

## ***Boreal:***

### ***1. Dry Mixedwood:***

The Subregion includes two main areas: the southern edge of the Boreal Forest Natural Region from Cold Lake west to about Barrhead and south along the western edge of the Central Parkland Subregion to about Gull Lake and a broad band from Lesser Slave Lake to Grande Prairie then north along the Peace River to Fort Vermilion. The Cooking Lake moraine east of Edmonton is a disjunct portion of this Subregion

#### **Climate**

The climate of this Subregion is subhumid, continental with short, cool summers and long, cold winters. The mean May - September temperature is about 13 °C and the growing period is about 90 days. Annual precipitation averages about 350 mm with June and July the wettest months. Winters are relatively dry with about 60 mm of precipitation. Overall, the climate is somewhat drier and warmer than the Central Mixedwood Subregion with somewhat higher moisture deficits.

#### **Soils**

Soils are typically Gray Luvisols in well-drained, upland till sites and Eutric Brunisols in coarse-textured sandy uplands. Organics and Gleysolics occur on wet depressional sites.

#### **Vegetation**

The vegetation of the Dry Mixedwood Subregion is transitional between the Central Parkland and Central Mixedwood Subregions and there are community types common to all three. The differences are largely in the proportion of various vegetation types and other landscape features. *Populus tremuloides* (aspen) is an important species in all three Subregions, occurring in both pure and mixed stands. *Populus balsamifera* (balsam poplar) frequently occurs with aspen especially on moister sites in depressions and along streams.

Successionally, *Picea glauca* (white spruce) and, eventually in some areas, *Abies balsamea* (balsam fir) can be expected to increase or replace aspen and balsam poplar as stand dominants. However, frequent fire seldom permits this to occur and pure deciduous stands are common in the southern part of the Dry Mixedwood Subregion. Coniferous species are more common further north in the Dry Mixedwood Subregion with mixed stands of aspen and white spruce being widespread. Older stands in protected sites, such as islands, may have significant amounts of balsam fir.

Upland aspen forests contain a diverse understory that may include *Viburnum edule* (low-bush cranberry), *Corylus cornuta* (beaked hazel), *Rosa acicularis* (prickly rose), *Cornus stolonifera* (red-osier dogwood), *Calamagrostis canadensis* (marsh reed grass), *Aralia nudicaulis* (sarsaparilla), *Rubus pubescens* (dewberry), *Lathyrus ochroleucus* (cream-coloured peavine), *Pyrola asarifolia* (pink wintergreen) and *Linnaea borealis* (twinflower). Both balsam poplar and *Betula papyrifera* (paper birch) may occur in these forests as well.

Coniferous, spruce or spruce-fir forests are not common but generally have a less diverse understory with greater moss cover especially of the feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*, *Ptilium crista-castrensis*).

Mixedwood forests generally contain a mosaic of deciduous and coniferous patches with species typical of each occurring through the stand.

Dry, sandy upland sites are usually occupied by *Pinus banksiana* (jack pine) forests. These may be quite open and have a prominent ground cover of lichens. Other understory species may include *Arctostaphylos uva-ursi* (bearberry), *Vaccinium myrtilloides* (low bilberry), *Vaccinium vitis-idaea* (bog cranberry) and *Rosa acicularis* (prickly rose).

Peatlands are common throughout the Subregion and are extensive in some areas, e.g. south of Athabasca, but are not as prevalent as in other Boreal Forest Subregions. Peatland complexes typically contain both nutrient-poor, acidic bog portions, dominated by *Picea mariana* (black spruce), *Ledum groenlandicum* (Labrador tea), and *Sphagnum* spp. (peatmosses) and more nutrient-rich fens, containing *Larix laricina* (tamarack), *Betula* spp. (dwarf birches), *Carex* spp. (sedges), and brown mosses (*Aulacomnium palustre*, *Tomenthypnum nitens*, *Drepanocladus* spp.). Patterned peatlands occur in several areas.

