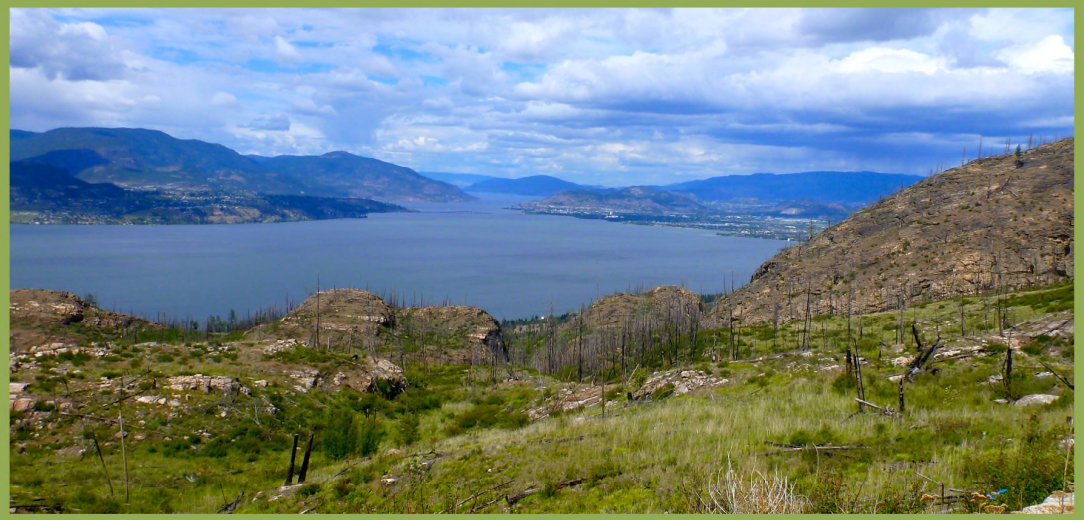

Keeping NATURE in Our Future

A Biodiversity Conservation Strategy for the Okanagan Region

(including parts of the Shuswap, North/Central/South Okanagan and Similkameen Valleys)

Okanagan Collaborative Conservation Program
South Okanagan Similkameen Conservation Program

Okanagan Collaborative Conservation Program and South Okanagan Similkameen Conservation Program. 2014. A Biodiversity Conservation Strategy for the Okanagan Region.

This document can be found at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389.

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PREFACE:

In 2009, the South Okanagan Similkameen Conservation Program (SOSCP) initiated work with partners to assess the status of biodiversity and develop recommendations to maintain biodiversity in the Regional District of Okanagan - Similkameen. A two-step approach was used, with the analysis methods comprising one document, and key findings plus future strategic directions forming a separate strategy document. Specific conservation opportunity maps and primers were also developed for each electoral area and municipality.

Building on the work of the SOSCP, the Okanagan Collaborative Conservation Program (OCCP) began an analysis of biodiversity for the Central and North Okanagan in 2011. Following a similar methodology as the South Okanagan - Similkameen, the OCCP established comparable information for the North and Central Okanagan Regional Districts. The OCCP and SOSCP then worked collectively to conduct an analysis and establish the biodiversity strategy for the entire Okanagan Region.[1] The Biodiversity Conservation Strategy for the Okanagan Region is a holistic approach, providing analyses, key findings and future strategic directions that incorporate all three regional districts and their member municipalities.

Additional companion documents that support the Biodiversity Conservation Strategy for the Okanagan Region have been developed. These documents include the guide Designing and Implementing Ecosystem Connectivity in the Okanagan and Case Studies from the North and Central Okanagan that support the Biodiversity Conservation Strategy for the Okanagan Region. The guidance document on ecosystem connectivity is a tool to assist local and senior governments and land managers to support biodiversity conservation by retaining and restoring ecosystem connectivity. The case studies illustrate how the analysis data can be used in land use planning and show examples of other projects and initiatives that support the strategic directions identified in this Strategy.

[1] For the purposes of this Strategy the Okanagan Region includes drainages flowing into the Okanagan River, and the portions of the Similkameen, Kettle and Shuswap Rivers that lie within the three Okanagan regional districts: Regional District of North Okanagan (RDNO), Regional District of Central Okanagan (RDCO) and Regional District of Okanagan – Similkameen (RDOS).

The *Keeping Nature in Our Future Series* provides a platform for sharing information.[2] The information is intended as guidance for the region and a tool for local and senior governments. Implementation and use of the information in these documents will vary depending upon the level of government and the scale at which it is used. It is anticipated that additional materials will be added to the Series, such as more examples of how the Strategy is or could be implemented, action plans, and monitoring and evaluation reports.

Keeping Nature in our Future Series

Analyses:

- A Biodiversity Conservation Analysis for the South Okanagan-Similkameen Region
- A Biodiversity Conservation Analysis for the North and Central Okanagan Region
- A Biodiversity Conservation Analysis Summary for the Okanagan Region

Strategies:

- A Biodiversity Conservation Strategy for the South Okanagan – Similkameen
- A Biodiversity Conservation Strategy for the Okanagan Region (including parts of the Shuswap, North/Central/South Okanagan and Similkameen Valleys)

Supporting Documents:

- Designing and Implementing Ecosystem Connectivity in the Okanagan
- Implementation Case Studies from the North and Central Okanagan for the Biodiversity Conservation Strategy for the Okanagan Region

[2] The documents in the Keeping Nature in our Future series and the maps that form part of the analyses are available at: http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389

ACKNOWLEDGEMENTS

The Okanagan Collaborative Conservation Program (OCCP) and the South Okanagan Similkameen Conservation Program (SOSCP) have integrated information from both programs' projects, using the South Okanagan-Similkameen Biodiversity Conservation Strategy as a model to create *Keeping Nature in Our Future: A Biodiversity Conservation Strategy for the Okanagan Region*. Together these groups represent more than 80 partners and countless participants working to support conservation goals across the three regional districts that encompass the North, Central, and South Okanagan and Similkameen areas.

We thank our many partners, advisors, agencies, technical experts and observers. Without their support, this project would not have been possible. We recognize our funders for both strategies that form the basin document:

1) **South Okanagan Similkameen**: Regional District of the Okanagan Similkameen; Environment Canada: Canadian Wildlife Service and Habitat Stewardship Program; Province of B.C., Ministry of Forests, Lands and Natural Resource Operations; Vancouver Foundation; Habitat Conservation Trust Foundation; Real Estate Foundation of B.C.; and Great Northern Landscape Conservation Cooperative.
2) **North and Central Okanagan**: Regional District of Central Okanagan and Regional District of North Okanagan; Real Estate Foundation of B.C., Vancouver Foundation; Environment Canada, Canadian Wildlife Service and Habitat Stewardship Program; Okanagan Basin Water Board; and Great Northern Landscape Conservation Cooperative.

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* for both projects 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 South Okanagan-Similkameen document which was used to guide development of this basin-wide document. Alison Peatt (Bearfoot Resources Limited) helped create this basin-wide document by integrating the South Okanagan-Similkameen and the North-Central information and provided editing assistance. Ethan Krindle provided comments related to local government laws and regulations. We wish to thank Dr. Lael Parrot (UBC Okanagan Campus) and her team for their work on connectivity planning in the Okanagan. Margaret Holm (Cannings Holm Consulting) provided final documented editing and Salina Curtis (eMBe Marketing and Communications) undertook the graphic design.

Finally we acknowledge the invaluable project coordination and assistance provided by Bryn White (SOSCP Program Manager), Carolina Restrepo Tamayo (OCCP Program Coordinator) and Susan Latimer (OCCP Project Manager).

EXECUTIVE SUMMARY

The Okanagan Valley is a precious resource for all species that depend on it, not the least of which is humans. As you can appreciate, our valley's wealth, prosperity and livability are inextricably linked to our ecosystems. The fact that nature does not respect political boundaries suggests that managing it requires a more collaborative and integrated approach than currently exists.
(Mayor Walter Gray, City of Kelowna. biodiverCities: a primer on nature in cities [2014])

The Okanagan region is an exceptional place with some of the greatest concentrations of species and ecosystems in Canada. Many are found nowhere elsewhere in the country and in some cases the world. Wildlife and natural areas in the Okanagan region are in trouble because of impacts from our towns and cities, agriculture, and other human activities on the land and water. By investing in "Keeping Nature in our Future", we can help to protect our rich natural assets as a legacy for future generations. As the region's population continues to grow, this strategy provides the necessary information to ensure that stewardship of the natural environment is considered in all decisions on urban, suburban, resource, recreational, and rural development.

A conservation strategy for the future, *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. The strategy provides a "big-picture" view of the region and a framework for considering conservation options for ecosystems, watersheds and all land tenures. Our vision for the Okanagan region is an area rich in biodiversity that provides valuable habitat for plants and animals. Healthy ecosystems and networks of natural areas are valued and conserved by decision-makers, communities and citizens.

This biodiversity strategy was developed through a collaborative and consultative process, guided by committees that included local, federal and provincial governments; First Nations observers and non-profit organizations.

The strategy identifies guiding principles, and an analysis (maps, tables and discussion) of the status of nature in the Okanagan region. The analysis includes four key components: conservation ranking of ecosystems, assessment of relative biodiversity (or locations of 'hotspot' priorities for conservation), identification of connections between natural areas (to support animal movement), and assessment of land ownership (to help identify tools for conservation). Key findings focus attention on valley bottom lands where conservation values are highest and most threatened by land use and development. Strategic directions for both local and senior (provincial and federal) governments are identified.

This strategy provides a scientific basis for including site-specific requirements in development approvals such as the conditions and standards to protect sensitive ecosystems and guidance to support design and maintenance of connections between natural areas. Local governments will also have a practical tool 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.

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1.0 A CONSERVATION STRATEGY FOR THE FUTURE

"A society is defined not only by what it creates, but by what it refuses to destroy."
(John Sawhill, former president/CEO of The Nature Conservancy)

The Okanagan region 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 this country's most endangered natural systems. The dry climate and desert-like habitats of the south Okanagan and Similkameen river valleys and the grasslands of the north and central Okanagan are an extension of the Columbia Basin USA to the south, forming an important corridor and a channel of movement for wildlife through to the interior grasslands of central British Columbia.

Many of the wildlife and natural areas in the Okanagan region are disappearing. This won't stop unless we accept responsibility for what is happening and work together to change the results. We have to plan for protection of natural areas and the protection of biodiversity, or lose them and the ecosystem services[3] on which we depend.

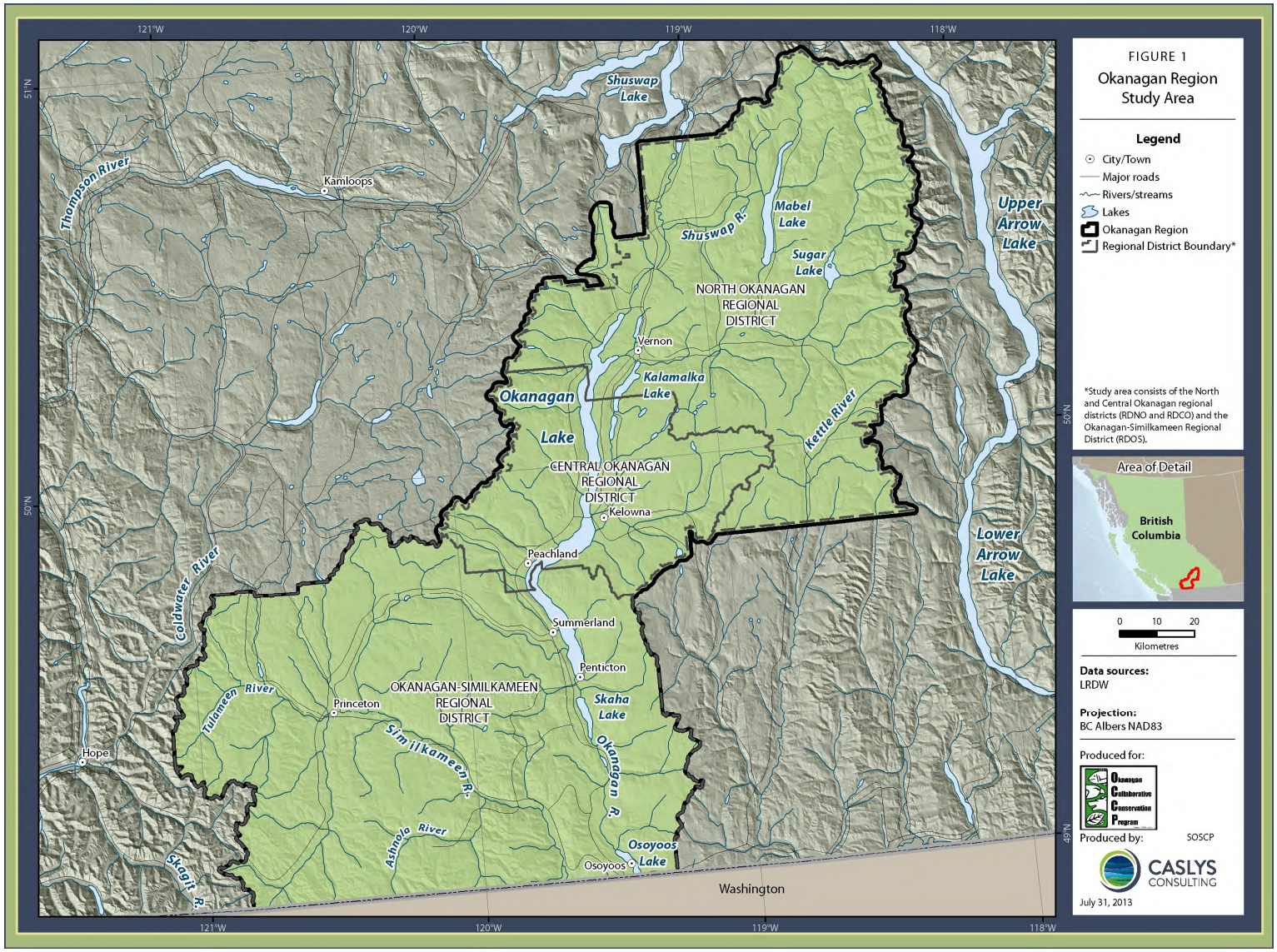
Residents of the Okanagan region appreciate and value the contribution of the natural environment to our economy, quality of life, and the unique character of our communities. This biodiversity strategy provides tools to sustain these values. By investing in *"Keeping Nature in our Future"*, we can help 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 considered in all decisions on urban, suburban, resource, recreational, and rural development.

1.1 What is "Keeping Nature in our Future"?

Keeping Nature in Our Future is a Biodiversity Conservation Strategy for the Okanagan Region. The geographic region covered by the strategy includes the South Okanagan-Similkameen, Central Okanagan, and North Okanagan regional districts and their member municipalities and electoral areas (see Figure 1).

[3] Ecosystem services are benefits healthy ecosystems provide to people such as fresh air and clean water.

Figure 1: Okanagan Region Biodiversity Study Area



The study area lies within the traditional territories of the Syilx[4] and Splatsin[5] Nations. The region includes the rivers that flow to the Columbia River system (Okanagan River, Similkameen River, and Kettle River) and a river that flows into the Fraser River system (Shuswap River) as defined by the boundaries of the three regional districts.

This strategy provides a plan for protecting the health and resilience[6] 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[7], watersheds[8] and all land tenures.

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.

This Biodiversity Conservation Strategy for the Okanagan region provides a foundation for information about biodiversity, including identifying strategic directions and opportunities for conservation. The strategy defines biodiversity protection as a key component of regional sustainability and a prosperous and resilient economy. It also complements other regional initiatives like climate action, renewable energy, water quality, food security, sustainable agriculture, transportation and tourism. Focusing on the challenges posed to biodiversity by population growth, *Keeping Nature in Our Future* offers mapping and strategies to help integrate biodiversity into land use planning and development.

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[4] The Okanagan (Syilx) people occupy an area which extends over approximately 69,000 square kilometers. The northern area of the territory is close to the area of Mica Creek, just north of Revelstoke, B.C., and the eastern boundary is Kootenay Lake. The southern boundary extends to the vicinity of Wilbur, Washington and the western border extends into the Nicola Valley. There are seven member bands in Canada with additional member groups across the Canada-US border.

[5] Splatsin is the southernmost community of the Secwepemc nation. The Secwepemc Nation consists of seventeen First Nations Communities, which historically were set into geographical groupings that became divisions with caretaker responsibilities on behalf of the nation. Splatsin is a part of the Sexqeltkemc (Shuswap Arrow Lakes Division) Division of the Secwepemc Nation. Splatsin's area of Yucwmenlucwu (stewardship) is from the Mica Creek area in the north to Kettle Falls Washington USA in the south and Monte Lake in the west.

