



Keeping  
**NATURE**  
in Our Future



A Biodiversity  
Conservation Strategy  
for the  
South Okanagan-  
Similkameen



South Okanagan Similkameen  
Conservation Program (SOSCP)

*“SOSCP acknowledges funding and support for this project from: Regional District of Okanagan Similkameen, Environment Canada, Province of BC, the Vancouver Foundation, The Habitat Conservation Trust Foundation and the Real Estate Foundation of BC.”*



South Okanagan Similkameen Conservation Program. 2012. Keeping Nature in Our Future: A Biodiversity Conservation Strategy for the South Okanagan Similkameen.

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# FOREWORD

We all know the Okanagan is a beautiful and special place. The combination of lakes, orchards and vineyards, desert grasslands and forested mountains provides something for everyone. Wine aficionados tell us that there is no place in Canada better for producing fine wines, biologists tell us that the diversity of its birds is unequalled anywhere on the continent, and a glance at any one of the sandy beaches on a sunny day in July tells us exactly why thousands of visitors flock to the valley each year. Where else in Canada can you walk through an alpine meadow, pick a ripe peach and enjoy a glass of wine produced from your neighbour's vineyard, all on the same day?

The beauty and diversity of this valley is the result of a long history of change. The oldest rocks in British Columbia form spectacular cliffs exposed when the valley cracked open millions of years ago. The high peaks of the Cascades rose up to block moisture from Pacific storms so that the annual rainfall here is only a quarter that experienced on the coast. The ice ages smoothed down the local mountains, deepened the lakes and left a legacy of rich sandy loam on the benches that is perfect for agriculture.

The result is a valley that is close to perfect for human comfort—the climate is dry but there is adequate water, the summers are warm and the cool winters are moderated by the large valley lakes. First Nations people found a land that provided everything they needed—salmon in the rivers, deer in the hills, and food plants in the grasslands. European settlers saw an opportunity for ranching in the abundant grass, then transformed those grasslands into an Eden of orchards through irrigation. Railways and highways brought visitors from east and west, lured by the warm, clear waters of the lakes and the lazy feeling of hot summer days.

These centuries of change have produced a remarkable mosaic of landscapes featuring native grasslands and pine forests, agricultural lands, vibrant cities and small towns. It is a mosaic that is the best of all worlds—easy access to beautiful natural spaces, fresh food and fine dining. The landscape as a whole provides a quality of life that is difficult to match, and that quality is as much a product of our spectacular natural surroundings as it is a product of sunny summers and a selection of fine golf courses.

We can't take this special place for granted. Change will continue to happen, and we must continually direct that change to keep the delicate balance of healthy wild places and comfortable living spaces intact. Land in the Okanagan is equally divided between private holdings, Crown Land and First Nations reserves, so we all have a role and a responsibility to make sure future generations will have a quality of life equal to our own. The Okanagan has something for everyone, and there can be a place here for every one if we plan together. Let's protect the Okanagan we all love.

Barb Pryce, SOSCP Chair



# ACKNOWLEDGEMENTS

**Keeping Nature in Our Future** was developed through a collaborative and consultative process guided by a steering committee that included local government planners, federal and provincial government ministries, First Nations observers and participants, and non-profit organizations. The strategy was initiated under the banner of the South Okanagan-Similkameen Conservation Program (SOSCP), a partnership among fifty non-governmental, government, academic, and First Nations organizations working together to conserve biodiversity

**Project Manager and Chair:**

Bryn White, South Okanagan Similkameen Conservation Program Manager

**Financial support for the project was provided by:**

The Regional District of Okanagan Similkameen  
Environment Canada: Canadian Wildlife Service & Habitat Stewardship Program  
Province of BC, Ministry of Forests, Lands and Natural Resource Operations  
The Vancouver Foundation  
The Habitat Conservation Trust Foundation  
The Real Estate Foundation of British Columbia

**Scientific expertise was provided by a technical steering committee:**

Ann Blyth - Caslys Consulting  
Orville Dyer – BC Ministry of Forests, Lands and Natural Resource Operations  
Kim Everett – BC Ministry of Environment  
Allison Haney – Private Consultant  
Kristi Iverson - Iverson and McKenzie Consulting  
Jan Kirkby - Environment Canada: Canadian Wildlife Service  
Lucy Reiss – Environment Canada: Canadian Wildlife Service  
Jillian Tamblyn, Waters' Edge Consulting

**Many partners and advisors helped guide the project and comment on drafts of strategy documents. Thanks to the following individuals and agencies that formed the biodiversity conservation steering committee:**

Narissa Chadwick – Ministry of Community, Sport and Cultural Development  
Grant Furness – Ministry of Forests, Lands and Natural Resource Operations  
Margaret Holm – Okanagan Similkameen Conservation Alliance  
Jan Kirkby – Environment Canada: Canadian Wildlife Service





Susan Latimer - Okanagan Collaborative Conservation Program  
Danielle Lukovich – Ministry of Community, Sport and Cultural Development  
Bill Huot - Ministry of Community, Sport and Cultural Development  
Carl MacNaughton - The Nature Trust of BC  
Donna Butler – Regional District Okanagan Similkameen  
Malcolm McNaughton – Regional District Okanagan Similkameen  
Barbara Pryce – Nature Conservancy of Canada  
Evelyn Reichert – Regional District Okanagan Similkameen  
Charlotte Stringam – Nk'Mip Desert Cultural Centre

**Project advisors and liaisons to the Steering & Technical Committees include:**

Richard Armstrong and Jeannette Armstrong, En'Owkin Centre  
Keith Baric, BC Ministry of Environment  
Michael Bezener, En'Owkin Centre  
Chad Eneas, En'Owkin Centre  
John Kirbyson, private consultant  
Wesley Miles, SOSCP Shared Municipal Environmental Planner  
Mike Sarell, Ophiuchus Consulting

**Non-Participating Observers include:**

Gwen Bridge, Okanagan Nation Alliance  
Meghan Fisher, Okanagan Nation Alliance  
Kathy Holland, Okanagan Nation Alliance  
James Pepper, Okanagan Nation Alliance

**Project consultants:**

Special thanks goes to Ann Blyth of Caslys Consulting for collecting the spatial information and shepherding the development of high-quality, science-based biodiversity analysis and meaningful map products.

Special thanks also to Kellie Garcia of Insight Environmental Consulting who wrote the first drafts of *Keeping Nature in Our Future* and facilitated steering committee discussions of the document. Susan Abs of Eclipse Environmental Consulting and Jillian Tamblyn of Water's Edge Consulting contributed to key sections of the document.

Thank you as well to the Okanagan Similkameen Conservation Alliance (OSCA) and Margaret Holm who provided administrative and project management support.



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# EXECUTIVE SUMMARY

The South Okanagan-Similkameen region is an exceptional place, known for its spectacular landscapes and wildlife, amazing outdoor recreation opportunities, world class wines, and diverse agricultural products. It is a biologically unique area with species and ecosystems that do not occur anywhere else in Canada, and in some cases the world. The region is home to some of the greatest concentrations of species diversity and species at risk in Canada, and is recognized as one of Canada's most endangered natural systems.

Many of the wildlife and natural areas in the South Okanagan-Similkameen are in trouble because of impacts from our towns and cities, agriculture, and other human activities on the land and water. Habitat loss and fragmentation, the spread of non-local species, climate change, pollution, and expanding land and water development are all contributing to a decline in the variety of living species and spaces. By investing in “Keeping Nature in our Future”, we can help to protect our rich natural assets as a legacy for our children and grandchildren. As the region's population continues to grow, this strategy provides the information we need to ensure that the stewardship of the natural environment is factored into all decisions on urban, suburban, resource, recreational, and rural development.

## A Conservation Strategy for the Future

### *What is a Biodiversity Conservation Strategy?*

**Keeping Nature in Our Future** identifies **why** we should conserve and restore natural areas, **which** natural areas should be protected and restored, **who** can contribute, **how** and **when** conservation and enhancement of these natural areas can be achieved, and the role of natural areas in protecting regional biodiversity. **Biodiversity is short for biological diversity – the variety of life in all its forms that many people think of simply as “nature”.** The strategy provides a “big-picture”, landscape view of the region and a framework for considering conservation options that go beyond jurisdictional boundaries to include entire ecosystems and watersheds and all land tenures.

**Keeping Nature in Our Future** was developed through a collaborative and consultative process, guided by a steering committee that included local governments, federal and provincial government ministries, First Nations observers and participants, and non-profit organizations.

### *Our Vision for Nature in the South Okanagan-Similkameen*

The South Okanagan-Similkameen is an area rich in biodiversity that provides valuable habitat for plants and animals found nowhere else in Canada and, in some cases, the world. Healthy ecosystems and networks of natural areas are valued and conserved by decision-makers, communities and citizens.

### **Guiding Principles for the Strategy**

The development of Keeping Nature in Our Future was guided by eight principles that address both conservation issues and management approaches.

1. Protect large and small areas of habitat.
2. Protect habitats characteristic of our region.
3. Connect habitat areas.
4. Protect a matrix of lands outside of core conservation areas and corridors.
5. Maintain diversity of ecosystems, species, and genetics.
6. Consider biodiversity from the regional land use planning and development context.
7. Share responsibility.
8. Practice the precautionary principle in decision-making.<sup>1</sup>

## **Key Findings: The Status of Nature in the South Okanagan-Similkameen**

The status of nature in the South Okanagan-Similkameen was assessed using ecological, environmental, and land ownership data. The analysis is based on conservation ranking of ecosystems; an assessment of relative biodiversity; identification of linkages between natural areas; and an assessment of ownership and tenure to determine current levels of protection from development and intensive use. The result is a series of maps<sup>2</sup> showing where the most intact natural areas occur and the level of protection offered by different types of land ownership. Key findings are presented in Section 3.0 of the Strategy and are summarized below.

### **Important Sensitive Ecosystems**

The local and provincial conservation status of ecosystems<sup>3</sup> in the South Okanagan-Similkameen was assessed using sensitive ecosystems mapping. This work provided the basis for conservation ranking maps, which show the relative significance and sensitivity of various ecosystems in the region. Conservation rankings were determined based on the provincial Conservation Framework, including sensitive ecosystem priorities.<sup>4</sup> Four conservation rankings are used in the maps: very high, high, moderate, and low.

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<sup>1</sup> Rio Declaration on Environment and Development 1992. "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

<sup>2</sup> Maps and other supporting materials can be located on the SOSCP website <http://www.soscp.org/biodiversity>

<sup>3</sup> An ecosystem is a community of organisms and their physical environment that can be defined at a range of scales, for example, from the very small (a pond) to the very large (all the grasslands in the southern interior). Sensitive ecosystems are ecologically fragile and are recognized as at risk on the provincial landscape.

<sup>4</sup> <http://www.env.gov.bc.ca/conservationframework/>

These maps provide a practical tool that local governments can use to integrate biodiversity protection into policies, plans, and regulations, such as official community plans; parks and transportation plans; development permit areas; and zoning by-laws. They also provide a scientific basis for developing site-specific requirements as part of development approvals, including conditions and standards that must be met to protect sensitive ecosystems.

**Key Finding:**

- Nearly two-thirds of the study area is classified as having high or very high conservation ranking.

**One of the most practical tools resulting from the above analysis is an information package that was prepared for each of the South Okanagan-Similkameen local governments.**<sup>5</sup> The package provides details about the location of sensitive ecosystems within local boundaries; a gap analysis to identify current and desired protection status for sensitive ecosystems; and recommendations for conservation and restoration of natural areas.

### **Biodiversity Hot Spots**

The relative biodiversity analysis builds on the conservation ranking maps by incorporating additional species and habitat information. It identifies biodiversity 'hotspots' or areas of greatest ecological importance in the regional landscape. Importance for biodiversity was viewed separately for valley bottoms and upland areas because valley bottoms have been subjected to more extensive urban and agricultural land conversion. Five classes of relative biodiversity are used: very high, high, moderate, low, and very low.

**Key Findings:**

- More than 20% of the study area is classified as having high or very high relative biodiversity i.e., the region has many healthy natural areas supporting a diversity of wildlife.
- The electoral areas and municipalities with the greatest proportion of very high and high relative biodiversity are Area A (Rural Osoyoos), Area B (Cawston), Area C (Rural Oliver), Area D (Okanagan Falls), and the municipalities of Osoyoos and Oliver.
- The valley bottom is very important, even though it is a smaller part of the region. Nearly half of the very high and high biodiversity values occur in the valley bottom. The results also show that a significant amount of habitat in the valley has already been lost, as reflected by the high proportion of low and very low relative biodiversity found there.
- Since upland areas do not have the same intensity of land conversion as the valleys, they represent an opportunity for land managers to retain biodiversity values, although protection of these lands is not comparable or interchangeable with protection of valley bottoms.

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<sup>5</sup> <http://www.soscp.org/biodiversity>



## Land Management Implications for Biodiversity

The relative biodiversity rankings provide a regional perspective regarding the state of biodiversity in the South Okanagan-Similkameen. These results were combined with information on current land management and ownership, in order to identify opportunities for land managers to implement conservation measures.

The study area was classified into four land management categories based on the current level of protection for biodiversity values: Class 1: Conservation lands with the highest degree of protection; Class 2: Dedicated open space that is more impacted by human disturbance and may not have long term protection; Class 3: Public resource lands, i.e., Crown lands used for resource-based activities; Class 4: Agricultural Land Reserve, locally zoned agriculture, and Crown leases.

### Key Findings:

- Approximately 13% of the study area falls within lands designated as parks, with most of this consisting of provincial parks and protected areas. Municipal, regional, and provincial parks and protected areas together protect only 22.6% of the region's very high and high biodiversity habitats.
- Amount of city parkland meets traditional recreation standards but achieves a low overall allocation of land to conservation. A small percentage of land (less than 1%) is allocated to regional parks. The total park and protected areas of all agencies combined in the study area – is the second lowest percent of protected land base of the six regions studied in BC.
- The comparatively small amount of land that falls within dedicated conservation lands highlights the need to manage public resource lands to protect multiple values, including biodiversity.
- Indian reserves also have a high proportion of very high and high biodiversity habitats, followed by private land. This highlights the need for improved First Nations land use planning capacity, conservation incentives, and opportunities for voluntary stewardship.
- The Agricultural Land Reserve is a relatively small proportion of the entire study area, but because it is concentrated in the valley bottom and has significant high and very high biodiversity habitat values, it is important to consider biodiversity conservation opportunities within these lands.

## Linking Natural Areas

Habitat connectivity describes the degree to which different habitats are linked to form an interconnected network. This network provides corridors for wildlife movement between important habitats.<sup>6</sup> The degree of interconnectedness and the characteristics of the linkages vary, based on terrain features and level of disturbance. For example, it is more difficult for most wildlife to move through steep areas than gentle slopes. The habitat connectivity analysis assigned scores to indicate current states of connectivity from low to high and outlined barriers and pinch points, where wildlife may not be able to pass through.

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<sup>6</sup> Habitat is the place where an organism lives, and or the conditions of that place including the soil, vegetation, water, and food.

#### Key Findings:

- At a regional scale, the Okanagan Valley represents a north-south corridor, facilitating wildlife movement between the US Columbia Basin and the grasslands of the Central Interior Plateau of BC. Human settlements and the transportation network in the South Okanagan-Similkameen represent barriers to wildlife movement. Highways 97, 3, and 5A impede east-west movement and Highway 3 and the Princeton Summerland Road potentially impact north-south movement.
- The valley area contains a large proportion of the high and very high values for habitat connectivity and is also under the most pressure from human activities. Along with areas of less rugged terrain located to the east of the Okanagan Valley and throughout the northern half of the study area, the valley area offers the best potential for increased wildlife movement.

## Strategic Directions: Identifying Opportunities and Focusing Efforts

Section 4.0 of **Keeping Nature in Our Future** identifies 16 strategic directions and accompanying opportunities for action to support biodiversity conservation efforts of local and senior governments.

### Strategic Directions for Local Government

1. Establish new, or update existing land use policies and regulations to ensure that development processes integrate biodiversity conservation considerations.
2. Build on the existing network of parks, protected areas and greenways to strengthen natural area conservation within a regional context.
3. Improve and expand methods to finance conservation of lands with ecological values.
4. Set security deposits to encourage environmental compliance consistent with the complexity of the development.
5. Develop a range of development, tax and financial incentives to encourage stewardship on private lands.
6. Share data and mapping between governments to make scientifically defensible land use decisions that protect regional ecosystems.
7. Promote better public and stakeholder understanding regional biodiversity.
8. Develop the capacity of local government staff and elected officials to become leaders and innovators in implementing biodiversity conservation.
9. Improve interagency collaboration on biodiversity conservation and capitalize on partnership opportunities.



## Strategic Directions for Senior Government

1. Establish new, or improve existing provincial enabling legislation that sets out powers and responsibilities of local governments for biodiversity protection.
2. Improve implementation of conservation initiatives; promote interagency cooperation, and enforcement of senior legislation, regulations, and standards.
3. Manage ecological values on provincial and federal Crown lands in a manner that leads by example.
4. Improve the efficiency and effectiveness of environmental mitigation and compensation programs.
5. Continue to build a network of protected areas to conserve sensitive and important ecosystems that are underrepresented in the current network.
6. Support land owners, managers and other stakeholders to conserve biodiversity with financial and technical assistance.
7. Conduct applied research and scientific studies to support biodiversity conservation in the region and disseminate results to decision-makers and stakeholders.
8. Ensure that environmental protection goals, including biodiversity conservation are effectively considered within government permitting processes.

## Moving Forward: Implementation and Monitoring Progress

SOSCP partners are committed to making a difference on the ground to strengthen the conservation of ecosystems, habitats and species in the South Okanagan-Similkameen region. To that end, this chapter focuses on implementation of **Keeping Nature in Our Future**. It outlines strengths, challenges and next steps that SOSCP and its partners can take to implement the strategy, with a focus on engaging stakeholders. It also proposes a performance measurement framework to assess progress on strategy implementation. Performance measurement will support accountability to partners and funders and demonstrate the relevance and effectiveness of the strategy to SOSCP and its partners and stakeholders. It will also provide the information needed for “mid-course adjustments” to improve strategy implementation.



## 1.0 A Conservation Strategy for the Future

The South Okanagan-Similkameen is an exceptional place, known for its spectacular landscapes and wildlife, amazing outdoor recreation opportunities, world class wines, and diverse agricultural products. The region is also home to some of the greatest concentrations of species diversity and species at risk in Canada and is recognized as one of Canada's most endangered natural systems. The dry climate and desert-like habitats of the Okanagan and Similkameen river valleys are an extension of the Great Basin desert to the south, forming an important corridor and a channel of movement for wildlife through to the interior grasslands of British Columbia.

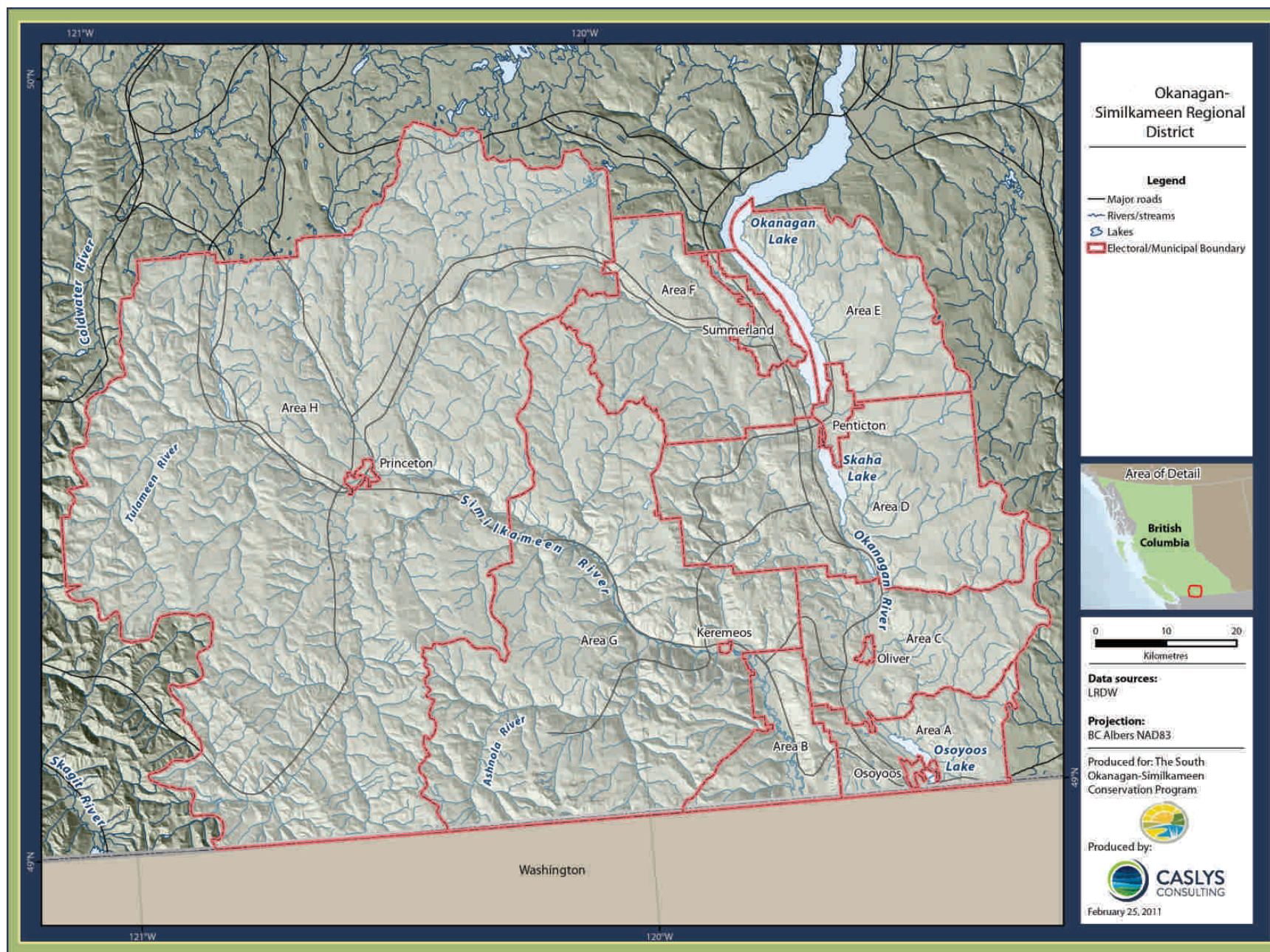
Many of the wildlife and natural areas in the South Okanagan-Similkameen are in trouble because of the impacts from our towns and cities, agriculture, and other human activities on land and water. Habitat loss and fragmentation, the spread of non-local species, climate change, pollution, and expanding land and water development are all contributing to a decline of living species and natural spaces.

Most residents of the South Okanagan-Similkameen appreciate and value the contribution of the natural environment to our economy, quality of life, and the unique character of our communities. By investing in **“Keeping Nature in our Future”**, we can help to protect our rich natural assets as a legacy for our children and grandchildren. As the region's population continues to grow, this strategy provides the information we need to ensure that stewardship of the natural environment is factored into all decisions on urban, suburban, resource, recreational, and rural development.





Figure 1 - Map of the Study Area



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen

## 1.1 What is “Keeping Nature in our Future?”

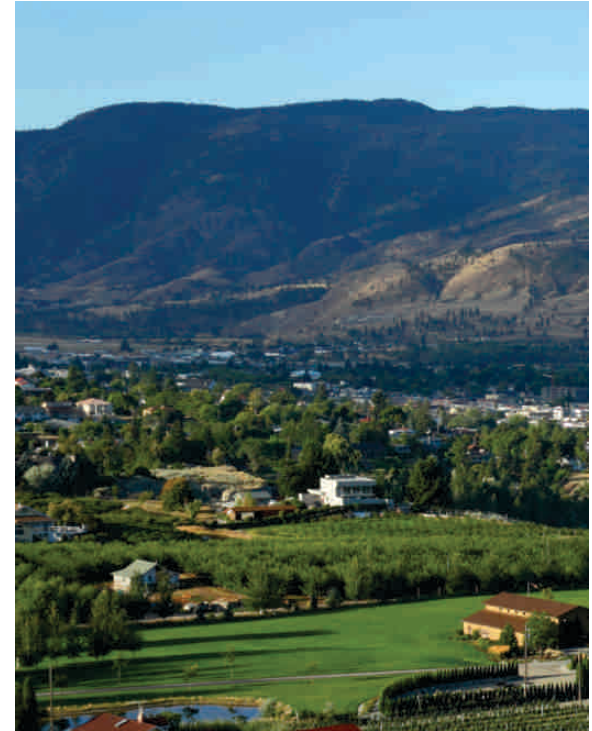
**Keeping Nature in Our Future** is a **biodiversity conservation strategy** for the South Okanagan-Similkameen region. It provides a plan for protecting the health and resilience<sup>7</sup> of natural areas and a strategy for decision-makers and citizens to work together to enhance and preserve the natural legacy of the region. The strategy provides a “big-picture”, landscape view of the region and a framework for considering conservation options that goes beyond municipal and rural boundaries to include entire ecosystems<sup>8</sup> and watersheds<sup>9</sup> and all land tenures.

