A Regional Profile of Non-Timber Forest Products Being Harvested from the Cariboo-Chilcotin, British Columbia Area

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Executive Summary

This report profiles the commercial and First Nations' use of non-timber forest products (NTFP) harvested from the Cariboo-Chilcotin. The primary economic activity in the region is from traditional forest industries. Reduced timber harvesting after the current mountain pine beetle infestation is expected to create a strong economic and social shift. The majority of the 8.3 million ha regional land base is Crown land under the management of the Ministry of Forests and Range. The Cariboo-Chilcotin Land Use Plan guides regional resource use and outlines specific targets for access to land and resources (including NTFPs). Traditional foods, medicines and crafts from NTFPs continue to be an important part of the culture of First Nations. None of the region's First Nations currently have band-owned NTFP-based businesses, however individuals from the First Nations are known to work in commercial arts and crafts production, wild mushroom harvesting and NTFP-based ecotourism. First Nations' NTFP issues and concerns centred on the impacts of other resource uses on traditional foods and medicines, commercialization of traditional foods and medicines and the intellectual rights to traditional knowledge, harvest practices of pine mushrooms, and lack of information and support to allow First Nations NTFP management. Commercial NTFP activity in the region is limited. The largest sector by participation is wild mushroom harvesting. Pine mushrooms (*Tricholoma magnivelare*) and morels (*Morchella* spp.) account for virtually all of the regional harvest. Harvesting for both is concentrated in the west Chilcotin. Recent annual harvests of 3,000 to 14,000 kg are a fraction of the potential. The sector is limited by falling wholesale prices (increasing world supply/limited number of wholesale buyers), diminishing pine mushroom habitat and a lack of formal industry structure. Other sectors, including floral greenery, herbal health and cosmetic products, arts and crafts, other foods (birch syrup, honey) and ecotourism based on NTFP experiences are not widespread in the region. Each sector is characterized by a limited number of small or micro-sized businesses operating primarily in local markets. The primary floral greenery used is Christmas trees and conifer boughs used for wreaths. Herbal health and cosmetic products are made from a variety of plant species, and with the exception of wild rose (*Rosa* spp.) and chamomile (*Matricaria spp*), annual harvests levels are minimal. Two commercial producers of birch (*Betula papyrifera*) syrup, small and large-scale biofuel businesses and ecotoursim operations based on NTFPs all have strong demand for their products. No large scale arts and crafts businesses were identified, although a large number of individuals (> 55) make use of non-timber resources for their craft on a small scale. Access to Crown NTFP resources and conflicts with other resource values are not currently issues of concern among the Cariboo-Chilcotin NTFP businesses. Lack of support for product development and marketing was the primary concern expressed among commercial NTFP sectors.

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1 Introduction

1.1 Purpose

This profile outlines the commercial and First Nations use of non-timber forest products (NTFP) being harvested from the Cariboo-Chilcotin region of British Columbia (BC).