### **Wildlife**

Characteristic species of deciduous forests in the Dry Mixedwood Subregion include least flycatcher, house wren, ovenbird, red-eyed and warbling vireos, Baltimore oriole and rose-breasted grosbeak. Species of mixedwood forests include yellow-bellied sapsucker, Swainson's thrush, solitary vireo, magnolia warbler, white-throated sparrow, pileated woodpecker and northern goshawk.

A few species are restricted to the Cold Lake area and represent an eastern faunal element. These include yellow rail, sage wren, great-crested flycatcher, chestnut-sided warbler and blackburnian warbler.

Typical mammals include beaver, moose, varying hare, black bear, wolf, lynx and ermine.

## **2. Central Mixedwood**

The Subregion includes the much of central and southeastern part of the Boreal Climate

The climate of the Central Mixedwood Subregion is subhumid, continental with short, cool summers and long, cold winters. The mean May - September temperature is about 12 °C and the frost-free period is about 85 days. Annual precipitation averages about 380 mm with June and July the wettest months. Winters are relatively dry. Overall, the climate is somewhat moister and cooler than the Dry Mixedwood Subregion with somewhat lower moisture deficits.

### **Soils**

Soils are similar to those of the Dry Mixedwood Subregion with Gray Luvisols in well-drained, upland till sites and Eutric Brunisols in coarse-textured sandy uplands. Organics and Gleysolics occur on wet depressional sites.

### **Vegetation**

The vegetation of the Central Mixedwood Subregion is similar to that of the Dry Mixedwood Subregion with many community types in common. The differences are largely in the proportion of various vegetation types and other landscape features. *Populus tremuloides* (aspen) is the characteristic forest species occurring in both pure and mixed stands. *Populus balsamifera* (balsam poplar) frequently occurs with aspen especially on moister sites in depressions and along streams.

*Betula papyrifera* (paper birch) also occurs commonly with aspen. It forms nearly pure stands infrequently, e.g. in the Christina Highland north of Lac La Biche; the reason for this is not clear although it may be related to sandy soils.

Successionally, *Picea glauca* (white spruce) and, eventually, *Abies balsamea* (balsam fir) can be expected to increase or replace aspen and balsam poplar as stand dominants. However, frequent fire seldom permits this to occur and pure deciduous stands are common in the southern part of the Subregion. Further north, coniferous species are more common with mixed stands of aspen and white spruce being widespread. Older stands in protected sites, such as islands, may have significant amounts of balsam fir.

Upland aspen forests contain a diverse understory that may include *Viburnum edule* (low-bush cranberry), *Corylus cornuta* (beaked hazel), *Rosa acicularis* (prickly rose), *Cornus stolonifera* (red-osier dogwood), *Calamagrostis canadensis* (marsh reed grass), *Aralia nudicaulis* (sarsaparilla), *Rubus pubescens* (dewberry), *Lathyrus ochroleucus* (cream-coloured peavine), *Pyrola asarifolia* (pink wintergreen) and *Linnaea borealis* (twinflower). Both balsam poplar and *Betula papyrifera* (paper birch) may occur in these forests as well.

Coniferous-dominated, spruce or spruce-fir forests are not common but generally have a less diverse understory with greater moss cover especially of the feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*, *Ptilium crista-castrensis*).

Mixedwood forests, containing a mosaic of deciduous and coniferous patches with species typical of each are widespread throughout the Subregion and characteristic of upland sites.

Dry, sandy upland sites are typically occupied by *Pinus banksiana* (jack pine) forests. These may be quite open and have a prominent ground cover of lichens. Other understory species may include *Arctostaphylos uva-ursi* (bearberry), *Vaccinium myrtilloides* (low bilberry), *Vaccinium vitis-idaea* (bog cranberry) and *Rosa acicularis* (prickly rose).