**Keeping Nature in Our Future** focuses on providing an information base on biodiversity, including identifying strategic directions and opportunities for conservation. The strategy positions biodiversity protection as one component of regional sustainability, complementing other regional initiatives to address additional aspects of environmental sustainability, such as climate action, renewable energy, water and food security, and sustainable agriculture, transportation and tourism.

### Biodiversity - the Variety of Life on Earth

Biodiversity is short for biological diversity – the variety of life in all its forms. It includes species and ecosystems and the processes that link them together – essentially, everything that we think of as “nature”.

As section 2.2 “Why is Nature in Danger” suggests, there are several major stressors on biodiversity. These include population growth, land conversion and degradation; invasive species; pollution; human interference with natural cycles; and the overarching impacts of climate change. **Keeping Nature in Our Future** focuses primarily on the first of these stressors, offering mapping and strategies to help integrate biodiversity into land use planning and development.



<sup>7</sup> Resilience describes the capacity of an ecosystem to tolerate disturbances without collapsing into a qualitatively different state.

<sup>8</sup> An ecosystem is a biological environment that is made up of includes all the living organisms as well as all non-living components of the environment with which they organisms interact, such as air, soil, water, and sunlight. Ecosystems can be examined at various scales, and may be as small as a single tree or as large as a sub-region of a province.

<sup>9</sup> A watershed is an area of land that catches precipitation and drains into a larger body of water such as a marsh, creek, river, stream or lake.



## 1.2 Diverse Partners Coming Together

**Keeping Nature in Our Future** was developed through a collaborative and cooperative process, guided by a steering committee that included local government planners, federal and provincial government ministries, First Nations observers and participants, and non-profit organizations. A similar strategy is being developed for the north and central Okanagan by the partners of the Okanagan Collaborative Conservation Program. Both strategies will be combined for a basin-wide analysis in the near future.

The strategy was initiated under the banner of the South Okanagan-Similkameen Conservation Program (SOSCP), a partnership among fifty non-governmental, government, academic, and First Nations organizations working together to conserve biodiversity. For the past twelve years, the SOSCP has been a vehicle for the partners to jointly set priorities, collaborate and coordinate their work, resulting in more effective conservation efforts.



<sup>10</sup> Province of BC, Local Government Act [RSBC 1996], Chapter 323 Part 1, Section 2 and the Community Charter [SBC 2003] Chapter 26 Part 2, Section 7. Queens Printer British Columbia Publishing. [www.bclaws.ca](http://www.bclaws.ca).

### Benefits of “Keeping Nature in Our Future”

- Provides a framework for conserving healthy ecosystems; clean air, soil and water; diverse wildlife; green space; and scenic beauty, all of which contribute to the region's health, liveability, resilience, and economic prosperity.
- Supports the use of science-based, peer-reviewed environmental information in decision-making about development and conservation in the region.
- Provides science-based information that can be used early in development approval processes to promote environmentally friendly development and reduce development costs.
- Supports the responsibility of municipal and regional governments to foster environmental well-being.<sup>10</sup>
- Assists senior, local and regional governments to meet legislative requirements and policy mandates for biodiversity protection.
- Assists local governments to meet BC Climate Change Action Charter targets through conserving natural areas that can store carbon.
- Provides a basis for conservation partnerships, sharing of resources and partnerships and divides the responsibilities of integration of planning and conservation responsibilities, thus reducing costs to individual agencies.
- Identifies possible options for financing conservation.
- Reduces the risk of incurring future costs for species at risk recovery programs.
- Provides a basis for directing resources to areas of greatest ecological importance.
- Promotes community and business participation in stewardship and sustainability.
- Sets the stage for promoting sustainable business and green development, regional competitiveness, and innovation.

Please note that although some First Nations representatives were part of the team that prepared the strategy, the rich complement of Traditional Ecological Knowledge and Aboriginal Traditional Knowledge is not included in the strategy. The Okanagan Nation Alliance (ONA) Natural Resource and Land Use Team representatives were non-participating observers of the strategy development process. Their presence does not constitute consultation, which would require direct contact with the individual Band communities and ONA. The South Okanagan-Similkameen Conservation Program wishes to continue to build dialogue and cooperation in implementing the strategy where possible in future.

### 1.3 Building on a Legacy – Links to other Plans

Several planning reports and regional strategies have paved the way for the development of Keeping Nature in Our Future, the most recent being the South Okanagan Regional Growth Strategy (Part II, Section 2). This strategy aims to ensure that growth in the South Okanagan takes place in a sustainable manner. It includes several environmental policies, including support for a regional approach to biodiversity conservation and ecosystems protection, beginning with development of a conservation strategy.

Several other regional strategies have identified the need for conservation measures to balance economic growth with long range ecological health and sustainability. These include the South Okanagan Conservation Strategy;<sup>11</sup> the Okanagan Shuswap Land and Resource Management Plan;<sup>12</sup> A Strategy to Achieve Green Sustainable Economic Development in the Okanagan and Similkameen Valleys;<sup>13</sup> and the Landscape Recovery Strategy for the South Okanagan and Similkameen.<sup>14</sup>

### 1.4 Basis for Conservation Planning - Vision, Goals and Guiding Principles

The following vision, goals, and guiding principles provide a framework for **Keeping Nature in Our Future**.

#### **Vision**

The South Okanagan-Similkameen is an area rich in natural diversity that provides valuable habitat for a unique and diverse array of plants and animals, some of which are rare in Canada. Healthy ecosystems and habitat networks are valued and conserved by decision-makers and citizens as the basis for health, livelihoods, liveable communities, and economic development.

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<sup>11</sup> Prepared by D. A. Hlady, 1990, for the B.C. Ministry of Environment. URL: [www.env.gov.bc.ca/wld/documents/southoka/southoka.pdf](http://www.env.gov.bc.ca/wld/documents/southoka/southoka.pdf).

<sup>12</sup> Prepared by members of the Okanagan-Shuswap LRMP Process, 2000. URL: <http://archive.ilmb.gov.bc.ca/slrp/lrmp/kamloops/okanagan/plan/files/oslrmpfull.pdf>.

<sup>13</sup> Prepared by Westland Resource Group, 2003, for the North, Central, and Okanagan-Similkameen regional districts. URL: [www.rdos.bc.ca/pdf/cao/gsed/GSED\\_Final\\_Strategy.pdf](http://www.rdos.bc.ca/pdf/cao/gsed/GSED_Final_Strategy.pdf).

<sup>14</sup> Prepared by the South Okanagan-Similkameen Conservation Program, 2007.



## Goals

1. Develop and manage a connected, biologically diverse network of ecosystems across all land uses and tenures.
2. Ensure that decision-makers and citizens have the information and tools needed to protect, enhance, and restore sensitive ecosystems, habitats and species.
3. Implement a system of greenways, parks, and protected areas in the South Okanagan-Similkameen that increases human connection to nature, protects sensitive ecosystems, respects working landscapes, and increases opportunities for recreation and non-motorized travel.
4. Promote a cooperative, collaborative approach to conservation and restoration of natural areas throughout the entire Okanagan Similkameen region amongst all levels of government, public and private organizations, and property owners.



## Guiding Principles

**Protect representative core habitat areas.** Large natural areas as well as a variety of other habitat patches (reservoirs, and refuges) are essential to protect species and ecosystems in the region. Habitat areas that are closer together are better than areas that are far apart.

**Connect habitat areas.** Intact areas are better than highly fragmented habitats, and wildlife movement corridors with minimal human disturbance function best. Watercourses, riparian areas, and other greenways offer good opportunities for wildlife to travel between winter and summer ranges. They also allow healthy populations of animals and plants to move or be dispersed among various habitat areas, thus increasing their ability to survive, and improving the viability and resilience of the ecosystems they inhabit.

**Protect a matrix of lands outside of core areas and corridors.** Small areas like a backyard can also be important to biodiversity. A diverse array of lands where special features are maintained contributes to the overall health of ecosystems.

**Maintain diversity of ecosystems, species, and genetics.** The diversity of an ecosystem generally depends on the characteristics of the physical environment, the diversity of species present, and the interactions of these species with the environment and each other. Maintaining wildlife populations and a variety of landscapes at different stages of their lifecycles, improves long-term biodiversity and helps ecosystems to withstand and adapt to natural, or human caused disturbances.



**Look at biodiversity from both a landscape and regional perspective.** Consideration of human influence on biodiversity is often limited to identifying site level impacts from specific development activities and devising mitigation measures to address them. However, the cumulative or “snowball” effects of numerous activities may eventually degrade ecosystem health and functioning. A 'landscape perspective' illustrates patterns of features on the landscape and the processes by which they connect and interact. For example, habitat loss and fragmentation is best identified at the landscape level.

**Consider the regional context.** The South Okanagan is part of the larger Okanagan Basin that stretches north to Armstrong and is an important corridor between the arid Columbia Basin to the south and the grasslands of the Central Interior of BC. The Similkameen also has important northern connections to the Thompson–Nicola region, another provincial hotspot for grasslands and biodiversity. Since ecosystems and wildlife movements do not respect municipal and international boundaries, local and regional land use decisions should consider this broader context.

**Share responsibility for biodiversity.** To conserve and enhance the region's biodiversity, decision-makers, communities, and individuals must work collaboratively and across political boundaries to identify biodiversity issues, capitalize on conservation opportunities, develop options, and implement solutions.

**Practice the precautionary principle** when making decisions that might affect biodiversity. Land use decisions should err on the side of caution in cases where there is a risk of significant or irreversible damage to ecosystems or species. Similarly, decisions regarding biodiversity conservation should not be postponed or weakened due to lack of information, if sensitive, high priority ecosystems are at risk.

## 2.0 NATURE AND BIODIVERSITY

### 2.1 Why Is Nature Important to the South Okanagan-Similkameen?

Biodiversity is short for biological diversity – the variety of life in all its forms. It includes species and ecosystems and the processes that link them together – essentially, everything that we think of as “nature”. Biodiversity provides important ecological services to all living things, such as regulating climate and the flow of water, as well as essential human needs such as food, clean water, resources upon which our economy is depends, and recreational, spiritual and cultural needs.

Although humans are part of biodiversity, it is important to distinguish between nature found in relatively undeveloped natural areas versus agricultural landscapes, manicured parks, and backyards. The latter can play an important role in maintaining local biodiversity and may be beautiful to look at, but they do not match the value of natural areas when it comes to supporting native species, ecosystems and ecological services.



#### Local Residents Value our Natural Environment

Public opinion surveys commissioned by the SOSCP and completed by Synovate Research in 2004 and 2008 reveal that local residents value our natural environment.

- 75% agreed that it is important to protect endangered species and their habitats in the long-term, even if that means putting restrictions on economic development.
- 77% identified the need for stricter regulations, and 84% wanted their local and regional governments to do more to protect the environment.
- Over 90% felt that the natural environment was important to their quality of life.
- 79% of residents are concerned with water quality and quantity, loss of habitat to development, sprawl, poor planning, and loss of wildlife.
- More than one third of the population thinks that the environment has become worse over recent years.
- Only one in five residents think too much land in the region is already protected and only 13% believe that the real estate industry is so important to the region that restrictions for new developments are unnecessary.



### Basic to our economy

Nature plays a critical role in the economy of the South Okanagan-Similkameen region. Profitable specialty crops such as organic produce, tree fruits, and wine grapes benefit directly from biodiversity. Soils rich in microorganisms improve crop productivity, while birds and invertebrate species help pollinate and control insect pests and weeds.

In addition to supporting resource-based industries within forests and farms, nature provides the foundation for the strong tourism industry in the South Okanagan-Similkameen. Natural landscapes are aesthetically pleasing and provide opportunities to get away from busy urban areas to watch birds, view wildlife, fish, hunt, walk, bike, climb, boat and swim in natural settings and all within a short distance from quality accommodations and amenities.



Nature also defines and enriches the region's culture, including its arts and literature, wine and cuisine, and many festivals. Diverse and healthy ecosystems contribute to public health and enhance the quality of life in the region, making it a desirable place that attracts and retains visitors, residents and businesses.

Proximity to natural areas, greenways, trails, and open spaces also directly benefits the building industry and real estate market in the region. Benefits include higher residential property values; higher property assessments and thus property tax revenues for local government; increased marketability of adjacent properties; and faster sales. There can also be reduced long-term costs for developers and communities when ecological considerations are integrated into development activities.<sup>15</sup>

### Economic Impact of Nature-Based Tourism in British Columbia

- Wildlife viewers spent \$6.2 billion on wildlife viewing activities in BC in 1996; 63% of that spending was for wildlife viewing, defined as trips away from home where the main purpose is to watch, feed, photograph or study wildlife.<sup>16</sup>
- Approximately 4.8 million people reported viewing wildlife in BC in 1996; most commonly, people viewed wildlife at their residences, with 47% of them viewing wildlife around their homes or cabins.<sup>17</sup>
- When all spin-off impacts were considered, nature-based tourism businesses generated \$1.55 billion in revenues and \$783 million of BC's Gross Domestic Product in 2001. 11% of these businesses operate in the Thompson Okanagan region.<sup>18</sup>

<sup>15</sup> Curran, D. 2001. Economic Benefits of Natural Green Space Protection. Paper prepared for the POLIS project on Ecological Governance and Smart Growth British Columbia, May 2001 [quoting US National Parks Service study]. Victoria, BC. Retrieved 07 March 2011 from: [www.smartgrowth.bc.ca/Portals/0/Downloads/Economic%20Benefits%20of%20Natural%20Green%20Space%20Protection.pdf](http://www.smartgrowth.bc.ca/Portals/0/Downloads/Economic%20Benefits%20of%20Natural%20Green%20Space%20Protection.pdf)

<sup>16</sup> Reid, R. 1998. Economic Value of Wildlife Activities in British Columbia. Wildlife Branch, Ministry of Environment, Lands and Parks.

<sup>17</sup> Ibid.

<sup>18</sup> Tourism British Columbia. 2005. Characteristics of the Commercial Nature-Based Tourism Industry in British Columbia. Retrieved 20 December 2011 from: [www.wilderness-tourism.bc.ca/docs/Commercial\\_Nature-Based%20Tourism.pdf](http://www.wilderness-tourism.bc.ca/docs/Commercial_Nature-Based%20Tourism.pdf).

## Essential to our health and prosperity

Natural systems provide what can be called “ecosystem goods and services” that provide the basis for achieving social, environmental, and economic sustainability in the South Okanagan Similkameen and beyond. The degradation of natural systems can reduce the availability and quality of ecosystem goods and services. In their place we are forced to find highly technical and expensive substitutes, which can be inefficient and costly. Evidence shows that contact with nature promotes health and well being.<sup>19</sup> There are known beneficial physiological effects when humans encounter, observe, or otherwise positively interact with animals, plants, landscapes, and wilderness.

Protecting the biodiversity of the South Okanagan-Similkameen will ensure a natural legacy for our children and allow future generations to enjoy the benefits of the diverse and healthy ecosystems, economies, and communities we enjoy today.



### Examples of Ecosystem Services

- food production and pollination of fruits and vegetables
- air and water purification
- providing drinking and irrigation water and recharging aquifers
- providing medicines and health products
- providing raw materials such as lumber and minerals
- flood control
- soil formation and retention
- regulation of pest populations
- providing fish and wildlife habitat
- connecting natural areas
- attracting tourists and enhancing quality of life for residents
- providing areas for outdoor recreation opportunities
- supporting aboriginal cultural activities
- converting carbon dioxide into oxygen
- carbon storage

<sup>19</sup> Maller, C. Townsend, M. Pryor, A. Brown, P. and St. Leger, L. 2005. Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. p 50. In Health Promotion International, Vol. 21 No. 1. Oxford University Press.

### **Intrinsic value – possessing value in its own right**

The idea that biodiversity has intrinsic value provides an ethical justification for conservation. The 'intrinsic value of nature' refers to the value it possesses in its own right, in contrast to the 'instrumental value' of nature, which refers to its practical value in supporting plants and animals, including humans.

### **Resilience – strength in the face of change**

Higher levels of biodiversity increase ecological resilience, which in turn helps ecosystems deal with natural and human stresses without losing their defining characteristics, and aids in the speed of recovery from disturbance. An ecosystem may become less resilient through loss of species and habitat diversity. For example, warmer winters, forestry practices and fire suppression have diminished the resilience of forest ecosystems to survive pest infestation – resulting in the massive pine beetle infestation in the BC Interior.<sup>20</sup>



#### **The Importance of Pollination**

One-third of the food consumed by people is a result of pollination by animals. Pollination is the transfer of pollen between plants by animals or by non-biological forces such as wind. Most animal pollination is carried out by insects such as bees, beetles, wasps, flies, butterflies, and moths.

<sup>20</sup> O'Riordan, J. 2008. Summary Report, Climate Change Adaptation and Biodiversity, Transitioning to an Ecosystem-Based Economy in British Columbia. Prepared for the Adaptation to Climate Change Team, Simon Fraser University, Vancouver, BC.

## 2.2 Why is Nature in Danger?

### Status of South Okanagan-Similkameen Region Relative to BC and Canada

The South Okanagan-Similkameen has species and ecosystems that do not occur anywhere else in Canada and, in some cases, the world.

The Regional District of Okanagan-Similkameen and the Capital Regional District have the highest numbers of species at risk in the province (approximately 1/3 of the total).

Of the three regional districts in the Okanagan, the Regional District of Okanagan-Similkameen has the highest proportion of sensitive ecosystems at 54.7%.<sup>21</sup>

Three of the four biogeoclimatic zones<sup>22</sup> of conservation concern in BC are located in the Okanagan-Similkameen. These natural areas, which are dominated by bunchgrass, ponderosa pine, and Douglas-fir plant communities, are imperilled provincially, or at high risk of extinction due to very restricted range, steep declines in size, and other factors. The areas cover less than 5% of the province and contain low elevation grasslands, which are the rarest land cover in BC. Over 80% of the ecosystem communities that make up these zones are of provincial conservation concern. Ecosystem conversion (loss) and degradation are widespread in these zones.<sup>23</sup>

To meet the goal of maintaining the full diversity of native species and ecosystems in BC, including preventing them from becoming at risk, the provincial Conservation Framework identifies 334 species and 59 ecosystems occurring in the South Okanagan-Similkameen as priority 1 and 2 for conservation.

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<sup>21</sup> Iverson, K., D. Curran, T. Fleming and A. Haney. 2008. Sensitive Ecosystems Inventory - Okanagan Valley: Vernon to Osoyoos, 2000-2007. Methods, Ecological Descriptions, Results and Conservation Tools.

<sup>22</sup> A biogeoclimatic zone is a geographic area having similar patterns of energy flow, vegetation, and soils as a result of a broadly homogenous macroclimate.

<sup>23</sup> 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](http://www.biodiversitybc.org).



## Population growth, land conversion and degradation

Population growth and accelerating development in the South Okanagan-Similkameen continues to put considerable pressure on important regional ecosystems. Fragmentation and loss of habitat threatens biodiversity, ecosystem functioning, and species at risk. Due to the narrow geography of the valley and the concentration of settlements along the valley corridor, most of the developable land base is located in the valley bottom and adjoining bench lands – the same areas that provide habitat for most of the species at risk in this region.

Sprawl development outside of core communities and the cumulative loss of smaller habitat patches is reducing total biodiversity. Linear structures such as highways and fence lines can fragment habitats and create biodiversity “sinks”, i.e., habitats in which populations of a particular species cannot survive because they are isolated from other populations.<sup>24</sup>

Agriculture, ranching, forestry, and energy and mining developments also contribute to ecosystem conversion and degradation. Agricultural expansion, especially for vineyards, competes with important habitat, particularly in rare grasslands and shrub-steppe. Poor livestock management practices, such as overgrazing and continuous grazing, degrade native plant communities, introduce weeds, and reduce wildlife habitat; in some cases, riparian vegetation is completely eliminated.



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<sup>24</sup> Pulliam, H.R. 1988. Sources, sinks, and population regulation. *American Naturalist*. 132:652–661.

## Extent of Changes to Natural Areas in Okanagan and Similkameen Valley Bottoms

A recent conservation project reviewed over 40 types of ecosystems in the Okanagan and Lower Similkameen valley bottoms to assess how human activities, such as agriculture and urban development, had affected the original extent of these natural areas. Starting from a snapshot during the year 1800, researchers were able to observe habitat changes in 1938 and in 2005. The results showed most natural areas had been significantly impacted, converted or destroyed by human activity – up to 90% in some cases.

For example, antelope-brush ecosystems, while uncommon in the South Okanagan, are important to many of the unique and rare species found in the region, (some of which are at risk of extinction). These ecosystems have sustained losses of up to 68% of their former range. Within two short years between 2001 and 2003, 10% of the entire remaining Antelope-brush was lost to agricultural development, a trend so severe that, if it is not stopped, will mean that all the Antelope-brush not conserved in parks or conservancy lands may be gone by the year 2020.

For more information, see  
[http://www.davidsonia.org/files/Okanagan\\_Lea](http://www.davidsonia.org/files/Okanagan_Lea)





### Invasive species

Invasive species are non-native plants or animals that have been introduced to an area and typically do not face the predators and diseases that helped to control them in their native ecosystems. Without natural enemies, these invaders are able to out-compete native plants, ornamental species, and agricultural crops. Once established, they can be difficult and expensive to control and often require the use of herbicides.

Invasive species exist everywhere that humans have settled and beyond, where they can threaten more remote ecosystems. The spread of invasives often changes habitats, causing declines in native species, changes in ecosystem types, and altered predator-prey dynamics. Invasive species also degrade recreational, agricultural, and range lands.

### Pollution

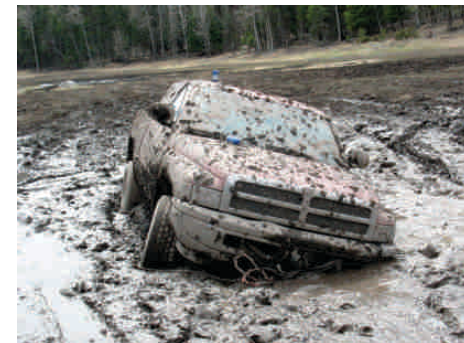
Pollutants impact ecological health. Sediments, metals, pesticides, and other contaminants transported from stormwater runoff into waterways can kill fish and other aquatic organisms or may impair reproduction or degrade habitat in streams, wetlands, and oxbow areas. Fertilizers and effluent can increase algal production in lakes, which lowers the dissolved oxygen levels and light levels. Without sufficient oxygen in the water and light, fish and plants are stressed and can die off in large numbers.

### Human interference with natural cycles

Natural disturbances, such as fire and floods, play a critical role in the patterns of abundance, distribution, and species composition of ecosystems. As forests and grasslands make way to development, the need for fire suppression increases and natural fire cycles are disrupted. Channelization of water systems and construction of dams throughout the valley has cut off meandering oxbows and wetland areas from the main channels, depriving downstream systems of floodwaters, scouring, and deposition of sediment and nutrients. Infilling of wetlands has reduced the biological diversity of the landscape and resulted in more runoff and less infiltration and cleansing of water before it reaches the main watercourses.

### Climate change

Climate change is predicted to bring warmer winters; longer, drier summers; and more frequent extreme weather events in the Okanagan-Similkameen. These changes will accelerate the competition between human uses of water and ecological needs, and may lead to public demand for more robust management of the environment, such as more water storage projects, increased use of groundwater sources, improved diking systems, and transfer of water to areas of greater demand.



Climate change will also put pressure on critical habitats, and in turn, on endangered species. Species may have to expand their range into areas they did not use previously, potentially creating further conflicts with human settlement.<sup>25</sup>

Biodiversity and ecosystem services help us to adapt to and mitigate climate change. Wetlands, soil, forests and water bodies play a crucial role in absorbing and storing carbon; playing a crucial role in our efforts to mitigate climate change. Loss of or damage to ecosystems reduces their capacity to capture and store carbon.<sup>26</sup>



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<sup>25</sup> bid, p. 4.

<sup>26</sup> European Commission. 2009. Nature's role in climate change. Available at [http://ec.europa.eu/environment/nature/info/pubs/docs/climate\\_change/en.pdf](http://ec.europa.eu/environment/nature/info/pubs/docs/climate_change/en.pdf).



## 3.0 STATUS OF NATURE IN THE SOUTH OKANAGAN-SIMILKAMEEN

The status of nature in the South Okanagan-Similkameen was assessed using ecological, environmental, and land ownership data. The result is a series of maps based on conservation ranking of ecosystems; an assessment of relative biodiversity; identification of important links between natural areas; and an assessment of ownership and tenure to determine current levels of protection from development and intensive use.

The identification of areas of ecological importance and high conservation value in the maps does not determine how they should be protected and managed. Rather, the maps are intended to help decision-makers make informed choices about development and land use in a regional landscape that supports multiple conservation and development values. To help ensure ecological sustainability, this landscape should include a gradient of land and water use, from highly protected areas to recreational lands and other stewarded areas, to intensive urban and industrial use.

