

Chapter 16: Boreal White and Black Spruce Zone

by

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LOCATION AND DISTRIBUTION

Most of the Boreal White and Black Spruce zone (BWBS) in British Columbia occurs on an extension of the Great Plains (the Alberta Plateau) into the northeastern corner of the province (Figure 58). This corner makes up about 10% of the total land area of British Columbia. The zone also occupies the lower elevations of the main valleys west of the northern Rocky Mountains (Figure 58). In northeastern British Columbia, this lowland to montane zone occurs north of roughly 54°N latitude and at elevations ranging from 230 to approximately 1300 m. In northwestern British Columbia, it occurs north of 56° from the valley bottoms to 1000-1100 m elevation. The vast majority of the zone occurs above 600 m; the main exceptions are the Fort Nelson Lowland (\pm 450 m) and some deeply incised valleys (e.g., Peace, Stikine, Liard, Ft. Nelson, Petitot).

The Spruce — Willow — Birch zone is the subalpine zone above the BWBS over most of its range in the province, but in the southern part of the BWBS, the Engelmann Spruce — Subalpine Fir zone occurs above it.

The BWBS is the most widespread zone in Canada, occurring from the Yukon Territory across all the provinces to Newfoundland.

ECOLOGICAL CONDITIONS

The northern continental climate, with its frequent outbreaks of arctic air masses, features long, very cold winters and short growing seasons (Figure 59; Table 4). The mean annual temperature for long-term climatic stations within the zone is -2.9 to 2°C. The daily maximum temperature can be quite high in mid-summer, but monthly averages remain below 0°C for 5-7 months of the year, and above 10°C for only 2-4 months. Annual precipitation averages between 330 and 570 mm, with 35-55% of this falling as snow. The ground freezes deeply for a large part of the year, and discontinuous permafrost is common in the northeastern parts of the zone.

White spruce, trembling aspen, lodgepole pine, black spruce, balsam poplar, tamarack, subalpine fir, common paper birch, and Alaska paper birch are the major tree species in the forested sections of the BWBS. Forest fires are frequent throughout the zone, maintaining most of the forests in various successional stages.

Forests predominate in the better-drained plateau, foothill, and cordilleran sections of the zone, where mixed trembling aspen — white spruce forests on Gray Luvisols dominate the landscape.

Relatively open pine — lichen forests occur on the driest sites, which are usually on rapidly drained outwash deposits. Mixed pine and black spruce stands are common on level or gently sloping, north-facing sites on compacted morainal or lacustrine soils. Dense black spruce — moss communities develop on imperfectly drained sites.

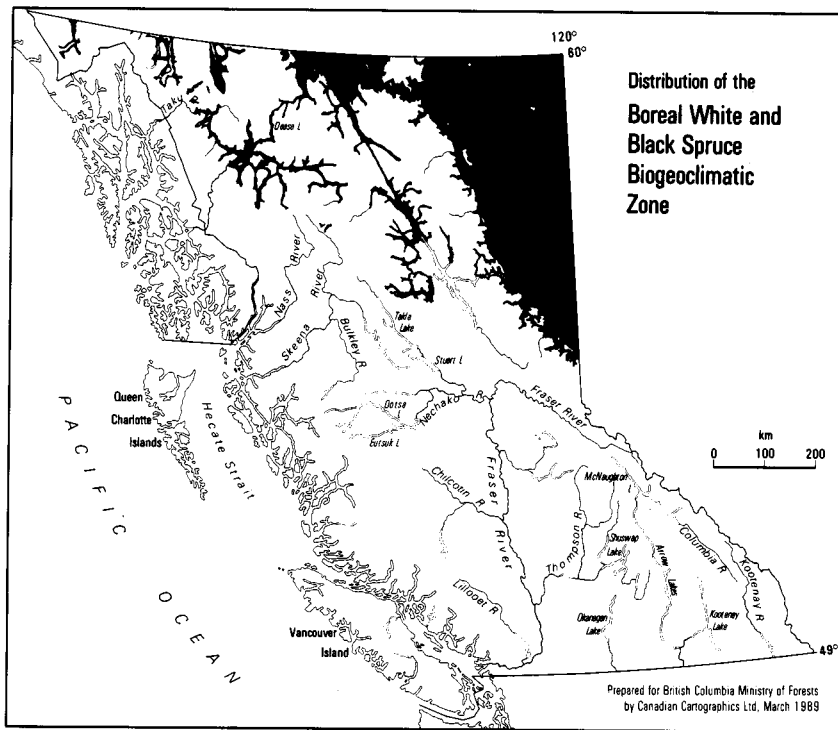


FIGURE 58. Boreal White and Black Spruce zone.

