

Section Five: Regional Information Packages

Cariboo Region

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This section of *Develop with Care* offers information on some of the issues, species and ecosystems of concern that are priorities in each region. This section is not a stand-alone guide to environmentally sensitive development in each region—reference to other sections of this document is essential for a full understanding of the recommended environmental guidelines.

Figure 5.1-1: Ministry of Forests, Lands and Natural Resource Operations Regions



Cover Photos:

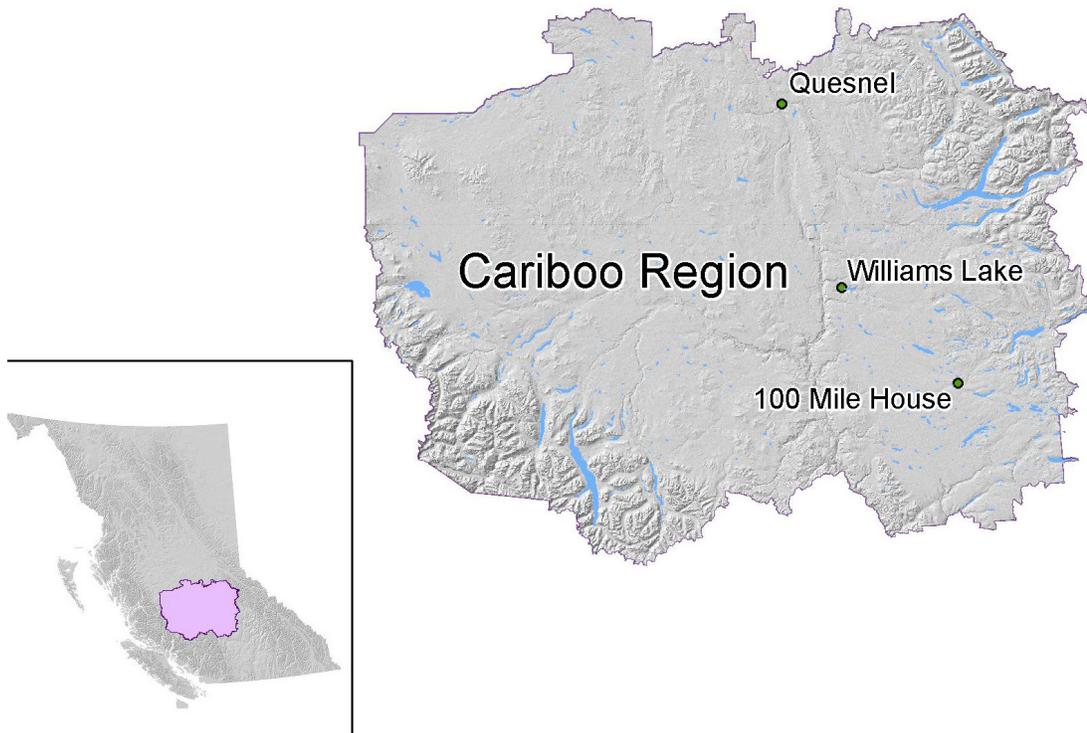
Left: Ponderosa Pines and grassland. *Photo: Dave Polster*
 Centre: California Bighorn Sheep. *Photo: Nicola Freeman*
 Right: Chilcotin River grasslands. *Photo: Julie Steciw*



5.1.1 Cariboo Region

The Cariboo Region is a large and varied area of central British Columbia that extends from the Coast Mountains in the west to the Cariboo Mountains in the east (**Figure 5.1-2**). It covers approximately 85,000 km².

Figure 5.1-2: Cariboo Region



5.1.2 Regional Features

The landscape of the Cariboo Region is extremely diverse. It includes extensive areas of pine forests, alpine, and wetland complexes along with dry grasslands on the Chilcotin Plateau, and interior rainforests in the Cariboo Mountains. This diversity of ecosystems is reflected in the diversity of species, ranging from moose and caribou to Sockeye Salmon.