The following is a summary of key findings from the biodiversity analysis. The analysis forms the basis for **Keeping Nature in Our Future** and the recommended strategic directions and actions that are outlined in Section 4.0.

### 3.1 Key Findings

#### Conservation ranking:

- Nearly two-thirds of the study area is classified as having high or very high conservation ranking.

#### Relative biodiversity:

- More than 20% of the study area is classified as having high or very high relative biodiversity.
- The electoral areas and municipalities with the greatest proportion of very high and high relative biodiversity are Area A (Rural Osoyoos), Area B (Cawston), Area C (Rural Oliver), Area D (Okanagan Falls), and the municipalities of Osoyoos and Oliver.
- The valley bottom is very important, even though it is a smaller part of the region. Nearly half of the very high and high biodiversity values occur in the valley bottom. The results also show that a significant amount of habitat in the valley has already been lost (reflected by the proportion of low and very low relative biodiversity).
- The upland area does not have the same intensity of land conversion as the valley and represents an opportunity for land managers to retain biodiversity values, although protection of these lands is not comparable or interchangeable with protection of the valley bottom.



### Land management:

- Approximately 13% of the study area falls within lands designated as parks, with the vast majority consisting of provincial parks and protected areas. Three different park types combined (municipal/regional parks, provincial parks and protected areas) protect only 22.6% of the region's very high and high biodiversity habitats.
- The comparatively small amount of land that falls within dedicated conservation lands highlights the need for public resource lands to consider multiple values, including biodiversity.
- Amount of city parkland meets traditional recreation standards but achieves a low overall allocation of land to conservation. A small percentage of land (1%) is allocated to regional parks.
- Indian reserves also have a high proportion of very high and high biodiversity habitats, followed by private land. This outlines the need for conservation incentives, land use planning capacity, and increased opportunities for voluntary stewardship.
- The Agricultural Land Reserve is a relatively small proportion of the entire study area, but because it is concentrated in the valley bottom and has significant high and very high biodiversity habitat values the analysis results underline the need for consideration of biodiversity on these lands.

### Connectivity:

- At a regional scale, the Okanagan Valley represents a north-south corridor, facilitating wildlife movement between the US Columbia Basin and the grasslands of the Central Interior Plateau of BC. Human settlement and the associated transportation network in the South Okanagan-Similkameen represent barriers to movement. Highways 97, 3, and 5A impede east-west movement and Highway 3 and the Princeton Summerland Road have potential impacts on north-south movement.
- The valley area contains a large proportion of the high and very high values for habitat connectivity and is also under the most pressure from human activities. The valley area and those areas of less rugged terrain located to the east of the Okanagan Valley and throughout the northern half of the study area offer the best potential for wildlife movement.

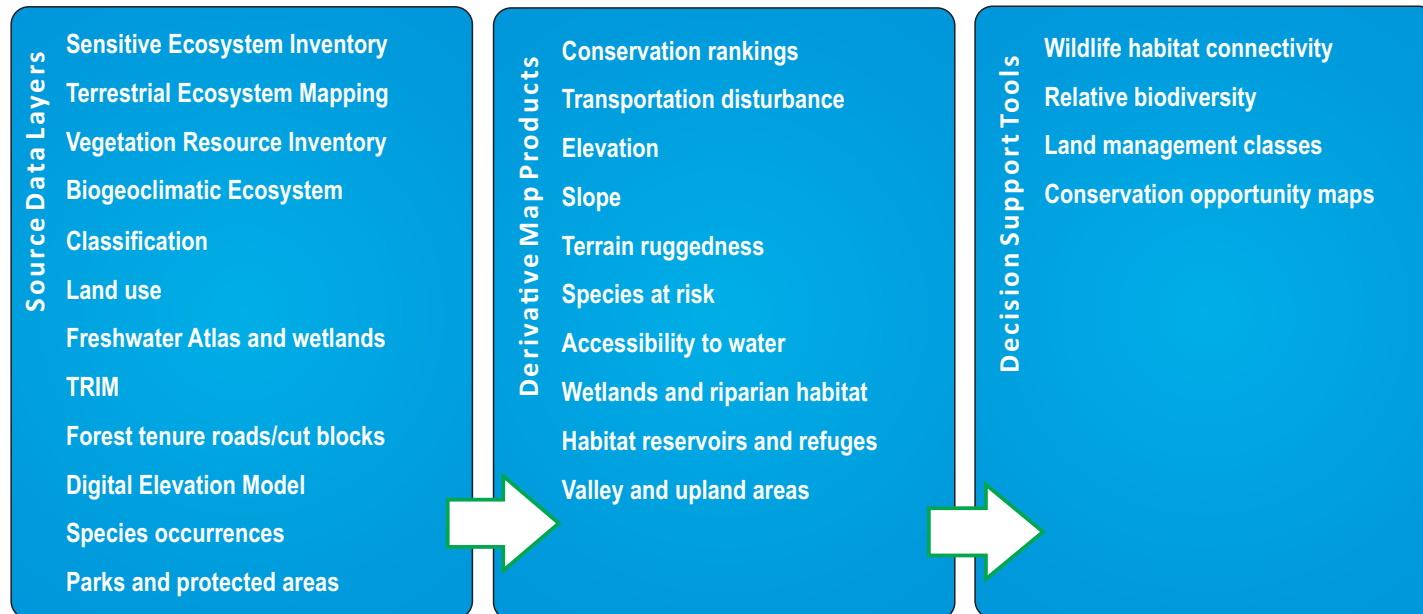
The high ecological values highlighted here face numerous threats throughout the region including urban/rural development, forestry, mining, and agriculture. The maps and key findings presented in this section will better enable land managers and decision-makers to target development, agricultural, and resource activities in areas of lesser ecological importance.



## 3.2 Biodiversity Analysis Results

This analysis forms the basis for **Keeping Nature in Our Future** and the recommended strategic directions and actions presented in Section 4. provides a visual overview of the analysis. Figure 2 shows a visual overview of the analysis.

Figure 2 – Biodiversity Conservation Analysis Overview



The analysis in the following sections reflects current land use patterns in relation to historical references. It provides a scientific basis for conserving remaining natural values and restoring key elements of biodiversity where they have been lost. Ecosystems that are not identified as high priority may still contribute to biodiversity, for example, by providing habitat for common species, connecting important habitats, and maintaining watershed functioning. In areas such as valley bottoms, where human impacts have been significant, the identification of remaining habitat pieces as moderate or low priority does not mean that these areas did not previously contain important habitats. In fact, some may be suitable for habitat restoration and enhancement.

For more detailed information on the methods used to conduct the biodiversity conservation analysis, the report *“Keeping Nature in Our Future: Volume 1 – A Biodiversity Conservation Analysis for the South Okanagan-Similkameen Region”* is available on the SOSCP web site [www.soscp.org/biodiversity](http://www.soscp.org/biodiversity).

**Pdf format maps** from this report that can be enlarged can also be enlarged, as well as **shapefile format maps** can be found on the SOSCP website at [www.soscp.org/biodiversity](http://www.soscp.org/biodiversity).



### 3.3 Highlighting Important Sensitive Ecosystems

The South Okanagan-Similkameen is recognized as a biologically unique area containing many of the province's at-risk ecosystems, habitats and species. Ecosystems in the South Okanagan-Similkameen were assessed for local and provincial conservation status, using sensitive ecosystems mapping. This provided the basis for the conservation ranking maps, which show the relative importance and sensitivity of various ecosystems. **'Sensitive ecosystems'** refer to **natural areas that are relatively unmodified, ecologically fragile, and/or recognized as being at risk** in the provincial landscape, **due to their limited natural occurrence, combined with loss or degradation from human activities.**

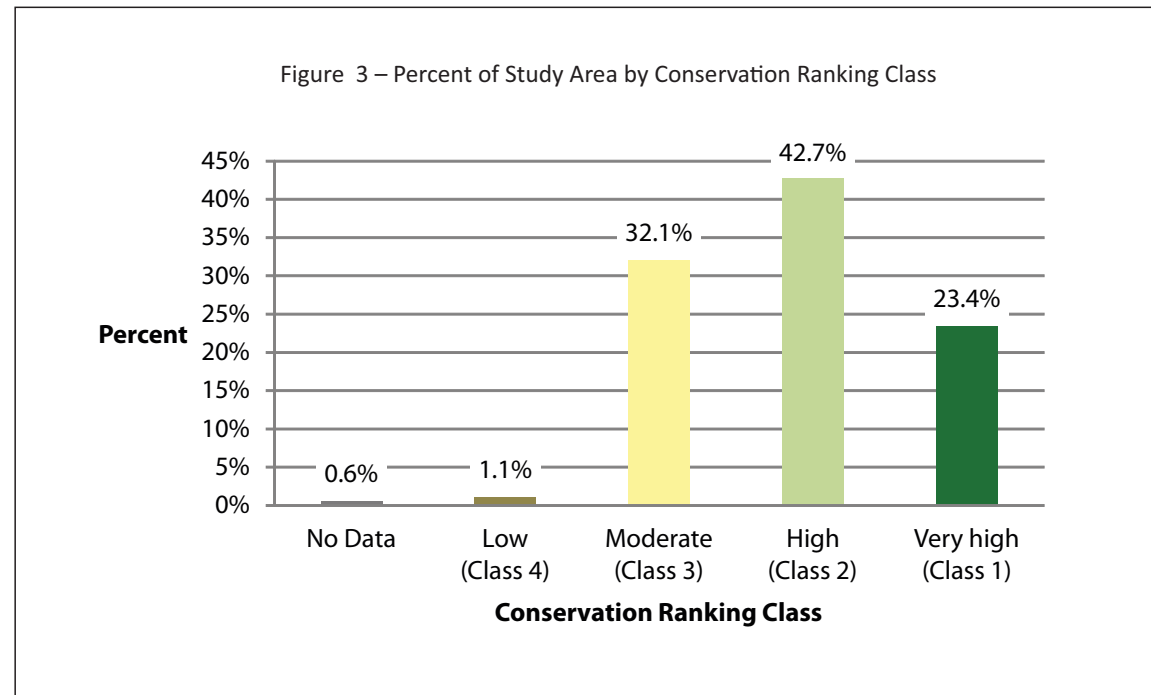


#### Sensitive Ecosystems

- Sensitive ecosystems were categorized into groupings of ecosystems that share similar characteristics, such as vegetation and soils.<sup>27</sup> These include:
- Wetlands include marshes, swamps and wet meadows.
- Riparian areas occur beside streams and rivers, as well as floodplains, gullies and beaches.
- Old forest, broadleaf woodlands, and coniferous forests include large old coniferous trees, aspen copses, and opens stands of Douglas-fir or ponderosa pine.
- Antelope-brush and sagebrush shrub lands.
- Grasslands.
- Sparsely vegetated lands with rock, talus and cliffs.
- High-elevation alpine areas of dwarf shrubs, grasses, herbs and parkland/clumped forests.
- Other ecosystems that are important include mature forests and seasonally flooded fields that are cultivated but may flood part of the year and provide important habitat.

<sup>27</sup> Iverson, K., D. Curran, T. Fleming and A. Haney. 2008. Sensitive Ecosystems Inventory - Okanagan Valley: Vernon to Osoyoos, 200-2007. Methods, Ecological Descriptions, Results and Conservation Tools.

Conservation rankings were determined based on the provincial Conservation Framework<sup>28</sup>, and local sensitive ecosystem priorities. Four conservation ranking classes were used in the maps: very high, high, moderate, and low. The analysis identified nearly two-thirds of the South Okanagan-Similkameen as high or very high priority for conservation. and illustrate the distribution of conservation ranking classes within the study area.

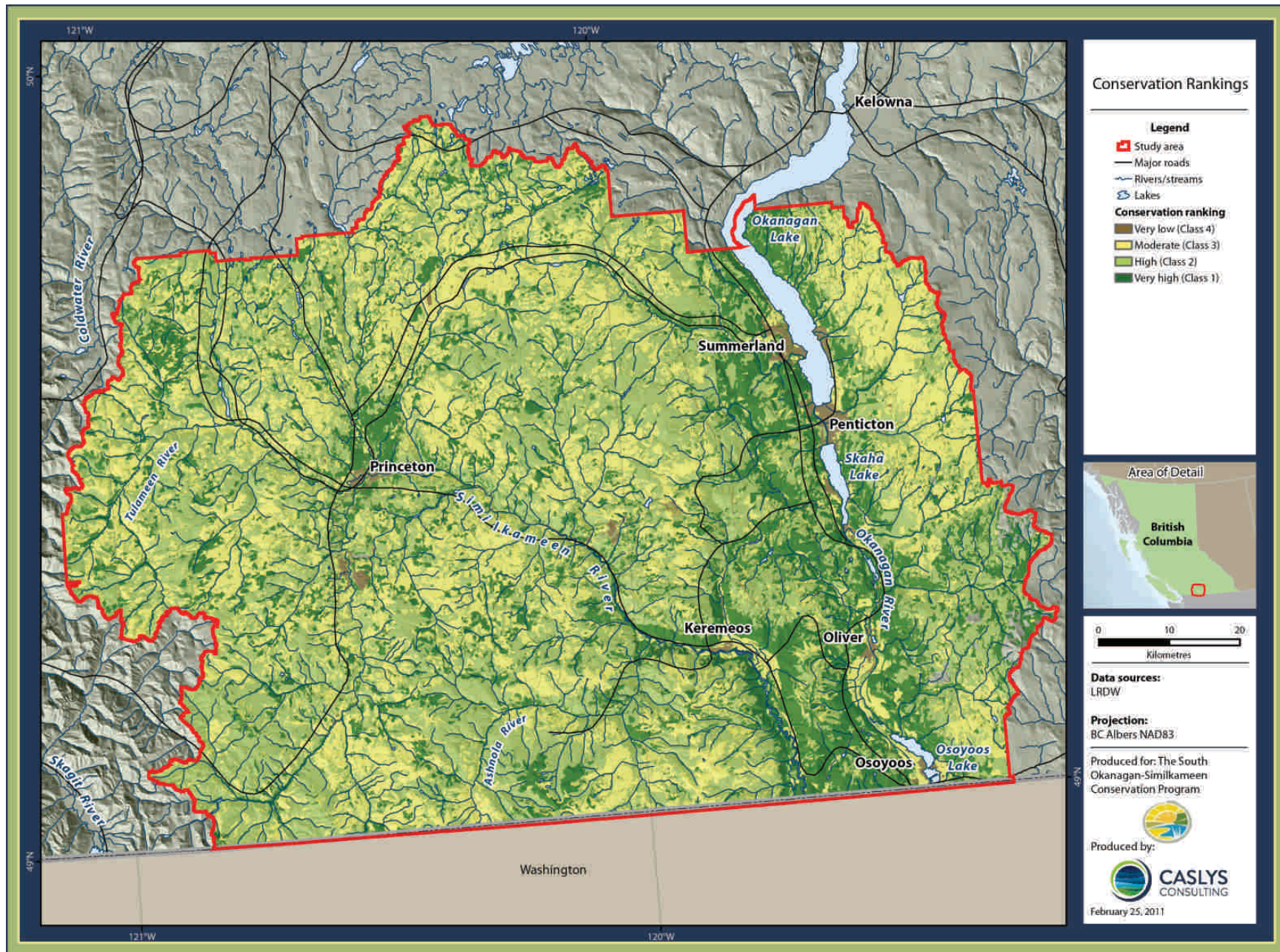


These maps provide a practical tool that local governments can use to integrate biodiversity protection into policies, plans, and regulations, such as official community plans; parks and transportation plans; development permit areas; and zoning by-laws. They also provide a scientific basis for developing site-specific requirements as part of development approvals, including conditions and standards that must be met to protect sensitive ecosystems. Information packages were prepared for each South Okanagan-Similkameen local government and can be viewed on the SOSCP web site [www.soscp.org/biodiversity](http://www.soscp.org/biodiversity). Each one provides details about the location of sensitive ecosystems within local boundaries; a gap analysis to identify current and desired protection status for sensitive ecosystems; and recommendations for conservation and restoration of natural areas.

<sup>28</sup> The Conservation Framework is a set of tools to enable collaboration between government and non-government resource managers and practitioners to: 1) prioritize species and ecosystems for conservation action; and 2) determine the most appropriate and effective management actions. See Appendix B for details



Figure 4 – Conservation Rankings



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen

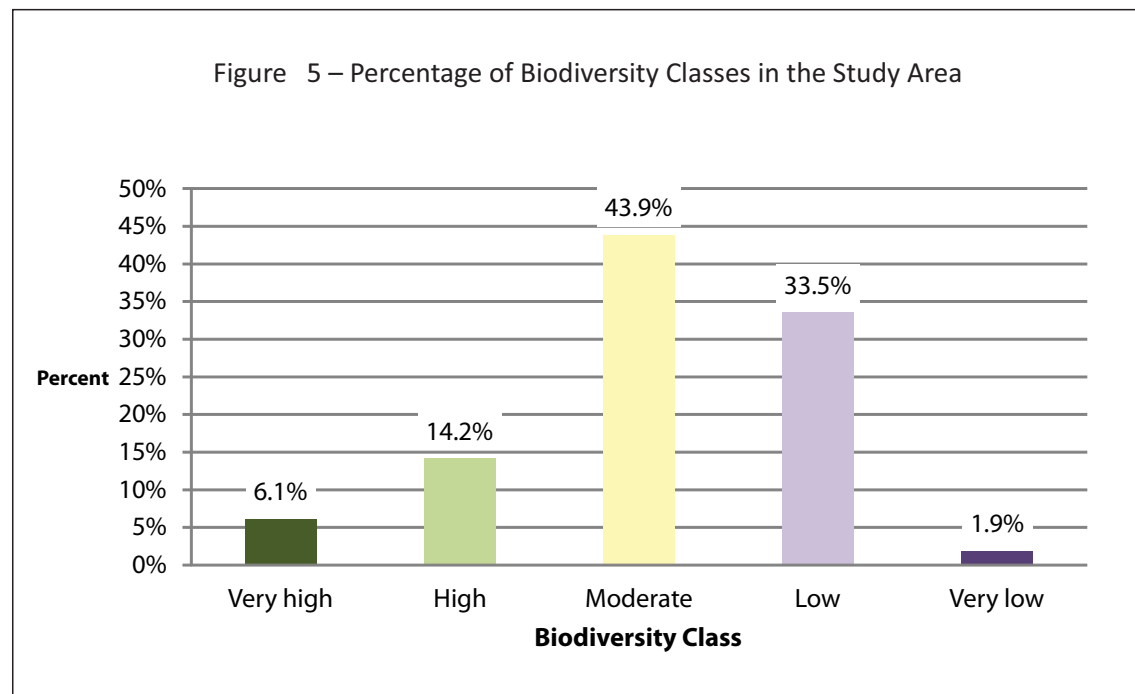
### 3.4 Identifying Biodiversity 'Hot Spots'

The biodiversity analysis builds on the conservation ranking maps through incorporation of additional species and habitat information. This analysis identifies biodiversity 'hotspots' or areas of greatest ecological importance on the landscape. Importance for biodiversity was viewed separately for valley bottoms and upland areas because valley bottoms have been subjected to extensive urban and agricultural land conversion.

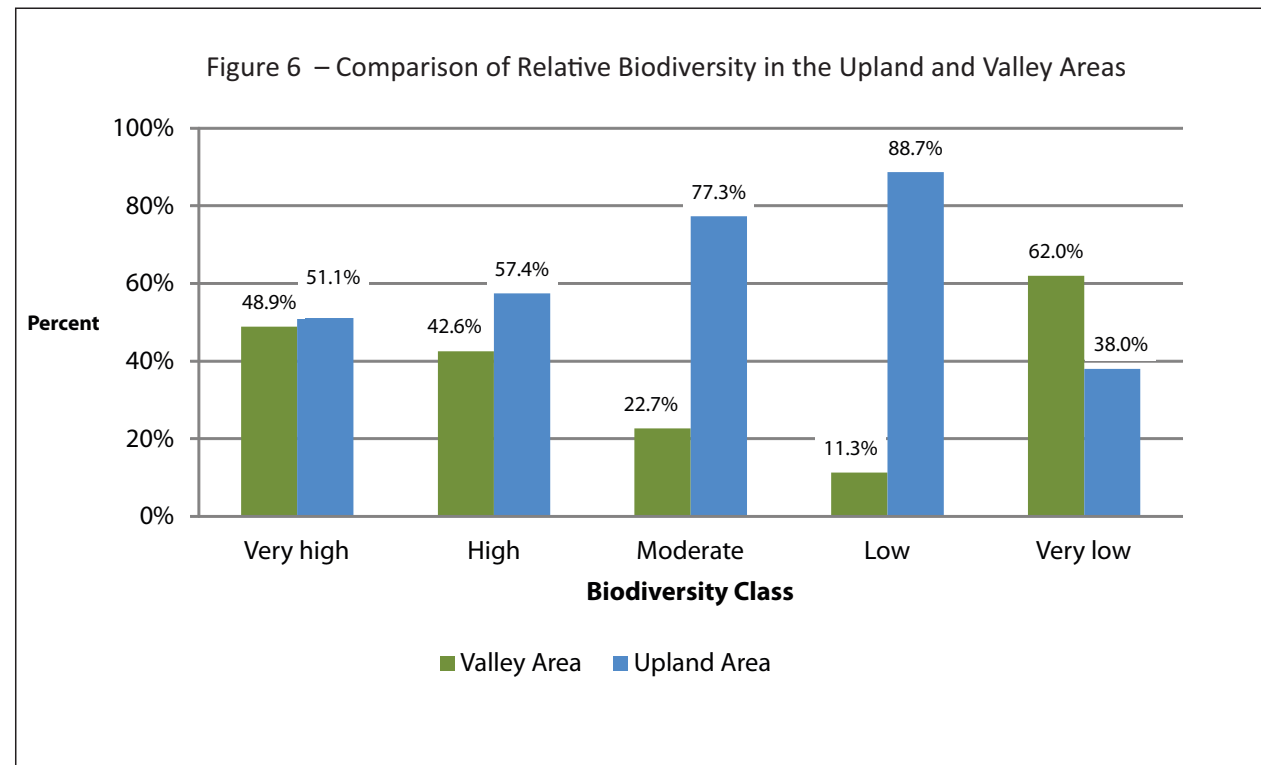
The following information was used to determine biodiversity hotspots:

- conservation rankings (see Section 3.1),
- size of natural areas,
- presence of regionally important habitat features,
- distance from roads, and
- species at risk information.

Five classes of relative biodiversity were used: very high, high, moderate, low, and very low. The low and very low classes generally represent agricultural and urban areas, while the moderate to very high classes represent less impacted natural areas. Approximately 20% of the study area has very high or high biodiversity value (see Figure 5).



The analysis highlights the need for conservation of areas classified as very high and high, and careful stewardship of areas classified as moderate. Although the valley represents a small proportion of the total region, nearly half of the very high and high biodiversity values occur there (see Figure 6 and Figure 7). Since the valley also represents the part of the study area where high biodiversity values and human settlement most often overlap, a significant amount of habitat in the valley has already been lost, as reflected by the proportion of low and very low biodiversity in the valley. Consequently, valley areas will require more focused and sophisticated management in order to protect biodiversity. The upland area does not have the same intensity of land conversion as the valley and thus more readily provides opportunities for land managers to retain biodiversity values.



