

Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia

Chapter 1

Using Interim Wildlife Guidelines for Obtaining Commercial Backcountry Recreation Tenures in British Columbia



Pelagic Cormorants
Photo: BC Parks



Northwest Toad
Photo: BC Parks



Mountain Goat
Photo: J. Guy Bergeron



Interim Wildlife Guidelines for Commercial Recreation: **Using the Guidelines**

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I. PREFACE

Potential impacts on wildlife can be avoided or mitigated through careful site assessment, planning and management of Commercial Recreation operations.

This guide is to assist Applicants to Land and Water BC (LWBC, formerly BCAL) for Commercial Recreation (CR) tenure over Crown land, in preparing an Application that addresses potential impacts of CR operations on sensitive wildlife resources. It presents steps to preparing a complete application that meets wildlife objectives through the use of recommended guidelines to prevent or mitigate the potentially adverse effects of CR activities on wildlife and wildlife habitats in the backcountry. By assisting preparation of complete applications, the guide will also enable the Ministry of Water, Land and Air Protection (WLAP) and LWBC to provide more streamlined, consistent and timely responses to applicants for CR tenure.

II. INTRODUCTION

British Columbia offers some of the finest outdoor recreation opportunities in the world.

The Province has a wide range of scenic landscapes, ranging from oceanic to freshwater to dramatic mountain ranges. The Province's ecological variety is broad, including desert-like shrub-steppes, temperate rain forests and expansive areas of alpine tundra. The fauna is the most varied in Canada, including almost all the large mammalian species to be found in North America. These species are found in numbers and settings that are among the most natural found anywhere in the world. With its spectacular natural scenic landscapes and biological diversity, British Columbia's outdoor recreation opportunities are well known. Not surprisingly, British Columbia attracts visitors from around the world.

In concert with a worldwide trend, outdoor recreation is a growing area of the provincial economy.

Ecotourism and adventure travel are among the fastest growing components of the BC tourism sector. Commercial backcountry recreation is defined to include all forms of outdoor recreation activities authorized by the provincial government on Crown land on a fee-for-service basis. It covers a wide range of activities such as guided:

- Heli-skiing,
- Heli-hiking,
- snowmobiling,
- Wildlife viewing
- sea kayaking.

The increasing demand for backcountry recreation has created many opportunities for entrepreneurs. As a result, this commercial activity is growing rapidly, and is occurring almost entirely on Crown Land since most of the province is publicly owned. This rapid increase of CR in recent years has raised concerns that unregulated growth may adversely affect the same features of the natural environment that CR activities depend on.

Scientific literature and experience show that some activities associated with accessing backcountry areas can affect sensitive wildlife and wildlife habitat.

Wildlife responses to disturbance may be behavioural (abandonment of preferred habitat) or physiological (stress). Over time, repeated disturbance may hurt wildlife by interrupting feeding or breeding behaviour, reducing vigour or productivity, or causing death. In the long term, negative impacts to wildlife may result in reduced populations. The impacts of CR activities depend on factors such as: the type of activity; the frequency, intensity and duration of the activity; the type of transportation (motorized or non-motorized); geographic location; and sensitivity of the wildlife and wildlife habitat in the area.

These Interim Wildlife Guidelines are based on best current practices in BC and elsewhere.

The Guidelines should be useful in assisting government officials¹ and CR operators in planning and managing commercial backcountry recreation. The purpose is to avoid and/or lessen the risks of CR activities on wildlife and contribute to the environmentally sustainable development of the industry. These Guidelines are designed to be useful in Crown land tenuring and planning processes. They do not address consumptive recreational pursuits such as hunting, or other activities such as mining or forestry. In order to remain consistent with the jurisdictional responsibilities of WLAP, marine mammals such as whales and seals are not addressed in these guidelines.

Generally, most recreational use of public lands has little impact on wild animals, plants, and their habitats.

This is particularly true of the "traditional" ways of enjoying the outdoors through hiking and canoeing. However, an increasing use is being made of motorized vehicles to access and tour wilderness settings. If this use is concentrated enough in space and time, particularly in areas that support

¹ Such as those in Ministry of Water, Land and Air Protection, Ministry of Sustainable Resource Management, and Land and Water British Columbia

sensitive wildlife populations or habitats, then adverse impacts to wildlife and wildlife habitats can occur.

