The Stewardship Series

NATURESCAPE
BRITISH COLUMBIA

Caring for Wildlife Habitat at Home

Native Plant and Animal Booklet, The Northern Region

HABITAT CONSERVATION TRUST FOUNDATION

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Naturescape British Columbia
Havitat Conservation Trust Foundation
Suite 107
19 Dallas Road Victoria BC
V8V 5A6
www.naturescapebc.ca

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Native Plant and Animal Booklet, The Northern Region

Written and compiled by

Kathleen Wilkinson

Graphic Design and Electronic Assembly

Bobolo Graphic Design

Illustrator

Cindy Vincent

ABOUT NATURESCAPE BRITISH COLUMBIA

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Moose

Common Red Paintbrush

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INTRODUCTION

The Provincial Guide has given you the basic how-to information for creating wildlife habitat in your yard. The next step is to consider the type of habitat appropriate to your location in the Northern Region. What plants should you consider? And what animals can you expect to attract?

To answer these questions, let's first venture into the surroundings beyond your home. Let's explore the concept of ecosystems and the physical area of the Northern Region to take a look at where your property sits in this larger scheme of things. Then we can return to your outdoor space and begin to answer your questions.

To get a better sense of our sustaining environment, we need a different perspective– one that looks beyond the neighbourhoods and town sites. While it is still possible in British Columbia to look over mountains and plateaus and see large expanses of natural ecosystems, the valley bottoms in many areas have been radically changed. Many of us live and work in the warmer valleys, and much of the natural habitats there have given way to urban development and agriculture. What are the different species of wildlife found in these areas? How do they live in this natural world? In the past, what animals, plants, and soils would have been where your nearest town now sits?

Just as we define our neighbourhoods and communities, so too the natural world can be defined by natural communities. You can think of these divisions of the natural landscape as nature's neighbourhoods. In essence then, you have two addresses – your urban address, and your address within the natural environment of the Northern Region.

This Native Plant and Animal Booklet explains the broader natural environment within which you live, and allows you to determine the general types of wildlife habitats you might consider when planning **Naturescape** projects. It includes a listing of plants and examples of their uses by wildlife, and listings of wildlife species with notes on their natural history.

ECOSYSTEMS AND ECOSYSTEM DIVERSITY

Ecosystem Defined

An ecosystem is a concept. The term applies to a set of living organisms and non-living elements, and their interaction with each other in both obvious and subtle ways.

You can think of an ecosystem as being any segment of the world that includes all the organisms and the environment within which they occur. The entire system must have a primary energy source, which is generally the sun. Plants use the sun's energy for their growth and, in turn, serve as food and shelter for animals. The cycle continues with the animals. Their foraging activities may, for example, play a role in pollination, seed dispersal, or opening up the plant community so that other species may become established.

An ecosystem will change over time and each organism within the system has its own life cycle. Nothing remains static in nature.

The science of ecology, which studies the myriad relationships and processes in ecosystems, has only begun to scratch the surface in recognizing, describing and understanding all the processes that occur in different ecosystems. There is still much we don't know or fully understand.

Ecosystems can be defined at different scales from the very small to the very large. A decaying log in the forest, with its many plant and animal organisms and associated non-living elements such as water, forms a small ecosystem within a much larger forest ecosystem.

Just as within a neighbourhood each person has an address, so within an ecosystem each organism has an address or habitat. Differences in habitat are quite clear; grassland animals such as Columbian ground squirrels and Long-billed Curlews do not live in the same neighbourhood as subalpine forest animals such as snowshoe hares or Brown Creepers. But animals not only live in different habitats, they have different foraging and life history strategies. You could think of these as their work addresses, where you would find Snowshoe Hares and Brown Creepers doing very different things.

Since every species has its own niche, or job, the loss of a species in any ecosystem has a ripple effect on the entire system. That is one of the many reasons why biodiversity is so important. On another scale, the loss of habitat diversity leads to a lessening of species diversity and richness in our natural world.

Diversity of Ecosystems:

Ecosystems vary from one place to another due to a myriad of factors, including climate, terrain, disturbance, soil-forming processes and age. Because British Columbia shows tremendous variation in all these factors, it has an incredible diversity of ecosystems. In fact, this province is the most naturally diverse in all of Canada.

SHARING YOUR OBSERVATIONS

As you create and nurture wildlife habitat on your property, you become one of the discoverers in the relatively young science of ecology. Your observations of relationships and processes, which happen within the wildlife habitat you provide and nurture, may be valuable to others. **Naturescape British Columbia** encourages you to record your observations. Who knows what you might discover in this on-going adventure?

The four northern ecoprovinces: Boreal Plains, Sub-boreal Interior, Northern Boreal Mountains and Taiga Plains, cover most of the northern half of the province. Within such a large area, it is not surprising to find considerable climatic and topographical variation and corresponding ecosystem diversity. This region of northern British Columbia encompasses mountain ranges, broad interior plateaus, large rivers, and lakes; and includes aspen parkland along the Peace River in the Boreal Plains, high elevation subalpine fir-spruce forests in the Sub-boreal Interior, vast stretches of alpine tundra in the Northern Boreal Mountains and muskegs and dense boreal forests of white and black spruce in the Taiga Plains.

Each of these regions has characteristic associated wildlife species. There are twenty-three species of birds that nest only in this portion of B.C., and the diversity and numbers of large mammals, including caribou, moose, grizzly and black bear, wolves, Dall sheep and mountain goats are particularly noteworthy. The four northern ecoprovinces also support several red-listed (endangered) and blue-listed (vulnerable) species of animals, birds and plants.

Climate

The climate in British Columbia is as diverse as its ecosystems. The combination of high mountain ranges, deep valleys and westerly winds off a large ocean produce some of the rainiest, snowiest, driest, hottest, coldest and windiest climates in Canada. Each winter the coast is inundated with the heaviest rainfalls in North America. This winter rain turns to snow as you climb the mountains, so the Coast and Columbia mountain ranges record some of the greatest snow depths in the world.

Temperatures along the open coast are moderated by the massive waters of the Pacific Ocean, rarely dipping below freezing in winter and rarely exceeding 25°C in summer. Sites east of the coast ranges are cut off from the moderating influence of the ocean and annual temperatures there can fluctuate widely.

In northern, non-coastal British Columbia, the climate of the Sub-Boreal Interior and the Northern Boreal Mountains ecoprovinces is influenced more by Pacific air masses than are the Taiga Plains and Boreal Plains to the east. The moist coastal air masses drop most of their moisture on the windward side of the mountain ranges, and the warm, descending air is capable of picking up moisture, resulting in some leeward regions being quite dry. Precipitation tends to be evenly distributed throughout the year, with summer rain and winter snows, and Arctic air masses frequently affect the region in winter. The varied topography, encompassing plateaus, lowlands, mountains, foothills and valleys, results in much corresponding climatic variation. The coldest winter temperature in B.C., a frigid -58.9°C , was recorded from Smith River in the Northern Boreal Mountains near the Yukon border.

The Taiga and Boreal Plains ecoprovinces are less influenced by Pacific air masses and have more continental climates. Their predominantly low relief topography allows cold Arctic air to blanket the region for long periods in winter and spring, and mean daily temperatures in January are less than –20°C. Summers, on the other hand, tend to be relatively warm, with mean daily temperatures of 14-18°C in July, while much of the Sub-Boreal Interior and Northern Boreal Mountains have a mean daily temperature of less than 14°C.

Topography

The topography of an area – its mountains, valleys and plateaus – affects the diversity of ecosystems within that area. Species of plants and animals that favour the sheltered or leeward side of mountains may differ from those that thrive on the unsheltered or windward side. Furthermore, the slope of the terrain and angle to the sun will limit the kinds of plants that can grow and the animals associated with them. If you look at a mountain valley, you see a richness in vegetation and wildlife species. Whereas the steep, rocky, upper slopes of the mountains on either side are often sparsely vegetated and contain different and fewer animal species.

Disturbance

Disturbance and the frequency of that disturbance affects the relative evolution of an ecosystem. Natural disturbances, such as landslides, flash floods, forest fires, wind storms and tidal waves, alter or change existing ecosystems on both a local and regional level.

The more frequent the disturbance, the less likely the ecosystem will be able to evolve to the degree of complexity it could exhibit. Avalanche slopes, bright green swathes of alder in the dark green spruce-fir forests, exist because annual avalanches permanently inhibit the growth of large trees in their path.

Fires, and insect and disease outbreaks are examples of natural disturbances in the northern regions of British Columbia. Fires, which occur every 50-150 years on average, are the most important short-term influence in the boreal forests, determining the distribution and growth of forest stands. Because of these frequent fires, many forest stands are even-aged and composed of pioneer species. Cones of some coniferous trees, such as lodgepole pine and black spruce often remain sealed until heat from a fire opens the cone scales to release the seeds, which are then able to germinate without competition on newly exposed mineral soil. Other species have different adaptations: the thick bark of balsam poplar is heat-resistant, and other deciduous trees, such as aspen poplar and paper birch may send out suckers after a fire.

Because of frequent fires, old growth forests are relatively scarce here. In aspen parkland areas of the Boreal Plains, repeated fires help to control the spread of tree groves and allow the maintenance and spread of grasslands. Frequent fires tend to improve northern forested habitat for wildlife in general because they create a mosaic of vegetation types and successional stages. Removal of trees allows grasses, forbs, and deciduous shrubs and trees to proliferate, which is beneficial for some ungulates and other species.

Disease and pest outbreaks are another natural disturbance that often affects forest and aspen parkland communities, and causes changes in plant and animal species composition of ecosystems.

Some types of disturbance may recur over time, but cause relatively local disturbance to a system. High winds cause trees to topple and create various-sized clearings in the forest, but they generally do not significantly alter the forest. Other types of disturbance may change the original ecosystem forever. An area of wetland, filled in with boulders and other rock debris from a landslide, is not likely to return again to a wetland ecosystem.

Disturbances are not always natural. One of the most detrimental types of disturbance is urbanization, which irrevocably alters the landscape, removes areas of natural habitat and causes barriers to the movement of plant and animal species between remaining habitats. Roughly a quarter to a third of any urbanized land surface is covered by pavement, and much of the remainder contains buildings, houses, and other structures. Logging roads and recreational off-road vehicle tracks cause further erosion of the natural habitat.

ECOPROVINCES, ECOREGIONS, AND ECOSECTIONS

British Columbia's 10 ecoprovinces are divided into 47 terrestrial and marine ecoregions; these are further divided into 116 local scale ecosections.

HOW ECOSYSTEMS ARE CLASSIFIED IN BRITISH COLUMBIA

Scientists have developed a number of different ecosystem classification schemes over the years. Each scheme makes use of a combination of one or more of three main factors: climate, physiography, and vegetation.

One system used by the B.C. Ministry of Water, Land & Air Protection and other agencies involved in resource and environmental management is known as the Ecoregion System. This classification is based on the interaction between climatic processes, such as seasonal rainfall pattern, and physiography or topography.

The Ecoregion System divides the landscape into ecosystems at various spatial scales. Because the **Naturescape** program is ecologically-based, it makes use of the ten ecoprovinces that make up British Columbia.

- ecoprovinces define areas with consistent climate, relief, and geological structures such as the Central Interior Ecoprovince
- ecoregions occur within ecoprovinces and cover areas with major physiographic and major climatic variation, such as the Fraser River Plateau Ecoregion.
- Ecosections occur within ecoregions and define areas with minor physiographic and climatic variation, such as the Bulkley Basin Ecosection.

Ecoprovinces, ecoregions, and ecosections each describe, albeit at different scales, areas of similar climate, physiography, vegetation and wildlife potential.

Think of the Ecoregion System as a way of determining your address in the broader, natural community of the Northern Region beyond your neighbourhood and municipality.

NORTHERN BRITISH COLUMBIA

Written by: Dennis Demarchi

The complex area from Prince George north is considered as northern British Columbia, it is fully one half the area of the province and consists of 1 whole Ecoprovince and parts of 5 others (although the Boundary, Alsek and Icefield ranges are part of the Coast and Mountains and Southern Alaska Mountains ecoprovinces, in this area of the province these 2 ecoprovinces are usually considered as part of northern British Columbia). The 4 ecoprovinces that will be discussed in this essay are: The Sub-Boreal Interior, Northern Boreal Mountains, Boreal Plains and Taiga Plains.

The northern interior of British Columbia falls within 2 Ecodomains, The Humid Temperate Ecodomain covers most of the mid-latitudes of North America from the east coast to the west. In British Columbia it occurs in the coastal islands and mountains, the central interior plateaus, and the southern interior mountains. The climate is characterized by strong seasonal cycles of temperature and precipitation with a distinct winter. The Sub-Boreal Interior Ecoprovince is the northern representative of this ecodomain. The Polar Ecodomain covers the northern latitudes of North America, Asia, Europe and Greenland. In British Columbia, it occupies the northern plains, mountains, and plateaus. Its climate is characterized by generally low temperatures, long, severe winters, and generally small amounts of precipitation. In British Columbia 3 ecoprovinces, Boreal Plains, Taiga Plains and Northern Boreal Mountains represent different climatic and physiographic regimes of this ecodomain.

The Nechako Lowland

is a flat or gently rolling plain covered in glacial drift with little or no exposed bedrock. The entire area was covered under glacial ice, resulting in modification of the land surface into drumlins. At the waning of the Cordilleran ice sheet the ice stagnated here creating long sandy eskers and large glaciers lakes. Pacific frontal systems moving eastward across the interior of British Columbia bring rain or snow to this Ecosection, in addition surface heating of the many wetlands and lakes causes convective currents to bring localized rainshowers throughout the summer. Cold Arctic air invades this area from the east or north bringing extreme cold weather for prolonged periods in the winter and spring months. This upland surface has been dissected by the Fraser River and its tributaries the Nechako and Stuart rivers. Many smaller streams, lakes and wetlands abound here. The mature forests in this Ecosection consists of hybrid white spruce or Englemann spruce and subalpine fir. Lodgepole pine is common in forests on drier sites. Trembling aspen, lodgepole pine and paper birch occur in wildfire areas and after clearcut logging. Black spruce grows in the muskeg and areas of cold air pockets. Prickly rose, birch-leaved spirea and Sitka alder are common shrubs; while kinnickinnick, bunchberry, twinflower, and dwarf blueberry are common ground-cover dwarf shrubs. Trapping was the main industry for over 100 years, then came logging, farming began in the level sandy soils around Vanderhoof, but is now common around Prince George. Moose are the most abundant ungulate, and black bears, wolves, and grizzly bears are common.

Peace Lowland Ecosection

is a flat, gently rolling upland that slopes slightly toward the Peace River, a few bedrock ridges rise above the general surface. This area is deeply dissected by the Peace River and its tributaries the Kiskatinaw, Pine, Moberly, Beatton, and Halfway rivers, all of which have cut down through the sandstone bedrock. The climate is continental, most moisture is the result of surface heating of the many lakes and streams causing convective showers in the summer. Precipitation is even summer and winter. There are no effective barriers to outbreaks of cold Arctic air which invade this area for prolonged periods in the winter and spring. White spruce is the expected forest in the upland areas and black spruce in the muskeg. However, frequent wildfires has enabled trembling aspen to dominate for long periods; balsam poplar occurs in wetter sites; and lodgepole pine stands occur many in drier sandy sites. Common shrubs are prickly rose and highbush-cranberry, but on steep southerly aspects Saskatoon is abundant. Trapping was the main industry of over 150 years. Farming began in the lower, warmer sites along the Peace River and expanded as transportation improved, first at Dawson Creek, then Fort St. John and finally at Chetwynd,; this Ecosection is the main grain producing area in the province. Oil and gas exploration began with the completion of the Alaska Highway. Logging is restricted mainly to aspen and poplar. Moose are the most abundant ungulate, but both mule deer and white-tailed deer have expanded into this Ecosection from Alberta. Predator, such as, black bear, coyote and red fox, are naturally abundant, but animal control for livestock and beekeeping has all but eliminated grizzly bears and wolves.

Fort Nelson Lowland

is an area of extremely low relief, in places flat and in places rolling. It is dissected to the north by the Fort Neslon Rivers and its tributaries the Muskwa, Sikanni Chief and Fontas rivers, and to the east by the Hay River and its tributaries the Kotcho and Shekilie rivers. However over large areas the upland is poorly drained resulting in extensive areas of muskeg and small lakes. The climate is continental with most of the moist in the summer caused by convective showers from surface heating of the many wetlands and small lakes. Winters are long and cold as there is no effective barrier to the outbreak of cold Arctic air, and daylight hours are much reduced from October to March. Black spruce and tamarack forest are the dominant forests because of the extensive muskeg; trembling aspen – white spruce forests occur on the better drained sites; and Balsam poplar, white spruce and paper birch are common on the floodplains of the larger rivers and streams. Trapping was the only industry until construction of the Alaska Highway, then Fort Nelson became the supply centre for northeastern British Columbia. Oil and gas exploration has been extensive across the lowlands in the frozen winter and spring months. More recently logging and milling of balsam poplar has occurred. The "Boreal" caribou ecotype that winter out on the muskeg lowland are probably the most abundant ungulate, however, moose, white-tailed and mule deer, and bison also occur here. Predators such as black bear, wolf, coyote and red fox are common.

SUB-BOREAL INTERIOR ECOPROVINCE

SUB-BOREAL INTERIOR ECOPROVINCE

Central Canadian Rocky Mountains Ecoregion
- Hart Foothills Ecosection
- Misinchinka Ranges Ecosection
- Northern Hart Ranges Ecosection
- Peace Foothills Ecosection
- Southern Hart Ranges Ecosection

Fraser Basin Ecoregion
- Babine Upland Ecosection
- McGregor Plateau Ecosection
- Nechako Lowland Ecosection

Omineca Mountains Ecoregion
- Eastern Skeena Mountains Ecosection
- Manson Plateau Ecosection
- Parsnip Trench Ecosection
- Southern Omineca Mountains Ecosection

Skeena Mountains Ecoregion
- Northern Skeena Mountains Ecosection
- Southern Skeena Mountains Ecosection

Location – The Sub-Boreal Interior Ecoprovince is located in the north-central portion of the province, to the east of the Coast Mountains and to the west of the Interior Plains. It consists of several physiographic systems: the low-lying plateau area of the Nechako Lowlands, the northern portion of the Nechako Plateau, and the McGregor Plateau, and the southern portion of the Northern Rocky Mountain Trench. The mountains to the west and north include the southern Skeena and Omineca mountains, while those to the east include the Hart Ranges and associated foothills, the Misinchinka Range and associated foothills.

Climate – The area has a sub-continental climate, typified by cold winters, warm summers, and precipitation that is equal in summer and winter. It is strongly influenced by the moderating Pacific air, in addition, summer rain is largely due to surface heating , which leads to convective showers. In winter and spring cold Arctic air can easily invade from the east and north to dominate the entire area. Rain shadows occur in some of the Skeena and Omineca mountains and Rocky Mountain Foothills, but heightened precipitation occurs on the western side of the Skeena Mountains and Hart Ranges.

Vegetation – Three major vegetation zones dominate much of the area, but 2 other zones occur in specific locations. The lowlands, plateaus and many valleys are dominated by the Sub-Boreal Spruce Zone where hybrid white spruce and subalpine fir are the dominant climax trees, but lodgepone pine, and trembling aspen form the forests after logging or wildfire; willow or sedge dominated wetlands are common in this zone and dot the landscape in poorly drained, depressions. The middle and upper slopes are dominated by the Engelmann Spruce - Subalpine Fir Zone where Engelmann Spruce and sublapine fir are the climax forest trees and white-flowered rhododendron usually dominates the understory, but lodgepole pine occurs as a seral tree on drier sites. And the Alpine Tundra Zone occurs on the upper slopes of all mountains. In addition, the wetter valleys of the Skeena Mountains and the southern part of the Hart Ranges the Interior Cedar - Hemlock zone occurs, and in the outer valleys of the Rocky Mountain Foothills and in the central valleys of the southern Omineca Mountains the Boreal White and Black spruce Zone occurs.

Fauna - Moose are the most abundant and widely distributed ungulate, woodland caribou occur throughout the mountains, mountain goats occur in the more rugged mountains, and Stone's sheep occur primarily in the Misinchinka Range and associated foothills. Mule deer and white-tailed deer are uncommon and occur mainly in the very southern lowland areas. Black bears and wolves are common throughout, while grizzly bears abundant in the mountain forests. Lynx, fisher and muskrat are widely distributed throughout this region.

Fifty-seven percent of the bird species known to occur in British Columbia and 46% of all species known to breed in the province are found in the Sub-Boreal Interior. The Boreal Owl is a typical resident species. Highest breeding numbers of Herring Gull and Black Tern occur here. Two passerine species of note are the Rusty Blackbird and Magnolia Warbler.

The only reptile is the rare common garter snake which occurs in the lowlands and mountain valleys While four amphibians occur here: the western toad, wood frog, and spotted frog occur throughout, while the long-toed salamander is restricted to the warmer valleys and lowlands.

This Ecoprovince supports both anadromous fish such as, chinook and sockeye salmon. Native and introduced, rainbow trout, lake trout, Dolly Varden, lake and mountain whitefish, Arctic grayling (in the Peace River watershed), longnose sucker, slimy sculpin and torrent sculpin are important fish that occur in the Sub-Boreal Interior.

ECOPROVINCE SUBDIVISIONS

The Sub-Boreal Interior Ecoprovince is subdivided into four Ecoregions containing 13 Ecosections.

The Central Canadian Rocky Mountains Ecoregion

consists of steep-sided, but round-topped mountains and foothills that are lower than ranges of the Rockies to either the south or the north. Pacific air spills over these mountains bringing moist mild air to the eastern valleys, while Arctic air passes from east to west bringing very cold, dense area to the western valleys and lowlands. The Boreal White and Black Spruce zone occurs in the outer eastern valleys; the Sub-Boreal Spruce Zone occurs in the interior and western valleys, the Engelmann Spruce – Subalpine Fir zone occurs on all the middle and upper mountain slopes; and the Alpine Tundra zone occurs on the mountain summits. It contains four Ecosections.

The Hart Foothills Ecosection

is a low, rounded mountains and wide valleys area on the east side of the Rocky Mountains. This is the driest ecosection in this ecoregion as cold Arctic air often stalls along the eastern margin or in the valleys. The Hart Highway linking the Peace River with the interior of the province lies in the northern portion of this ecosection. Gwillam Lake and Kinuseo Falls parks occur within this ecosection.

The Misinchinka Ranges Ecosection

is a rugged mountain area, with deep narrow valleys. Moist Pacific air often stalls over these mountains, bringing high precipitation, both summer and winter. The Peace Reach of the Williston Lake (Reservoir) divides this ecosection in two.

The Northern Hart Ranges Ecosection

is a low rounded mountainous area that is often overridden by eastward moving Pacific air or southwestward moving Arctic air. The Hart Highway linking the Peace River with the interior of the province lies near the middle of this ecosection.

The Peace Foothills Ecosection

is a blocky mountain area that lies on the east side of the Rocky Mountains. Strong rainshadows exist. The Peace Reach of the Williston Reservoir divides this ecosection in two.

The Southern Hart Ranges Ecosection

is a mountainous area that forms a barrier to the eastward moving Pacific air or southwestward moving Arctic air. The mountains build in height from north to south. The Interior Cedar – Hemlock zone occurs on the lower slopes of the southern valleys. Ice-fields are common on the higher mountain summits. Logging has occurred throughout the valleys. Two large mountain parks – Monkman and Kakwa occur along the higher eastern boundary.

The Fraser Basin Ecoregion

is a broad, lowland and rolling upland area, located in the southwestern portion of the Sub-Boreal Interior. The climate is sub-continental with even precipitation amounts throughout the year. The Sub-Boreal Spruce zone dominates much of this area: with the Engelmann Spruce – Subalpine Fir zone on the upper slopes of the few higher ridges; while the Alpine Tundra zone occurs only on Tsisutl Mountain. It contains 3 Ecosections.

The Babine Upland Ecosection
is a rolling upland with low ridges, many small streams and wetlands and several very large lakes in the depressions. Logging is the main resource industry.

The McGregor Plateau Ecosection
is rolling upland adjacent to the Hart Ranges. A cool moist climate occurs here. Many small lakes, wetlands, and streams occur here, while a portion of the Fraser River cuts through the southern portion. The Hart Highway lies in the northern portion in the Misinchina and Crooked river valleys, and the Yellowhead Highway lies in the southern portion. Logging is the main resource industry.

The Nechako Lowland Ecosection
is a broad, flat lowland with some dissection by the Fraser and Nechako rivers. Although the climate is sub-boreal, this Ecosection has a milder climate than any other in this Ecoprovince. The Hart Highway lies along the eastern boundary servicing many small communities and connecting the Peace River and Mackenzie with Prince George; the Yellowhead Highway lies near the southern boundary and services Vanderhoof, and Fort St. James, but also connects this region with both Prince Rupert and Alberta. Logging is the main resource industry, but agriculture occurs along the southern-most lowland area. Carp Lake Park is located in the northern portion.

The Omineca Mountains Ecoregion
consists of several mountain groups that are dominantly rounded, isolated ranges that build in height from the south to north. Cold northern air is common in the winter. The Sub-Boreal Spruce zone occurs in the valleys; the Engelmann Spruce - Subalpine Fir occurs on the mountain slopes; and the Alpine Tundra occurs on the mountain summits.

The Eastern Skeena Mountains Ecosection
has a wide valley in the centre that is surrounded by high isolated mountains. This area is in a rainshadow of the higher Northern Skeena Mountains Ecosection.

The Manson Plateau Ecosection
is a rolling upland, that lies south of the higher Omineca Mountains.

The Parsnip Trench Ecosection
is a wide intermountain plain that lies between the Omineca Mountains to the west and the Rocky Mountains to the east. Warm, moist air flows in from the south and cold Arctic air move south down the Northern Rocky Mountain Trench. The Williston Reservoir occupies about 40% of this ecosection. Mackenzie occurs at the southeastern boundary.

The Southern Omineca Mountains Ecosection
consists of rounded mountains and ridges, separated by wide valleys. The Boreal White and Black Spruce zone occurs in the valley bottoms. Manson Creek and Germansen Landing occur in the very southern valleys.

The Skeena Mountains Ecoregion
is a bold mountain range lying to the east of the coastal climates and mountains. The Interior Cedar – Hemlock zone occurs in the western valleys and the Sub-Boreal Spruce zone in the eastern ones; the Engelmann Spruce – Subalpine Fir zone occurs in the mid-slopes; and the Alpine Tundra dominates the upper slopes.

The Northern Skeena Mountains Ecosection consists of high rugged mountains and a moist, coast/interior transition climate. Many glaciers persist especially in the north. The Cassiar Highway passes through the eastern valleys connecting northern British Columbia with the Yellowhead Highway.

The Southern Skeena Mountains Ecosection consists of a narrow range of mountains to the east of the Nass Basin and the west of the Nechako Plateau. The climate is variable being wetter and milder on the west side and drier and colder on the east side. The Babine Mountains protected area occurs in the southernmost mountains.