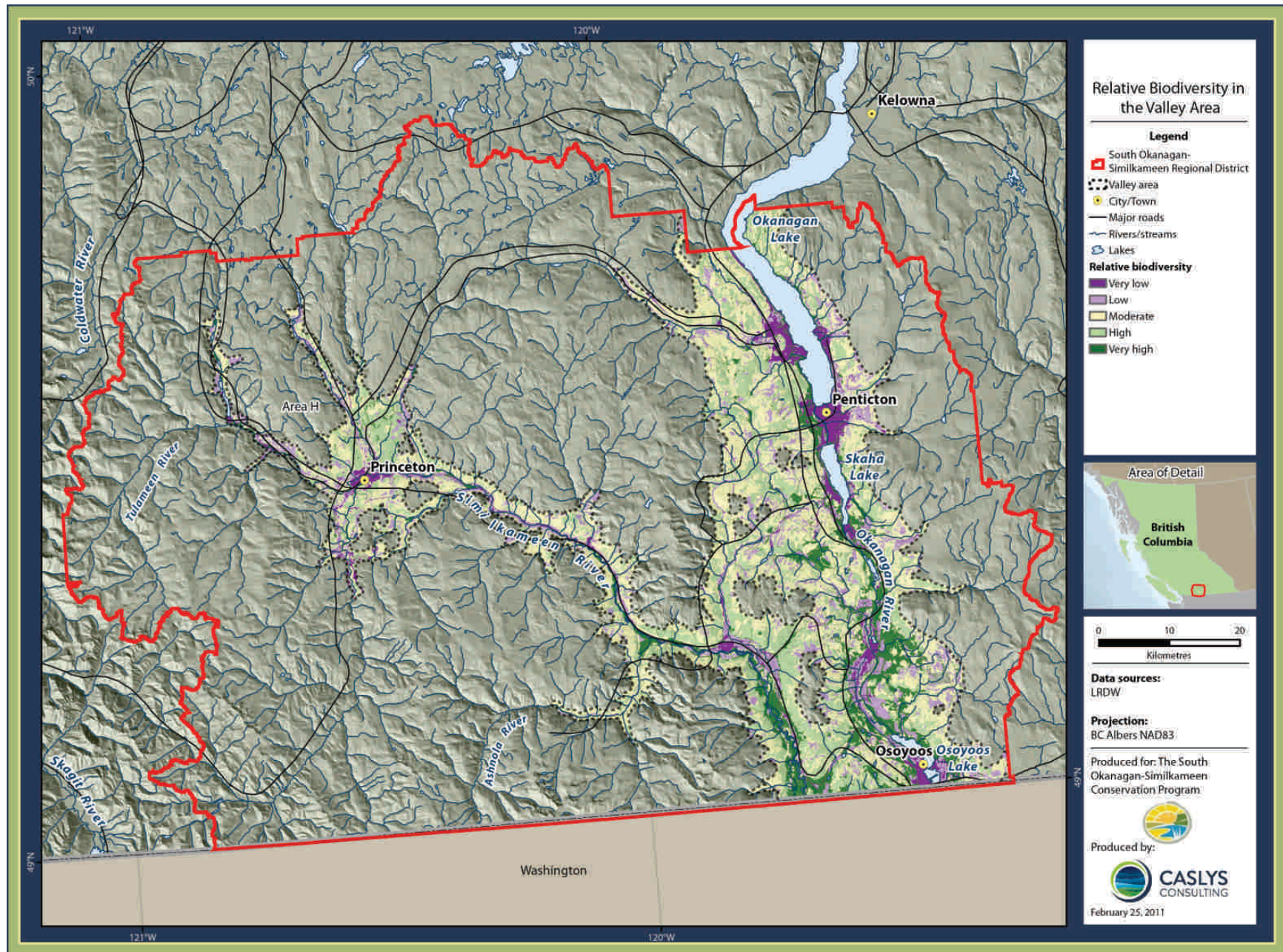
Relative biodiversity classes are also summarized for each municipality and electoral area, based on the relative percentages of each class within each jurisdiction (see Figure 8 and Figure 10) and within the entire study area (see Figure 9 and Figure 11).

The total area and the percentages should be considered in relation to the size of the jurisdiction. For example, larger, more rural electoral areas generally contain a greater amount of the region's very high relative biodiversity habitats, but municipalities that contain areas representing a smaller proportion of a given class may still be important because of the relative rarity of the habitats and the connectivity they provide in the valley bottom for wildlife movement.

The electoral areas and municipalities with the greatest proportion of very high and high relative biodiversity are Area A (Rural Osoyoos), Area B (Cawston), Area C (Rural Oliver), Area D (Okanagan Falls), Osoyoos, and Oliver.



Figure 7 – Relative Biodiversity in the Valley Area



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen



Figure 8  
Relative Biodiversity by  
Electoral Area (based on  
percent of electoral area  
land area)

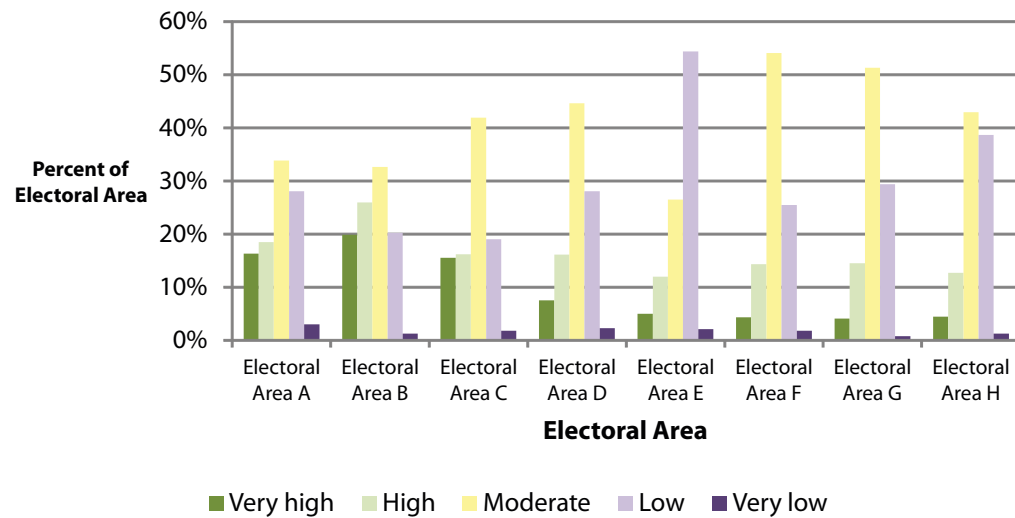


Figure 9  
Relative Biodiversity by  
Electoral Area (based on  
percent of study area  
class total)

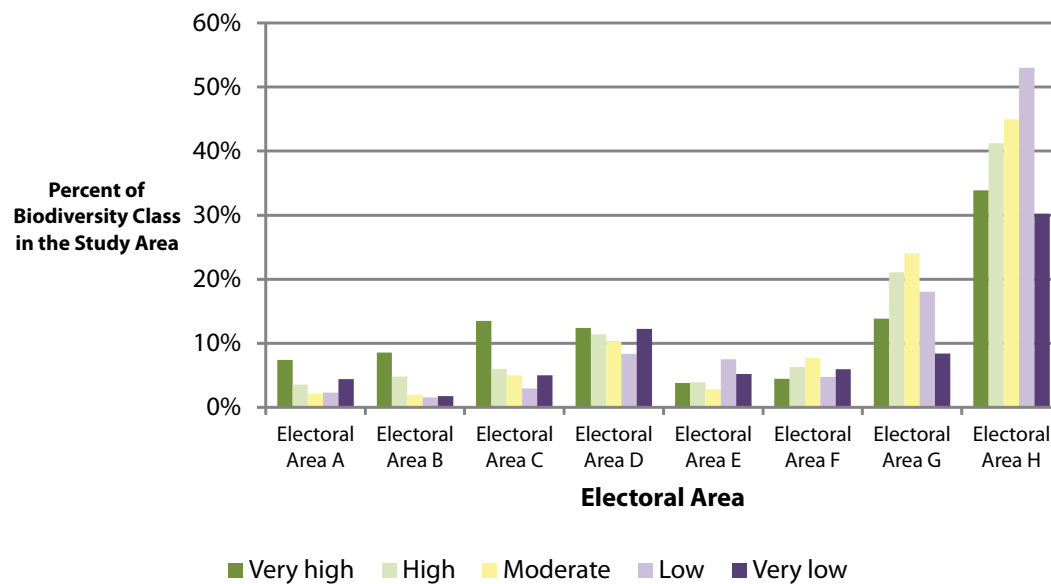


Figure 10  
Relative Biodiversity by  
Municipality (based on  
percent of municipality  
land area)

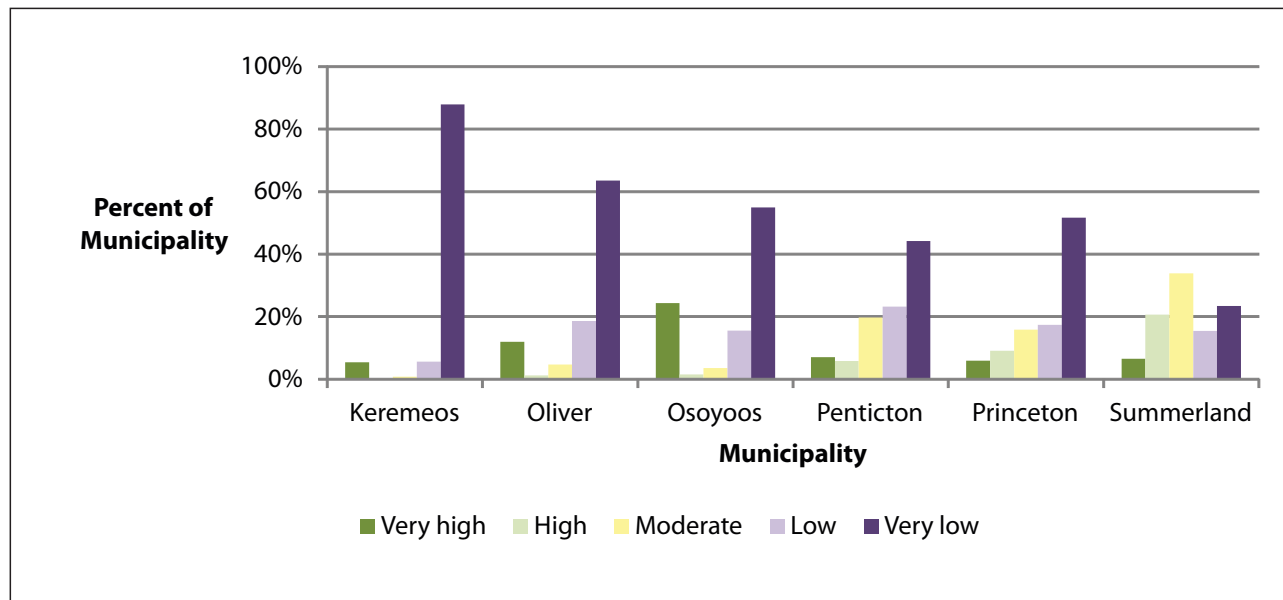
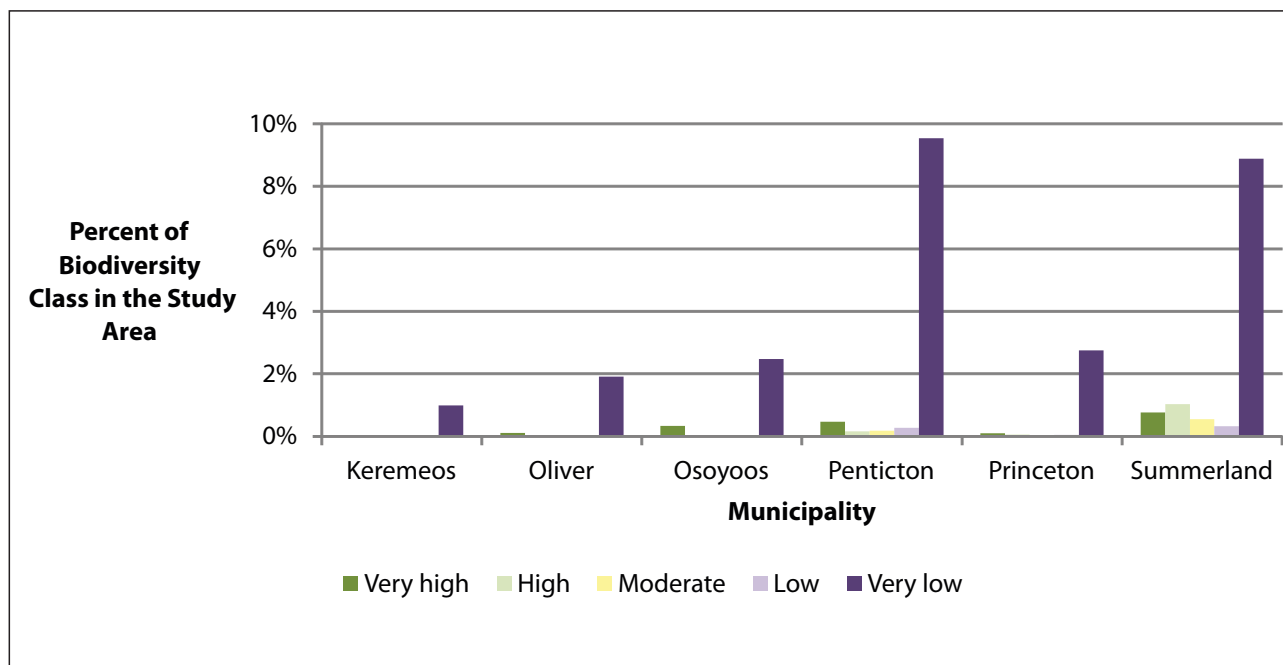


Figure 11  
Relative Biodiversity by  
Municipality (based on  
percent of study area  
class total)



### 3.5 Land Management Implications for Biodiversity

The relative biodiversity rankings provide a regional perspective regarding the state of biodiversity in the South Okanagan-Similkameen. These results were combined with information on current land management and ownership, in order to identify opportunities for land managers to implement conservation measures.

The study area was classified into four land management categories, based on the level of protection and consideration given to biodiversity values:<sup>29</sup>

- **Class 1:** Conservation lands with the highest degree of protection, including private conservancies, provincial parks and protected areas, wildlife management areas, bird sanctuaries, National Wildlife Areas.
- **Class 2:** Dedicated open space that may be more impacted by human disturbance and may not have long term protection, including municipal or regional parks, public trails and Crown recreation lands.
- **Class 3:** Public resource lands that are predominantly public and institutional forests, including Crown land, and municipal lands set aside for forestry or grazing.
- **Class 4:** Agricultural Land Reserve, locally zoned agriculture and Crown leases.

The results of the analysis are illustrated in Figure 12, Figure 13, Figure 14, and Figure 15.

Only 13% of the region falls within conservation lands, where biodiversity values are given significant consideration, with an additional 2% falling within dedicated open spaces. Within that 13%, only a small portion is considered to have high or very high biodiversity values.

Most of the region (70%) falls within public resource lands, over half of which are considered to have high or very high relative biodiversity values. However, these areas are managed primarily as working lands and not for their significant biodiversity values. Public resource lands provide excellent opportunities to meet the dual goal of protecting working lands and biodiversity, but this approach requires effective land use planning and management.

The percentage of the study area identified as Indian reserves and private land are almost equal in area (4.8% and 4.6% respectively). Indian reserves also have a high proportion of very high and high biodiversity habitats (46%), followed by private lands (36.5%). This outlines the need for improved First Nations land use planning capacity, conservation incentives for landowners, and opportunities for voluntary stewardship.

The Agricultural Land Reserve is a relatively small proportion of the entire study area (8.1%), but because it is concentrated in the valley bottom and it has significant high and very high biodiversity habitat values (35.3%), it is important to consider biodiversity within these lands.

<sup>29</sup> The land management analysis identifies private lands and Indian Reserves, however, due to their unique tenure status, apart from where these lands fall within the Agricultural Land Reserve, they are not considered within the land management classes.

Figure 12  
Percentage of Each Land  
Management Class in the  
Study Area

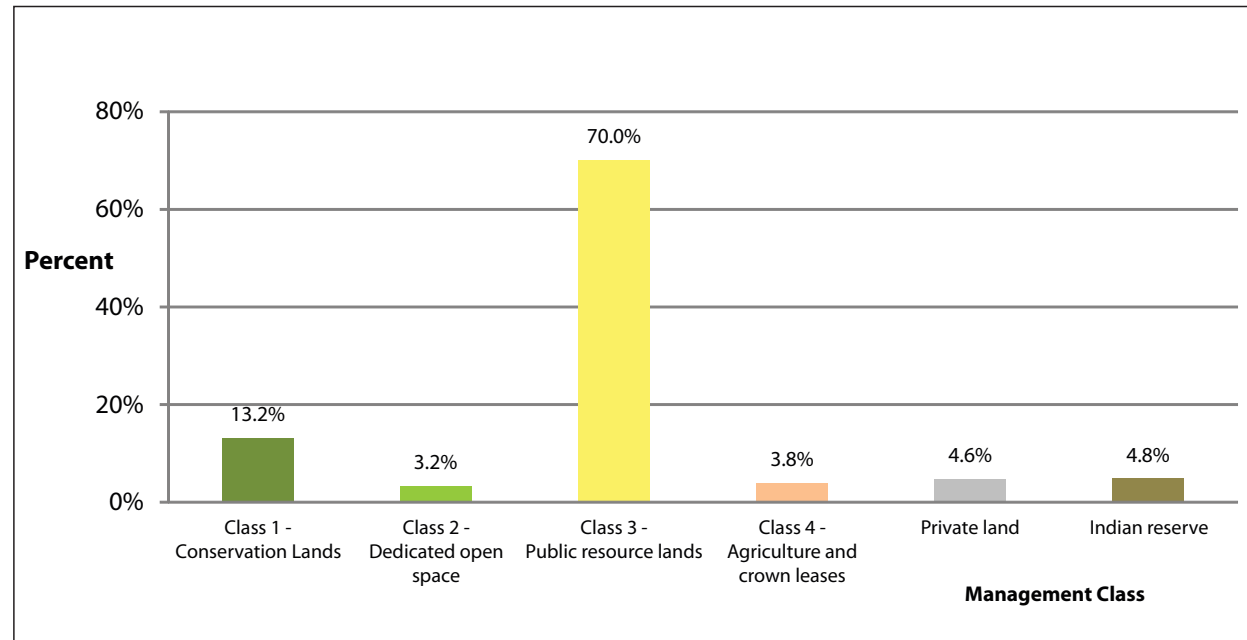


Figure 13  
Relative Biodiversity by  
Land Management Class  
(based on percent of  
study area class total)

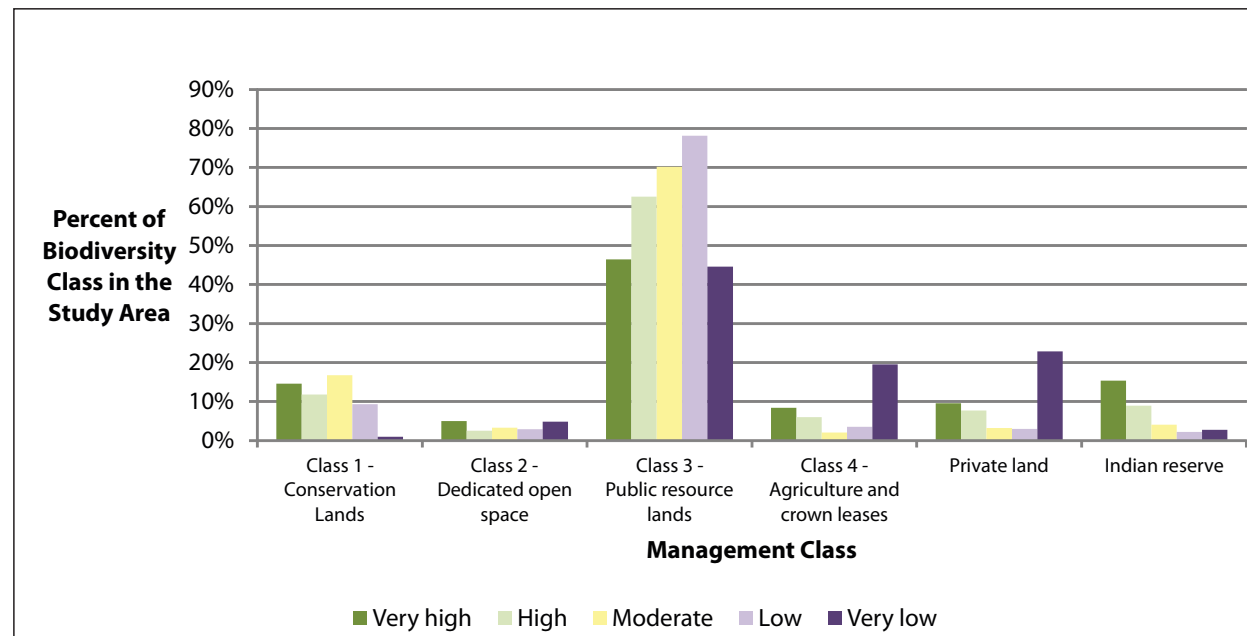
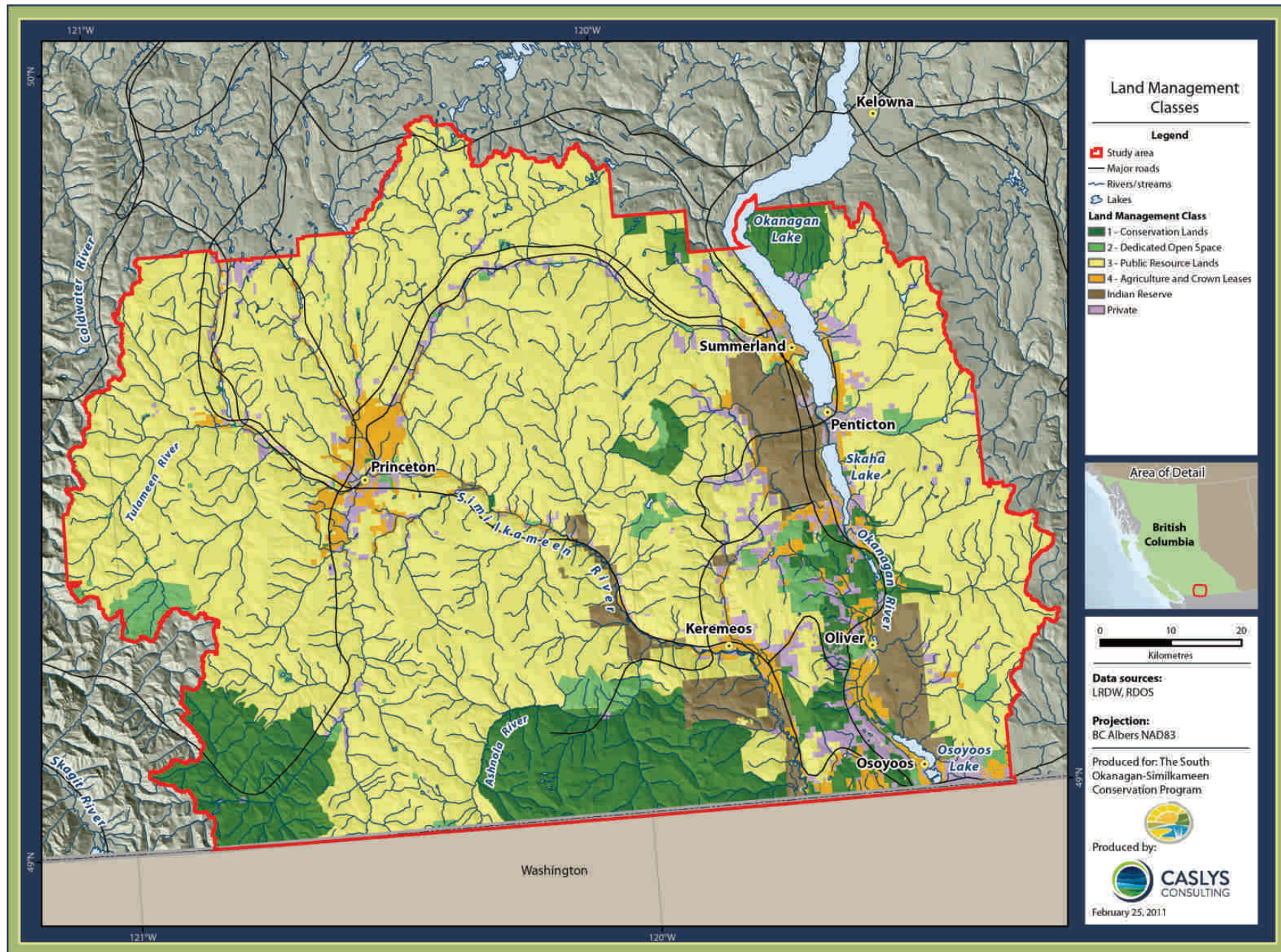