According to the Wildlife Policy of Canada, wildlife means all living wild organisms. However, the literature on effects of recreational activities on wildlife focuses largely on vertebrates, particularly large terrestrial mammals and large birds. Very little information exists on fish, reptiles, and amphibians, and even less on invertebrates and other animal life. Information exists about the impacts on terrestrial plant communities, but it has mainly been conducted in high-use areas of parks.

There is a great deal of information on the impacts of recreational activities on certain species of wildlife.

Not all of this information is readily available. However, for some species and species groups, there are a significant number of published accounts addressing the impacts of disturbance. Guidelines for these species are supported by the best available information in the published literature, taking into account approaches adopted by other management agencies.

Notwithstanding the large information base, many aspects of the issue are still unstudied. Given the number of wildlife species of concern, the many types of backcountry recreational activities and the variety of modes of accessing the backcountry, it is not surprising that gaps still exist. For some species and species groups, published accounts are limited or non-existent. Accordingly, Guidelines for these species are based on general principles and knowledge about wildlife, and use approaches adopted by other management agencies. In these cases, recommendations for limiting impacts are more dependent on the species life history and habitat requirements, as well as the judgment and experience of professional biologists.

III. MANAGEMENT OF COMMERCIAL RECREATION IN BRITISH COLUMBIA

Most CR businesses in BC operate on Crown land and are regulated under the Commercial Recreation on Crown Land Policy.

A license of occupation, issued under Section 39 of the *Land Act*, is the form of tenure used to authorize commercial recreation use of Crown land for a term of greater than two years over an extensive area, which may also involve intensive use of small sites. Applicants are required to submit an Application to LWBC, including a draft Management Plan, for the term of the tenure.

The provincial Land Act requires individuals who want to use Crown land for CR purposes to apply for tenure to do so.

LWBC issues these tenures. Recognizing the need to manage the increasing numbers of operators, the Commercial Recreation on Crown Land policy (see http://lwbc.bc.ca/CLB/pdf_files/crfinal.pdf) was developed and introduced for full implementation in 1998. The Commercial Recreation policy applies to all forms of outdoor recreation activities authorized by LWBC on provincial Crown land in a provincial forest and Crown land covered by saltwater and freshwater, on a fee-for-service basis. LWBC does not have jurisdiction over forest service roads and campsites, provincial parks or water corridors.

The Commercial Recreation policy provides for a number of tenuring options, including licenses, permits, and leases.

The approval or adjudication process for Crown land tenures for CR involves the referral and review of applications as appropriate by key agencies, which may include regional WLAP staff. The general public is consulted through advertisement. WLAP may assess the applications for how well they maintain the existing environment and protect important biological features. Tenures are required to incorporate environmental management provisions consistent with approved land use plans and environmental guidelines.

The approval process for recreation activities within provincial parks and protected areas is different from that for Crown land outside parks.

Interested parties must approach BC Parks and Protected Areas directly. Environmental guidelines such as these would generally apply within parks as well.

These current Guidelines do not apply to public recreation although the intent is that, over time, environmental impacts caused by public recreation will also be addressed and mitigated. The mechanisms for achieving this would be different than for CR.

IV. PURPOSE OF INTERIM WILDLIFE GUIDELINES

These Guidelines summarize available information on the impacts of non-consumptive outdoor recreational activities on wildlife, and serve as recommended practice for CR tenure applicants and holders.

Given the rapid increase in CR in recent years, and the potential for unregulated recreational activities to damage sensitive wildlife and wildlife

habitat, these Guidelines were needed in order to meet the program goals of the Ministry of Water, Land and Air Protection.

The goals of the Ministry of Water, Land and Air Protection include the “protection, conservation and restoration of a full range of biological and physical diversity native to British Columbia” and the “provision of social, economic and outdoor recreation opportunities consistent with maintaining a naturally diverse and healthy environment”.

Guidelines are defined as “a set of recommended or suggested methods or actions that should be followed in most circumstances to assist administrative and planning decisions, and their implementation in the field”². They are provided as a broad framework of recommended actions to be taken and, therefore, provide some flexibility for decision-making. They should also assist in the preparation of management plans that protect wildlife while carrying on CR activities.

These Guidelines focus on particular wildlife species and habitats of particular concern in the province because they are at high potential risk of disturbance from commercial recreation.

Most of these species are red- or blue-listed (i.e. threatened, endangered or vulnerable) or otherwise regionally significant. The Guidelines are based on current practices in B.C. and elsewhere, scientific literature on the potential adverse effects of CR on wildlife, and expert opinion.