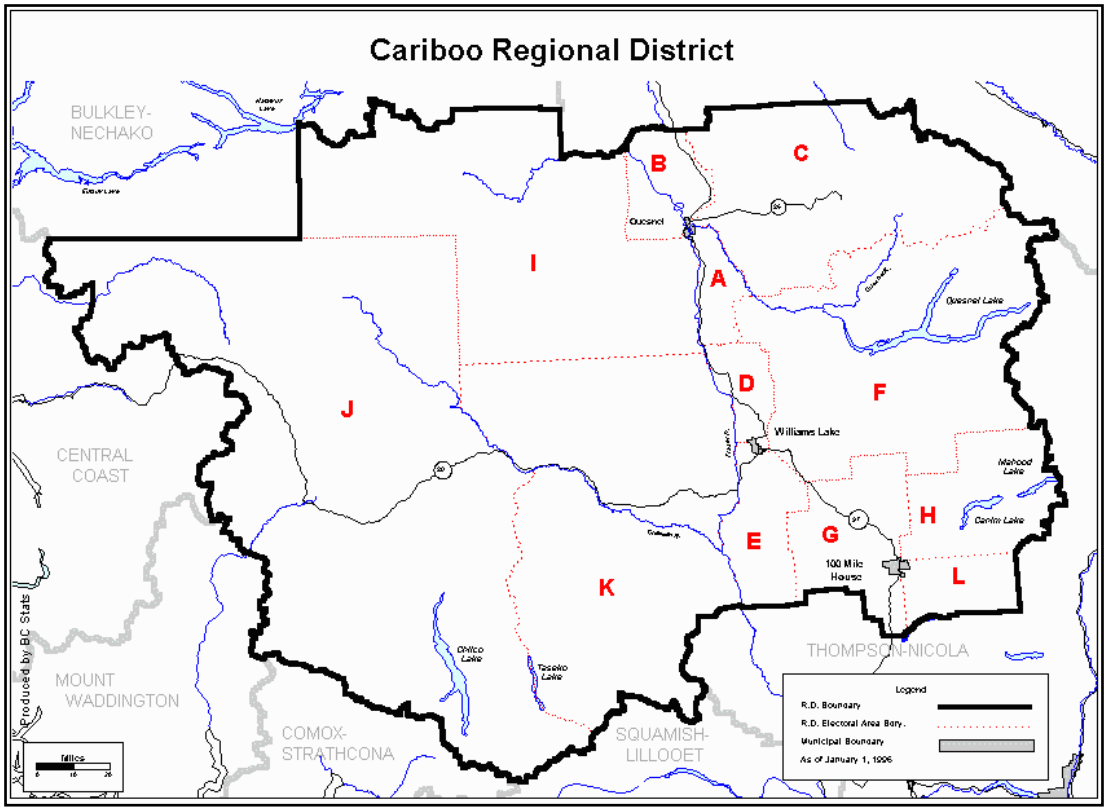
1.2 Scope

For the purposes of this profile, NTFPs will be inclusive of wild mushrooms and other wild foods, botanical medicinals, arts and crafts, floral greenery, bio-fuels, and forest recreation/tourism based on the forest botanical resources. Although forage and browse produced in forests can also be considered NTFPs, and are an important resource to wildlife and the ranching industry of the Cariboo-Chilcotin, they are beyond the scope of this report.

The Cariboo – Chilcotin will be delineated as contiguous with the boundaries of the Cariboo Regional District, specifically the municipalities of 100 Mile House, Quesnel, Wells and Williams Lake and surrounding areas (Figure 1).

Throughout this report, minor differences in the areas bounded by various federal and provincial political and administrative units, nominally equated with the Cariboo or Chilcotin, are not factored into the interpretation of social, economic or production information.

Figure 1: Cariboo Regional District (Province of BC, BC STATS)



2 Biophysical Context

The Cariboo-Chilcotin region comprises an area of approximately 8.3 million ha in the central interior of British Columbia (8.7% of the provincial land area) and can be divided into two major physiographic regions (Holland 1976):

- the broad interior plateau through the centre of the region, comprised primarily of the Fraser Basin, Quesnel Highlands, Chilcotin Plateau and Fraser Plateau, and with minor occurrences of the Nechako and Thompson Plateaus; and,
- montane areas comprised of the Pacific and Chilcotin ranges of the Coast Mountains in the southwest and the Cariboo Mountains to the east of the Quesnel Highlands.

The plateau and highland areas form part of the Fraser Plateau Ecoregion (Demarchi 1988) and include three dominant ecological zones (Province of BC 1977):

- South and west of McLeese Lake are dominated by the interior dry belt (Bunchgrass and Interior Douglas Fir leading biogeoclimatic zones) characterized by relatively long dry summers, moderately long frost-free periods, and cool, dry winters;
- East of Williams Lake and Quesnel are part of the interior wet belt (Interior Cedar-Hemlock and Engelmann Spruce-Subalpine Fir leading biogeoclimatic zones) with a significant precipitation gradient (including appreciable snowpack differences) and associated vegetation changes moving northeast from the Fraser River into the Quesnel Highlands; and,
- north and west of McLeese Lake are dominated by subboreal forests (Subboreal Spruce and Subboreal Pine-Spruce leading biogeoclimatic zones) characterized by colder weather and fewer frost-free days.

Other macro ecological variables, most notably the frequency and extent of wildfires and the current mountain pine beetle (MPB) epidemic, also influence the natural forest cover, and hence the production and use of NTFPs, and are highlighted later in the report.

The region is home to over 300 species of fish and wildlife, many of which rely on limited or sensitive habitat including :riparian areas, old-growth forests, grasslands and alpine ecosystems (Province of BC 1995). Winter range for mule deer, habitat management for mountain caribou and grizzly bears have been the primary focus of wildlife proponents in regional land use planning. The region contains some wildlife (including flora) species at risk (red or blue listed) and in danger of extirpation – primarily in grassland habitats along the Fraser and Chilcotin Rivers.

3 Socio-Economic Context

3.1 Population and Community Structure

The region encompasses four municipalities and a host of unincorporated communities organized within the Cariboo Regional District. Major transportation links, education centres, government services, industry and retail activity are concentrated in and around the municipalities of 100 Mile House, Williams Lake and Quesnel, anchored along the north-south axis of Highway 97.

The 2005 population of the Cariboo-Chilcotin is estimated at 65,650, approximately 1.7% of the provincial total (Province of BC 2005a). The population distribution is highly skewed to three main centres, 100 Mile House, Quesnel and Williams Lake, containing 35 % of the regional total and secondary populations in the rural areas surrounding these communities (Table 1). The remainder of the regional population is distributed at relatively low densities in rural areas, including the West Fraser and Chilcotin districts in the west, and Quesnel Lake area (150 Mile/Horsefly/Likely) to the east.