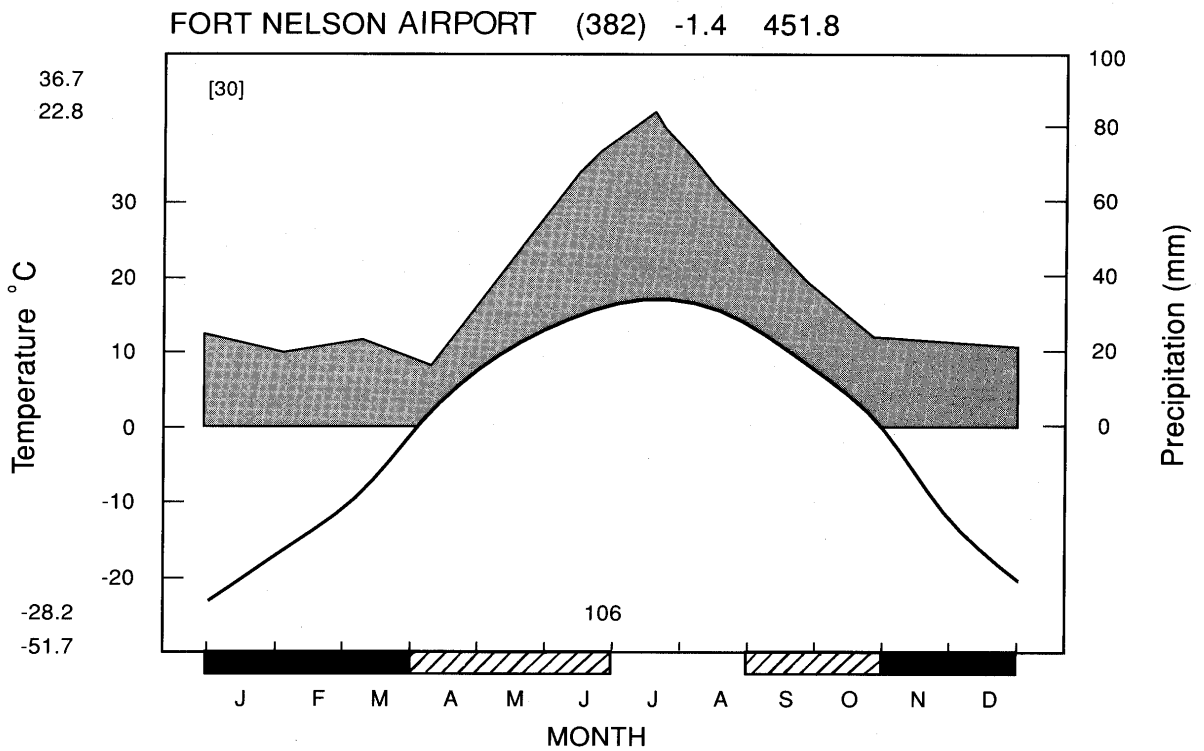


FIGURE 59. Representative climatic diagram for the Boreal White and Black Spruce zone.

The most productive forests and agricultural lands of this zone occur on rich, well-drained alluvial sites. White spruce and balsam poplar can reach heights of over 50 m, and productivity can exceed 7 m³/ha per year. Soils are typically Cumulic Regosols on these floodplains.

The poorly drained lowlands (especially the Fort Nelson Lowland) are a mosaic of forest and wetland ecosystems. Here, Organic Cryosols, Luvic Gleysols, and Organics are the most common soils. The build-up of organic matter from bog vegetation tends to insulate frozen ground, resulting in lenses of permafrost. Black spruce and occasionally tamarack are the main trees on organic terrain. They are, however, much reduced in size compared to their stature on upland sites.

Tamarack forms pure stands only in nutritionally rich (minerotrophic) fens and swamps, and occurs mainly north and east of the Rockies (basically on the Alberta Plateau and the Liard Plain). Common species of these fens are *Carex* spp. (sedges), *Betula glandulosa* (scrub birch), *Betula pumila* (swamp birch), *Chamaedaphne calyculata* (leatherleaf), *Myrica gale* (sweet gale), *Andromeda polifolia* (bog-rosemary), *Ledum groenlandicum* (Labrador tea), *Menyanthes trifoliata* (buckbean), *Drosera rotundifolia* (round-leaved sundew), *Oxycoccus oxycoccus* (bog cranberry), and the mosses *Aulacomnium palustre* (glow moss), *Tomenthypnum nitens* (golden fuzzy fen moss), and *Sphagnum* spp. (sphagnum mosses).