Red Squirrel

NORTHERN BOREAL MOUNTAINS ECOPROVINCE

NORTHERN BOREAL MOUNTAINS ECOPROVINCE

Boreal Mountains and Plateaus Ecoregion
- Cassiar Ranges Ecosection
- Kechika Mountains Ecosection
- Northern Omineca Mountains Ecosection
- Southern Boreal Plateau Ecosection
- Stikine Plateau Ecosection
- Teslin Plateau Ecosection

Hyland Highland Ecoregion
- Hyland Plateau Ecosection

Liard Basin Ecoregion
- Liard Plain Ecosection

Northern Canadian Rocky Mountains Ecoregions
- Eastern Muskwa Ranges Ecosection
- Muskwa Foothils Ecosection
- Western Muskwa Ranges Ecosection

Pelly Mountains Ecoregion
- Tuya Range Ecosection

St. Elias Mountains Ecoregion
- Kluane Ranges Ecosection

Yukon Southern Lakes Ecoregion
- Teslin Basin Ecosection
- Whitehorse Upland Ecosection

Yukon – Stikine Highlands Ecoregion
- Stikine Highlands Ecosection
- Tagish Highlands Ecosection
- Tahltan Highland Ecosection
- Tatshinshini Basin Ecosection

Location - This Ecoprovince lies east of the Boundary Ranges of the Coast Mountains, west of the interior plains, and south of the Yukon Territory, in the north-central portion of British Columbia. The general character of this Ecoprovince is one of mountains and plateaus separated by wide valleys and lowlands. The Northern Boreal Mountains Ecoprovince extends from north-central British Columbia northward across the southern Yukon into east-central Alaska.

Climate - Prevailing westerly winds bring Pacific air to the area over the high St. Elias Mountains and Boundary Ranges. Coastal air is greatly reduced in moisture when it reaches the area, and this Ecoprovince is characterized by rainshadow effects that can cause some areas to be very dry. Summertime surface heating leads to convective showers which, together with winter frontal systems, result in precipitation amounts that are evenly distributed throughout the year. Winter climates are long and persistent, while the growing season is relatively short; outbreaks of Arctic air are frequent during the winter and spring. The rugged relief leads to a complex pattern of surface heating and cold air drainage in the valleys.

Vegetation - Vegetation is dominated by three zones: the Boreal White and Black Spruce Zone occurs throughout the valley bottoms and extensive plains, the Spruce - Willow - Birch Zone occurs throughout the high valleys and middle slopes of the mountains, while the Alpine Tundra Zone occurs throughout the middle to upper slopes of most mountains. Sporadic occurrence of two additional zones occurs adjacent to the large coastal valleys; the Sub-Boreal Spruce Zone occurs in the lower slopes of the lower Stikine and lower Taku River valleys, and the Englemann Spruce - Subalpine Fir Zone occurs on the middle slopes of those valleys.

Fauna - Moose are the most numerous and widely distributed ungulate, but the thinhorn sheep (both the pure white Dall's and Stone's) and caribou best characterize the fauna. Mountain goats are an abundant species in rugged alpine areas. Grizzly bears, black bears, and wolves are common throughout the valleys.

Characteristic small mammals include the collared pika, Arctic ground squirrel, tundra vole, and brown lemming. Wolverines and lynx are common.

This Ecoprovince supports only 52% of all bird species known to occur in the province and 42% of all species known to breed. However, many species breed nowhere else in British Columbia including the Pacific Loon, Gyrfalcon, Lesser Golden-Plover, Wandering Tattler, Hudsonian Godwit, Red-necked Phalarope, Arctic Tern, Northern Shrike, Smith's Longspur, Snow Bunting, Common Redpoll, and "Timberline" Sparrow. This area is the centre of abundance for Willow and Rock ptarmigan, Bohemian Waxwing, and American Tree Sparrow, and it supports the only breeding population of the dark race (harlani) of the Red-tailed Hawk.

This Ecoprovince supports both anadromous and freshwater fish. The fish species vary because of the sea that the watersheds drain into. For example, the Stikine, Taku and Tatshenshini drain into the Pacific Ocean; the Yukon River drains into the Bering Sea; and the Liard and Peace rivers drain into the Arctic Ocean. Anadromous fish are restricted to the Stikine, Taku and Tatshenshini watersheds, and include, chinook and chum salmon. Freshwater fish include, Arctic grayling, Dolly Varden, lake trout, and lake whitefish; in the Liard and Peace river watersheds - northern pike and white sucker; in Teslin Lake and the Liard River - inconnu; in the Pacific watersheds -coastal cutthroat trout and Coast Range sculpin.

ECOPROVINCE SUBDIVISIONS

The Northern Boreal Mountains Ecoprovince in British Columbia consists of 8 Ecoregions with 19 Ecosections.

The Hyland Highland Ecoregion

Is a rolling plateau with mainly the Spruce –willow Birch zone in the upland and Boreal White and Black Spruce in the Liard River Canyon, in British Columbia it consists of only one Ecosection.

The Hyland Plateau Ecosection

is an area of rolling upland that extends from northern British Columbia into the Yukon and Northwest Territories. This Ecosection provides a low barrier between the Interior Plains to the east and the valleys of the Canadian Cordillera to the west.

The Liard Basin Ecoregion

is an extensive area of lowland to rolling upland that extends from northern British Columbia into the Yukon and Northwest Territories. It is dominated by the Boreal White and Black Spruce zone. The Alaska Highway passes through from the Liard River Hot Springs park in the east to Watson Lake, Yukon Territory in the northwest; the Cassiar Highway passes through from Boya Lake Park in the south to connect with the Alaska highway in the Yukon. In British Columbia this Ecoregion consists of only one Ecosection.

The Liard Plain Ecosection

is a broad, rolling inter-mountain plain with a cold, sub-Arctic climate. Lodgepole pine forests dominate as the result of frequent wildfires.

The Northern Canadian Rocky Mountains Ecoregion

is an area of high, rugged mountains, several of which have large glaciers and rounded isolated foothills separated by wide valleys. The Spruce – Willow Birch zone dominates the valleys and lower to mid slopes, while the Alpine Tundra zone is extensive. The Alaska Highway from Fort Nelson passes through here past Summit Lake and Muncho Lake park. Most of this Ecoregion is managed under the Muskwa – Kecchika Wilderness Management Area. This Ecoregion consists of three Ecosections.

The Eastern Muskwa Ranges Ecosection

is the area with the highest, most rugged mountains in the Ecoprovince. It has more snowfall than the foothills to the east. Muncho Lake park, Stone Mountain – Wokpash protected area, Kwadacha Wilderness park, and Redfern Lake park occur here.

The Muskwa Foothills Ecosection

is an area of subdued mountains which are isolated by wide valleys. This area is in the rainshadow of the Rocky Mountains to the west; but summer storms from the east can bring intensive rain storms.

The Western Muskwa Ranges Ecosection

is an area of deep, narrow valleys and rugged mountains. It has a cold, wet climate. The western half of the Kwadacha Wilderness park occurs in the central portion of this ecosection.

The Boreal Mountains and Plateaus Ecoregion

is a large area with a complex of lowlands, rolling and high plateaus and rugged mountains. It has a cold, dry boreal continental climate. The Boreal White and Black Spruce zone occurs in the lower, wider valleys and lowlands, the Spruce – Willow – Birch zone occupies the mid slopes, and the extensive Alpine Tundra occurs on the upper slopes. In British Columbia this Ecoregion contains 5 Ecosections.

The Cassiar Ranges Ecosection

is the area with the highest and most rugged mountains in the Ecoregion. It is a broad band of mountains extending from upper Finlay River northwestward to the Dease River.

The Kechika Mountains Ecosection

is an area with high mountains, but includes low, wide valleys (including the northern Rocky Mountain Trench). It is in a rainshadow of the Cassiar Ranges to the west. This area is part of the Muskwa-Kechika Wilderness Management Area.

Northern Omineca Mountains Ecosection

is an area of rounded mountains and wide valleys, it is the mildest area in this ecoregion. Logging is carried out in the Rocky Mountain Trench from Ingenika Arm to Ware. Tatlatui Park occurs in the southwest.

The Southern Boreal Plateau Ecosection

consists of several deeply incised plateaus. Extensive rolling alpine and willow/birch habitat occurs. The Cassiar Highway passes by Kiniskan and Eddontenajon lakes. Several large protected areas occur here: Stikine Plateau Wilderness park, Gladys Lake Ecological reserve, the southern portion of the Mount Edziza Park, and the upper Stikine River Park.

The Stikine Plateau Ecosection

is a plateau area with variable relief, from lowland to rolling alpine. Low elevations along the Stikine, Nahlin and Klastline river valleys are the driest in the Ecoregion. The Cassiar Highway goes through here past Dease Lake, a service road goes west to Telegraph Creek. The lower Stikine River park and northern potion of the Mount Ediziza park occur here.

The Teslin Plateau Ecosection

is a rolling plateau area, with several large lakes, including Atlin Lake, the largest lake in the province. It lies in a distinct rainshadow The road from Jakes Corner, Yukon comes down to Atlin. Placer mining is extensive. The lower, lake portion of Atlin Park occurs here.

Pelly Mountains Ecoregion

is a rolling upland dominated by the Spruce – Willow – Birch zone, of mainly treeless shrubs, in the valleys and lower slopes, and extensive areas of the Alpine Tundra zone on the mid to upper slopes. The Alaska Highway passes along the British Columbia – Yukon Territory Boundary.

The Tuya Range Ecosection

is the area with the most extensive rolling alpine landscape in the province.

The St. Elias Mountains Ecoregion

is a rugged, bold, ice-capped mountain area lying to the leeward of the Alsek and Icefield Ranges. In British Columbia it is represented by only one Ecosection.

Kluane Ranges Ecosection

in British Coumbia this ecosection is entirely protected by the Tatshinshini – Alsek Park.

The Southern Yukon Lakes Ecoregion

is a gently rolling upland, with isolated mountains separated by wide valleys. The Boreal White and Black Spruce Zone occurs in the valleys, with the Spruce – Willow Birch on the mid- slopes and Alpine Tundra zone on the upper slopes.. In British Columbia it is represented by 2 Ecosections

The Teslin Basin Ecosection

is a wide valley, dominated by Teslin Lake and wetlands, isolated mountains and rolling uplands occur along the margins.

Whitehorse Upland Ecosection

is almost all in the Yukon Territory. The small British Columbia portion it is a wide valley with extensive wetlands.

The Yukon-Stikine Highlands Ecoregion

is a transitional mountain area lying between the rugged coastal mountains to the west and the subdued plateaus to the east. The moist Sub-Boreal Spruce zone occurs in the southern valleys, while Engelmann Spruce – subalpine Fir zone occurs on the lower slopes and in the northeastern valleys, the rugged Alpine Tundra occurs on the summits and is very extensive in the northwest portion. This Ecoregion consists of 4 Ecosections.

The Stikine Highland Ecosection

is dissected by the Stikine River as it enters the Coast Mountains which allows moist Pacific air easy passage into the northern interior of British Columbia.

The Tagish Highland Ecosection

is a rugged transitional mountain area, all the streams drain northward in the Yukon River system. Barren alpine areas and snow fields are common. The Carcross – Skagway Highway passes through near the southern boundary.

The Tahltan Highland Ecosection

is a transitional mountain area with a complex drainage system, the large Taku River valley exposes the area to the coast moist air allowing Sub-Boreal Spruce to occur in the valleys and the Englemann Spruce – Subalpine Fir zone to dominate the lower slopes.

The Tatshenshini Basin Ecosection is an area with rounded, subdued mountains and wide valleys leeward of the rugged Boundary and St. Elias Ranges. In spite of its close proximity to the Pacific Ocean, this area has a typically northern boreal climate. The Hanes Highway passes through from Hanes, Alaska to Haines Junction, Yukon Territory. The western _'s of this area is protected by the Tatshenshini – Alsek Park.

Red Breasted Nuthatch

BOREAL PLAINS ECOPROVINCE

BOREAL PLAINS ECOPROVINCE

Central Alberta Upland Ecoregion
- Clear Hills Ecosection
- Halfway Plateau Ecosection

Peace River Basin Ecoregion
- Peace Lowland Ecosection

Southern Alberta Upland Ecoregion
- Kiskatinaw Plateau Ecosection

Location – The Boreal Plains Ecoprovince lies east of the Rocky Mountains, south of the Fort Nelson Lowlands. It occurs on the Alberta Plateau, and consists of plateaus, plains, prairies, and lowlands, and away from the deeply incised large rivers is generally of low relief. It extends eastward, across northern Alberta, Saskatchewan and Manitoba and southern Northwest Territory.

Climate - The climate is typically continental since most of the moist Pacific air has dried, crossing successive ranges of mountains before it reaches this area. In warmer months rain is largely due to surface heating, which leads to convective showers. Winters are cold because there are no barriers to irruptions of Arctic air.

Vegetation - Vegetation is dominated by the Boreal White and Black Spruce Zone, aspen parkland occurs in the Peace River Lowland and black spruce muskegs occurs throughout most of the upland surface. East of the Rocky Mountain Foothills, on low ridges, more mountainous vegetation develops, the Engelmann Spruce - Subalpine Fir Zone occurs on the summits of these ridges south of the Peace River, while the Spruce - Willow - Birch Zone occurs on those ridges north of the Halfway River.

Fauna - The most abundant large mammal is the moose. Both mule deer and white-tailed deer are common in the Peace Lowland Ecosection. Large carnivores include wolves, and black bears. The only small mammal restricted to this region is the Arctic shrew.

This Ecoprovince supports 61% of all bird species known to occur in British Columbia, and 46% of all species known to breed in the province - the fourth lowest total in British Columbia. The many wetlands, ponds, and slow-moving streams on the upland surface provide excellent habitat for breeding and migrating waterbirds. Some of the largest breeding concentrations of Eared Grebe occur in this Ecoprovince. Some of the rarest shorebirds in British Columbia regularly migrate through the Peace Lowland Ecosection. They include the Hudsonian Godwit, White-rumped Sandpiper, and Stilt Sandpiper. The area is the centre of abundance in the province for Broad-winged Hawk, Sharp-tailed Grouse, Upland Sandpiper, Franklin's Gull, common Grackle, and Eastern Phoebe. It is the only breeding area in the province for Philadelphia Vireo, Chestnut-sided Warbler, Black-throated Green Warbler, and Connecticut Warbler. The Boreal Plains Ecoprovince is also the major migratory corridor in British Columbia for Lapland Longspur.

The only reptile to occur in this Ecoprovince, the common garter snake, is rare. Only one salamander, the long-toed salamander, and four species of toads and frogs occur here. One species, the northern chorus frog, has its centre of distribution in this Ecoprovince.

This Ecoprovince supports only freshwater fish, such as, Arctic grayling, northern pike, walleye, slimy sculpin, flathead chub, lake trout, lake whitefish, and pearl dace.

ECOPROVINCE SUBDIVISIONS

In British Columbia, the Boreal Plains Ecoprovince has 3 Ecoregions containing 4 Ecosections.

The Central Alberta Uplands Ecoregion

is a rolling plateau that rises slowly to the north of the Peace River. It consists of two Ecosections in British Columbia. Oil and gas exploration has been extensive here.

The Clear Hills Ecosection

is a smooth rolling upland that gradually rises in elevation towards the north and east. Numerous wetlands occur throughout.

The Halfway Plateau Ecosection

is a rolling upland with some higher ridges, it has wide valleys with some dissection by the small, southward flowing streams. Numerous wetlands and slow-moving streams occur on the upland surface. The Alaska Highway runs through the middle of this Ecosection, small settlements, such as Wonowon and Pink Mountain, have built up along it.

The Peace River Basin Ecoregion

is a wide plain that lies between rolling uplands to the north and south; it is dissected by the Peace River and its tributaries. In British Columbia this Ecoregion consists of only one Ecosection. The Hart, Hudson Hope and Alaska highways all converge in this ecoregion.

The Peace Lowland Ecosection

is a large lowland that is deeply dissected by the Peace River and its tributaries. This Ecosection has the mildest climate with the lowest snowfall in this Ecoprovince. Farming, especially grain crops is the dominant enterprise. Fort St. John and Dawson Creek, the largest communities in northeastern British Columbia occur here.

The Southern Alberta Upland Ecoregion is a rolling upland that rises from the Peace River Basin to the north and culminates in the Rocky Mountain Foothills to the south. In British Columbia this Ecoregion is consists of only one Ecosection.

The Kiskatinaw Plateau Ecosection

is a rolling upland with some dissection by the Murray, Kiskatinaw and Wapiti rivers. Numerous wetlands occur on the upland surface. Tumbler Ridge, located on the western boundary is the only town

TAIGA PLAINS ECOPROVINCE

TAIGA PLAINS ECOPROVINCE

Hay – Slave Lowland Ecoregion
- Fort Nelson Lowland Ecosection

Muskwa Plateau Ecoregion
- Muskwa Plateau Ecosection

Northern Alberta Upland Ecoregion
- Ethso Plateau Ecosection
- Maxhamish Upland Ecosection
- Petitot Plain Ecosection

Location - This Ecoprovince lies to the east of the northern Rocky Mountains in the northeastern portion of British Columbia. It is characterized as a large lowland that has been dissected below the Alberta Plateau surface by the Liard River and its tributaries, namely the Fort Nelson and Petitot Rivers. It extends north, in the Northwest Territories, down the upper Mackenzie River Basin to the Beaufort Sea.

Climate - The climate is continental. Cold, dense Arctic air is unimpeded from the north and may easily blanket the area in winter and spring. The long sub-Arctic winters are generally dark with little heating by solar radiation. In summer, its location between the Arctic and Pacific air masses give it long periods of cloud cover and unstable weather. In years of cold temperatures, or of more moisture, some soils may remain frozen.

Vegetation - Only the Boreal White and Black Spruce Zone occurs here. Black spruce bogs and wetlands are common and extensive.

Fauna - Moose are the most abundant ungulate, and black bear, and lynx are common carnivores. Scattered herds of caribou spend the winter months in all the upland, muskeg, and boreal forests. The muskrat, meadow vole, northern red-backed vole, and meadow jumping mouse are widely distributed small mammals.

The Taiga Plains Ecoprovince supports the lowest diversity of birds of any terrestrial ecoprovince in British Columbia with only 43% of all species known to occur in the province having been reported, the area holds only 35% of all species known to breed. Part of the reason for that low diversity may simply be a reflection of the very low level of observer effort in the region. This ecoprovince is the centre of abundance for breeding Lesser Yellowlegs and Solitary Sandpipers. Spruce Grouse are abundant in the extensive boreal forests. This is the only breeding area in the province for the Bay-breasted Warbler and is the centre of abundance for the Swamp Sparrow. Le Conte's Sparrow is locally abundant. Other breeding species of note include Cape May Warbler, Canada Warbler, Black and White Warbler, and Rose-breasted Grosbeak.

No reptiles are known to occur in the Taiga Plains Ecoprovince and the only amphibians known to occur include the western toad, northern chorus frog, and wood frog.

This Ecoprovince supports only freshwater fish, such as, Arctic grayling, northern pike, walleye, inconnu, white sucker and lake whitefish.

ECOPROVINCE SUBDIVISIONS

In British Columbia, the Taiga Plains Ecoprovince has 3 Ecoregions consisting of 5 Ecosections.

The Hay – Slave Lowland Ecoregion

is a broad lowland area that lies below the higher portions of the Alberta Plateau to either the north or south. There is only one Ecosection in British Columbia.

The Fort Nelson Lowland Ecosection

is dominated by extensive wetlands, small lakes, and muskeg. Oil and gas exploration is the main industry. The Alaska Highway passes through the western portion, Fort Nelson is the only British Columbia town in the Taiga Plains Ecoprovince.

The Muskwa Plateau Ecoregion

is rolling and hilly, it is the highest portion of the Taiga Plains Ecoprovince. It lies to the east of the northern Canadian Rocky Mountains. This Ecoregion consists of only one Ecosection.

The Muskwa Plateau Ecosection
is a dissected upland area that rises above the Fort Nelson Lowland to the east. The Alaska Highway passes through the southern and middle section with a few service establishments, such as Trutch and Steamboat Mountain.

The Northern Alberta Upland Ecoregion
is an area of low rolling plateaus that overlay flat-lying sedimentary bedrock. Muskeg predominates. Oil and gas exploration is the main industry. In British Columbia it consists of 3 Ecosections.

The Etsho Plateau Ecosection
is a rolling upland that rises above the Fort Nelson Lowland to the south.

The Maxhamish Upland Ecosection
is a rolling upland that lies below the Etsho Plateau to the east. On the west the Fort Nelson and Liard rivers have dissected the upland surface.

The Petitot Plain Ecosection
is a level basin that has extensive wetlands and slow moving streams.

EXPANDING DEVELOPMENT IN NORTHERN ECOSYSTEMS

The northern interior ecoprovinces encompass a very large area, almost half the province. The region contains vast tracts of forest, muskegs and numerous mountain ranges, and the number of people who live there is relatively small. Although not nearly as heavily affected by human activities as more readily accessible southern regions of the province, such as the densely populated Lower Mainland and Okanagan valley, the north is experiencing unprecedented growth because of interest in development of energy potential, particularly oil and gas. Logging and development of mineral resources are also having impacts in northern ecosystems.

Oil and gas exploration and development activities, including construction of seismic lines, access roads, pipelines and well sites can result in loss or alteration of habitat for wildlife. Perhaps the most significant problems stem from increased access to previously inaccessible areas. Increased access can result in increased harassment, hunting and poaching, and vehicle-caused mortality of wildlife. For example, in northern B.C., moose tend to travel on roads, particularly when snow is deep, and are very prone to collisions. There is also increased potential for encounters between bears (and other wildlife) with people, and problem animals are frequently shot. Noise from exploration and drilling activities and traffic can also displace wildlife. Disruption of normal predator-prey relationships, which for many northern species such as wolves, grizzlies, cougar and wolverine requires large, relatively undisturbed tracts of wilderness, is another concern. However, predator efficiency may increase (at the expense of such species as caribou) if roads and snowmobile tracks provide easier travel routes. Linear disturbances such as pipelines, transmission lines and seismic lines can also be barriers to wildlife movement.

Provincial government Land and Resource Management Plans (LRMP) for the area recognize the potentially adverse impacts on the land base and associated wildlife, and have developed management directives that they hope will allow for exploration and development of resources in an environmentally responsible manner. Some examples are: new oil and gas tenures will not be granted in Protected Areas unless surface disturbance can be eliminated by such techniques as directional drilling; gating roads that are in use, and decommissioning of access roads that are no longer needed. The LRMPs have also adopted the general management directive of conserving biodiversity, including rare ecosystems, plant communities and habitat types.

Logging also results in increased access, and may also cause loss of habitat for species that do best in mature forests, such as caribou, marten, northern goshawk, and some species of owls and woodpeckers. In the northern interior, the preferred species for regeneration are usually pine and secondarily spruce, so old-growth subalpine fir-spruce stands are often replaced by young pine-dominated stands. Clearcutting removes snags that are important for cavity-nesting birds and provide roosting sites, and may also produce local climate changes.

Poor logging practices can cause soil erosion, sometimes with detrimental impacts on fish-bearing streams, soil compaction, and introduction and spread of non-native plant species in reclamation mixes. These often aggressive non-native species may outcompete native plants that provide food, cover and other habitat requirements for indigenous local wildlife. Clearcuts are often replanted with one species of tree, which can lead to vast areas that provide structurally simple habitats and sustain a small number of species; and are prone to major disease and pest outbreaks. The effects of herbicides and pesticides that are applied in forests on non-target butterflies and other insects, insect-eating birds, and ungulates are not well-known. Fire suppression to prevent loss of harvestable timber may also change natural cycles.

Fragmentation of habitat may also occur as a result of both logging and oil and gas exploration activities, and involves the breakup of once extensive and contiguous ecosystems into various size and shape fragments. This can interfere with normal movement patterns, promote isolation of populations and a subsequent loss in genetic diversity; and result in increased susceptibility of more densely congregated species to predators, increased parasitism of songbird nests by cowbirds and harassment of some small birds by other, larger birds that prefer forest edges. Forest/clearing edges also have different microclimates from adjacent areas. Many forest-interior specialist bird and animal species require a certain minimum amount of intact forest, with its distinctive microclimatic conditions, in which to breed. Fragmentation of habitat can cause loss of large, wide-ranging species, and loss of area-sensitive or interior species. Maintaining connectivity between important habitat types for species is critically important.

Impacts of forestry are not all negative, however. Some wildlife, such as various species of butterflies and moose, benefit from open meadows, and the increased grazing and browsing opportunities in clearcuts; others, such as white-throated and white-crowned sparrows, and warbling vireos benefit from increased edge and/or younger forests. There is increased use of better forestry practices that include leaving larger riparian buffer zones, longer rotation ages, more careful road construction, timing of operations to minimize disruption to wildlife, and practices such as irregular thinning that maintain stand structure, species composition and landscape patterns that are similar to those generated by natural disturbances. In some harvested forests, large trees, snags and downed wood are left to provide habitat opportunities.

One particularly environmentally significant ecosystem in northern B.C. that is affected by many of these issues is the Peace River aspen parkland. Aspen parkland is restricted to this area of B.C., but is much more widespread to the east in Alberta. The aspen parkland is characterized by groves of aspen poplar trees interspersed with grasslands. These unusual grasslands have developed as a result of a unique combination of topographic, climatic and soil conditions that inhibit tree growth and may occur on level to rolling ground, and on south or southwest-facing slopes above rivers and streams. They provide excellent winter habitat for deer and are home to several species of butterflies that usually occur far to the east on the prairies. Improved drainage as a result of agricultural expansion, and subsequent changes in soil chemical composition and texture; and suppression of fires have resulted in tree encroachment in many of the grassy areas.

The aspen parkland of this region also includes riparian mixedwood habitats that provide valuable cover and food for songbirds (including several red and blue-listed species of warblers), excellent deer, elk and moose winter range, and migratory waterfowl staging areas. There are critical trumpeter swan nesting sites near pothole lakes and the rivers support substantial fish populations. Several unique species of plants also occur here. Because these parkland areas were relatively easily cleared, they were quickly cultivated and few intact areas of any size remain. The aspen parkland is therefore one of the most endangered ecosystems in Canada.

Another special ecosystem in northern interior B.C. is the largely undeveloped Muskwa-Kechika area that is considered globally significant for wildlife due to substantial populations of large mammals, including four species of large carnivores and eight species of ungulates. This area represents one of the best opportunities in B.C. to protect an intact, naturally functioning large mammal ecosystem with relatively undisturbed predator-prey relationships.

Despite the many environmental concerns, it would be unreasonable to expect, and economically disastrous, to halt such activities as energy resource development and logging in northern B.C.. At present, energy development is the economic engine of the region and provides jobs for a large percentage of the population. The challenge will be to develop economically feasible and environmentally sustainable solutions to potentially conflicting objectives of wildlife habitat conservation and economic growth.

WHAT YOU CAN DO

So what can you do to help conserve northern ecosystems and promote sustainable development? Here are some suggestions:

1. In this era of tight budgets, it is more important than ever for individuals to act as watchdogs for Protected Areas, and to observe whether best management practices are being used in resource development activities.

