

REPORT 10: FEBRUARY 2013

# AN AUDIT OF BIODIVERSITY IN B.C.

ASSESSING THE EFFECTIVENESS OF KEY TOOLS

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**Auditor General**  
of British Columbia



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The Honourable Bill Barisoff  
Speaker of the Legislative Assembly  
Province of British Columbia  
Parliament Buildings  
Victoria, British Columbia  
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Dear Sir:

I have the honour to transmit to the Legislative Assembly of British Columbia my 2012/2013 Report 10: *An Audit of Biodiversity in B.C.: Assessing the Effectiveness of Key Tools*.

This audit found significant gaps in the provincial government's understanding of biodiversity in the province and no strategy to address these gaps. In addition, there are inconsistencies and barriers within the legislative framework that are inhibiting the conservation of biodiversity. This combined with a lack of implementation of government's habitat protection tools and monitoring of their effectiveness are impeding government's ability to conserve biodiversity.

John Doyle, MAcc, FCA  
Auditor General

Victoria, British Columbia  
February 2013



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## AUDITOR GENERAL'S COMMENTS

**BIODIVERSITY IS CRITICAL** to the health and well-being of British Columbians. It provides the products and services that support life including the air we breathe, the food we eat, the water we drink and many of the resources vital to our economy. Managing biodiversity is a difficult and complicated task; however, with 94 per cent of the province in Crown land, government has a pivotal role in ensuring that biodiversity is conserved now and into the future.

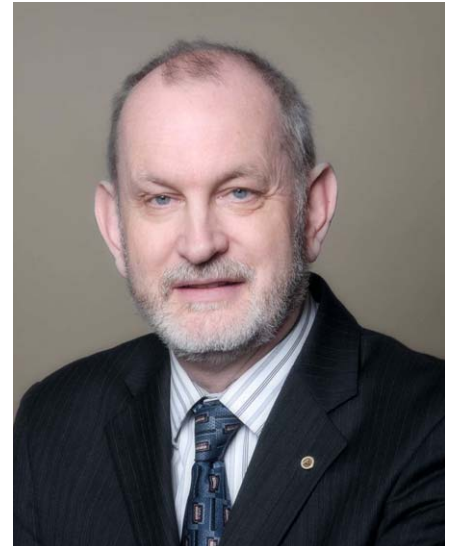
Government's acknowledgement of the importance of this role is apparent through its participation in such things as the United Nations Biodiversity Convention and the Canadian Biodiversity Strategy. However, despite the B.C. government's decades-long objective to conserve biodiversity, and commitments made on the national and international stage, the biological diversity of our province is in decline.

This audit found that government is not doing enough to address this loss of biodiversity. Specifically, government is not fully implementing or monitoring its habitat-protection tools. I was disappointed to learn this since my Office identified similar issues in an audit we conducted 20 years ago on habitat protection.

In 2010, the United Nations found that governments had failed to reduce biodiversity loss and declared 2011–2020 the Decade on Biodiversity. B.C. has an opportunity to be an international leader and bolster its reputation on the world stage by ensuring that, by 2020, it has reversed the current decline in the province's biodiversity. However, to reach this target will require specific, strategic actions by government. This report makes six recommendations on how the provincial government can work towards this.

I thank the ministries involved for their assistance and cooperation during this audit. I look forward to receiving updates on their implementation of the recommendations made in this report through our follow-up process.

John Doyle, MAcc, FCA  
Auditor General  
Victoria, British Columbia  
February 2013



**JOHN DOYLE, MAcc, FCA**

AUDITOR GENERAL

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## EXECUTIVE SUMMARY

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**BIODIVERSITY IS THE VARIETY** of life on the planet. It includes species, their genetic diversity and ecosystems. The health of biodiversity is often compared to the health of the environment, and ultimately affects human well-being by supplying us with food, water, air, soil and medicines.

British Columbia is Canada's most biologically diverse province; however, recent assessments have shown that many of its species and ecosystems are declining. The two ministries primarily responsible for conserving biodiversity in the province are the Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations.

The Ministry of Environment has had a long-term goal of conserving, maintaining and enhancing native species and ecosystems, while the Ministry of Forests, Lands and Natural Resource Operations undertakes many of the activities aimed at realizing this goal. This audit looked at the conservation of biodiversity on Crown land, and focused on the habitat protection actions of these two ministries.

We conducted this audit to determine whether the B.C. government is effectively conserving biodiversity in the province. We asked three questions:

1. Does government have a clear understanding of biodiversity in B.C.?
2. Are government actions resulting in the conservation of biodiversity?
3. Is government measuring and reporting publicly on its progress towards conserving biodiversity?

### WE CONCLUDED THAT:

- ◆ Significant gaps exist in government's understanding of biodiversity in B.C.
- ◆ Government does not know whether its actions are resulting in the conservation of biodiversity.
- ◆ Government is not adequately measuring and reporting on its progress in the conservation of biodiversity.



### **WE RECOMMEND THAT GOVERNMENT:**

- 1.** make a long-term commitment to collect sufficient and reliable information about the status of biodiversity in B.C. and apply this information to make informed decisions about the conservation of biodiversity;
- 2.** review its legislative framework to ensure that any significant gaps, inconsistencies or barriers to achieving conservation of biodiversity are identified and addressed;
- 3.** assign responsibilities and timelines for its conservation actions and demonstrate how the prioritization of these actions is conserving biodiversity;
- 4.** establish goals, objectives, targets and timelines to fully implement its habitat designation tools and determine whether other tools are necessary to achieve its objective of conserving biodiversity;
- 5.** complete sufficient monitoring to assess the effectiveness of its actions in the conservation of biodiversity; and
- 6.** report periodically to the Legislative Assembly and the public on how its actions are impacting the status of biodiversity and how it is meeting its provincial, national and international commitments to biodiversity.



## RESPONSE FROM GOVERNMENT

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The Ministries of Environment and Forests, Lands, and Natural Resource Operations appreciate the efforts of the Office of the Auditor General of British Columbia (OAGBC) in their Audit of Biodiversity in B.C.: Assessing the Effectiveness of Key Tools.

As the report indicates, every jurisdiction in the world is challenged with issues of biodiversity conservation. Scientists are challenged to measure, monitor, and understand biodiversity; while governments work to manage in ways that balance economic growth, social interest, and ecological integrity. The laws, tools, policies, and programs required to manage biodiversity are, like the system itself, necessarily complex and multifaceted.

Currently, 37% of British Columbia's land-base has one or more biodiversity conservation designations associated with it. Examples of these designations include Ecological Reserves, Parks, Conservation Lands, Wildlife Habitat Areas, Ungulate Winter Ranges, and Special Conservation Areas. The level of conservation varies with each of these designations, but we are looking at the performance of these areas to better inform future decisions and incorporate Climate Change mitigation and adaptation.

The Province recognized that effectively managing to conserve biodiversity in the 21st century required a fundamental shift to how we manage natural resources in B.C. We are now in the process of implementing a shift from a ministry-by-ministry approach to a coordinated, natural resource sector approach that will incorporate biodiversity objectives (along with other social, economic, and environmental objectives) into all natural resource decisions.

This new “**One Land Base, One Land Manager**” approach includes leading-edge initiatives to assess the cumulative effects of development on our social, environmental, and economic values; to explore new ways of mitigating the effects of development on our environmental values; to further protect and recover our species at risk; and to more effectively report on environmental condition to the public.