Grassland and scrub communities occur (usually in small pockets) on steep, south-facing slopes above many of the major rivers such as the Peace and the Stikine. Chernozemic, Chernozem-like, and Brunisolic soils occur in these ecosystems. Common shrubs include *Rosa acicularis* (prickly rose), *Rosa woodsii* (Wood's rose), *Amelanchier alnifolia* (saskatoon), *Symphoricarpos occidentalis* (western snowberry), and trembling aspen. Herbs and grasses include *Artemisia frigida* (pasture sage), *A. campestris* (northern wormwood), *Agropyron smithii* (western wheatgrass), *Achillea millefolium* (yarrow), *Koeleria macrantha* (junegrass), *Stipa comata* (needle-and-thread grass), *Galium boreale* (northern bedstraw), and *Antennaria microphylla* (rosy pussytoes).

Humus forms in mature conifer stands are mostly Hemimors with some Hemihumimors, Velomors, and Humimors. Mixedwood and aspen stands have humus forms that are usually Hemimors and Hemihumimors, but are thinner than in conifer stands. Mormoders are also found in aspen ecosystems.

Important agricultural land exists in the BWBS around Dawson Creek and Fort St. John. Many of these soils have developed on lacustrine clays over marine shales and show Solonetzic development.

SUBZONES

Three subzones are recognized in the BWBS (Table 33 and Figure 60) in British Columbia. Distinguishing species for the dry, cool BWBSdk include *Shepherdia canadensis* (soopolallie) and *Geocaulon lividum* (bastard toad-flax). The moist, warm BWBSmw typically has *Lathyrus ochroleucus* (creamy peavine), *Mertensia paniculata* (tall bluebells), *Galium boreale*, and *Mitella nuda* (common mitrewort). *Abies lasiocarpa* (subalpine fir) and *Vaccinium membranaceum* (black huckleberry) help differentiate the wet, cool BWBSwk from the other two boreal subzones.

TABLE 33. Synopsis of subzones in the Boreal White and Black Spruce zone (BWBS)

Subzone	Code	Old code
Dry Cool BWBS	BWBSdk	(BWBS _e /a2)
Moist Warm BWBS	BWBSmw	(BWBS _c 1/c2/a1)
Wet Cool BWBS	BWBSwk	(BWBS _d 1/d2/b)

The BWBSdk is found primarily west of the Rocky Mountains except where it follows the Liard River as it slices east through the mountains. It is located below the Spruce — Willow — Birch (SWB) and in some cases the Engelmann Spruce — Subalpine Fir (ESSF) zones. The regional climate is drier and cooler with a shorter growing season than that of the BWBSmw. The forests are dominated by white spruce or lodgepole pine.

The BWBSmw covers the rolling topography from the Red Willow River, near where the 120°W longitude (i.e., Alberta border) intercepts the Rocky Mountains, north to the Yukon and Northwest Territories borders. Elevation ranges from 600 to 1050 m in the south and 350 to 1100 m in the north. The regional climate is relatively moist and warm with a longer growing season than the higher elevation BWBSwk. The forests are dominated by white spruce or aspen.

The BWBSwk is found in the foothills and on lower to middle slopes of the Rocky Mountains, from the Alberta border north to the Yukon. The BWBSwk is widespread at its southern extent; in the north it is reduced to isolated pockets. It is located between the BWBSmw and either the ESSF or SWB at elevations of 900-1300 m, depending on latitude and topography. The climate is wetter and cooler with a shorter growing season than the BWBSmw. The forests are dominated by white spruce or lodgepole pine.

SOME REPRESENTATIVE SITE ASSOCIATIONS

The following four site associations are common in the BWBS landscape. They form a typical sequence of ecosystems in the southern portion of the BWBSmw (Figure 61).