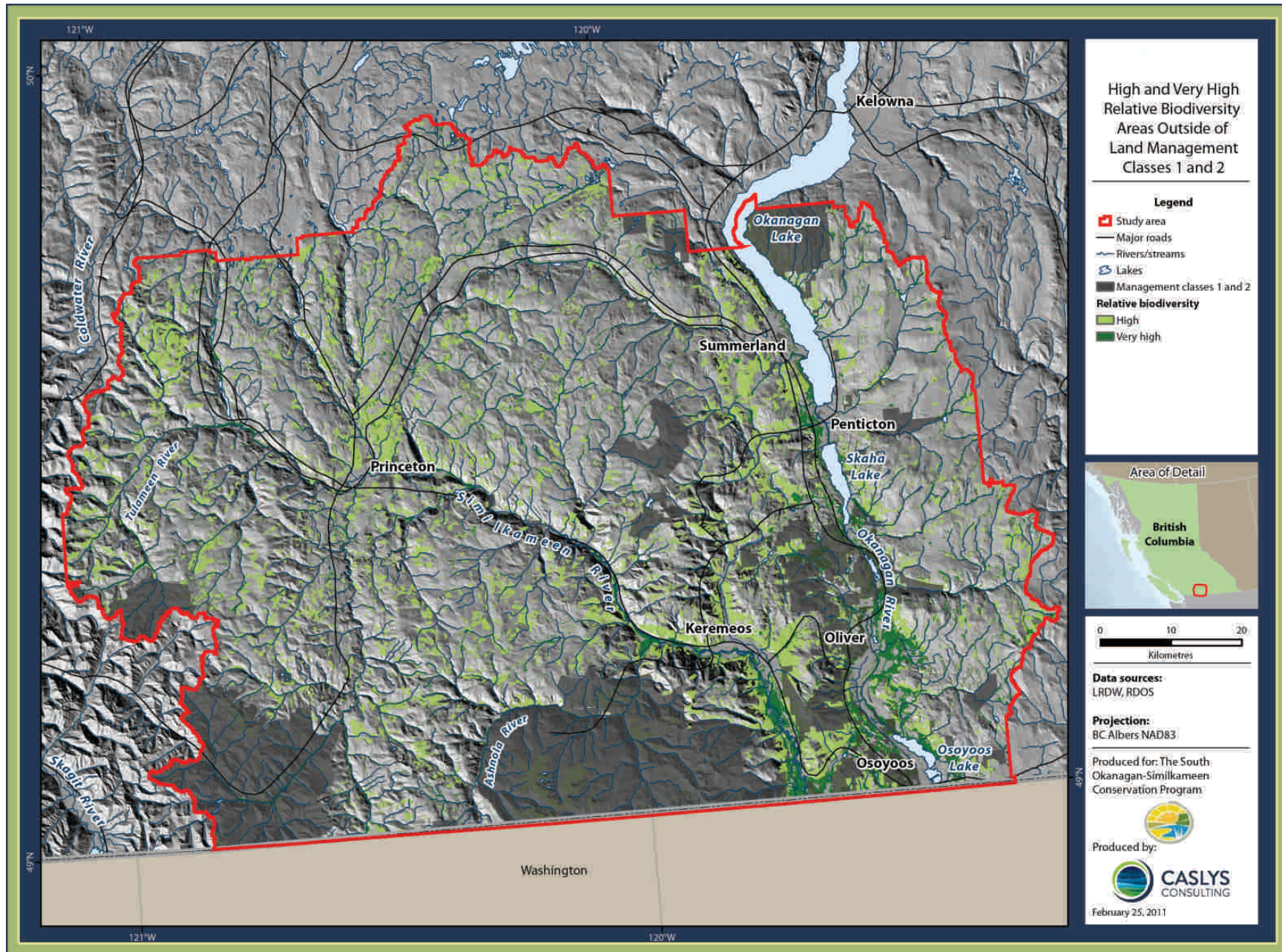
Figure 14 – Land Management Classes



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen

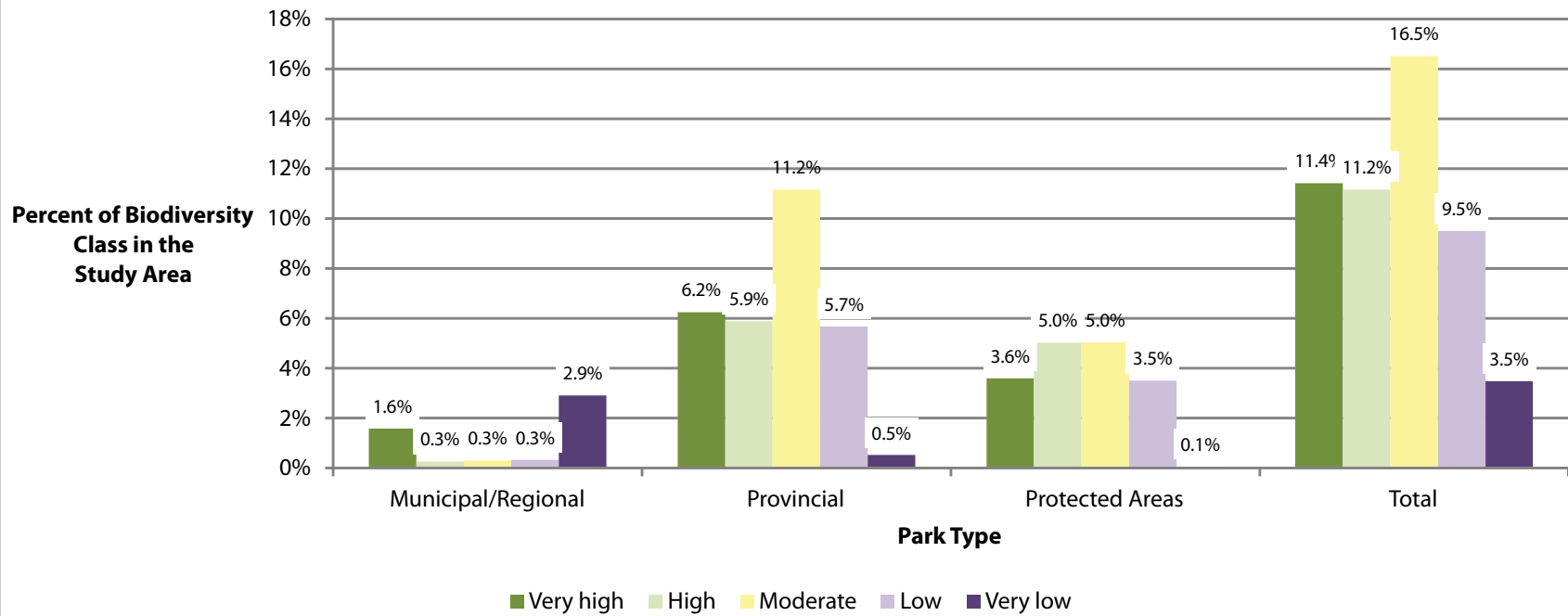


Figure 15 – High and Very High Relative Biodiversity Areas Outside of Land Management Classes 1 and 2



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen

Figure 16 – Relative Biodiversity by Park Type (based on percent of study area class total)



The land management analysis also identifies parks and protected areas in the study area (see Figure 16). Approximately 13% of the study area falls within lands designated as parks, with the vast majority consisting of provincial parks and protected areas. Three different park types combined (municipal/regional parks, provincial parks and protected areas) protect only 22.6% of the region's very high and high biodiversity habitats. Not all parks are dedicated to biodiversity as some incorporate recreation areas (i.e., playgrounds and sports fields), and set aside areas for parking facilities and ornamental landscaping.





## Local and Regional Parks

A recent analysis of local and regional government park resources outline the total amount and type of parklands including developed (for active recreation such as ball fields) and undeveloped (for passive recreation, nature or open space) park lands. This analysis compared parkland allocations both as a percentage of total area of land base, and as a ratio of parkland area to population (ha per capita). The results were compared against other local and regional jurisdictions in BC and to national surveys.

The results show that municipal governments in the South Okanagan Similkameen region have allocated comparable amounts of parkland per capita according to historic guidelines adopted by Canadian and US parks and recreation associations (10.5 ha/1000 population). However, for South Okanagan Similkameen municipalities, almost half of that parkland is developed for active recreational use, not for conservation. Further, the amount of parkland provided by the regional district is less than 1% of its total land base. When combined with the total of all park and protected areas by all agencies, the RDOS has the second lowest percent of protected land base of the six regions studied in BC. While there are no comparable standards for the allocation of regional parks in BC, regional districts typically achieve 10-15% of their land base as park and protected areas.

Many regional districts are moving away from the use of population allocation standards towards ecosystem based management approaches which aim to ensure protection of key functioning ecosystems and rare and unique elements of biodiversity within the region, as well as adequate habitat protection for species.<sup>30</sup> A regional parks strategy is needed to help meet these biodiversity goals, as well as other regional goals, such as those in climate action strategies.

### 3.6 The Need to Link Natural Areas

Habitat connectivity describes the degree to which different habitats are linked to form an interconnected network. This network provides corridors for wildlife movement among habitat areas. The degree of interconnectedness and the characteristics of the linkages vary, based on terrain features and level of disturbance. For example, it is more difficult for most wildlife to move through steep areas than gentle slopes.

Habitats may be connected through buffers, corridors, or greenways, which are generally linear areas of natural habitat, but can also be stepping stones or “islands”. Disturbance to the linkages among natural areas results in ecosystem fragmentation, which can negatively impact biodiversity and reduce ecosystem functioning, including the ability to provide ecological services such as water filtration and groundwater recharge. Wildlife are also unable to fulfill their needs for food, shelter, and reproduction in fragmented habitats.

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<sup>30</sup> Kirbyson, J. 2012 Report: Review of Local Government Park Resources within the South Okanagan –Similkameen Regional District Prepared for the South Okanagan Similkameen Conservation Program (SOSCP). <http://www.soscp.org/wp-content/uploads/2010/05/SOSCP-Local-and-Regional-Parks-Resource-Review.pdf>

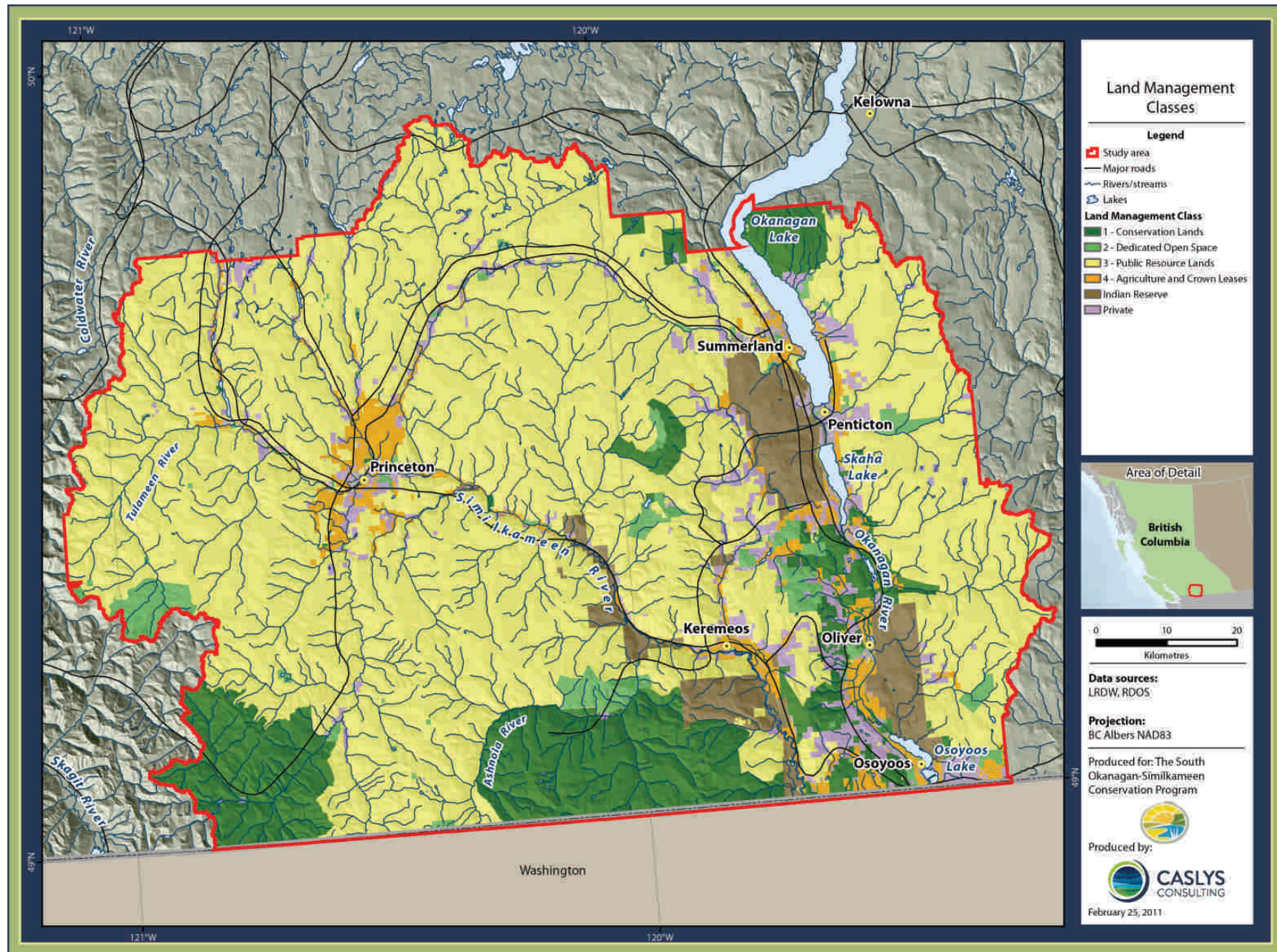


The habitat connectivity analysis assigned scores to indicate the current state of connectivity from low to high, identifying barriers and pinch points to wildlife passage. At a regional scale, the Okanagan Valley represents a north-south corridor, facilitating wildlife movement between the US Columbia Basin and the grasslands of the Central Interior Plateau of BC. Human settlements and the transportation network in the South Okanagan-Similkameen represent barriers to wildlife movement. Highways 97, 3, and 5A impede east-west movement and Highway 3 and the Princeton Summerland Road potentially affects north-south movement. In addition, roads and railways are the cause of mortality for many wildlife species.

The valley area contains a large proportion of the high and very high values for habitat connectivity and is also under the most pressure from human activities (see Figure 17). Areas of less rugged terrain located to the east of the Okanagan Valley and throughout the northern half of the study area offers the best potential for increased wildlife movement. At a finer scale, the analysis identifies opportunities for maintaining existing connectivity and addressing barriers and pinch points through protection of smaller, local, natural corridors and habitat patches.



Figure 17 – Habitat Connectivity



Go to [www.soscp.org/biodiversity/resources](http://www.soscp.org/biodiversity/resources) to view maps that can be enlarged on screen

## 4.0 STRATEGIC DIRECTIONS AND OPPORTUNITIES FOR ACTION

The jurisdictional context for biodiversity conservation in the South Okanagan-Similkameen is complex, with many agencies sharing discrete and overlapping responsibilities. They also share a collective opportunity for leadership in managing one of the most biologically diverse, sensitive and at-risk areas in the province and in Canada.

This section identifies roles and responsibilities for biodiversity conservation at the local government level, including regional and municipal bodies, and at the senior government, including federal and provincial agencies. It summarizes the current situation at each level, including strengths and gaps, and identifies strategic directions and opportunities for actions to translate the vision and goals in this strategy into measurable results. Many resources and tools for biodiversity conservation are available to local and senior governments, the most relevant ones listed in Appendix A.

### 4.1 Local Government

“Local government” in this section includes both the South Okanagan Similkameen Regional District and municipal governments. While the regional district has fewer powers than municipalities in relation to subdivision, roads, and infrastructure, it manages a much larger land base that provides greater potential impact on conservation values. Local government manages primarily development on private lands; however, the Province will consider local government objectives in decisions regarding Provincial Crown lands, including dispositions, leases, licences of occupation and other tenures, and these decisions must be consistent with all zoning bylaws and other land use regulations.

Surveys have demonstrated that citizens of this region are very concerned about biodiversity protection and support stronger local government action to conserve wildlife and ecosystems.<sup>31</sup> Civic leaders have responsibility and the opportunity to manage one of the most sensitive areas of the province, in order to protect species and habitats and promote a strong sense of community pride and ownership.

<sup>31</sup> Synovate. 2004 and 2008. South Okanagan and South Similkameen Survey Results Presentation for SOSCP.

### Local Government Conservation Opportunity Maps and Primers

Maps depicting conservation opportunities have been developed for each municipality and electoral area. Each map contains two insets:

- Conservation rankings with the location of existing conservation lands, dedicated open space, Agricultural Land Reserve, and Environmentally Sensitive Development Permit Areas; and
- Habitat connectivity, known California bighorn sheep movement corridors, and locations of cultivated fields, orchards, vineyards, and rural areas.

These maps provided the basis for the Local Government Conservation Primers that can be found at <http://www.soscp.org/biodiversity>





## Local Government Planning and Regulatory Tools (examples):

**Planning tools** – regional growth strategies, regional parks plans, official community plans, neighbourhood plans, park master plans, greenways plans, transportation plans, stormwater plans, watershed plans, sustainable community plans, liquid waste management plans, water management plans, community wildfire protection plans

**Regulatory tools** - development permit areas, zoning bylaws, subdivision bylaws, other regulatory bylaws, e.g., regarding riparian areas, watercourse protection, tree protection, invasive species, soil deposit and removal, and landscaping

Local governments can play a significant role in conserving biodiversity since they are empowered to guide and regulate land use in their communities. Over the last few decades, the Province has strengthened the enabling legislation that defines local government powers, including a range of community planning and land use regulation tools that can be used for environmental protection (see next sidebar). For example, these tools can be used to identify environmentally sensitive areas and to designate land for conservation, parks, recreation and other uses which will conserve biodiversity. They can also be used to protect biodiversity within urbanized areas, for example, by passing bylaws and providing incentives to protect riparian areas and watercourses, regulate tree removal, manage stormwater flows, and control pollution. Most local governments in the region have used some of the above tools to address environmental goals, but their use could be expanded and strengthened. The Green Bylaws Toolkit: “Conserving Sensitive Ecosystems and Green Infrastructure” summarizes local government options for protecting biodiversity. [www.greenbylaws.ca](http://www.greenbylaws.ca)

Local governments can also protect biodiversity through securing ecologically significant areas through land acquisition (including partnering with NGOs); establishing local levy-based conservation funds; accepting donations of land and funds; establishing rights-of-way and covenants; and stewardship of protected areas within their boundaries. As significant landowners, they can act as role models by using their properties, facilities, and projects to demonstrate conservation best practices. They can also provide residents, businesses and landowners with information and education to promote biodiversity, environmental protection, and 'green' development.

Local government engagement and consultation with First Nations is a valuable and essential element of effective biodiversity conservation and land use planning in the region. Consultation should be built on respect for legal rights; historic and cultural use of the land; and traditional knowledge of land and wildlife stewardship. The provincial *Interim Guide to Engagement with First Nations on Local Government Statutory Approvals* provides guidance to local governments on engaging with First Nations as part of the provincial government approval process for municipal boundary changes and restructures (under Part 2 of the Local Government Act and Regional District bylaws).<sup>32</sup> The Community to Community Forum Program, managed by the Union of BC Municipalities and the First Nations Summit, assists local governments who are interested in building closer relationships with neighbouring First Nations.

## 4.1.1 Land Use Planning and Development

### Strategic Direction 1.1

**Establish new, or update existing land use policies and regulations to ensure that development processes integrate biodiversity conservation considerations.**

#### Opportunities for Action

- 1.1.1 Review and update approval processes to ensure that ecological considerations are integrated from the earliest stages of planning and decision-making regarding private land development and public works, including referrals to/from the Crown.
- 1.1.2 Review and update key planning and regulatory tools, e.g., official community plans, zoning and subdivision bylaws, and development permit areas (see sidebar on page 41), to incorporate the new biodiversity information presented in **Keeping Nature in Our Future**. Assess biodiversity impacts under different planning and development scenarios and identify where land use designations could be made less detrimental and more supportive of biodiversity protection.
- 1.1.3 Use development permit and rezoning applications and bylaw reviews to implement biodiversity conservation priorities and address weaknesses in historic zoning that was not sensitive to ecological values.
- 1.1.4 Recognize and support the role and value of non-government organizations undertaking habitat restoration and enhancement activities and enable an expedited permit process including fee exemptions or reductions.
- 1.1.5 Increase regional cooperation on biodiversity conservation, including adoption of consistent, region-wide standards and bylaws whenever possible, in order to promote a common regional approach and achieve cost savings.
- 1.1.6 Develop a sustainability checklist for proposed developments, as recommended in the South Okanagan Regional Growth Strategy.
- 1.1.7 Engage Silyx Nation members to ensure that land use policies and plans reflect local First Nations unique knowledge, expertise and perspectives.

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<sup>32</sup> Available at [www.cscd.gov.bc.ca/lgd/library/First\\_Nations\\_Engagement\\_Guide.pdf](http://www.cscd.gov.bc.ca/lgd/library/First_Nations_Engagement_Guide.pdf).



- 1.1.8 Strengthen staff capacity to integrate biodiversity conservation/environmental protection into policies, plans and regulatory tools through professional development, training and networking.
- 1.1.9 Invite specialists, academic institutions, and stewardship practitioners with environmental expertise to provide advice on integration of biodiversity considerations into land use planning and management. Consider establishing a regional “Environmental Planning Committee”. (Consider Regional District of Central Okanagan Environmental Advisory Commission as an example).
- 1.1.10 Set targets to define and limit urban and rural development areas.
- 1.1.11 Continue implementation of the Regional Growth Strategy, including regulatory tools and incentives to encourage development in areas that are preferable from a biodiversity/environmental perspective, e.g., disturbed urban areas with existing infrastructure, not relatively natural un-serviced rural areas.
- 1.1.12 Use existing regulatory tools at the regional level as leverage to negotiate transfer (exchange) of density away from rural regional district areas and into municipalities.
- 1.1.13 Establish internal capacity and/or work with non-governmental agencies, to accept dedication of environmentally sensitive lands and create a dedicated fund to manage those lands for conservation and passive recreation.
- 1.1.14 Advocate for more effective Provincial enabling legislation for local government and increased funding and support from provincial and federal governments (see side bar).



## Opportunities for Successful Implementation of Large Lot Zoning

Large lot zoning has been implemented in many rural areas to maintain the pastoral character and support resource-based uses. As a tool to conserve biodiversity, however, it is important to carefully consider minimum lot size, density and allowable uses. Widespread, low-density rural or “exurban” development of large lots can have serious ecological impacts on intact natural areas where there is little current development. Large lot development can result in ecological impacts occurring from 100m to 800m beyond the original footprint and higher development costs.

In more compact development approaches, such as cluster development, the impact areas of houses overlap, resulting in a smaller overall impact footprint. With large parcels, there is less likelihood of impact areas overlapping and a greater chance of an increased road network. As a result, the house and road impacts the maximum area.

Mid-densities of one dwelling per 2 to 4 Ha can also accelerate habitat fragmentation. On smaller rural lots, such as ranchettes or hobby farms, most ecological values can be lost as lots are completely built-out and converted to non-native plants for yards, livestock and gardens.

Generally, larger lots with less development are more appropriate in areas with high biodiversity values. Housing densities as low as 1 unit/16 Ha can hinder species movement through the landscape, based on a minimum 100m zone of impact around a house. At this scale, only 10% of the lot would be impacted. Resource areas in the RDOS have a minimum lot size and density, which is 1 unit /6.6 Ha or about 40% of the parcel within the disturbance zone.

In sensitive areas, resource area zoning needs to be modified to have larger minimum lot sizes and/or reduced densities. In Resource Areas and Large Holdings outside of the ALR, intensive types of agricultural or resource development should not be permitted or their footprint should be limited in sensitive areas.

Theobald D and N Hobbs. 2002. A Framework for Evaluating Land Use Planning Alternatives: Protecting Biodiversity on Private Land. *Conservation Ecology*. 6(1):5

## Strengthening Provincial Enabling Legislation for Local Government

In an effort to develop a collaborative, provincial vision for species at risk protection on private land, the Ministry of Environment, Union of BC Municipalities (UBCM) and a number of local governments established a Species at Risk Local Government Working Group in 2009. Its purpose was to develop a joint discussion paper,<sup>33</sup> written from the vantage point of local government, to identify strategies needed to protect species at risk on local government and private lands in BC.

More than 50 B.C. local government elected officials and environmental staff provided input to the paper, which included recommendations on how the provincial government could work in partnership with local governments to achieve shared conservation goals. It concluded that strengthening provincial legislation and passing amendments to the *Local Government Act* and *Community Charter* and regulations would better enable local governments to develop and enforce regulatory tools, including biodiversity and environmental protection measures on private land. This work is continuing through the Species and Ecosystem at Risk (SEAR) Local Government Working Group<sup>34</sup> and annual meetings of the Union of BC Municipalities (UBCM).

The following are examples of resolutions regarding enabling legislation for local governments that received broad support from member municipalities at the 2011 UBCM meeting.

### **Authority to Issue Tickets and Prosecute for Development Permit Violations**

WHEREAS local governments do not have the authority to penalize property owners through ticketing or prosecution in provincial court for these development permit violations: THEREFORE BE IT RESOLVED that UBCM lobby the provincial government to make changes to the *Local Government Act* to permit local governments to issue tickets and initiate prosecution through municipal ticketing processes to enforce the prohibitions in accordance with the permit.

### **Authority to Implement Natural Area Protection Tax Exemption Programs**

WHEREAS the Islands Trust currently offers a Natural Area Protection Tax Exemption Program which provides property tax relief of up to 65% for owners who wish to enter into a conservation covenant to protect important natural features of their property; AND WHEREAS regional districts may wish to support and encourage property owners to preserve natural areas for the benefit of future generations: THEREFORE BE IT RESOLVED that the Ministry of Community, Sport & Cultural Development be requested to grant local governments the authority to implement natural area protection tax exemption programs.