Conservation of biodiversity is a key mandate of the natural resource sector. This audit and its recommendations will help support ongoing efforts to manage and conserve British Columbia's biodiversity and will be coordinated with the ongoing efforts of BC Parks in response to the OAGBC audit on Conservation of Ecological Integrity in B.C. Parks and Protected Areas. That work has seen revisions to BC Parks' land acquisition criteria, which ensures that ecological values are appropriately represented in new land acquisitions, as well as a variety of ongoing operational and policy initiatives to further enhance the conservation of ecological integrity within B.C.'s Parks and Protected Areas.

**RECOMMENDATION 1:** *Make a long term commitment to collect sufficient and reliable information about the status of biodiversity in B.C. and apply this information to make informed decisions about the conservation of biodiversity.*



## RESPONSE FROM GOVERNMENT

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We recognize the high value of additional information, but we also recognize that field-data collection is increasingly expensive. Because of this and because the scope of biodiversity is so large, we are strategic about where we invest. For example, the Province recently invested in species and ecosystems inventories in B.C.'s Northeast, a current hotspot for development. We also rely on a number of external avenues to acquire better information by working with partners and networks, by encouraging citizen science programs, and by seeking access to existing external collections. The BC Conservation Data Centre, where much of this information is managed, is a recognized leader in Canada in the collection and dissemination of information on species and ecosystems at risk.

Starting in 2013, the Ministries will initiate work to:

- ◆ streamline policies for data collection to further improve data submissions in support of conservation status assessments and legal listing decisions (by end of 2014);
- ◆ develop options to secure long-term funding for species and habitat inventory, monitoring, and related reporting (by 2017); and
- ◆ develop a process for using ecosystems and ecological communities as a coarse-filter approach to manage for species such as non-vascular plants and invertebrates (by end of 2014).

**RECOMMENDATION 2:** *Review its legislative framework to ensure that any significant gaps, inconsistencies or barriers to achieving conservation of biodiversity are identified and addressed.*

The natural resource sector ministries are responsible for 130 provincial statutes that provide for the sustainable management and protection of the Province's natural resources and reconciliation with Aboriginal peoples. Thus, we rely on a suite of regulations and policies to protect and conserve the biodiversity of British Columbia. We are not aware of any jurisdiction in Canada that does not use multiple regulations and policies to conserve biodiversity.

As part of the shift to a more coordinated natural resource sector, we recognize there are opportunities to refine our legal and policy frameworks.

Starting in 2013, the Province will:

- ◆ initiate a review of the natural resource sector legal framework to identify and address significant gaps, duplications, or inconsistencies (by 2017);
- ◆ develop and implement policy, procedures, and guidelines for mitigating impacts to priority biodiversity values (by end of 2013); and
- ◆ assess and recommend new methods, including incentives, to promote voluntary protection of species at risk on private land (by 2015).





## RESPONSE FROM GOVERNMENT

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**RECOMMENDATION 3:** *Assign responsibilities and timelines for its conservation actions and demonstrate how the prioritization of these actions is conserving biodiversity.*

For an issue as all-encompassing as biodiversity, prioritizing is essential and we do it by necessity. We also rely on others (e.g., industry, First Nations, municipalities, and the general public) to engage in the conservation of biodiversity in B.C. We have learned that this “shared-stewardship” approach requires flexibility to enable opportunistic use of partners, resources, and capacity when and where they become available.

The Conservation Framework is only one approach to priority setting, assigning actions to over 6000 species and ecosystems to better align conservation priorities across multiple agencies. In the last five years we have learned much about the challenges of maintaining such a comprehensive list of priorities.

Starting in 2013, the Province will initiate work to:

- ◆ refine the priority-setting process of the Conservation Framework to be more efficient and further integrate the delivery and tracking of these priorities into provincial programs (by 2015); and
- ◆ update the content of the Ecosystems Program Plan and integrate the strategies and actions within the plan into natural resource sector planning (by 2014).

**RECOMMENDATION 4:** *Establish goals, objectives, targets, and timelines to fully implement its habitat designation tools and determine whether other tools are necessary to achieve its objective of conserving biodiversity.*

British Columbia’s approach to habitat protection is collaborative. We evaluate the socio-economic impacts of habitat decisions, and we engage with parties that may be affected by them. We believe that this type of collaboration results in more effective conservation outcomes and reflects the will of British Columbians.

The Province recently implemented a Government Actions Regulation (GAR) Implementation Strategy. This is a mechanism to better prioritize biodiversity and habitat designations under the *Forest and Range Practices Act* and the *Oil & Gas Activities Act* and to guide annual business planning and resourcing.



## RESPONSE FROM GOVERNMENT

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Starting in 2013, and in conjunction with the review of the natural resource sector legal framework, the Province will:

- ◆ initiate a review of the Identified Wildlife Management Strategy (*Forest and Range Practices Act*; *Oil & Gas Activities Act*), and assess options to improve implementation efficiency and better align with both landscape-level biodiversity initiatives and the coordinated natural resource sector approach (by end of 2013); and
- ◆ develop a plan to fully implement existing habitat designation tools in conjunction with an assessment of the need for additional tools (by end of 2014).

### **RECOMMENDATION 5:** *Complete sufficient monitoring to assess the effectiveness of its actions in the conservation of biodiversity.*

The complex nature of biodiversity means that we will never have a definitive picture of the status of biodiversity, nor will we definitively understand all of the causal factors that influence that status. Thus, we must combine strategic monitoring efforts with surrogate measures, models, and indicators to evaluate the status of biodiversity and our efforts to conserve it.

When the *Forest and Range Practices Act* was implemented, we established a monitoring system known as the Forest & Range Evaluation Program (FREP) which is designed to evaluate forest and range practices in achieving management objectives, including those for biodiversity. Effectiveness protocols have been developed for several species, some monitoring has been conducted, and more is planned.

As part of the shift to the natural resource sector approach, the Province will:

- ◆ investigate options for expanding the current FREP program to develop a more integrated and comprehensive approach to natural resource monitoring (by 2014); and
- ◆ continually seek new opportunities for cost-sharing and/or information-sharing with industry and other partners to support monitoring efforts (ongoing)

### **RECOMMENDATION 6:** *Report periodically to the Legislative Assembly and the public on how its actions are impacting the status of biodiversity and how it is meeting its provincial, national, and international commitments to biodiversity.*

Changes to the status of biodiversity in an area the size of British Columbia occur slowly, thus our reporting efforts on changes to that status will, necessarily, reflect that time frame.



## RESPONSE FROM GOVERNMENT

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Less than 5 years ago, the Province worked with partners to produce *Taking Nature's Pulse: The Status of Biodiversity in British Columbia*. The Province also co-published the Canadian Biodiversity: Ecosystem Status and Trends 2010 report. In November 2012, the Ministry of Environment launched Environmental Reporting BC, a web-based state of environment reporting portal. Environmental Reporting BC is a modernized model, including open data, and more iterative updates. It also includes an easy window for the public and decision makers to access data, reporting products, and reporting sites across key environmental topics. <http://www.env.gov.bc.ca/soe/>

Starting in 2013, the Province will:

- ◆ develop and publish an initial indicator on change in status of native vertebrates in B.C. (by early 2013); and
- ◆ develop a centralized, web-based approach to reporting on species at risk in B.C. that will provide access to and link together different initiatives, agencies, and information related to species at risk in B.C. (by 2015).