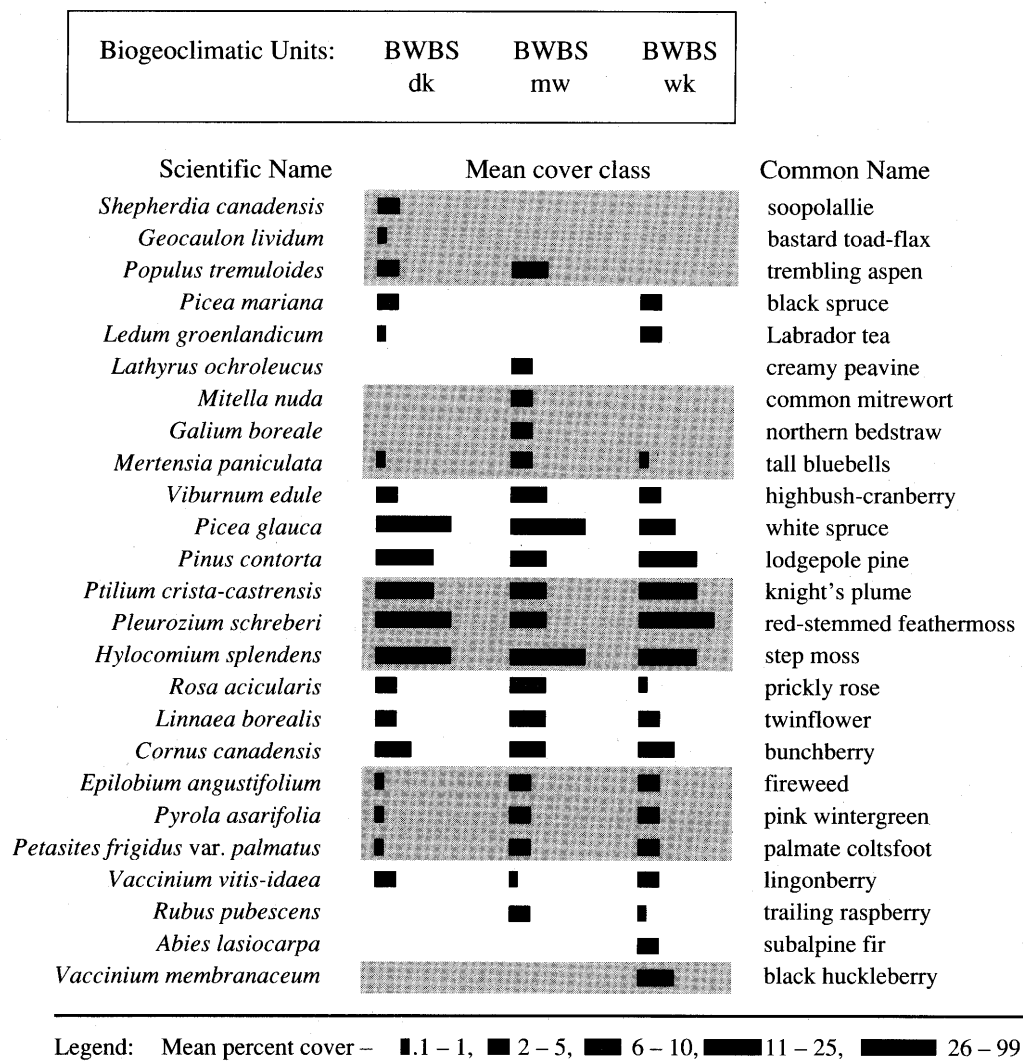


FIGURE 60. Zonal vegetation of subzones of the Boreal White and Black Spruce zone.