Biogeoclimatic Zones

For information on biogeoclimatic classification (BEC) see the [Biogeoclimatic Zones](http://www.for.gov.bc.ca/hre/becweb/) and the BEC website: <http://www.for.gov.bc.ca/hre/becweb/>.

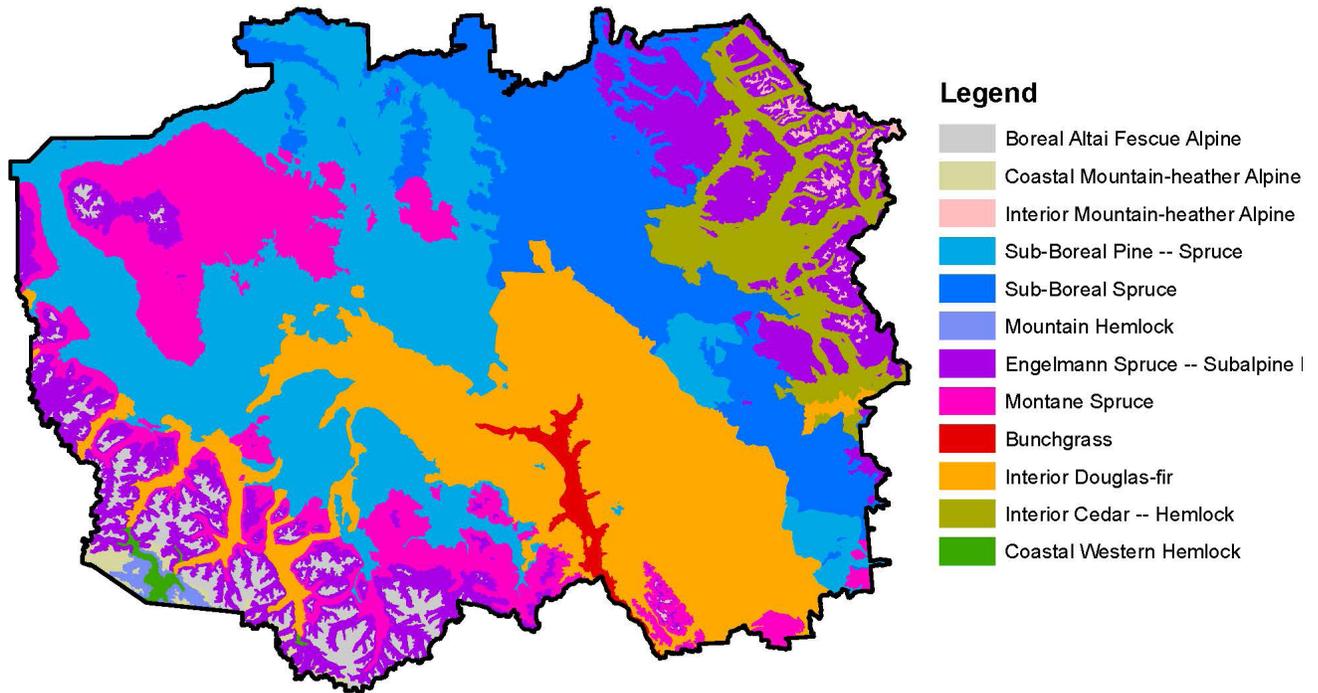
In the western portion of the region, the Coast Mountains create a rainshadow and relatively dry climate on the Chilcotin Plateau. Lodgepole Pine stands are common, but some Douglas-fir and Ponderosa Pine also occur. In the southeast corner of the region, even drier conditions support



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grasslands at lower elevations, while the northern portion features spruce forests. The higher elevations and western slopes of the Cariboo Mountains support Engelmann Spruce and sub-alpine fir forests.

Figure 5.1-3: Biogeoclimatic Zones of the Cariboo Region



5.1.3 Development Concerns

Although the human population of the Cariboo Region is relatively small, urban and rural land development influences a large proportion of the region's wildlife and wildlife habitat. Loss of riparian areas, recreational activities, and agricultural and ranching practices can adversely impact wildlife and their habitats. For example, the fencing of pastures and crop fields can disrupt wildlife movements in some areas, and the timing of hay cutting may affect nesting birds. Urbanization can also have significant localized impacts on wildlife habitat.