## BACKGROUND

### WHAT IS BIODIVERSITY?

Biodiversity includes the variety of ecosystems, genes and species on earth, as well as the natural processes that maintain them. Biodiversity is crucial for the functioning of ecosystems, and provides the natural products and services that support life – from oxygen, food, fresh water and fertile soils to medicines and storm and flood protection.

Despite their importance, ecosystems, species and genetic diversity are being reduced at a rapid rate due to the impacts of increased resource consumption and growing human population. The global decline of biodiversity is recognized as one of the most serious environmental issues today.

British Columbia is Canada’s most biologically diverse province because of its complex geography and varied climate. However, recent assessments have shown that many of its species and ecosystems are declining, and that a number of species are at risk of local extinction (or **extirpation** – see sidebar).

### THE ROLE OF THE PROVINCIAL GOVERNMENT IN CONSERVING BIODIVERSITY

In B.C., 94 per cent of the province is Crown land. How that land is managed is pivotal in conserving biodiversity.

Understanding and managing biodiversity is a difficult and complicated task. The B.C. government has been involved in initiatives to conserve biodiversity for a long period of time (see **Appendix 1**). Since 2006, one of the goals of the Ministry of Environment has been to maintain healthy and diverse native species and ecosystems across B.C. To achieve this goal, the ministry set three objectives, all related to biodiversity:

1. well-managed, integrated, open and accessible information on species and ecosystems;
2. conserved, maintained and enhanced native species and ecosystems; and
3. well-managed parks and protected areas.

From 2007 to 2010, the Wildlife, Fisheries and Ecosystems Programs, as well as the activities undertaken to conserve species and ecosystems, were led by the Ministry of Environment (MoE). In 2010, the Wildlife and Fisheries Programs and most of the activities in the Ecosystems Program were transferred to the Ministry of Forests, Lands and Natural Resource Operations. MoE retained a significant policy, science and coordination role in these programs.

### THREATS TO BIODIVERSITY

According to the International Union for the Conservation of Nature, biodiversity faces five major threats:

- ◆ habitat loss and fragmentation
- ◆ invasive alien species
- ◆ over-exploitation of natural resources
- ◆ pollution and diseases
- ◆ human-induced climate change

### EXTIRPATION

This biological term refers to a species that no longer exists in the wild of a certain area, but can be found elsewhere in the world.

In B.C., several species have been extirpated in recent years. For example, the last sighting of the white-tailed jack rabbit in the province was in 1981. Before then, these rabbits were typically found in the southern Okanagan (a small portion of their global range). Their extirpation is likely the result of over-hunting, habitat loss and fragmentation from intense urban, agricultural and industrial development.



**WHITE-TAILED JACK RABBIT**  
PHOTO: JARED HOBBS



### AUDIT OBJECTIVES AND SCOPE

We conducted this audit to determine whether the B.C. government is effectively conserving biodiversity in the province. We asked three questions:

- ◆ Does government have a clear understanding of biodiversity in B.C.?
- ◆ Are government actions resulting in the conservation of biodiversity?
- ◆ Is government measuring and reporting publicly on its progress towards conserving biodiversity?

Our audit looked at the conservation of biodiversity on Crown land, and focused on the habitat protection actions of the Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations – the two ministries with primary responsibility for conserving biodiversity in the province.

In 2010, government amended the *Oil and Gas Activities Act* (OGAA) to mitigate oil and gas activities in areas designated for habitat protection. However, as this is a recent change in government legislation, we did not include OGAA in the audit scope.

Interviews were carried out between April and December 2012, and the audit team reviewed relevant documentation for the years 2005 through 2012.

We conducted the audit in accordance with section 11(8) of the *Auditor General Act* and the standards for assurance engagements established by the Canadian Institute of Chartered Accountants.

### AUDIT CONCLUSION

We concluded that:

- ◆ Significant gaps exist in government's understanding of biodiversity in B.C.
- ◆ Government does not know whether its actions are resulting in the conservation of biodiversity.
- ◆ Government is not adequately measuring and reporting on its progress in the conservation of biodiversity.



### KEY FINDINGS AND RECOMMENDATIONS

#### **SIGNIFICANT GAPS EXIST IN GOVERNMENT'S UNDERSTANDING OF BIODIVERSITY IN B.C.**

Biodiversity is a challenging concept to comprehend, let alone measure, inventory and document. Having adequate inventories of biodiversity is a common problem for most jurisdictions. Nevertheless, government needs a basic amount of good-quality information with which to understand the status of biodiversity in the province and make well-informed decisions about its conservation.

We expected government to be systematically collecting sufficient and reliable information on biodiversity.

We found that there are significant gaps in government's information about biodiversity. For example:

- ◆ Parts of B.C. have never been surveyed for species distribution, and in other areas that have been surveyed, the information is now decades out of date.
- ◆ Thousands of species have been assessed for their conservation status — that is, whether they are red-listed (endangered or threatened) or blue-listed (not immediately threatened, but of concern); however this is only a small portion of the estimated total number of species.
- ◆ Information about **non-vascular plant species** (e.g. mosses – see sidebar) and invertebrates (e.g. insects) is lacking.
- ◆ Information on the state of some ecosystems is limited.

Government has not developed a strategy for filling these gaps and its current approach to collecting inventory information is dependant on sporadic funding. In addition, the quality checks necessary to ensure that the information being captured is reliable are sometimes lacking. Such issues restrict government's ability to have the knowledge it needs to make informed decisions about conserving biodiversity.

**RECOMMENDATION 1:** *We recommend that government make a long-term commitment to collect sufficient and reliable information about the status of biodiversity in B.C. and apply this information to make informed decisions about the conservation of biodiversity.*

#### **NON-VASCULAR PLANT SPECIES**

These simple land-dwelling plants do not produce seeds or flowers, and generally only reach a height of one to two centimetres. Mosses are an example of such plants. Mosses are important for small animals and insects, providing them with food and shelter.



**MENZIES' ANACOLIA MOSS**  
PHOTO: RYAN BATTEN



## GOVERNMENT DOES NOT KNOW WHETHER ITS ACTIONS ARE RESULTING IN THE CONSERVATION OF BIODIVERSITY

For actions to be effective in the conservation of biodiversity, we expected government to have:

1. a legislative framework that supports the conservation of biodiversity;
2. a method to prioritize the actions needed to conserve biodiversity;
3. accountability for those actions; and
4. assessed and monitored its actions to ensure they are effective.

## B.C.'S LEGISLATIVE FRAMEWORK DOES NOT FULLY SUPPORT ITS OBJECTIVE OF CONSERVING BIODIVERSITY

Human activity is the main cause of biodiversity loss. With so much Crown land in B.C., government has a critical role in managing the impact of this human activity to ensure the conservation of biodiversity.

We expected B.C.'s legislation to support the conservation of biodiversity and we found that there are acts that have this objective (see sidebar). For example, the *Park Act* allows for the creation of Class A parks and conservancies with the objective of preservation of the environment and the protection and maintenance of their biological diversity. However, outside of parks and protected areas, the legislative framework is not as supportive of government's stated objective. We found that legislation to conserve species and habitat doesn't apply equally to all industries.