These Guidelines will assist in planning and managing CR in the backcountry.

They will:

- Provide CR operators and LWBC with an overall picture of WLAP's key concerns about the potential impacts of recreation to wildlife, wildlife habitat and biodiversity;
- Advise CR applicants of WLAP's possible concerns at the conceptual stage of new CR proposals prior to large capital investments;
- Provide Ministry staff with clear and consistent guidelines for reviewing CR applications;
- Demonstrate provincially consistent application of wildlife management criteria, providing greater clarity and certainty for operators;

- Provide CR operators with an early indication of any wildlife inventory and environmental assessment required for timely adjudication of proposals;
- Outline acceptable impact avoidance/mitigation measures;
- Assist in focusing new CR development in areas with the least impact on wildlife and wildlife habitat; and,
- Build public confidence in the stewardship role of government and CR operators in ensuring a sustainable environment.

V. APPLICATION FOR LAND TENURE USING INTERIM WILDLIFE GUIDELINES

A generalized approach for proponents to address wildlife issues through the Crown land tenure process is:

1. Proponent contacts regional WLAP staff and the BC Conservation Data Centre (see Section VIII) regarding wildlife resources, and rare and endangered species' occurrence in a proposed or operating land tenure area. Additional information may be available on government web sites.
2. For major projects³, the Proponent will contract with a qualified biologist (RPBio or equivalent) to review existing species / habitat information and to assess the potential effects of the proposed CR operation on wildlife.
 - a. The qualified practitioner will review the Guidelines to identify information needs and operational practices required to complete the management plan, and will review existing species and habitat information and arrange for collection of new information as required.
3. Proponent is responsible for developing an Application including a CR Management Plan (see Section VI) containing mitigation strategies for wildlife resources potentially affected.
4. Proponent submits application and management plan to LWBC, who may refer it to interested parties for review. Regional WLAP staff will review proposals for major projects.
5. Depending on the risk assessment, LWBC may indicate that additional wildlife/habitat studies may be required prior to a decision for acceptance of the management plan.
6. Proponent receives CR tenure based on the proposed CR Management Plan, which then becomes binding.

² Dunster, J., & Dunster, K. (1996). *Dictionary of natural resource management*. Vancouver, BC: UBC Press.

³ A major project includes the construction of permanent facilities, the extensive use of motorized transportation equipment, or the potential of large number of clients.

7. Government and/or others may monitor the compliance with and effectiveness of wildlife mitigation strategies as stipulated in CR tenure documents.
8. Government may direct modifications of the wildlife mitigation strategies as necessary based on results of compliance and effectiveness monitoring.

Most of the Guidelines are expressed as performance-based objectives rather than rigid prescriptions.

Where specific strategies are recommended, these are to be read as guidelines rather than fixed rules. These guidelines will assist WLAP and/or LWBC staff in evaluating how well new CR management proposals address specific wildlife and habitat interests. LWBC staff will use flexibility in applying these Guidelines in assessing CR tenure proposals.

Proponents will be encouraged to utilize the guidelines and apply them to their existing or proposed activities and projects, taking into consideration site-specific factors.

Proponents may request a variance from LWBC, allowing them to deviate from the guidelines, when they can demonstrate that their particular proposal can meet environmental objectives equally well in other ways.

Other variables that need to be considered include topography, seasonality and frequency of use by humans and wildlife, and sensitivity of particular habitats and animal species to human disturbance.

WLAP staff will, when possible, work with LWBC and proponents to seek alternatives consistent with the intent of the guidelines. For example, if a physical barrier that would minimize disturbance could separate helicopter flight-related activity that is part of a CR operation, the flight set-back guidelines could be varied as appropriate. As well, distance interval restrictions may be periodically relaxed for specific circumstances such as safety concerns or inclement weather. In other instances, where the guidelines are less prescriptive, the expectation is for the proponent to demonstrate the proposed management approach is consistent with the intent of the guidelines. The results-oriented guidelines allow for a range of solutions.

WLAP will make appropriate ministry wildlife inventory and habitat information available to CR proponents for use in preparation of applications and management plans.