[6] Resilience describes the capacity of an ecosystem to tolerate disturbances, resist damage and recover quickly.

[7] An ecosystem is a biological environment that includes all the living organisms as well as all non-living components they require 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.

[8] 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 consultative process, guided by two steering committees. One committee in the South Okanagan-Similkameen was led by the South Okanagan-Similkameen Conservation Program (SOSCP), and another in the North-Central Okanagan was led by the Okanagan Collaborative Conservation Program (OCCP). Subsequently, the strategic results were combined to form this Okanagan region strategy. Collectively, committee membership included local government planners, federal and provincial government staff, First Nations observers, and non-profit organizations who came together and represented organizations with diverse backgrounds.

The SOSCP is a partnership comprised of fifty non-governmental, government, academic, and First Nations organizations working together to conserve biodiversity. For the past twelve years, the SOSCP has provided a way for the partners to jointly set priorities, collaborate and coordinate their work, resulting in effective conservation efforts. The OCCP is a partnership comprised of thirty-six partners from three levels of government, land trusts, stewardship outreach organizations, and academia that came together in 2006. The OCCP and SOSCP are collaborating to build a basin-wide approach to conservation and biodiversity protection.[9]

The study area for this strategy overlaps the traditional territories of both the Syilx and Splatsin First Nations. Although some First Nations Representatives acted as observers in the preparation of the strategy, the opportunities to integrate biodiversity protection with Traditional Ecological Knowledge and Aboriginal Traditional Knowledge have not been addressed by this report. Both the SOSCP and OCCP wish to continue to talk with the Syilx and Splatsin First Nations about potential conservation opportunities and efforts to implement this strategy within the region.

[9] For more information about the OCCP programs and accomplishments, see the following website http://okcp.ca/ and for more information about the SOSCP programs and accomplishments, see the following website http://www.soscp.org/

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 early in the decision-making process to promote environmentally friendly development and reduce development costs.
- Supports the responsibility of municipal and regional governments to foster environmental well-being. [10]
- Assists senior, municipal and regional governments to meet legislative requirements and policy mandates for biodiversity protection.
- Assists local governments to meet B.C. 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.

[10] 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 E-publishing. http://www.bclaws.ca

1.3 Building on a Legacy – Links to Other Plans

A number of past planning reports and regional strategies have paved the way for the development of *Keeping Nature in Our Future*. Current Regional Growth Strategies for each of the three regional districts aim to ensure that growth in the Okanagan takes place in a sustainable manner. They include environmental policies and support for a regional approach to biodiversity conservation and ecosystems protection. Development of biodiversity conservation strategies also complement other sustainability planning within the region.

Various other regional and sub-regional strategies have identified the need for conservation measures to balance economic growth with long range ecological health and sustainability. Examples include the South Okanagan Conservation Strategy,[11] the Okanagan Shuswap Land and Resource Management Plan,[12] A Strategy to Achieve Green Sustainable Economic Development in the Okanagan and Similkameen Valleys,[13] City of Vernon Hillside Guidelines,[14] City of Vernon Environmental Management Areas Strategy,[15] Shuswap River Watershed Sustainability Plan,[16] Landscape Recovery Strategy for the South Okanagan and Similkameen,[17] Our Regional Parks: The Central Okanagan's Official Plan for the Regional Park System[18] and Okanagan Basin Water Board Water Sustainability Plan[19]. Thus, *Keeping Nature in Our Future* is not a plan looking for an audience, but rather a plan that seeks to make it easier to achieve goals and strategies already identified in many other plans.[20]

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

[12] 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

[13] 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

[14] Available at the City of Vernon website, http://www.vernon.ca/ocp/hillside_guidelines_may202008.pdf

[15] Available at the City of Vernon website, http://www.vernon.ca/ocp/ema_strategy_final.pdf

[16] Available at the Regional District of North Okanagan website, http://www.rdno.ca/index.php/services/planning-building/planning-projects/shuswap-river-watershed-sustainability-plan/

[17] Prepared by the South Okanagan-Similkameen Conservation Program, 2007.

[18] Prepared by residents and park users of the Central Okanagan with assistance from Parks and Recreation Department, Regional District of Central Okanagan see website https://www.regionaldistrict.com/media/15935/Bylaw0884.pdf

[19] Okanagan Basin Water Board Water Sustainability Plan see website http://www.obwb.ca/library/okanagan-sustainable-water-strategy/

[20] For example, local government plans like Official Community Plans, Sector Plans etc.

1.4 The Basis for Conservation Planning - Vision, Goals & Guiding Principles

The following vision, goals and guiding principles provided a framework for *Keeping Nature in Our Future* and represent opportunities and introduce actions that would benefit biodiversity conservation in the region. The intent of identifying strategies is to describe conservation aspirations and encourage partners who share certain interests to collaborate on efforts to achieve individual strategies. With this strategy, we propose options for local government and senior government partners to work on high-priority biodiversity actions, but we recognize that each partner will choose areas of focus, determine any goals they share with this strategy and whether collaboration with other partners will occur.

Vision

The Okanagan region 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.[21]

Goals

1. Develop and manage a connected, biologically diverse network of ecosystems and natural areas across all land uses and tenures.

2. Ensure that decision-makers and citizens have the information and tools needed to protect, enhance, and restore important sensitive ecosystems, habitats, natural corridors and species.

3. Identify conservation areas that can be used to support development of a diverse system of greenways, parks, and protected areas in the Okanagan region that increases human connection to nature, sustains sensitive ecosystems, respects working landscapes, and increases opportunities for residents and visitors appreciate and enjoy natural areas.

4. Promote a cooperative, collaborative approach to conservation and restoration of natural areas throughout the entire Okanagan region amongst all levels of government, public and private organizations and property owners.

[21] Healthy ecosystems provide ecological services such as clean water, pollination, flood protection, and soil protection. See page 10 for more examples of ecosystem services.

Guiding Principles

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

Protect habitats that are characteristic of our region. The Okanagan region is one of the most biologically diverse regions in Canada. Habitats including key species like Antelope-brush, that occur nowhere else in Canada, are vitally important to the survival of species at risk. Slowly but surely, local landscapes are changing and these habitats are disappearing. Seniors and elders remember what used to be here. There are historical pictures, but if remaining natural landscapes are not protected, the unusual biodiversity of the Okanagan will be lost.

Connect habitat areas. Connect parks and conservation lands by conserving or protecting linear corridors between them. Watercourses, riparian areas, and other greenways offer good opportunities for wildlife to travel between areas needed for their survival, such as seasonal ranges. They also allow healthy populations of animals and plants to move and be distributed among various habitat areas, thereby improving the viability and resilience of the ecosystems they inhabit.

Maintain a matrix of lands outside of core areas and corridors. Retaining natural areas is a critical part of biodiversity conservation, but areas modified by human use can also provide habitat for some species. Backyards, old fields, greenways, and other vegetated areas can also be important to biodiversity. Matrix lands can contribute 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 a regional perspective. Consideration of human influences 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 hurt ecosystem health and limit its capacity to provide ecosystem services. Looking at impacts and effects on a larger scale (e.g. region or sub-region) helps provide perspective about what problems are particularly significant and found throughout the region, For example, habitat loss and fragmentation is easier to see at a regional level.

Share responsibility. 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 precautionary decision-making. 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, where sensitive, high priority ecosystems are at risk.

2.0 NATURE AND BIODIVERSITY

"An ecosystem is a tapestry of species and relationships. Chop away a section, isolate that section, and there arises the problem of unraveling." (From: David Quammen, The Song of the Dodo, 1996.)

2.1 Why Is Nature Important to the Okanagan Region?

Biodiversity provides personal opportunities for recreation, spiritual renewal, cultural pursuits and experiences in nature; it is linked to important ecological services like clean water, regulated climate and food resources upon which our economy depends.

Essential to our health and prosperity

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. These modified lands can play an important role in maintaining local biodiversity particularly where native plants are retained or restored through planting. While these modified lands make important contributions, they cannot by themselves support native species, ecosystems and the full suite of ecological services on which healthy communities depend. Overall, it makes sense to protect natural areas and receive ecosystem services as another benefit, rather than relying on highly technical and expensive substitutes that can be both ineffective and costly. Evidence shows that contact with nature promotes health and wellbeing.[22] There are known beneficial physiological effects when people encounter, observe, or otherwise positively interact with animals, plants, landscapes and wilderness.

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

[22] 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.

The Importance of Pollination

Pollination is the transfer of pollen between plants by animals or by non-biological forces such as wind. One-third of the food consumed by people is a result of pollination by animals. Most animal pollination is carried out by native insects such as bees, beetles, wasps, flies, butterflies, and moths. Retaining natural areas within communities is vitally important to support the productivity of agricultural lands associated with urban development.

Basic to our economy

Nature plays a critical role in the economy of the Okanagan 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 various 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 Okanagan region. 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. The Okanagan region provides abundant tourism opportunities: a place to enjoy nature, culture, cuisine, sports, festivals and many other pleasures within a short distance from high-quality accommodations and amenities. 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.

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 on direct wildlife viewing, defined as trips away from home where the main purpose is to watch, feed, photograph or study wildlife.[23]
- Approximately 4.8 million people reported viewing wildlife in British Columbia in 1996; most commonly, people viewed wildlife around their home or cabin (47% of respondents).[24]
- When all spin-off impacts were considered, nature-based tourism businesses generated $1.55 billion in revenues and $783 million in Gross Domestic Product for British Columbia in 2001. 11% of those businesses operate in the Thompson Okanagan region.[25]

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.[26]

Protecting the biodiversity of the Okanagan region 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.

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[23] Reid, R. 1998. Economic Value of Wildlife Activities in British Columbia. Wildlife Branch, Ministry of Environment, Lands and Parks.

[24] Ibid.

[25] 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

[26] 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

Core Value – Nature is more than what matters to people

Ultimately biodiversity cannot be valued only by what it buys us or what we like about it. Biodiversity has intrinsic value, separate from the value we place on it ourselves. 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 – thriving 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 B.C. Interior. [27]

[27] 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, B.C.

2.2 How is Nature in Danger?

Population growth, land conversion and land use impacts

Population growth and accelerating development in the Okanagan region 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. Development is now moving up the valley slopes and affecting ecosystems previously not affected. These fragile upslope areas often have slope stability concerns which can increase disturbance at the site and often result in down-slope impacts.

Development outside of core communities and the cumulative loss of smaller habitat patches is reducing total biodiversity and connections between ecosystems. Linear structures such as highways and fence lines can fragment habitats and create biodiversity "sinks" where populations of a particular species cannot survive because they are isolated from other populations.[28] Recreational and urban development along lake and river shorelines reduces access to water for wildlife and reduces upland-foreshore connectivity.

[28] Pulliam, H.R. 1988. Sources, sinks, and population regulation. American Naturalist. 132:652–661.

Extent of Changes to Natural Areas in Valley Bottoms

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

Uncommon on the landscape and important to many of the South Okanagan's rare species (some at risk of extinction), antelope-brush ecosystems between Osoyoos and Penticton 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. If this trend continues, all of BC's antelope-brush not conserved in parks or conservancy lands may be gone by the year 2020.

Smaller areas were also analysed for ecosystem loss, including the City of Kelowna and the City of Vernon. Percentage losses of certain ecosystem types were higher in the Kelowna area than for the entire Okanagan Valley. The analysis also revealed that 100 percent of the Water Birch – Red-osier Dogwood riparian plant community is gone from the City of Vernon. [29]

Agriculture, ranching, forestry, energy and mining developments also contribute to ecosystem conversion and degradation through land clearing, road building, and tree harvesting. Agricultural expansion, such as vineyard development and fencing, excludes wildlife, impedes their movement between habitats and results in loss of important ecosystems, particularly in the valley bottom areas affecting rare grasslands and shrub-steppe. Poor livestock management practices, such as continuous season-long grazing, degrade native plant communities, introduce weeds, and reduce wildlife habitat. Riparian vegetation is particularly vulnerable and can sometimes be completely eliminated.

[29] Lea, Ted. 2008. Historical (pre-settlement) Ecosystems of the Okanagan Valley and Lower Similkameen Valley of British Columbia – pre-European contact to the present. Davidsonia 19:1: 3-35. http://www.davidsonia.org/files/Okanagan_ecosystems_Lea.pdf

Invasive species

Invasive Species Present Challenges in the Okanagan

Beyond well-known invasive species like knapweed, there are new species arriving at Canadian borders each year. Hoary alyssum, *Berteroa incana*, a native of Europe and Asia, produces a large number of seeds per plant which are spread by vehicles, wildlife and people. The plant is a threat to both agricultural lands and natural habitats, invading irrigated alfalfa fields, rangelands and native grasslands. It is toxic to horses and even small amounts can contaminate hay.

Outreach activities help to increase public awareness of actions needed to avoid the spread or lessen the impact of invasive species. For example, the "Don't move a mussel" campaign seeks to stop the establishment of Zebra Mussels in the Okanagan. See www.dontmoveamussel.ca/home to learn more about this program, led by the Okanagan Basin Water Board. The Invasive Species Council of BC has ideas and resources for dealing with the growing list of invasive plant and animal species www.bcinvasives.ca.

Hoary alyssum

Invasive species are non-native plants or animals that have been introduced to an area and typically thrive in the absence of the predators and diseases that limited their distribution and survival in native ecosystems. Without natural enemies, these invaders are able to out-compete native plants and agricultural crops. Once established, they can be difficult and expensive to control and often require the use of herbicides to prevent further expansion and infestations.

Invasive species exist everywhere that humans have settled and beyond, where they can threaten more remote ecosystems. The spread of invasive species 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 storm-water 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 light and sufficient oxygen in the water, fish and plants are stressed and can die off in large numbers.

Recreation

Areas valued for their recreational attributes are often also important for their biodiversity. While many activities can be managed to minimize impacts, others cannot. Various direct and indirect impacts from recreation activities are difficult to mitigate. Sensitive areas like wetlands benefit from management restrictions to limit recreation impacts.

Off-road vehicles, horse traffic, bikers, and hikers can damage habitat and impact survival of species at risk. Fragile soils can be disrupted and compacted. Disturbed areas are more likely to provide opportunities for invasive species to grow. Areas that are trampled or compacted may be very slow to recover. Trails and roads become barriers to some species and fragment habitat. Many species avoid roads or are more likely to die in areas where roads occur.

Advocates for reducing the impact of recreation use have developed ethical principles for recreation use called "Leave-No-Trace".[30] Recreation use guidelines may succeed in wilderness areas where recreation use is lower and where habitats are robust, but regulation may be necessary in areas of intensive use and higher sensitivity.[31]

Recreation guidelines and regulations help protect sensitive areas, like grasslands, wetlands and areas near creeks, from recreational use.

[30] See http://www.leavenotrace.ca/principles

[31] For example, the Grasslands Conservation Council of British Columbia, in partnership with the province of BC facilitated the development of ***Best Management Practices for Recreational Activities on Grasslands in the Thompson and Okanagan Basins 2004*** and the Stewardship Centre for BC provides various guideline documents to support sustainable recreation use. See for documents like the Grassland Stewardship Guide at http://www.stewardshipcentrebc.ca/

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 in ecosystems. As forests and grasslands make way to development in the Okanagan region, the need for fire suppression increases and natural fire cycles are disrupted. The construction of dams throughout the valley water system deprives downstream systems of floodwaters, causing scouring and the deposition of sediment and nutrients. Infilling of wetlands for agriculture and development reduces the biological diversity of the landscape and results in more runoff and less infiltration and cleansing of water before it reaches the main watercourses. Channelization of the Okanagan River, Mission Creek, and other stream systems to control flooding and provide irrigation has changed the hydrologic regime of the area by cutting off meandering oxbows and wetland areas from the main channel. These landscape changes have far-reaching impacts on species and ecosystems in the Okanagan region.

Biological Soil Crusts are Sensitive to Recreation Impacts

In more arid parts of the Okanagan, vegetative cover is generally sparse. Open spaces are often covered by biological soil crusts, a highly specialized community of cyanobacteria, mosses, and lichens**.** Like the historic canary in a coal mine, these communities act as indicators of environmental stress. Soil crusts also help retain water, reduce erosion, as well as capture nitrogen and carbon. Crusts are vulnerable to trampling damage caused by people, livestock, and vehicles. It takes many years for the biological soil crust to recover from disturbance.

After many years of being impacted by off-road vehicles, a 2012 restoration project at Ritchie Lake in Summerland District, demonstrated rapid recovery of the damaged wetland. (Left photo, 2009 pre-restoration; right photo, 2013 after restoration).