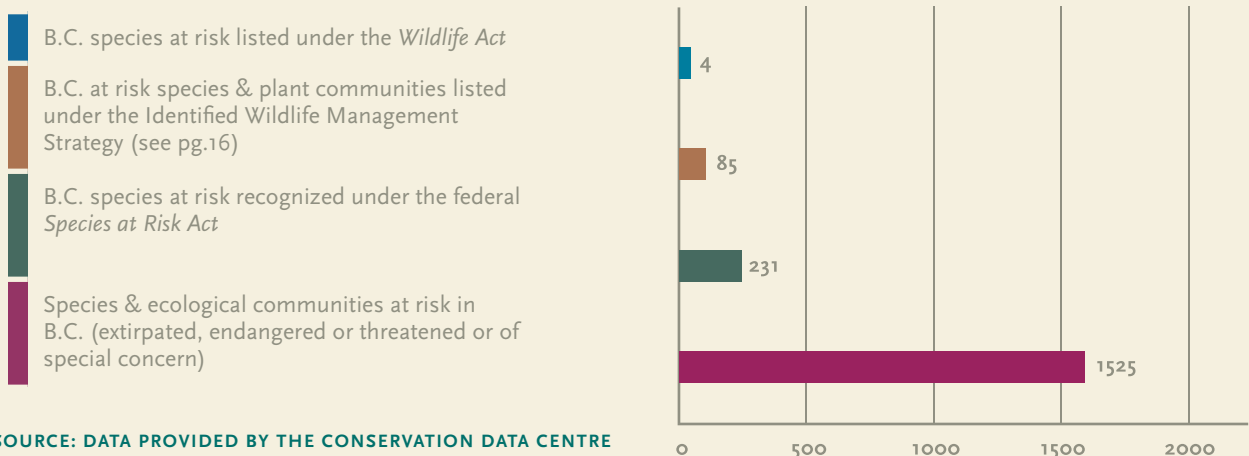
Furthermore, despite the number of species considered endangered or vulnerable in B.C., few are actually protected under the province's legislation (see Exhibit 1)

### LEGISLATION SUPPORTING BIODIVERSITY

In B.C., the following pieces of legislation include provisions for the conservation of key components of biodiversity (species, ecosystems and habitats):

- ◆ *Ministry of Environment Act*
- ◆ *Wildlife Act*
- ◆ *Forest and Range Practices Act*
- ◆ *Oil and Gas Activities Act*
- ◆ *Fish Protection Act*
- ◆ *Land Act*
- ◆ *Park Act*
- ◆ *Environment and Land Use Act*
- ◆ *Ecological Reserve Act*

**EXHIBIT 1:** At risk species and ecological communities listed in B.C. under provincial and federal legislation



SOURCE: DATA PROVIDED BY THE CONSERVATION DATA CENTRE



The *Wildlife Act* applies to vertebrates and fish, but has only four species listed as either threatened or endangered. Government amended the act in 2004 to allow plants and invertebrates to also be designated, however the regulation needed to bring these amendments into force has still not been introduced.

Under the *Forest and Range Practices Act*, the minister can list endangered, threatened, or vulnerable vertebrate and invertebrate species and endangered or threatened plants and plant communities that might be negatively affected by forest or range management on Crown land. To date, 85 species and plant communities have been identified. Government's objective for these species is "to conserve sufficient wildlife habitat" but "without unduly reducing the supply of timber from British Columbia's forests." So, for example, government limits the amount of area that can be designated as wildlife habitat to 1 per cent impact on the provincial land base for forest and range activities. We found no scientific rationale for this policy.

**RECOMMENDATION 2:** *We recommend that government review its legislative framework to ensure that any significant gaps, inconsistencies or barriers to achieving conservation of biodiversity are identified and addressed.*

### **GOVERNMENT CANNOT DEMONSTRATE THAT ITS PRIORITIZATION TOOL IS EFFECTIVE**

Current literature indicates that the job of conserving biodiversity is far greater than the resources available. We expected the B.C. government to be prioritizing its actions to achieve the best possible biodiversity conservation outcomes for the amount of funding and other resources invested. In July 2008, government launched the Conservation Framework, a tool to prioritize species and ecosystems for conservation purposes and determine the most appropriate and effective actions to take. The Conservation Framework is government's approach to the conservation of biodiversity and was expected to inform all conservation actions and decisions across the province by its third year of implementation.

We found that the Conservation Framework is not achieving its intended results. The Conservation Framework has not been updated since 2009 and the information it uses to create priorities is inadequate. This brings into question whether the priorities that government has recommended are the right ones. Without an effective way to prioritize its conservation actions, government cannot demonstrate it is using its resources effectively or determine the success of its efforts.

### **RESPONSIBILITIES AND TIMELINES FOR UNDERTAKING ACTIONS HAVE NOT BEEN ASSIGNED**

Government assigned the Natural Resource Board<sup>1</sup> (composed of deputy ministers) responsibility for ensuring that the priority actions identified in the Conservation Framework were adopted and implemented across the natural resource ministries. The activities and outcomes were to be reported annually to the board, but our review of the board's minutes found little evidence that this oversight had occurred.

<sup>1</sup> Formerly the Integrated Land Management Bureau Deputy Minister Board of Directors





We also found that government has identified the actions it needs to take to conserve biodiversity in its Wildlife, Ecosystems and Fisheries Program Plans, but government is no longer using these plans to guide its annual business planning and is not assigning accountability or tracking the implementation of the actions.

**RECOMMENDATION 3:** *We recommend that government assign responsibilities and timelines for its conservation actions and demonstrate how the prioritization of these actions is conserving biodiversity.*

### **HABITAT DESIGNATION TOOLS HAVE NOT BEEN FULLY IMPLEMENTED**

According to studies, habitat destruction is the main reason that most threatened species become extinct, and preventing degradation of habitats is the most effective way to conserve biodiversity. The Ministry of Environment's *Environmental Trends in British Columbia: 2007* describes habitat loss in the province as the greatest threat to B.C.'s species at risk, affecting 86 per cent of them.

### **CONSERVATION OF HABITATS REQUIRES LANDSCAPE AND LOCAL LEVEL APPROACHES**

Government has indicated that the conservation of biodiversity depends on a coordinated strategy that includes a system of protected areas and provisions for the conservation of habitats at both the landscape and the local scale.

### **CONSERVATION OF HABITATS AT THE LANDSCAPE LEVEL**

A landscape level approach to conserving biodiversity aims to retain biodiversity by maintaining a variety of ecosystems across the landscape, and by ensuring that representative ecosystem structure, composition and function are maintained. This way most species can be conserved by maintaining habitat at a broad scale across the landscape (see Exhibit 2).

The tools used in B.C. to implement this approach include:

- ◆ provincial parks and protected areas;
- ◆ strategic land use planning; and
- ◆ providing biodiversity requirements under the *Forest and Range Practices Act* through old growth management areas and riparian management areas (see sidebar).

In 2010, our Office reported that the parks and protected area system has not been designed to ensure ecological integrity (see *The Conservation of Ecological Integrity in B.C. Parks and Protected Areas*). This is because we found many of the Class A parks and ecological reserves are too small to ensure their ecological viability and they are not adequately connected to other protected areas.