2. Be a wildlife watcher. For example, if you observe significant changes in numbers or species of birds or wildlife on your property, or elsewhere in your area, contact staff in your local provincial government fish and wildlife department.

3. Join your local naturalist group and become involved with local conservation issues.

4. Keep informed – read local papers and attend public information sessions and public hearings regarding proposed developments.

5. Become familiar with the Land and Resource Management Plans for your region. If revisions are planned, provide informed, rational input. If management directives set out in the LRMP guidelines to protect wildlife habitat values are not being followed, contact your local MLA.

6. Enlist support of local government to protect environmentally significant features and areas.
7. Promote environmental sustainability in your community.
8. Practice good environmental stewardship on your own property, which may include retaining snags and dying trees, maintaining travel corridors and connectivity between habitat types, and protecting riparian buffer zones.

PUTTING IT ALL TOGETHER IN YOUR YARD

You now have a general introduction to ecosystems and a broad visual picture of the Northern Region Ecoprovinces. After determining the location of your home within these ecoprovinces, spend some time taking a closer look at natural, undisturbed areas nearby.

The type of native plant garden and wildlife habitat that will work best in your outdoor space depends on a combination of factors including the size of your property, exposure to sun and other elements, soil conditions, topography, whether you are in an urban or rural setting, and your specific location. Everyone's outdoor space is different.

The amount of shade or sunlight your outdoor space receives is an important factor to consider when creating your naturescape. For example, if you have a small yard that is shaded by adjacent buildings or large trees, you may want to consider creating a shady forest floor habitat, filled with shade-tolerant shrubs and groundcovers native to the forests in your area. If your property has a full south or southwest exposure, you may want to try planting a native dry grassland or meadow habitat.

You will also need to consider the basic condition of your soil when selecting plants. Having your soil analyzed in a laboratory is the best way of determining the nutritional and textural base upon which you are building your naturescape garden. If analysis is not possible, then talk to some local gardeners. They usually have a good understanding of local soil conditions, and can recommend the most suitable plants for your garden. They may also be able to recommend ways of modifying your soil conditions, if you choose to do so.

Soil texture and topography affect drainage conditions on your property, and will also need to be considered when choosing plants for your garden. For example, well-drained gravelly soils may be perfect for many grassland or alpine plants, but are inappropriate for plants adapted to moist bottomland soils.

The specific location of your home will also have considerable bearing on what plants you can grow and what animals you can expect to attract to your property. This is where time spent observing natural areas beyond your property will be helpful. If you can hear frogs calling near your home, you may be able to attract them to a natural or artificial pond in your yard. If you live near a natural forested area with deciduous and coniferous trees and various berry-producing shrubs, you may want to consider creating a similar forest edge habitat in your yard. By noting the types of habitat found in local natural parks and undeveloped rural and wilderness areas, you will have a better idea of how your garden can fit into the natural landscape around you. The plant tables that follow this section have been organized according to the type of habitat you may want to create or enhance. By using these habitat categories along with the information on moisture and sunlight requirements for individual species, you will be able to select plants that best suit your naturescape garden, and blend with surrounding natural areas.

Remember, the more you study natural habitats, the more you will understand their structure, patterns, and processes. Creating native plant and wildlife habitat is not a one-time project. It is an on-going process of experimentation and refinement. Your awareness and understanding of what works in your outdoor space will grow with time and experience, as will your ability to make your garden more attractive to wildlife. Some things may not work at first, but don't get discouraged. Try to determine why the project isn't succeeding. The solution may be as simple as moving a nest box to a different location, or opening up some forest edge habitat to attract wildlife. Use surrounding natural areas as your teacher – look to them if you need answers. Most importantly, be patient, and enjoy the adventure.

CREATING AN URBAN NATURESCAPE GARDEN

The size and shape of your outdoor space may limit the extent of native plant and wildlife habitat that you can develop. Apartment dwellers with balconies could focus on creating small flower gardens to attract hummingbirds and butterflies. Townhouse patio yards may offer enough space to provide a few shrubs and small trees that produce berries or seeds that are attractive to birds. If your patio area is large enough, perhaps a small wildflower meadow or shrubby section of forest could be created. Small yards have potential for some larger trees or forest edge or open forest habitat. A pond for amphibians could also be considered. Nest boxes for birds and bats (see the Provincial Guide) are a valuable addition to any backyard. You will be most successful in attracting these animals, however, if you also have trees and shrubs that provide cover and foraging habitat, and if your wildlife habitat is somewhat undisturbed by human activities.

CONNECTING YOUR RURAL LIVING SPACE WITH THE NATURAL LANDSCAPE

Living in a rural community provides you with a wonderful opportunity to create a living space that blends naturally into the surrounding wild landscape. This can be as simple as letting the clearings around your buildings develop "fuzzy" edges that lead gently into the surrounding grasslands or forests. This may take some practice, though. Many of us were raised to believe that the wilderness needed to be brought under control, and that untidy garden spaces were a sign of bad moral character.

Believe it or not, you can remain an upstanding member of society and still create a beautiful, practical living space that harmonizes with the surrounding wild landscape. You can do this merely by placing manicured areas and flower gardens closest to your home where you will have the greatest opportunity to gaze upon them.

Then as you move away from your house, allow the landscape to become increasingly more wild and natural. This way you will create a living space that is both aesthetically pleasing to you and which complements the surrounding landscape.

Designing your space -

When designing your outdoor living space, try to retain existing landscape features such as snags, brush piles and rock piles. These provide valuable habitat for many wildlife species. You can also create brush piles and rock piles by following the instructions in the Provincial Guide. Also consider retaining as many native plants as possible. If there are some plants you do not want in your garden, try moving them to another place on your property, rather than destroying them.

Plan to use water efficiently throughout your naturescape. This will probably mean planting vegetable gardens or non-native flowering plants close to your house, since this is usually where your water source is located.

Native plants will rarely need to be watered once they become established. Group these together with other plants that do not need supplemental watering. This way you will only have to water those areas of your garden that really need it. Traditional lawns need water to remain green all summer. Try to use lawns only where they are needed (e.g. sitting or play areas), keep them small, and place them close to other areas that need water. If you are living in a dry area, try xeriscape landscaping (see the Provincial Guide) using the drought-tolerant plants listed in the plant tables in this booklet.

Creating your space –

Remember to proceed slowly with your project. The creation of a naturescape is not something that should be hurried. You are well advised to spend the first year taking stock, letting things grow, and revising your plans gradually.

You may need to start your project by cleaning up some existing junk piles. Once this is done, consider allowing these areas to reestablish on their own. You may like what comes up. This will also let you see what types of native plants grow best in those spaces. If you are impatient, you can always plant these areas with species that self-propagate quickly, or seed them thickly with species that easily become established.
If you are moving existing plants to new locations, do so early in the spring, and let them grow naturally. Native shrubs and trees do not need to be pruned. You can further reduce the maintenance of your natural landscape by letting plants self-seed. You only need to "dead-head" those plants you do not want to spread. Also try to leave branches and twigs, and bark and leaf litter on the ground. It may look messy, but this type of debris can provide valuable habitat for insects, amphibians and reptiles, and small mammals and foraging habitat for some bird species. And finally, if you need to condition your soil to meet the needs of your naturescape design, you can do so by following the instructions provided in the Provincial Guide.

Creating grassland habitats

Northern grasslands are very unique habitats in British Columbia, and sustain many uncommon, vulnerable and threatened species of wildlife. If you are fortunate enough to have native grassland adjacent to your property, you may be able to create additional habitat by allowing native plants to move in naturally to your space. The easiest way to do this is to avoid mowing or grazing corners of fields, areas between buildings, or sites along fencelines or roadways. The same methods can be used to enhance existing grassland habitats. Recently cleared areas or sites with large areas of bare soil can also be seeded with native grassland plants. See Table 1: Native Plants in this booklet for some possible species, and the Naturescape Resource Booklet, Northern Interior for suppliers of locally adapted native plants. They should be able to give you suggestions for the best species and cultural techniques for your area. Be sure to remove as many weeds as possible before planting, and be prepared to battle weeds for the first couple of years until the native species take hold. Seeding annual grasses such as oats or rye may help by providing a ground cover until native plants become established. Once established, native species should not require fertilizer, irrigation or pest control to thrive.

Wildlife Trees

There is life in dead and dying trees! A wildlife tree is any standing dead or live tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife. The special characteristics include broken tops, loose bark and natural cavities. In British Columbia more than 90 wildlife species depend on wildlife tree habitat for many of their life functions including reproduction, feeding, shelter and communication.

The largest group of wildlife tree users are cavity nesting birds. Birds that excavate their own cavities (e.g. woodpeckers, nuthatches, and chickadees) are known as primary cavity excavators. Birds that use the abandoned cavities of the primary cavity excavators (e.g. small ducks, owls and birds of prey) are known as secondary cavity users. Wildlife tree dependant mammals include most bats, some forest rodents, furbearers, bears, and caribou.

Many wildlife tree users play important ecological roles in forest ecosystems. Most notable is the significant impact some of these species have on the abundance and distribution of forest insect pests. Birds like woodpeckers, nuthatches, and chickadees consume large numbers of bark and woodboring beetlles, budworms, tussock moths, and sawflies.

In addition to providing habitat for birds and mammals, wildlife trees represent essential habitat for insects, spiders, mosses, lichens and mushrooms. Once fallen, these trees become coarse woody debris, habitat for a variety of species that inhabit the forest floor. Ultimately, wildlife trees return important nutrients (especially nitrogen) to the soils of the forest.

Despite its important ecological role, British Columbia's wildlife tree resource is declining. This decline seriously threatens the viability of many wildlife tree dependant populations, to the extent that entire species may become endangered. Landowners can play a significant role in conserving valuable wildlife tree resources. As long as they are safe, wildlife trees can be maintained on private property. In general the largest and tallest trees are the most valuable but wildlife trees of all different ages, sizes and stages of decay provide habitat for different species of wildlife.

Enhancing forest habitats near your home –

Pockets of woodland habitat in your outdoor space will provide continuity with nearby forests. You can plant small woodland habitats around your property, or you can plant smaller, shade-tolerant shrubs, trees, and groundcovers along the forest border to create more forest edge habitat (see the Provincial Guide). The plant tables in this booklet will help you select plants that are most suitable for the type of woodland habitat you wish to create, whether it is a deciduous, coniferous, open, or deep shade woodland.

Protecting and restoring riparian habitats –

Riparian habitat refers to the green belt of vegetation around wetlands, lakes, rivers, and streams. The lush plant growth in these areas protects the waterbodies from runoff, and provides extremely valuable habitat for many wildlife species. Try to protect riparian habitats on or near your property by not draining wetlands, and by leaving at least a 15-metre-wide band of vegetation along or around the shoreline. Do not use fertilizers or pesticides around riparian areas. These chemicals have an uncanny knack of ending up in surface and ground water runoff and, not surprisingly, can seriously threaten the health of a wetland. Also try to restrict livestock grazing and human activity around wetlands. Amphibians and breeding wetland and marsh birds are often highly sensitive to disturbance, and to the removal of protective riparian vegetation.

You may be able to enhance or restore riparian areas by planting native plants, and by reducing human and livestock use of the riparian zone. If you do not have wetlands on your property, remember that even small, wet areas such as seeps and ditches can provide valuable native plant and animal habitat if you avoid mowing or clearing them. For additional information on the protection of riparian areas, see the reference section in the Resource Booklet.

Providing wildlife travel corridors –

Many wild animals avoid travelling across large open areas because this makes them vulnerable to predators. Interconnected corridors of protective vegetation form important travel routes for many animals. You may be able to create or enhance wildlife travel corridors on and around your property. For example, if you plant a windbreak of trees, consider adding some shrubs to provide additional protective cover for smaller animals. Or you could plant hedgerows of native shrubs. The hedge should be 4-5 metres wide, and should include a variety of shrubs that provide seeds and berries. After the shrubs become established, you may wish to add some climbing vines. Do not prune your hedgerows. Thicker growth usually provides better cover. You can also plant shrubs in clumps throughout your property. As well as providing small islands of protective cover and foraging habitat, these shrub groupings can act as living screens for areas of your yard that you may not want to see.

When you don't want to share your space with wildlife -

If deer and moose are common visitors around your home you will probably want to protect some of your garden by fencing it (although dogs can also be helpful here). Placing vegetable and flower gardens close together can reduce fencing costs and maintenance. A handsome and inexpensive fence can be made by obtaining scrap boards from local mills. Cut the boards into 1.5-2 metre lengths, and nail them vertically to cross rails made from tree thinnings. You will also need to place a top-rail 0.5 metres above the top of the fence. You may wish to plant native shrubs and vines along your fences to camouflage them, or to create additional cover or foraging habitat for wild animals.

Another type of fence can be made from rails and fish netting. Rails can be made from tree thinnings, and netting can be obtained at no cost from net repair shops on the coast. Elevate the cross-rails 2.5 metres above the ground and drape the netting over the rail and down to the ground. Weight the bottom of the netting with rocks or boards. This type of fencing has the added advantage of allowing you to see beyond your property to the surrounding wilderness.

If rodents are a problem in your garden, you can keep them from damaging young trees by wrapping the base of the tree trunk with wire mesh, plastic spirals, or PVC piping. Deterrent sprays (available from garden centres) and porcupine guards can provide added protection. Tramping down snow around the base of young trees with also discourage rodent damage to tree trunks.

If birds are raiding your vegetable or flower garden, try planting native berry- and seed-producing plants around your property. Birds are less likely to eat your prize fruits and vegetables if there are plenty of native food sources nearby.

If mosquitoes and black flies are a problem around your home, keep trees, shrubs, and tall grasses away from outdoor sitting areas. Thinning existing vegetation slightly, or planting new areas so that there is good air movement amongst plants will also help control populations of biting insects around your home.

IN SUMMARY

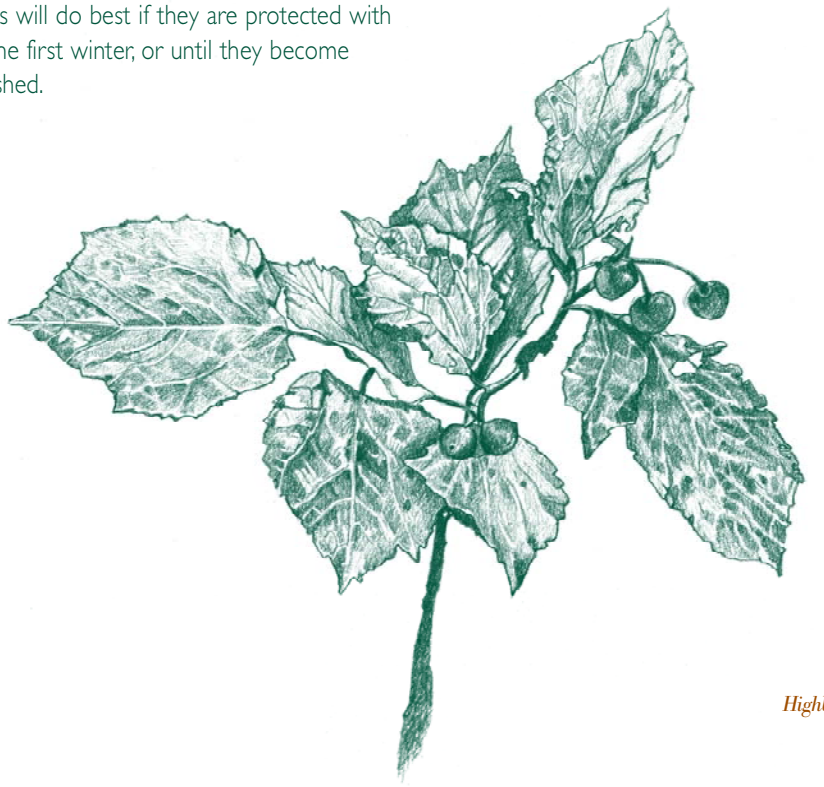
Look beyond your yard and focus on the surrounding natural environment. You share this landscape with a community of native plants and animals. Can you see how your home's address now becomes your location in the broader landscape of the Central Interior Ecoprovince?

As you drive through the towns and villages of this region, you may notice how different they are from the surrounding rural or wilderness areas. Urban landscapes need not be so disconnected from the natural landscape. A little creativity and a slightly different approach to landscape planning are all that is needed to "naturalize" our urban centres. You will become an important part of this new philosophy by creating a naturescape garden. By caring for native plant and wildlife habitat around your home, you begin the process of creating a mosaic of native habitats that connect with the surrounding wilderness. Eventually, you may want to move beyond your property line and promote the creation, restoration, enhancement, or maintenance of larger natural areas. Also think about the impact of human activity on your local natural landscape. Consider learning about how urban development and resource extraction affects your local environment. You may even want to get involved in local area planning and decision-making. Whatever you do, you will soon see that your naturescape is part of an overall commitment to maintaining the integrity and diversity of your local natural community.

TABLE 1: NATIVE PLANTS

The following table lists some native plants that occur in the four northern ecoprovinces, grouped by life form e.g. trees, shrubs, dwarf shrubs usually less than 30 cm tall, perennials, grasses and grass-like plants, and ferns and fern-allies. Most have wildlife values, as indicated in the comments section. Many are currently available from local retail and wholesale nurseries and garden centres, and the others can be obtained, with advance notice, from specific northern suppliers (see the Resource Booklet). If a native species you wish to acquire is not listed below, ask local nurseries or seed suppliers. Stock is always changing and they may have the species you want or can get it for you. If the plant(s) you want are not available locally you be able to obtain them from nurseries or seed suppliers in the Central or Southern Interior or Lower Mainland (see the Resource Booklet). Many nurseries in those areas provide mail order catalogues of the plants they stock. Success rates for nursery-raised native plants are often much higher than those of plants taken from the wild, even if the nursery has propagated plants from stock that is not local to your area. Nursery-raised plants will do best if they are protected with mulch for the first winter, or until they become well established.

If you are interested in growing a particular species that is not stocked by a nursery, try collecting the plant or taking cuttings from plants growing in areas that are already disturbed, or slated for development (e.g., road building sites, housing developments, logged areas, power-line or railroad right-of-ways). Only collect plants when you already have, or can create suitable habitat for them on your property. Do not disturb natural areas merely to create a similar natural space on your property. You will be most successful in transplanting native plants to your yard if you follow procedures such as those listed in the Streamkeepers and Wetlandkeepers manuals, or on the Streamside Nursery web-site (see the Resource Booklet). You could also collect seed from native plants, but collect no more than 10% of the entire seed crop, and do not collect in parks, ecological reserves, or wildlife management areas. Most native seeds take time to germinate. Pretreatment techniques such as scarification and/or stratification often improve germination rates. Most reliable gardening books provide tips on these types of pretreatment techniques.



Highbush Cranberry

Use the range and habitat information, plus the key for light and moisture requirements, to select plants that are most suitable for your setting. For example, if you want to create or enhance a dry, open woodland, or woodland edge habitat on your property, then select those plants that occur in forested habitats in your ecoprovince that prefer partial sun and well-drained soils. Many species, however, do well in more than one type of habitat, so you may wish to experiment with your plantings. Be aware, though, that local growing conditions vary considerably throughout northern B.C. Depth and duration of snow cover, winter temperatures, and length of growing season all affect plant survival. In addition to using this plant table, you may wish to check nearby natural landscapes or refer to local plant identification guides (see the Resource Booklet) when making your selection of native plants to use in your natural landscape design.

KEY:

BP	Boreal Plains
SB	Sub-boreal Interior
NB	Northern Boreal Mountains
TP	Taiga Plains

S	Prefers full sun
SSh	Prefers a mixture of sun and shade
Sh	Prefers full shade

D	Prefers dry, well-drained soils
M	Prefers somewhat moist soils
W	Prefers moist to wet soils

Pasque Flower

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
TREES				
Subalpine Fir *Abies lasiocarpa*	BP, SB, NB Subalpine forests to treeline	SSh, Sh M	30 m evergreen tree (or prostrate shrub near treeline), with smooth grey bark, short branches, and stiff needles	Seeds enjoyed by squirrels Browse for mountain goats Buds, twigs and bark eaten by snowshoe hares in winter
Paper Birch *Betula papyrifera*	All Occurs on moist but well drained soil in forests and forest openings Low elevations	S, SSh M	30-40 m deciduous tree with white, papery bark; leaves turn bright yellow in fall	Seeds eaten by pine siskins, chickadees and redpolls Wrens and creepers nest under bark Food for beaver and porcupine Larval food for butterflies such as Compton tortoiseshell Shade intolerant; frost tolerant
Tamarack *Larix laricina*	All Bogs, swamps, fens and lower mountain slopes	S,SSh M, W	Small deciduous conifer to 20 m tall; needles occur in clusters, turn yellow and drop off in fall	Seeds eaten by white-winged crossbills and common redpolls
White spruce *Picea glauca*	All Occurs at low elevations in moist soil along rivers and lakes, in bogs, fens, and wet to dry slopes	S, SSh D, M	30-35 m evergreen with cones with rounded scales, and grey, scaly bark; hybridizes with Engelmann spruce where their ranges overlap	Seeds eaten by crossbills and squirrels Large, old trees good for raptor nests Young trees used for summer nests Has shallow roots and susceptible to windthrow
Black spruce *Picea mariana*	All Bogs, fens swamps and upland sites near wetlands Low to moderate elevations	S, SSh, Sh D, M, W	Small evergreen to 20 m tall with a club-shaped top, hairy young twigs, and small purplish-brown seed cones <3 cm long	Seeds provide food for white-winged crossbills and squirrels
Lodgepole pine *Pinus contorta var. latifolia*	All Occurs in forests at all elevations on a variety of soils and in various moisture regimes	S D, M	Evergreen to 30+ m, with curved, often twisted needles in bundles of two; cones are tan-coloured and often prickly	Seeds eaten by crossbills, pine grosbeaks and squirrels Needles eaten by Western pine elfin butterfly larvae Tolerates low nutrient sites Often used for shelterbelts
Balsam poplar *Populus balsamifera ssp. balsamifera*	All Occurs mainly in riparian habitats and on floodplains; also on moist uplands Low elevations	S M, W	Tall deciduous tree to 50 m, with leaves that are tapered to a point at the tip, and sticky, aromatic buds	A nectar source for bees and butterflies and a larval food for moths

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
TREES				
Aspen poplar Populus tremuloides	All Occurs in a variety of sites from moist, open forests to the edges of dry grasslands Low to moderate elevations	S D, M	Deciduous tree to 30 m, with whitish bark and trembling leaves that turn bright yellow in fall	Food plants for several butterfly species such as swallowtails Nectar source for bees Food and building materials for beaver, food for porcupine Snowshoe hares eat the twigs in winter Buds are a favorite food of ruffed grouse Older aspens are preferred by woodpeckers for nest cavities Has shallow invasive roots, but appropriate for rural landscapes Hybrids and cultivars are available that are more suitable for smaller properties
SHRUBS				
Mountain Alder *Alnus incana ssp. tenuifolia*	All Riparian habitats and poorly drained sites Low elevations	S, SSh M, W	Coarse shrub or small tree to 10 m tall; often occurs in clumps Leaves coarsely toothed Bark has distinct lenticels like birch Nutlets occur in small, stiff cones	Alder seeds are eaten by pine siskins Alders provide good foraging sites for warblers and other insect-eating birds Decaying alder trees provide nesting sites for chickadees, woodpeckers and small owls Larval food for green comma butterfly
Green Alder *Alnus viridis ssp. crispa*	All Upland forested slopes and riparian locations; usually on well-drained coarse-textured soils Low to subalpine elevations	S, SSh, Sh M, W	Shrub to 3 m tall; flowers appear at the same time as the finely-toothed leaves Nutlets occur in small, stiff cones	Nutlets provide winter food for songbirds Larval food for some moths and butterflies
Saskatoon *Amelanchier alnifolia*	All Occurs in dry to moist forests and forest edges, on slopes and in gullies; usually on well-drained soils Low to moderate elevations	S, SSh D, M	1-5 m deciduous shrub with showy white flowers in spring and purple, edible berries	Berries eaten by many birds, including tanagers, thrushes and cedar waxwings Berries are also eaten by bears and small mammals Important winter browse for deer and moose Supplies nectar for some species of butterflies and moths; larval food for some moths
Scrub Birch *(Betula nana & B. pumila var. glandulifera)*	All Bogs, fens, meadows, marshes, rocky slopes To alpine elevations	S M, W	Low-growing shrubs <2m tall with small round-toothed leaves and flowers in catkins	Provides cover for ground-nesting birds Seeds eaten by wintering redpolls Buds provide food for grouse and ptarmigan Larval food for butterflies Browse for ungulates

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
SHRUBS				
Red-osier dogwood *Cornus stolonifera*	All Moist soil, riparian habitats, upland forest and thickets From low to moderate elevations	S, SSh, Sh M, W	To 4 m tall with bright red stems; white to greenish flowers are followed by white berries, leaves are distinctly parallel veined	Berries are eaten by kingbirds, thrushes, and other birds Favoured deer and moose winter browse Larval food for butterflies
Beaked hazelnut *Corylus cornuta*	BP, SB Moist well-drained areas in open forests and shady clearings, riparian habitats, rocky slopes Low elevations	S, SSh M	1-4 m deciduous shrub with flowers in catkins and paired nuts enclosed in hairy bracts	Provides cover and nesting sites for small birds Nuts eaten by squirrels, voles, mice, crows and jays Browse for ungulates
Wolf-willow; Silverberry *Elaeagnus commutata*	All Thickets, forest edges, also occurs on gravelly floodplains and on river and stream banks at low elevations	S D, M	3-4 m shrub with silvery leaves that are scurfy underneath, small, yellow, very pungent flowers and silvery, dry berries	Nitrogen fixer Berries eaten by birds and mammals Twigs and buds are winter foods for red-backed voles Larval food for some moths Attracts butterflies such as Canadian tiger swallowtail, silvery blue
Common Juniper *Juniperus communis*	All Dry, open woods, gravelly ridges, open rocky slopes From low to alpine elevations	S,SSh D	Low-growing (usually <1 m) evergreen shrub with sharp, needle-like leaves and bluish, berry-like cones	Cones eaten by birds in winter Shelter for small mammals
Western Bog-laurel; Swamp Laurel *Kalmia microphylla*	BP, SB, NB Bogs, muskegs, moist mountain meadows To alpine elevations	S, SSh M, W	Small evergreen to 0.5 m tall with pink, saucer-shaped flowers and opposite, dark green leaves that are whitish-hairy beneath	
Common Labrador tea *Ledum groenlandicum*	All Bogs and moist coniferous woods Low to moderate elevations	S, SSh, Sh M, W	Evergreen shrub to 1.5 m tall with small white flowers in clusters, and narrow, inrolled leaves that are rusty-hairy beneath	Possibly larval food for boreal spring azure butterfly
Black Twinberry; Bracted Honeysuckle *Lonicera involucrata*	BP, SB Moist forests, thickets, riparian habitats Low to moderate elevations	SSh, Sh D, M, W	0.5-2 m deciduous shrub with small, yellow, paired flowers in early spring; black berries covered by conspicuous reddish bracts	Flowers are a nectar source for hummingbirds, butterflies and moths Larval food for some butterflies Berries eaten by birds and mammals