Sanitary landfills are also a concern. Without good management, sanitary landfills can attract bears and create problem 'garbage bears' which may have to be destroyed. For information on bear management, see [Section 2.8.4](#) and [Section 3.9.2](#).



5.1.4 Ecosystems at Risk

The Cariboo Region contains important habitats that range from wetlands to old-growth forests. About 70 rare ecological communities occur in the region, including those shown in **Table 5.1-1**.

Table 5.1-1: Rare Ecosystems (Source: Cariboo-Chilcotin Land Use Plan Biodiversity Strategy)

Ecosystem	Comments
Trapper's tea – Crowberry	Occurs locally on dry to moist north-facing slopes in the Montane Spruce biogeoclimatic zone , especially in the Kloakut-Gaspard area.
Scrub birch - Fen Moss	Occurs locally in the Sub-boreal Pine Spruce zone at the margins of wetlands and in other moist areas where cold air accumulates.
Twinberry - Oak Fern	Occurs locally on moist valley bottom sites where cold air accumulates.
Devil's Club - Knight's plume	Occurs locally on moist, rich sites on north-facing lower slopes in the Sub-boreal Spruce zone.
Soopollalie	Occurs on dry, thin soils underlain by calcareous bedrock at the crest of slopes
Cottonwood forests adjacent to streams in the Sub-boreal Spruce zone	Occur as small localized stands adjacent to medium and larger streams
Aspen forests on dry upland sites in the Sub-boreal Pine Spruce zone	Occur as isolated patches with poor or low productivity within the coniferous forest matrix
Spruce forests on mid and upper slope seepage areas in the Sub-Boreal Pine Spruce zone	Occur as isolated stands on moist, rich sites with near-surface seepage waters on slopes in the Sub-boreal Pine Spruce zone

Grasslands

For more information on grasslands, see the Grasslands Conservation Council website <http://www.bcgrasslands.org/>.

Grasslands are an ecosystem of particular concern in the Cariboo Region, as many of British Columbia's Red-listed species are found in these ecosystems. Fire suppression has allowed forests to encroach into grassland areas, which has caused some changes in the types of species that these areas support. With urban development there are even greater pressures to control fires, and land clearing around houses for fireproofing purposes is leading to loss of ecosystem features such as snags. The [Cariboo-Chilcotin Grasslands Strategy Working Group](#) has prepared a strategy to address forest encroachment. For guidelines on wildfires, see [Section 2.8.3](#).



Grasslands. Photo: Becky Bings



Wetlands

The Cariboo Region is fortunate to have an abundance of wetlands. These ecosystems are among the most productive in any landscape, sustaining high levels of biodiversity and providing habitat for species at risk. Land development can reduce the conservation values of wetlands in numerous ways. Developers should consider the environmental consequences of any alterations or modifications to wetlands before proceeding with any projects (for more information see the [Water Act](#) and [Fisheries Act](#)).

For information on ways to protect wetland values, see [Section 4: Environmentally Valuable Resources](#) and [Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia](#).

Riparian Areas

Developments along lakes and streams are causing a loss of riparian habitats which adversely impacts fish and fish habitat as well as shoreline nesting areas for many bird species such as Barrow's Goldeneye, Harlequin Duck, Grebe, and Wood Duck as well as small mammals. Many neotropical migrant songbirds also depend heavily on riparian areas for nesting sites.

Amphibians such as frogs, salamanders, and toads are also affected by development in riparian areas.

For guidelines on protecting riparian areas, see [Section 4](#).

100 Mile House. Photo:
Chris Harris picturebc.ca





5.1.5 Regionally Significant Species

For information on species at risk in the Cariboo Region, see the B.C. [Species and Ecosystems Explorer](#). See [Section 4: Environmentally Valuable Resources](#) for guidelines on protecting species at risk.