Climate change

Climate change is predicted to bring warmer winters; longer, drier summers; and more frequent extreme weather events in the Okanagan region. These changes will accelerate the competition between human uses and ecological requirements for water. Water demand may lead to more intensive management of the environment, such as more water storage projects, increased use of groundwater sources, expanded diking systems, and transfer of water to areas of greater demand. These management decisions can result in impacts such as reducing stream flows below minimum requirements for ecological functions and species needs.

Climate change will also put pressure on critical habitats, and in turn, on species at risk. Changing climates may force species into areas they have not previously occupied, potentially creating further conflicts with human settlement. [32]

Biodiversity and ecosystem services help people to adapt to climate change. Wetlands, soil, forests and water bodies play a crucial role in absorbing and storing carbon; therefore playing a crucial role in our effort to mitigate climate change. Loss of or damage to ecosystems reduces the capacity to capture and store carbon. The climate system can adjust to change but there appear to be limits. As ecosystems become more altered they lose resilience and more carbon can be released. [33]

2.3 Why is Nature in Danger?

Gradual landscape changes create challenges for nature

Some change is part of natural processes such as fire and erosion, but some change is linked to human activities. Warning signs are evident in abundant wildlife (like urban deer eating our garden plants, Canada geese wandering on our soccer fields, raccoons or black bears in our garbage) and declining wildlife (many species that were once common are declining rapidly). These are not signs that wildlife and people are incompatible, but rather signs that our altered landscape enhances habitat for a few species and damages habitat for others. We can continue to alter landscapes and manage the urban wildlife problems these changes create, but without strong action to protect nature, we will be telling our grandchildren stories about what used to be, not showing them how we have protected nature as their legacy.

[32] Ibid, p. 4.

[33] European Commission. 2009. Nature's role in climate change. Available at http://ec.europa.eu/environment/nature/info/pubs/docs/climate_change/en.pdf

Human settlement in the Okanagan region extends far beyond the memories of life-long Okanagan residents. Many of the changes to the landscape have happened gradually and over long enough time frames that the extent of change is not visible to those who live here now. Science and research gives us clues about the ecosystems and species in the past, based on analysis of soils, pollen, seeds, and remaining vegetation. Photographic records, First Nations oral history, traditional ecological knowledge and archeological records also provide evidence of the past. The picture that emerges is of a valley dominated by grasslands, meandering river corridors and wetlands. Hill slopes were forested, but were more open, with fewer trees and bunch-grass and shrub habitat shaped by frequent fires.

We have this evidence of historical change, but our reference point continues to be what each of us remembers. It is hard to imagine the future that will result if we continue at the same or an accelerated pace of change. The extent of human-induced change over two centuries is startling and poses significant challenges to species and ecosystems. These are challenges we can either mitigate and alter, or continue to ignore. Whether our choice is made consciously, or by default when we fail to act to protect natural areas, our actions will affect the future landscape. If we do not want a future where we can only remember the natural areas we used to enjoy, we must actively work for a future where new generations can enjoy them as well.

Our memories shape our understanding of change in the Okanagan

These photos compare a view of Vernon in 1915 and 2006. If this much change has occurred in 90 years, do we assume we will lose all remaining natural landscapes? Alternately, we could choose to plan for a different future where remaining natural areas are conserved.

Understanding the link between environment and economy

As regional polls indicate,[34] Okanagan residents care about the environment and want green spaces conserved. The funds allocated to this endeavour are inadequate given the economic value of land, especially in the Okanagan. Resources are required to manage that land, and these resources are often the first to be cut in poor economic times. In some cases, we encourage activities promoting economic growth and allow environmental standards to be relaxed because the impacts of economics are felt more directly and on time scales we can comprehend. We don't see investment in our environment as a solution to economic woes; we tend to see environmental protection as an affordable luxury when times are good. We know that the environment brings us clean water, food, oxygen and other natural resources, but we think of this as something that comes for free, without associated cost and investment.

Section 4 of the Biodiversity Conservation Strategy Document entitled, *Strategic Directions and Opportunities for Action*, identifies options to protect and restore environmental resources. There is a choice available to each of us to actively pursue opportunities that will create a future that preserves the legacy of healthy, natural ecosystems throughout the Okanagan region.

Will Meadowlarks be a part of Nature's Future in the Okanagan Region?

Western Meadowlarks herald the arrival of spring in the Okanagan. They have been a common species, but are now declining throughout their range. They are being lost as grassland habitat is developed or impacted by land use. Like money in the bank, biodiversity helps stabilize our environment and protect us from changing environmental conditions. There are growing concerns about declines in common species like Meadowlarks, since they are only one of many other species affected by habitat loss. Actions to manage and conserve biodiversity can help to sustain meadowlarks and ensure that their song and colourful presence will be enjoyed by future generations.

[34] See Appendices 1-A, B and C, "Value for Nature" sections on public opinion polls and surveys.

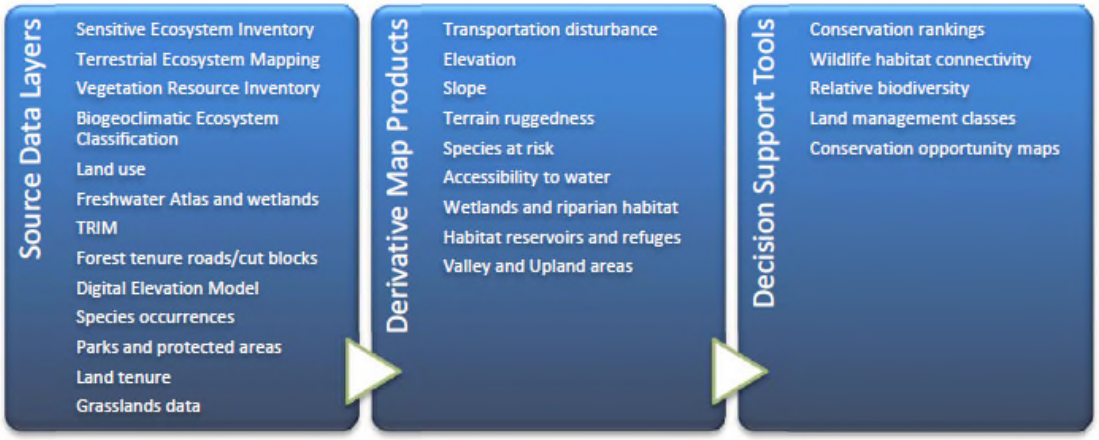
3.0 STATUS OF NATURE IN THE OKANAGAN REGION

"British Columbia's biodiversity is globally significant because of its variety and integrity, but without immediate action is vulnerable to rapid deterioration" (Taking Nature's Pulse: The Status of Biodiversity in British Columbia (2008).)

The status of nature in the Okanagan region was assessed using ecological, environmental, and land ownership data.[35] Smaller local data sets were used to supports gaps in the data sets noted below. 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. This analysis forms the basis for *Keeping Nature in Our Future* and the recommended strategic directions and actions presented in Section 4. Figure 2 provides a visual overview of the analysis.

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 with an understanding of both site-specific and landscape conservation values, as well as the capacity to compare the relative importance of different sites proposed for development. 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.

Figure 2. Biodiversity Conservation Analysis Overview



[35] This information helps provide a regional and sub-regional view of priorities for strategic planning. More information about the methods used to develop the biodiversity conservation analysis is found at the EcoCat website http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=23903 for *A Biodiversity Conservation Strategy for the Okanagan Region* and http://a100.gov.bc.ca/appsdata/acat/documents/r36056/OCCP_methods_1365792681919_9270215144400375a92d8e1c4e6c0c3ecd4234ae2a0ff67356e915a62d814dc8.pdf for *A biodiversity conservation analysis for the North and Central Okanagan Region.*

Status of Biodiversity in the Okanagan Region Relative to BC and Canada

The Okanagan region has unique species and ecosystems. Some are found nowhere else in Canada and others nowhere else in the world. It has 400 species identified as priority 1 and 2 in the BC Conservation Framework, 73 species listed under the federal *Species at Risk Act*, as well as 170 red-listed and 174 blue-listed species as assessed by B.C.'s Conservation Data Centre. For example, the Okanagan supports some of the greatest diversity and largest number of breeding bird species in British Columbia. It is home to 74% of all bird species known to occur in the province and 70% of all species known to breed in the province.[36]

Three of the four biogeoclimatic zones[37] of conservation concern in BC are located in the Okanagan region. These natural areas, which are dominated by bunchgrass, ponderosa pine, and Douglas-fir plant communities, are imperilled provincially, or at high risk of extinction. This conservation concern exists for a variety of reasons including their small size relative to other zones in the province (<5%), and their location in areas of interest for development, intensive land use and other forms of land conversion. Over 80% of the ecosystem communities that make up these zones are of provincial conservation concern. [38]

The analysis in the following sections considers current land use patterns in relation to the original extent of natural habitats. It provides a scientific basis for conserving remaining natural areas and restoring key elements of biodiversity where they have been lost.

Ranking sites helps define high priorities for conservation, but does not define how much conservation effort is required. Ecosystems that are not identified as high-priority still contribute to biodiversity by providing habitat for common species, connecting important habitats, and maintaining watershed functioning.

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[36] Nature Conservancy of Canada. 2006. Okanagan Ecoregional Assessment, Volume 1:9. Available at http://support.natureconservancy.ca/pdf/blueprints/Okanagan.pdf

[37] A biogeoclimatic zone is a geographic area having similar patterns of energy flow, vegetation, and soils as a result of a broadly similar climate.

[38] 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, B.C. 268 pp. Available at: www.biodiversitybc.org

3.1 Highlighting Important Sensitive Ecosystems in the Okanagan Region

The Okanagan region is recognized as a biologically unique area containing many of the province's at-risk ecosystems, habitats and species. Ecosystems in the Okanagan region 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

'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 were categorized into groupings of ecosystems that share similar characteristics, such as vegetation and soils.[39] These include:

- Wetlands including marshes, swamps and wet meadows
- Riparian areas occurring beside streams and rivers, as well as floodplains, gullies and beaches
- Old forest, broadleaf woodlands, and coniferous forests including 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.

Conservation rankings were determined based on the Provincial Conservation Framework, and local sensitive ecosystem priorities. Four conservation ranking classes were used in the maps: very high, high, moderate, and low. A fifth category (no data) was sometimes used to reference the area not covered by analysis.

[39] 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. Available at www.env.gov.bc.ca/ecocat/

Figure 3 – Sample of the Conservation Rankings Map for Vernon area

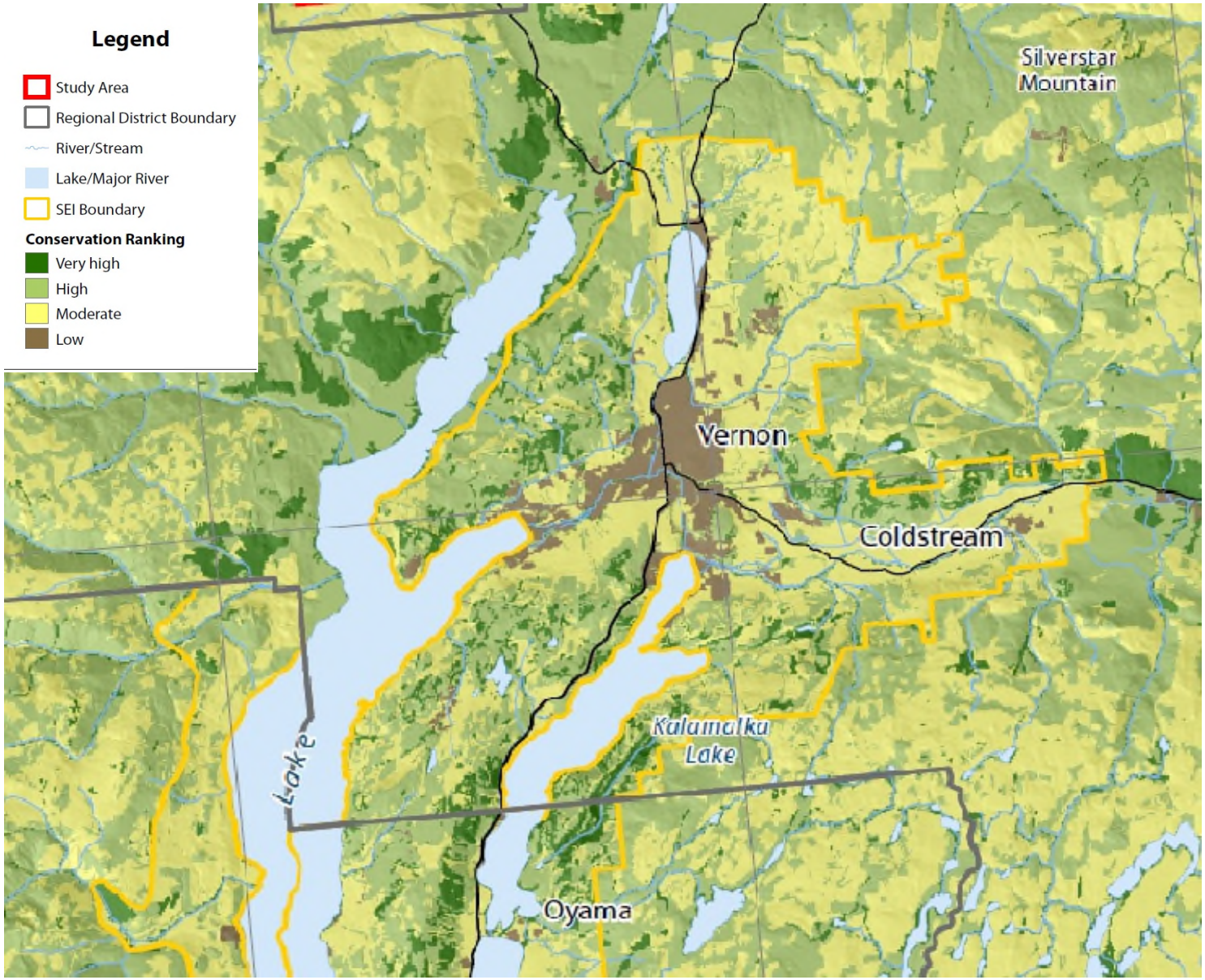
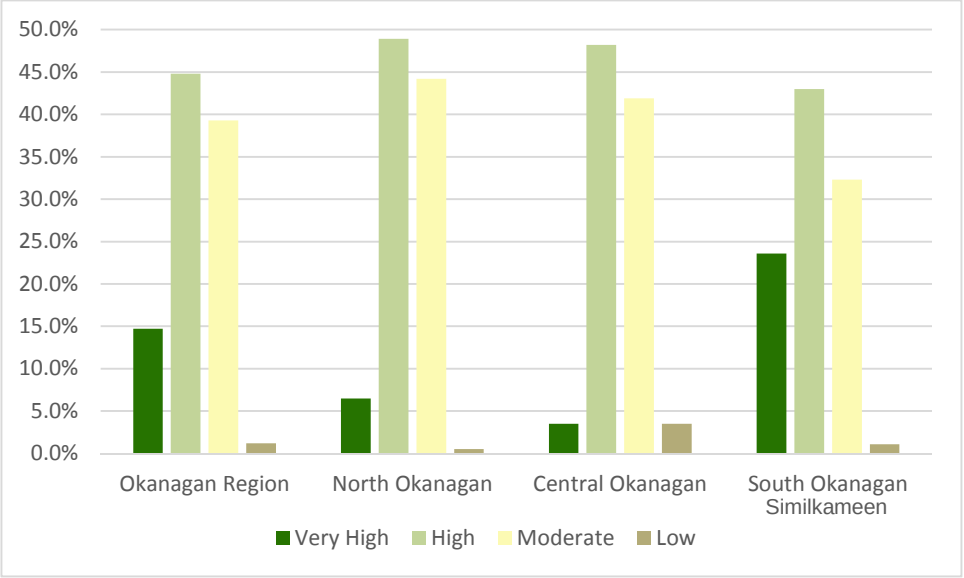


Figure 3 shows a sample area near Vernon mapped for conservation rankings. Conservation rank mapping is available for all areas in the Okanagan region.[40] These maps provide a practical tool that local governments can use to integrate biodiversity protection into policies, plans, and regulations, such as: official community plans; parks and transportation planning; 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.

Figure 4 compares the relative proportions of different conservation ranked lands between regional districts and the overall Okanagan region. This figure highlights the greater proportion of very high and high ranked conservation lands, particularly in the South Okanagan-Similkameen where more than 23% is ranked very high and 43% high for conservation ranking.

Figure 4 – Comparison of Percent Biodiversity Conservation Rank for the region and its regional districts [41]



[40] Small areas of the region are lacking sufficient data and are rated only as data deficient.