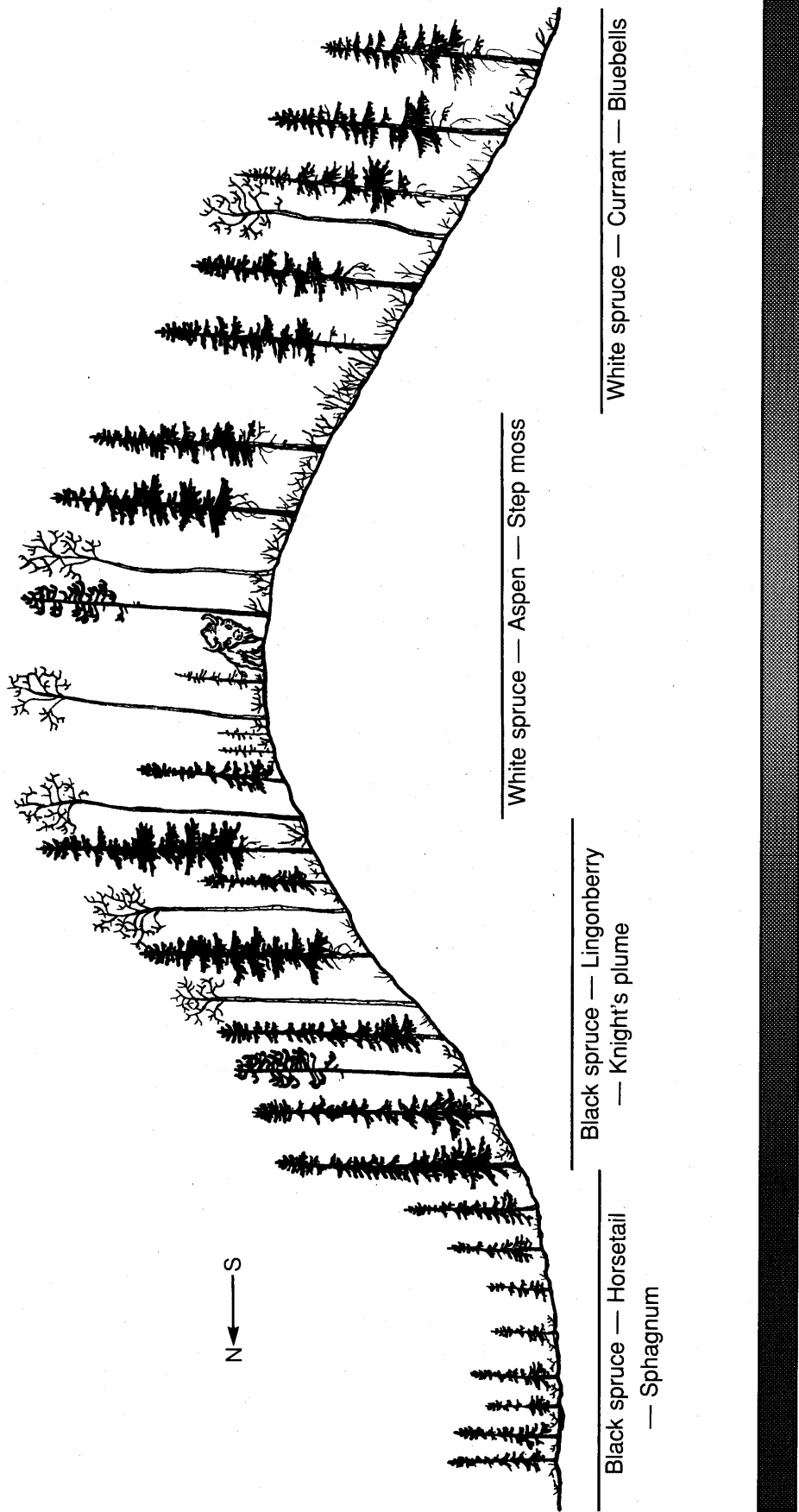


FIGURE 61. Simplified schematic diagram of topographic relationships among four common site associations of the Boreal White and Black Spruce zone.

White spruce — Aspen — Step moss

The White spruce — Aspen — Step moss association is very common east of the Rocky Mountains. It is the zonal association in the BWBSmw and is mostly found on moderately well-drained, fresh to slightly dry sites in the uplands. Soils are primarily fine-textured Gray Luvisols with some Brunisols. Hemimors and Mormoders are the most common humus forms.

Mature stands are usually well stocked with white spruce. Seral stands are dominated by trembling aspen with occasional components of balsam poplar and lodgepole pine.

The shrub layer is well developed and dominated by *Viburnum edule* (highbush-cranberry) and *Rosa acicularis*. Advance regeneration of white spruce is a consistent feature.

Common herbs include *Linnaea borealis* (twinline), *Rubus pubescens* (trailing raspberry), *Mertensia paniculata*, *Petasites frigidus* var. *palmatus* (palmate coltsfoot), *Pyrola asarifolia* (pink wintergreen), and *Cornus canadensis* (bunchberry).

The moss layer is usually dominated by *Hylocomium splendens* (step moss), *Pleurozium schreberi* (red-stemmed feathermoss), and *Ptilium crista-castrensis* (knight's plume).

Black spruce — Lingonberry — Knight's plume

The Black spruce — Lingonberry — Knight's plume association occurs on moist to wet, nutrient-very poor to -poor sites on level to gently sloping north-facing slopes throughout the zone. Soils are usually medium- to fine-textured Dystric Brunisols or Grey Luvisols. Hemimors are the most common humus forms.

Lodgepole pine and black spruce dominate mature stands; trembling aspen or lodgepole pine dominate seral stands.

The most common shrubs are *Rosa acicularis* and *Ledum groenlandicum*; *Alnus crispa* ssp. *crispa* (green alder) is sometimes present.

Cornus canadensis, *Linnaea borealis*, *Vaccinium vitis-idaea* (lingonberry), *Epilobium angustifolium* (fireweed), *Petasites frigidus* var. *palmatus*, and *Vaccinium caespitosum* (dwarf blueberry) generally dominate the herb layer.

The well-developed moss layer is primarily composed of the mosses *Pleurozium schreberi*, *Hylocomium splendens* and *Ptilium crista-castrensis* (knight's plume), and the lichen *Peltigera aphthosa*.

White spruce — Currant — Bluebells

The White spruce — Currant — Bluebells association is found on moist, nutrient-medium to -rich sites generally in moisture-receiving topographic positions in the BWBSmw and wk. Soils are usually Gray Luvisols or Luvic Gleysols. Hemimors and Mormoders are the most common humus forms.

The shrub layer is usually dominated by *Viburnum edule*, *Rosa acicularis*, *Ribes triste* (red swamp currant), and *Lonicera involucrata* (black twinberry).

Cornus canadensis, *Epilobium angustifolium*, *Linnaea borealis*, *Rubus pubescens*, *Mertensia paniculata* (tall bluebells), *Petasites frigidus* var. *palmatum*, and *Mitella nuda* usually dominate the herb layer. As well, *Calamagrostis canadensis* (bluejoint) is often a dominant component of this layer, especially after any disturbance to the stand.

The moss layer is dominated by *Hylocomium splendens*, *Pleurozium schreberi*, and *Ptilium crista-castrensis*.