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
SHRUBS				
False azalea *Menziesia ferruginea*	BP, SB, NB Shady coniferous woods, riparian habitats, moist slopes Low to subalpine elevations	SSh, Sh M	Shrub to 2 m tall with oblong leaves that are light green, turning orange in the fall, with rusty-coloured hairs; Flowers salmon-coloured, urn-shaped	Cover and nesting site for birds
Shrubby Cinquefoil *Pentaphylloides Floribunda* (Formerly *Potentilla fruticosa)*	All Open, often moist habitats such as bogs, meadows, cliffs, rocky slopes and gravelly river flats; prefers calcareous soils Low to alpine elevations	S, SSh D, M	0.3-1.5 m tall with abundant yellow flowers, small compound leaves with 3-7 leaflets, and shredding bark	Provides nectar for bees, butterflies and moths Attracts beneficial insects Birds and small mammals eat the seeds Browse
Choke cherry *Prunus virginiana*	All Forest edges, thickets, open woodlands, clearings Low elevations	S, SSh D, M	1-4 m shrub occurs in open forests and aspen parkland; has numerous white flowers in long clusters, followed by reddish to black berries	Berries eaten by birds and mammals Nectar source for butterflies, larval food for some butterflies and moths Browse
Northern black currant *Ribes hudsonianum*	All Moist woods, riparian habitats, thickets Low to moderate elevations	Sh M, W	0.5-2 m deciduous shrub with small white flowers early in spring, followed by black berries	Berries eaten by birds and mammals; Flowers provide nectar for hummingbirds
Black Gooseberry *Ribes lacustre*	All Moist forests, riparian habitats, forested slopes From lowland to subalpine elevations	SSh, Sh M	Deciduous shrub to 2 m tall with small reddish flowers in clusters, followed by hairy purple berries; leaves are slightly maple-leaf shaped	Flowers are a source of nectar for hummingbirds Thorny gooseberries provide cover and the berries provide food for birds and small mammals
Northern Gooseberry *Ribes oxyacanthoides*	All Dry to moist, open woods and rocky sites Low elevations	S, SSh, D, M	0.5-1.5m spreading prickly shrub with yellow to white flowers in clusters, followed by greenish to purplish fruit	Provides nectar for hummingbirds Some gooseberries and currants supply bees and butterflies with nectar, and larval food for moths
Red Swamp Currant *Ribes triste*	All Moist coniferous forest, wetlands, riparian areas From low to subalpine elevations	SSh M, W	Deciduous shrub to 1 m tall with small reddish to greenish-purple flowers in drooping clusters, followed by bright red berries	Provides nectar for hummingbirds Berries eaten by birds and small mammals

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
SHRUBS				
Prickly Wild Rose *Rosa acicularis*	All Open forest, slopes, clearings, riparian areas Low to subalpine elevations	S, SSh D, M	Deciduous prickly shrubs to 1.5 m tall, with large pink flowers, followed by reddish hips	Roses provide shelter for birds and rose hips are eaten by coyotes, bears and grouse Young foliage is browsed by wild ungulates such as deer and moose Nectar source for bees
Wild red raspberry *Rubus idaeus*	All Thickets, clearings, open woods, disturbed areas, often on well-drained sites Low to moderate elevations	S, SSh D, M	Erect deciduous shrub to 1.5 m, with white flowers, followed by a red raspberry	Berries eaten by birds and mammals Shrubs provide cover for birds Nectar source for bees
Willows *Salix spp.*	All Usually occurs in riparian habitats or in moist woods Low to alpine elevations	S, SSh, Sh M, W	Deciduous, often much-branched shrubs with catkins that appear before or at the same time as the leaves; fruits are capsules	Browsed by moose Bark is eaten by beavers, and both bark and buds are eaten by heather voles in winter Buds are also eaten by grouse Larval host for butterflies such as dreamy duskywing Provides nectar for bees and butterflies Catkins of pussy willows (Salix discolor) provide early pollen for bees
Red Elderberry *Sambucus racemosa spp. pubens*	BP, SB, NB Moist meadows, riparian habitats, forests From low to moderate elevations	S, SSh, Sh D, M	Deciduous shrub to 6 m tall with small, white flowers in a cluster, and red or black berries	Flowers attract hummingbirds, berries are relished by birds such as robins and waxwings Browse
Soopolallie; Soapberry; Canada Buffaloberry *Shepherdia canadensis*	All Occurs in open forests, forest openings and clearings Lowland to subalpine elevations	S, SSh D, M	1-2 m deciduous shrub with inconspicuous flowers that appear before the leaves; leaves have whitish hairs and small rusty scales beneath; berries red to orange; nice compact-growing shrub for gardens.	Fixes nitrogen Berries eaten by heather voles, bear, deer, porcupines and grouse Forms thickets for cover
Western mountain ash *Sorbus scopulina*	All Moist forests, forest openings, and clearings To subalpine elevations	S, SSh D, M	1-5 m deciduous shrub has compound leaves, clusters of white flowers and red to orange berries	Berries are favoured by waxwings, pine grosbeaks, robins, orioles, finches, grouse and mammals Twigs are browsed by deer and moose

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
SHRUBS				
Snowberry *Symphoricarpos albus & S. occidentalis*	All Open woods, clearings, floodplains Low elevations	S, SSh D, M	50-150 cm deciduous shrub Flowers white to pinkish; berries white to purplish, last through the winter	Winter food for pine grosbeaks Berries are eaten by other birds when other food is scarce Larval food for snowberry clearwing moth Leaves and twigs browsed by deer Nectar source for bees, birds and butterflies Shelter and cover for small mammals
Black Huckleberry *Vaccinium membranaceum*	All Coniferous forests and openings From low to subalpine elevations	S, SSh D, M	Coarse deciduous shrub to 1.5 m, with small, pinkish, urn-shaped flowers followed by large blackish berries	Vaccinium species are larval food plants for several butterflies Nectar source for hummingbirds and bees Berries are eaten by birds and mammals
Velvet-leaved Blueberry *Vaccinium myrtilloides*	BP, SB, TP Open forests, clearings, bog hummocks Usually on gravelly or sandy soils Low elevations	S, SSh D, M	Deciduous shrub to 0.4 m tall with soft-hairy leaves, whitish bell-shaped flowers and a blue berry with a pronounced whitish bloom	Larval food for pink-edged sulphur butterfly Berries eaten by bears, deer, moose, caribou and birds such as grouse
Highbush Cranberry; Low-bush Cranberry; Squashberry *Viburnum edule*	All Moist forests, openings, riparian habitats and wetlands Low to moderate elevations	SSh, Sh M, W	Deciduous shrub, 0.5-2.5 m tall, with clusters of small white flowers followed by red to orange berries; leaves turn bright red in fall	Berries eaten by birds such as jays, woodpeckers, and waxwings; and small mammals Food for hummingbird moths Possible larval food plant for boreal spring azure butterly
DWARF SHRUBS				
Kinnikinnick; Common Bearberry *Arctostaphylos uva-ursi*	All Well-drained, often sandy soils, dry rocky slopes and dry forests, clearings Low elevation to alpine	S, SSh D	Prostrate evergreen with long, rooting branches and pinkish urn-shaped flowers; berries are bright red	Larval food and nectar source for butterflies Berries stay on the plant in winter, providing excellent forage for ground-feeding birds
Bunchberry *Cornus canadensis*	All Dry to moist coniferous and mixedwoods, forest openings Low to subalpine elevations	SSh, Sh D, M	Trailing evergreen to 20 cm tall, with large whitish bracts surrounding inconspicuous flowers; fruits red, berry-like	Forage for deer Sparrows, vireos and grouse eat berries Cornus spp. are possible larval food plants for butterflies

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
DWARF SHRUBS				
Yellow Mountain-avens *Dryas drummondii*	All Gravel bars, rocky slopes, especially on calcium-rich soils Low to alpine elevations	S, SSh D, M	Woody-based, low growing (to 30 cm) prostrate perennial with yellow flowers enclosed in hairy bracts; leaves prominently veined, green above and densely white-hairy beneath	Food for pikas in alpine habitats Provides nectar for bees and butterflies
Smooth-leaved Mountain-avens; Entire-leaved Mountain-avens *Dryas integrifolia*	All Exposed rocky or gravelly sites, heaths, tundra Subalpine to alpine elevations	S, M D, M	Mat-forming, low growing perennial with creamy-white solitary flower on leafless, hairy stem; leaves are basal, leathery and are densely white-hairy beneath	Food for pikas Browsed by Dall's sheep in winter
Crowberry *Empetrum nigrum*	All Muskegs, coniferous forest, rocky slopes Low to alpine elevations	S, SSh, Sh D, M	Branched evergreen to 30 cm tall, with needle-like leaves that are grooved below, and inconspicuous flowers followed by black, berry-like fruits	Browsed by Dall's sheep in winter Berries eaten by bears and voles
Twinflower *Linnaea borealis*	All Forests, wetlands, bogs, dry ridges Low to subalpine elevations	SSh, Sh D, M	Trailing, delicate evergreen to 10 cm tall, with nodding pink, bell-shaped flowers in pairs	Source of nectar for hummingbirds
Dwarf Nagoonberry *Rubus arcticus*	All Bogs, wetlands, open forests, thickets, meadows From lowland to alpine elevations	SSh, Sh M, W	Hairy-stemmed dwarf shrub to 15 cm tall, with large pink to reddish flowers; leaves 3-lobed or compound with 3 leaflets; fruits red, raspberry-like	Some *Rubus* species supply food for butterflies
Trailing Raspberry; Dewberry *Rubus pubescens*	All Moist to wet forests, wetlands, bogs Low to moderate elevations	SSh, Sh M, W	Trailing plant with compound leaves with 3 leaflets; flowers usually white; berries red, raspberry-like	Berries may supply food for birds such as white-crowned sparrows, chickadees and grouse, and small mammals such as chipmunks Twigs and leaves may be browsed by rabbits and deer
Bog Cranberry *Oxycoccus oxycoccus*	All Muskegs, bogs, always with Sphagnum moss Low elevations	SSh, Sh M, W	Evergreen creeping shrub to 40 cm long, with leathery, widely spaced elliptic leaves, and pink nodding flowers; berries large in relation to plant, pink to red	Larval food for Reakirt's copper butterfly Berries eaten by bears and grouse
Lingonberry; Mountain Cranberry *Vaccinium vitis-idaea ssp. minus*	All Muskegs, moist to dry coniferous woods, alpine tundra Low to alpine elevations	S, SSh D, M	Trailing evergreen to 20 cm long; leaves leathery, inrolled and dotted with dark glands beneath; flowers pinkish, bell-shaped; berries red	Berries eaten by birds, small mammals and bears.

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
PERENNIALS				
Yarrow *Achillea millefolium*	All Open sites, meadows, clearings, slopes Low to high elevations	S D, M	Aromatic perennial 10-100 cm tall with fern-like dissected leaves and small white flowers in a flat to round-topped cluster	Provides nectar for butterflies Grazed by snowshoe hares Attracts beneficial insects
Pearly Everlasting *Anaphalis margaritacea*	BP, SB, NB, TP Open forest, meadows, fields, roadsides Low to high elevations	S D, M	Unbranched, to 80 cm tall; flowers tiny, yellow surrounded by larger white bracts; leaves white-woolly below, often inrolled	Eaten by deer Flowers attract syrphid flies, small wasps and butterflies Foliage eaten by painted lady butterfly larvae
Blue Columbine *Aquilegia brevistyla*	All Meadows, riparian habitats, open forest, often on gravelly soil From low to subalpine elevations	S, SSh M	Taprooted perennial to 70 cm tall, with blue and cream, spurred flowers, and leaves in groups of 3's	Provides nectar for bees, butterflies and hummingbirds
Sitka Columbine *Aquilegia formosa*	BP, SB, NB, TP Moist meadows, forest openings, rocky slopes Low elevations to subalpine	S, SSh M	To 1 m tall, with red and yellow, spurred flowers, and leaves in groups of 3's	Provides nectar for butterflies and hummingbirds
Holboell's Rockcress *Arabis holboellii*	BP, SB, NB, TP Dry slopes, floodplains, open woods, grasslands Low to moderate elevations	S, SSh D, M	20-50 cm tall with narrow stem leaves and a rosette of basal leaves; flowers with 4 purplish to pink or white petals; fruits long, narrow, pod-like	Several species of rock cress grow in northern B.C., many provide larval food for butterfly larvae and nectar for adults
Heart-leaved Arnica *Arnica cordifolia*	All Moist coniferous forests, meadows Low to high elevations	S, SSh M	10-60 cm tall with large yellow flowers and heart-shaped basal leaves	
Showy Aster *Aster conspicuus*	BP, SB Open forests, clearings, meadows	SSh, Sh D, M	30-100 cm tall with bluish flowers and leaves that are rough to the touch	Provides food for butterfly larvae and nectar for adults
Great Northern Aster *Aster modestus*	All Moist to wet forests, openings, riparian habitats Low to moderate elevations	S, SSh? M, W	Purple flowered perennial 30-100 cm tall with lance-shaped, clasping leaves	Provides nectar late in the season for butterflies

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
PERENNIALS				
Alpine Milk-vetch *Astragalus alpinus*	All Mountain meadows, talus slopes, open woods, gravel bars From low to alpine elevations	S D, M	Mat-forming perennial to 35 cm long with blue to pinkish flowers that are paler at the base, and compound leaves with 13-25 leaflets	Several milk-vetch species provide food for butterfly larvae and nectar for adults
Common Red Paintbrush; Scarlet Paintbrush *Castilleja miniata*	All Meadows, open woods and slopes, gravel bars, wetland edges Low to alpine elevations	S D, M	Perennial to 60 cm tall with bright red bracts that look like flowers, and narrow, prominently veined leaves	Provides nectar for hummingbirds
Marsh Cinquefoil *Comarum palustre* *(Formerly Potentilla palustris)*	All Marshes, bogs, wet meadows; often growing in water Low to moderate elevations	S, SSh W	Perennial to 1 m tall; flowers reddish-purple in loose clusters; lower leaves palmately compound with 5-7 toothed leaflets	The flowers produce an odour that attracts carrion-feeding insects as pollinators
Common Fireweed *Epilobium angustifolium*	All Disturbed sites, especially burned or logged areas; open forests, meadows, riparian habitats Low to subalpine elevations	S, SSh D, M	Showy perennial 0.5-3 m tall with large, bright pink flowers in a long cluster; fruits are long pods that open to release seeds with a "parachute" of white hairs	A nectar source for hummingbirds and butterflies, and larval food for some moths Eaten by small mammals and deer
Philadelphia Fleabane *Erigeron philadelphicus*	All Open forests, riparian habitats, clearings Low to moderate elevations	S, SSh M	Biennial or short-lived perennial 20-70 cm tall with pink, purple or white flowers; stem leaves gradually reduced to the top	Many species of fleabane supply nectar to butterflies and moths
Wild Strawberry *Fragaria virginiana*	All Open forest, disturbed sites Low to subalpine elevations	S, SSh D, M	Short perennial to 15 cm tall with creeping runners; flowers white; leaves in 3's with toothed edges; fruit small, intensely-flavoured berries	Attracts butterflies such as the grizzled skipper
Northern Bedstraw *Galium boreale*	All Meadows, grasslands, open forests Low to subalpine elevations	S, SSh D, M	To 80 cm tall with small white flowers and narrow, 3-veined leaves in whorls of 4	Nectar source for butterflies and larval food for bedstraw sphinx moths
Large-leaved Avens Geum macrophyllum	All Moist meadows, forests, clearings Low elevations	SSh M	To 1 m tall with 1 large terminal leaflet and several smaller ones; flowers yellow in clusters	Attracts bees

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
PERENNIALS				
Alpine Sweet-vetch *Hedysarum alpinum*	All Open woods, rocky slopes, gravel bars, tundra From low to alpine elevations	S, SSh D, M	Taprooted perennial to 90 cm tall with pinkish-purple, pea-shaped flowers in a cluster and compound leaves with 9-23 prominently-veined leaflets	A favourite food of bears Larval food plant and nectar source for butterflies
Cow-parsnip *Heracleum maximum*	All Open deciduous forests, riparian habitats, moist sites From low to moderate elevations	SSh, Sh M	Large perennial from 1-3 m tall with large, flat-topped, white flower clusters and large, segmented, toothed leaves	Provides food for anise swallowtail butterfly larvae Provides nectar for bees and adult butterflies
Creamy Peavine *Lathyrus ochroleucus*	All Deciduous, mixedwood and coniferous forests; sometimes clearings Low elevations	S, SSh M	Twining perennial to 1 m long, with white to yellowish flowers and compound leaves with 3-4 pairs of leaflets; stipules to half as large as leaflets	Larval food for butterflies and nectar for bees and hummingbirds
Arctic Lupine *Lupinus arcticus*	All Moist meadows, open forests Low to subalpine elevations	S, SSh D, M	Hairy-stemmed perennial to 60 cm tall with large bluish flowers, and palmately compound leaves with 6-8 leaflets arising from the tip of the leaf stalk	Food for butterfly larvae and nectar for adult butterflies and bees Seeds are eaten by ground squirrels Food for pika in alpine habitats
Wild Lily-of-the-Valley *Maianthemum canadense*	BP, SB, TP Moist to dry shaded woods, clearings From low to moderate elevations	SSh, Sh D, M	Small perennial to 25 cm with small white flowers in an erect cluster, and 2-3 heart-shaped to oval leaves	
Star-flowered false Solomon's-seal *Maianthemum stellatum* *(Formerly Smilacina stellata)*	All Forests, clearings, meadows, riparian areas Low to subalpine elevations	S, SSh, Sh D, M	20-60 cm tall with white, star-shaped flowers in clusters at the tip of the stem; leaves narrowly lance-shaped, alternate; berries dark-striped, greenish, turning black at maturity	Fruit may be eaten by grouse and some small mammals
Buckbean; Bogbean *Menyanthes trifoliata*	All Bogs, fens, marshes, edges of lakes and ponds Low to moderate elevations	S W	Aquatic to semi-aquatic plant with white, fringed flowers; and leaflets in 3's, on long stalks	Seeds are eaten by waterfowl
Tall Bluebell; Tall Lungwort *Mertensia paniculata*	All Moist forests, riparian habitats, meadows Low to subalpine elevations	SSh, Sh M	20 cm-1.5 m tall with blue to pinkish or occasionally white bell-shaped, drooping flowers and lance-shaped, prominently-veined, hairy leaves	

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
PERENNIALS				
Yellow Monkey-flower *Mimulus guttatus*	SB, NB, TP Riparian habitats, seepages, weeping rock faces, wet ditches Low to subalpine elevations	S, SSh, Sh M, W	Trailing or erect annual or perennial to 80 cm, with yellow tubular flowers that are spotted with red on the lower lip; leaves in pairs, toothed	Nectar source for butterflies
Wild Bergamot; Bee Balm *Monarda fistulosa*	BP Open woods, meadows Low elevations	S, SSh M	Perennial to 70 cm tall with large, rose-coloured to lilac tubular flowers and opposite, toothed leaves	Nectar attracts butterflies, moths, butterflies, bees and hummingbirds
Yellow Pond-lily *Nuphar lutea*	BP, SB, NB, TP Ponds, shallow lakes, slow-moving streams From low to moderate elevations	S W	Large aquatic perennials with large, yellow cup-shaped flowers, and floating, leathery, round to heart-shaped leaves	Seeds are eaten by waterfowl Leaves, stalks and flowers are eaten by deer and muskrats Rhizomes eaten by beaver
Small-flowered Penstemon; Slender Blue Penstemon *Penstemon procerus*	All Dry to moist meadows, slopes, gravelly ridges, open forests To alpine elevations	S D, M	Woody-based perennial to 40 cm tall with dense clusters of small, usually bluish-purple flowers and opposite, lance-shaped leaves	Some penstemons are a nectar source for butterflies, bees, moths and hummingbirds
Sweet Coltsfoot *Petasites frigidus var. frigidus, nivalis, palmatus*	All Moist forests, wetlands, clearings Low to alpine elevations (depends on variety)	S, SSh, Sh M, W	10-50 cm tall plant with white to pinkish flowers that appear before the deeply lobed leaves	Attracts butterflies
Moss Campion *Silene acaulis*	SB, NB Rocky ridges and exposed areas, rock crevices, tundra Alpine areas	S D, M	Mat-forming plant <5 cm tall with pink to purplish flowers and tiny, narrow, stiff leaves	Nectar source for bees and butterflies A favourite rock garden plant
Canada Goldenrod *Solidago canadensis*	All Meadows, forest openings, often in disturbed areas Low to moderate elevations	S D, M	30-100 cm tall with yellow flowers in a dense pyramid-shaped cluster; leaves numerous, lance-shaped, often toothed at the tips and rough to the touch	There are several species of goldenrod in this region Goldenrods provide butterflies and bees with nectar and are also eaten by woodchucks Attracts beneficial insects
Narrow-leaved Bur-reed *Sparganium angustifolium*	BP, SB, NB, TP Ponds, lakeshores, slow-moving streams in the boreal forest To subalpine elevations	S W	Aquatic perennial to 1 m with tiny, greenish flowers in spherical heads; long narrow leaves float in the water	Provides cover and forage for waterfowl and marsh birds Eaten by muskrats and deer

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
PERENNIALS				
Clasping Twistedstalk *Streptopus amplexifolius*	BP, SB, NB, TP Moist forest, riparian habitats, clearings Low to subalpine elevations	SSh, Sh M	Perennial 40-100 cm tall, often with a zig-zag stem; flowers white, bell-shaped on twisted stalks; berries yellow to reddish or purple	Berries are eaten by chipmunks and grouse
Stinging Nettle *Urtica dioica*	All Riparian habitats, deciduous forests, thickets Low to subalpine elevations	S, SSh M	To over 2 m tall, with inconspicuous flowers and opposite, hairy, toothed leaves	Larval food for butterflies such as red admirals and tortoiseshells
American Vetch *Vicia americana*	All Meadows, open deciduous or mixedwood forest Low to moderate elevations	S, SSh, Sh M	Trailing or climbing perennial to 1 m long, flowers purplish in a loose cluster; leaves with tendrils at the tip, compound with 8-18 leaflets; fruits are smooth pods	Nectar source for bees, and larval food for butterflies such as western tailed blue
Kidney-leaved Violet *Viola renifolia*	All BP, TP Moist coniferous forests, forested wetlands Lowland to subalpine elevations	SSh, Sh? M, W	Short plant to 15 cm; white petals, some with narrow purplish nectar guidelines; leaves heart to kidney-shaped	Many species of violets provide food for butterfly larvae This species blooms shortly after snowmelt
GRASSES AND GRASS-LIKE PLANTS				
Bluejoint *Calamagrostis canadensis*	All Moist forests, meadows, wetlands From low to high elevations	S, SSh M, W	Grass to 2 m tall with a large, nodding inflorescence	Some species of *Calamagrostis* supply food for butterflies
Sedges *Carex spp.*	All Although many sedges grow in and adjacent to water, some are found in upland grasslands and forests Low to alpine elevations	S, SSh, Sh D, M, W	Grass-like plants, often with triangular stems; leaves are in 3 rows Variable in height	Provide cover and nesting material for birds such as finches, sparrows, and waterfowl Food for muskrats, lemmings and other small mammals Larval food for butterflies
Tufted Hairgrass *Deschampsia cespitosa*	All Grows in moist meadows, riparian habitats Low to alpine elevations	S, SSh M, W	An attractive grass with an open, shiny inflorescence	Seeds are food for birds and small mammals Plants form clumps that provide nesting cover Cultivated varieties of this grass are sold in garden centres

Name Common, Scientific	Habitat & Range	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
GRASSES AND GRASS-LIKE PLANTS				
Slender Wheatgrass *Elymus trachycaulus*	All Grasslands, meadows, rocky slopes, open forest Low to moderate elevations	S, SSh D, M	50- 90 cm tall with a long, narrow spike inflorescence	Provides forage for deer, moose, rabbits Seeds eaten by birds Seeds and leaves eaten by voles and ground squirrels Many wheatgrasses are used as nesting cover by ground-nesting birds
Altai Fescue *Festuca altaica*	All Open forest, meadows, grassland From low to high elevations	S D	Tufted grass to 1 m tall, forms large tussocks Inflorescence a drooping, often purplish cluster	Important summer forage for caribou Seeds eaten by birds and rodents
Hairy Wild Rye; Fuzzy-spiked Wild Rye *Leymus innovatus*	All Open forest, south-facing grassy slopes, clearings Low to high elevations	S, SSh, Sh D, M	To 1 m tall with soft-hairy, spike inflorescence	Possibly winter forage for Dall's sheep
Glaucous Bluegrass *Poa glauca*	All Grassy slopes, ridges and rocky outcrops Low to subalpine elevations	S D	Short tufted grass to 30 cm tall with a narrow, often purplish inflorescence	
Bulrushes *Scirpus spp.*	All Emergent in wetlands, stream and lake edges Usually low to moderate elevations	S, SSh M, W	Variable from leafy with drooping inflorescences to almost leafless with small, erect flower clusters	Provides food and cover for fish, muskrats, and otters Seeds and leaves are eaten by ducks, geese, shorebirds Nesting cover for waterfowl, blackbirds and wrens
Cattails *Typha latifolia*	All Emergent in wetlands, stream edges, marshes Low elevations	S, SSh M, W	Large flat-leaved plant to 2 m in height, with thick, brown spike inflorescence	Habitat and food for muskrats, ducks, blackbirds, wrens and other wildlife Nesting sites for some ducks, coots, grebes and other birds Used to filter pollutants from water bodies
FERNS AND FERN-ALLIES				
Oak Fern *Gymnocarpium dryopteris*	All Moist forests, openings, rocky slopes Low to subalpine elevations	Sh M, W	Fern to 35 cm tall with leaf blades that taper to the tip, and toothed "leaflets" (pinnae)	
Horsetails *Equisetum spp.*	All Moist forests and riparian habitats, disturbed areas Lowland to alpine elevations	S, SSh, Sh D, M, W	Segmented, often branched plant impregnated with silica which makes it rough to the touch Spores are produced in cones at the tip of the stems	Eaten by voles, and bears in early spring,

TABLE 2: NON-NATIVE PLANTS

The following plants are not native to northern interior B.C. but can be beneficial to local wildlife. They are hardy in much of the area (check with your local nursery or native plant supplier) and are usually readily available. Consult the Naturescape Provincial Guide for further ideas on planting to attract butterflies, birds and other wildlife to your property.