<sup>33</sup> <http://www.env.gov.bc.ca/wld/documents/SAR%20Paper%20January%202011%20FINAL.pdf>

<sup>34</sup> [http://www.env.gov.bc.ca/wld/searl\\_gwg/index.html](http://www.env.gov.bc.ca/wld/searl_gwg/index.html)

Political leadership and funding continue to be critical factors in ensuring effective regional biodiversity conservation. This conservation strategy provides regional and municipal officials and staff with credible scientific and management information to use in land use planning and development approval processes.

### **Strategic Direction 1.2**

**Build on the existing network of parks, protected areas and greenways to strengthen natural area conservation within a regional context.**

#### **Opportunities for Action**

- 1.2.1 Develop a regional park, trail and conservation lands master plan, that incorporates the ecosystem and habitat connectivity considerations outlined in this biodiversity strategy.
- 1.2.2 Identify desirable park and conservation areas and criteria for protection based on the biodiversity strategy and revise local government plans and parkland dedication policy to reflect this information.
- 1.2.3 Conduct ecological assessments of existing parks, protected areas and greenways. Develop policies and plans for management and restoration of ecological values these areas, and resources for implementation.
- 1.2.4 Create a “Regional Park Conservation Committee” representing municipal and regional jurisdictions to share ecological information and promote regional consistency in implementing conservation objectives.
- 1.2.5 Seek partnerships with business, industry, academic institutions, and conservation organizations to assist in acquisition, monitoring, and management of conservation areas. This could include “adoption” of specific areas by one or more of these groups.
- 1.2.6 Use regulatory and educational tools to ensure that recreational activities within conservation areas are compatible with biodiversity protection. Use zoning and buffer areas to ensure that surrounding land uses are also complementary.
- 1.2.7 Adopt a regional approach to provision of recreation facilities (e.g., sports fields) to reduce encroachment on natural areas, as well as encouraging economic efficiencies by avoiding duplication of amenities.
- 1.2.8 Strengthen and expand current approaches to land acquisition for biodiversity, including conservation funds, covenants, donations, easements, and other tools and incentives (see side bar).





## Land Acquisition

Local government can facilitate the acquisition of land for the purposes of protecting biodiversity values in several ways:<sup>35</sup>

**Acquisition during subdivision:** *The Local Government Act* (section 941) states that when land is subdivided, the municipality can require the developer to provide up to 5% of the area as park (at no cost) in a location acceptable to the municipality. If there is no land suitable for a park, the developer may pay the municipality “an amount that equals the market value of the land required for park purposes”. (This provision does not apply where fewer than three lots are being created or where the smallest lot is larger than two hectares).

The *Parkland Acquisition Best Management Practices Guide*<sup>36</sup> notes that environmentally sensitive areas, hazard areas and other undevelopable areas can only be calculated as part of the 5% dedication if they qualify as passive parkland by having trails or other public features. When municipalities calculate the required parkland contribution, areas that will not be publicly accessible due to environmental sensitivity or risk should not be included in the equation since they must be kept free of development in any case. These areas should also not contribute to the calculation of the 5% dedication. See the above guide for details on calculating the 5% dedication. The local government may still want to accept the donation of these lands to obtain and ensure the ecosystem values such as watershed protection, hazard protection or viewsapes.

**Donation or transfer of land from a private owner:** Private landowners may choose to donate their land to a local government agency or a non-governmental organization such as a land trust, to ensure long-term protection of its natural values. This gift may qualify for a tax credit (see Ecogifts sidebar). The donated land is often further protected by a conservation covenant to ensure that the donor's wishes are carried out.

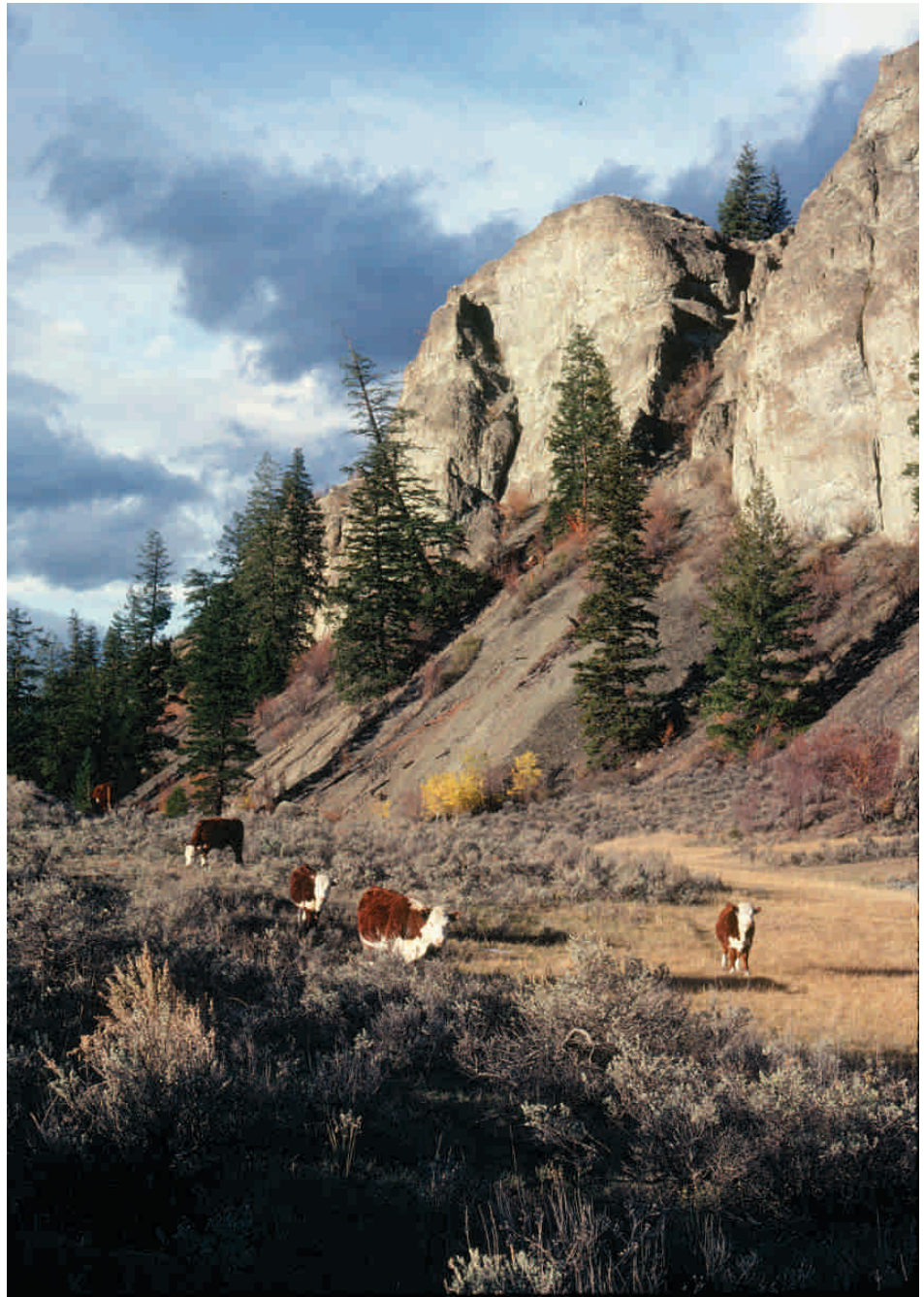
**Direct purchase from a private owner:** While this can be done, land costs may be prohibitive since the appraisal is typically based on the possible 'highest and best use,' and current zoning, which is often residential in built up areas.

**Joint purchase (partnered acquisitions):** Local government may collaborate with other levels of government and non-governmental organizations to acquire conservation lands.



<sup>35</sup> Habitat Acquisition Trust. 2004. *The HAT Manual: Protecting Natural Areas in the Capital Region*. Victoria, BC. pp. 51-54

<sup>36</sup> Ministry of Community Services (MCS). 2006. *Parkland Acquisition Best Practices Guide*. [www.cscd.gov.bc.ca/lgd/intergov\\_relations/library/Parkland\\_Acquisition\\_BPG.pdf](http://www.cscd.gov.bc.ca/lgd/intergov_relations/library/Parkland_Acquisition_BPG.pdf).





## Conservation Covenants and Easements

A **conservation covenant** provides protection to lots or portions of lots under Section 219 of the Land Title Act by registering them on the title as 'ecologically sensitive land'. The covenant requires landowners to preserve natural and cultural features of the land while retaining ownership and appropriate use. Because it is registered on the land title, it remains in effect after the land is sold or transferred, binding future owners of the land to the terms of the covenant. Many covenants are a three-way agreement between the landowner, the local government, and a conservation organisation, as this provides the strongest long-term protection and the best use of resources to manage and monitor the land.<sup>37</sup>

As the financial consequences of conservation covenants vary based on the land parcels and people involved, a full appraisal is necessary to determine land and conservation covenant values. The conservation organization that holds the covenant can issue the landowner with a charitable tax receipt for an appraised value of the covenant, which can then be used to reduce income tax. Property taxes may be affected, depending on the difference between the land's value with and without the covenant. Other possible tax consequences include changes in capital gains or other land transfer, probate, HST, or pension amounts.

**Easements** are another tool that can be employed by local governments to provide public benefits such as access to trails, rights of way, and foreshore areas. An easement is a right to access and use of land or to restrict access and use of land. An easement may be created by grant, reservation, court order under the Property Law Act, statute, or expropriation and should be registered.<sup>38</sup> Conservation covenants, as described above, should include an access easement to enable monitoring of covenant requirements.



<sup>37</sup> Land Trust Alliance of BC. 2009. Conservation Covenants: A Guide for Developers and Planning Departments. URL: [http://ltabc.ca/images/covenants\\_for\\_developers\\_planners.pdf](http://ltabc.ca/images/covenants_for_developers_planners.pdf)

<sup>38</sup> Little, D., MacInnis, A., and Mullen, M. 2004. Easements, Covenants and Similar Rights in British Columbia -An Overview. Fasken Martineau DuMoulin LLP.

## 4.1.2 Financing Biodiversity Conservation

### Strategic Direction 1.3

**Improve and expand methods to finance conservation of lands with ecological values.**

#### Opportunities for Action

- 1.3.1 Establish a local conservation fund for the South Okanagan-Similkameen (see next side bar).
- 1.3.2 Identify opportunities for senior government agency, trust, and foundation funding, and encourage the expansion of environmental endowment funds.
- 1.3.3 Increase private sector financing and in-kind support for biodiversity protection through strengthening tax, development, and fiscal incentives for conservation, and promoting funding partnerships with business, landowners, and industry associations.

### Strategic Direction 1.4

**Set security deposits to encourage environmental compliance consistent with the complexity of the development.**

#### Opportunities for Action

- 1.4.1 Consider the use of security deposits for all types of conditional development approvals, including development permits, to help ensure that environmental protection conditions are met (see side bar).
- 1.4.2 Develop bylaws and written policies for the use, collection, and return of environmental protection security deposits, including procedures for approval of works.
- 1.4.3 Ensure that conditions for development approvals and permits provide sufficient information to assist inspectors to assess the before and after results of the development activity.
- 1.4.4 Ensure that the security process allows for staff review in addition to sign off by environmental professionals to address cases of inconsistency.

### Conservation Fund

A conservation fund is a distinct and reliable source of funding held by a regional district or municipality for the specific purpose of undertaking ecological conservation activities. These include stewardship initiatives that restore and maintain sensitive habitats, and the acquisition, management and conservation of land with important ecological values.

Municipalities and regional districts provide a range of services, which are determined by local residents, for the property taxes they levy. These include planning, parks and recreation, libraries, fire protection, recycling, solid waste disposal, and water supply and distribution. Ecological conservation can be considered a service and a conservation fund can be financed through a property or parcel tax or local area service levy or fees.



For more information, see:

[www.soscp.org/conservationfundguideforbc/](http://www.soscp.org/conservationfundguideforbc/).



### 4.1.3 Creating Incentives for Landowners and Developers

#### Strategic Direction 1.5

**Develop a range of development, tax and financial incentives to encourage stewardship on private lands.**

#### Opportunities for Action

- 1.5.1 Develop and publicize a tool box of possible incentives to encourage stewardship on private lands, including density bonuses, tax and fiscal incentives; educational incentives, (e.g., guidance on conservation best practices, pilot and demonstration projects); and recognition (see side bar).
- 1.5.2 Develop incentives to promote increased use of conservation-friendly subdivision design methods, such as residential cluster development, greenways, and increased riparian setbacks, as well as and density transfer within and between jurisdictions.
- 1.5.3 Increase the involvement of land use professionals and consultants in establishing economic incentives, regulatory measures, and key education messages.



#### Security Deposits

Even with the best of intentions, development can damage an environmentally sensitive area. To prevent or remedy this, local government can require developers to post a security deposit that it can use for habitat restoration and landscaping if damage occurs. The security deposit may be required by a municipal bylaw or may be a condition of a licence, permit, or approval. If a landowner or permit holder does not fulfill the required conditions, the municipality may complete the work and recover the costs from the owner's security.

Securities act as an incentive for a landowner or developer to carry out construction activities properly and to complete any restoration commitments. Many local governments find it more effective to require a security deposit which includes the costs of labour, materials, and monitoring. Accounting for the whole cost allows for the local government to remedy damage without incurring any additional costs. Ticketing can also be used in some cases and can be a quick and effective motivator.





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<sup>39</sup> Environmental Law Clinic and Deborah Curran & Company. 2007. Green Bylaws Toolkit for Conserving Sensitive Ecosystems and Green Infrastructure. Available at [www.greenbylaws.ca](http://www.greenbylaws.ca).

## Examples of Incentives for Landowners and Developers

Provincial legislation gives local governments legal options for providing landowners and developers with various incentives to meet community goals such as protecting biodiversity and 'green infrastructure', including:<sup>39</sup>

- Providing resources to help landowners and developers understand the financial benefits of ecological development approaches.
- Encouraging voluntary placement of conservation covenants, dedication of land, or voluntary changes in zoning to protect sensitive ecosystems; in exchange for incentives such as increased density on the balance of the subject property (“density bonusing”), an amenity bonus for another property, trading land, purchasing land, offering grants-in aid, or granting tax exemptions.
- Exempting eligible riparian property from property taxes if a property is subject to a conservation covenant registered under section 219 of the *Land Title Act*.
- Allowing the owner(s) of land affected by dedications for environmental protection to use the dimensions of the original site area when computing density and floor area ratios and minimum areas for development or subdivision purposes.
- Supporting conservation organizations to secure important habitat by means of acquisition, conservation covenants, or other stewardship agreements for conservation purposes.
- Reducing fees for applications that meet certain environmental criteria.
- Providing free technical assistance and recognition for land conservation.



## Ecogifts

Local government can provide information to landowners regarding the Ecological Gifts Program (EcoGift) and can also be qualified as a receiving organization. An EcoGift is a federally certified donation of ecologically sensitive land or an interest in land (e.g., conservation easement, covenant, or servitude). EcoGifts qualify for a charitable donations tax credit (for individuals) or deduction (for corporations) and are not subject to tax on any capital gain realized on the disposition of the property. Both corporate and individual landowners can donate ecologically sensitive land to approved environmental charities and any levels of government. However, there can be limits to using ecogifts as part of a land development scenario where there are local government approvals that require the setting aside of the land.<sup>40</sup>



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<sup>40</sup> See [www.cws-scf.ec.gc.ca/egp-pde/](http://www.cws-scf.ec.gc.ca/egp-pde/) for more information about ecogifts.



## Opportunities for Successful Implementation of Conservation (Cluster) Development

The option of cluster development (as an alternative to sprawl) has been around for about 50 years, and is now evolving into the concept of “conservation development”. This approach can save infrastructure and development costs. Cluster and conservation development options have been rarely used in the Okanagan-Similkameen where there is more of a tendency to implement “large lot development”. Studies have shown that both large lot and traditional cluster developments may fail to protect the natural land base if not planned appropriately. Effective conservation development can be a challenge if the land is not serviced, as lots smaller than one hectare can only be developed with a community sewer, and some smaller sized lots may be restricted unless there is community water.

Conservation development can work well on the urban/suburban fringe if there is enough density to allow connections to services as they come into the area, or if the land is serviced from the start. Due to short and long term infrastructure costs, it makes sense to locate developments where servicing is available or may become available. Cluster developments provide a product type that is often accepted in the market. If done well, they give every home an opportunity to back on to protected open space, thus becoming a “premium” lot.



## Opportunities for Successful Implementation of Conservation (Cluster) Development continued

Effective cluster development guidelines, as set out in Development Permit or Zoning bylaws, should consider the following measures (Lenth, 2006):<sup>41</sup>

- Minimum set aside areas based on the ecological and hazard constraints of the property (40% - 70%).
- Limiting clusters by number of homes, lot sizes, area of disturbance or a combination of these.
- Setting aside highest sensitivity areas; those areas which provide ecosystem services; and spaces with connectivity to other sensitive areas.
- Basing ecological buffers on provincial guidelines and best management practices and avoiding “cluster sprawl” by clustering only small residential sized lots.
- Locating clusters away from ecologically sensitive lands – (residential development can impact 100-200m into grassland and shrub-steppe areas).
- Minimizing road and linear disturbance to access the cluster.
- Planning clusters across the landscape to compliment development and set aside or parkland dedications areas on surrounding properties.
- Restricting recreational use and domestic animal access to the less sensitive areas.
- Controlling invasive plants while retaining and planting native species throughout the development and conservation areas.
- Providing provisions for monitoring of covenants or conservation areas, and/or participation of land trusts.
- Providing clear requirements for who will “own” the conservation lands and how their management will be paid for, and conducted. (Pechar)



<sup>41</sup> Lenth, B et. al. 2006. Conservation Value of Clustered Housing Developments. Conservation Biology. 20(5) 1445-1456.

Pechar, L. et. al. 2007. Evaluating the Potential for Conservation Development: Biophysical, Economic, and Institutional Perspectives. Conservation Biology. 21(1) 69-78.

## 4.1.4 Science and Information

### Strategic Direction 1.6

**Share data and mapping between governments to make scientifically defensible land use decisions that protect regional ecosystems.**

#### Opportunities for Action

- 1.6.1 Implement the South Okanagan Regional Growth Strategy recommendation to develop regional biodiversity performance measures and indicators, including habitat losses and gains, and to report on progress at regional and local levels.
- 1.6.2 Develop a regional framework to more effectively integrate and manage ecological data and mapping systems among all levels of government and with the Syilx Nation.
- 1.6.3 Use provincial standards and methods for data collection and mapping as a basis for improved environmental information-sharing, impact assessment, and monitoring. Require QP's to submit species and ecosystems data to the Conservation Data Center (CDC) as part of local land use processes.
- 1.6.4 Consider requiring a cost benefit analysis for developments of a certain minimum size or outside of growth areas that are defined in the South Okanagan Regional Growth Strategy, to assess long term infrastructure implications, as well as costs of environmental damage and ecosystem services forgone.
- 1.6.5 Network with governments and universities to implement research projects that are designed to answer specific biodiversity conservation questions for local governments, e.g., surveys of species on local government lands and recommendations on how to manage them.

### Strategic Direction 1.7

**Promote better public and stakeholder understanding of regional biodiversity.**

#### Opportunities for Action

- 1.7.1 Ensure consistent biodiversity information, mapping, and management tools are disseminated to local and regional governments, conservation groups, developers, and landowners.
- 1.7.2 Use local government lands for demonstrations, pilot projects and hands-on learning, including stewardship and restoration projects.
- 1.7.3 Encourage various sectors of the community, including residents, businesses, professional organizations, universities and schools, to become more involved in local and regional biodiversity conservation activities, e.g., support environmental events such Environment Week, Arbour Day, BC Rivers Day.
- 1.7.4 Communicate the economic, social and environmental benefits of biodiversity conservation to the public and stakeholders, including improved community health and quality of life for residents, and reduced costs for infrastructure development and maintenance.



Local government can develop engagement and education programs that inspire community involvement in biodiversity conservation. Examples include the City of Kelowna's Environmental Expo and the City of Vernon's Sustainability Award Program, both of which engage the community and recognize excellence in environmental stewardship and enhancement.

### **Strategic Direction 1.8**

**Develop the capacity of local government staff and elected officials to become leaders and innovators in implementing biodiversity conservation.**

#### **Opportunities for Action**

- 1.8.1 Identify and publicize opportunities for training, education, networking, peer learning, and technical support on biodiversity conservation for local government staff and elected officials.
- 1.8.2 Publicize opportunities for awareness-raising and training on biodiversity and local government requirements, to landowners, developers, and residents.
- 1.8.3 Continue to work with SOSCP partners to provide professional development opportunities, including peer networking and field trips, for elected officials and local government staff involved with development services, parks, transportation, engineering and planning.
- 1.8.4 Seek opportunities to understand and integrate Traditional Ecological Knowledge and Aboriginal Traditional Knowledge in biodiversity conservation, including protocols related to the use and sharing of the information.

## **4.1.5 Partnerships and Collaboration**

### **Strategic Direction 1.9**

**Improve interagency collaboration on biodiversity conservation and capitalize on partnership opportunities.**

#### **Opportunities for Action**

- 1.9.1 Promote regionally consistent approaches to provisions for biodiversity conservation within local governments plans, regulatory tools, enforcement mechanisms, and public information programs.
- 1.9.2 Develop partnerships and collaborative funding arrangements with SOSCP partners and other regional organizations, including local and senior governments, conservation groups, business organizations, scientists and funders.
- 1.9.3 Integrate decision-making and land use planning among organizations (regional district and municipalities) and between departments (development services, engineering, public works and parks).
- 1.9.4 Learn from the experience of other local governments in addressing similar biodiversity conservation and land use issues (e.g., Langley, Surrey, Metro Vancouver, and Comox) through reviewing strategies, networking, and peer learning.

- 1.9.5 Build and enhance communication and relationships with local First Nations' communities (as per policy G2 in the South Okanagan Regional Growth Strategy).
- 1.9.6 Provide leadership and technical assistance to support implementation of the biodiversity strategy through participation in an Implementation Committee.

## 4.2 Senior Government

The management of wildlife and wildlife habitat in Canada is the shared responsibility of federal, provincial, and territorial governments. Federal responsibilities include protection and management of migratory birds and nationally significant wildlife habitat, administering the *Federal Fisheries Act*, protection of endangered species; national parks, park reserves and marine protected areas, control of international trade in endangered species; research on wildlife issues of national importance; and international wildlife treaties and related issues. Provincial legislation covers water quality and supply; air quality; most wildlife and freshwater fisheries conservation and management; and management of provincial parks, ecological reserves, and other protected areas.

Senior governments play a key role in biodiversity conservation through:

- establishing and implementing biodiversity and land use related policy, legislation and regulations, and ensuring enforcement and compliance;
- considering biodiversity in approval and permitting processes required by provincial and federal legislation;
- providing funding to local governments, First Nations, and non-profit groups for conservation initiatives;
- conducting research, collecting data, and developing plans related to protection of ecosystem, habitat, and species, and providing technical support to local governments on these topics; and
- facilitating coordination among regional and local governments on biodiversity management across jurisdictional boundaries.

Senior governments also provide tools and resources that can be used by local and First Nations governments and conservation groups (see Appendix A). For example, federal research on national species at risk has identified the South Okanagan-Similkameen as an endangered species 'hotspot', and highlighted the need for decisive biodiversity protection.

The Crown has the duty to ensure that Aboriginal peoples' rights are fairly considered in any government conduct that could potentially affect those rights, particularly in the approval of developments involving land and resources (i.e., 'a legal duty to consult'). First Nations consultation is also an important part of good governance, and sound policy development and decision-making. The *Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* provides practical guidance to federal departments and agencies in determining when the duty to consult may arise and how it can be fulfilled (see [www.aadnc-aandc.gc.ca/eng/1100100014664](http://www.aadnc-aandc.gc.ca/eng/1100100014664)). The province also has Draft Procedures for Meeting Legal Obligations When Consulting First Nations (May 2010).<sup>42</sup>

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<sup>42</sup> [http://www.gov.bc.ca/arr/reports/download/updated\\_procedures.pdf](http://www.gov.bc.ca/arr/reports/download/updated_procedures.pdf)

The following sections identify opportunities for action on biodiversity protection by senior governments, including suggestions as to which provincial and/or federal agencies should be responsible for each. Note that 'Provincial Interagency', as used below, refers to all provincial resource ministries (Forest, Lands and Natural Resource Operations; Environment; Transportation and Infrastructure; Energy and Mines; and Agriculture).