Black spruce — Horsetail — Sphagnum

The Black spruce — Horsetail — Sphagnum association contains vegetation characteristic of plateau bogs in the Dawson Creek/Fort St. John area. These plateau bogs are very common on poorly drained organic soils. On the nutrient-poorer sites the humus forms are Hydromors or Histomors and on the nutrient-richer sites they are Hydromoders or Histomoders.

Growth of trees is very poor in these bogs; black spruce is dominant, with tamarack forming a minor component of the stunted stands.

Characteristic shrubs include *Ledum groenlandicum* and *Salix myrtillofolia* (bilberry willow).

The herb layer is usually dominated by *Vaccinium vitis-idaea*, *Equisetum* spp. (*scirpoides* [dwarf scouring-rush], *sylvaticum* [wood horsetail], *arvense* [common horsetail]), and *Petasites frigidus* var. *palmatum*.

The moss layer is dominated by *Hylocomium splendens*, *Pleurozium schreberi*, *Aulacomnium palustre*, and *Sphagnum* spp.

WILDLIFE HABITATS

Despite a harsh climate, this zone is surprisingly rich in wildlife (Table 34). The BWBS has the least snowfall of all the northern zones and consequently is very important for wintering ungulates. Moose, Caribou and, to a lesser degree, Mule Deer are distributed throughout, while Rocky Mountain Elk, White-tailed Deer, and Wood Bison are found primarily east of the Rocky Mountains. Stone Sheep, Dall Sheep, and Mountain Goat occur sporadically, wherever suitable rugged terrain exists. The largest known population of “canyon dwelling” Mountain Goat in Canada occurs in the Grand Canyon of the Stikine. Large carnivores such as Black Bear and Gray Wolf are widespread and abundant, while Grizzly Bear are common in the mountainous regions of the BWBS.

Frequent forest fires have formed a mosaic of upland forests of different ages in the BWBS. Conifers are often slow to re-establish after fire and deciduous forests of aspen and willow are commonplace and persistent. These deciduous forests are very productive habitats for ungulates, a wide selection of birds (including many of the warblers, thrushes, vireos, and flycatchers), and a variety of small mammals.

Some birds, such as the Black-throated Green Warbler, White-throated Sparrow, Rose-breasted Grosbeak, Broad-winged Hawk, and Blue Jay, are not commonly found in other zones.

TABLE 34. Selected wildlife habitats and species in the Boreal White and Black Spruce zone (adapted from Wildlife Branch 1989)

Habitat	Habitat distribution	Representative wildlife species	Wildlife species at risk ^a
Mixed deciduous and coniferous forests	Extensive	Moose, Rocky Mountain Elk, Mule Deer, White-tailed Deer, Black Bear, Gray Wolf, Lynx, Marten, Ermine, Red Squirrel, Porcupine, Snowshoe Hare, Deer Mouse Northern Goshawk, Broad-winged Hawk, Northern Hawk-owl, Great Horned Owl, Sharp-tailed Grouse, Ruffed Grouse, Common Raven, Gray Jay, Blue Jay, Downy Woodpecker, Yellow-bellied Sapsucker, Hermit Thrush, Least Flycatcher, Yellow Warbler, Dark-eyed Junco, Red-eyed Vireo, Black-capped Chickadee, Purple Finch, White-throated Sparrow, Rose-breasted Grosbeak	◆ Caribou, Northern Long-eared Myotis, Black-throated Green Warbler, Canada Warbler
Mature coniferous forests	Extensive	Moose, Gray Wolf, Coyote, Lynx, Wolverine, Marten, Red Squirrel, Least Chipmunk, Northern Red-backed Vole Northern Goshawk, Boreal Owl, Great Gray Owl, Spruce Grouse, Northern Shrike, Red-breasted Nuthatch, Boreal Chickadee	◆ Caribou, Gray-cheeked Thrush
Peatlands or muskeg	Extensive on plains and lowlands	Moose, Meadow Jumping Mouse, Western Jumping Mouse, Northern Bog Lemming, Water Vole, Arctic Shrew Northern Harrier, Great Gray Owl, Boreal Owl, Sharp-tailed Grouse, Solitary Sandpiper, Lesser Yellowlegs, Le Conte's Sparrow, Swamp Sparrow, Blackpoll Warbler, Palm Warbler, Yellow-bellied Flycatcher, Olive-sided Flycatcher, Marsh Wren Striped Chorus Frog, Wood Frog	▽ Wood Bison ◆ Grizzly Bear, Black-throated Green Warbler, Connecticut Warbler
Wetlands, shallow lakes, and streams	Common	Moose, Beaver, Muskrat, Mink, Water Shrew Trumpeter Swan, Red-throated Loon, Sora, Mallard, Northern Pintail, Blue-winged Teal, Northern Shoveller, Barrow's Goldeneye, Bufflehead, Ring-necked Duck, Oldsquaw, White-winged Scoter, Horned Grebe, Bonaparte's Gull, Herring Gull, Franklin's Gull, Mew Gull, Black Tern, Semipalmated Plover, Common Snipe, Semipalmated Sandpiper, White-rumped Sandpiper, Wilson's Phalarope, Red-winged Blackbird, Tree Swallow Wood Frog, Striped Chorus Frog, Spotted Frog	◆ Pacific Loon, Arctic Loon, Ring-billed Gull, Least Sandpiper, Short-billed Dowitcher, Wandering Tattler, Arctic Tern, Yellow-headed Blackbird, Purple Martin