Name Common, Scientific	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
TREES			
Crabapple *Malus spp.*	S, SSh D, M	Grows 3-15 m depending on variety; has pinkish or white flowers, followed by small reddish fruit	Fruit is eaten in winter by robins, waxwings and pine grosbeaks Nectar source for bees, butterflies, moths and hummingbirds Larval food source for moths Siberian crabapples (Malus baccata) are hardy to the coldest areas Don't plant where water tends to pool as this may cause damage to the roots
Colorado Spruce *Picea pungens*	S, SSh D, M	Height (<1 m to 18 m) and form variable depending on variety; needles bluish to green, cones pale brown with wavy edges	Excellent cover and winter shelter for birds Seeds are eaten by birds in the finch family
American Mountain Ash and European Mountain Ash *Sorbus americana and S. aucuparia*	S, SSh D, M	American Mountain Ash to 10 m tall, European Mountain Ash to 12 m tall: Tiny white flowers occur in clusters, followed by bright orange-red berries	Berries are eaten by waxwings, thrushes, orioles, grosbeaks and other birds Deer will browse leaves and twigs Trees have attractive fall foliage colour
SHRUBS			
Caragana; Siberian Pea Tree *Caragana arborescens*	S, SSh D, M	Fast-growing shrub to 6 m tall with bright yellow flowers, and small, slender pods	Provides nectar for hummingbirds and butterflies When left unpruned, provides good cover for songbirds Often used in hedges or shelterbelts Drought-tolerant and low maintenance
Cotoneaster *Cotoneaster sp.*	S, SSh D, M	Variable size shrub, usually with small glossy leaves that turn orange to red in the fall; berries red or black depending on variety	Berries are eaten by birds and other wildlife Nectar source for bees and butterflies Peking cotoneaster (Cotoneaster acutifolius) is particularly hardy, grows to 3 m tall and makes a good hedge
Honeysuckle *Lonicera spp.*	S, SSh D, M	Shrubs 2-3 m tall with flowers and berries of different colours depending on variety	Attracts hummingbirds and butterflies Berries are eaten by birds
Nanking Cherry *Prunus tomentosa*	S, SSh D, M	Shrub to 3 m with masses of white flowers followed by leaves that turn orange to red in the fall	Berries are very popular with birds Flowers are a nectar source for bees, butterflies and moths Easily started from seed

Name Common, Scientific	Sun Exposure & Moisture Preference	Description	Wildlife Values & Other Comments
ANNUALS AND PERENNIALS			
Delphinium *Delphinium elatum*	S, SSh M	Tall perennial that may grow to over 2 m, with blue, purple, pink or white flowers	Provides nectar for hummingbirds, bees and moths
Globe Thistle *Echinops ritro*	S D	Perennial to >1 m tall with striking globe-shaped, metallic blue flowers and prickly foliage	Nectar attracts butterflies and bees
Sunflowers *Helianthus spp.*	S D, M	Perennials or annuals of variable height, with large, usually yellow flowers, and large heads with many seeds	Seeds are eaten by birds Provides nectar for bees and butterflies and larval food for butterflies Easily grown but prefers well-drained soil
Pincushion Flower; Scabious *Scabiosa spp.*	S M	Annuals of variable height and a wide range of flower colours	Provides nectar for hummingbirds, butterflies and bees
Black-eyed Susan *Rudbeckia spp.*	S D, M	Long-blooming perennials with bright yellow flowers	Seeds eaten by birds Nectar source for bees and butterflies

TABLE 3: BUTTERFLIES, MOTHS AND BENEFICIAL INSECTS

This table lists only the more common, non-pest butterflies, moths and insects of non-coastal, northern British Columbia. Range refers to the four northern ecoprovinces:

BP Boreal Plains
SB Sub-boreal Interior
NB Northern Boreal Mountains
TP Taiga Plains

Information presented below on range, abundance and food for butterflies and moths is specific to this region. These butterflies and moths may be more abundant, occupy different habitats and eat different foods in other portions of the province. Only the most frequently eaten plants are listed, and in some cases only the genus is given. Because food species use is poorly documented in British Columbia, butterfly watchers should record food plants supplemented with photographs or pressed plant specimens.

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
SKIPPERS FAMILY HESPERIIDAE					
Northern Cloudywing *Thorybes pilades*	BP, TP Restricted distribution Below 1000 m elevation	Common along the Peace River; rare elsewhere	Larvae feed on plants in the pea family, likely red clover *(Trifolium pratense)*, white clover *(T. repens)* and pea-vine *(Lathyrus sp.)*	Aspen parkland, moist meadows, streambanks	
Dreamy Duskywing *Erynnis icelus*	BP, NP, TP Below 1000 m	Common along the Peace River; of scattered occurrence elsewhere	Larvae feed on willows *(Salix spp.)*, poplars *(Populus spp.)* and members of the pea family	Meadows and riparian areas	
Persius Duskywing *Erynnis persius*	BP, NB, TP	Widespread Common	Likely lupines *(Lupinus spp.)* and milk-vetches *(Astragalus spp.)*	Forest openings, meadows, and along streams	This species has been recorded in most of B.C. except the Queen Charlotte Islands
Grizzled Skipper *Pyrgus centaureae*	BP, NP, TP	Widespread Uncommon	Strawberry *(Fragaria sp.)* and *Rubus spp.*		Found throughout B.C. except in the Queen Charlottes and on Vancouver Island
Arctic Skipper *Carterocephalus palaemon*	BP, NB, TP	Widespread More common in the eastern part of the range	Grasses such as purple reedgrass *(Calamagrostis purpurascens)*	Stream edges, meadows; from low elevations to alpine	Despite the name, this species does not occur mainly in arctic habitats
Garita Skipperling *Oarisma garita*	BP	Restricted distribution Occurs along the eastern portions of the Peace River	Possibly Kentucky bluegrass *(Poa pratensis)*	Undisturbed grassy meadows	The name skipperling refers to the small size of these skippers
Common Branded Skipper *Hesperia comma*	All	Widespread	Grasses and sedges *(Carex spp.)*	Open grassy areas; forest openings from low to subalpine elevations	Males of one subspecies are commonly seen on the south-facing banks of the Peace River

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
Parnassians and Swallowtails Family Papillionidae					
Eversmann's Apollo *Parnassius eversmannii*	SB, NB, TP	Of scattered occurrence	Plants in the fumitory family; likely few-flowered corydalis *(Corydalis pauciflora)*	Mainly in upper subalpine krummholz zones but also occurs in alpine tundra and openings in lower elevation forests	Probably more widely distributed than current data indicates due to the lack of access to much of northern B.C.
Baird's Swallowtail *Papilio bairdii*	BP	Restricted to the Peace River area	Tarragon *(Artemisia dracunculus)* is the larval food plant	Open, dry, grassy slopes along the Peace River canyon	Swallowtails include some of the largest and most striking of all butterflies; most are tropical or subtropical
Old World Swallowtail *Papilio machaon*	BP, NB, TP	Of scattered occurrence in northeastern and extreme northern B.C.	Larvae eat mountain Sagewort *(Artemisia norvegica)*, and possibly coltsfoot *(Petasites frigidus var. palmatus)*	Clearings in the boreal forest, subalpine willow communities, and alpine tundra	
Anise Swallowtail *Papilio zelicaon*	BP	Common in the Peace River area	Larvae eat plants in the carrot family including cow parsnip *(Heracleum maximum)*, Angelica spp. and garden carrots, parsley, and parsnips	Forest edges, streambanks, beaches, hilltops, dry grasslands, subalpine meadows	Leave dead branches and flower stalks for overwintering pupae Anise swallowtails may also pupate on other vertical surfaces such as fences, house sidings and tree trunks
Canadian Tiger Swallowtail *Papilio canadensis*	All	Widespread Common, especially in the eastern portion	Larvae eat alder *(Alnus spp.)*, birch *(Betula spp.)*, balsam poplar *(Populus balsamifera)*, trembling aspen *(P. tremuloides)* and willow *(Salix spp.)*; Adults may take nectar from garden lilacs *(Syringa spp.)*	Coniferous forests, aspen woodland; from low elevations to subalpine	Males are frequently seen "mud-puddling" – drinking water with naturally occurring salts, feces or urine, to replace sodium lost to females during mating
Whites, Marbles and Sulphurs Family Pieridae					
Western White *Pontia occidentalis*	BP, NB, TP	Common along the Peace River; of scattered occurrence elsewhere	Larvae feed mainly on native and introduced plants in the mustard family	Dry meadows, forest openings, roadsides, and alpine areas up to 2500 m elevation	Most white butterflies in B.C. feed on plants in the mustard family and may taste bad to some predators because of the mustard oil glycosides that they ingest
Margined White *Pieris marginalis*	SB, NB, TP	Common and widespread in the western part of its northern range	Larvae may eat such mustard family plants as rock cress *(Arabis spp.)*, Pennsylvania bitter cress *(Cardamine pensylvanica)* and stinkweed *(Thlaspi arvense)*	Cool, moist habitats in deciduous forests, willow/alder *(Salix/Alnus)* floodplains & avalanche chutes; subalpine meadows	One of the first butterflies in flight in spring

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
Whites, Marbles and Sulphurs Family Pieridae					
Mustard White *Pieris oleracea*	All	Widespread in the north and east	Native (e.g. *Arabis spp.*) and cultivated mustard family plants	Moist meadows; moist shrubby forest openings to subalpine elevations	Pest control for related Cabbage Whites may eliminate Mustard Whites
Large Marble *Euchloe ausonides*	BP, NB, TP	Common Widespread	Larval plants are in the mustard family; rock cress (*Arabis spp.*) is the major food plant in B.C.	Meadows, forest openings, and riverbanks	
Northern Marble *Euchloe crusa*	BP, NB, TP	Of scattered occurrence	Larvae eat mainly whitlow grass (*Draba spp.*)	Dry, sparsely vegetated forest openings, river flats, alpine tundra	
Sara's Orangetip *Anthocharis sara*	SB, NB	Of scattered occurrence in the western portion of northern B.C.	Eggs are laid and larvae feed on mustards, particularly rock cress (*Arabis spp.*)	Forest openings, rocky slopes, cliffs from sea level to subalpine	
Clouded Sulphur *Colias philodice*	All	Widespread Common	Larvae eat alfalfa *(Medicago sativa)*, red clover *(Trifolium pratense)*, white clover *(T. repens)*, probably American vetch *(Vicia americana)*, northern hedysarum *(Hedysarum boreale)*, and other members of the pea family	Grassland, meadows and open forest areas; where alfalfa, clover or vetches grow; To alpine elevations	
Christina's Sulphur *Colias christina*	All	Common in the eastern part of the area; of restricted occurrence in the west	Larval food plants are vetches *(Vicia spp.)*, and possibly yellow hedysarum *(Hedysarum sulphurescens)* and lupines *(Lupinus spp.)*	Open, dry pine and spruce forests	
Canadian Sulphur *Colias canadensis*	BP, NB, TP	Of scattered occurrence Uncommon	Larval foodplants are in the pea family and may include hedysarum *(Hedysarum spp.)* and clovers *(Trifolium spp.)*	Openings in the boreal forest	
Chippewa Sulphur *Colias chippewa*	BP, NB, TP	Common, especially in the northeast	Larval foodplants are blueberry species such as dwarf blueberry *(Vaccinium caespitosum)* and perhaps bog blueberry *(V. uliginosum)*	High elevation bogs and wet tundra	
Pink-edged Sulphur *Colias interior*	BP, TP	Restricted to the eastern portion of northern B.C.	Larval food plants are members of the heath family such as dwarf blueberry *(Vaccinium caespitosum)* and velvet-leaved blueberry *(V. myrtilloides)*	Moist coniferous forest openings where blueberries grow	
Giant Sulphur *Colias gigantea*	BP, NB, TP	Widespread and common in northeastern B.C.	Willows *(Salix spp.)*	Wet willow fens and catchment marshes where willows grow	

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
Gossamer Wings Family Lycaenidae					
Dorcas Copper *Lycaena dorcas*	BP, NB, TP	Of scattered occurrence	Larvae eat shrubby cinquefoil *(Pentaphylloides floribunda)*	Low elevation boreal forest bogs and other wetlands	
Reakirt's Copper *Lycaena mariposa*	All	Of scattered occurrence	Larvae eat plants in the heath family such as dwarf blueberry *(Vaccinium caespitosum)*, bog blueberry *(V. uliginosum)*, bog cranberry *(Oxycoccus oxycoccos)* and bog-rosemary *(Andromeda polifolia)*	Forest openings and riparian habitats where *Vaccinium* host plants occur	
Western Pine Elfin *Incisalia eryphon*	BP, NB, TP	Of scattered occurrence	Larvae eat lodgepole pine *(Pinus contorta)* needles Adults take nectar from Mackenzie willow *(Salix prolixa)*	Mature pine stands	
Western Tailed Blue *Everes amyntula*	All	Widespread and common in northeast B.C.	Larval food plants are in the pea family and include American vetch *(Vicia americana)*, milk-vetches *(Astragalus spp.)* and pea-vines *(Lathyrus spp.)*	Open meadows, mature open forests and riparian habitats where the larval food plants are present	
Boreal Spring Azure *Celastrina ladon*	All	Widespread and common	Possible larval food plants are blueberries *(Vaccinium spp.)*, Viburnum spp., Labrador tea *(Ledum spp.)*, cherries *(Prunus spp.)* and dogwoods *(Cornus spp.)*	Riparian habitats and along the edges of open meadows	
Silvery Blue *Glaucopsyche lygdamus*	All	Widespread and common	Members of the pea family, particularly lupines *(Lupinus sp.)*	Anywhere where the larval food plants occur, from low elevations to near treeline	Where lupines are heavily fed on by silvery blue larvae, the plants develop high concentrations of alkaloids to inhibit further feeding
Northern Blue *Lycaeides idas*	All	Widespread and common	Probably dwarf blueberry *(Vaccinium caespitosum)*	Open meadows, to alpine elevations; pine forest openings	
Greenish Blue *Plebeius saepiolus*	All	Widespread and Common	Pea family plants such as clovers *(Trifolium spp.)* and possibly hedysarum *(Hedysarum spp.)*	Forest openings, meadows	Despite the name, there is no green on the wings of this species in B.C.
Arctic Blue *Agriades glandon*	All	Of scattered occurrence	Spotted saxifrage *(Saxifraga bronchialis)* and three-toothed saxifrage *(S. tricuspidata)*; possibly Androsace sp. and locoweeds *(Oxytropis spp.)*	In northern B.C. found from 500 to 2000 m in dry, rocky or thinly grassed habitats	

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
BRUSH FOOTS FAMILY NYMPHALIDAE					
Satyr Anglewing *Polygonia satyrus*	All	Of scattered occurrence	Stinging nettle *(Urtica dioica)* and hops *(Humulus lupulus)* for larvae, and tree and willow *(Salix spp.)* sap for adults	Riparian areas and moist, open deciduous forests where stinging nettle is found; Up to subalpine elevations	The wings of Anglewings have a scalloped, jagged appearance; mature anglewing larvae resemble bird droppings
Green Comma *Polygonia faunus*	All	Widespread Common	Larval food plants are paper birch *(Betula papyrifera.)*, mountain alder *(Alnus incana ssp. tenuifolia)*, green alder *(A. viridis spp. crispa)* and willow *(Salix spp.)*; Adults feed on poplar *(Populus spp.)* and willow *(Salix)* sap	Riparian areas and open deciduous and coniferous forests	Adults hibernate in woodpiles, barns, hollow trees and stumps
Hoary Anglewing *Polygonia gracilis*	All	Of scattered occurrence	Willows *(Salix spp.)*, possibly Sitka alder *(Alnus viridis ssp. sinuata)* and currants/gooseberries *(Ribes spp.)*	Openings in coniferous forests and along river banks	
Grey Comma *Polygonia progne*	BP, TP	Uncommon in the northeast	Probably currants/gooseberries *(Ribes spp.)* and poplar *(Populus spp.)* sap	Forest openings and riparian areas to subalpine elevations	
Compton Tortoiseshell *Roddia l-album*	BP, SB, NB	Of scattered occurrence	Larval food plants are water birch *(Betula occidentalis)* and paper birch *(B. papyrifera)*; additional sources may be willows *(Salix spp.)* and trembling aspen *(Populus tremuloides)*; adults may eat tree sap	Forest openings; often seen along logging roads in the fall	
Mourning Cloak *Nymphalis antiopa*	All	Widespread	Larvae feed on willows *(Salix spp.)*, and poplars *(Populus spp.)*; adults feed on sap of trees such as poplars prior to hibernation	Forest openings and moist riparian areas where willow grows; Low to mid elevations	Some tortoiseshells such as the Mourning Cloak hibernate in hollow stumps, logs, debris piles, and rock piles
Milbert's Tortoiseshell *Aglais milberti*	All	Common and widespread	Larvae feed on stinging nettle *(Urtica dioica)* leaves	Forest openings from low elevations to alpine; Frequently seen in mountain meadows in August	

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
Brush Foots Family Nymphalidae					
Painted Lady *Vanessa cardui*	BP, NB, TP	Common in the Peace River region; of scattered occurrence elsewhere	Larvae feed mainly on Canada thistle *(Cirsium arvense var. horridum)* and bull thistle *(C. vulgare)*	Open areas over a wide range of elevations	Migrates into B.C. from the south each year May be common in some years and absent in others
Red Admiral *Vanessa atalanta*	BP, SB, TP	Of scattered occurrence	Larvae feed on stinging nettle *(Urtica dioica)*	Open areas from low elevation to alpine	Migrates into B.C. from the south each year May be common in some years and absent in others
Aphrodite Fritillary *Speyeria aphrodite*	BP, SB	Restricted to the Peace River region, where it is common	Larvae feed on violets *(Viola spp.)*	Meadows in aspen woodlands	
Northwestern Fritillary *Speyeria hesperis*	All	Widespread; Common especially in the eastern portion	Larvae feed on violets *(Viola spp.)*	Meadows and forest openings	
Mormon Fritillary *Speyeria mormonia*	All	Scattered throughout	Larval food plant is violets *(Viola spp.)*	Forest openings to alpine elevations	
Bog Fritillary *Clossiana eunomia*	All	Of scattered occurrence	Unknown	Along streams in openings in spruce forests; edges of bogs and lakes	
Silver-bordered Fritillary *Clossiana selene*	BP, NB, TP	Of scattered occurrence	Larvae feed on violets *(Viola spp.)*	Sphagnum bogs, fens, and aspen parkland	
Frigga Fritillary *Clossiana frigga*	BP, NB, TP	Of scattered occurrence	Larval food is willows *(Salix spp.)*	Along streams in openings in spruce forests; edges of bogs and lakes	
Freija Fritillary *Clossiana freija*	BP, NB, TP	Common in the east; of scattered occurrence elsewhere	Larvae feed on dwarf blueberry *(Vaccinium caespitosum)* and kinnikinnick *(Arctostaphylos uva-ursi)*	Mountainous and boreal areas; spruce and pine forests to subalpine elevations	
Arctic Fritillary *Clossinia chariclea*	BP, NB, TP	Widespread	Larvae feed on willows *(Salix spp.)*	Along streams in openings in spruce forests, edges of bogs and lakes; mountainous and boreal areas; spruce and pine forests	This species and the Polar Fritillary occur farther north than any other North American butterfly

Name Common, Scientific	Range	Abundance	Food Plants	Habitat	Comments
BRUSH FOOTS FAMILY NYMPHALIDAE					
Pearl Crescent *Phyciodes tharos*	All	Common in the east	Larvae eat asters *(Aster spp.)*	Old fields, meadows, mature aspen woodland	
Field Crescent *Phyciodes pratensis*	SB, NB, TP	Of scattered occurrence in the north and east	Larvae eat asters *(Aster spp.)*	Grasslands and forest openings to alpine elevations	
White Admiral *Limenitis arthemis*	All	Most common in the eastern portion	Larvae eat trembling aspen *(Populus tremuloides)* and willows *(Salix spp.)*; adults feed on carrion as well as nectar	Deciduous and mixed forests	
Common Ringlet *Coenonympha california*	BP	Restricted to the Peace River district	Larval food plants are grasses	Meadows and grasslands at low elevations	
Common Woodnymph *Cercyonis pegala*	BP	Restricted to the Peace River district	Larvae eat grasses and possibly sedges *(Carex spp.)*	Meadows and grasslands at low elevations	
Common Alpine *Erebia epipsodea*	All	Common in the Peace River area; of scattered occurrence elsewhere	Larval food is grasses	Moist, grassy fields, ditches, low elevation grasslands; subalpine and alpine meadows	
Chryxus Arctic *Oeneis chryxus*	BP, NB	Of scattered occurrence	Larval food is likely grasses and possibly sedges *(Carex spp.)*	Dry grassland, forest openings, and dry alpine tundra	

ATTRACTING BUTTERFLIES:

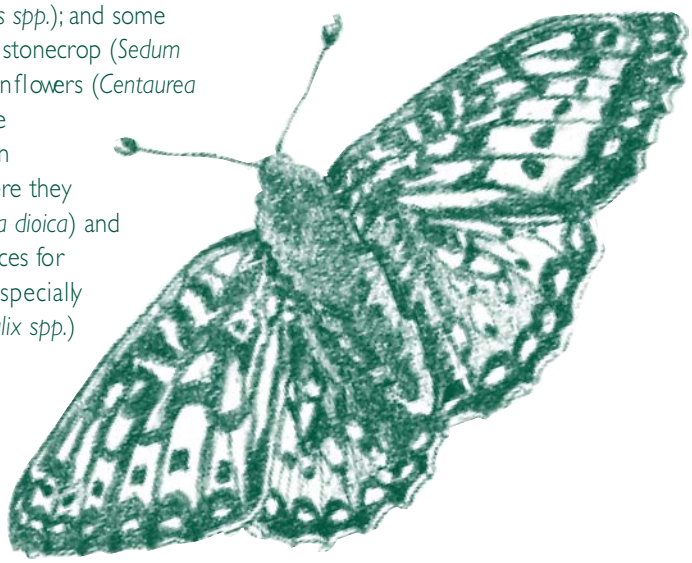
Some butterfly species are declining in the province due to loss or degradation of habitat, pesticide use, and introduction of weedy species, particularly non-native grasses that out-compete native plant sources of food for larvae and nectar for adults. Identifying the butterflies that you see, becoming familiar with their food and habitat requirements, and providing these in your garden could ensure a safe haven for your butterfly visitors and viewing enjoyment for your family. If you don't have a garden, potted plants and window boxes with appropriate plants will work.

Growing a variety of plants will attract diverse butterfly species, and plants are as effective scattered throughout the garden as in solid stands. Try to select flowers so that some plants are in bloom from spring to fall. Most of the butterfly larvae in B.C. are leaf feeders and most specialize on only a few larval food plants. Plants in the pea family such as lupines (*Lupinus spp.*), vetches (*Vicia spp.*), hedysarum (*Hedysarum spp.*) and clovers (*Trifolium spp.*); carrot family including cow parsnip (*Heracleum maximum*), carrots, dill, and parsley; and in the mustard family such as native rock cress (*Arabis spp.*), and garden cabbage provide food for both larvae and adults of several species. Some additional ornamental plants that will grow in at least some parts of this area and could be tried are bee balm (*Monarda fistulosa*), hollyhock (*Alcea spp.*), daylilies (*Hemerocallis spp.*), pansies (*Viola spp.*), red-osier dogwood (*Cornus stolonifera*), pearly everlasting (*Anaphalis margaritacea*), goldenrods (*Solidago spp.*), pinks (*Dianthus spp.*); and some species of gloriosa daisy (*Rudbeckia spp.*), stonecrop (*Sedum spp.*), honeysuckle (*Lonicera spp.*), and cornflowers (*Centaurea spp.*). Fall-blooming asters (*Aster spp.*) are valuable because they supply a late season source of nectar. If you have a place where they won't be a nuisance, stinging nettle (*Urtica dioica*) and thistles (*Cirsium spp.*) are good food sources for several butterflies in this area. Tree sap, especially from poplar (*Populus spp.*) and willow (*Salix spp.*) species, and rotting fruits may be used by some species. Other less savoury food sources may be discarded fish guts, dung, and carrion.

Butterflies are attracted to warm, sunny, sheltered spaces, with sites for perching, resting and sunning themselves. A water source, such as a stream, seep, puddles, or even overflow from a birdbath is also required in summer, as butterflies can dehydrate quickly on hot summer days. In northern B.C. many species of butterflies hibernate, and overwinter as adults, larvae or pupae. Overwintering adults look for hollow trees, unheated buildings, and wood piles in which to hibernate. Retain some leaf litter on the ground for hibernating larvae and pupae, and try to prune plant material when eggs, larvae and pupae are not present.

When trying to attract butterflies, it is critical to avoid using herbicides and insecticides (even the otherwise environmentally benign biological control bacteria Bacillus thuringiensis, which can have devastating results on butterfly and moth larvae).

Careful observations of the butterflies and caterpillars that you see, and the plants that they eat, may provide new and useful information to science, especially in this little studied region of the province. Accurate, careful observations on species and their habits would be welcomed by the entomologists at the Royal B.C. Museum (please see the Naturescape Resource Booklet for contact information).