#### **OLD GROWTH MANAGEMENT AREAS (OGMA)**

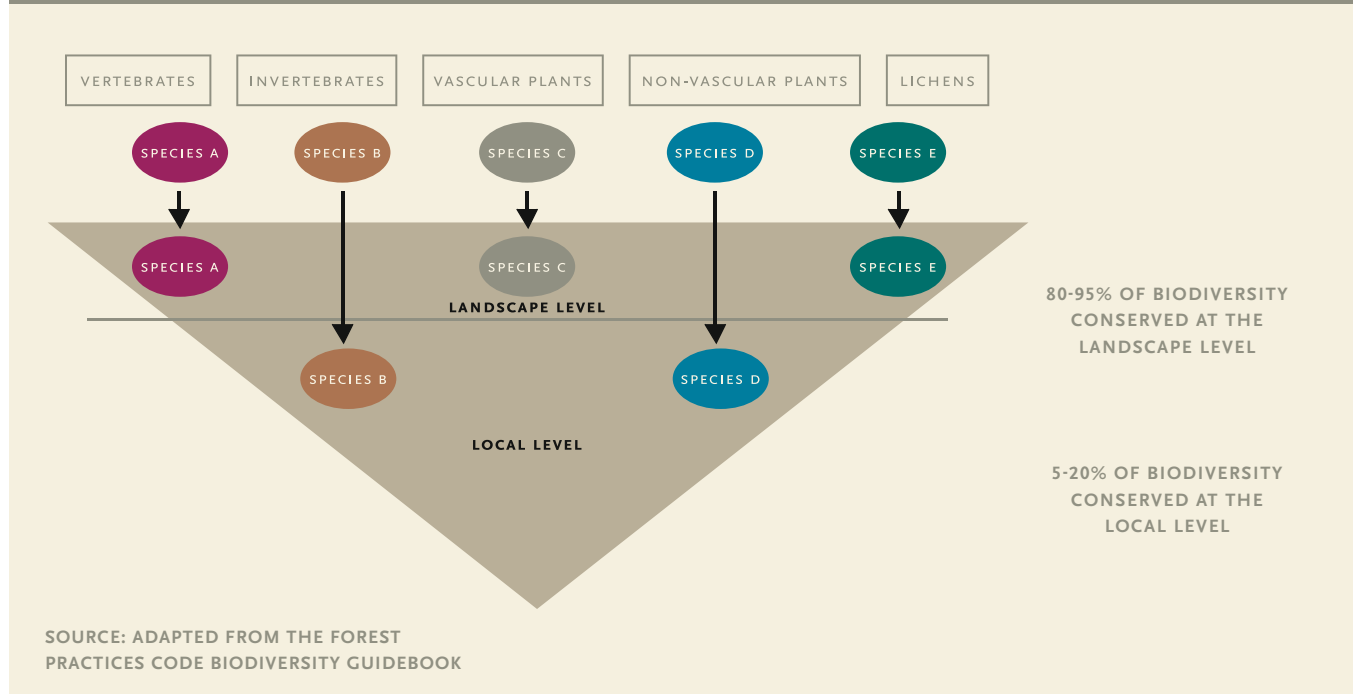
These designations are established to ensure that old growth forest is retained as a primary element of forest biodiversity.

#### **RIPARIAN MANAGEMENT AREAS**

These measures are established to conserve the ecological values associated with lands adjacent to wetlands or bodies of water such as swamps, streams, rivers or lakes.



### EXHIBIT 2: Landscape and Local Approaches to Conserving Biodiversity



In 2012, the Forest Practices Board found that government has not assessed if old growth management areas are effective in meeting their objectives (see [Conserving Old Growth Forests in BC](#)) and noted that some areas have higher amounts of old growth than others, which could affect the biodiversity values that these areas were meant to protect.

Considering both old growth management areas and parks and protected areas had undergone recent analyses, they were not part of this audit. We note that these outstanding issues identified at the landscape level will impact government's ability to conserve species at the local level. The focus of this audit was on habitat conservation at the local level.

### CONSERVATION OF HABITATS AT THE LOCAL LEVEL

The main tool that government has available to conserve species habitat at the local level is through the Government Actions Regulation (GAR) under the *Forest and Range Practices Act* and the Environmental Protection and Management Regulation under the *Oil and Gas Activities Act* (the latter not included in this audit).

We reviewed the following GAR designations: wildlife habitat areas, ungulate winter ranges, fisheries sensitive watersheds, temperature sensitive streams, and wildlife habitat features. We expected government to have identified what habitat is needed for these designations and to be monitoring whether they are effective.



### WILDLIFE HABITAT AREAS (WHA)

The Minister of Environment can establish two categories of wildlife that require special attention to address the impacts of forest and range activities on Crown land:

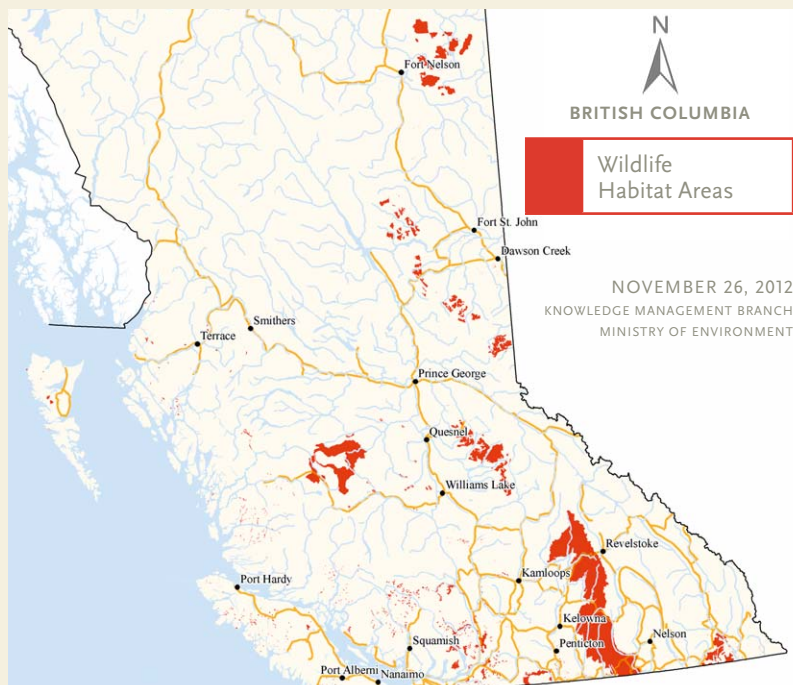
1. species at risk; and
2. regionally important wildlife.

Species at risk includes endangered, threatened or vulnerable species of animals or plants that are not adequately protected by other mechanisms. Regionally important wildlife includes species that are important to a region of B.C. which require habitats not otherwise protected.

Together, these two categories of wildlife make up the identified wildlife under the Identified Wildlife Management Strategy (IWMS). Management of these species is done through the establishment of WHAs, whose purpose is to minimize the effects of forest and range practices on identified wildlife situated on Crown land, and to maintain the species' habitats.

Government has identified 85 species eligible to receive this type of habitat protection, and designated 1,601 WHAs occupying about 3 million hectares, or 3.2 per cent, of the province (see Exhibit 3).

#### EXHIBIT 3: Map of Wildlife Habitat Areas



SOURCE: B.C. MINISTRY OF ENVIRONMENT



We found that government has not completed establishing WHAs for 36 of the 85 species it identifies as at risk from forest and range activities. Implementation has not occurred for a number of reasons including:

- ◆ a time consuming selection process to establish a WHA;
- ◆ gaps in ministry expertise on species and their habitat requirements;
- ◆ knowledge gaps resulting from limited and dated inventory information; and
- ◆ a general decline in available funding.

Furthermore, 40 per cent of the designated WHAs are for grizzly bears. This means that a large portion of government's efforts have been dedicated to one species (see species profile).

Although government can establish WHAs in two categories, we found it has only done so for the species at risk category and not for the regionally important species.