[41] Exact percentages and areas (hectares) are available in *A Biodiversity Conservation Strategy for the Okanagan Region* (2013). Available at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389

3.2 Identifying Biodiversity 'Hot Spots'

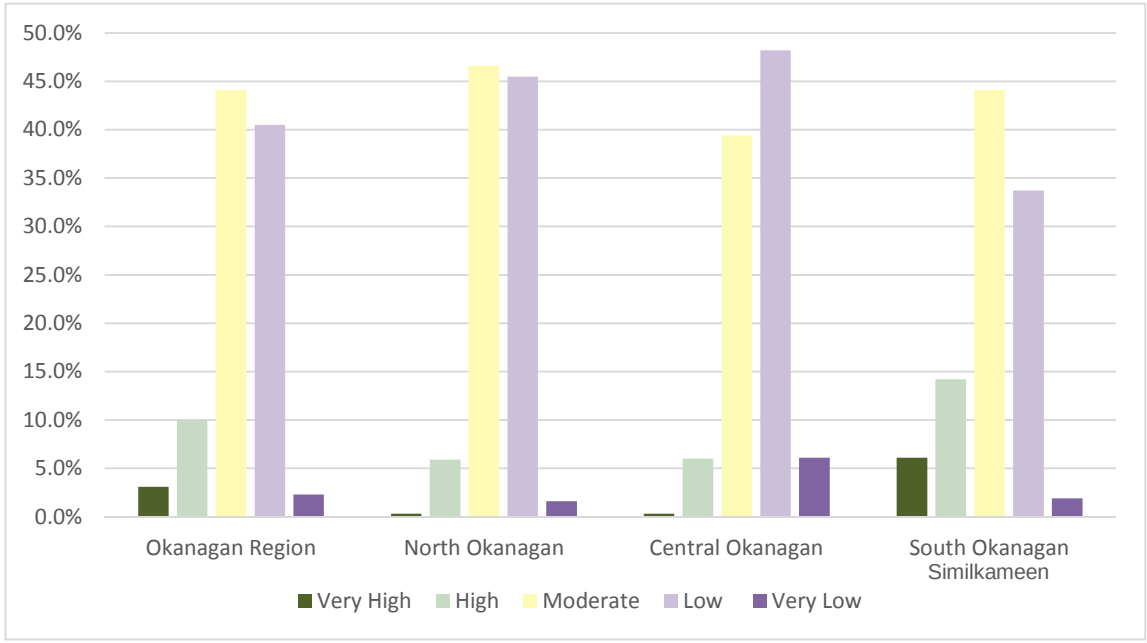
The biodiversity hot spots analysis refines the conservation ranking (important ecosystems) maps through incorporation of additional species and habitat information. This analysis identifies biodiversity 'hotspots' or areas of greatest ecological importance on the landscape (relative biodiversity).

The following information was used to determine biodiversity hotspots:

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

Five classes to denote relative rankings of biodiversity importance 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 of biodiversity represent less impacted natural areas. Approximately 13% of the Okanagan region study area has very high or high relative biodiversity value (Figure 5). Consistent with the findings for conservation ranking (important ecosystems), high and very high relative biodiversity rankings are concentrated in the South Okanagan-Similkameen (Figure 5).

Figure 5– Comparison of Relative Biodiversity for the region and its regional districts

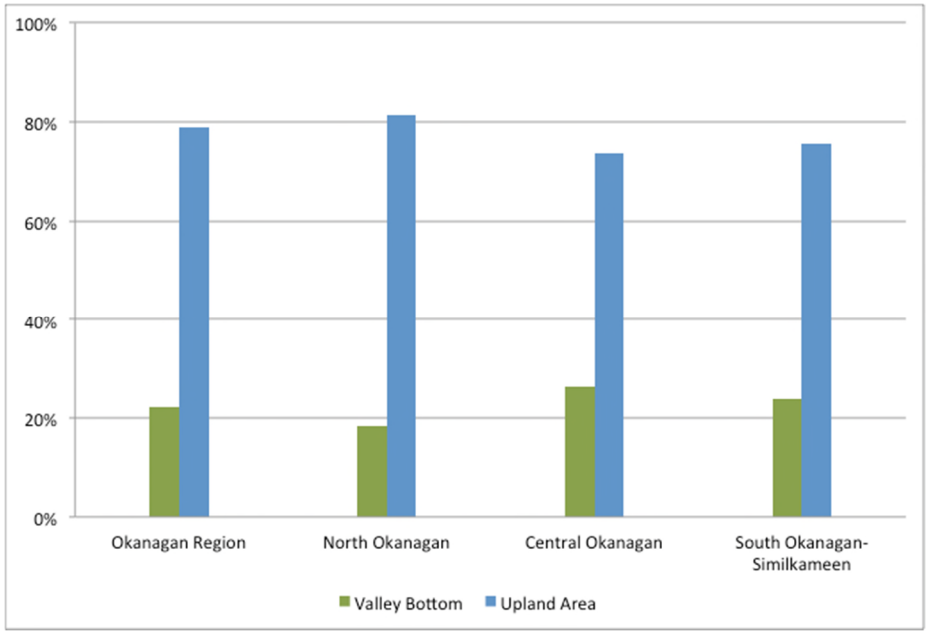


The relative biodiversity analysis points out the hot spots or highest value areas amongst the important ecosystems, providing additional information for identifying high-priority areas for conservation. The analysis highlights the need to conserve areas classified as very high and high relative biodiversity, and careful stewardship of areas classified as moderate.

3.2.1 Importance of biodiversity 'Hot Spots' in the valley bottom

For each regional district, the importance of biodiversity was viewed separately for valley bottoms and upland areas [42] because valley bottoms have typically been subject to extensive urban and agricultural land conversion. The valley bottom represents 22% of the total Okanagan Region and the proportions of valley bottom and upland areas are similar for each regional district (Figure 6).

Figure 6- Proportion of valley bottom and upland areas for the region and its regional districts



[41] Valley bottom area was primarily based on a selection of biogeoclimactic Ecosystem Classification (BEC) classes that represented xeric (dry) valley bottom habitat in the study area. The zones selected are the dry hot forested/grassland phases of the bunchgrass, interior Douglas fir and ponderosa pine ecosystems (BGxh1,IDFxh1,IDFxh1a,PPxh1,PPxh1a in BEC classification). In the moister northern areas where these zones do not exist, elevations less than 700m were included in the valley area. More detail on the methodology for separating valley bottoms and upland areas is in A Biodiversity Conservation Analysis for the North and Central Okanagan Region (2013). Available at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389.

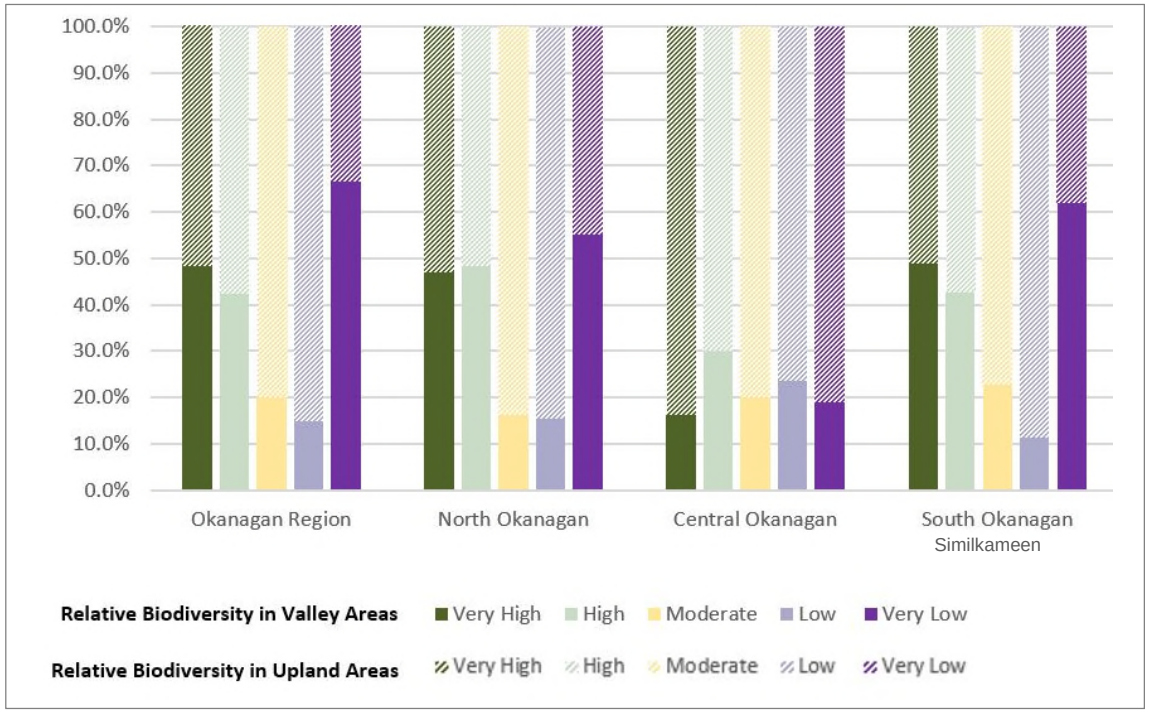
Although the valley bottom represents a small amount of the total Okanagan region (22%), it contains a disproportionate amount of the very high and high relative biodiversity classes. For example, 66, 500 hectares of the total Okanagan Region is classified as having very high relative biodiversity value, of which nearly half (32,000 hectares or 48%) is located in the valley bottom. With nearly half of the very high relative biodiversity class (48%) and half of the high relative biodiversity class (43%) concentrated in the smaller area of the valley bottom, the valley bottom becomes a key area for biodiversity protection. The proportions of each biodiversity class in the valley bottom and upland areas for the region and its regional districts are shown in Figure 7. Over half (66.5%) of the very low biodiversity class is also concentrated in the valley bottom, indicating the extent of settlement and development in the valley bottom.

The concentration of high relative biodiversity classes in the valley suggests the historical bias of biodiversity in valley bottoms was even higher in the past since it is still found today, despite the history of settlement and development in these areas. Given historical losses and remaining biodiversity concentrations, **valley bottom areas will require more focused and sophisticated management in order to protect biodiversity.**

Relative biodiversity classes for each municipality and electoral area are summarized in the analysis documents.[43] The total area and percentage for each biodiversity class should be considered in relation to the size of the regional district and the comparative size of valley bottoms and uplands. For example, larger, more rural electoral areas generally contain a greater amount of the region's very high relative biodiversity habitats; however, even the smaller areas of very high, high or moderate biodiversity values may be important for conservation. Intact or moderately modified valley bottom habitats are rare and may represent the only remaining opportunities for connectivity between ecosystems.

[43] See A Biodiversity Conservation Analysis for the North and Central Okanagan Region (2013). http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=36056 and Biodiversity Conservation Analysis and Mapping for the South Okanagan Similkameen Region (September 2011) http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=23903

Figure 7– Comparison of Relative Biodiversity in Valley Areas for the region and its regional districts



3.3 Land Management Implications for Biodiversity

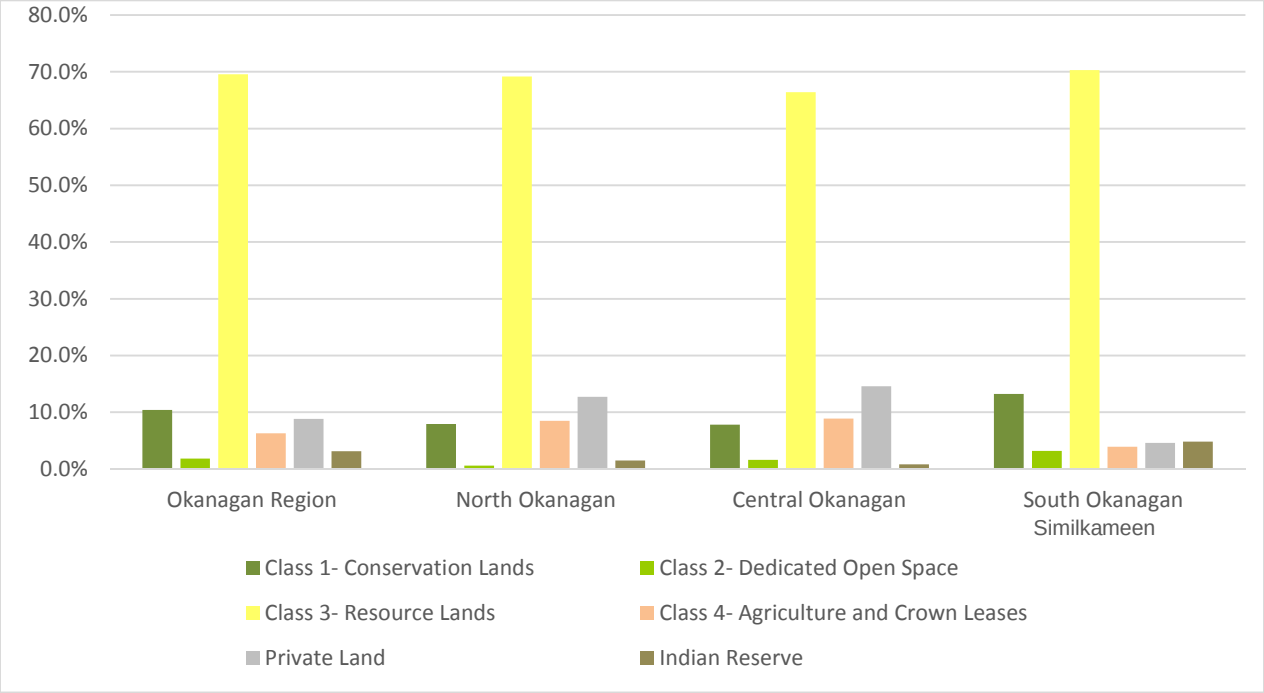
The relative biodiversity rankings provide a regional perspective regarding the state of biodiversity in the Okanagan region. These results were combined with information on current land management and ownership, in order to identify opportunities for land managers to implement conservation measures.

The Okanagan region was classified into four land management categories, based on the level of protection and consideration given to biodiversity values: [44]

- **Class 1:** Conservation lands with the highest degree of protection for biodiversity conservation, including private conservancies, provincial parks and protected areas, wildlife management areas, bird sanctuaries, National Wildlife Areas.
- **Class 2:** Dedicated open space currently protected as greenspace due to land use designation, including municipal or regional parks, public trails and Crown recreation and research lands, forest tenure recreation lands, provincial recreation areas, and lands surrounding reservoirs zoned for conservation (e.g. RDCO CL8 zoning). Protection may or may not be long term.
- **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.

[44] The land management analysis identifies private lands and Indian Reserves as separate categories; some private lands are also counted as part of the Agricultural Land Reserve (Class 4).

Figure 8 – Land Management Classes for the region and its regional districts



Much of the region falls within resource lands. This pattern is consistent between the three regional districts. Resource lands are managed primarily as working lands and not for their significant biodiversity values. 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.

Indian Reserves make up 3.1% of the Okanagan region, although these are primarily located in the South Okanagan-Similkameen regional district. Private lands comprise 8.8% of the Okanagan region with the majority located in the North (12.7%) and Central Okanagan (14.6%). Often Indian Reserves and private lands have a high proportion of very high and high biodiversity habitats. Additional benefits for biodiversity can be gained by facilitating increased planning capacity for First Nations, together with enhancing conservation incentives and voluntary stewardship for private landowners. It may be that private or reserve lands do offer protection through the use of tools like covenants, development permit areas, zoning or various kinds of private stewardship.

As shown in Figure 8, approximately 9% of the region is contained in private lands—less in the south and more in the central and north. Similar patterns prevail with Agricultural Land Reserve and Crown lands lease lands more extensive in the North (8.4%) and Central Okanagan (8.9%) as compared to the Okanagan region (6.3%). Where Agricultural Land Reserves (ALR) and higher biodiversity lands overlap, challenges exist since the priority for farming may limit opportunities for conservation. It is important to consider biodiversity within ALR lands and consider how farming and biodiversity can be managed for mutual benefit.

Conservation Covenants and Easements

A **conservation covenant** is a specific Section 219 covenant under the *Land Title Act* that is registered on the title to ecologically sensitive land (either lots or portions of lots). The covenant requires landowners to preserve natural and cultural features of the land, while still retaining ownership and appropriate use. Because it is registered on title to the land, it remains in effect after the land is sold or transferred, binding future owners of the land to the terms of the covenant. Many are a three-way agreement between the landowner, the local government and a conservation organisation as this provides the best long-term protection and the best use of resources to manage and monitor the land.[45]

The financial consequences of conservation covenants are specific to the land and people involved and 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, federal and provincial sales tax, 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.[46] Conservation covenants, as described above, should include an access easement to enable monitoring of covenant requirements.