TABLE 34. Continued

Habitat	Habitat distribution	Representative wildlife species	Wildlife species at risk ^a
Riparian areas and floodplains	Common, not extensive	Moose, Black Bear, Gray Wolf, Beaver, Muskrat, Meadow Jumping Mouse, Western Jumping Mouse, Meadow Vole, Arctic Shrew Bald Eagle, Canada Goose, Ruffed Grouse, Eastern Phoebe, Northern Waterthrush, American Redstart Common Garter Snake, Western Garter Snake, Western Toad, Long-toed Salamander	◆ Grizzly Bear, Mourning Warbler
South aspect grassland and scrub in the Alberta Plateau	Limited areal extent	Moose, Rocky Mountain Elk, Mule Deer, Black Bear, Gray Wolf American Kestrel, Common Raven, Common Crow, Black-billed Magpie, Alder Flycatcher	◆ Grizzly Bear, Mourning Warbler
South aspect grassland and scrub in the mountains	Limited areal extent	Stone Sheep, Mountain Goat, Moose, Rocky Mountain Elk, Mule Deer, Black Bear, Gray Wolf Golden Eagle, Merlin, American Kestrel, Common Raven, Common Crow, Black-billed Magpie, Alder Flycatcher	◆ Dall Sheep, Grizzly Bear
Agricultural areas	Limited areal extent	Mule Deer, White-tailed Deer, Black Bear, Coyote, Ermine, Meadow Vole Northern Harrier, American Kestrel, Rough-legged Hawk, Snowy Owl, Short-eared Owl, Northern Shrike, Sharp-tailed Grouse, Tundra Swan, Sandhill Crane, Upland Sandpiper, White-fronted Goose, Common Raven, Common Crow, Black-billed Magpie, Brewer's Blackbird, Common Nighthawk, Lapland Longspur, Barn Swallow, Snow Bunting	◆ Purple Martin

^a Wildlife species and subspecies at risk are those on the preliminary Red and Blue Lists proposed in the Provincial Wildlife Strategy, B.C. Ministry of Environment (October 1989 draft).

▽ Red-listed wildlife species. These are being **considered** by the Wildlife Branch for designation as endangered or threatened in British Columbia.

◆ Blue-listed wildlife species. The Wildlife Branch considers these species "sensitive" and/or deserving of management attention. Population viability is a concern for these species because of (a) major declines in population numbers; or (b) major changes in habitat that will further reduce existing distribution. Species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category, are included in this category.

Most reptiles and amphibians are ill adapted to a northern climate and consequently only 7 of the 39 species found in British Columbia occur in the BWBS. The Western Garter Snake and Common Garter Snake are the only two reptiles and are found in the "warmer" main valleys and lower elevations of the Peace River region. Amphibians such as the Wood Frog, Spotted Frog, and Western Toad are widely distributed throughout the many wetland and moist upland habitats. The Long-toed

Salamander has been reported in the Stikine and Peace river valleys, but is secretive and seldom observed. The Striped Chorus Frog is restricted to the BWBS in British Columbia, inhabiting wetland areas of the Alberta Plateau.

Mixed forests of trembling aspen, lodgepole pine, and white spruce are the most characteristic and widespread upland habitat in the BWBS. Moose, Caribou, Mule Deer, Gray Wolf, and Black Bear are common large mammals. Smaller mammals include the Lynx, Red Squirrel, Ermine, Snowshoe Hare, and Deer Mouse. Birds such as the Northern Goshawk, Great Horned Owl, Ruffed Grouse, Common Raven, Gray Jay, Downy Woodpecker, and Black-capped Chickadee are characteristic residents. Other birds such as the Yellow-bellied Sapsucker, Hermit Thrush, Yellow-rumped Warbler, Purple Finch, and Dark-eyed Junco are commonly found in these areas in summer.