Overall, we found that government has not identified what WHAs are needed to minimize the effects of forest and range practices. As a result, species may be at risk of decline because of the lack of habitat areas designated as WHAs.

### WILDLIFE HABITAT FEATURES

Wildlife habitat features are specific habitat elements necessary for the survival of certain species. Examples include nests for herons and mineral licks for caribou.

We found that government has not yet established any wildlife habitat features although they are currently in development. Without these designations, habitat features are at risk of being damaged or destroyed, potentially jeopardizing the species that depend on them for their survival.

## SPECIES PROFILE

### GRIZZLY BEAR

British Columbia is home to one quarter of the entire North American grizzly bear population. Provincially, grizzly bears are ranked as vulnerable and are threatened by human-caused mortality, habitat loss, alienation and fragmentation. In some areas of B.C. the population numbers are so low that natural recovery is believed to be nearly impossible because bear populations tend to be isolated from each other and little natural immigration can occur.

Government has established wildlife habitat areas for grizzly bears in order to maintain critical habitat patches, to ensure security and to provide for foraging. However, given that grizzly bears have large home ranges, both the landscape and local approach to their conservation is necessary to ensure habitat connectivity and long-term viability.



GRIZZLY BEAR

PHOTO: JARED HOBBS

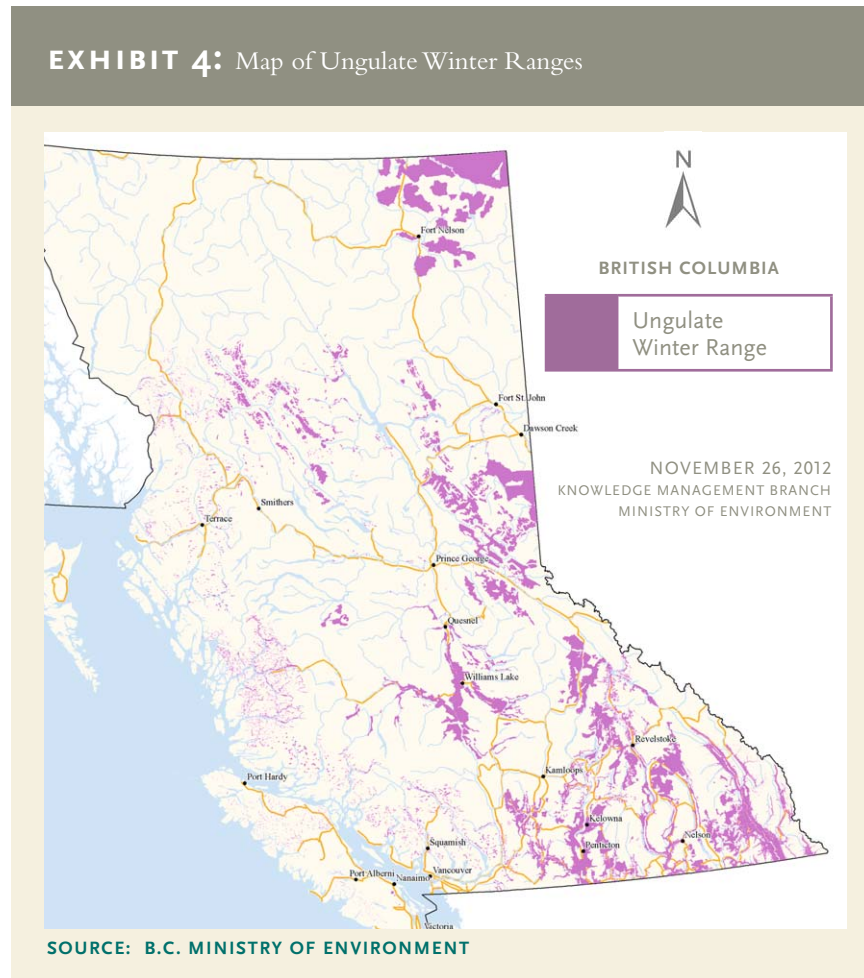


### UNGULATE WINTER RANGES (UWR)

Ungulate winter ranges (UWRs) are areas containing the winter habitat needs of an ungulate (hoofed mammal) species. These areas are critical to the survival of certain ungulates because they provide shelter, food and protection from predators. Industrial activity in these areas may force animals to relocate or expose them to greater pressures from predators.

In B.C., 74 UWRs have been established. Together they occupy about 8 million hectares, or 8.6 per cent of the province, for the following ungulates: mule deer, white-tailed deer, elk, mountain goat, caribou, bighorn sheep and moose (see Exhibit 4).

**EXHIBIT 4:** Map of Ungulate Winter Ranges

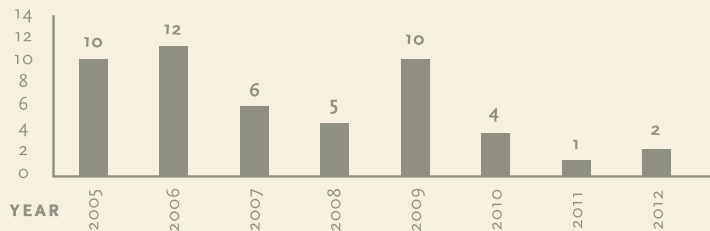




We found that government has, for the most part, identified the number of UWRs that need to be established. In 2009, the Ministry of Environment indicated that it was unable to meet its target for the designation of these areas because of a lack of funding. The number of UWRs being created has declined since then (see Exhibit 5).

**EXHIBIT 5:** Number of Ungulate Winter Ranges Designated in B.C., 2005-2012

# OF DESIGNATED  
UNGULATE  
WINTER RANGES



SOURCE: OFFICE OF THE AUDITOR GENERAL OF BRITISH COLUMBIA

Even if government met their targeted number of UWRs, the effects from multiple industries will continue to impact these designations (see species profile).

## SPECIES PROFILE

### BOREAL CARIBOU

B.C.'s boreal caribou are declining primarily because of unnaturally high predation rates resulting from the rapid development of petroleum exploration across their range and the associated effects of roads, seismic lines and pipelines impacting their habitat ([view video](#)).

To help provide habitat for boreal caribou, government has established ungulate winter ranges where certain activities are restricted for specific industries during the winter months.

In 2011, government published a new implementation plan with a number of measurable targets, including protecting habitat and monitoring the effectiveness of management actions. This plan predicts that the boreal caribou have a high probability of disappearing from at least two ranges in B.C.