The guidelines are primarily for use in guiding new applications for CR tenure. Special consideration will be provided and flexibility given to

existing businesses to minimize, when appropriate, impacts on their ongoing operations. The same consideration will also be given to existing tenured CR businesses at the time of tenure renewal. In some instances, existing CR tenures contain clauses that allow for amendments to management practices of an operation. Where the current management practices vary from the recommendations in the guidelines, LWBC and, when possible, WLAP, will work with the operators to move towards improved operating practices making best efforts to ensure their continued economic viability.

The guidelines will evolve over time.

Things will change as new scientific information and experience are gained and new ways are found to operate in the backcountry while minimizing disturbance or stress to wildlife. These guidelines will be implemented using the principles of adaptive management⁴, so wildlife values can be protected at the same time that monitoring and research is used to validate and improve the various protective and mitigative measures. Monitoring the effectiveness of harm-reducing strategies is critical to a flexible and adaptive management approach. To make the guidelines work effectively will require a collaborative approach by the CR industry, CR clients, the public and government.

VI. MANAGEMENT PLANS

A Management Plan is a combination of text and maps that form part of an Application and become components of a legal agreement between LWBC and the tenure holder.

Part of the *Commercial Recreation on Crown Land Policy*, a Management Plan consists of descriptions of the specific nature of the CR operation, including the boundaries within which the operation may occur, and the conditions, provisions, restrictions and guidelines for use of Crown land for such an operation.

A Management Plan must:

1. Specify and justify the proposed area(s), purpose, terms and conditions;

⁴ Experimenting scientifically with alternative management strategies on a limited scale that will not cause large/irreversible impacts, and in a manner that will reveal which management approach is preferred (i.e. active management experiments with monitoring and a feedback loop to management decision-making). For example, see <http://www.for.gov.bc.ca/hfp/amhome/introgd/toc.htm>, *An Introductory Guide to Adaptive Management For Project Leaders and Participants*

2. Establish level of use, including number of clients on a monthly and annual basis;
3. Specify measures to eliminate or minimize conflicts with existing interests in the area;
4. Specify measures to: protect environmental integrity; ensure public access is maintained; ensure affected parties' interests are protected; and, minimize/ mitigate impacts on other resource users.

For major projects only, WLAP may consider and assess proposals for mitigation of significant potential impacts on wildlife and significant habitat. In reviewing the size and configuration of an application area, among other things, the Ministry must be satisfied that the Management Plan excludes or provides mitigation for areas of significant environmental concern.

Approved Management Plans act as the basis for monitoring specific performance requirements, such as “diligent use” of the tenure area, environmental management and reporting procedures.

VII. ASSESSING POTENTIAL IMPACTS ON WILDLIFE AND HABITAT

In preparing a Management Plan to minimize the effects of the proposed CR operation on sensitive wildlife and wildlife habitats, it is important to plan in a manner that first identifies:

1. whether, where and when there are sensitive wildlife and habitat values in the proposed operating area;
2. potential adverse effects of the proposed facilities and activities on those values (i.e. risks); and,
3. mitigation options.

This information is then used in designing the layout of built facilities, setting the boundaries and timing of recreation activities and establishing the conditions of operation to avoid or minimize negative effects on wildlife resources.

How to Identify Sensitive Wildlife Values

A Proponent only needs to consider species and habitats of special management concern listed in the Guidelines that occur in their proposed operating area.

In most cases only a few of the species or habitats, and related best management practices, will apply to any single operation in any region of the province.

There is a wide variety of sources of information on species and habitats in the province.

Information for a particular proposed operating area may be available from existing data sources, such as from the CDC. Assistance and advice on species of concern and data sources for a particular proposed operating area may be obtained from Regional WLAP and CDC staff. Species and habitats of concern for adverse impacts from CR are listed in Appendix 1. See Section VIII for sources of information on wildlife and for the locations of Regional WLAP offices.

For major projects, LWBC may recommend that the applicant obtain the appropriate information required to adequately assess and plan the proposed operation.

Depending on the nature and size of a proposal and for sites without wildlife or habitat inventory information or with inventory data that is too incomplete to assess potential impacts of CR operations, LWBC may recommend that an inventory be done by a qualified biological consultant. Regional WLAP offices can provide a list of qualified consultants. The objective is to identify sensitive species and sites, and critical times in a species' life history, such as calving, nesting, spawning etc.

Potential Adverse Effects

The level of wildlife inventory and mitigation required for a particular operation is linked to the magnitude of impacts posed by the proposed CR activities.

