

Physical Environment

Quesnel's economy derives almost entirely from its physical environment and location, so it is appropriate to start here.

Location

Latitude: 53° 02'N

Longitude: 122°31'W

Elevation: 545 metres (1,789 feet) above sea level

Area: 56.54 square kilometres (35.34 square miles) City of Quesnel, 2001

Climate

Quesnel is in the upper Fraser Basin on the leeward side of the Coast Mountains, and is consequently relatively dry, with warm dry summers and cool winters lasting from mid-November to mid-March. Precipitation is generally distributed evenly through the seasons. There are periodic incursions of moist maritime air alternating with cold Arctic air invasions in the winter.

Snow and rainfall increases from Quesnel toward the Cariboo Mountains in the east. On average, there are 96 days with measurable rainfall and 54 days with measurable snowfall. The area is usually frost-free from mid May through early September. Weather extremes in the Quesnel area are very unusual, and weather rarely impedes transportation or communications. Snowfall may impede traffic on rural roads for short periods of time.

Average weather conditions			
Temperatures		Precipitation	
Extreme maximum	36.7oC/98o F	Days with measurable precipitation	149.1
Extreme minimum	46.7oC/-52 o F	Maximum rainfall (24 hrs.)	55.1 mm/ 2 in
Average summer temp.	16oC/61 o F	Maximum snowfall	(24 hrs.) 40.1 mm/ 1.5 in
Average winter temp.	-6oC/21 o F	Annual sunshine hours (est)	2,025

Average weather comparisons among communities			
	Area Average Annual Rainfall	Average Annual Snowfall	Average Annual Hours of Sunshine
Whitehorse, YT	163.1mm/6.4 in	145.0cm/57 in	1,852 hours
Kelowna, BC	298.0mm/11.7 in	101.8cm/40 in	2,000 hours
Calgary, AB	320.6mm/12.6 in	126.7cm/49.8 in	2,395 hours
Dawson Creek	325.6mm/12.9 in	174.2cm/68.5 in	2,215 hours
Quesnel, BC	386.9mm/15 in	177.9cm/70 in	2,025 hours
Winnipeg, MB	415.6mm/16.3 in	110.6cm/43.5	2,377 hours
Prince George, BC	418.9mm/16.5 in	216.1cm/85 in	1,942 hours
Revelstoke, BC	617.7mm/24.3 in	424.6cm/167.1 in	1,598 hours
Montreal, PQ	760.0mm/29.9 in	214.2cm/84.3 in	2,028 hours
Vancouver	1154.7mm/45.4 in	48.2cm/18.9 in	1,920 hours

Geology and Topography

The geological structure of the area consists of a combination of sandstone, greywacke, shale, lignite, minor breccia, tuff and basalt. The area is heavily treed with mixed deciduous/coniferous forests. The main part of the City is situated on a tongue of alluvial sediments at the junction of the Fraser and Quesnel rivers, with steep slopes rising above the rivers.

Physiography

The Quesnel region is almost entirely comprised of portions of the Interior Plateau accompanied by a small section of the Columbia Mountains in the extreme eastern portions of the district. Within the district, the Interior Plateau is represented by three subdivisions: the Fraser Basin, Fraser Plateau and Quesnel Highland. The Fraser Basin occupies the lower elevations generally below 1,000 meters and flanks the major drainages such as the Fraser, Blackwater and lower Quesnel Rivers.

The Fraser Basin is generally an area of deep glacial deposits with a flat to gently rolling surface. Drainage is often poorly organized, making small lakes, swamps and wetlands more common. The Fraser River and lower sections of its tributary streams have incised themselves below the surface of the lowland creating relatively steep areas where local relief is several hundred meters. Above 1,000 metres, the Fraser Lowland gives way to the Fraser Plateau, which extends westward to form about half the area of the forest district. Small portions of the Plateau are also found east of the Fraser River. Similar to the Fraser Lowland, the Fraser Plateau is also mostly flat to gently rolling and composed of deep deposits of glacial drift. Drumlins and eskers often provide the main vertical relief. The underlying bedrock is basalt lava that sometimes shows at the surface as cliffs along drainages and rocky escarpments. To the southwest two shield volcanoes rise above the plateau at Far Mountain and Downtown Mountain. The summit elevations of these distinctive features are between 2,350 and 2,400 meters.