Callippe Fritillary

Moths	Distribution and Abundance (if known)	Larval Food	Habitat and Natural History
SPHINX MOTHS FAMILY SPHINGIDAE			
Bedstraw Sphinx *Hyles gallii*	SB Probably all	Common fireweed *(Epilobium angustifolium)*, bedstraw *(Galium spp.)* and *Clarkia spp.*	Low elevation, open forests Often seen at night around lights in early summer A powerful flier
Snowberry Clearwing; Hummingbird Moth *Hemaris diffinis*	Probably all	Dogbane *(Apocynum spp.)*, snowberry *(Symphoricarpos spp.)*, honeysuckle *(Lonicera sp.)*	The most common of the clearwings; occurs in open areas throughout B.C. Can be seen during the day These moths are sometimes called Hummingbird moths because they produce a buzzing sound with their wings, like a hummingbird, when hovering over flowers. A more appropriate name is "Bee Moth", because they look very much like large bumblebees visiting flowers for nectar.
Twin-spot Sphinx *Smerinthus jamaicensis*	Southern SB and possibly southern BP	Willows *(Salix spp.)* , poplar *(Populus spp.)*, birch *(Betula spp.)*, and fruit trees	Low elevation open forests
Eyed Sphinx; Cerisy's Sphinx; One-eyed Sphinx Smerinthus cerisyi	Southern SB, and southern BP (Peace River region)	Willows *(Salix spp.)*, birches *(Betula spp.)*, poplars *(Populus spp.)*	Occurs along river margins and wetlands where willows grow, and in open forests at low elevations
White-lined Sphinx *Hyles lineata*	All Common	Fireweeds *(Epilobium spp.)*	These moths are called Hummingbird moths because they produce a buzzing sound with their wings, and can easily be mistaken for hummingbirds when hovering over flowers to sip nectar
Modest Sphinx; Big Poplar Sphinx *Pachysphinx modesta*	Probably southern SB and BP	Poplars *(Populus tremuloides & P. balsamifera)*, willows *(Salix spp.)*	Habitat is deciduous and mixed forests
Hummingbird Moth; Common Clearwing *Hemaris thysbe*	SB Common	Viburnum spp., honeysuckle *(Lonicera spp.)*, snowberry *(Symphoricarpos spp.)*	Found in forest edges, meadows and cultivated flower gardens Can be observed in the daytime
GIANT SILKWORM MOTHS FAMILY SPHINGIDAE			
California Silk Moth *Hyalophora gloveri*	BP, SB, TP	Willows *(Salix spp.)*.	Occurs in deciduous and mixed forests Although a silkworm, it is not closely related to the silkworms of Asia. Giant silkworms such as this one add too many leaves and knots into their cocoons for using them to produce silk. They don't feed as adults.
Polyphemus Moth *Antheraea polyphemus*	southern SB and probably southern BP (including the Peace River area)	Eats many different trees and shrubs, including birch *(Betula spp.)*, spirea *(Spiraea spp.)*, willows *(Salix spp.)*, Prunus spp., and alders *(Alnus spp.)*	Habitat is deciduous and mixed forests

Moths	Distribution and Abundance (if known)	Larval Food	Habitat and Natural History
Tiger Moths Family Arctiidae			
Garden Tiger Moth *Arctia caja*	Probably in southern SB and BP	Eats many different trees and shrubs, including birch *(Betula spp.)*, spirea *(Spiraea spp.)*, willows *(Salix spp.)*, poplars *(Populus spp.)*, *Prunus spp.*, alders *(Alnus spp.)*, plantain *(Plantago spp.)*	Habitat is deciduous and mixed forests A very attractive moth that contains chemicals to repel predators The hairs of the black fuzzy caterpillars can cause itchiness and rashes
Mottled Tiger Moth *Lophocampa maculata*	Probably southern SB, BP	Eats many different trees and shrubs, including such as red alder *(Alnus rubra)*, spirea *(Spiraea spp.)*, saskatoon *(Amelanchier alnifolia)* & willows *(Salix spp.)*	Low elevation deciduous and mixed forests
Black and White Tiger *Parasemia plantaginis*	NB	Larvae feed on plantain *(Plantago spp.)* and forget-me-nots *(Myosotis spp.)*	Habitat is deciduous and mixed forests
Wooly Bear *Diacrisia virginica*	Probably all	Larvae feed on many plants, including snowberry *(Symphoricarpos spp.)* and vetches *(Vicia spp.)*	Habitat is deciduous and mixed forests
Isabella Tiger *Pyrrharctia isabella*	Probably all	Spirea *(Spiraea spp.)*, bracken fern *(Pteridium aquilinum)*, ribwort plantain *(Plantago lanceolata)*, fireweeds *(Epilobium spp.)*, grasses and many other plants	
Mountain Tiger *Parasemia yarrowii*	NB, possibly all	Foodplants unknown	
Noctuids Family Noctuidae			
Relict Underwing *Catacola relicta*	Probably SB, BP	Birch *(Betula spp.)* and poplar *(Populus spp.)*	This large moth has bark-patterned forewings; bright red on the hindwings There are several species, all of which look very similar

Variable Darner

Moths	Distribution and Abundance (if known)	Larval Food	Habitat and Natural History
BENEFICAL INSECTS AND ARACHNIDS			
Leafcutter Bees *Family Megachilidae*	Important pollinators that use their leaf cuttings to make closed cells within which pollen is packed and an egg is laid Usually nest in the ground or in a natural cavity, and will nest in loose rock walls, between roof shingles, etc.		
Orchard Mason Bees *Osmia lignaria* *Propinqua cresson*	Important pollinators that nest in small holes in trees, or in special nesting boxes available from garden centres for this purpose.		
Bumblebees *Bombus* species	Nest in dry holes in the ground, piles of dry leaves, or compost piles, or even bird boxes. Important pollinators		
Ladybird beetles *Family Coccinellidae*	Both adults and larvae prey on many pest species such as aphids, scale insects and mites Leaving autumn leaves on the ground over winter provides shelter for these useful insects		
Dragonflies & Damselflies *Order Odonata*	Adults are usually found near water; and prey on flies, mosquitoes, and other small insects. They will eat anything up to their own size and can eat quite large insects like smaller dragonflies and yellowjacket wasps. Eggs are usually laid on aquatic vegetation or directly in water. Overwinter as larvae or as eggs. Larvae prey on aquatic insects such as mosquito larvae, etc.		
Hover Flies *Family Syrphidae*	Similar in appearance to wasps and bees but they do not sting or bite Important pollinators Occur in many habitats, near flowers Larvae of some species prey on aphids and scale insects.		
Ichneumon Wasps *Family Ichneumonidae*	This is the largest family of insects Large wasps, most of which have long, slender ovipositors for egg-laying Lay eggs on the larvae of beetles, butterflies, moths, etc. Most do not sting humans - the only ones that can are nocturnal ones that have tiny ovipositors.		
Yellowjackets and Hornets *Family Vespidae*	Yellowjackets and bald-faced hornets are wasps that are voracious predators on other insects, including caterpillars and aphids. The insects are fed to the wasp larvae. Nests are made of paper, and either hang in shrubs or trees, or are constructed in holes in the ground. Nests should be left in the garden, providing they are not a hazard to people.		
ARACHNIDS			
Spiders *Order Araneida*	Spiders should be encouraged in the home garden as they do not eat plants, but eat harmful garden insects such as grasshoppers, moths, mosquitoes, and wasps. Spiders may be encouraged by maintaining or creating habitats such as forest edges, patches of tall grass, rotten logs, leaf litter and wetland edges. Spider bites can be painful but spiders are not aggressive and bite very rarely, and then usually only when threatened.		

TABLE 4: AMPHIBIANS AND REPTILES

This table lists all the amphibians and reptiles currently known to occur in non-coastal, northern British Columbia.

Range:

Lists the ecosections where the species is found; "All" signifies that the species is widely distributed in the Northern Region. Please refer to the ecosection map and table.

BP	Boreal Plains
SB	Sub-boreal Interior
NB	Northern Boreal Mountains
TP	Taiga Plains

Habitat:

Habitat lists the general habitat types where the species occurs. Compare the types of habitats on your property, or the types you wish to create, with those used by individual species to determine which amphibians and/or reptiles you may want to attract. Specific habitat features within the general habitat type that are important to the species survival are called key habitat components. These can include features such as breeding ponds, or structures that provide protective cover from predators or from the elements. You will have a greater chance of attracting amphibians and reptiles to your property if you provide these types of features within the general habitat types. For example, you may have the appropriate forest or meadow habitat for Wood Frogs, but without breeding ponds, the species is unlikely to be present.

General Habitat:

lists the general habitat types where the species is found. Wherever possible, these habitat types have been made consistent with those in the plant tables for easy cross-referencing. Compare the type(s) of habitat on your property, or the types you wish to create, with those used by individual species to determine which amphibians and/or reptiles you may want to attract to your property.

Key Habitat Components:

Specific habitat features within the general habitat type that are important to the species' survival. These can include features such as breeding ponds, or structures that provide protective cover from predators or from the elements. You will have a greater chance of attracting amphibians and reptiles to your property if you provide these types of features within the general habitat types. For example, you may have the appropriate forest or meadow habitat for Wood Frogs, but without breeding ponds, the species is unlikely to be present.

Most amphibians need cool, shady retreats near water. If you do not have natural wetlands on your property, the **Naturescape** Provincial Guide provides tips on creating wildlifeponds (pp. 28-31).

Most reptiles (lizards and snakes) need the protective cover of rock piles or coarse woody debris within their general habitats to withstand daily and seasonal temperature fluctuations. The Naturescape Provincial Guide gives tips on creating rock piles that may provide suitable micro-habitats for lizards and snakes.

Definitions:

Coarse woody debris is the term given to fallen trees, rotting logs, and broken tree branches and twigs that are lying on the ground.

Reminder: It is best to avoid handling amphibians. They may have toxic skin secretions that are transferred to your hands. In turn, they may absorb, through their permeable skin, chemicals such as sunscreens or bug repellants on your hands that are harmful to them. Furthermore, amphibians are often in danger of desiccation, and handling them can increase this risk.

Name Common, Scientific	Range	Abundance	Habitat	Food	Comments
FROGS & TOADS					
Columbian Spotted Frog *Rana luteiventris*	BP, SB, NB Ranges up to tree-line in elevation	Widespread Common	Prefers permanent ponds, marshes, lake edges and slow streams with abundant vegetation; will forage in meadows or damp woods; Shallow water is preferred for egg laying but hatchlings and tadpoles can occur in deeper water	Tadpoles feed on algae and leafy aquatic plants; Adults prey on insects, crayfish, sowbugs, millipedes, spiders and slugs	Can be active during the day; Breeds early in spring before ice has disappeared; In northern BC, may overwinter as tadpoles
(Northern) Wood Frog *Rana sylvatica*	All; To 1800 m elevation	Widespread Common	Juveniles and non-breeding adults occur in marshes, forest, wet meadows and shrubland; Breeds in shallow ponds, wet meadows & slow-moving streams; Eggs are attached to submerged sticks or aquatic plants such as sedges	Adults eat insects, spiders, worms, snails, slugs; Tadpoles eat algae and bottom detritus	More widespread and found further north than any other amphibian in Canada; Accelerated larval development allows it to cope with short growing seasons; Hibernates beneath forest litter and humus, insulated by snow; Breeds early, often before ice has melted; The genus name sylvatica means "of the woods", referring to its preferred habitat
Boreal Chorus Frog Northern Chorus Frog; Striped Chorus Frog; Swamp Treefrog *Pseudacris maculata*	BP, TP To 800 m elevation	Uncommon	Marshes, wet meadows, damp grass/shrubland or wooded areas; Prefers shallow standing water of pools, lake edges or slow-moving streams for breeding; Eggs are attached to emergent plants	Ground-dwelling insects and invertebrates Tadpoles eat algae and bottom detritus	
Western Toad; Boreal Toad; Northwestern Toad *Bufo boreas*	BP, SB, NB To 2250 m elevation	Widespread Common	Fields, forests, mountain meadows; Breeds in ponds or shallow lake edges, preferably with a sandy bottom; Tadpoles form dense aggregations of hundreds or thousands; Baby toads often live under rocks or in brush; Eggs are laid in long strings, usually entwined in submerged vegetation; May live in small burrows for cover	Adults eat worms, slugs, and insects; Tadpoles eat algae and bottom detritus	Has poison in its "warts" to deter predators; Needs logs or rock piles for cover Not well-adapted to urban areas

ATTRACTING AMPHIBIANS TO YOUR GARDEN:

Frogs and toads are carnivorous for most of their lives, and salamanders for all of their lives. They eat large numbers of slugs, insects, worms and small invertebrates and can be an effective form of natural pest control in the home garden. While salamanders can hunt by smell, frogs and toads are conditioned to attack moving prey and must have a source of living, moving food. Salamander larvae need live, aquatic prey. Most amphibians must have a source of clean water, which they absorb through their skins, and require for reproduction. If you do not have a wetland or pond on your property the Naturescape Provincial Guide provides tips on creating wildlife ponds. Toads need somewhere to dig, and salamanders need something to hide under such as rocks or logs. Aquatic vegetation provides protection from predators, shade and a support for the egg masses of some species. Use the information in this table to try to re-create a natural habitat which will provide food, water and shelter from predators such as birds, raccoons and snakes.

NEVER move eggs, tadpoles, or adult amphibians. If the habitat you create is suitable, the amphibians will find it. Moving animals risks introducing species to areas where they would not naturally occur, and risks inadvertently moving disease organisms around as well. Also, unless your pond is connected to other suitable habitat, the amphibians would be separated from the rest of the breeding population.

The northern areas of the province have not been thoroughly surveyed for amphibians – further searching may turn up valuable information on habits, new species or extend the known ranges of existing species. Accurate, careful observations on all amphibian species and their habits would be welcomed by the B.C. Ministry of Water, Land and Air Protection Frogwatch Program (please see the Naturescape Resource Booklet for contact information.

CAUTION: It is best to avoid handling amphibians. Many have toxic skin secretions that can be transferred to your hands, however none of the native B.C. amphibians are considered dangerous to people. If you must handle an amphibian, please ensure that your hands are moistened prior to contact, and free of sunscreens and repellents, as these can be absorbed through their permeable skin.

Name Common, Scientific	Range	Abundance	Habitat	Food	Comments
SALAMANDERS					
Long-toed Salamander *Ambystoma macrodactylum*	BP, SB, NB; To 2500 m elevation	Widespread in the south half of the region	Grasslands, woods, disturbed areas, damp areas at forest margins close to standing water, Can live in cold mountain meadows; Breeds in shallow permanent ponds, lake edges and slow-moving streams; Shallow ponds with abundant vegetation are preferred for eggs, hatchlings, larval stages and breeding adults; Juveniles and non-breeding adults are often found in grass and shrub areas, and less frequently in marsh and forests	Small invertebrates, snails	Provide rock piles, boards or logs for shelter

PROVIDING HABITAT FOR REPTILES:

Although there are those who would question attempting to attract snakes, the two mentioned above are efficient, non-toxic forms of pest control (particularly for slugs and mice). However, few reptiles are adapted to the long, cold winters that characterize northern British Columbia. Low summer temperatures can reduce reproduction and very cold winters can result in high mortality through freezing. The two species of snakes that occur in this portion of northern B.C. are live-bearing, which may allow the female to provide optimum conditions for development of the embryos. Species in northern regions are also readily able to adapt to gradually lowering temperatures. They may increase reproductive success by hibernating in communal dens and thus being exposed to potential mates quickly in the spring.

Constructing a rock pile in your yard (see the Naturescape Provincial Guide for details) could provide a place to bask in the sun, cover and possibly a denning site for snakes. Boulders, rock walls, plant ground covers, brush piles and logs can provide shade and shelter from predators, while a pond or stream can supply needed water.

The northern areas of the province have not been thoroughly surveyed for reptiles, and further searching may turn up valuable information on habits of snakes, new species, or range extensions for known species. Accurate, careful observations on northern snakes and their habits would be welcomed by the B.C. Ministry of Water, Land and Air Protection herpetologist (please see the Naturescape Resource Guide for contact information).

Name Common, Scientific	Range	Abundance	Habitat	Food	Comments
REPTILES					
Common Garter Snake *Thamnophis sirtalis*	BP, SB	Widespread Common	Inhabits a wide variety of habitats but most common near marshes, small lakes, rivers, streams, ponds, and humid forests; Dens communally in rocky areas	Preys on slugs, amphibians, earthworms, leeches and small birds	The most widespread and cold-tolerant snake in North America; When captured these snakes may bite or emit body fluids; In northern B.C. may overwinter in large communal hibernacula
Western Terrestrial Garter Snake *Thamnophis elegans*	BP	Restricted range Uncommon	Prefers open sites such as meadows and estuaries; Dens communally in rocky areas in winter	Slugs, small mammals, fish, amphibians, worms, leeches, birds and other snakes	Despite its name, this snake usually occurs near water; Aggressive and may bite when captured

TABLE 5: BIRDS

Birds, with their bright colours, songs and daytime habits, are one of the most rewarding groups of wildlife to attract to your home. Here are some quick hints on creating a northern interior backyard or property to attract birds; for further information please read the Naturescape Provincial Guide.

Provide a source of water for drinking and bathing. Almost every bird species near your home will use a small birdbath. Water, especially dripping or running water, can be as effective as food in attracting birds. Birdbaths can be as simple as a large dish or old garbage can lid set in the ground. The bath should have a water depth of no more than 5-7 cm, sloping sides, a rough, rather than smooth surface for traction, and it should be cleaned regularly. Bird bath water heaters are available for keeping water ice-free in the winter. Ensure that water sources are near perches and away from shrubbery where cats can hide.

Plant berry or fruit-producing shrubs and trees. Western mountain-ash *(Sorbus scopulina)*, choke cherry *(Prunus virginiana)*, saskatoon *(Amelanchier alnifolia)*, red-osier dogwood *(Cornus stolonifera)*, roses *(Rosa spp.)*, gooseberries and currants *(Ribes spp.)*, and red or black elderberry *(Sambucus racemosa ssp. pubens)* are good native species. Some non-native species that might be attractive are crabapples *(Malus spp.)*, Tatarian honeysuckle *(Lonicera tatarica)*, and Nanking cherry *(Prunus tomentosa)*.

Plant nectar-producing native plants for hummingbirds. Glaucous-leaved or twining honeysuckle *(Lonicera dioica var. glaucescens)*, black twinberry *(Lonicera involucrata)*, currant and gooseberry *(Ribes spp.)*, blue columbine *(Aquilegia brevistyla)*, Sitka columbine *(Aquilegia formosa)*, bee balm *(Monarda fistulosa)*, and common fireweed *(Epilobium angustifolium)* are excellent choices. Some non-native plants that produce nectar and should grow in at least some parts of northern interior B.C. are crabapples *(Malus spp.)*, caragana *(Caragana arborescens)*, delphiniums *(Delphinium spp.)*, coral bells *(Heuchera spp.)*, and pincushion flower *(Scabiosa spp.)*.

Provide seeds for sparrows, finches, and other species. Small black sunflower seeds are perhaps the best all-round type, but millet and large striped sunflower seeds are also popular. Pine siskins prefer the small niger seeds. If you are feeding birds, be sure to keep feeders filled during cold or stormy weather, however birds will not become dependent on your feeder to the point that they will not look elsewhere for food.

Provide suet or a suet mix for woodpeckers, chickadees, nuthatches, jays, and several other species. Suet can be hung in cake form in an onion bag or wire frame, or pushed into holes drilled into a hanging log. If you have had problems with woodpeckers drilling on your house or outbuildings, hang suet feeders well away from your buildings. Different types of feeders and foods will attract different bird species. Place feeders where there is cover, as concentrations of feeding birds will attract predators such as hawks and cats.

Put up nest boxes for cavity-nesting species such as chickadees, nuthatches and swallows. Different types of nest boxes are required for different bird species (see the Naturescape Provincial Guide for suggestions). Larger boxes provide homes for small owls, kestrels, flickers, and several species of ducks. Be sure to clean out nest boxes after use as the nests may harbour parasites. Barn swallows, Say's phoebes, and American robins can use nest platforms placed under the eaves of houses or outbuildings. Large nest platforms built of wire mesh and sticks can attract larger owls. If you have a large yard, brush piles or areas of thick shrubbery will provide roosting and escape cover.

If you are fortunate enough to have wetlands on your property, you may be able to attract a number of species by ensuring that those sites are not drained or subjected to pesticide or fertilizer runoff. Minimizing human disturbance, brush clearing, and cattle grazing around these sites will help maintain prime nesting and roosting habitat for many birds.

If you have pet cats, please keep them indoors, if you can. If not, place low wire fences (sold in garden or hardware stores) around the base of your feeder or bird bath. Forcing the cat to go over the fence should give the birds enough time to escape. You may want to consider erecting a cat fence of stucco wire, or attaching stucco wire to the top of high wooden fences, to keep your cats confined to a specific area of your yard, or neighbourhood cats away from a bird feeding area. Belling cats is often ineffective.

The following table lists some of the more common and/or readily seen birds that occur in northern, non-coastal British Columbia. Distribution and abundance refers to the four ecoprovinces:

BP Boreal Plains
SB Sub-boreal Interior
NB Northern Boreal Mountains
TP Taiga Plains

Abundance may refer to migration periods, summer or winter. If a bird is listed as common, it is common in at least one of these times of the year; if it is listed as uncommon, it is not common at any time of the year. Regional bird guides should be consulted to determine at what time of year these species can be expected in northern, non-coastal B.C.

Habitat refers to habitat in northern, non-coastal B.C. Birds may occupy different habitats in other areas of the province. Compare the types of habitat on your property, or the types that you wish to create, with those used by individual species to determine which birds you are most likely to attract. Please note that lack of space in the table often prevents inclusion of all habitats occupied by a particular species. Key habitat components are specific habitat features within the general habitat type that are important for the species. These may include features that provide suitable nesting or roosting sites. You will have a greater chance of attracting birds to your property, if you retain or provide these types of features within the general habitat types.

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
CRANES				
Sandhill Crane *Grus canadensis*	All Uncommon	Wetlands, grasslands, agricultural fields for roosting and feeding	Nests mainly in sedge *(Carex spp.)* wetlands Requires unobstructed view of surroundings and isolation from disturbance	Islands, riverbanks, beaches and even fields surrounding airports may be used for roosting and feeding Migrates through northeastern B.C. Some breed in Ft. Nelson area
BLACKBIRDS AND ORIOLES				
Brewer's Blackbird *Euphagus cyanocephalus*	All BP, SB Common NB, TP Uncommon	Low elevation marshes, lakeshores, sedge *(Carex spp.)* meadows, riparian thickets, deciduous bottomlands; Agricultural fields, pastures, garbage dumps and other human-modified habitats Roosts along the edges of open habitat such as fields, shorelines, roadsides, dykes and in trees, hedges, thickets, and wetlands	Nests in human-modified habitats, forests, thickets, grasslands and wetlands; nests are usually constructed on the ground close to wetlands or low-lying areas	Has expanded its range northwards in recent years as clearing of forests has increased In B.C. breeding populations appear to be declining May nest in conifers in large yards and rural areas Currant and gooseberry (*Ribes spp.*) fruit eaten in fall
Red-winged Blackbird *Agelaius phoenicius*	All BP Common SB, NB, TP Uncommon	Usually occurs in low elevation wetlands with emergent vegetation and shrubs; wet fields, pipeline rights-of-way, stubble fields	Breeds in marshes, sloughs, ponds and muskegs where there are cattails *(Typha latifolia)*, bulrushes *(Scirpus spp.)*, tall grasses or sedges *(Carex spp.)* with willows *(Salix spp.)* at the borders Nests are built in cattails, bulrushes, sedges, grasses and shrubs	Probably the most abundant land bird in North America Appears to be increasing in the north Breeds regularly in the Peace River lowlands Often comes to feeders, particularly those offering sunflower seeds or cracked corn

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
BLACKBIRDS AND ORIOLES				
Brown-headed Cowbird *Molothrus ater*	All Common	Usually at lower elevations, although they may use alpine ridges in summer Open habitats in rural and urban locations, forest edges, near water	Prefers forest-field transition zones, pastures, mixedwood forests and mature aspen poplar *(Populus tremuloides)* woods for breeding; prefers areas with tall shrubs	Lays its eggs in the nests of other birds so its nestlings are reared by the host species Several bird species are now threatened by cowbird parasitism Some species such as robins, Baltimore orioles and cedar waxwings, recognize cowbird eggs and eject them from the nest; Protecting riparian habitats and preventing habitat fragmentation of forests can limit the impacts of cowbirds.
Baltimore Oriole *Icterus galbula*	All BP Common, SB, NB, TP Uncommon	Open deciduous woodlands, often near clearings, lakes	Usually nests in stands of mature aspen poplar *(Populus spp.)* At the western limit of its summer range in B.C.	Breeds in the province only in the Boreal Plains.
CHICKADEES				
Black-capped Chickadee *Parus atricapillus*	All BP, SB, NB Common TP Uncommon	Most abundant at lower elevations in deciduous, mixedwood and open coniferous forests, also in thickets and riparian woodland Often seen in rural and urban areas	Roosts overnight in tree cavities or dense vegetation Prefers to nest in tree cavities in snags, stumps of deciduous trees near forest edges; prefers a shrub understorey; also nests in riparian thickets, near ponds and in nest boxes	Chickadees will eat birch *(Betula spp.)* catkins in spring, seeds, berries, insects found on conifer cones Black-capped chickadees can drop their body temperatures 10-12 degrees at night in winter to conserve energy Often seen at feeders, especially those with black oil sunflower seeds
Boreal Chickadee *Parus hudsonicus*	All Uncommon	Forests	Breeding habitat is open coniferous, deciduous and mixedwood forests from valley bottoms to treeline Tree cavities in stumps, snags and live trees for roosting and nesting	Eats seeds and insects Highest numbers in summer in B.C. occur in the Northern Boreal Mountains Usually occurs at higher elevations than the black-capped chickadee
COOTS				
American Coot *Fulica americana*	All BP Common SB, TP Uncommon	Lakes, ponds, sloughs, marshes, flooded fields where there is emergent vegetation for cover and food	Nests in dense vegetation such as bulrushes (*Scirpus spp.*), sedges (*Carex spp.*), cattails (*Typha latifolia*) and grasses Builds floating nests or attaches nests to emergent vegetation Nests often have an access 'ramp' built at one end and vegetation forming a 'dome' over the nest	Eats aquatic plants and invertebrates

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
Ducks				
Ducks can generally be attracted to properties that have wetlands with abundant emergent and/or submerged vegetation, adjacent trees with nesting cavities and good vegetation cover in nearby upland areas.				
Bufflehead *Bucephala albeola*	All BP, SB, TP Common NB Uncommon	Lakes, and sometimes rivers, ponds, creeks	Breeding habitat includes lakes, ponds, sloughs in aspen parkland, farmland Nests in cavities in living and dead poplar *(Populus spp.)*, lodgepole pine *(Pinus contorta)*, and spruce *(Picea spp.)* trees	Will use nest boxes The smallest diving duck, the Bufflehead weighs only about 1 pound
Barrow's Goldeneye *Bucephala islandica*	All Common	Mainly on lakes, ponds and rivers, but also seen on sloughs, creeks, marshes	Uncommon breeder north of 53° N latitude Nests mainly in deciduous tree cavities in woodlands surrounding wetlands	B.C. supports 60-90% of the world's population of Barrow's Goldeneye Will use nest boxes
Common Goldeneye *Bucephala clangula*	All Uncommon	Mainly lakes and rivers, but also ponds, marshes, creeks	Uncommon breeder in northern B.C. Nests mainly in tree cavities close to water	Eats aquatic invertebrates Will use nest boxes
Mallard *Anas platyrhynchos*	All Common	Prefers shallow marshes, but also occupies lakes, rivers, ponds, wet fields, ditches, parks	Nests on dry land in marshes, woodlands, at lake edges, riverbanks Nests on the ground, usually concealed by vegetation	The most abundant and widely distributed duck in B.C. Winters as far north as Peace River Will use nest platforms
Common Merganser *Mergus merganser*	All Common	Rivers, streams and lakes	Breeds along forested shores of rivers, streams, lakes, ponds Mainly nests along lakeshores and banks of large rivers; Nests in living or dead tree cavities, caves, or on the ground under dense shrub cover	Eats fish Will use large nest boxes
Blue-winged Teal *Anas discors*	All BP, TP Common SB, NB Uncommon	Shallow water with emergent vegetation, flooded fields, ditches	Breeds in forested or open habitat near small bodies of water, marshes, bogs, beaver ponds, fields, ditches; Mostly nests in grasses, sedges *(Carex spp.)*, and bulrushes *(Scirpus spp.)*	Breeds in northern B.C. Large numbers breed in the Peace River lowlands
Northern Pintail *Anas acuta*	All Common	Riverbanks, flooded fields, ponds, marshes, lakes	Sparse or short-growing vegetation preferred for nesting sites; nests on drier margins of lakes and ponds; in bogs, shrubby fields, forest edges	Large numbers breed in the Peace River lowlands
Northern Shoveler *Anas clypeata*	All Common	Shallow lakes, marshes, flooded fields	Nests in open to semi-open habitats, in vicinity of marshes, ponds, bogs, lakes, ditches	Large numbers breed in the Peace River lowlands