## 4.2.1 Legislation and Policy

### Strategic Direction 2.1

**Establish new, or improve existing, provincial enabling legislation that sets out powers and responsibilities of local governments for biodiversity conservation.**

#### Opportunities for Action

- 2.1.1 Strengthen existing legislation and regulatory tools and/or develop new approaches to enable the transfer (exchange) density away from rural regional district areas and into municipalities.  
[Who: Ministry of Community, Sport and Cultural Development](#)
- 2.1.2 Provide legislation and regulatory tools such as ticketing and stop work orders that enable local governments to enforce development permit conditions without going to court.  
[Who: Ministry of Community, Sport and Cultural Development](#)
- 2.1.3 Update the Riparian Areas Regulation, based on a review of implementation and methodology in order to address current weaknesses and gaps which lead to loss of habitat or missed restoration opportunities.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.1.4 Provide enabling legislation and regulatory tools to enable the development of various incentives for conservation of ecological values on private land. (See Strategic Direction 1.5)  
[Who: Ministry of Community, Sport and Cultural Development; Ministry of Environment, Ministry of Forests, Lands and Natural Resource Operations; Environment Canada](#)

### Strategic Direction 2.2

**Improve implementation of conservation initiatives, promote interagency cooperation and enforcement of senior legislation, regulations, and standards.**

#### Opportunities for Action

- 2.2.1 Protect ecosystems that are identified as priority 1 and 2 and recommended for protection in the Provincial Conservation Framework (CF). Include “ecosystems at risk” in current provincial legislation designed to protect “at risk” biodiversity values.  
[Who: Ministry of Environment; Provincial Interagency](#)
- 2.2.2 Bring into force and implement the Wildlife Amendment Act, which has a key role to play in protecting wildlife and biodiversity.  
[Who: Ministry of Environment](#)



- 2.2.3 Identify critical habitat and implement effective protection measures.  
[Who: Environment Canada](#)
- 2.2.4 Strengthen federal and provincial policy and legislation and build interagency cooperation to benefit biodiversity conservation.  
[Who: Provincial Interagency, Environment Canada, Natural Resources Canada, BC Environmental Assessment Office, BC Assessment, Fisheries and Oceans Canada](#)
- 2.2.5 Increase funding and staffing to enable agencies to monitor and enforce results-based management to ensure that it meeting biodiversity standards, and to process and review applications and requests for data in a timely manner.  
[Who: Ministry of Environment, Ministry of Forests, Lands and Natural Resource Operations, Environment Canada, Fisheries and Oceans Canada](#)
- 2.2.6 Implement recommendations from the Species at Risk Task Force, including preparation of annual monitoring and compliance reports on priority 1 CF species.  
[Who: Ministry of Environment, Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.2.7 Provide leadership and technical assistance to support implementation of the biodiversity strategy through participation in an Implementation Committee.  
[Who: Provincial Interagency, Environment Canada](#)

### **Conflicts between Agricultural Land Commission Act and Biodiversity Protection**

Although there is some federal and provincial legislation in place to protect ecological values, implementation, compliance and enforcement mechanisms are relatively ineffective. On the other hand, agricultural interests are generally well protected under the provincial *Agricultural Land Commission Act*. Within the Agricultural Land Reserve (ALR), agricultural uses take precedence over other values, including ecological values. Furthermore, the *Right To Farm* legislation gives preferential treatment to carry out farming practices in the ALR. In most cases, the Agriculture Land Commission does not support or approve conservation covenants on ALR land, even if the landowner is willing, if it is perceived to limit future agricultural uses.

At a local government level, land use bylaws must honour lands in the ALR for agricultural uses. Several local governments have adopted environmentally sensitive development permit areas (ESDPAs). These ESDPAs often include considerable tracts of land that are within the ALR, but the *Agricultural Land Commission Act* takes precedence over local government legislation. As a result, lands within the ALR that are currently in farm use are exempt from the provisions of an ESDPA. Some landowners may even apply to have lands included in the ALR in order to avoid the ESDPS requirements. In some cases where lands within the ALR are used for a non-farm uses, an ESDPA may still apply if the municipality or regional district has explicitly stated this.





## Water Act Modernization

The *Water Act* is the principal law for managing the diversion and use of provincial water resources. Established in 1909, B.C.'s *Water Act* is the primary piece of water management legislation and plays a key role in protecting BC's water resources, which contribute significantly to maintaining biodiversity. The *Water Act* contains no protection for groundwater; continues to use the “first in time, first in right” system for surface water licenses; and offers only limited protection of instream flows for fish and wildlife, without considering other ecological factors. The Act is being reviewed in light of new pressures on water related to climate change, population growth, and changes in water use.

The four goals of the *Water Act* modernization process are to:

- Protect stream health and aquatic environments;
- Improve water governance arrangements;
- Introduce more flexibility and efficiency in the water allocation system; and
- Regulate ground water use in priority areas and for large withdrawals.



## 4.2.2 Land Use Planning and Development

### Strategic Direction 2.3

**Manage ecological values on provincial and federal Crown lands in a manner that leads by example.**

#### Opportunities for Action

- 2.3.1 Avoid the disposition of any Crown lands in the South Okanagan-Similkameen that are deemed sensitive or important to biodiversity (i.e., lands that support the Provincial Conservation Framework priority 1 and 2 species).  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.3.2 For non-sensitive Crown lands, apply best management practices to application processes, (such as those as outlined in 'Develop with Care: Environmental Guidelines for Urban and Rural Land Development in BC'), and ensure appropriate consultation with First Nations governments, public and other stakeholders.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.3.3 Expand the current referral process and procedures for Crown land disposition for the South Okanagan to assess risk and sensitivity for Crown lands applications for disposition in the Similkameen Valley.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.3.4 Ensure that the decision-making process for Crown land, including dispositions, considers not only economic values, but also biodiversity and environmental values, such as recreation, ecosystem services important ecosystems (including representation), species at risk, wildlife habitat and cumulative impacts.  
[Who: Provincial Interagency](#)
- 2.3.5 Support local, regional and First Nations government and non-government organization applications for tenures on Crown lands that enhance biodiversity values by conserving important ecosystems (e.g., through parkland establishment or open space dedication). Where market values of important and at-risk conservation lands are high, devise methods to streamline the application process and reduce costs, including lowering the threshold amounts for these applications.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.3.6 Implement outstanding recommendations in the Okanagan-Shuswap Land and Resource Management Plan regarding motorized vehicle access management, proposed Goal 2 Areas, and Wildlife Management Areas, such as special Resource Management Zone 1.  
[Who: Ministry of Forests, Lands and Natural Resource Operations, Ministry of Environment](#)
- 2.3.7 Strengthen inter-agency coordination and best management practices related to assessment, mitigation and monitoring of the environmental impacts of transportation and highways projects, as required under provincial legislation.  
[Who: Ministry of Transportation and Infrastructure, Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.3.8 Increase staffing to help ensure that environmental requirements are included in approvals and renewals of Crown land leases, and conditions are monitored and enforced.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)

## **Strategic Direction 2.4**

**Improve the efficiency and effectiveness of environmental mitigation and compensation programs.**

### **Opportunities for Action**

- 2.4.1 The provincial government is taking positive steps to produce new mitigation and compensation guidelines. Establish a fully resourced but streamlined process for implementing these programs.  
[Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment](#)
- 2.4.2 Provide a mechanism for local governments to participate in mitigation and compensation programs, including enabling access to compensation funds by local governments and conservation groups.  
[Who: Ministry of Forests, Lands and Natural Resource Operations, Ministry of Environment](#)
- 2.4.3 Increase implementation of compensation mechanisms provided for under the federal Species at Risk Act (SARA, Section 64), and implement compensation schemes and financial incentives for First Nations to set aside habitat for SARA species.  
[Who: Environment Canada](#)

## **Strategic Direction 2.5**

**Continue to build a network of protected areas to conserve sensitive and important ecosystems that are underrepresented in the current network.**

### **Opportunities for Action**

- 2.5.1 Develop and implement targets for increased protection of underrepresented ecosystems. Increase funding for acquisition of important habitat on private land, where representation cannot be achieved.  
[Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment, Environment Canada](#)
- 2.5.2 Identify opportunities to transfer non-sensitive Crown land in exchange for sensitive private land which is suitable for conservation areas.  
[Who: Ministry of Forests, Lands and Natural Resource Operations](#)
- 2.5.3 Increase protection for Important Bird Areas by legislatively protecting them and increase the capacity and management of National Wildlife Areas.  
[Who: Environment Canada](#)
- 2.5.4 Identify high priority habitat areas and wildlife corridors that should be added to the existing protected areas network and implement the actions needed to expand the network.  
[Who: Ministry of Forests, Lands and Natural Resource Operations, Ministry of Environment, Environment Canada](#)

## 4.2.3 Financing Biodiversity

### Strategic Direction 2.6

**Support land owners, managers and other stakeholders to conserve biodiversity with financial and technical assistance.**

#### Opportunities for Action

- 2.6.1 Develop, disseminate and monitor biodiversity best management practices (BMPs), tailored to specific ecosystems, species and types of activity, and support land managers to implement them through outreach and technical support.  
*Who: Provincial Interagency*
- 2.6.2 Provide consistent long-term funding for biodiversity conservation, including stewardship and education programs.  
*Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment, Environment Canada*
- 2.6.3 Accept and implement recommendations from the Farm Assessment Review Committee Report (2009) related to split classification. Improve farm classification to provide further incentives for landowners and recognize the value of retaining natural areas and features on all agricultural land in order to protect biodiversity and ecological goods and services.<sup>43</sup>  
*Who: BC Assessment Office, Ministry of Agriculture.*
- 2.6.4 Help build local government capacity to incorporate biodiversity into policies, plans and by-laws through funding, training and technical support, with a focus on municipalities with high biodiversity and limited management capacity.  
*Who: Ministry of Forests, Provincial Interagency; Environment Canada*
- 2.6.5 Support capacity building to enable local First Nations governments to undertake planning on Indian Reserves, within the Syilx territory and to have capacity to respond to referrals effectively.  
*Who: Aboriginal Affairs and Northern Development Canada, Environment Canada, Provincial Interagency.*



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<sup>43</sup> BC Assessment includes natural areas under Residential Classification rather than Farm Classification both within and outside of the ALR. The assessment and classification process also unintentionally results in farmers removing and degrading natural areas where Farm Classification and status is tied to crop production. A system incorporating positive (or at least neutral) incentives for recognizing and working with ecological goods and services on farmland is required. The importance of the latter to agriculture and over-all health and well-being is internationally recognized, e.g. EU Common Agricultural Policy; USA Conservation Securities Program; PEI, Manitoba, and Ontario Alternative Land Use Services program. See <http://www.farmassessmentreview.ca/>



## 4.2.4 Science and Information

### Strategic Direction 2.7

**Conduct applied research and scientific studies to support biodiversity conservation in the region and disseminate results to decision-makers and stakeholders.**

### Opportunities for Action

- 2.7.1 Develop joint conservation and land management research projects between government agencies and educational institutions.  
*Who: Provincial Interagency; Department of Fisheries and Oceans, Environment Canada*
- 2.7.2 Conduct research on the effectiveness of current biodiversity-related policies, legislation and regulatory tools and how they could be improved.  
*Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment; Environment Canada*
- 2.7.3 Restore the capacity of federal and provincial governments to provide inventory and technical information for improved decision-making and implementation.  
*Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment; Environment Canada.*
- 2.7.4 Improve stream and wetland mapping. Continue to invest in Terrestrial Ecosystem Mapping, Sensitive Ecosystem Inventories and other biodiversity data systems which support informed decision making.  
*Who: Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment; Environment Canada.*
- 2.7.5 Support the advancement and integration of Traditional Ecological Knowledge in approaches to conservation and land use planning.  
*Who: Provincial Interagency, Environment Canada, Fisheries and Oceans Canada Aboriginal Affairs and Northern Development Canada*



## 4.2.5 Communication and Partnerships

### Strategic Direction 2.8

Ensure that environmental protection goals, including biodiversity conservation are effectively considered within government permitting processes.

### Opportunities for Action

- 2.9.1 Expedite referral processes associated with subdivision approval, and land donation for conservation.  
[Who: Ministry of Transportation and Infrastructure, Ministry of Agriculture](#)
- 2.9.2 Ensure ecosystem and species at risk values are considered in senior government approval and permitting processes.  
[Who: Provincial Interagency](#)

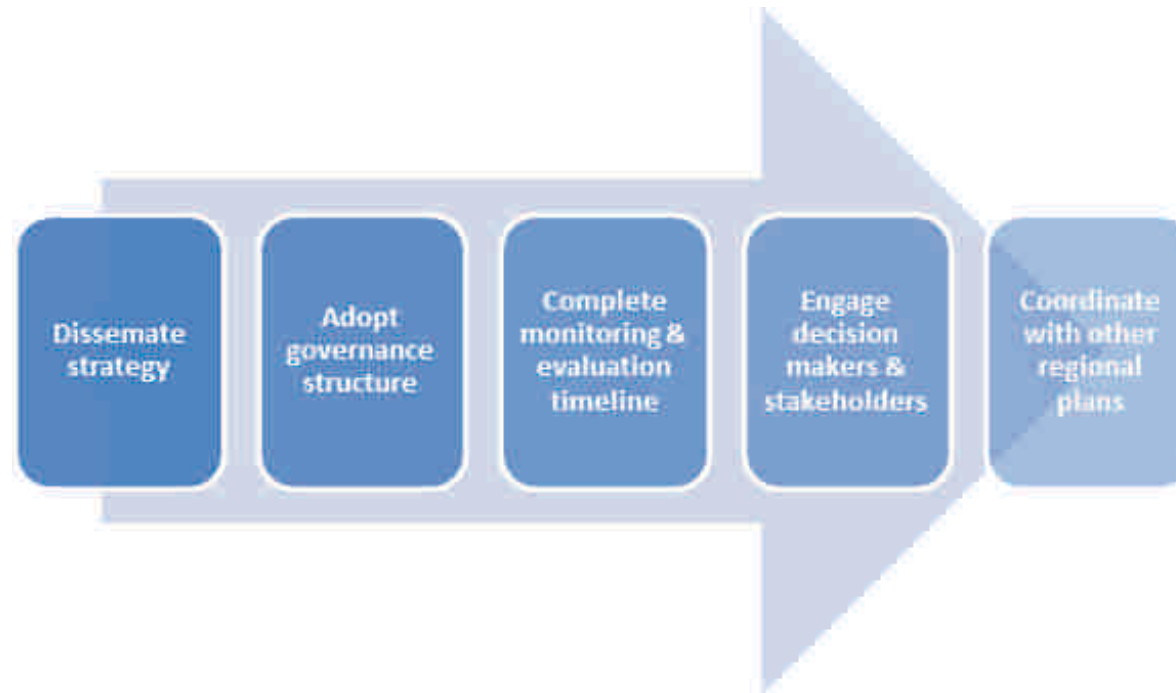


## 5.0 IMPLEMENTATION

### 5.1 Introduction

SOSCP and its partners are committed to making a difference on the ground to strengthen the conservation of ecosystems, habitats and species in the Okanagan-Similkameen. To that end, this chapter focuses on implementation of **Keeping Nature in Our Future**. It proposes key elements and next steps for effective implementation, each of which is discussed in more detail in the sections which follow.

1. *Engage stakeholders and decision-makers, including First Nations* through disseminating the biodiversity strategy, local government primers and maps; and targeted outreach and discussion (Section 5.2).
2. Adopt a *Governance Structure* for strategy implementation (Section 5.3).
3. Finalize an *Action Plan*, with roles, responsibilities and a timeline (Section 5.4).
4. Finalize a *Measurement, Reporting and Evaluation Plan*, including a Performance Measurement Framework, with roles, responsibilities and a time line (Section 5.5).
5. Coordinate strategy implementation with the Central and North Okanagan Biodiversity Conservation Strategy process and other relevant regional and inter-regional land use planning and management initiatives.







Implementation can build on the following strengths in the Okanagan-Similkameen region:

- Regional Growth Strategy which provides a policy framework with clear commitments to biodiversity conservation, and measurable progress indicators (see Sidebar).
- Significant large and small natural areas with good potential for conserving regional ecosystem, habitat and species biodiversity.
- Solid technical work during this strategy preparation, resulting in:
  - ♦ detailed habitat maps and scientific consensus on conservation priorities, and
  - ♦ detailed data and recommendations at a local scale, suitable for local government use.
- Previous SOSCP technical work, including SOSCP Prospectus, 2000; Dyer and Wood, Habitat Action Plan and Conservation Summary, 2008; Lea, Historical Ecosystems of South Okanagan and Similkameen Valleys (Davidsonia) 2008; SOSCP Landscape Recovery Strategy 2007 (unpublished).

<sup>44</sup> Original language in the RDOS is “Aboriginal”, while this strategy uses the term “First Nations”.

## Regional Growth Strategy Support for the Biodiversity Conservation Strategy

The Regional District of Okanagan Similkameen (RDOS) *Regional Growth Strategy* (RGS), adopted in 2010, includes a long-term commitment to manage growth for the South Okanagan within the Regional District. Part II of the RGS, Growth Management Goals and Actions, includes Section 2. *Ensure the Health of Ecosystems and Policy En1 – Coordinate the Management of Regional Biodiversity Conservation*, as follows:

“The South Okanagan municipalities and electoral areas and Ministry of Environment agree to:

1. Meet with environment partners to develop a regional approach to biodiversity conservation and work with the RDOS Board toward coordinated biodiversity conservation and ecosystems protection.
2. Support the development of an inter-regional Biodiversity Conservation Strategy by collaborating with ecosystems experts, including those with traditional ecological knowledge, and balance ecosystems interests with economic and social sustainability.
3. Work with Aboriginal<sup>44</sup> leaders to develop partnerships for regional ecosystems health.
4. Monitor the effectiveness of RGS ecosystems actions, including annual indicators for key ecosystem measures.”

The RGS Implementation Section identifies as an immediate priority:

“Meet with environment partners to develop a regional approach to biodiversity conservation and work with the RDOS Board toward coordinated biodiversity conservation and ecosystems protection.”

And notes as a medium priority:

“Support the development of an inter-regional Biodiversity Conservation Strategy.”

- Existing SOSCP framework and networks:
  - ♦ history of collaboration among SOSCP partners; and
  - ♦ reputation and credibility of SOSCP among funders, government and non-government stakeholders.
- Supportive senior government biodiversity initiatives, including:
  - ♦ Federal Government's National Conservation Plan, Environment Canada's focus on South Okanagan Similkameen as a significant region for biodiversity and species at risk protection, and Dry Interior Regional Conservation Plan .
  - ♦ Significance of the South Okanagan in the *Biodiversity BC and Provincial Conservation Framework*, and
  - ♦ Inclusion and priority of the South Okanagan in the *BC Sensitive Ecosystem Inventory*.

## 5.2 Engage stakeholders and decision-makers, including First Nations

It is proposed that the first step in implementing **Keeping Nature in Our Future** be to involve stakeholders and decision-makers, including First Nations. An Engagement Plan, available under separate cover, provides a framework for launching this engagement. It includes draft goals and objectives; a list of stakeholders and decision-makers, including First Nations; draft messages; and possible communications and engagement activities. The plan should be refined through discussions with the target groups.

The goal of the Engagement Plan is: *to generate widespread support and momentum for strategy implementation among stakeholders and decision-makers, including First Nations*. The latter are defined as organizations and individuals who:

- have a legal mandate and responsibilities for biodiversity conservation;
- can affect biodiversity conservation in a significant way; and/or
- have an interest in biodiversity conservation.

The primary target groups for engagement are elected officials, planners and staff of regional and local government bodies, First Nations governments, and key senior government agencies, as well as SOSCP partners. Other stakeholders that will need to be involved include business organizations; developers; agricultural, viticulture and ranching groups; environmental and community organizations; landowners; Crown Land user groups; the academic and science community; professional organizations; students and the broader public. Each of these groups will be involved to different degrees in strategy implementation, depending on their role in biodiversity conservation.

The Engagement Plan suggests that the first step in stakeholder engagement be to disseminate the strategy and maps. This could be done through the SOSCP website, and/or through websites and links of SOSCP partners and other organizations involved in strategy development. This could then be followed by production of a range of user-friendly communications materials, designed in collaboration with specific target groups.

Communication materials will likely include traditional print and PDF documents and maps; user-friendly, interactive, web-based materials; and social media, depending on resources available. The Steering Committee may wish to consider organizing a Strategy Launch, which could involve a

high-profile conference or workshop for key decision-makers, possibly combined with celebrations and community participation, such as field trips and family activities.

### 5.3 Governance Structure

This section proposes governance options to be considered as the strategy moves from the research and planning phase to the implementation phase (i.e., organizational and decision-making structures and processes). Although the project Steering Committee initiated and led the biodiversity strategy process, the strategy resulted from a two-year collaboration among diverse stakeholders and decision-makers. Effective implementation will depend on the continued involvement of these groups, along with broader outreach to key organizations and individuals who have not been involved to date. This mobilization will require effective governance, with defined implementation roles, responsibilities and reporting systems.

The following principles should guide the final design of governance arrangements:

- Build on the successful collaboration forged during strategy development, and expand the process to involve additional stakeholders and decision-makers, including First Nations, that are essential to ensure implementation.
- Ensure a representative mix of government and non-government participants.
- Define central roles for key organizations, such as the Regional District, municipalities and electoral areas, and First Nations and senior governments.
- Build on existing structures, plans and processes as much as possible, including those of the SOSCP, Regional District, and other inter-agency and non-government coordinating bodies.

It is proposed that the following bodies be considered as part of the governance structure:

#### *1. Implementation Committee*

- Would oversee strategy implementation and monitoring, reporting and evaluation.
- Membership would be similar to the Strategy Steering Committee, i.e., high level decision-makers, and including additional members, as needed to assist key stakeholders and decision-makers, including First Nations, in the implementation of the strategy.

#### *2. Technical Working Groups*

- Would assume technical tasks, such as on-going work on habitat information and mapping, as well as development of ecological indicators (see Section 5.5).
- Membership would be similar to the Strategy Technical Committee, but with additional members, as needed.
- Groups could be based on specific sections/topics in the strategy section 4.0 or groupings of related implementing agencies and organizations.
- Topic-based groups would take on specific sections in the strategy, working closely with the agencies and organizations who have the relevant mandate and responsibilities and/or interests.



### 3. Secretariat/staff person

- Would coordinate implementation activities, answering to the Implementation Committee.
- Could be SOSCP staff person on a part-time basis, as for strategy development or a full-time person, especially in the first year to ensure a “quick start” and keep momentum on implementation.
- Specific implementation activities could be contracted out to consultants, organizations or academics, supervised by a secretariat/staff person.

### 4. Technical Advisors, as needed

- Various specialists could be called upon to advise on implementation of specific technical aspects of the strategy, e.g., scientific, legal, regulatory or communications topics.
- Could also include key stakeholder groups who are not available to sit on working groups, but could be convened as-needed basis to offer advice or asked to sit on an advisory committee.

Once the governance structure is determined, the following tasks should be undertaken:

- Specify the relative roles and responsibilities in a Terms of Reference for each body;
- Identify reporting and accountability relationships, and a coordination mechanism;
- Identify communication methods, building on existing channels and networks (as specified in the Stakeholder and Decision-maker Engagement Plan);
- Ensure strong linkages with regional and local government bodies in the region; and
- Consider formalizing partnerships and collaborative arrangements through a memorandum of understanding (MOU) or other agreement.



## 5.4 Action Plan

Table 1 presents a framework that could be used to define the “what, who and when” of strategy implementation, based on the “strategic directions”, “opportunities for action” and responsibilities (listed under “who”) identified in Section 4.0. These could be transferred to this table and then be refined and agreed during the engagement process described in section 5.2.

Table 1. Action Plan

Strategic Direction 1			
Opportunities for Action	Responsibility <ul style="list-style-type: none"><li>• Lead organization</li><li>• Other participants</li><li>• Advisors</li></ul>	Priority High, Medium, Low (This may not be need, but could be useful to guide implementation.	Time Frame (eg. short (2yrs), medium (3-5 yrs) & long term (10 yrs) OR specify a target date: 2013 etc)
1.1			
1.2			
Strategic Direction 2			
2.1			

## 5.5 Measurement, Reporting and Evaluation

This section proposes an approach to translating the goals, strategic directions and opportunities for action identified in **Keeping Nature in Our Future** into expected results and a framework for measuring, reporting and evaluating those results over time. It describes three components, a Performance Measurement Framework, using outcomes and success measures; a Reporting Plan; and an Evaluation Plan. It also identifies roles, responsibilities and time lines for each of these functions.

### 5.5.1 Performance Measurement Framework

It is proposed that a performance measurement framework be developed to monitor progress on strategy implementation, based on the template in Table 2 below. The table can be completed once strategy recommendations are finalized, in consultation with stakeholders and decision-makers, including First Nations.

Performance measurement will support accountability to partners and funders and demonstrate the relevance and effectiveness of the strategy to stakeholders and decision-makers, including First Nations. It will also provide the information needed for “mid-course adjustments” to improve strategy implementation.

Table 2. Performance Measurement Framework

Expected Outcomes (sample - based on Strategic Directions in Section 4.0)	Success Measures (or “Indicators”)	Target	Sources of Information
Outcomes at Local Government Level			
1.1 New or updated land use policies and regulations to ensure that development approval processes integrate biodiversity conservation are in place	eg. Number of land use policies and regulations that explicitly address biodiversity.	eg. 50% of municipalities adopt new or updated policies and regulations.	eg. Review of land use policies and regulations; interviews with officials.
1.2			
1.3			
Outcomes at Senior Government Level			
Strategic Direction 2			
2.1			
1.			
2.			