Bogs and fens, intermixed with forest, make up one of the most common habitats in the BWBS. Often referred to as “muskeg,” these peatlands are particularly extensive in the northeastern corner of the province. Moose, Caribou, and Black Bear are the most common large mammals of muskeg habitats. Wood Bison historically inhabited much of this extensive muskeg and are still occasionally observed in the Fort Nelson area. The Great Gray Owl and Sharp-tailed Grouse are characteristic year-round residents, while migratory species such as the Solitary Sandpiper, Lesser Yellowlegs, Palm Warbler, Tennessee Warbler, Swamp Sparrow, and Blackpoll Warbler select these areas for breeding during summer.

Marsh and shallow lake habitats are dispersed throughout the BWBS, but are most abundant in the Alberta Plateau portion. These very productive wetlands are important for a wide variety of wildlife and account for the greatest diversity of bird species in the BWBS. Mallard, Northern Pintail, Blue-winged Teal, Northern Shoveller, Barrow’s Goldeneye, Bufflehead, and Ring-necked Duck are characteristic waterfowl. Other birds commonly associated with BWBS wetlands include the Red-winged Blackbird, Horned Grebe, Common Snipe, Marsh Wren, Black Tern, Wilson’s Phalarope, Tree Swallow, and Sora. Moose, Caribou, Beaver, Muskrat, Mink, Arctic Shrew, and Meadow Vole also frequent these habitats. The Wood Frog, Spotted Frog, and Striped Chorus Frog are usually found in or adjacent to marshes and lakes.

The agricultural areas of the Peace River district have several associated species such as the Sharp-tailed Grouse, Black-billed Magpie, Upland Sandpiper, Common Crow, Barn Swallow, Common Nighthawk, American Kestrel, Short-eared Owl, and Northern Harrier. Introduced species such as the European Starling and House Sparrow have become well established. Migrating species such as the Tundra Swan, Sandhill Crane, Rough-legged Hawk, White-fronted Goose, Northern Shrike, and Lapland Longspur stop over briefly in the spring and fall. Other birds such as the Snowy Owl, Common Raven, and Snow Bunting move into the agricultural areas during winter. Mule Deer, White-tailed Deer, Black Bear, Coyote, Ermine, and Meadow Vole are common mammals. Although wildlife are often more readily observed in these man-made habitats, they have less species diversity than the original native habitats.

The floodplain and riparian areas found throughout the BWBS are vital wildlife habitats, as in other biogeoclimatic zones. In winter, Moose rely on these alluvial habitats for the abundant browse (especially red-osier dogwood [*Cornus stolonifera*]), and during spring, Moose and Mule Deer use the dense cover while calving. The largest balsam poplar grow on these sites and provide nest trees for the Bald Eagle.

Steep, south-facing grass/shrub communities found along the major valleys and in the Rocky Mountain foothills provide critical wintering habitats for several ungulate species. Though relatively minor in extent, these habitats have low snow depths and provide winter range for Mule Deer and Rocky Mountain Elk, and in some areas for Stone Sheep and Mountain Goat. Kinnikinnick and saskatoon berries attract Black Bear to these slopes in the autumn.

RESOURCE VALUES

Fresh to moist sites in this zone have moderate capability for producing white spruce and trembling aspen. South-facing, slightly dry sites have moderate capability for producing lodgepole pine. All other sites generally have low capability for producing any commercial species.

Forest harvesting in the BWBS is relatively active and will continue to grow with the increased use of trembling aspen and balsam poplar. There are still large areas which are not much good for logging because of an abundance of poorly drained, non-productive wetlands.

Fresh to moist sites have moderate capability for agriculture if topography is not limiting. These sites are common in the southern portion of the BWBS east of the Rocky Mountains, and this is where most of the agricultural activity is concentrated, especially around Dawson Creek and Fort St. John. Fine-textured, stone-free lacustrine soils and large floodplains associated with the Peace River and major tributaries, in combination with a favourable climate, have resulted in some of the most productive agricultural land in British Columbia. Elsewhere, agriculture is largely inappropriate because of adverse climate and poorly drained organic soils.

Range use in the BWBS occurs primarily east of the Rocky Mountains. Most of the range is in successional forests; for example, about half the range resource in the Peace River area occurs in aspen ecosystems. Principal forages include *Calamagrostis canadensis*, *Elymus innovatus*, *Agropyron trachycaulum* (slender wheatgrass), *Lathyrus ochroleucus*, *Astragalus* spp. (milk-vetches), *Vicia* spp. (vetches), *Rosa* spp. (roses), *Amelanchier alnifolia*, *Cornus stolonifera* (red-osier dogwood), and *Salix* spp. (willows). Cattle are grazed throughout the growing season.

Hunting and fishing are the main recreational activities in the BWBS. Fur harvest from this zone is among the highest in the province.

LITERATURE CITED

Wildlife Branch. 1989. Regional wildlife habitat maps. B.C. Min. Environ., Victoria, B.C. 15 maps, 1:500000.