[45] Land Trust Alliance of BC. 2009. Conservation Covenants: A Guide for Developers and Planning Departments. Available at http://ltabc.ca/docs/covenants%20for%20developers%20&%20planners%20web%2009.pdf

[46] Little, D., MacInnis, A., and Mullen, M. 2004. Easements, Covenants and Similar Rights in British Columbia -An Overview. Fasken Martineau DuMoulin LLP.

The Okanagan region contains more than 225,000 ha of conservation lands (10.4%) and more than 39,000 ha of dedicated open space (1.8%). Conservation lands in the region are dominated by provincial parks and protected areas. These lands are concentrated in the South Okanagan-Similkameen. The land management analysis also identifies the extent to which Class 1 and 2 lands overlap or protect high conservation ranked lands. Collectively, conservation lands and dedicated open space help conserve approximately 14.9% of the region's very high and high biodiversity habitats. The percentage of conservation lands and dedicated open space is highest in the South Okanagan (18.9% or 116,476 ha). Not all parks are dedicated to biodiversity. Some are focused on recreation (playgrounds and sports fields), and set aside areas for parking, facilities and ornamental landscaping. Class 2 (dedicated open space) captures these modified but protected landscapes.

3.4 The Need to Link Natural Areas Together

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 species are also unable to fulfill their needs for food, shelter, and reproduction in fragmented habitats.

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. The GIS model used to assign these scores focused on various characteristics. Qualities that received higher connectivity scores are listed below:

- moderate elevation,
- moderate slopes/flatter areas,
- terrain with less variation or ruggedness,
- more accessibility to water, and
- less development (avoiding urban areas primarily and agriculture lands secondarily).

Areas of flatter terrain offer the best potential for increased wildlife movement. These include areas to the east of the Okanagan Valley and throughout the northern half of the Okanagan region. 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.

Opportunities to manage for connectivity will be supported using the connectivity maps provided by this strategy. Finer (local scale) connectivity information is available for some specific known wildlife movement corridors (e.g. Bighorn Sheep corridor in eastern hillsides between Okanagan Mountain Park and Osoyoos in the South-Okanagan Similkameen Regional District). *Designing and Implementing Ecosystem Connectivity in the Okanagan* is included in the ***Keeping Nature in our Future*** series**.** This guidance document provides additional direction on how planning processes can be designed and connectivity strategies developed, using tools like the connectivity maps provided by the Biodiversity Conservation Strategy.

4.0 STRATEGIC DIRECTIONS AND OPPORTUNITIES FOR ACTION

"Never again will we have as good a chance to restore and protect the natural systems that keep us alive. Now we know what no one knew when I was a child." (Sylvia Earle, Oceanographer and National Geographic Society Explorer-in-Residence)

Approaches to biodiversity conservation in the Okanagan region are complex, with many agencies sharing discrete and overlapping responsibilities. These agencies also share a collective opportunity for leadership in managing one of the most biologically diverse, sensitive and at-risk areas in BC 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 level, including federal and provincial agencies. It summarizes the current situation at each level, as well as identifying strategic directions and opportunities for actions to translate the strategy vision and goals into results. Many resources and tools for biodiversity conservation are available to local and senior governments, the most relevant ones listed in Appendix E.

4.1 Local Government

Local government in this section includes both the Okanagan regional districts and municipal governments. While the regional districts have fewer powers than municipalities in relation to subdivision, roads, and infrastructure, they manage a much larger land base with greater potential opportunity for conservation. Local government is the primary regulator of development on private lands. The Province will consider local government objectives in decisions regarding Provincial Crown lands, including dispositions, leases, licences of occupation and other tenures. According to provincial policy, such decisions should be made in a manner consistent with all local government zoning bylaws and other land use regulations.

The Okanagan has a unique form of local government in British Columbia, the Okanagan Basin Water Board (1970), which is a local government agency, formed through supplementary letters patent by the three Okanagan regional districts. Its vision is to have water systems that meet the needs of residents and agriculture while supporting wildlife and natural areas – now and in the future. The Okanagan Basin Water Board (OBWB) acts on the vision through proactive leadership and by supplying timely information, communication and funding for water activities that benefit the Okanagan as a whole. An OBWB water governance manual (http://www.obwb.ca/fileadmin/docs/obwb_governance_manual.pdf) developed in 2010 provides a clear description of the agency's form and function.

Civic leaders can fulfil citizen expectations[47] and promote a strong sense of community and pride by acting strongly to conserve biodiversity. Few communities in Canada have the profound opportunities that the Okanagan has to influence biodiversity protection and conservation outcomes.

Conservation Planning and Regulation Examples in the Okanagan Region

The Regional District of Central Okanagan addressed the issue of development on reservoir lakes by creating a new zone called "conservation lands" (CL8) which restricts the location and type of new development that can occur within 100 m of reservoir lakes (outlined in red on photo of Beaver Lake). The purpose of the CL8 zone is to manage lands and water courses where protection and conservation of the natural environment is the principle objective and to permit passive recreational uses where appropriate. The zoning amendments were prepared through consultation with the Okanagan Cottage Owners Association, the Integrated Land Management Bureau, Interior Health Authority, water purveyors and member municipalities. The intent was to limit the scale of residential development to a sustainable management level around drinking water reservoirs.

[47] See appendix A, B, and C **"Value for Nature"** sections for examples of citizen surveys.

Local governments can act to conserve biodiversity by guiding and regulating 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. Planning tools include: regional growth strategies, regional parks plans, official community plans, neighbourhood plans, park master plans, greenways plans, transportation plans, stormwater plans, watershed plans, community sustainability plans, liquid waste management plans, water management plans, and community wildfire protection plans. Land use regulation tools include: development permit areas, zoning bylaws, subdivision bylaws, and other regulatory bylaws (e.g. bylaws to enhance protection of riparian areas, watercourse protection, tree protection, invasive species, soil deposit and removal, hill-slope development and landscaping). Collectively, 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 urban areas using a combination of incentives and bylaw regulations. Most local governments in the region have used some of these 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.[48]

Local governments can also protect biodiversity by: purchasing ecologically significant areas (including partnering with NGOs), establishing local levy-based conservation funds, accepting donations of land and funds, establishing rights-of-way and covenants, and providing stewardship of protected areas within their boundaries. As significant landowners, local government 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).[49] 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 First Nations.

[48] Environmental Law Clinic and Deborah Curran & Company. 2007. Green Bylaws Toolkit for Conserving Sensitive Ecosystems and Green Infrastructure. Available at www.greenbylaws.ca

[49] Available at www.cscd.gov.bc.ca/lgd/library/First_Nations_Engagement_Guide.pdf

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. Large lot development can result in ecological impacts occurring from 100 m to 800 m beyond the original footprint and higher development costs.

When large parcels are developed individually or zoning provides for mid-density (e.g.2-4 Ha/lot ranchettes or hobby farms), developed areas are unlikely to be adjacent and more roads are typically created. As a result, most ecological value may be lost with yards converted to non-native plants, livestock grazing and gardens. A preferred approach is more compact (e.g. cluster development) where development areas are grouped resulting in a smaller overall development footprint.

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 development around a house. At this scale, only 10% of the lot would be impacted.

In sensitive areas, resource area zoning needs to be modified to have larger minimum lot sizes or reduced densities. Outside of the Agricultural Land Reserve, intensive types of agricultural or resource development should not be permitted or their footprint should be limited in sensitive areas.

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

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.

The next section provides Strategic Directions for Policy Development and Tools that may be considered by local governments. Some may be applicable to municipalities, some to regional districts, and some may have application to both. Individual local governments must determine which, if any of these, have application to their area. Some of these tools are already being actively used in various areas of the region.

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 to incorporate the new biodiversity information presented in *Keeping Nature in Our Future*. Planning tools include: official community plans, neighbourhood plans, and park master plans. Regulatory tools include: development permit areas, as well as zoning and subdivision bylaws (e.g. riparian areas, watercourse protection, tree protection, invasive species, soil deposit and removal, landscaping). 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.

1.1.7 Engage Syilx and Splatsin Nation members to ensure that land use policies and plans reflect local First Nations unique knowledge, expertise and perspectives.

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 Cultivate opportunities to invite specialists, academic institutions, and stewardship practitioners with environmental expertise to provide advice on integration of biodiversity considerations into land use planning and management (e.g. Regional District of Central Okanagan Environmental Advisory Commission).

1.1.10 Set targets to define and limit urban and rural development areas.

1.1.11 Continue implementation of the Regional Growth Strategies and Official Community Plans, 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 to direct density away from rural regional district areas and into communities.

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.

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,[50] written from the vantage point of local government, to identify strategies needed to protect species at risk on local government and private lands in B.C.

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[51] and annual meetings of the Union of BC Municipalities.

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.

[50] http://www.env.gov.bc.ca/wld/documents/SAR%20Paper%20January%202011%20FINAL.pdf
[51] http://wwwd.env.gov.bc.ca/wld/searl_gwg/index.html

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 in these areas, and resources for implementation.

1.2.4 Encourage regional collaboration among 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 like 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).

Example of building a network of parks through acquisitions and partnerships in the Central Okanagan

The RDCO Parks Services are active in acquiring land in order to conserve and enhance regionally significant natural features and ecological values. Recreation is also a consideration but in some areas is considered secondary to the natural environment values. Future park land acquisitions are intended to augment the existing parks system so that these parks collectively represent a complete range of ecosystems for the Central Okanagan. RDCO has in place a Legacy Program intended to provide guidance for a 10 year park land acquisition strategy (2007 – 2017). See http://www.regionaldistrict.com/services/parks-services/regional-parks/planning-initiatives.aspx#Legacy.

RDCO has demonstrated a close working relationship with non-government organizations (NGOs) in the protection of ecosystems and species. For instance, the Johns Family Nature Conservancy Regional Park is an example of how government and NGOs can work together to conserve our natural heritage and protect biodiversity. The Johns bequeathed their properties, totaling more than 300 hectares, to the Central Okanagan Land Trust (COLT) whose mandate focuses on preservation of the Central Okanagan's natural landscapes and wildlife habitats. COLT and RDCO have agreements in place for these properties that would see these environmentally significant lands protected as a Regional Park.

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 Encourage establishment of a local conservation fund for regional districts and municipalities in the Okanagan region.

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.

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, local area service levy or fees.

For more information, see: www.soscp.org/conservationfundguideforbc/

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.

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 security deposit.

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.

4.1.3 Creating Incentives for Private Land Owners

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 amenity 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 density transfer.

1.5.3 Increase the involvement of land use professionals and consultants in establishing economic incentives, regulatory measures, and key education messages.

1.5.4 Provide educational materials to landowners about third party certification programs that encourage stewardship of private lands such as Salmon Safe, the Environmental Farm Plan, Audubon certification for golf courses, and the BC Sustainable Winegrowing Program.

Ecogifts

Local government can provide information to landowners regarding the Ecological Gifts Program (Ecogift) and can also be qualified as a receiving organization. An ecological gift is a federally certified donation of ecologically sensitive land or an interest in land (e.g., conservation easement, covenant, or servitude). Ecological gifts 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 ecological gifts as part of a land development scenario where there are local government approvals that require the setting aside of the land. [52]

[52] See 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.

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 Regional Growth Strategy recommendations for biodiversity for each regional district. Support monitoring of progress in sustaining biodiversity using performance measures and indicators, including habitat losses and gains, and 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 and Splatsin First Nations with the intent of creating a strategy for the region that will maintain the Okanagan ecological corridor.

1.6.3 Consider requiring a cost benefit analysis for developments of a certain minimum size or outside of growth areas that are defined in a Regional Growth Strategy, to assess long term infrastructure implications, as well as costs of environmental damage and ecosystem services forgone.

1.6.4 Explore partnership opportunities 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.

1.6.5 Facilitate submission of species and ecosystems data to the BC Conservation Data Centre (CDC) and other applicable provincial data sharing sites to improve environmental information-sharing, of species and ecosystem data in impact assessment, and monitoring.

1.6.6 Apply standards and methods for data collection, such as RISC data collection standards, to improve environmental information-sharing, impact assessment, and monitoring.

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 Leadership to Engage and Inspire local residents

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 and OCCP 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.

1.8.5 Increase region wide cooperation on opportunities for efficiency and consistency of messaging. This could be facilitated through increased cooperation between OCCP and SOSCP.

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 government plans, regulatory tools, enforcement mechanisms, and public information programs.

1.9.2 Develop partnerships and collaborative funding arrangements with SOSCP and OCCP 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 (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.

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 species at risk; 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; as well as 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 E). 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 in the Okanagan.

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, 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). The province also has Draft *Procedures for Meeting Legal Obligations When Consulting First Nations* (May 2010).[53]

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 and those addressing local government environment/regulation issues.

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 communities.
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

[53] http://www.gov.bc.ca/arr/reports/down/updated_procedures.pdf

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)[54]. 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 ensure the implementation of 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 staff to enable agencies to monitor and enforce results-based management to ensure that biodiversity standards are met, 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 Conservation Framework species.
Who: Ministry of Environment, Ministry of Forests, Lands and Natural Resource Operations

[54] http://www.env.gov.bc.ca/conservationframework/results.html#outputs

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

Water Sustainability Act

On April 29, 2014 after a four year process involving a discussion paper, policy proposal, consultation with stakeholders and a proposed legislative framework, the British Columbia Legislature gave third and final reading, without any amendments, to *Bill18 - 2014*, BC's new *Water Sustainability Act*. This bill replaces the 105 year old Water Act and addresses new pressures on water related to population growth, industrial water use and climate change. The bill brings ecology and groundwater into decision making for water management in B.C. and ties land use decisions to their impacts on water and the riparian and instream environments. How the innovative provisions will function for environmental protection in this legislation, such as thresholds and triggers for groundwater and water protection, will depend on the details and standards for environmental performance yet to be developed through regulation in the next three to five years. The *Water Sustainability Act* is expected to receive Royal Assent in the near future and come into force after April 2015.

The act addresses water policy in seven key areas:

1. Protect stream health and aquatic environments
2. Consider water in land use decisions
3. Regulate groundwater use
4. Regulate during scarcity
5. Improve security, water use efficiency, conservation
6. Measure and report large scale use
7. Enable a range of governance approaches

For more information on Bill18-2014 see
http://engage.gov.bc.ca/watersustainabilityact/

Conflicts between Agricultural Land Commission Act and Biodiversity Protection

Agricultural interests are generally well protected under the provincial Agricultural Land Commission Act (ALCA). Within the Agricultural Land Reserve (ALR), agricultural uses take precedence over other values, including ecological values. Furthermore, the Farm Practices Protection (Right To Farm) Act 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. Although there is some federal and provincial legislation in place to protect ecological values on agricultural land, implementation, compliance and enforcement mechanisms are relatively ineffective.

At the local government level, land use bylaws must be consistent with the ALCA and its regulations. This limits local government jurisdiction over farmland. For example, environmentally sensitive development permit areas do not have the same capacity to influence land use on ALR lands as they do elsewhere.

4.2.2 Crown 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 Okanagan region 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 *Designing and Implementing Ecosystem Connectivity in the Okanagan*), 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 in the South Okanagan to assess risk and sensitivity for Crown lands applications for disposition in the entire Okanagan region.
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, recreation and environmental values such as: ecosystem services, important representative ecosystems, important wildlife corridors, hiking connections, species at risk, wildlife habitat, nature appreciation 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, in 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 Develop any necessary regulations to 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[55] 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

[55] The concept of protected area targets was advanced first by the United Nations Brundtland Commission Report. The report recommended tripling the world wide parks and protected areas percentage, which then made a target of 12%. Somewhat later, B.C.'s Protected Areas Strategy pioneered the idea of target setting in B.C. suggesting the 12% target be applied to provincial protected areas and parks. Although the province has achieved these targets, some underrepresented ecosystems still need to be protected. In 2010, Canada agreed to the Aichi Targets (http://www.cbd.int/sp/targets/). These target are that 17% of terrestrial areas and 10% of marine areas will be protected by 2020, in areas that are well-managed, representative and well connected. Targets are increasing as scientists learn more about what is required to support ecosystem services and protect biodiversity. Research from various sources suggest that protected areas should comprise 25-75% of all land (Noss R.F. et al. 2012).

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 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. [56]
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 Within the Syilx and Splatsin territories, support capacity building to enable local First Nations governments to undertake planning on Indian Reserves and to have capacity to respond to referrals effectively.
Who: Aboriginal Affairs and Northern Development Canada, Environment Canada, Provincial Interagency.

[56] 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/

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:

- 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 owners 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.