## **a) Success Indicators**

The strategic directions and actions recommended in the Biodiversity Strategy focus primarily on devising policy, planning, information and collaborative tools to conserve biodiversity, with a focus on land use, environmental and natural resource management. The performance measurement framework should incorporate success indicators to measure progress in implementing those tools. Given the ongoing shortage of human resources and budget, the framework should also be relatively simple, incorporating a few well-chosen indicators that can be measured using reasonably accessible sources of information.

## **b) Ecological Indicators**

The use of success *indicators* to measure progress in conservation planning and management should be complemented by the use of *ecological* indicators to monitor progress in meeting regional targets for ecosystems, habitat and species conservation. SOSCP and its partners have been working in recent years to develop ecological indicators, based on habitat assessments and measurable habitat protection targets. These ecological indicators will show how well planning and management tools are achieving substantive results “on the ground”.

The development of ecological indicators should be completed as part of implementing the following strategy recommendation:

Opportunity for Action:

- 1.6.1. Implement the proposal in the South Okanagan Regional Growth Strategy (RGS) to develop regional performance measures and indicators for biodiversity and report on progress for each jurisdiction and the region as a whole, including monitoring habitat losses and gains in the region.

This action refers to the proposal set out in RGS Policy Policy En1, point #4. “Monitor the effectiveness of RGS ecosystems actions, including annual indicators for key ecosystem measures.” (See Side Bar in Section 5.1)

The development of ecological indicators should build on previous efforts. The Okanagan Sub-Regional Growth Strategy Baseline Report (2008) identifies a series of “Performance Indicators”, including three related to “Natural Spaces”, as follows:

- BNS-1 annual and cumulative area of parkland and protected areas (measured annually)
- BNS-2 percentage of sensitive ecosystems protected or stewarded by general habitat type (measured 5 years)
- BNS-3 percentage of riparian areas protected (measured 5 years)

These indicators could be refined, based on the habitat assessment and mapping done during strategy development and previous technical work, especially the report: Dyer, Orville and Chris Wood, 2007 *Habitat Action Plan and Conservation Summary (Draft)*, which identifies protection targets for specific habitat classes in the region. Ecological indicators could be developed for ecosystem, habitat type and species, including species at risk, and use similar headings to Table 2, i.e., Topic, e.g., Habitat Type, Success Measure, Targets and Information Sources.

### 5.5.2 Reporting

It is proposed that the results of the performance monitoring described in 5.5.1 be assessed and reported to stakeholders and decision-makers, including First Nations, using existing communication channels, and both traditional and social media. Reporting should include progress on goals, strategic directions and actions, achievements, success stories and lessons learned. The reporting period could be annual or biannual and be carried out in lock-step with other reporting processes, e.g., local government annual planning, budgeting and reporting cycles.

In this age of “information overload”, implementing bodies should consider using innovative and engaging ways to share successes over time. These might include community celebrations, field trips, awards for biodiversity champions in various categories, and high profile media events featuring local politicians and community leaders

### 5.5.3 Evaluation

The Performance Measurement Framework will generate information on the degree to which strategy recommendations are being implemented. This will facilitate on-going strategy refinement. However, implementing bodies may also wish to commission periodic evaluations of strategy implementation, (for example, every three years), to assess overall success in achieving the biodiversity conservation vision and goals set out in Chapter 1.4 of the strategy.

Each evaluation would be a systematic, independent assessment to assess how well the strategy is achieving its stated vision and goals and the cumulative impact of strategy implementation on regional biodiversity conservation. The analysis would incorporate information generated through ongoing performance measurement, but use a broader analytical framework and draw on additional sources of information, such as interviews and surveys. The evaluation framework would be based on several overarching criteria for success, based on what strategy managers wish to know, such as impact, effectiveness, efficiency, stakeholder engagement, and the sustainability of conservation measures.

## 5.6 Coordination with Other Regional and Cross-regional Initiatives

The implementation of **Keeping Nature in Our Future** should be coordinated with relevant regional and inter-regional land use planning and management initiatives. These include the Washington State Wildlife Habitat Connectivity Transboundary Project, and the Central and North Okanagan Biodiversity Conservation Strategy process with the Okanagan Collaborative Conservation Program. OCCP and SOSCP would like to establish a “Basin Wide” approach as of mid-2012 going forward.

# GLOSSARY

**Aboriginal Traditional Knowledge (ATK):** broad-based traditional knowledge, developed over long periods of time, provided through ceremonial practices, oral tradition and story, historical accounts, social practice, resource gathering and production techniques, land-use and occupancy.

**Biodiversity:** the variety of life on earth in all its forms including genes, species, and ecosystems and the natural processes that link and maintain them.

**Biogeoclimatic zone:** a geographic area having similar patterns of energy flow, vegetation, and soils as a result of a broadly homogenous macroclimate.

**Buffer:** an area of land that surrounds and protects an environmentally valuable resource from the adverse effects of activities on, or encroachment from, adjacent land.

**Conservation covenant:** a voluntary, written legal agreement in which a landowner promises to protect his or her land in specified ways. The covenant is attached to the title of land and binds future landowners to the terms of the covenant.

**Cumulative effects:** the combination and interaction of individual human activities that result in aggregate effects that may be different in nature or extent from the effects of the individual activities. Ecosystems cannot always cope with the combined effects of human activities without fundamental functional or structural changes.

**Ecosystem:** a collection of plants, animals and micro-organisms interacting with each other and with their non-living environment. Sensitive ecosystems are relatively unmodified, ecologically fragile, or are recognized as being at-risk on the provincial landscape.

**Ecosystem functions:** the physical, chemical and biological processes that keep an ecosystem operating. Examples include infiltration of surface water, evapo-transpiration and nutrient cycling.

**Ecosystem services:** the benefits healthy ecosystems provide to humans. Clean air, clean water, and flood control are just a few examples.

**Edge effect:** the portion of an ecosystem near its perimeter, where influences of the adjacent patches can cause an environmental difference between the interior of the patch and its edge. The edge effect includes a distinctive species composition or abundance. For example, when a landscape is a mosaic of perceptibly different types, such as a forest adjacent to a grassland, the edge is the location where the two types adjoin.

**Fragmentation:** a process whereby large contiguous ecosystems are transformed into smaller patches surrounded by disturbed areas. There are no longer continuous connections for wildlife to travel through and use for food and shelter.

**Greenways:** networks of linked greenspace that provide wildlife habitat and recreational opportunities. Some greenways include trails; others do not provide public access. On the ground, greenways are created as part of an integrated approach to land planning, balancing the needs of human communities and natural systems.

**Habitat:** the place where an organism lives, and/or the conditions of that place, including the soil, vegetation, water, and food.

**Intrinsic value:** the inherent worth of something, in this context, biodiversity, which is independent of its use or 'instrumental' value to anyone or anything.

**Invasive species:** plants, animals, and micro-organisms that colonize and take over the habitats of native species. Most invasive species are also alien (non-native) to the area and can become dominant because the natural controls (e.g., predators, disease) that kept their populations in check in their native environment do not occur in their new location.

**Sensitive Ecosystem Inventory:** systematic identification and mapping of rare and fragile ecosystems in a given area. The information is derived from aerial photography, supported by selective field checking of the data.

**Stewardship:** an ethic and practice to carefully and responsibly manage resources and ecosystems for the benefit of future generations. Stewardship can be practiced in many ways by governments, organizations, communities, and individuals to benefit the natural environment.

**Terrestrial Ecosystem Mapping:** an approach to stratifying the landscape into map units according to ecological features using a combination of manual airphoto interpretation and ground sampling.

**Traditional Ecological Knowledge (TEK):** specific local extensive areas of knowledge of the ecology of a region of occupancy by an Indigenous group, encompassing both historical and current uses.

**Vegetation Resource Inventory (VRI):** a photo-based, two-phased vegetation inventory design consisting of photo interpretation and ground sampling.

**Wildlife corridor:** a travel corridor for wildlife. Wildlife corridors range in size depending on the species' needs. Wide, natural corridors are appropriate for large mammals, 'sky corridors' offer a safe flight path between feeding and resting places for birds, and smaller man-made corridors (such as urban trails or culverts under roads) provide safe passage for smaller creatures. These corridors also provide year-round habitat for less mobile species. Human development and natural features can create pinch-points that reduce the effectiveness of corridors for wildlife.



## APPENDIX A

### Tools and Resources for Biodiversity Conservation

#### Senior Government Policies and Initiatives

**BC Conservation Framework:** A set of tools to enable collaboration between government and non-government resource managers and practitioners. The prioritization tool scores BC species and ecosystems in terms of urgency for conservation action based on three conservation goals: 1) BC's global responsibility for maintaining biodiversity; 2) Proactive conservation; and 3) Maintaining BC's native biodiversity. The action sorting tool places high ranking species and ecosystems under each goal into appropriate management actions, including habitat protection, restoration, inventory, monitoring, and planning. More than 3,000 species and 600 ecosystems have been run through the Conservation Framework tools. [www.env.gov.bc.ca/conservationframework/](http://www.env.gov.bc.ca/conservationframework/).

**Identified Wildlife Management Strategy (IWMS):** The IWMS is a component of the Forest and Range Practices Act of British Columbia. Its goals are to minimize the effects of forest and range practices on Identified Wildlife (i.e., those identified as Species at Risk or Regionally Important by the Minister of Environment), and to maintain their limiting habitats throughout their current ranges and, where appropriate, their historic ranges. [www.env.gov.bc.ca/wld/frpa/iwms/](http://www.env.gov.bc.ca/wld/frpa/iwms/).

**Okanagan – Shuswap Land and Resource Management Plan (LRMP):** The LRMP provides direction for the management of the Crown land and resources in the Okanagan-Shuswap area. It includes management direction that applies across the entire plan area (i.e., general management); resource management zones (RMZs) where integrated resource management is practiced based on objectives and strategies specific to that RMZ; as well as almost fifty new protected areas. <http://ilmbwww.gov.bc.ca/slrp/lrmp/kamloops/okanagan/index.html>.

**Species at Risk Task Force:** It provides recommendations to the British Columbia government to help it update its vision for the conservation of species and ecosystems at risk and ensure that BC remains a leader in environmental sustainability. The Task Force released a report in January 2011 that contains recommendations to help the province refine its approach to dealing with ecosystems and species at risk. [www.env.gov.bc.ca/sartaskforce/Documents/SpeciesAtRisk\\_report.pdf](http://www.env.gov.bc.ca/sartaskforce/Documents/SpeciesAtRisk_report.pdf)

**Species and Ecosystems at Risk (SEAR) Local Government Working Group:** Collaboration of local government and provincial government professionals working on SEAR protection support on private land. Contact: Lynn Campbell, Species at Risk Biologist, Ministry of Environment, tel: (250) 387-9676; fax: (250) 387-9750. [http://www.env.gov.bc.ca/wld/searl\\_gwg/index.html](http://www.env.gov.bc.ca/wld/searl_gwg/index.html)

**BC Species and Ecosystem Recovery Planning:** A process to identify and facilitate the implementation of priority actions to ensure the survival and recovery of species and ecosystems at risk. It is generally accomplished through a two stage process: 1. development of a recovery strategy; and in some cases, 2. development of one or more action plan(s). [www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm](http://www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm)

**Stewardship Centre for British Columbia:** Created to assist governments, businesses, organizations, and citizens to carry out stewardship activities in the most efficient, effective and rewarding ways. See [www.stewardshipcentre.bc.ca](http://www.stewardshipcentre.bc.ca) for best management practices, case studies, demonstration projects, publications and other resources.

**Ecological Gifts Program:** Provides a way for Canadians with ecologically sensitive land to protect nature and leave a legacy for future generations. Made possible by the terms of the Income Tax Act of Canada and the Taxation Act in Quebec, it offers significant tax benefits to landowners who donate land or a partial interest in land to a qualified recipient. [www.ec.gc.ca/pde-egp/](http://www.ec.gc.ca/pde-egp/)

**Species at Risk & Local Government:** A Primer for British Columbia: A website to help local governments learn about species at risk and the threats they face, learn which species at risk are in their area, search for species at risk by name or habitat type, and learn how local government can help conserve species at risk. [www.speciesatrisk.bc.ca](http://www.speciesatrisk.bc.ca)

**Invasive Alien Species Framework for BC:** Identifying and Addressing threats to Biodiversity: A background document that sets out a framework for the use of science, and the coordinated involvement of partners, to address the threats to BC's environment and economy posed by invasive alien species. [www.env.gov.bc.ca/wld/documents/alien\\_species\\_framework\\_BC\\_0205.pdf](http://www.env.gov.bc.ca/wld/documents/alien_species_framework_BC_0205.pdf)

## Inventory and Data

**BC Conservation Data Centre:** Collects and disseminates information on plants, animals and ecosystems (ecological communities) at risk in British Columbia. The information is compiled and maintained in a computerized database that provides a centralized and scientific source of information on the status, locations and level of protection of these organisms and ecosystems. [www.env.gov.bc.ca/cdc/](http://www.env.gov.bc.ca/cdc/)

**BC Species and Ecosystems Explorer:** A source for conservation information on approximately 6,000 plants and animals and over 600 ecological communities in BC. Can be used to generate lists of provincial species and ecological communities, based on a number of criteria options, including conservation or legal status, and spatial distribution. [www.env.gov.bc.ca/atrisk/toolintro.html](http://www.env.gov.bc.ca/atrisk/toolintro.html)

**Eco-Cat (the Ecosystem Report Catalogue):** A website with data and inventory from many different sources, including project reports and associated files. Searches can be done using keywords, for example regions or vegetation types. This site was previously known as Aqua-Cat, but has been updated to reflect terrestrial information. <http://a100.gov.bc.ca/pub/acat/public/welcome.do>

**Sensitive Ecosystems Inventories:** Purpose is to identify and map remnants of rare and fragile terrestrial ecosystems in a given area and to encourage land use decisions that will ensure the continued integrity of these ecosystems. [www.env.gov.bc.ca/sei/](http://www.env.gov.bc.ca/sei/). The SEI study reports and data are also found on Ecocat at [www.env.gov.bc.ca/ecocat/](http://www.env.gov.bc.ca/ecocat/)

**Wildlife Species Inventory:** Provides access to information about wildlife species inventory in BC, including all surveys undertaken to determine the presence or abundance of any wildlife species. [www.env.gov.bc.ca/wildlife/wsi/index.htm](http://www.env.gov.bc.ca/wildlife/wsi/index.htm)

**Okanagan Habitat Atlas:** The Okanagan Habitat Atlas (OHA) is an interactive mapping tool hosted by the Community Mapping Network (CMN) and UBC-Okanagan. The OHA provides access to map layers of sensitive habitats and species distribution in the Okanagan Basin of BC. The OHA has links to local and remote databases, WMS sources and geo-referenced video. Data on the OHA is meant to give the public open access to regional habitat information and to assist land use planning processes in the Okanagan Basin. <http://cmnmaps.ca/OKANAGAN/>

## Publications

**Green Bylaws Toolkit for Conserving Sensitive Ecosystems and Green Infrastructure:** Brings together examples of local government best practices and points to specific bylaws that can help communities protect their green infrastructure. [www.greenbylaws.ca](http://www.greenbylaws.ca)

**Taking Nature's Pulse: The Status of Biodiversity in British Columbia:** A comprehensive, science-based assessment of the province's natural environment. Its purpose is to assist British Columbians in making informed choices regarding biodiversity. It was developed in 2008 by Biodiversity BC, a partnership of government and non-government organizations with a mandate to produce a biodiversity strategy for British Columbia. [www.biodiversitybc.org/EN/main/where/132.html](http://www.biodiversitybc.org/EN/main/where/132.html)

**Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia:** Intended to assist people who are involved in planning, implementing, reviewing and/or approving land developments in BC's urban and rural areas. It provides guidelines for the maintenance of environmental values during the development of urban and rural lands and information on ways that environmental protection and stewardship can benefit the community, the property owner, and the developer, as well as the natural environment. <http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare2012/>

**Conservation Covenants - A Guide For Developers and Planning Departments:** Provides information on the process, costs, and potential tax consequences of establishing conservation covenants. [http://ltabc.ca/images/covenants\\_for\\_developers\\_planners.pdf](http://ltabc.ca/images/covenants_for_developers_planners.pdf)

**A New Climate for Conservation Nature, Carbon and Climate Change in British Columbia:** Explores the role of nature conservation in a climate action strategy for ecological adaptation and ecological mitigation, with the key recommendation to develop a comprehensive and integrated Nature Conservation and Climate Action Strategy for BC. [http://cpawsbc.org/upload/NewClimate\\_report\\_CPAWS.pdf](http://cpawsbc.org/upload/NewClimate_report_CPAWS.pdf)

**Planning for Biodiversity: A Guide for Farmers and Ranchers:** Designed for farmers and ranchers who wish to increase their understanding of biodiversity and what it means to their operations. It offers ideas on how agricultural producers can manage for biodiversity and provides tools for doing so. [http://www.agf.gov.bc.ca/resmgmt/EnviroFarmPlanning/EFP\\_Biodiversity\\_Guide/Biodiversity\\_Guide\\_toc.htm](http://www.agf.gov.bc.ca/resmgmt/EnviroFarmPlanning/EFP_Biodiversity_Guide/Biodiversity_Guide_toc.htm)

**Guidelines and Best Management Practices documents:** Approaches based on known science that, if followed, will help ensure proposed development activities are planned and carried out in compliance with the various legislation, regulations, and policies that apply to the activities. This website includes provincial guidelines and BMPs on maintaining the viability of native amphibian and reptile populations in urban and rural environments, protecting raptors during land development, and appropriate development near wetlands, among other topics. It also contains several region-specific guidelines and BMPs related to biodiversity conservation. [www.env.gov.bc.ca/wld/BMP/bmpintro.html](http://www.env.gov.bc.ca/wld/BMP/bmpintro.html)

**Invasive Plant Council of BC, Local Government Toolkit for Invasive Plant Management and other resources:** This is a guide for local government published by the Invasive Species Council of BC, which has a rich website on this topic. <http://www.bcinvasives.ca> See especially the overview of legislation on invasive plants, summary of funding options to manage invasives and outreach materials that could be used to engage the public on biodiversity protection. See also their “Outreach materials” under “Resources”.

**British Columbia Sustainable Winegrowing Program:** Aims to foster grape and wine production and winery hospitality services that enhance environmental quality and the resource base on which the industry depends, is economically viable, and improves quality of life for growers, producers, and society as a whole. [www.bcwgc.org/programs/bc-sustainable-winegrowing-program](http://www.bcwgc.org/programs/bc-sustainable-winegrowing-program).

## Non-government Organizations

There are many stewardship and land acquisition programs being undertaken by non-government organizations and land trusts across British Columbia. Many of these groups work in cooperation with senior and local governments to achieve shared goals and are actively involved in the SOSCP partnership – see [www.soscp.org](http://www.soscp.org) for list of partners and their contact information.

Organizations with a province-wide or broad regional scope include:

- B.C. Nature (Federation of B.C. Naturalists) [www.bcnature.ca](http://www.bcnature.ca)
- Ducks Unlimited Canada <http://www.ducks.ca/your-province/british-columbia/>
- Land Trust Alliance of B.C. [www.landtrustalliance.bc.ca](http://www.landtrustalliance.bc.ca)
- Nature Conservancy of Canada (B.C.) [www.natureconservancy.ca](http://www.natureconservancy.ca)
- Nature Trust of B.C. [www.naturetrust.bc.ca](http://www.naturetrust.bc.ca)
- Salmon Safe BC [www.salmonsafe.org/bc](http://www.salmonsafe.org/bc)
- TLC The Land Conservancy of British Columbia [www.conservancy.bc.ca](http://www.conservancy.bc.ca)
- Community Mapping Network [www.cmnbc.ca](http://www.cmnbc.ca)
- Okanagan Conservation Planning <http://okcp.ca>



## APPENDIX B

### Federal and Provincial Legislation of Significance to Biodiversity Management

#### Federal Legislation

**Canadian Environmental Assessment Act (CEAA)** - legislated requirement to review environmental impacts of major projects, although it is limited to projects dependant on certain federal government approvals or funding, or in some cases where the federal government is the project proponent. An activity in contravention of the Fisheries Act can be used to trigger an assessment under the CEAA, or the CEAA can be used to challenge a lack of enforcement under the Fisheries Act.

**Canadian Environmental Protection Act** - an amalgam of several acts concerning environmental standards, protection and penalties for violation. It deals primarily with regulation of pollution.

**Canada National Parks Act** - Maintains and restores the ecological integrity of Canada's national parks.

**Canada Wildlife Act** - allows for the designation of National Wildlife Areas, lands set aside for conservation purposes, such as the Vaseux-Bighorn National Wildlife Area. Also directs federal government wildlife research and education activities.

**Fisheries Act** - protection of fish and fish habitat from destructive or deleterious activities. Also includes management provisions to maintain the productive capacity of fish habitat. Act affects all land development activities, requiring review and authorization of development proposals that may directly affect fish habitat. A powerful tool for managing land use impacts on aquatic biodiversity.

**Migratory Birds Convention Act** - regulates the hunting and use of migratory birds, as well as disturbance to nesting habitat, eggs, and shelters. Vaseux Lake Migratory Bird Sanctuary is a part of a network of protected areas under this legislation

**Species at Risk Act (SARA)** – protection of endangered or threatened organisms and their habitats and management of species which are not yet threatened, but whose existence or habitat is in jeopardy. The Act designates COSEWIC, an independent committee of wildlife experts and scientists, to identify threatened species and assess their conservation status. COSEWIC then issues a report to the government, and the Minister of the Environment evaluates the committee's recommendations when considering the addition of a species to the List of Wildlife Species at Risk.

## Provincial Legislation

**Agricultural Land Commission Act** – sets the legislative framework for the establishment and administration of the Provincial agricultural land reserve program. Establishes the Provincial Agricultural Land Commission and gives it the mandate to: preserve agricultural land; encourage farming on agricultural land in collaboration with other communities of interest; and encourage local governments, first nations, the government and its agents to accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

**Community Charter** - provides all municipalities with a framework for their core areas of authority, including broad powers; taxation; financial management; procedures; and bylaw enforcement.

**Environmental Assessment Act** (BCEAA) - similar to the CEAA, triggered by provincial projects. When both CEAA and BCEAA legislation is triggered, the provincial process is used with the addition of steps from the CEAA to address any outstanding issues only covered by the CEAA.

**Fish Protection Act** - includes a number of important provisions that prohibit dams, designate sensitive streams and limit Water Act approvals and licenses on sensitive streams, allow development of legally binding recovery plans for sensitive streams, and allow the province to require local governments take actions to protect fish habitat.

**Riparian Areas Regulation** (RAR) - A tool under the Fish Protection Act that requires local governments to assess land use activities affecting riparian areas during the development approvals process. Developers must retain a Qualified Environmental Professional (QEP) to assess the potential for harmful alteration, disruption or destruction (HADD) of riparian fish habitat (the federal Fisheries Act would cover in-stream activities).

**Forest Act** – one of two main pieces of legislation that govern logging on BC's publicly owned forest lands (the other being the Forest and Range Practices Act). Primary focus is determining the rate of logging, granting tenure rights to Crown (public) timber and rules for administration of tenures, designating forest land for administrative purposes, and establishing rules for logging business.

**Forest and Range Practices Act** - regulates the practice requirements for the logging and ranching industries. Incorporates both planning requirements and on-the-ground practices requirements.

**Land Act** - main legislation governing the disposition of provincial Crown (i.e. public) land in BC. Crown land is any land owned by the Province, including land that is covered by water, such as the foreshore and the beds of lakes, rivers and streams.

**Local Government Act** - delegates extensive powers to regulate private land use activities to local governments. Legislation requirements include the creation of Regional Growth Strategies and Official Community Plans, tools that direct urban development.

**Park Act** – main legislation governing protected areas in British Columbia. It provides for the designation and administration of provincial parks, recreation areas, and nature conservancy areas.

**Water Act** - regulates water use, requiring licenses to access surface waters. As critical limits on the ability of watersheds to meet water demands are reached, this act must be used to negotiate the allocation of those limited water flows.

**Weed Control Act** – aim is to protect natural resources and industry from the negative impacts of foreign weeds. The Act imposes a duty on all land occupiers to control designated noxious plants, which are typically non-native plants that have been introduced to British Columbia without the insect predators and plant pathogens that help keep them in check in their native habitats.

**Wildlife Act** - Allows for the creation of Wildlife Management Areas (WMA), sites for the protection of wildlife habitat while allowing certain types of human activities, on lands held by the provincial government directly or through lease. WMA are considered a tool to protect wildlife when other protection measures are considered too restrictive on the existing land uses (e.g. forestry, grazing, recreation, agriculture) in the area. At this time, the Wildlife Act provides almost no protection of habitat for species. Although there is enabling legislation to act on Species at Risk, little has been done with it.

**Wildlife Amendment Act 2005**: changes to the provincial Wildlife Act, intended to enhance protection for species that are at risk of extinction.