The potential magnitude of impact is a function of the sensitivity of the wildlife species and habitats in the area; the type of activity (e.g., motorized vs. non-motorized travel); the frequency, intensity and duration of the activity; and the geographic location.

The potential adverse impacts of CR on wildlife resources vary greatly depending on the:

type of recreation	method of travel
geographic location	wildlife species present
time of year	predictability of the activity
and perhaps most importantly, the frequency of the activity	

In general, use of motorized vehicles, including helicopters, snowmobiles, off-highway vehicles, personal watercraft and jet boats, has a greater likelihood of disturbing wildlife and physically damaging vegetation and

soils than non-motorized forms of transportation such as hiking, horseback riding and canoeing.

However, even relatively low impact activities can have negative impacts. For example, rock climbing near cliff-nesting birds or caving in winter bat hibernacula can stress or displace the animals, and high numbers of hikers randomly walking off trails in alpine meadows can damage sensitive soils and vegetation.

The amount of information required to address wildlife issues in a Management Plan should reflect the risk presented by the proposal.

Mitigation

Wildlife species or habitats of concern that could be adversely affected by the proposed CR operation will need protection or impact mitigation measures to avoid or minimize the impacts.

Mitigation and protection measures should be incorporated into the CR Management Plan. Guidelines that recommend methods to mitigate potential impacts of CR activities on wildlife and wildlife habitat of concern are viewable at: <http://wlapwww.gov.bc.ca/wld/comrec/crecintro.html>.

The overall objective of the Guidelines is to maintain the abundance and distribution of wildlife species.

The Guidelines are organized by group (mammals, birds, amphibians and reptiles, plant communities) and then by species, with impact mitigation guidelines then identified for individual species of ungulates, carnivores, seabirds, etc. For each species, the key concerns are identified. The concerns can be habitat-related, such as those areas used by animals at critical times in their annual life cycle (e.g. winter ranges for ungulates or breeding sites for colonial nesting birds). Key issues can also refer to particular aspects of a species' biology that make them vulnerable or sensitive to human activities, such as a hypersensitivity to stress or times of large aggregations.

The guidelines are flexible and results oriented. Applicants may propose alternative management approaches to LWBC that are consistent with the objective of the guidelines.

VIII. SOURCES OF INFORMATION

Rare and endangered species and plant communities

BC Conservation Data Centre

The British Columbia Conservation Data Centre (CDC) provides a centralized data source for location information on red- and blue-listed animal and plant species and plant communities. The CDC has collected information from museums, herbaria, universities, published and unpublished reports, theses, scientists, natural history groups, and the ongoing work of its own staff and contractors. Location and status information of rare and endangered species and plant communities is available to anyone making a written request. In most cases this information can be made available within one week.

The Endangered Species in British Columbia web site (srmwww.gov.bc.ca/atrisk/index.html) provides a link to the *BC Species Explorer*, a state-of-the-art on-line database with information about species at-risk in BC.

The CDC can be contacted as follows:

By Mail BC Conservation Data Centre Ministry of Sustainable Resource Management P.O. Box 9993 STN PROV GOVT Victoria, BC. V8W 9R7	By Phone Tel: (250) 356-0928 – toll free through Enquiry BC Fax: (250) 387-2733
By Computer Email: cdcdata@victoria1.gov.bc.ca Website: srmwww.gov.bc.ca/cdc/	

Key Documents

Information on the distribution, status, biology and conservation needs of rare and endangered wildlife resources (red- and blue-listed species) are available from a large variety of sources. General information is available:

Cannings, S. G., Ramsay, L. R., Fraser, D. F., & Fraker, M. A. (1999). *Rare amphibians, reptiles, and mammals of British Columbia*. Victoria, BC: Wildlife Branch and Resources Inventory Branch, British Columbia Ministry of Environment, Lands and Parks. Available through Crown Publications (www.crownpub.bc.ca/) for \$26.00, Inventory Number 605.

Douglas, G. W., Straley, G. B., & Meidinger, D. V. (1998). *Rare native vascular plants of British Columbia*. Victoria, BC: Resources Inventory Branch, British Columbia Ministry of Environment, Lands and Parks.

Fraser, D. F., Harper, W. L., Cannings, S. G., Cooper, L. R., & Cooper, J. M. (1999). *Rare birds of British Columbia*. Victoria, BC: Wildlife Branch and Resources Inventory Branch, British Columbia Ministry of Environment, Lands and Parks. Available through Crown Publications (www.crownpub.bc.ca/) for \$30.00, Inventory Number 600.