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 Increase 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

2.8.1 Expedite the referral processes associated with subdivisions where land is being donated for conservation purposes.
Who: Ministry of Transportation and Infrastructure, Ministry of Agriculture

2.8.2 Ensure ecosystem and species at risk values are considered in senior government approval and permitting processes.
Who: Provincial Interagency

5.0 IMPLEMENTATION

"When we protect the places where the processes of life can flourish, we strengthen not only the future of medicine, agriculture and industry, but also the essential conditions for peace and prosperity." (Harrison Ford)

5.1 Introduction

SOSCP, OCCP and their partners are committed to making a difference on the ground to strengthen the conservation of ecosystems, habitats and species in the Okanagan region. Implementation can build on the following strengths in the Okanagan region:

- Three Regional Growth Strategies each providing a policy framework with clear commitments to biodiversity conservation, and measurable progress indicators.
- Significant large and small natural areas with good potential for conserving regional ecosystems, habitats and species biodiversity.
- Biodiversity planning established on a solid foundation of technical work that was expanded and enhanced during strategy development, 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.
- Existing Conservation Program (SOSCP and OCCP) networks:
  - history of collaboration among partners; and
  - reputation and credibility of conservation programs and regional districts among funders, government and non-government stakeholders.
- Supportive senior government biodiversity initiatives, including:
  - Environment Canada's Habitat Stewardship Program for Species at Risk[57]
  - Species and Ecosystems at Risk (SEAR) Local Government Working Group
  - Protected Areas Strategy for British Columbia
  - Significance of the Okanagan in the *Biodiversity BC and Provincial Conservation Framework*, and
  - Inclusion and priority of the Okanagan in the *BC Sensitive Ecosystem Inventory*.

[57] This program provides funding for implementing activities that protect or conserve habitats for species assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as nationally at risk (endangered, threatened or of special concern) and priority is given to projects that target species listed under the *Species at Risk Act* (SARA).

Implementation Next Steps

High-priority tasks related to raising awareness of the Biodiversity Conservation Strategy contents and products include:

1. *Engage stakeholders and decision-makers, including First Nations* through disseminating the biodiversity strategy, local government maps; and targeted outreach and discussion,
2. Adopt a *Governance Structure* for strategy implementation,
3. Finalize an *Action Plan*, with roles, responsibilities and a timeline,
4. Finalize a *Measurement, Reporting and Evaluation Plan*, including a Performance Measurement Framework, with roles, responsibilities and a time line, and
5. *Coordinate strategy implementation* across the Okanagan region and other relevant regional and inter-regional land use planning and management initiatives.

5.2 Engage stakeholders and decision-makers, including First Nations

The proposed first step in implementing ***Keeping Nature in Our Future*** is to involve stakeholders and decision-makers, including First Nations. An *Engagement Plan* has been developed for the South Okanagan-Similkameen and is currently being implemented. Determining the appropriate approach and details of engagement for the North and Central Okanagan is an identified high priority task as well.

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 and OCCP 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. Priority actions include making the biodiversity strategy and its products (maps, guidance etc.) available through websites and links of SOSCP/OCCP partners. This strategy directs partners to work together and with others to help achieve shared goals that contribute to strategy implementation.

5.3 Governance Structure

Guiding principles and a structure including an implementation committee, technical working groups, a secretariat/staff person and technical advisors are considered essential to implementation. Further detail on this is proposed in ***Keeping Nature in Our Future: A Biodiversity Conservation Strategy for the South Okanagan-Similkameen.*** Defining and agreeing to an approach will require joint action by representatives

from the three strategic areas (North, Central and South Okanagan-Similkameen). This effort will require defined implementation roles, responsibilities and reporting systems. This is a key task for 2014-2015 and the partners are committed to developing a governance structure by the end of the fiscal year, subject to funding.

5.4 Action Plan

A draft framework for action planning is also proposed in the Biodiversity Conservation Strategy for the South Okanagan-Similkameen, but development of the actual plan is a basin-wide task and another priority for 2014-16. High-priority tasks for implementing this biodiversity strategy include both, A) efforts to raise awareness of the plan, its contents, and products; as well as B) acting on strategic direction statements compiled in the document.

Important tasks include actions associated with the strategic directions are provided in Section 4 of this document. As the implementation of this conservation strategy proceeds, strategic directions will be identified, priorities and timelines will be assigned and detailed work planning measures will be identified and tracked, consistent with resources and funding available. Examples of basin-wide priorities include: development and implementation of the ***Okanagan Wetlands Strategy***; Okanagan Basin Water Board's ***Okanagan Sustainable Water Strategy***; cooperative efforts to implement protection for ***Critical Habitat for Species at Risk*** identified consistent with Recovery Strategies; coordinate efforts to limit the spread of **Invasive Species**; and work to sustain, and enhance ***Habitat Connectivity.***

5.5 Measurement, Reporting and Evaluation

Appropriate approaches to measuring, reporting and evaluating the achievement of vision, goals and priority actions is discussed in greater detail in the South Okanagan-Similkameen Biodiversity Strategy document. For the region, further definition of this component of implementation is required as part of future actions.

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 Trans-boundary Project and the Okanagan Basin Water Board.

Okanagan Basin Water Board Supports Sustainable Water Management

The Okanagan Basin Water Board's technical advisory committee, the Water Stewardship Council, provides a forum for ongoing dialogue about a range of important contemporary water issues. Council discussions provide a forum for diverse viewpoints on water management; however, the global objective of sustainable water management for the region overrides any single special interest.

The Okanagan Sustainable Water Strategy (http://www.obwb.ca/library/okanagan-sustainable-water-strategy/) provides direction on sustainable water management for the Okanagan. The strategy explores critical questions that link to biodiversity protection and reinforce the importance of protecting the water resource. The strategy also explores the strong links between the well-being and survival of people with the environment and water supply. For example, "How do we plan for a future with enough water for all priorities, including ecosystems?" and "How can we ensure that high water quality is maintained and sensitive riparian and wetland ecosystems protected?"

A key aspect of the Strategy is the twelve Guiding Principles. The chapters: *The Need for a Sustainable Strategy; Protecting our Lakes, Rivers, Wetlands and Aquifers*; *Securing our Water Supplies*; and *Delivering the Strategy* demonstrate the interrelationships between water quantity and quality, and humans and the environment.

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.

Barrier: A physical obstacle or obstruction to wildlife movement of various natural and man-made causes including: habitat fragmentation, urban development, roads, industrial development, landscape features like lakes, and steep terrain.

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.

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.

Climate change: changes in climate that are attributed directly or indirectly to human activity that alters the composition of the global atmosphere and exceeds natural climate variability over comparable time periods.

Connectivity: physical and functional links between ecosystems necessary to support biodiversity.

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.

Conservation ranking: ecosystems in the Okanagan region have been assessed for local and provincial conservation status using sensitive ecosystems mapping. This provides the basis for conservation ranking maps, which show the relative importance and sensitivity of various ecosystems. Four conservation ranking classes are used in the biodiversity conservation strategy maps: very high, high, moderate, and low.

Corridor: See **wildlife corridor** below.

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.

Ecoregion: a defined part of a national classification approach to terrestrial ecosystem classification based on geology, landform, soil, vegetation, climate, wildlife, water and human factors. An ecoregion is a part of an eco-province characterized by distinctive regional ecological factors.

Ecosystem: a biological environment that includes all the living organisms as well as all non-living components they require 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.

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 people such as fresh air and clean water. Services include providing food, fresh water, natural medicines, fiber, and fuel; regulating climate, erosion and flood regulation, water supply purification and flow regimes; supporting cultural services such as tourism, heritage and recreational, educational, scientific and aesthetic opportunities; and other supporting services that provide a foundation for healthy ecosystems such as nutrient and water cycling, photosynthesis and soil formation.[58]

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 green space 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 the conditions of that place, including the soil, vegetation, water, and food.

Habitat refuge: a small patch of habitat that provides food, shelter and other needs for wildlife.

Habitat reservoir: a large area of relatively natural habitat that has sufficient size and ecological integrity to support a range of native species, including species that need interior habitats. The size of a habitat reservoir depends on the species being managed.

Intrinsic value: the inherent worth of something, independent of its value to anyone or anything else.

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 natural controls, such as predators and disease that kept their populations in check in their native environment, do not occur in their new location.

Matrix: land areas that are modified or somewhat disturbed surrounding and interconnected with habitat patches. Examples of matrix lands include areas subject to moderate land use and modification by uses like livestock grazing, old fields (previously cultivated by now recovering some characteristics and structure of habitat), and historical forest harvesting (second growth forests).

Pinch point: a physical location where geography, land use alteration or development have narrowed opportunities for ecological connectivity and animal movement across a landscape. An example would be a narrow strip of land required to retain connectivity because lakes, steep terrain, land development or other barriers prevent movement elsewhere in the landscape.

Qualified environmental professional: an applied scientist or technologist who is registered in good standing with an appropriate professional organization and who acts under its code of ethics and is subject to its disciplinary action. The professional must be acting within their area of expertise. This term is a legal definition in the Riparian Areas Regulation.

[58] Taken from the Nova Scotia Wetlands Policy. For more information, see the following website http://www.gov.ns.ca/nse/wetland/docs/Nova.Scotia.Wetland.Conservation.Policy.pdf

Relative biodiversity: five classes of biodiversity defined for the current study, from very high to very low. The low and very low classes generally represent agricultural and urban areas, while the high and very-high classes represent less impacted natural areas able to support biodiversity.

Sensitive Ecosystems Inventories (SEI): systematically maps and defines rare and fragile ecosystems using aerial photography and field-checking of data in select locations. Its purpose is to encourage land-use decisions that will ensure the continued integrity of these ecosystems. SEI is completed according to Resources Information Standards Committee (RISC) standards.

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.

Sustainable development: a pattern of resource-use that entails meeting the needs of the present without compromising the ability of future generations to meet their own needs. It implies using a community's resources wisely within a framework that integrates environmental, economic and social factors (from Nova Scotia Wetland Policy).

Terrestrial Ecosystem Mapping (TEM): an approach to stratifying the landscape into map units according to ecological features using a combination of manual air photo interpretation and ground sampling. TEM is completed according to Resources Information Standards Committee (RISC) standards.

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. VRI is completed according to Resources Information Standards Committee (RISC) standards.

Wildlife corridor: a travel corridor for wildlife. Wildlife corridors vary in size and design. They include: very wide, natural corridors that provide habitat for small and medium sized animals and are critical for large mammals sensitive to people (e.g. Woodland Caribou, Grizzly Bears), and narrower corridors to protect small streams and adjacent riparian habitat or culverts that facilitate safe road crossings for small species. Typically, they focus on species that move across the ground but in certain circumstances may also include 'sky corridors' that offer a safe flight path between feeding and resting places for birds (e.g. where migration routes are at risk from wind farms, tall buildings and aggregated power lines).

APPENDIX A: Regional District of Okanagan-Similkameen Biodiversity Key Findings

Value for Nature

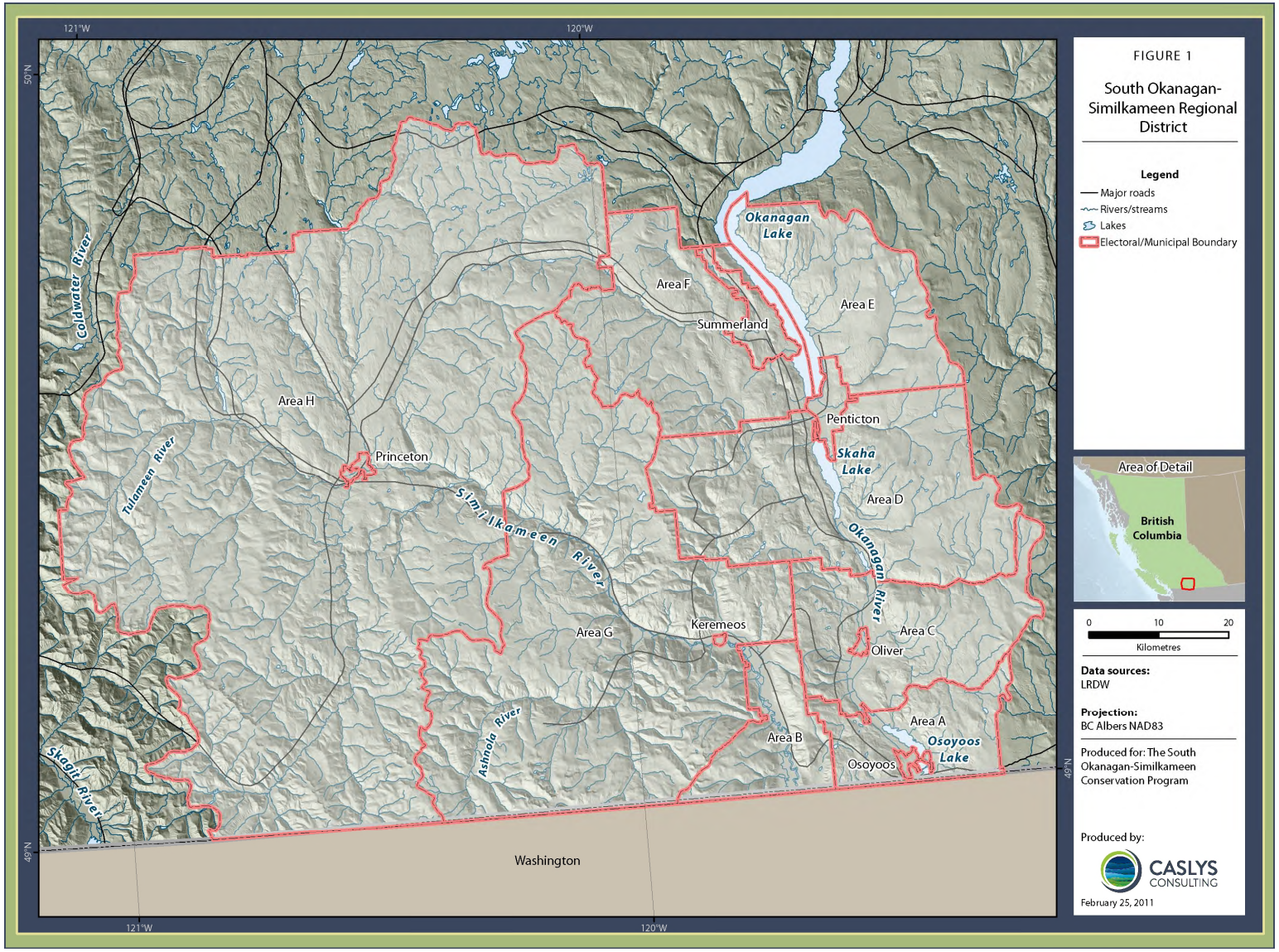
Public opinion surveys commissioned by the South Okanagan Similkameen Conservation Program (SOSCP) and completed by Synovate Research in 2004 & 2008 show a clear mandate and strong community pride for environmental protection.

- 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 be doing more to protect the environment.
- More than 90% felt that the natural environment was important to their quality of life.
- 79% of residents identified concerns with loss of wildlife, water quality and quantity, loss of habitat to development, as well as sprawl and poor planning.
- More than 33% of those polled think that the environment has become worse over recent years.
- Only 20% of those polled 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.

Links between the Biodiversity Strategy and other important regional district plans

On September 5th, 2013, the RDOS Board of Directors, in the Planning and Development Committee meeting, accepted *Keeping Nature in our Future: A Biodiversity Conservation Strategy for the South Okanagan-Similkameen* http://www.soscp.org/biodiversity/ as a guiding document for the Regional District and the amendment of official community plans. The regional growth strategy policy EN2 addresses environmental stewardship strategies and the promotion of conservation and sustainability of watersheds, wetlands and riparian areas, as well as a green space network to serve as a wildlife corridor. The regional district also has a sustainability checklist that aims to provide the regional district board, staff and advisory bodies with the necessary information to ensure that new development in the south Okanagan is consistent with the policies and intent of the Regional Growth Strategy http://www.rdos.bc.ca/departments/development-services/regional-growth-strategy/what-we-do/.

Study Area: Regional District of Okanagan-Similkameen



Key Findings of Biodiversity Conservation Strategy Analyis[59]

Conservation ranking:

- Nearly two-thirds of the Regional District of Okanagan-Similkameen (RDOS) area is classified as having high or very high conservation ranking.

Relative biodiversity:

- More than 20% of the RDOS 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 RDOS area falls within lands designated as parks, with the vast majority consisting of provincial parks and protected areas. All types of parks 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.
- The 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.

[59] Key findings of the biodiversity strategy are summarized for each rural area and community in primers available at the South Okanagan Similkameen Conservation Program website http://www.soscp.org/biodiversity/primer-reports/

- 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. 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 U.S. Columbia Basin and the grasslands of the Central Interior Plateau of B.C. 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.

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 B.C., regional districts typically achieve 10-15% of their land base as park and protected areas

APPENDIX B: Regional District of Central Okanagan Biodiversity Key Findings

Value for Nature

In a 2012 survey of City of Kelowna residents[60], a wide range of factors were linked to perceived improvements in quality of life, but improved parks and green spaces was the most commonly selected category.