The following list of wildlife species is not an exhaustive list of regionally significant species for the Cariboo Region. Some regionally significant species are species at risk; some species are more common in backcountry areas and are not included in this discussion. To obtain more information on regionally significant species, contact the local Ministry of Forests, Lands and Natural Resource Operations office.

Fish

Diversion of stormwater into fish habitat is creating water quality concerns. Where livestock are allowed access to streams or lakes for drinking purposes, shorelines can become eroded and silt levels in water bodies can increase. Some streams have also been diverted to support ranching activities, which has led to a loss of aquatic and riparian habitats. Allocation of water for private, industrial or agricultural purposes is also a concern as multiple users can affect water quantity and quality. Small hydro developments (Independent Power Projects) can also disrupt and destroy fish habitats by creating barriers to fish movements and changes in water quality and temperature.

Because of land development and over-fishing, many unique stocks of fish have become extinct, while others have suffered dramatic decreases. Each stock represents thousands of years of adaptation to a home watershed, and its loss reduces the diversity of the species as a whole. The cumulative loss of fishing opportunities also affects a multi-million dollar sport and commercial fishery.

Bull Trout

Bull Trout are [Blue-listed](#) in B.C. They are considered to be an indicator of ecosystem health because they are extremely sensitive to reduced water quality, increased water temperatures, loss of riparian habitat, and loss of stream channel integrity. Bull Trout populations in the Cariboo are particularly sensitive due to their restricted distribution and susceptibility to habitat degradation, as well as to over-fishing and disruption of their migration patterns.



Salmon and Trout

Most salmon and some trout are ‘anadromous’, meaning that they use the ocean for part of their life cycle and return to freshwater to spawn. Some anadromous species are more affected than others by urban development, particularly [Rainbow Trout](#) and [Chinook and Coho Salmon](#) which rely on small freshwater streams. [Steelhead Trout](#) are also decreasing in numbers because they need healthy watersheds and stable river channels during the two to four years that they spend in freshwater before migrating to the ocean.

Birds

Important Bird Areas (IBAs) have been designated for bird species at risk, such as the Chilcotin Junction IBA that supports species at risk such as Flammulated Owl, Lewis’s Woodpecker, and Long-billed Curlew. To find the locations of IBAs and access site information (e.g., bird species abundance, habitat description, and conservation issues), search the online Map Viewer or Site Directory at www.ibacanada.ca.

Information from several bird monitoring programs coordinated by Bird Studies Canada is also available through a searchable online data warehouse, Nature Counts (www.naturecounts.ca). Available information includes species presence, seasonal abundance, breeding species and other information. See [Appendix D: Sources for Environmental Mapping and Inventory](#) for more details.

Great Blue Heron

The Cariboo Region is home to the *herodias* subspecies of the Great Blue Heron. Most heron colonies are extremely sensitive to human disturbance, particularly during the stages of nest selection, nest building, pair formation, and egg-laying. Construction work during development may cause adult herons to leave active nests, resulting in losses of young birds. Nest disturbance can also lead to higher predation by Bald Eagles.

For more information and guidelines for protection, see the [Fact Sheet on Herons](#) (Appendix G).



Bald eagle and nest.
Photo: Karen Morrison

Bald Eagle

The Bald Eagle is still a common sight in many parts of the Cariboo Region, but the gradual loss of nesting habitat is affecting the species' long-term prospects. Eagles generally nest in large, strong trees that are at least as tall as the surrounding trees. The highest nesting success rate is associated with the largest trees. These nest trees are often veteran Douglas-firs which are at least 150 years old. Some of these big trees are still present in urban and rural areas, but many are under threat of removal due to safety concerns caused by houses that were built too close.

For more information and guidelines for protection, see the [Fact Sheet on Bald Eagles and Ospreys](#) (Appendix G) and [Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia \(2013\)](#).