BOREAL CARIBOU

PHOTO: CONRAD THIESSEN

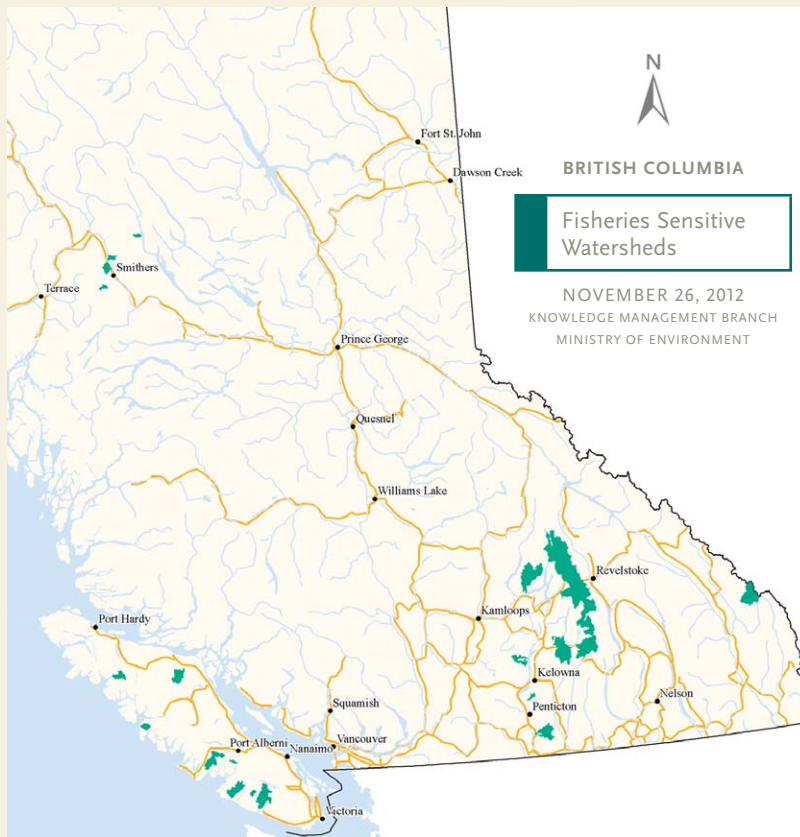


## FISHERIES SENSITIVE WATERSHEDS (FSW)

The Minister of Forests, Lands and Natural Resource Operations can designate a watershed as a fisheries sensitive watershed (FSW) if the watershed has significant fish values and sensitivity. This designation is meant to prevent forestry activities from compromising fisheries values in a major fish-bearing watershed.

31 FSWs are currently designated in B.C., occupying about 700,000 hectares (see Exhibit 6).

**EXHIBIT 6:** Map of Fisheries Sensitive Watersheds



SOURCE: B.C. MINISTRY OF ENVIRONMENT

We found a number of barriers to the designation of new FSWs. Limited funding, and uncertainty about what constitutes a watershed being “sensitive” has resulted in no new FSWs created since 2007. Without designation of these areas, significant fish habitats may be declining (see species profile).

## SPECIES PROFILE

### BULL TROUT

Bull trout are blue-listed (of special concern) in B.C. They are found in a variety of aquatic habitat types including small streams which they often use for spawning and early rearing. These fish prefer cold water with water temperature playing an important role in their spawning success. Increased water temperatures due to climate change and associated global warming are predicted to reduce bull trout habitat.

Due to their wide distribution and specific habitat needs, this species requires conservation at the landscape scale. Bull trout are sensitive to habitat degradation and are especially vulnerable to forest harvesting; petroleum and mining development and associated access; hydro development; livestock grazing; and urban development.



**BULL TROUT**

PHOTO: ERNEST KEELEY



### TEMPERATURE SENSITIVE STREAMS

Temperature sensitive streams are fish-bearing streams that are at risk of heating and impacting fish development as a result of forest and range activities.

We found that government has not finalized its procedures for designating temperature sensitive streams. As a result, it has yet to establish any of these designations, leaving some fish habitat at risk.

**RECOMMENDATION 4:** *We recommend that government establish goals, objectives, targets and timelines to fully implement its habitat designation tools and determine whether other tools are necessary to achieve its objective of conserving biodiversity.*

### HABITAT DESIGNATIONS ARE NOT BEING SUFFICIENTLY MONITORED

Effective conservation of biodiversity depends on monitoring programs that can detect and measure changes in biodiversity. This information is essential for evaluating the success or failure of policies and programs and to demonstrate the effectiveness of decisions made.

Effectiveness monitoring of WHAs, UWRs and FSWs is the responsibility of the Forest and Range Evaluation Program (FREP). The objective of the FREP is to evaluate whether practices under the *Forest and Range Practices Act* are meeting the intent of the Act's objectives, and to determine whether forest and range practices, and the legislation itself, are meeting government's broader intent to sustain B.C.'s natural resources. To do this, the FREP needs to evaluate whether WHAs, UWRs and FSWs are sufficient in amount, quality and distribution to ensure the survival of the species targeted.

We expected government to be monitoring the effectiveness of its WHAs, UWRs and FSWs in conserving biodiversity. We found, however, that only minimal monitoring is being done. There are several reasons:

- ◆ ungulates and species that have WHAs or UWRs all have very different habitat requirements, and a monitoring protocol must be developed for each of the 57 species designated;
- ◆ the target species can also be difficult to detect or involve expensive field-level assessments such as helicopter surveys; and
- ◆ the lack of both internal and external experts, a lack of information and baseline data, and variable funding are other problems.

**RECOMMENDATION 5:** *We recommend that government complete sufficient monitoring to assess the effectiveness of its actions in the conservation of biodiversity.*





### **GOVERNMENT IS NOT ADEQUATELY MEASURING AND REPORTING ON ITS PROGRESS IN THE CONSERVATION OF BIODIVERSITY**

Reporting on the state of biodiversity and documenting its actions to meet its national and international commitments are important steps for government to demonstrate its progress towards conserving biodiversity. We therefore expected government to be:

- ◆ reporting to the public on the status of biodiversity;
- ◆ measuring and reporting publicly on its progress towards conserving biodiversity; and
- ◆ reporting on how it is meeting its national and international commitments.

### **REPORTING PUBLICLY ON THE STATUS OF BIODIVERSITY**

Government has a legal requirement to report on general environmental conditions in B.C. We found that government has reported on the status of biodiversity in its *Environmental Trends* reports in 1998, 2000, 2002 and 2007 and has committed to release these reports every five years. In its last report (2007), government noted that biodiversity in B.C. was declining. This was confirmed in 2008 when government collaborated with non-government organizations to produce a status report on biodiversity entitled *Taking Nature's Pulse: The Status of Biodiversity in British Columbia*. In 2012, government launched a web site with environmental indicators, but it does not include an overall report on the status of biodiversity.

### **MEASURING AND REPORTING PUBLICLY ON PROGRESS IN CONSERVING BIODIVERSITY**

Since 2006, the Ministry of Environment has been reporting against its goal of ensuring healthy and diverse native species and ecosystems. The performance measures used between 2005 and 2009 were output measures based on the number of completed designations under the *Forest and Range Practices Act* for wildlife habitat areas, ungulate winter ranges and fisheries sensitive watersheds. These numbers do not indicate whether they are achieving government's outcome of ensuring healthy and diverse native species and ecosystems. In addition, this measure relates only to habitat protection for species impacted by forest and range activities.

In 2010, the Ministry of Environment changed its performance measure to tracking changes in the status of species. The ministry reported that changes in the status of native species of plants and animals in B.C. is an important indicator of its efforts to protect biodiversity and conserve native species. However, we found that the ministry was measuring changes to species and ecosystems at risk, only a small component of what makes up biodiversity in B.C.



### REPORTING ON THE STATUS OF ITS NATIONAL AND INTERNATIONAL COMMITMENTS

B.C.'s national and international reputation depends in part on the credibility it maintains by keeping its environmental commitments, and on its ability to demonstrate whether it is achieving the environmental results that were envisioned under these agreements (see sidebar).

Canada signed the United Nations Biodiversity Convention in 1992, and responded to this commitment by creating the Canadian Biodiversity Strategy three years later. The B.C. government supported both of these initiatives.

One of the requirements under the Canadian Biodiversity Strategy was that the province report publicly on its progress in implementing the strategy.

We found that the B.C. government has reported only once, in 1996. This lack of reporting puts the B.C. government at risk of losing credibility on the international stage in terms of its commitment to the conservation of biodiversity.