- As a service provided to residents, 97% of respondents rated parks as very important or somewhat important.
- 64% of citizens also reported protection of the natural environment as a top priority for investment; this value was second only to police and fire services.
- 53% of respondents rated park-related investment as the most important/or next most important priority with 53% supporting further investment in neighbourhood parks, 46% for waterfront beach parks, 43% for path trails and 36% for natural open spaces.

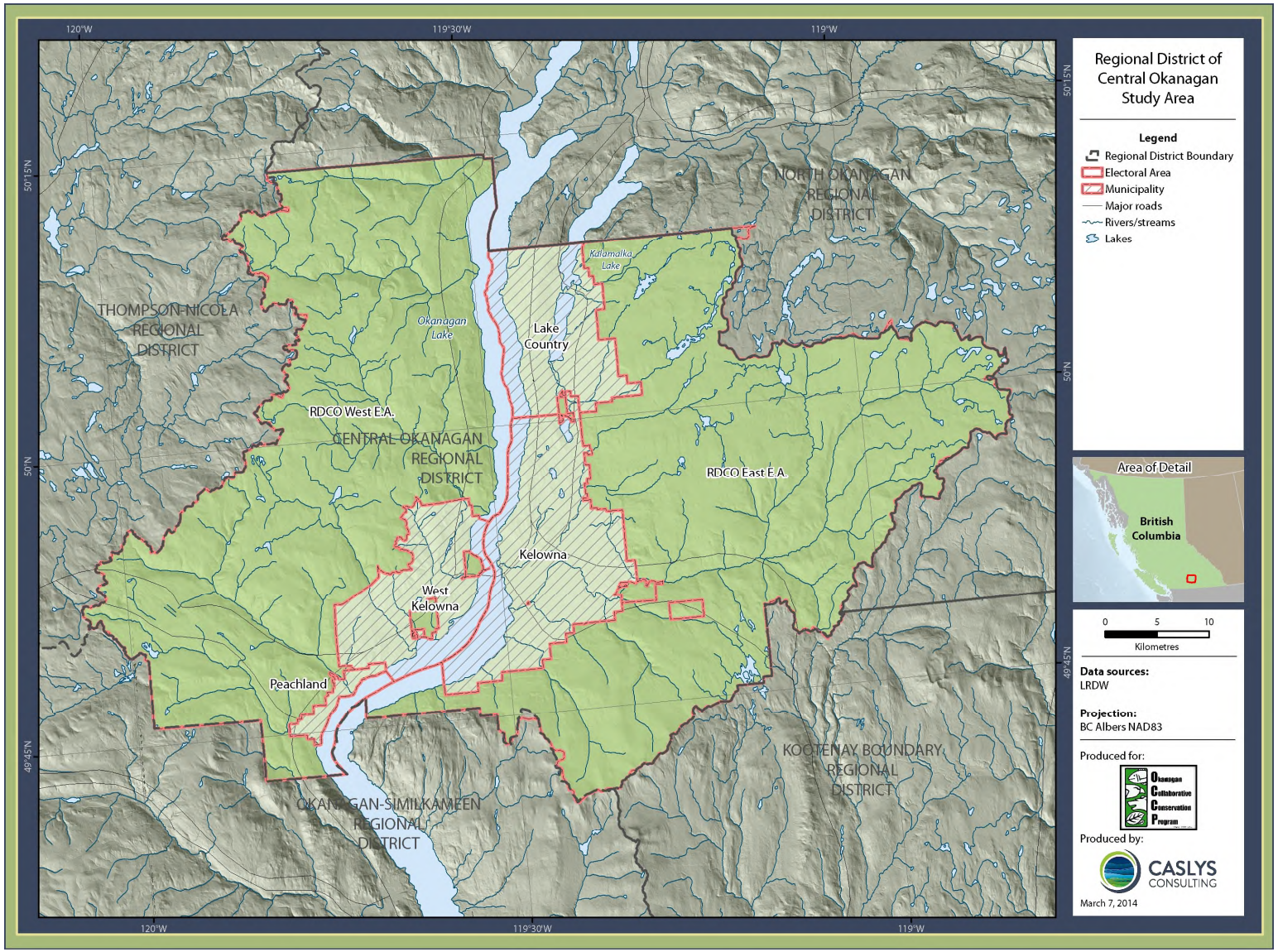
Links between the Biodiversity Strategy and other important regional district plans

The Regional District of Central Okanagan (RDCO) adopted its first regional growth strategy in 2000 in response to concerns about the impacts of rapid population growth and development. The updated and revised Regional Growth Strategy addresses identified regional issues. Discussion Papers were developed in 2012 to provide a forum for policy analysis in each of the issue areas. These papers are designed to help identify and explore a range of current challenges facing the region in order to provide a common understanding of how growth impacts the region. The biodiversity analysis results were used in the development of the Environment paper. For more information on the regional growth strategy see the RDCO website at http://www.regionaldistrict.com/services/planning-section/growth-strategy/regional-growth-strategy.aspx.

Specific case studies outline how the Biodiversity analysis mapping has been used within the regional district already (see *Case Studies from North and Central Okanagan that support the Biodiversity Conservation Strategy for the Okanagan Region*).

[60] Available at http://www.kelowna.ca/CM/Page618.aspx

Study Area: Regional District of Central Okanagan



Key Findings of Biodiversity Conservation Strategy Analysis[61]

Conservation ranking:

- Nearly 50% (48.4%) of the RDCO area is classified as having high or very high conservation ranking.

Relative biodiversity:

- 6.3 % of the RDCO 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 based on percent of study area class total are RDCO East (33.7%), RDCO West (16.2%), City of Kelowna (4.6%) and municipality of Lake Country (2.7%).
- The valley bottom is very important in the RDCO, even though it is a smaller part of the region overall, and the high, moderate and low classes are distributed proportionately between valley and upland. The upland area generally does not have the same intensity of land conversion as the valley and therefore represents an opportunity for land managers to retain biodiversity values. Protection of these lands is not necessarily comparable or interchangeable with protection of the valley bottom as ecosystems and biodiversity values may differ.

Land management:

- Approximately 8 % of the RDCO and RDNO total study area falls within lands designated as parks, with the vast majority consisting of provincial parks and protected areas. All types of parks combined (municipal/regional parks, provincial parks and protected areas) protect 16.6 % of the region's very high and 12.8 % high biodiversity habitats. In just the RDCO area, 24.6% class 1 conservation lands and 10.9% class 2 dedicated open space lie within the high and very high biodiversity classes. It should be noted that within RDCO many of the regional park areas dedicated to conservation fall within the class 1 conservation lands.
- The comparatively small amount of land that falls within dedicated conservation lands highlights the need for public resource lands to include multiple values, including biodiversity.
- 62.7% of the very high relative biodiversity class falls within resource lands, followed by 12.2% on conservation lands, 10% on private land and 9.3% on agricultural and crown leases.

[61] For more detailed information see *A Biodiversity Conservation Analysis for the North and Central Okanagan Region* at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389

Connectivity:

- At a regional scale, the Okanagan Valley represents a north-south corridor, facilitating wildlife movement between the U.S. Columbia Basin and the grasslands of the Central Interior Plateau of B.C. Human settlement and the associated transportation network in the RDCO represent barriers to wildlife movement. Highway 97 impedes east-west movement and highways 33 and 97C have potential impacts on 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. The valley area and those areas of less rugged terrain located to the east of the Okanagan Valley and the higher elevations west of the valley offer the best potential for north-south wildlife movement.
- Points of the valley with large urban/suburban areas (Kelowna) or areas where the valley narrows due to terrain (e.g. Peachland) create potential pinch points where opportunities to create wildlife corridors are more limited.

Local and Regional Parks

The regional parks system in the Regional District of Central Okanagan currently has 28 parks covering approximately 1041 ha. Of these parks, 18% are conservation parks, 7% are trails (greenways), 25% are natural and 50% are recreation/cultural/waterfront. Collectively, these parks represent 4 biogeoclimatic subzones, of which some are low elevation forests and grasslands currently at risk in the region (i.e. 45% IDFxh1, 52% PPxh1a, 1% PPxh1a and 2% MSdm1).

The current park system provides approximately 6 ha. for every 1000 residents within the regional district. The Official Regional Park Plan proposes to achieve 12 ha. for every 1000 residents. For this to occur, another 1015 ha. would need to be acquired at the current population level. This would place the regional district above the average for B.C. For more information on the Regional Parks Legacy Plan (2007-2017) and RDCO Regional Growth Strategy Parks and Open Space Discussion Paper see

- http://www.regionaldistrict.com/services/parks-services/regional-parks/planning-initiatives.aspx#ORPP
- http://www.regionaldistrict.com/media/49732/Parks%20and%20Open%20Space.pdf

APPENDIX C: Regional District of North Okanagan Key Findings

Value for Nature

A survey of north Okanagan youth (ages 8-25) was conducted as part of the Regional Growth Strategy,[62] and showed that youth considered the natural beauty and environmental amenities as the defining attribute of the North Okanagan. There appeared to be a strong environmental awareness present in youth participating in the survey, together with a strong desire for the development of an eco-friendly community over the next 20 years. Approximately 68% of respondents associated environmental attributes with quality of life.

A survey of seniors (55+) was also conducted for the Regional Growth Strategy with a focus on age-specific needs and priorities. When asked what they liked about their community, seniors highlighted natural beauty, beaches and trails, natural amenities, protecting watershed and conserving green spaces. For seniors, the environment was both a valued feature and a priority for protection with specific references to preserving natural lands, and setting aside lands for native plants and animals.

Links between the Biodiversity Strategy and other important regional district plans

The regional district bylaw 2500, The RDNO Regional Growth Strategy,[63] was enacted in September of 2011. This project was already underway during the start of the Biodiversity Conservation Strategy project and members of the OCCP formed a part of the environmental advisory group providing input to the regional growth strategy. The resulting RGS environmental goals do not directly refer to this current biodiversity strategy, but the biodiversity information and mapping supports the RDNO RGS vision and goals by providing a seamless analysis of ecosystem values and conservation opportunities over the entire regional district.

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[62] For more information on "What Future Would you Like to Create" and other background surveys to inform development of the North Okanagan Regional Growth Strategy, contact RDNO staff.

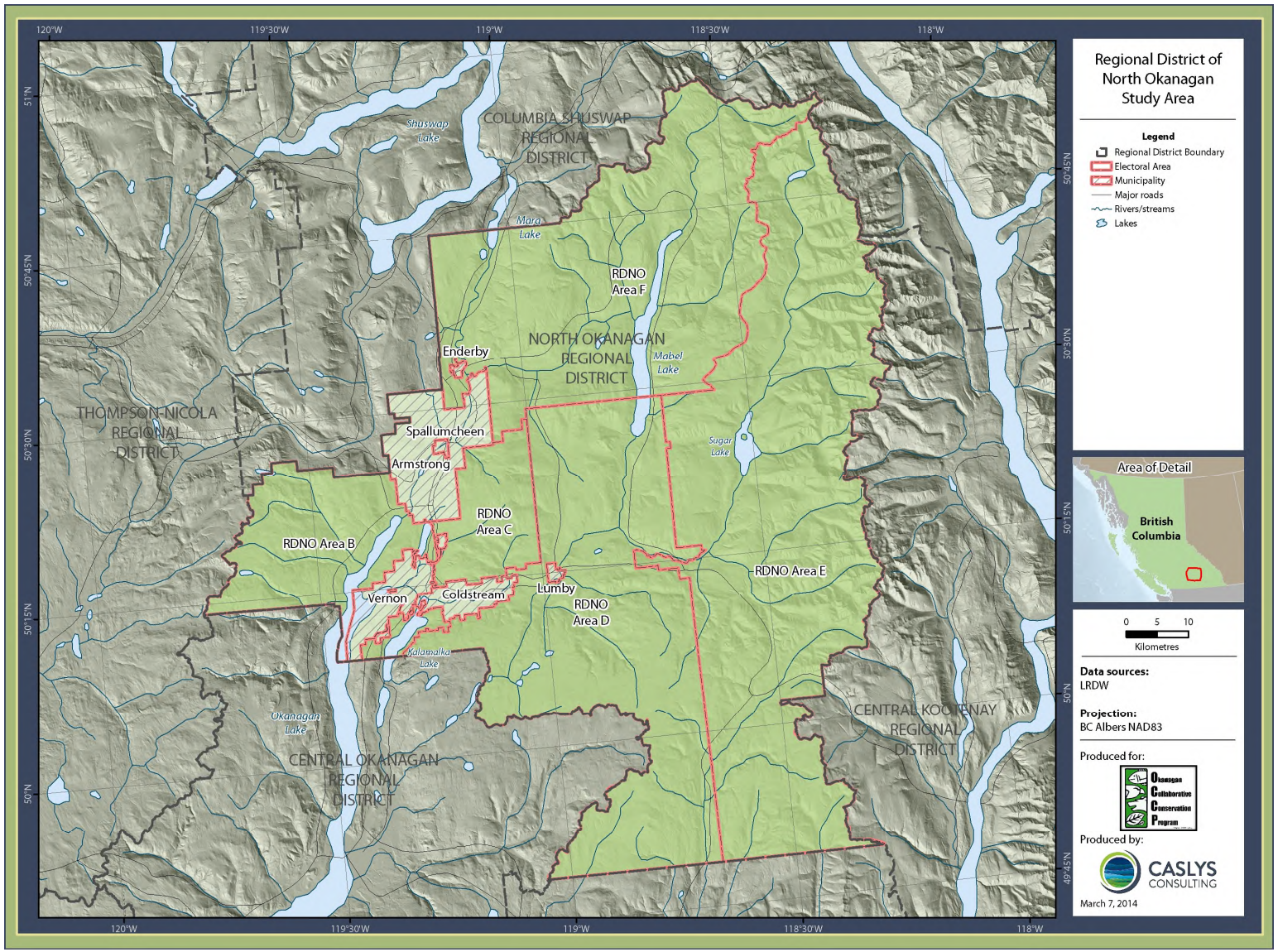
[63] RDNO Regional Growth Strategy is available at the following website: http://www.rdno.ca/index.php/services/planning-building/regional-growth-strategy

In particular the biodiversity conservation analysis and mapping fulfills a number of the RGS goals directed towards collaboration and identifying important features, ecosystems and corridors. Analysis and mapping products also support creation of regionally consistent policies to protect water, ecosystem function, biodiversity and ecological services in floodplains, shorelines, stream and river systems, aquifers, wetlands and forested watersheds.

The mapping and tools also provide a baseline of data that can be used as part of the Regional Growth Strategy monitoring program which is to be designed to provide meaningful feedback on the effectiveness of regional policies to the Regional Board and the municipal councils.

For more information on specific policies and the regional growth strategy visit the RDNO website
http://www.rdno.ca/index.php/services/planning-building/regional-growth-strategy.

Study Area: Regional District of North Okanagan



Key Findings of Biodiversity Conservation Strategy Analysis[64]

Conservation ranking:

- Over 50% (55.4%) of the Regional District of North Okanagan (RDNO) area is classified as having high or very high conservation ranking.

Relative biodiversity:

- More than 6.2 % of the RDNO 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 based on percent of study area class total are Area D (43%), Area E (38.6%), Area F (33.5%), Area B (14%), the City of Vernon (4.1%) and Municipality of Coldstream (1.6%).
- The valley bottom is very important, even though it is a smaller part of the region overall, and in the RDNO, the moderate and low classes are distributed proportionately between valley and upland. A higher proportion of the very high (47%) and high biodiversity (48.2%) is found in the valley area while the valley areas represent only 18.5% of the regional district. The upland area generally does not have the same intensity of land conversion as the valley and therefore represents an opportunity for land managers to retain biodiversity values. Protection of these lands is not necessarily comparable or interchangeable with protection of the valley bottom as ecosystems and biodiversity values may differ.

Land management:

- Approximately 8 % of the RDCO and RDNO total study area falls within lands designated as parks, with the vast majority consisting of provincial parks and protected areas. All types of parks combined (municipal/regional parks, provincial parks and protected areas) protect only 16.6 % of the region's very high and 12.8 % high biodiversity habitats. In just the RDNO area, 32.2% of class 1 conservation lands and 1.2% of class 2 dedicated open space lie within the high and very high biodiversity classes.
- RDNO does not have a regional parks function that covers the whole regional district.
- The comparatively small amount of land that falls within dedicated conservation lands highlights the need for considering multiple values for public resource lands, including biodiversity.
- 51.8% of the very high relative biodiversity class falls within resource lands, followed by 19.8% on conservation lands, 14.8% on private land and 10.4% on agricultural and crown leases.