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
DUCKS				
American Wigeon *Anas americana*	All Common	Agricultural fields, sloughs, marshes, lakes, fields	Nests in brushy, upland habitats	Large numbers breed in the Peace River lowlands
FINCHES				
Such shrub species as choke cherry (*Prunus virginiana*) provide food and cover; currant and gooseberry (*Ribes spp.*) fruit, and berries of honeysuckle (*Lonicera spp.*) and elderberry (*Sambucus racemosa*) are eaten in fall.				
White-winged Crossbill *Loxia leucoptera*	All Common	Most abundant in higher elevation mountainous regions or where spruce *(Picea spp.)* or larch *(Larix spp.)* occur; Coniferous forests and mixedwood riparian forests; muskegs, birch *(Betula spp.)* woodlands	Nests on branches in coniferous trees	Eats conifer seeds, willow *(Salix spp.)* and birch *(Betula spp.)* buds, berries and insects May be seen in winter in gardens and at bird feeders eating seeds and suet Logging boreal spruce forests and short logging rotations pose a threat to crossbills as maximum cone crops only occur after 60 years
Pine Grosbeak *Pinicola enucleator*	All Common	Open subalpine coniferous forests, upper elevation boreal and sub-boreal forests; also lower elevation forests, forest edges and settled areas in winter	Probably breeds in the northern interior Preferred breeding habitat is open, often young, coniferous forests and forest edges Little is known about breeding distribution and habitat preference	Eats buds, berries and fruits of various woody plants such as crab apples *(Malus spp.)*, mountain ash *(Sorbus spp.)*, snowberry *(Symphoricarpos spp.)* and roses *(Rosa spp.)* A frequent visitor to bird feeders in the northern interior and often quite tame
Common Redpoll *Carduelis flammea*	All Common	Valleys, deciduous riparian habitat, edge habitat, weedy and settled areas To alpine elevations	Breeds in riparian habitats, thickets on floodplains, wetlands Nesting occurs in subalpine areas	Attracted to feeders with niger seed Eats catkins of birch *(Betula spp.)* and alder *(Alnus spp.)* Known to breed in the province only in the Northern Boreal Mountains
Pine Siskin *Carduelis pinus*	All Variable, sometimes Common	Open forests, settled areas, open subalpine habitats and alpine meadows	Populations vary in response to cone crop production of conifers; mainly nests in conifers	Eats conifer seeds; birch (*Betula spp.*) catkins in spring Attracted to feeders with niger and sunflower seeds but very susceptible to disease when congregating in large numbers
FLYCATCHERS				
Eastern Kingbird *Tyrannus tyrannus*	All BP Common SB, NB, TP Uncommon	Usually occupies dense riparian woodlands in valley bottoms and lower slopes, edges of marshes, ponds; wet meadows, lakes, hedgerows, fields	Breeding habitat similar to non-breeding habitat; prefers sites with dead trees or shrubs by water or forest/wetland edges	Eats insects in summer, berries in late summer and fall Will use nest boxes

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
FLYCATCHERS				
Say's Phoebe *Sayornis saya*	All SB, NB Common BP, TP Uncommon	Open country, often in settled areas; clearings, riparian habitats, meadows, To alpine elevations	Frequently nests in buildings, bridges, culverts and other man-made structures; also cliffs, caves, rock crevices	Eats insects Often builds its nest in the same site year after year Will nest on nest platforms
Western Wood-Pewee *Contopus sordidulus*	All BP, SB Common NB, TP Uncommon	Open coniferous, deciduous or mixedwood forests, usually near water or at forest edges	Frequently nests in aspen and balsam poplars *(Populus spp.)* Favourite perches for hunting and calling are dead lower aspen poplar *(Populus tremuloides)* branches or tops of small trees	May inhabit farmyards and gardens; frequently nests near beaver ponds in northern B.C.
GEESE				
Canada Goose *Branta canadensis*	All Common	Abundant where there is permanent water and adjacent grazing areas	Breeds in marshes, lakes, islands, tundra, muskegs, fields, ditches, dykes; nests close to permanent water	Forages in agricultural fields Will nest on nest platforms
GREBES				
Horned Grebe *Podiceps auritus*	All Common	Sheltered areas of larger lakes; wetlands	Nests mainly on calm lakes and marshes with emergent vegetation, also on ponds, sloughs, streams and river backwaters	Eats aquatic insects and fish Uses mainly bulrushes *(Scirpus spp.)* but also cattails *(Typha latifolia)*, sedges *(Carex spp.)*, rushes *(Juncus spp.)* and hosetails *(Equisetum spp.)* for nesting Will use nest platforms
Red-necked Grebe *Podiceps grisegena*	All BP, TP Common SB, NB Uncommon?	Large lakes and slow-moving rivers, wetlands	Breeds on sheltered, usually shallow, vegetated lakes; needs submerged and emergent vegetation and protection from wind and wave action	Eats insects and fish Uses mainly bulrushes *(Scirpus spp.)*, cattails *(Typha latifolia)* and sedges *(Carex spp.)* for nesting, but also submerged aquatic plants;
GROUSE AND PTARMIGAN				
Spruce Grouse *Dendragapus canadensis*	All Uncommon	Coniferous forests from lowland valleys to treeline	Nests in open, coniferous forest with a sparse shrub understorey	
Ruffed Grouse *Bonasa umbellus*	All Common	Prefers low elevation wooded habitats along river bottoms; occurs in second growth deciduous and mixedwood forests	Brushy areas, thickets, forest edges, aspen poplar *(Populus tremuloides)* groves	Tends to avoid inhabited areas
Willow Ptarmigan *Lagopus lagopus*	SB, NB Uncommon	Subalpine and alpine zones of mountains and plateaus; Willow *(Salix spp.)* and scrub birch *(Betula pumila var. glandulifera)* thickets, wet sedge *(Carex spp.)* meadows, stream and lake edges, gravel bars, forest edges, open tundra	Nests on alpine tundra in a shallow scrape lined with grass and feathers	

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
HUMMINGBIRDS				
Hummingbirds will visit potted plants such as fuchsias, red impatiens and geraniums. Branches for perching give them a chance to rest, and wait their turn at a feeder. They are attracted to the sound of running water and enjoy devices that create a spray or mist. See the introduction to this table, and Table 1: Native Plants and Table 2: Non-Native Plants for garden plants that will attract hummingbirds. The Naturescape Provincial Guide provides further information on how to attract hummingbirds to your property.				
Rufous Hummingbird *Selasphorus rufus*	All SB, NB Common BP, TP Uncommon	Open forests and forest edges, cleared and settled areas, meadows; To alpine elevations	Nesting habitat includes coniferous and deciduous forests, riparian thickets, wetlands, farmland; most nests are situated in coniferous trees, with some in deciduous trees and shrubs	The most agile and aggressive of our hummingbirds Will come to hummingbird feeders Also eats insects and is attracted to sap
JAYS AND MAGPIES				
Gray Jay *Perisoreus canadensis*	All Common	Boreal and subalpine coniferous and mixedwood forests, riparian shrub habitat	Often associated with white spruce *(Picea glauca)* and black spruce *(Picea mariana)*; Often breeds at edges of high elevation spruce forests; nests in coniferous trees at edges of forests, wetlands	Uses backyard feeders and suet Frequently scrounges handouts from hikers and skiers Also known as Whisky Jack and Camp Robber
Blue Jay *Cyanocitta cristata*	BP, SB, TP Uncommon	Low elevation mixedwood forest, aspen poplar *(Populus tremuloides)* groves; riparian areas	Breeds in open deciduous or mixedwood forests	Recently established in the province; now breeds in the Peace River lowlands; often overwinters in farmyards, parks, city yards
Common Raven *Corvus corvax*	All Common	Coniferous, mixedwood, and deciduous forests, grasslands, mountains	Mature coniferous trees, especially snags, are used for roosting Mature forest preferred for breeding habitat Frequently nests in living trees or on cliff ledges	Has become more common in northern B.C. in recent years as human habitation has expanded. In the north carrion from wolf kills is a major natural food source for ravens in winter, garbage dumps are also heavily used; Birds may patrol highways for road kills
Black-billed Magpie *Pica pica*	All BP Common SB, NB, TP Uncommon	Often occurs in settled areas; also in wet meadows, riparian thickets, open forests and forest edges, lakeshores	Thickets and riparian areas for roosting; open areas for foraging; breeds in lowland and subalpine areas; often nests in deciduous trees or shrubs	Becoming increasingly common in the Boreal Plains Abandoned magpie nests may be used by merlins, kestrels and long-eared owls
KINGFISHERS				
Belted Kingfisher *Ceryle alcyon*	All Uncommon	Riparian habitats	Cutbanks near foraging areas for nests Shrubs, trees and snags for roosting	Catches small fish by diving from a hovering position in the air or from perches near water Excavates burrows in sand or clay banks near water

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
KINGLETS				
Ruby-crowned Kinglet *Regulus calendula*	All SB Common BP, NB, TP Uncommon	Coniferous and mixedwood forests Often occurs near muskegs, lakes, ponds, and in alpine meadows	Uses black spruce *(Picea mariana)* bogs during the breeding season Nests in old growth and older second growth forests, usually in coniferous trees	Often seen in farmyards or gardens during migration, occupying aspen poplar *(Populus tremuloides)* or birch *(Betula spp.)* trees Kinglets will eat insects found on conifer cones and are attracted to insects found on willow *(Salix spp.)* catkins
LARKS				
Horned Lark *Eremophila alpestris*	All SB, BP, TP Uncommon NB Common	Open grasslands, tundra To alpine elevations	Nesting habitats include sparsely vegetated rocky areas, alpine tundra; Nests on ground, usually by a clump of grass Perches, sings on rocks	Eats insects Uses dirt roads for roosting and dust bathing
LOONS				
Common Loon *Gavia immer*	All Common	Lakes and rivers	Breeds on fish-bearing lakes in forested and open areas, and sometimes on marshes, sloughs and rivers; most nests are on shorelines of water bodies; uses emergent and aquatic plants for nesting materials	May return to the same lakes for many years
NIGHTHAWKS				
Common Nighthawk *Chordeiles minor*	All Uncommon	Open forests Roosts in open habitats such as logged areas, farmland, rock outcrops	Breeds in logged areas, farmland, pastures, Nests on bare ground, often on river gravel bars, or in forest leaf litter; Prefers short, sparse vegetation cover for nesting	Feeds in the air on flying insects; By thrusting his wings forward at the end of dives, the male makes a loud vroom noise during courtship aerial displays
EAGLES, HAWKS AND FALCONS				
Bald Eagle *Haliaeetus leucocephalus*	All Uncommon	Usually associated with lakes, rivers, sloughs and marshes	Breeds in forests (usually coniferous) near water bodies Nests in mature coniferous and deciduous trees or snags Needs large trees or snags to support its huge branch nest	Eats fish and small mammals May scavenge at garbage dumps or on carrion
Red-tailed Hawk *Buteo jamaicensis*	All Common	Open to semi-open habitats such as woodlands, grasslands, fields, marshes To alpine elevations	Breeding habitat includes edges of forests, agricultural areas, river bottomlands; Nests in mature coniferous and deciduous trees	Eats small animals and birds
Northern Goshawk *Accipiter gentilis*	All Uncommon	Open to dense mixedwood forests Hunts along creeks, rivers, lakeshores	Usually breeds in dense, mature coniferous forest, Mixedwood and deciduous forest are also used Most nests are near water	Widely distributed in the province but most abundant in the northern interior May visit farmlands, parks, cemeteries, airports If conditions are favourable in the north, may overwinter; otherwise migrates south

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
EAGLES, HAWKS AND FALCONS				
American Kestrel *Falco sparverius*	All Common	Open country and clearings with nearby perching sites; grassland, agricultural and riparian areas, meadows, marshlands	Breeds in semi-open to open country Nests in tree cavities, on poles, in cliffs	Eats insects and small animals Will use nest boxes with a 7 cm opening
Northern Harrier *Circus cyaneus*	All Common	Marshes, fields, grasslands, alpine meadows	Nests usually in cattail *(Typha latifolia)* or bulrush *(Scirpus spp.)* marshes; also nests in emergent vegetation of lakes, ponds Occasionally nests in fields with shrubs	Formerly called Marsh Hawk
OWLS				
Most owls do not build their own nests, so retaining snags and large trees, or providing nest boxes or platforms in appropriate habitats may encourage owls to nest on larger properties.				
Great Gray Owl *Strix nebulosa*	BP, SB, TP Uncommon	Prefers edges of coniferous and mixedwood forests for hunting; also observed in pastures and near wetlands	Breeds in coniferous, deciduous and mixedwoods, Nests in mature trees, usually near water	Eats small mammals Will use nest platforms More information is needed on the range and habits
Great Horned Owl *Bubo virginianus*	All Uncommon	Wooded areas, river valleys, lakeshores, settled areas	Breeds in forests, Usually nests in forests near water, often in abandoned nests of other species such as crows or hawks	Eats small mammals and birds Will use nest platforms
Northern Hawk Owl *Surnia ulula*	All Uncommon	Open coniferous and mixedwood forests, forest edges and clearings, wetlands	Nests in trees in open coniferous and mixedwood forests	Most common in B.C. north of 560 N latitude
PIPITS				
American Pipit *Anthus rubescens*	All BP, SB, NB Common TP Uncommon	Fields, pastures, mountains	Occurs in alpine meadows, boulder fields, scree, stream edges, cliff ledges during breeding; usually nests on well-vegetated alpine slopes	Very common migrant in B.C.
SHOREBIRDS				
Killdeer *Charadrius vociferus*	All BP, TP Common SB, NB Uncommon	Grasslands, pastures, farmland, wetlands, lakeshores, river banks, alpine meadows	Breeds and nests in open spaces with sparse vegetation; Usually nests on gravelly or bare ground	Forages in agricultural fields and wetlands for insects

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
SHOREBIRDS				
Least Sandpiper *Calidris minutilla*	All Common to Uncommon	Lakeshores, sloughs, river banks, bogs	Breeding habitat similar to non-breeding habitat; Often nests in sedges *(Carex spp.)*, and Sphagnum moss, near water	
Spotted Sandpiper *Actitis macularia*	All Common	Shores, riparian habitats, floodplains	Breeds near fresh water, usually in open or semi-open areas with sparse tree and shrub cover; nests on the ground near edges of open areas, also on gravel bars	Eats insects along shorelines
Greater Yellowlegs *Tringa melanoleuca*	All Common	Edges of shallow sloughs and ponds, exposed mudflats, sedge *(Carex spp.)* meadows, flooded fields, stream edges, ponds, muskeg, bogs	Breeds in open forests near wetlands Nests usually in depressions on the ground	Usually occurs singly or in small flocks There are no records of breeding north of 55° N latitude in B.C.
Common Snipe *Gallinago gallinago*	All Uncommon	Bogs, fens, marshes, riverbanks, lakeshores, wet fields; late in the year cattail *(Typha latifolia)* and bulrush *(Scirpus spp.)* marshes are used	Breeding habitat is meadows, fens and bogs, willow *(Salix spp.)* or alder *(Alnus spp.)* thickets Mainly nests in grasses and sedges *(Carex spp.)*	Eats insects, worms, amphibians, seeds
SPARROWS AND JUNCOS				
Many species of sparrows are attracted to backyard feeders, especially those with millet. Most sparrows are ground feeders, and are therefore often seen cleaning up seeds that have fallen from feeders.				
Dark-eyed Junco *Junco hyemalis*	All Common	Forest and field edges, shrubby areas, meadows, gardens, riparian habitat, lakeshores, thickets From valley bottoms to upper subalpine	Breeding habitat is often similar to non-breeding habitat but this junco also frequently nests in forests, logged or burned areas, bogs and muskegs; Nests up to alpine elevations	The most abundant and widespread sparrow in B.C. Occurs in the north from spring to fall The slate-colored group of dark-eyed juncos commonly breeds in the northern boreal forest in B.C.
American Tree Sparrow *Spizella arborea*	All BP, NB Common SB, TP Uncommon	Clearings with low shrubs and open ground for foraging during migration	Typically nests near tree-line in shrubby meadows and wetlands	Breeds in the far north Most spring and summer records are from the northern third of B.C. Will come to feeders
Chipping Sparrow *Spizella passerina*	All Common	Open deciduous and coniferous forests, and forest edges, shrubland, fields, muskeg, thickets, farms, gardens	Breeds in shrubby habitats, often associated with edges of coniferous and deciduous woodlands, wetlands, farms; Nests mainly in trees and shrubs	Forages on the ground for seeds and insects

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
SPARROWS AND JUNCOS				
Savannah Sparrow *Passerculus sandwichensis*	All SB, BP, NB Common TP Uncommon	Open areas with weeds, and/or grasses and sedges *(Carex spp.)*; up to alpine elevations	Breeds and nests in grasslands, shrubby areas, fields, wetlands, alpine meadows Nests on the ground, under vegetation	Because they feed extensively on farm fields during migration they are highly susceptible to pesticide poisoning
Lincoln's Sparrow *Melospiza lincolnii*	All Common	May occur in logged areas, hedgerows, fields, forests, riparian areas	Prefers wet habitats with low, dense shrub, especially willow *(Salix spp.)* for breeding Mainly nests on the ground or in shrubs	Susceptible to human disturbance when nesting
White-throated Sparrow *Zonotrichia albicollis*	All BP, TP Common SB, NB Uncommon	Boreal spruce *(Picea spp.)* and mixedwood forests at low elevations, forest edges and openings, low shrubs surrounding lakes and wetlands	In northeastern B.C. breeds in deciduous and mixedwood, often riparian, forests with a shrub understorey, forest edge habitats around bogs, ponds Usually nests on the ground in or near forest clearings	Wintering birds in the Boreal Plains are dependent on bird feeders for survival
White-crowned Sparrow *Zonotrichia leucophrys*	All Common	Edge habitats such as shrubby areas adjacent to more open sites, riparian zones, agricultural areas	Breeding habitat requires grasses, bare ground for foraging, and dense shrubs or small conifers for roosting; Nests in forests, shrubby and grassland areas, settled areas; Nests to alpine elevations	Common in the Northern Boreal Mountains in summer Will come to feeders
Golden-crowned Sparrow *Zonotrichia atricapilla*	All SB, NB Common BP, TP Uncommon	Ranges from valley bottoms to alpine elevations Prefers open shrubby habitats often around wetlands, lakes Also occurs in settled areas	Breeds and nests in mountainous areas Nests in coniferous forests, shrubby spruce-willow-birch *(Picea spp.-Salix spp.-Betula spp.)* plant communities; krummholz, and alpine tundra	Commonly visits bird feeders
Lapland Longspur *Calcarius lapponicus*	All BP, NB, TP Common SB Uncommon	Grasslands, fields, settled areas To alpine elevations	Does not breed or nest in B.C.	Forages along roadsides and therefore frequently killed by cars
Snow Bunting *Plectrophenax nivalis*	All BP, NB, TP Common SB Uncommon	Open, sparsely vegetated habitat such as grasslands, fields, lakeshores, settled areas To alpine elevations	Breeds in rocky terrain in mountainous areas and mainly summers above treeline	In B.C., breeds only in alpine areas of the Northern Boreal Mountains

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
SWALLOWS				
In spring, swallows forage for insects on ice-free ponds and lakes but in summer they mainly forage in open country such as grasslands, agricultural fields and wetlands.				
Bank Swallow *Riparia riparis*	All Common	Lakes, wetlands, farms, riparian habitats	Nests in colonies in banks and cliffs	Forages over fields, marshes and cliffs for insects Potential nesting sites have been increased by road building
Barn Swallow *Hirundo rustica*	All Common	Rural and suburban areas, clearings in woodlands, wetlands and riparian habitats	Frequently nests in buildings in settled areas, often in colonies; Also nests on cliff faces, in caves, and in tree cavities Nests are constructed mainly of mud	Will use nest platforms placed under eaves Barn swallows appear to be declining in the northern part of their North American range and in many other parts of the world Nestlings are subject to parasites
Cliff Swallow *Petrochelidon pyrrhonota*	All Common	Open valleys and parkland near lakes, ponds, marshes, fields, farms	Builds nests attached to farm buildings, bridges, cliff faces and banks Needs a mud source to construct nests	May form large colonies Nests must be protected from rain or they will erode Where nests are re-used, parasites are often a problem
Tree Swallow *Tachycineta bicolor*	All Common	Associated with wetlands, lakes, riparian habitats, settled areas	Breeds in farmlands, pastures, wooded areas, wetlands, river banks Nests in tree cavities in wooded areas, on posts and in nest boxes	Eats insects Require unobstructed paths to their nesting sites or boxes Susceptible to parasites
SWANS				
Trumpeter Swan *Cygnus buccinator*	All Uncommon	Sheltered, shallow water bodies such as lakes, ponds, slow-moving rivers	Breeds in forested habitat containing shallow lakes with emergent vegetation; builds nests in bulrushes *(Scirpus spp.)*, sedges *(Carex spp.)*, cattails *(Typha latifolia)* and horsetails *(Equisetum spp.)*	Breeds mainly in the Peace lowlands and boreal forest regions of B.C. Conservation efforts have resulted in increased trumpeter swan numbers in recent years
TANAGERS				
Western Tanager *Piranga ludoviciana*	All SB, BP, TP Common NB Uncommon	Mature deciduous, mixedwood and coniferous forests, wooded lakeshores, gardens	Breeds at forest edges and transitional zones, often near water; also in aspen poplar (Populus tremuloides) stands, rock bluffs, and shrubby grasslands; nests mainly in coniferous trees	Eats insects and berries Occasionally visits bird feeders with a nearby water source
THRUSHES				
Choke cherry *(Prunus virginiana)* provides food and cover. Thrushes also enjoy mountain-ash *(Sorbus spp.)*, cotoneaster *(Cotoneaster spp.)*, honeysuckle *(Lonicera spp.)* and elderberry *(Sambucus spp.)* berries, and currant and gooseberry *(Ribes spp.)* fruit in fall.				
American Robin *Turdus migratorius*	All Common	Fields, open woodland, forest edge habitat, settled areas, lakeshores, marsh edges To subalpine elevations	Breeds at edges of deciduous, coniferous and mixedwood forests, riparian areas and in open subalpine habitats; frequently nests in trees and shrubs in settled areas, thickets, often near water bodies	Eats insects and berries Forms communal, nocturnal roosts Will use nest platforms Often increases in numbers after logging and fires

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
THRUSHES				
Swainson's Thrush *Catharus ustulatus*	All Common	Deciduous and mixedwood forests; black spruce-tamarack *(Picea mariana-Larix laricina)* woods, riparian areas; often where there is a berry supply	Mixedwood forest for breeding and nesting; Nests in trees, snags and shrubs	Eats insects and berries More information is needed about the nesting requirements in northern B.C.
Hermit Thrush *Catharus guttatus*	All Common	Low to subalpine elevation coniferous forests and avalanche slopes	Breeding and nesting habitat is moist deciduous, coniferous and mixedwood forests and muskegs, with a dense shrub understorey; Nests in trees, snags and shrubs	
VIREOS				
Warbling Vireo *Vireo gilvus*	All BP, SB Common NB, TP Uncommon	In valleys where patches of deciduous forest occur	Open deciduous and mixedwood forests, especially near the edges; riparian habitats; Nests in open forests or at forest edges in deciduous trees or shrubs	Probably breeds throughout the northern interior Vireos will eat birch *(Betula spp.)* catkins in spring; Eat insects attracted to mountain-ash *(Sorbus spp.)* flowers and willow *(Salix spp.)* catkins
WARBLERS				
Warblers are small, active, often brightly coloured birds, usually with highly melodious songs. They eat insects, such as those found on conifer cones, birch *(Betula spp.)* and willow *(Salix spp.)* catkins. They nest in trees (often poplars *(Populus spp.)* and dense shrubs.				
Blackpoll Warbler *Dendroica striata*	All BP, SB, TP Uncommon NB Common	Riparian habitats, lodgepole pine *(Pinus contorta)* stands, mixedwood forests, muskegs	Breeds in boreal white spruce *(Picea glauca)* and black spruce *(Picea mariana)* muskegs, moist mixedwood forest edges	Breeds in northern B.C.; highest numbers in summer are in the Northern Boreal Mountains
American Redstart *Setophaga ruticilla*	All BP, SB Common NB, TP Uncommon	Coniferous and deciduous forests, riparian zones, gardens, shelterbelts	Breeds in poplar *(Populus spp.)* and mixedwood stands, often with an alder (*Alnus spp.)* or red-osier dogwood *(Cornus stolonifera)* understorey, riparian woodlands, willow *(Salix spp.)* thickets; often nests in floodplain and riparian forests in deciduous trees and shrubs such as willows *(Salix spp.)*	Highest numbers in summer occur in the Sub-boreal Interior
Orange-crowned Warbler *Vermivora celata*	All BP, SB, NB Common TP Uncommon	Riparian poplar *(Populus spp.)* and mixedwood forests, edge habitat between young and old forests, gardens, parks	Breeds in various forest types, usually with a shrub understorey, wetlands To subalpine elevations Mainly nests on the ground where adjacent shrubby vegetation, such as willows *(Salix spp.)* provides shelter	Probably breeds in deciduous woods in north-central B.C. but not confirmed

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
WARBLERS				
Wilson's Warbler *Wilsonia pusilla*	All BP, SB, NB Common TP Uncommon	Thickets, riparian habitats, adjacent to wetlands, mixedwood forests, shrubland, muskeg edges, parks, gardens	Breeds in dense, low-growing vegetation such as willows *(Salix spp.)*, often associated with mature aspen poplar *(Populus tremuloides)* stands Breeds to subalpine elevations but mainly nests on or near the ground in deciduous forests	Most abundant in summer in B.C. in the Northern Boreal Mountains B.C. has some of the highest densities of Wilson's Warbler in North America
Yellow Warbler *Dendroica petechia*	All BP, SB Common NB, TP Uncommon	Deciduous riparian woodlands, shrubby avalanche chutes, gardens To subalpine elevations	Decidous forests, often with willow *(Salix spp.)*, shrubby riparian habitats, wetland margins, thickets Nests in shrubs or trees in wooded habitats	Abundant in summer in the Peace River lowlands
Yellow-rumped Warbler *Dendroica coronata*	All Common	Open mixedwood forests, forest edges, riparian habitats, bogs, yards To subalpine elevations	Breeds mainly in open coniferous forests, but also in mixedwood and deciduous forests, riparian habitats and settled areas; nests in coniferous trees	The most widespread and abundant warbler in B.C.
Common Yellowthroat *Geothlypis trichas*	All Common	Usually inhabits wetlands and riparian areas	Nests on or near the ground, mainly in wetlands with abundant emergent vegetation such as sedges *(Carex spp.)*, reedgrass *(Calamagrostis spp.)*, and cattails *(Typha latifolia)*; and in willow *(Salix spp.)* communities; needs dense cover for foraging and nesting	
WAXWINGS				
Waxwings especially enjoy mountain-ash *(Sorbus spp.)* and cotoneaster *(Cotoneaster spp.)* berries in fall. Shrubs such as choke cherry *(Prunus virginiana)* provide both cover and food.				
Bohemian Waxwing *Bombycilla garrulus*	All BP, SB, NB Common TP Uncommon	Coniferous, deciduous and mixedwood shrubby forests near water; moves to lower elevations, often in settled areas, in fall and winter to find fruits, buds and berries	Breeds in coniferous and mixedwood forests with access to berries and water Nests in coniferous trees and small shrubs	Eats insects and berries in the summer, fruit and berries in the winter; In B.C. most abundant in the summer in the Northern Boreal Mountains; winters in the Peace River lowlands
Cedar Waxwing *Bombycilla cedrorum*	All BP, SB, TP Common NB Uncommon	Valley bottoms and lower mountain slopes, open forests, settled areas with shrubs, ponds, riparian areas	Attracted to areas with berries and small fruits; generally breeds at lower elevations than Bohemian Waxwings in edges of mixed woodlands near water; Nests in settled areas where water is available and there are abundant insects, fruit and berries, and in riparian areas and muskegs	Eats insects and fruits of red elderberries *(Sambucus racemosa)*, soopolallie *(Shepherdia canadensis)*, saskatoons *(Amelanchier alnifolia)*, red-osier dogwood *(Cornus stolonifera)*; and blueberries, cranberries and huckleberries *(Vaccinium spp.)*

Name Common, Scientific	Distribution and Abundance	General Habitat	Breeding Habitat and Key Habitat Components	Comments
WOODPECKERS				
Woodpeckers drill holes in trees to obtain wood-boring insects and so are important control agents for many forest insect pests. Woodpecker populations have been monitored in forest stands as a means of tracking potential insect pest outbreaks. They also excavate nesting and roosting cavities which are used later by a variety of other birds and small mammals. Woodpeckers are attracted to suet feeders.				
Downy Woodpecker *Picoides pubescens*	All BP, SB Common NB, TP Uncommon	Deciduous and mixedwood forests, and edges of coniferous forests; riparian thickets, settled areas	Breeds in deciduous forests, mixedwoods, riparian thickets, logged areas, settled areas; Frequently nests in cavities drilled in dead deciduous, especially poplar *(Populus spp.)* trees and snags	Eats insects, berries and seeds Will eat suet at feeders
Hairy Woodpecker *Picoides villosus*	All Uncommon	Coniferous, deciduous and mixedwoods, often near openings; residential areas	Breeding habitat is similar to non-breeding habitat; Frequently nests in cavities drilled in dead poplar *(Populus spp.)* and in other deciduous and coniferous trees and snags	May come to suet feeders in winter
Northern Flicker *Colaptes auratus*	All Uncommon	Deciduous and mixedwood forests, and edges of coniferous forests; riparian thickets, settled areas	Breeds in deciduous and coniferous trees. Frequently nests in cavities or in silt or clay cliffs	Will nest in bird boxes. Can be found feeding at suet feeders.
INTRODUCED SPECIES				
Starlings and House Sparrows were introduced to North America from Eurasia and are now very common here in settled areas. However in northern interior B.C. they are not nearly as widespread and abundant as further south. House Sparrows, in particular, tend to avoid woodlands and wilderness areas. Both are considered pest species by wildlife biologists and birders as they are aggressive, and often drive other native species away from nesting sites. House Sparrows will also occasionally kill eggs and young birds. Declines in populations of some native cavity-nesting species have been attributed to competition with these nuisance species. They can be discouraged from using nest boxes by using boxes with specific entrance hole shapes (see the Naturescape Provincial Guide).				