Amphibians and Reptiles

Painted Turtle

Painted Turtles are found in a variety of lakes, ponds and slow-moving streams where there are basking sites and aquatic vegetation. In June or July, females dig nests on land, usually on slopes with southern exposures within 150 m of water. These turtles may travel several hundred metres on land, especially in the spring and fall when they move between their summer and hibernating ponds.

The main threat to these turtles is from the loss of productive pond habitat and nesting habitat. As well, roads that cut across movement corridors to nesting sites threaten females and dispersing juveniles.



Western Painted Turtle
Photo: Julie Steciw



Ponds and adjacent nesting habitat on private and Crown lands should be protected from development.

Rubber Boa Snake

The Rubber Boa is found mainly in moist, heavily forested mountainous regions, although locally it occurs in lowland areas, such as the drier open forests associated with grassland areas, usually close to streams or wet meadows. It seeks cover within or under moist decaying logs, pieces of bark, boards, rocks, and other surface debris, and will occasionally climb trees.

Rubber Boas are very secretive and are active mainly at dusk and at night, although they will emerge during daylight hours on warm, cloudy days. They are active from mid-March to early November. They prey primarily on small mammals, birds, and lizards, but may sometimes take salamanders and other snakes.

The Rubber Boa is Yellow-listed in British Columbia. The primary concern for the species' survival is habitat loss due to land development and road construction, which can disrupt the snake's normal movement patterns. Removal of coarse woody debris and rock, and disturbance of talus slopes during development can also have an impact on this species.

Agricultural activities that can be detrimental to Rubber Boas include hay cutting and the prescribed burning of grazing areas and hay fields to enhance forage and hay production.

For guidelines on protecting Rubber Boas, see [*Guidelines for Amphibian and Reptile Conservation during Urban and Rural Land Development in British Columbia \(2014\)*](#).

Mammals

Moose

Moose are distributed throughout the Cariboo and are an important food and economic resource in the region. Preserving winter habitat is important for maintaining healthy moose populations. Wetlands provide concentrated food resources for moose during the winter when their energy requirements are greatest, and adjacent coniferous stands provide shelter, security cover, and travel corridors, which help reduce energy demands and improve survival rates. Wetlands also provide critical calving habitat.

For information on the location of wetlands of high value for moose, see [*High Value Wetlands for Moose for Cariboo Region*](#).

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The loss of forested uplands and the conversion of wetlands to hay fields and pastures result in loss of moose habitat.

Mule Deer

During summer and fall, Mule Deer use a wide range of habitats for foraging; however, in winter, they use smaller, lower elevation areas that provide sufficient forage and shelter. Mule Deer in the Cariboo are close to the northern limit of their range; therefore, suitable habitat is critical to their ability to survive the region's harsh winters.

Mule Deer winter habitat consists of mature Douglas-fir stands with well developed canopies that intercept snow. These stands provide security, warmth, and food in the form of fallen branches. Protecting winter ranges is critical to Mule Deer survival.

Loss of winter ranges is occurring, however, due to an increase in livestock grazing areas. Land clearing or harassment of Mule Deer by humans or domestic animals on winter ranges or adjacent lands is also a problem, hence the concern about loss of winter range areas from the sale of Crown land to private individuals or corporations. Mule Deer winter ranges should be protected from all forms of land alienation.

California Bighorn Sheep

California Bighorn Sheep live in the grasslands and foothills near rocky cliffs in the south Chilcotin region. They use cliffs and talus slopes to escape from predators, and forage on flowering plants as well as grasses such as Bluebunch Wheatgrass and Junegrass.

The loss of native grasslands to livestock range use and urban/rural development is a threat to this species. Bighorn Sheep can also be



California Bighorn Sheep.
Photo: <http://jetboatadventures.com>

Mule deer winter range strategy reports are available from http://www.env.gov.bc.ca/cariboo/env_stewardship/ecosystems/mdwr_strat/mgmtplan.html.



The Northern Caribou Strategy is available from http://www.env.gov.bc.ca/cariboo/env_stewardship/wildlife/reports/cari_2002_rpt/cari_main.html.

disturbed by snowmobiling, ATV recreational use, and harassment from dogs.