Thirty-five kilometres east of Quesnel, the Fraser Plateau borders the Quesnel Highland, a mountainous area that is transitional between the Plateau to the west and the Columbia Mountains to the east. Most summits are rounded but a few of the highest peaks are above 2,100 meters such as Mount Tinsdale Ecological Reserve and Two Sisters Mountain and have serrated peaks and cirque erosional features.

A small section of the Cariboo Mountains (a sub-division of the Columbia Mountains) are found in eastern portions of the forest district around the Bowron Lake chain of lakes and the upper Matthew River. This is a rugged area of high summits and deep valleys where local relief frequently exceeds 1,500 meters. The Cariboo Mountains were intensely glaciated and the summits, which are often over 2,300 meters elevation, feature serrated peaks, sculptured cirque basins and remnant glaciers, especially on north-facing slopes.

Rivers and Lakes

The area lies entirely within the Fraser River drainage. The Fraser bisects the area in a north-south direction and provides the main transportation corridor in terms of railroad and highway access.

To the west, drainage is provided by streams of modest flow reflecting the relatively low amounts of precipitation. The Blackwater (West Road) River is the major tributary draining the Fraser Plateau. In turn, its tributaries include the Nazko, Coglistiko, Baezaeko and Clesbako rivers. Several smaller streams such as Baker and Narcosli creeks drain directly into the Fraser River from the west.

To the east, the Quesnel and Cottonwood rivers are the main Fraser tributaries that drain the Quesnel Highland and Cariboo Mountains. These are relatively large rivers in terms of volume due to the higher precipitation on the eastern mountains. Both rivers have numerous medium-sized tributaries including the Cariboo and Matthew rivers (Quesnel drainage) and the Swift River and Lightning Creek (Cottonwood drainage). To the northeast, headwater sections of the Willow and Bowron rivers are found that flow northward out of the forest district.

There are numerous lakes of various sizes throughout the area. Generally, the plateau and lowland areas have the greatest density of lakes but most are small in size; many are ponds, sloughs or marshes. However, there are dozens of lakes that are one or a few kilometers in length and there are several such as Tsacha, Titetown, Tzenzaicut and Dragon lakes that are close to ten or more kilometers long.

The largest lakes are in the eastern portion of the forest district which are associated with the Bowron chain in the Cariboo Mountains. These form the world-famous, 110 kilometre long Bowron canoe route. These include Bowron, Indian Point, Isaac (at 40 kilometers long, the largest in the forest district), Lanezi, Sandy, Babcock and Spectacle lakes.

Flora and Fauna

The Quesnel area is made up of several biogeoclimatic zones that are mainly distributed by elevation. The Sub-Boreal Spruce zone dominates the lower and middle elevations, although there are also elements and transitions to the Sub-Boreal Pine-Spruce and Montane Spruce zones.

Generally, the forests are dominated by dense stands of white spruce or by transitional forests of lodgepole pine. Fine-textured soils and disturbed areas support trembling aspen and paper birch. The forest understory is often well developed with a rich variety of shrubs and herbs. Douglas-fir is common to the lower elevations such as in the Fraser Lowland. With increasing elevation, the Englemann Spruce-Alpine Fir zone is found where Englemann spruce and some alpine fir become the dominant tree species. The western slopes of the Cariboo Mountains and the Quesnel Highlands support relatively moist western red cedar and western hemlock forests associated with the Interior Cedar Hemlock zone. At the highest elevations treeless Alpine Tundra areas prevail.

Moose, mule deer and black bear are prevalent throughout most of the forest district. Grizzly bears are common to eastern sections of the district accompanied by mountain goat at the higher elevations. Small populations of caribou also occur in the eastern sections. The Fraser Plateau provides extensive habitats for a wide range of waterfowl, water birds and shorebirds. Almost all the lakes and rivers contain good populations of rainbow trout and Dolly Varden char.

Of course, thousands of other species of fauna live in the region. Some of the rare vertebrate animals found in the Quesnel Forest District include:

Freshwater Fish

White Sturgeon (Fraser River population)
Cutthroat Trout, *clarki* subspecies
Bull Trout
Dolly Varden
Chiselmouth

Mammals

Common Pika, *septentrionalis* subspecies
Grizzly Bear
Fisher
Wolverine, *luscus* subspecies
Cariboo, Southern population
Cariboo, Northern population

Birds

American White Pelican, American Bittern
Great Blue Heron, *herodias* subspecies, Bald
Eagle
Sandhill Crane, Long-billed Curlew, Shorteared
Owl
(source: B.C. Conservation Data Centre)