Harding, L. E., & McCullum, E. (Eds.). (1994). *Biodiversity in British Columbia: Our changing environment*. Ottawa: Environment Canada, Canadian Wildlife Service.

Species of Management Concern

Information on the distribution, status, biology and conservation needs of regionally significant and other wildlife species can best be located through discussions with wildlife and habitat protection biologists located in regional WLAP offices.

Region 1 - Vancouver Island 2080-A Labieux Road NANAIMO BC V9T 6J9 Tel: (250) 751-3100 Fax: (250) 751-3103	Region 2 – Lower Mainland 2 nd Floor, 10470 – 152 Street SURREY BC V3R 0Y3 Tel: (604) 582-5200 Fax: (604) 930-7119
Region 3 – Southern Interior 1259 Dalhousie Street KAMLOOPS BC V2C 5Z5 Tel: (250) 371-6200 Fax: (250) 828-4000	Region 4 – Kootenay #401 – 333 Victoria Street NELSON BC V1L 4K3 Tel: (250) 354-6333 Fax: (250) 354-6332
Region 5 – Cariboo Ste. 400 – 640 Borland Street WILLIAMS LAKE BC V2G 4T1 Tel: (250) 398-4530 Fax: (250) 398-4214	Region 6 – Skeena Bag 5000, 3726 Alfred Avenue SMITHERS BC V0J 2N0 Tel: (250) 847-7303 Fax: (250) 847-7728
Region 7 – Omineca/Peace 3 rd Floor, 1011 – 4 th Avenue PRINCE GEORGE BC V2L 3H9 Tel: (250) 565-6135 Fax: (250) 565-6629	

Terrestrial ecosystems and wildlife habitats

Maps of terrestrial ecosystems and wildlife habitat interpretations are available for much of the province at various scales ranging from 1:5000 to 1:250,000. Regional offices of Ministry of Water, Land and Air Protection will be aware of ecosystem and habitat maps available for particular areas of interest (see list above). As well, the Terrestrial Information Branch of the Ministry of Sustainable Resource Management may have additional wildlife habitat mapping available for certain areas of the province.

Terrestrial Information Branch
Ministry of Sustainable Resource Management
PO BOX 9993 STN PROV GOVT
VICTORIA V8W9R7
Phone: (250) 387-1314
srmwww.gov.bc.ca/rib/wis/

Coastal sensitive ecosystem inventory

The sensitive ecosystem inventory (SEI) is a joint project of Environment Canada and the Ministry of Sustainable Resource Management. It covers the coastal lowlands of east Vancouver Island, the adjacent Gulf Islands, and Sunshine Coast. The purpose of the SEI is to identify, map and evaluate remnants of rare and fragile ecosystems, and to encourage responsible land use decisions to help ensure the continued integrity of these ecosystem types. SEI information is intended to be used in a variety of land use decisions. SEI data is available in paper copy or in electronic form. Further information can be obtained from the SEI website (srmwww.gov.bc.ca/cdc/sei/index.htm).

MWLAP recommends that proponents use the SEI to determine if the proposed tenure lies within or adjacent to a sensitive coastal ecosystem.

South Okanagan sensitive ecosystem inventory

Similar to work being done on the coast, this project describes sensitive ecosystems through the south Okanagan and the lower Similkameen regions. The publication can be viewed at wlapwww.gov.bc.ca/sir/fwh/wld/atlas/index.html.

Other sources of information

Various types of additional information are available from regional WLAP offices, such as nest site data and annual monitoring reports for bird species identified in Section 34 of the Wildlife Act (e.g., bald eagles, great blue herons, ospreys, peregrine falcons and goshawks).

Freshwater fish inventories compiled from lake and stream surveys. Please see the FishWizard website (www.fishwizard.com) for the Fish Inventory Stream Summary (FISS) database.