Fluvial deposits along major stream valleys have white spruce or white spruce-balsam poplar forests that often contain large trees that have benefited from the favorable nutrient and moisture regimes of these sites. Gleyed Luvisols and Gleysolics are typical of these sites.

Peatlands are common and extensive throughout the Central Mixedwood Subregion. Peatland complexes typically contain both nutrient-poor, acidic bog portions, dominated by *Picea mariana* (black spruce), *Ledum groenlandicum* (Labrador tea), and *Sphagnum* spp. (peatmosses) and more nutrient-rich fens containing *Larix laricina* (tamarack), *Betula* spp. (dwarf birches), *Carex* spp. (sedges), and brown mosses (*Aulacomnium palustre*, *Tomenthypnum nitens*, *Drepanocladus* spp.). Patterned peatlands occur commonly in several areas.

#### **Wildlife**

The species of coniferous forests are wide-ranging and include western wood peewee, gray jay, red-breasted nuthatch, golden and ruby-crowned kinglets, yellow-rumped warbler, pine siskin, red and white-winged crossbills, dark-eyed junco, boreal chickadee, and red squirrel. Three warblers, bay-breasted, Cape May and black-throated green are confined largely to mature conifer dominated mixedwood stands in the central and eastern portions of the Subregion. Balsam fir stands have a particularly diverse assemblage of coniferous forest birds.

Characteristic species of deciduous include least flycatcher, house wren, ovenbird, red-eyed and warbling vireos, Baltimore oriole and rose-breasted grosbeak. Species of mixedwood forests include yellow-bellied sapsucker, Swainson's thrush, solitary vireo, magnolia warbler, white-throated sparrow, pileated woodpecker and northern goshawk.

The most species-rich habitats are mixedwoods and shrublands associated with swamps, ponds, streams and lakes. Some species, such as yellow and black-and-white warblers, American redstart, song sparrow, northern water thrush, fox sparrow and Philadelphia vireo are mostly restricted to these sites. Barred owl occasionally occurs in mature mixedwoods along lakeshores and river valleys.

Typical, widespread mammals include beaver, moose, varying hare, black bear, wolf, lynx, Gapper's red-backed vole, cinereous shrew, deer mouse, least chipmunk, moose and ermine. Others, such as fisher, wolverine, river otter, and woodland caribou, are less common and locally distributed.

### **3. Northern Mixedwood**

#### **Climate**

The climate of this Subregion is characterized by cool, moist summers and long, cold winters. It is generally colder than the Central Mixedwood Subregion but probably more moderate than the Subarctic or Boreal Highlands subregions. The mean May - September temperature is about 11 °C and the frost-free period is about 85 days. Average annual precipitation is 400-450 mm with 250-300 mm in the summer. Snow cover lasts an average of 185 days per year, one of the longest in Alberta.

#### **Soils**

Organic and Gleysolic soils are widespread in the wet depressional sites that are prevalent in this Subregion. Permafrost occurs in many peatlands in a discontinuous fashion. Upland sites typically have Gray Luvisols on fine or medium-textured materials or Eutric Brunisols on coarse-textured materials.

#### **Vegetation**

The vegetation of the Northern Mixedwood Subregion appears quite similar to that of the Central Mixedwood Subregion, although little is known about much of it. Generally, the landscape in this Subregion contains a greater proportion of wetlands, both peatlands and willow-sedge complexes on mineral soil, and more upland black spruce forest than the Central Mixedwood. This perhaps reflects the more rigorous, cooler climate with a lower moisture deficit. The differences are subtle and need further examination.

#### **Wildlife**

The wildlife of the Wetland Mixedwood Subregion is relatively depauperate both in species and numbers compared with the Central Mixedwood Subregion. The scarcity of deciduous and mixedwood communities is largely responsible for this. The extensive wetlands that characterize this Subregion provide important habitat for nesting and migrating waterfowl including sandhill crane and the rare whooping crane.