[64] For more detailed information see *A Biodiversity Conservation Analysis for the North and Central Okanagan Region* at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389

Connectivity:

- At a regional scale, the Okanagan Valley represents a north-south corridor, facilitating wildlife movement between the U.S. Columbia Basin and the grasslands of the Central Interior Plateau of B.C. Human settlement and the associated transportation network in the RDNO represent barriers to wildlife movement. Highways 97 and 97A impede east-west movement and highway 6 has a potential impact on 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. The main Okanagan valley offers the best potential for north-south wildlife movement. The north end of the Okanagan Valley, where the Shuswap and Okanagan drainages meet near Enderby and near Lumby, offer the best options for east-west movement along the Shuswap River Valley.
- Opportunities to create wildlife corridors are limited where pinch points occur. Pinch points are found in large urban/suburban areas such as Vernon, or areas where terrain creates narrow valley bottoms.

Local and Regional Parks

Unlike some of the more populated regional districts in BC, the RDNO does not have a regional parks operation for the entire regional district, however, it does have regional parks applicable to the Greater Vernon area which includes electoral areas B and C, District of Coldstream and the City of Vernon. Greater Vernon has 407 ha of parks and of these 214 ha are natural areas and 34 are trails (linear parks). Combined, these areas cover 60% of the park area. The remaining park area includes neighbourhood, community, athletic, city wide parks and facilities. In total, the existing area of parks exceeds the 2004 Parks Master Plan. Recently, there has been a considerable increase in natural areas parks, attributed to the large area purchased at the end of Swan Lake. The Greater Vernon Parks function has undergone recent restructuring with local parks ownership and management transferred to each applicable jurisdiction leaving sub-regional parks under the management of the regional district.

Natural areas have been acquired by the Greater Vernon Services Committee participants to protect environmentally significant areas and features and to provide outdoor recreation opportunities. The natural areas include ponds, wetlands, riparian and forested areas, prominent slopes, and other natural features. Trails include off-road trails that connect key use areas and natural features throughout the Greater Vernon area. Trails are often located within natural areas. For additional information see the Greater Vernon Parks, Recreation and Culture website and Parks Master Plan

http://www.rdno.ca/index.php/services/recreation/greater-vernon-parks-recreation-culture

APPENDIX D: EXISTING 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 B.C. species and ecosystems in terms of urgency for conservation action based on three conservation goals: 1) B.C.'s global responsibility for maintaining biodiversity; 2) Proactive conservation; and 3) Maintaining B.C.'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. See www.env.gov.bc.ca/conservationframework/ for more information.

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 plans. See www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm for more information.

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. See www.ec.gc.ca/pde-egp/ for more information.

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 habitat throughout their current ranges and, where appropriate, their historic ranges. See www.env.gov.bc.ca/wld/frpa/iwms/ for more information.

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 coordinated involvement of partners, to address the threats to BC's environment and economy posed by invasive alien species. See www.env.gov.bc.ca/wld/documents/alien_species_framework_BC_0205.pdf.

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. See http://ilmbwww.gov.bc.ca/slrp/lrmp/kamloops/okanagan/index.html for more information.

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. See www.speciesatrisk.bc.ca/.

Species and Ecosystems at Risk (SEAR) Local Government Working Group: Collaboration of local government and provincial government professionals working on SEAR protection support for private land. The working group is coordinated by Lynn Campbell, Species at Risk Biologist, Ministry of Environment tel: (250) 387-9676; fax: (250) 387-9750.

Species at Risk Task Force: Provides recommendations to the B.C. government to help it update its vision for the conservation of species and ecosystems at risk and ensure British Columbia 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 (available at www.env.gov.bc.ca/sartaskforce/Documents/SpeciesAtRisk_report.pdf).

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/ for best management practices, case studies, demonstration projects, publications and other resources.

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. See www.env.gov.bc.ca/cdc/ for more information.

BC Species and Ecosystems Explorer: A source for conservation information on approximately 6,000 plants and animals and over 600 ecological communities in B.C. 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. See www.env.gov.bc.ca/atrisk/toolintro.html for more information.

EcoCat (the Ecological Reports 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 type. Available at: http://srmapps.gov.bc.ca/apps/acat/. Biodiversity Conservation Analysis and mapping for the South Okanagan-Similkameen and Biodiversity Conservation Analysis for the North and Central Okanagan Region, is available on this site at http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=42389.

Hectares BC: Hectares BC, a web-accessible geospatial analytical tool developed as a collaborative project by federal and provincial government agencies and non-government organizations. The system grants anyone with web access the ability to view, download or analyze large volumes of data with a query tool. The system enables both technically sophisticated geospatial analysts and those with limited understanding or access to geospatial data and tools to complete timely, transparent, repeatable modeling and analysis using centrally held data. The tool can save time acquiring and disseminating datasets, completing analysis and developing geospatial models and thematic maps, while enabling collaboration. http://www.hectaresbc.org/app/habc/HaBC.html

Okanagan Basin Water Board: The Okanagan Basin Water Board (OBWB) was instituted in 1970 through a collaboration of the three Okanagan regional districts to provide leadership on water issues that span the entire valley – recognizing the need to work together to protect our common resources. The website provides information on initiatives and links to data sources. http://www.obwb.ca/water_management/

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 region 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 region. http://cmnmaps.ca/OKANAGAN/.

Sensitive Ecosystems Inventories (SEI): SEI systematically maps and defines rare and fragile ecosystems using aerial photography, and field-checking of data in select locations. Its purpose is to encourage land-use decisions that will ensure the continued integrity of these ecosystems. SEI reports are available for Central Okanagan, Coldstream-Vernon, Joe Rich, Kelowna, Lake Country, Naramata, Okanagan Valley, South Okanagan and Vernon Commonage. See www.env.gov.bc.ca/sei/. SEI study reports and data are also found on EcoCat at www.env.gov.bc.ca/ecocat/.

Species Inventory Database (SPI) & Species Inventory Web Explorer (SIWE): The Species Inventory Web Explorer is a search engine for the Species Inventory Database (SPI). http://www.env.gov.bc.ca/wildlife/wsi/siwe.htm

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. See www.env.gov.bc.ca/wildlife/wsi/index.htm for more information.

Publications

Beyond Islands of Green: A Primer for Using Conservation Science to Select and Design Community-based Nature Reserves: This report includes discussion of conservation science principles and considerations for assessing, designing and selecting of nature reserves consistent with Environment Canada's ecological gifts program. Available at http://www.ec.gc.ca/pde-egp/default.asp?lang=En&n=B99BEB41-1

biodiverCities: A Primer on Nature in Cities: Published by ICLEI-Local Governments for Sustainability, the primer is intended for urban decision-makers who want to explore new approaches to this issue, and see Canadian examples of where biodiversity has been successfully integrated into municipal services and programs. Available at http://icleicanada.org/component/k2/item/121-biodivercitiesprimer

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. Available at www.bcwgc.org/programs/bc-sustainable-winegrowing-program.

Conservation Covenants - A Guide For Developers and Planning Departments: Provides information on the process, costs, and potential tax consequences of establishing conservation covenants. Available at http://ltabc.ca/research.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 B.C.'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. Available at www.env.gov.bc.ca/wld/documents/bmp/devwithcare2012/

Ecosystem Services, Natural Capital & Nature's Benefits In the Urban Region: Information for Professionals & Citizens: This project involved creating an information resource for environmental consultants, designers, planners and policy makers working at the urban and regional scale. This internet-accessible resource also contains references and links to detailed technical literature and to many case studies and examples. These resources are intended to help citizens, stakeholders, and policy makers to understand and use the new ideas and approaches related to the concept of ecosystem services. The resource can also be used by professionals and stakeholders to understand the relationships between existing good environmental practices and ecosystems services. Available at http://bcsla.org/initiatives/ubclacf-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. Available at www.greenbylaws.ca/.

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. Available at www.env.gov.bc.ca/wld/BMP/bmpintro.html.

How Much Habitat is Enough? Originally written for the Great Lakes area, much of the information and guidelines contained in this Environment Canada document are generic and easily adapted for use in other regions. This third edition document describes wetland, forest, riparian and grassland habitat minimum requirements to sustain wildlife populations. The document includes a literature review and guidelines suggesting percentage retention targets for forest cover, wetland cover, streamside riparian areas, and grassland patch sizes, as well as limits to impervious cover in watersheds. Available at http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=1B5F659B-B931-4F37-A988-3DD73DF656B7.

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. Available at http://wcel.org/resources/publication/new-climate-conservation-nature-carbon-and-climate-change-british-columbia-ful.

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. Available at www.ardcorp.ca/index.php?page_id=39.

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. Available at www.biodiversitybc.org/EN/main/where/132.html.

Sample of Regional Policies and Initiatives

Central Okanagan Air Quality Management Plan: "Clearing the Air" is a joint plan by the RDCO, City of Kelowna, Peachland and District of Lake Country. It addresses strategies and actions to manage air quality in the Central Okanagan.
http://www.regionaldistrict.com/media/28208/AirQualityManagementPlan.pdf

Central Okanagan Regional Parks Legacy Program: Prepared by the Regional District of Central Okanagan, this document describes the district's 10 year park land acquisition strategy for the years 2007-2017. This plan is available at:
http://www.regionaldistrict.com/media/19624/RegionalParkLegacyPlan.pdf

Crown Land Acquisition and Management Plans: This website provides links to specific crown land areas considered a regional district priority for additions (in the future) to the regional parks system. http://www.regionaldistrict.com/services/parks-services/regional-parks/planning-initiatives.aspx#ORPP

Environmental Protection Discussion Paper: This discussion paper was prepared as part of the Regional Growth Strategy planning process for RDCO. It addresses broad perspectives about perceived environmental concerns, issues and opportunities, building on the understanding of the previous RGS (2000) and RGS in neighboring areas. http://www.futureok.ca/phase-2/updated-discussion-papers.aspx

Foreshore Inventory and Mapping (FIM) & Aquatic Habitat Index for The Okanagan Lake: A Compilation of the North, South and Central Okanagan Lake, 2011: This mapping project describes the status of the entire foreshore of Okanagan Lake. It provides an inventory of land use, shore type, riparian condition and human-caused alterations for the area. Available at:
http://www.regionaldistrict.com/services/planning-section/environmental-planning/initiatives/mapping/foreshore-mapping.aspx

Okanagan Sustainable Water Strategy: Prepared by the Okanagan Water Stewardship Council (Okanagan Basin Water Board), this report is designed to address changing climate and water demand to provide water sustainability in the long term, for the Okanagan Basin. It provides comprehensive guidance about water management practices that will assist with sustainability. http://www.obwb.ca/water_strategy/

Okanogan Sub basin Plan: This plan by the Northwest Power and Conservation Council addresses the sub basin that includes both Canadian and U.S. lands. It is designed to provide the Northwest Power and Conservation Council with a method for providing mitigation and resources related to conservation/fish and wildlife in the sub basin. http://www.nwcouncil.org/fw/subbasinplanning/okanogan/plan/

Our Regional Parks: A Central Okanagan's Official Plan for the Regional Park System: Written in 2000, this plan was prepared by park users with assistance by the Parks and Recreation Department of RDCO. The plan provides a vision for the system of regional parks in the Central Okanagan directing protection of the natural environment, and provision for outdoor recreation, priority setting and environmental education. http://www.regionaldistrict.com/media/15935/Bylaw0884.pdf

Regional Parks and Greenways Plan for the Central Okanagan (2008 – 2020): This strategic plan is designed to assist the Parks Services Department with policy direction and priorities. It proposes priorities for acquisition and management of regionally significant parks and also aims to develop a greenway network for represent and help conserve Central Okanagan natural environments. http://www.regionaldistrict.com/media/19627/RegionalParks_Greenways_Plan.pdf

Shuswap Lake Integrated Planning Process (SLIPP): This integrated multi-agency planning process is working for the health and prosperity of lakes in the Shuswap watershed. http://www.slippbc.ca/

Shuswap Watershed Water Quality Program: This new program will begin in 2015. 2014 will be the developmental year for this new water quality program designed to replace SLIPP. http://www.fraserbasin.bc.ca/cgi/page.cgi?_id=691

The State of Fish and Fish Habitat in the Okanagan and Similkameen Basins: This is a component of planning in a watershed-based Fish Sustainability Plan. It provides information on habitat/fish in the Okanagan/Similkameen River Basins. http://www.obwb.ca/fileadmin/docs/state_of_fish_habitat_obwb.pdf

Water Resources Discussion Paper: This discussion paper was prepared as part of the Regional Growth Strategy planning process for RDCO. It addresses broad perspectives about issues and concerns related to water resources, lakes and streams (groundwater and surface water). http://www.futureok.ca/phase-2/updated-discussion-papers.aspx

Western Screech-Owl Stewardship Agreement: This represents an agreement between B.C.-Ministry of Environment and RDCO Parks Services to address protection, best management practices, referrals etc. related to Western Screech-Owl.
http://www.regionaldistrict.com/media/48480/Item%203.2%20Western%20Screech%20Owl%20Stewardship%20Agmt.pdf

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 either the South Okanagan Similkameen Conservation Program (SOSCP)- see www.soscp.org or Okanagan Collaborative Conservation Program (OCCP)- see http://okcp.ca/ for partner and contact information.

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

- B.C. Nature (Federation of B.C. Naturalists) www.bcnature.ca/
- Community Mapping Network www.cmnbc.ca/
- Ducks Unlimited Canada www.ducks.ca/province/bc/index.html
- Grasslands Conservation Council http://www.bcgrasslands.org/
- Land Trust Alliance of B.C. www.landtrustalliance.bc.ca/
- Nature Conservancy of Canada (B.C.) www.natureconservancy.ca/
- Nature Trust of B.C. www.naturetrust.bc.ca/
- Salmon Safe BC www.salmonsafe.org/bc
- The Land Conservancy of British Columbia www.conservancy.bc.ca/

APPENDIX E: FEDERAL AND PROVINCIAL LEGISLATION OF SIGNIFICANCE TO BIODIVERSITY MANAGEMENT

Federal Legislation

Canadian Environmental Assessment Act, 2012 (CEAA 2012) - provides a legislated requirement to review environmental impacts of major projects. Environmental assessments focus on potential adverse environment effects within federal jurisdiction including: fish and fish habitat, other aquatic species, migratory birds, federal lands, effects that cross provincial or international boundaries, effects that impact on Aboriginal peoples, such as their use of lands and resources for traditional purposes, and changes to the environment directly linked to federal decisions about a project. Environmental assessments consider various factors including cumulative effects, mitigation and comments from the public.

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 – recently revised to focus on protection for the productivity of recreational, commercial and Aboriginal fisheries.

Migratory Birds Convention Act - regulates the hunting and use of migratory birds, as well as disturbance to bird nests, 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) – seeks to prevent wildlife species in Canada from disappearing; to provide for the recovery of wildlife species that are extirpated, endangered or threatened by human activity; and to manage to avoid wildlife species of special concern from becoming endangered or threatened.

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 encourages 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.

Ecological Reserve Act - the purpose of this Act is to reserve Crown land for ecological purposes, including; areas suitable for natural environment scientific research and educational purposes; representative examples of natural ecosystems; areas of ecosystems that have been modified by human beings and offer an opportunity to study the recovery of the natural ecosystem; areas that include rare or endangered native plants and animals in their natural habitat; and areas that contain unique and rare examples of botanical, zoological or geological phenomena.

Environmental Assessment Act (BCEAA) - similar to the CEAA, triggered by major provincial projects. B.C. and Canada work together to minimize duplication of assessments and harmonize efforts where possible.

Environment and Land Use Act - a broad piece of legislation which empowers a Land Use Committee of Cabinet to ensure that all aspects of the preservation and maintenance of the natural environment are fully considered in the administration of land use and resource development. Orders can be made respecting the environment or land use. Protected area designations under the *Environment and Land Use Act* are by order in council and management direction for protected areas is provided by any special conditions included in the establishing order in council and specified provisions of the *Park Act* and *Park, Conservancy and Recreation Area Regulation* as identified in the order in council.

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.

Forest Act – one of two main pieces of legislation that govern logging on B.C.'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 B.C. 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. Local governments may adopt 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.

Protected Areas of British Columbia Act - establishes class A parks, ecological reserves and conservancies whose management and development is constrained by the Park Act.

Riparian Areas Regulation (RAR) - A tool under the *Fish Protection Act* that requires local governments to approve land use activities affecting riparian areas only after an environmental assessment is done, during the development approvals process. Developers must retain a Qualified Environmental Professional (QEP) to assess the potential for impacts to riparian areas, with a focus on fish and fish habitat (the federal Fisheries Act would cover in-stream activities).

Water Act (Water Sustainability 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.

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

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.