Northern Caribou

Northern Caribou are [Blue-listed](#) in B.C. The Cariboo-Chilcotin Land Use Plan recognizes that Northern Caribou in the western portion of the Cariboo Region are of provincial significance. Maintaining habitat values for northern caribou was identified as an 'overriding objective' in the land use plan.

Habitat values for Northern Caribou can be compromised by ranching activities such as the clearing of forested lands for pasture, and the fencing of pastures, which can disrupt caribou movements.

5.1.6 Invasive Alien Species

Many invasive plant species have become abundant and widespread, and have replaced or crowded out native plant species and changed the way that ecosystems function. There are economic implications associated with the introduction and spread of invasive plants, particularly in rangeland areas where they can replace important browse species and pose a threat to livestock health. More information is available from the [Invasive Species Council of B.C.](#)

Invasive plants can affect food sources for wildlife, can influence pollinator availability, and can crowd out native species directly. Dramatic changes in

Blueweed (invasive).
Photo: Dave Polster





bird populations, elk and caribou herds, and other wildlife have occurred due to the replacement of native plants by alien species. While some animal species can adapt to and feed on alien food sources, many cannot.

A list of provincial noxious weeds can be found at <http://www.agf.gov.bc.ca/cropprot/noxious.htm>.

The B.C. [Weed Control Act](#) lists 'noxious' plants which must be controlled by land occupiers. In the Cariboo, noxious weed species include Blueweed, Burdock, Orange Hawkweed, and Oxeye Daisy. Suggestions for dealing with invasive species can be found in the [Integrated Weed Management Manual](#) and in [Section 2.4.4](#).

5.1.7 Useful Sources

General information

Ministry of Forests, Lands and Natural Resource Operations
Cariboo Regional Office
400 - 640 Borland Street,
Williams Lake, B.C. V2G 4T1
Phone: (250) 398-4530
<http://www.for.gov.bc.ca/mof/regdis.htm> or
<http://www.env.gov.bc.ca/cariboo/>

Cariboo Chilcotin Conservation Society <http://www.cconserv.org/>

Ministry of Agriculture Integrated Weed Management Manual <http://www.agf.gov.bc.ca/cropprot/weedman.htm>

Regional Resources

Access to many sources of inventory information can be found through the EcoCat (Ecosystems Report Catalogue) website <http://www.env.gov.bc.ca/ecocat/>

Cariboo Region Wildlife/Habitat Inventory and Mapping http://www.env.gov.bc.ca/cariboo/env_stewardship/wildlife/regional/inventory.html

Cariboo-Chilcotin Land Use Plan http://www.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/cariboo.html

Cariboo Region Fish Inventory Reports <http://www.env.gov.bc.ca/fish/index.html>



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Cariboo-Chilcotin Land Use Plan. Biodiversity Strategy Report http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/plan/biodiv/bio9.pdf

Cariboo-Chilcotin Grasslands Strategy Working Group. January, 2001
Cariboo-Chilcotin Grasslands Strategy http://www.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/news/files/reports/grasslands_strat/index.html

Cariboo-Chilcotin Land Use Plan. High Value Wetlands for Moose for Cariboo Region http://www.env.gov.bc.ca/cariboo/env_stewardship/wildlife/habmap/moose/index.html

Northern Caribou Strategy http://www.env.gov.bc.ca/cariboo/env_stewardship/wildlife/reports/cari_2002_rpt/cari_main.html

Working with the Forest and Range Practices Act under the Cariboo Chilcotin Land Use Plan http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/docs/frpa.html

Climate Change Impacts

For information on regional projections for climate change see the Pacific Climate Impacts Consortium's project report entitled Preliminary Analysis of Climate Change in the Cariboo-Chilcotin Area of British Columbia available at: <http://pacificclimate.org/sites/default/files/publications/Werner.ClimateChangeCaribooChilcotin.Sep2008.pdf>