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APPENDIX 1: SPECIES AND HABITATS OF CONCERN

MAMMALS	<i>UNGULATES</i>	Bighorn Sheep (California & Rocky Mountain) and Thinhorn Sheep (Dall's & Stone's)			Northern Pocket Gopher – <i>segregatus</i> ssp
		Bison			Red-tailed Chipmunk – <i>ruficaudus</i> ssp
		Caribou			Red-tailed Chipmunk – <i>simulans</i> ssp
		Mountain Goat			Southern Red-backed Vole – <i>galei</i> ssp
	<i>CARNIVORES</i>	Badger			Southern Red-backed Vole – <i>occidentalis</i> ssp
		Cougar			Townsend's Vole – <i>cowani</i> ssp
		Fisher			Western Harvest Mouse
		Gray Wolf			Vancouver Island Marmot
		Grizzly Bear			BIRDS
		Lynx			<i>SONGBIRDS</i>
		Wolverine			Bay-breasted Warbler
		Sea Otter			Black-throated Green Warbler
	<i>BATS</i>	Fringed Myotis			Brewer's Sparrow - <i>breweri</i> ssp
		Keen's Long-eared Myotis			Bobolink
		Northern Long-eared Myotis			Canada Warbler
		Pallid Ba			Canyon Wren
		Spotted Bat			Cape May Warbler
		Townsend's Big-Eared Bat			Connecticut Warbler
		Western Red Bat			Grasshopper Sparrow
		Western Small-footed Myotis			Gray Flycatcher
	<i>RODENTS</i>	Red- and Blue-listed			Lark Sparrow
		Cascade Mantled Ground Squirrel			Nelson's Sharp-tailed Sparrow
		Great Basin Pocket Mouse			Philadelphia Vireo
		Least Chipmunk – <i>orocetes</i> ssp			Pine Grosbeak - <i>carlottae</i> ssp
		Least Chipmunk – <i>selkirki</i> ssp			Purple Martin
		Meadow Jumping Mouse – <i>alascensis</i> ssp			Sage Thrasher
		Mountain Beaver - <i>rainieri</i> ssp			Smith's Longspur
		Mountain Beaver – <i>rufa</i> ssp			Steller's Jay - <i>carlottae</i> ssp
		Northern Bog Lemming – <i>artemisiae</i> ssp			Vesper Sparrow - <i>affinis</i> ssp
					Yellow-breasted Chat

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	<i>SEA BIRDS</i>	Brandt's Cormorant			Northern Saw-whet Owl- <i>brooksi</i> ssp
		Pelagic Cormorant - <i>pelagicus</i> ssp			Burrowing Owl
		Double-crested Cormorant			Spotted Owl
		Common Murre			Western Screech-Owl - <i>macfarlanei</i> ssp
		Thick-billed Murre			Short-eared Owl
		Ancient Murrelet			<i>GROUSE</i>
		Cassin's Auklet			Sharp-tailed Grouse
		Horned Puffin			White-tailed Ptarmigan
		Tufted Puffin			<i>WOODPECKERS</i>
	<i>SHOREBIRDS</i>	Great Blue Heron			Hairy Woodpecker - <i>picoideus</i> ssp
		American Avocet			Lewis's Woodpecker
		Long-billed Curlew			White-headed Woodpecker
		American Golden-Plover			Williamson's Sapsucker - <i>nataliae</i> ssp. and <i>thyroideus</i> ssp
		Hudsonian Godwit			<i>REPTILES</i>
		Red-necked Phalarope			Gopher Snake - <i>deserticola</i> ssp
		Short-billed Dowitcher			Gopher Snake - <i>catenifer</i> ssp
		Wandering Tattler			Night Snake
		Upland Sandpiper			Painted Turtle
	<i>FRESHWATER BIRDS</i>	Western Grebe			Racer
		American White Pelican			Sharptail Snake
		Harlequin Duck			Western rattlesnake
		American Bittern			<i>AMPHIBIANS</i>
		Sandhill Crane			Coeur d'Alene Salamander
	<i>RAPTORS</i>	Gyrfalcon			Northern Leopard Frog
		Peregrine Falcon - <i>anatum</i> ssp			Great Basin Spadefoot
		Prairie Falcon (RED) <i>pealei</i> ssp			Pacific Giant Salamander
		Broad-winged Hawk			Tiger Salamander
		Ferruginous Haw			Tailed Frog (Coastal and Inland)
		Northern Goshawk- <i>laingi</i> subspecies			<i>WILDLIFE HABITAT</i>
		Swainson's Hawk			Sensitive Wetlands
		Flammulated Owl			Coarse Woody Debris
		Northern Pygmy-Owl- <i>swarthi</i> ssp			Ungulate Winter Ranges
					<i>PLANT COMMUNITIES</i>
					Red-listed Plant Communities
					Riparian Ecosystems
					Alpine and Subalpine Meadows