**RECOMMENDATION 6:** *We recommend that government report periodically to the Legislative Assembly and the public on how its actions are impacting the status of biodiversity and how it's meeting its provincial, national and international commitments to biodiversity.*

### UN BIODIVERSITY TARGET NOT MET

In 2010, the United Nations (UN) announced that the target agreed to by the world's governments in 2002 – “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level” – had not been met. The United Nations General Assembly proclaimed the period 2011–2020 as the United Nations Decade on Biodiversity.



## LOOKING AHEAD

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**IN THIS AUDIT,** we did not look at the 2010 amendment to the *Oil and Gas Activities Act* which restricts oil and gas activities in areas that are designated for habitat protection. We note that implementation of this amendment will be necessary to ensure that there is a balance between sustaining both the economy and the environment. We will consider examining it in the future.

We will follow-up on the status of the implementation of the recommendations in this report in 2014.



## APPENDIX 1: BIODIVERSITY TIMELINE\*

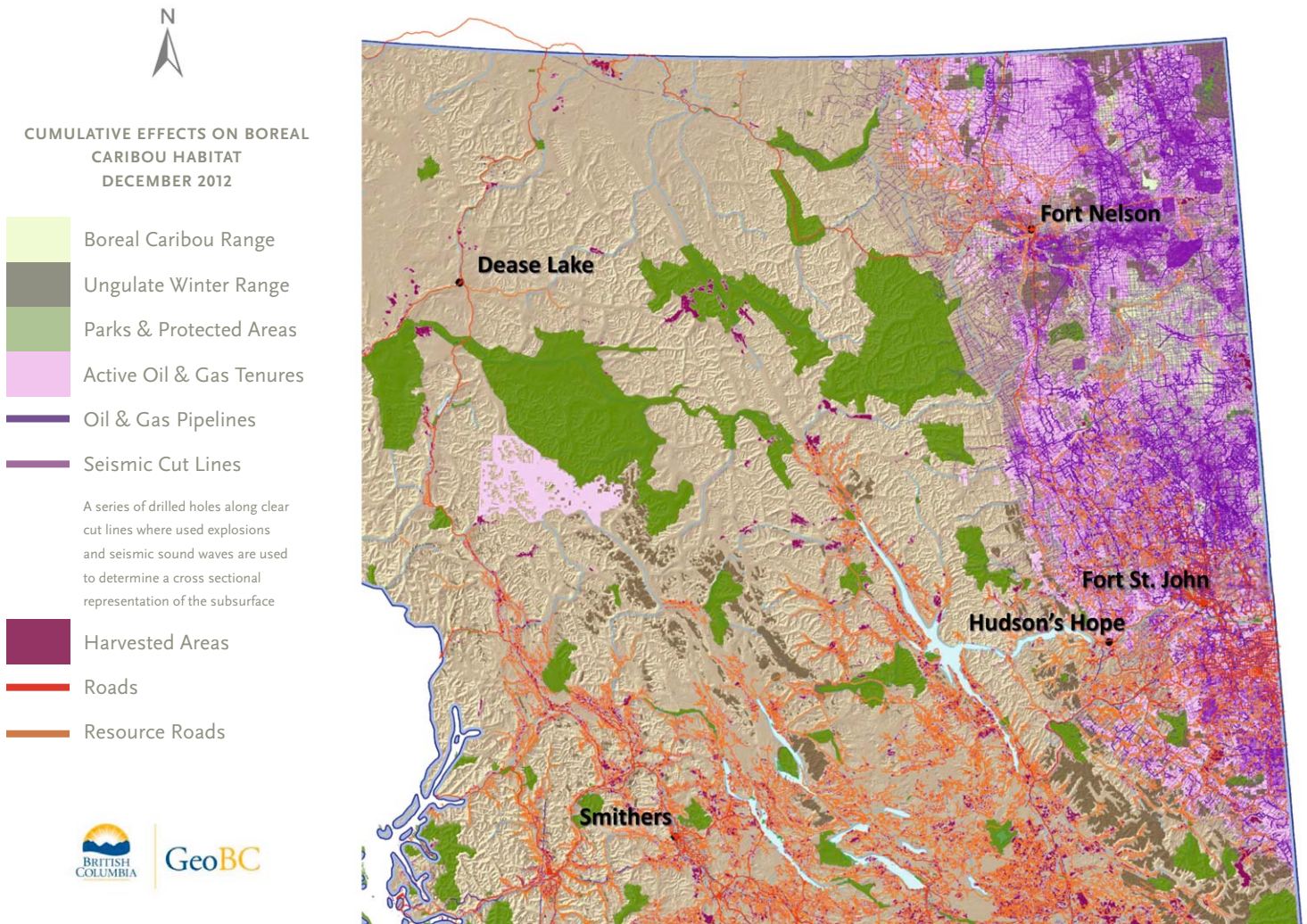
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<b>1991</b>	The Conservation Data Centre is established to assist in the preservation of biodiversity in B.C. by providing accurate information on species and ecological communities at risk.
<b>1992</b>	Canada, with the support of the provinces and the territories, signs and becomes the first industrialized country to ratify the United Nations Convention on Biological Diversity (CBD). The main objective of the CBD is to achieve by 2010 a significant reduction in the current rate of biodiversity loss.
<b>1992</b>	The B.C. government initiates the development of a Provincial Sustainability Strategy with the underlying principle of conserving biodiversity. Implementation was to be through the following key initiatives: Strategic Land Use Plans, Timber Supply Review, Protected Area Strategy and the Forest Practices Code.
<b>1994</b>	B.C. government introduces the Forest Practices Code which includes guidebooks that provide a coordinated strategy for biodiversity.
<b>1995</b>	Federal government releases the Canadian Biodiversity Strategy – a guide to the implementation of the Convention on Biological Diversity in Canada.
<b>1996</b>	B.C. government publishes a progress report on its initiatives related to the five goals of the Canadian Biodiversity Strategy.
<b>2004</b>	The Forest Practices Code is replaced by the <i>Forest and Range Practices Act</i> . The BC Conservation Lands Forum is formed to secure and improve the management of public and private lands to conserve biodiversity. This is a partnership of governments and non-government organizations.
<b>2005</b>	An independent committee of the BC Conservation Lands Forum (later named Biodiversity BC) is established to develop and facilitate the implementation of a science-based biodiversity strategy/action plan for British Columbia.
<b>2008</b>	Biodiversity BC releases <i>Taking Nature's Pulse: The Status of Biodiversity in British Columbia</i> . It was to be followed up with a Biodiversity Action Plan, but this initiative was never completed. B.C. government launches the Conservation Framework (CF) as its approach to maintaining the province's biodiversity.
<b>2010</b>	United Nations Environment Program finds that the Parties to the Convention of Biological Diversity, including Canada, have not met their commitment “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth.” The United Nations declares 2010 as the International Year of Biodiversity.
<b>2011</b>	The United Nations General Assembly declares 2011-2020 as the United Nations Decade on Biodiversity. Governments are encouraged to meet the targets identified in the internationally agreed to Strategic Plan for Biodiversity and ultimately secure the future of the Earth's biodiversity.

\* THIS INFORMATION IS PROVIDED FOR THE CONVENIENCE OF THE READER BUT IS NOT PART OF OUR AUDIT REPORT.



## APPENDIX 2: CUMULATIVE EFFECTS ON BOREAL CARIBOU HABITAT\*



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