Bohemian Waxwing

TABLE 6: MAMMALS

Many mammals lead secretive or mainly nocturnal lives, and so are often not encountered. The more well known mammals are those that are large, such as bears, deer, and moose, or are diurnal such as chipmunks and squirrels. Some species are unwelcome around homes and gardens. (See the section "When you don't want to share your living space with wildlife" under " Putting it all together in Your Yard" for suggestions on how to live in harmony with these species.) Similarly, Nagorsen and Brigham, 1995. (See the references in the Resource Booklet) provide tips on how to discourage bats from roosting in occupied buildings.

The following table includes the more common and/or well known mammal species of northern, non-coastal B.C. Distribution refers to the four ecoprovinces:

BP	Boreal Plains
SB	Sub-boreal Interior
NB	Northern Boreal Mountains
TP	Taiga Plains

Abundance refers to the species abundance in northern B.C.. General habitat lists the general habitat types where the species occurs. Compare the types of habitat on your property, or the types you wish to create with those used by individual species to determine what types of mammals you may expect to attract. Key habitat components are specific habitat features within the general habitat types that are important to the species' survival.

How to use this table:

Only the most well known or most common mammal species in the Central Interior are listed.

Distribution:

lists the ecosections where the species is found, "All" signifies that the species is widely distributed in the Central Interior. Please refer to the Ecosection map and table.

How to attract:

General Habitat:

lists the general habitat types where the species is found. Wherever possible, these habitat types have been made consistent with those in the plant tables for ease of cross-referencing. Compare the type(s) of habitat on your property, or the types you wish to create, with those used by individual species to determine what types of mammals you may expect to attract to your property.

Key Habitat Components:

are specific habitat features within the general habitat types that are important to the species' survival. These can include features such as coarse woody debris or tree cavities that provide protective cover from predators or from the elements. You will have a greater chance of attracting certain mammals to your property if you retain or provide these types of features within the general habitat types. For example, you may have the appropriate forest habitat for fishers or marten, but without snags or coarse woody debris for den sites, these species are unlikely to be present.

Stone's Sheep

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
SHREWS				
Common Shrew, Masked Shrew; Cinereus Shrew *Sorex cinereus*	All Common	Coniferous and deciduous forests, open meadows, bogs, willow-birch *(Salix spp.-Betula spp.)* thickets, riparian habitats	Logs, rock piles for denning; fallen foliage and forest debris for shelter	Mainly eats insects but also slugs, snails, young mice, fungi, carrion and seeds May be an important predator on forest insect pests Shrews are largely nocturnal and therefore not readily seen
Dusky Shrew, Montane Shrew *Sorex monticolus*	All Common	Moist alpine meadows, sedge *(Carex spp.)* and willow *(Salix spp.)* wetlands, moist coniferous forest, near bogs; burned or logged forests	Decayed logs for dens	Eats insects, slugs, spiders, snails, carrion , fungi, lichens and plants Often the dominant shrew species at high elevations in the north
Common Water Shrew; Navigator Shrew *Sorex palustris*	All Common	Near streams (especially those with rapids and riffles), wetlands and lakeshores; alpine tundra, low elevation forests	Well-vegetated banks, sphagnum moss shorelines, wood debris of beaver lodges and hollow logs for denning	Eats mainly aquatic insects; may also eat terrestrial invertebrates such as slugs and snails, and small fish; Small hairs on the back feet act as flippers to aid in swimming; Provides food for weasels, mink, otter and large fish
Pygmy shrew *Sorex hoyi*	All Uncommon	Woodlands, sphagnum bogs, grassland, shrubland, wetlands, rocky slopes	Coarse woody debris, leaf piles; rock piles for denning	The smallest mammal in B.C. Eats mainly larvae and adult insects
Arctic Shrew; Saddle-backed Shrew; Black-backed Shrew *Sorex arcticus*	BP, TP Probably Uncommon	Moist boreal forest and forest edges, bogs, open areas, ephemeral sloughs and streamside habitats	Coarse woody debris, leaf piles, rock piles for denning	Eats insects, slugs, snails and carrion Is a major predator of the larch sawfly, a forest insect pest
BATS				
Many people fear bats because they think that bats will attack them and cause rabies. This fear is largely unfounded as bats are not aggressive, try to avoid contact with humans, and are not abnormally prone to rabies. In the U.S., only 25 people in the last 50 years have contracted this disease from bats. However, bats should not be handled or approached, as any bat which allows you to approach is likely ill. If a bat flies into your house, open doors and windows and it will find its way out using echolocation. Bats can be prevented from forming colonies in attics by sealing potential entrances with screens, a much more environmentally friendly alternative to chemicals. Bats are useful allies in the battle against insect pests, with some species such as the little brown bat, consuming half of their weight in insects in one night. B.C. has the greatest diversity of bat species in Canada, but half of the province's 16 bat species are provincially rare as a result of direct extermination, disturbance to roosting sites, pesticides and loss of habitat. In B.C., forestry has the greatest impact on bat habitat, through the the loss of old growth forests and destruction of roosting sites. We should develop a tolerance for these mysterious (and helpful) night creatures and preserve those bat habitats that we can. To attract bats to your yard, you may wish to build or buy a bat box. For further details see the Naturescape Provincial Guide.				
Northern Long-eared Myotis; Northern Bat; Northern Myotis *Myotis septentrionalis*	BP Rare	Boreal forests near water	Old growth trees for roosting; caves for hibernation; tree cavities for nurseries	Eats insects, including moths, flies, leaflhoppers and beetles

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
BATS				
Big Brown Bat *Eptesicus fuscus*	BP, SB Uncommon	Forests, farmlands, cities	Buildings, caves for hibernating; rock crevices and tree cavities (roosting and nurseries)	Often roosts in large colonies; forages over water, forests, along roads & under street lamps Eats insects, especially beetles Very helpful in controlling agricultural insect pests
Silver-haired Bat Lasionycteris noctivagans	BP, SB Uncommon	Forests, grasslands, farmlands	Trees, especially old growth, for roosting and hibernation; Females form small nursery colonies in tree cavities, narrow crevices and old buildings	Roosts alone or in small numbers under bark, in crevices, and tree cavities Eats mainly small insects such as moths, flies, butterflies and ants
Little Brown Bat; Little Brown Myotis *Myotis lucifugus*	All Common	Occupies a wide range of habitats but usually near water	Buildings, caves, rock crevices, and trees (roosting)	Hunts over open areas, forests, rock bluffs and water Aquatic insects are the major prey but night-flying insects such as moths, and beetles are also eaten Has different night and day roosts
HARES AND PIKAS				
Snowshoe Hare *Lepus americanus*	All Common	Boreal coniferous forests and mountain forests	Brush/shrubs, coarse woody debris, tree stumps (cover)	In summer, eats grasses, forbs, and new leaves of shrubs and tree saplings Eats buds, bark, twigs and evergreen leaves of shrubs and tree saplings in winter Its large feet, which enable it to easily cross soft snow, give this hare its common name
Collared Pika *Ochotona collaris*	NB	High elevation talus slopes with abundant grasses and forbs nearby	Rock piles for cover and denning	Eats a wide variety of grasses, sedges and forbs which are stacked in "haystacks" for winter food
Common Pika; American Pika *Ochontona princeps*	SB	Cliffs, rocky talus slopes; occasionally lives in woody avalanche debris	Rock piles (cover)	Uses prominent rocks as lookout posts Eats grasses, sedges, forbs, and new shoots of shrubs Stores haystacks of vegetation among rocks
RODENTS: MICE AND VOLES				
Western Jumping Mouse *Zapus princeps*	All	Variable; tall grass, often near streams, in treed or shrubby areas	Tall grass & shrubs	Eats berries, plants, insects and other invertebrates in spring and summer; in fall and winter grass seeds, fungi and fruits of plants are often used
Meadow Jumping Mouse *Zapus hudsonius*	All	Moist fields are preferred, but also shrublands, marshes, or woods	shrubs & marshes	Eats insects, grass and forb seeds, fungi

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
RODENTS: MICE AND VOLES				
Deer Mouse *Peromyscus maniculatus*	All Common	Grassland, shrubland, forests, tundra; human habitation	Coarse woody debris, rock piles, tree cavities, stumps (cover)	Eats seeds, fruits, shrub and tree buds, fungi, eggs, and insects Caches food under rocks, exposed tree roots, and tree cavities CAUTION: Is a vector for hantavirus, therefore use precautions when cleaning up old buildings, droppings etc.
Long-tailed Vole *Microtus longicaudus*	All	Wet meadows in grasslands and alpine sites; mountains, coniferous forests; near water	Rocky areas and woody debris for dens	Eats plants and berries in summer; bark of heaths, willows and trees in winter Voles look like mice but have shorter ears and tails
Meadow Vole *Microtus pennsylvanicus*	All	Grassy areas in marshes, open woodlands, forests, mountain meadows		The most widespread vole in North America Eats sedges, grasses and some forbs in summer; seeds, bark, underground plant parts and insects in winter
Eastern Heather Vole *Phenacomys ungava*	BP, NB, TP	Prefers open coniferous forest or shrubby areas at forest edges, birch *(Betula spp.)* and willow *(Salix spp.)* thickets	Rock piles and woody debris for nurseries	A boreal forest species Eats foliage of shrubs and forbs in summer, mainly bark and buds in winter The closely related western Heather Vole, which also occurs in northern B.C., has a more southerly distribution
Southern Red-backed Vole *Clethrionomys gapperi*	All	Moist coniferous forests, bogs, near swamps; occasionally aspen *(Populus tremuloides)* forests	Logs, rock crevices for summer denning	Eats grasses, berries, lichens, seeds and fungi
Northern Red-backed Vole *Clethrionomys rutilus*	NB	Birch *(Betula spp.)*, willow *(Salix spp.)* and alder *(Alnus spp.)* thickets of the northern boreal forest	Rock piles, hollow logs for dens	An important food for raptors and carnivores Eats berries, leaves, buds and twigs
Brown Lemming *Lemmus trimucronatus*	SB, NB	Alpine tundra and meadows, bogs, spruce forests		Eats grasses, sedges
Northern Bog Lemming *Synaptomys borealis*	All	Sphagnum bogs, spruce forests, subalpine meadows, tundra sedge meadows		Eats grasses, sedges

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
CHIPMUNKS AND SQUIRRELS				
Least Chipmunk Tamias minimus	All	Shrubby and rocky areas in mountain and boreal forests	Some least chipmunks use trees for nesting	Eats conifer seeds, nuts, berries and insects; and occasionally eggs, baby birds, mice and carrion
Northern Flying Squirrel *Glaucomys sabrinus*	All Common	Coniferous mountain forests; occasionally in mixed or deciduous forests	Tree cavities (cover and nesting)	May build large twig and bark nests on tree branches; will use large nest boxes; Eats seeds, buds, male cones of conifers, lichens, berries, foliage, fungi, insects, bird eggs and nestlings Nocturnal and will use bird feeders at night
Red Squirrel *Tamiasciurus hudsonicus*	All Common	Coniferous and mixed forests; cities with older trees	Tree cavities and underground burrows for cover and nesting; rock piles for cover	Preferred food is conifer seeds but also eats mushrooms, fruits insects, baby birds, hares; Frequently uses bird feeders May build huge food caches for winter Builds large, leafy nests on tree branches or may use large nest boxes
OTHER RODENTS				
Arctic Ground Squirrel *Spermophilus parryii*	NB	Tundra and alpine habitats; sandy banks, lakeshores, meadows		Hibernates for more than 6 months of the year Forms colonies with a single male and many females Eats grasses, berries, inner bark, roots, willows and fungi, but also will take eggs, baby birds and carrion
Bushy-tailed Woodrat (Packrat) *Neotoma cinerea*	All	Cliffs, talus slopes, forests, caves, rocky or shrubby areas		Buildings, caves, rocky areas, tree cavities (nesting) Builds bulky nests of sticks, foliage and human belongings Eats foliage, seeds, forbs, berries, underground plant parts, fungi and insects
Hoary Marmot *Marmota caligata*	NB	Rocky subalpine and alpine areas near vegetation	Rocky areas	Hibernates for 8-9 months Eats grasses, sedges and other plants
Beaver *Castor canadensis*	All Common	Rivers, streams, wetlands	Shrubs and trees (cover, food)	Eats bark and inner bark *(cambium)* of poplars *(Populus spp.)*, willows *(Salix spp.)*, alders *(Alnus spp.)* and birches *(Betula spp.)* Builds dams & lodges from shrubs and trees growing near water bodies Beaver ponds are important sites for water storage and soil erosion control, and create wetland habitat for wildlife`

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
OTHER RODENTS				
Woodchuck; Groundhog *Marmota monax*	All	Forests, meadows, cultivated land		Eats grass, leaves, seeds, berries, and occasionally bark and carrion; loves garden vegetables
Muskrat *Ondatra zibethicus*	All Common	Rivers, streams, wetlands	Emergent vegetation (cover, food)	Builds houses in shallow water or cattail-bulrush *(Typha latifolia-Scirpus spp.)* stands, or may burrow into banks along the shoreline Eats emergent vegetation, amphibians and fish
Porcupine *Erethizon dorsatum*	All Common	Forests, pastureland, tundra	Coarse woody debris, tree cavities, and stumps (denning)	Eats leaves in summer; bark, buds and twigs in winter Mostly nocturnal
CARNIVORES WEASEL-LIKE CARNIVORES				
Fisher *Martes pennanti*	All	Dense older, usually coniferous forest	Coarse woody debris; rock crevices (denning)	Prime habitat is forest/meadow edges or forest riparian edges; May den in holes in the ground or under the snow, in squirrel or raptor nests Feeds mainly on snowshoe hares, squirrels, voles, grouse and porcupines but may also eat berries, nuts and carrion
Marten; American Marten; Pine Marten *Martes americana*	All	Mature coniferous or mixed forests	Coarse woody debris (denning)	Feeds primarily on voles and mice, but may also eat squirrels, hares, birds, eggs, plants, insects and carrion
Mink *Mustela vison*	All	Forest edges, rivers, streams, wetlands	Tree stumps, underground burrows (denning)	Dens in riparian areas; occasionally digs its own burrow but usually uses abandoned muskrat or beaver burrows or dens Eats small mammals, fish and amphibians and can dive to depths of several metres in search of prey
Northern River Otter *Lontra canadensis*	All	Rivers, streams, Wetlands in wooded areas	Coarse woody debris, tree stumps (denning)	Uses muskrat and beaver burrows for denning Eats mainly fish, insects and amphibians; but may take small mammals Captures most food underwater Often makes slides down grassy, muddy or snowy banks
Least Weasel *Mustela nivalis*	All	Open grassy areas, forest edges and tundra	Coarse woody debris, rock piles, tree stumps, Underground burrows (denning)	Eats mainly voles, mice and insects, but may take amphibians, birds and eggs

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
CARNIVORES WEASEL-LIKE CARNIVORES				
Short-tailed Weasel *Mustela erminea*	All	Coniferous forests, forest edges, meadows, riparian habitats, alpine tundra	Coarse woody debris, rock piles, tree stumps, Underground burrows (denning)	Most common B.C. weasel Often takes over other mammal's burrows Eats mainly small mammals but also birds, insects, amphibians and plant material
LARGE CARNIVORES				
Large, potentially dangerous predators have been included in this table as it is hoped that owners of large properties may be able to provide or maintain habitat, particularly key habitat components, for these often uncommon or even endangered species.				
Black Bear *Ursus americanus*	All Common	Forests, swamps, shrubby thickets	Caves, hollow trees, tree stumps (denning)	Eats plant materials such as fruits, roots, grasses and sedges, insects, carrion and mammals CAUTION: To lessen the potential for bear encounters, clean up food sources that could be attractive and store garbage properly.
Grizzly Bear *Ursus arctos*	All	Forests, mountains, alpine tundra	Caves, tree roots	Eats plants, especially fruits and roots; mammals, fish and insects
Lynx Lynx canadensis	All	Northern coniferous forests	Areas with fallen trees and dense thickets for cover and ambush of prey; fallen logs, rocky areas or caves for denning	Lynx numbers fluctuate in response to fluctuations in snowshoe hare numbers They also eat squirrels, grouse and rodents
Cougar; Mountain Lion; Puma *Puma concolor*	All	Forests, rocky slopes in low elevation to subalpine areas of the mountains	Brush, shrubs; Coarse woody debris, rock crevices, rock piles, caves (denning)	Occupies coniferous forests and mountainous terrain Feeds mainly on large ungulates such as deer and bighorn sheep, but also eats other large mammals, porcupine, beaver, hares, mice and birds
Wolverine *Gulo gulo*	All	Remote wilderness is preferred, often in foothills or mountains; in summer it may frequent alpine tundra	Den sites	In summer wolverines eat ground squirrels and other small mammals, fish, birds and occasionally berries; in winter they live on carrion
Coyote *Canis latrans*	All	Forests, grasslands	Bush, shrubs; Coarse woody debris, rock piles (denning)	Most common in open grasslands and forests Feeds mainly on small mammals, but also eats large mammals, birds, insects, vegetation and carrion CAUTION: Cats and dogs should not be allowed to roam in coyote country as they are readily taken as food

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
LARGE CARNIVORES				
Red Fox *Vulpes vulpes*	All	Open forests and forest edges, grasslands, wetlands; open areas interspersed with shrubs for cover; adaptable to human habitation	Gravelly or sandy soils (denning)	Prefers semi-open country, avoids dense forests Digs dens along lakeshores or streambanks, in grasslands or along forest edges May use abandoned dens of other animals Eats small mammals, birds, insects and berries
Gray Wolf *Canis lupus*	All	Most common in dense forests, also in tundra	Caves, coarse woody debris, rock piles, tree stumps (denning)	Wolf packs occupy large territories, sometimes over 700 km^2 Most common in wilderness forests and tundra habitats Eats mainly large ungulates such as deer, moose and caribou but also eats small mammals, birds, fish and insects
OTHER CARNIVORES				
Striped Skunk *Mephitis mephitis*	All	Open forests and forest edges, riparian habitats, shrubby grasslands and valleys; Adapted to human habitation	Coarse woody debris, rock piles, underground burrows (denning)	Will nest in underground burrows or under buildings Eats mainly insects, small mammals and plant material but will also take baby birds, eggs, amphibians, reptiles, and carrion
UNGULATES				
Mule Deer *Odocoileus hemionus*	All	Grassland, shrubland, open forests, riparian habitats To alpine elevations	Forests & grassland	Spring and summer foods are mainly grasses and forbs; winter diet consists of lichens, shrubs and branches
White-tailed Deer *Odocoileus virginianus*	BP, TP	Valleys, woodlands, riparian habitats, meadows, settled farmland with cover	Mix of woodlands and open areas	Adaptable to human habitation therefore more common now than in pre-settlement times Eats forbs and grasses mainly in spring and summer; leaves and twigs of trees and shrubs in winter

Name Common, Scientific	Distribution and Abundance (If Known)	General Habitat	Key Habitat Components	Comments
UNGULATES				
Dall's Sheep *Ovis dallii*	SB, NB	Occurs on alpine slopes in summer and descends to drier, predominantly south-facing slopes in winter	Steep rocky cliffs for escape terrain; Mineral licks	Dall's Sheep are similar to Bighorn Sheep but have thinner horns; There are 2 subspecies of Dall's Sheep – one which has a mainly white coat *(ssp. dallii)* and occurs in the extreme northwestern corner of the province and the more southern Stone Sheep *(ssp. stonei)*, which has a dark brown to grayish coat Eats broad-leaved herbs in spring and summer; grasses, seeds and branch tips of willows *(Salix spp.)*, pasture sage *(Artemisia frigida)*, crowberry *(Empetrum nigrum)*, and mountain avens *(Dryas spp.)* in winter
Wapiti; Elk *Cervus elaphus*	All	Prefers upland forest and grasslands; may occur in coniferous forests, alpine tundra, shrublands,		Wapiti tend to move to higher elevations in spring and lower elevations in fall; Eat sedges and grasses in spring and summer; may eat fallen leaves and browse on woody plants in winter Salt is a requirement
Mountain Goat *Oreamnos americanus*	SB, NB	Steep slopes and rocky cliffs in subalpine or alpine areas; dense low elevation or subalpine forests for travel; Alpine meadows	Steep slopes and rocky cliffs for escape terrain; Salt source during early summer moult	Diet is variable depending on what is available – shrubs, mosses, lichens, forbs, grasses, sedges and rushes Winter and summer feeding areas are usually separate Goats bed down in shallow depressions scraped out of cliff base debris
Moose *Alces alces*	All Common	Coniferous forest, early successional willow *(Salix spp.)* and poplar *(Populus spp.)* wetlands, riparian habitats, moist shrubland To alpine elevations		Eats aquatic vegetation in summer and browses on shrubs and trees; in winter moose eat twigs, buds, and bark of deciduous trees
Caribou *Rangifer tarandus*	All	Forests, alpine meadows	Old growth and mature forests with abundant lichens	Do best in wilderness areas that allow for seasonal migration Spend summers at high elevations to avoid heat and insects, winters at lower elevations Eat grasses, sedges, mosses, forbs and lichens in summer; buds, leaves, shrub bark and lichens in winter Caribou have been declining in the north and the remaining isolated herds are vulnerable to overhunting, habitat loss and predation Removal of mature forests has resulted in loss of some local caribou populations

GLOSSARY

Alpine: The alpine zone in the mountains lies above treeline (the limit of continuous tree cover), where tree growth is restricted to occasional krummholz (krüppelholz) islands.

Bogs: Acidic wetland area, also called peatland, with a high water table; often low in oxygen and nutrients. Bogs are often populated by Sphagnum mosses, sedges and black spruce.

Boreal Forest: The circumpolar, subarctic forest of high northern latitudes that is dominated by conifers. It is bordered on the north by the tundra.

Coarse Woody Debris: Refers to fallen trees, rotting logs, and broken tree branches and twigs that are lying on the ground.

Contiguous: Adjacent, close; refers here to dense forest growth as opposed to scattered clumps of trees above treeline.

Emergent: Emergent vegetation refers to plants that are rooted in the bottom of ponds, lakes or marshes, but whose stalks and flower heads grow up above the water surface. Examples of emergent plants include cattails, bulrushes and some rushes, and sedges.

Edge: Refers to the transition zone between two distinct vegetation types, such as forest and clearing or mature forest and early successional forest. Edge habitats frequently provide very productive areas for wildlife.

Fens: Wetland area fed by streams and groundwater; less acidic and usually higher in nutrients than bogs. Often populated with sedges, grasses, willows and tamarack.

Forb: A non-grassy herbaceous plant.

Heath: An area dominated by dwarf shrubs in the heather (Ericaceae) family.

Inflorescence: The arrangement of flowers on a stem.

Krummholz (krüppelholz): Scattered clumps of stunted, bushy trees and shrubs near treeline in upper subalpine and alpine zones of the mountains.

Mixedwood: Forest composed of both broad-leaved deciduous and coniferous trees.

Muskeg: Poorly drained, wooded peatland characterized by black spruce and Sphagnum moss.

Riparian Habitat: Refers to the greenbelt of vegetation surrounding wetlands, rivers and streams. These areas are wet enough to develop and support vegetation distinct from that of the surrounding uplands.

Snags: Standing dead trees.

Subalpine: The vegetation zone in the mountains below the alpine. As elevation increases, forests tend to become more open until tree growth is restricted to krummholz.

Successional: The sequential change in plant community composition in response to changing environmental conditions.

Taiga: Another term often used to refer to the Boreal Forest. Some authorities use the term taiga to mean the open, park-like northern fringes of the boreal forest where there are sparse coniferous trees with an understorey of lichens.

Treeline: The limit of continuous tree cover in the mountains. Above treeline, trees may occur in scattered, small clumps.

Tundra: A treeless plain of Arctic, Antarctic and alpine areas. In northern B.C. the alpine tundra is often characterized by low-growing plants resistant to exposure and desiccation, such as sedges, grasses, dwarf willows and lichens, with heaths and willow/scrub birch plant communities in snowier and moister areas.

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