Population growth in the region of 1.7% in 2004 outpaced the provincial average of 1.1%. However, the population has had no net change averaged over the past 5 years. Moreover, little growth is projected in the region through 2030 (0.007% per year to an estimated 76,733) relative to an overall provincial growth rate projected at 1.2% per year for the same period (Province of BC 2005a).

Table 1: Population of the Cariboo – Chilcotin (2001)

Location	CRD Districts	Population (2001)	Percentage of Total
City of Quesnel		10,044	15.3
District of Wells		235	0.4
Quesnel – Wells Rural	A, B, C	12,089	18.4
City of Williams Lake		11,153	17.0
Williams Lake Rural	D, E	7,962	12.1
District of 100 Mile House		1,739	2.6
100 Mile House Rural	G, H, L	11,069	16.9
West Fraser / Chilcotin	I, J, K	3,327	5.1
150 Mile / Horsefly / Likely	F	4,963	7.6
First Nations Reserves		3,058	4.7
Total		**65,639**	

The Cariboo-Chilcotin encompasses the traditional territories of 15 First Nations with reserves in the region, belonging to the Dakelh (Carrier), Secwepemc (Shuswap) and Tsilhqot'in (Chilcotin) tribal groups. With the exception of the Esketemc (a Secwepemc First Nation), the resident First Nations are affiliated within three regional tribal associations: Secwepemc te Qulmucw (Cariboo Tribal Council), the Carrier-Chilcotin Tribal Council and the Tsilhqot'in National Government (Table 2). The region is also home to members of many other First Nations and Metis. In addition, bands from other Secwepemc, Tsilhqot'in, Dakelh, Stl'atl'imx, Coast Salish and Kwakiutl Nations have asserted traditional territory within the Cariboo-Chilcotin, but do not have reserve lands in the region.

Members of the First Nations comprised 12.1% of the regional population in 2001, or approximately 7,865 persons. Of this total, approximately 39% lived on various reserves throughout the region (Table 2).

Table 2. First Nations with Reserves in the Cariboo-Chilcotin

Official Name	Tribal Association	Population (2001)	Area of Reserves (ha)
Canim Lake	Cariboo Tribal Council	556	2,065
Canoe Creek	Cariboo Tribal Council	629	5,583
Soda Creek	Cariboo Tribal Council	346	2,093
Williams Lake	Cariboo Tribal Council	495	1,927
Kluskus	Carrier Chilcotin Tribal Council	184	1,648
Nazko	Carrier Chilcotin Tribal Council	313	1,851
Red Bluff	Carrier Chilcotin Tribal Council	138	683
Toosey	Carrier Chilcotin Tribal Council	270	2,583
Ulkatcho	Carrier Chilcotin Tribal Council	911	3,226
Esketemc		721	3,932
Alexandria	Tsilhqot'in National Government	157	1,304
Alexis Creek	Tsilhqot'in National Government	607	4,359
Stone	Tsilhqot'in National Government	374	2,146
Tl'etinqox-t'in	Tsilhqot'in National Government	1398	5,656
Xeni Gwet'in First Nations Government	Tsilhqot'in National Government	378	1,261

3.2 Economic Structure

The primary economic activity in the region is from traditional forest industries and associated businesses: forest management, harvest and processing of wood fibre products. Agriculture, mining and tourism also make important contributions, and government services (health, education, Crown resource management and social services) are an important source of employment, particularly for providing professional and management positions.

Forest Industries

Wood-based industries in the region are diverse and include all aspects of forest management, timber harvesting and processing. Logging and forest products businesses employ 23% of the regional workforce (Province of BC 2005a) - the largest employment sector in the region.

Pre- and post harvest silvicultural work, harvesting and transport of logs to manufacturing and re-manufacturing outlets factor significantly into the overall impact of the forest industry on the regional economy. Log harvesting and hauling businesses are located throughout the region. Timber harvesting and silvicultural work is typically conducted for the major forest tenure holders on a contract basis through a number of small and medium-sized general forest contracting and trucking businesses. These primary contractors extensively utilize subcontracting with smaller firms or owner-operators.

The region has forest products manufacturing businesses of all sizes, producing a host of primary and value-added wood products, including: lumber, poles, plywood, oriented strand board (OSB), medium-density fibreboard (MDF), particleboard, pulp and paper, laminated veneer lumber, log homes, flooring, musical instruments, specialty furniture, windows, doors, and window sashes.

The majority of timber harvested in the region is processed into dimension lumber for sale into export markets. Seventeen major lumber manufacturing facilities are located in the region (Table 3) as well as, numerous micro-enterprises processing rough lumber from small bandsaw mills. With the exception of a single OSB facility in 100 Mile House, primary manufacturing for chips, pulp, plywood, veneer and other types of panels is concentrated in the north Cariboo. Conversely, log home, pole and cedar shake production is concentrated in the south Cariboo. With the exception of a minority of the regional lumber production, little forest product manufacturing is located in the Chilcotin.

As with the rest of the province, forest product manufacturing is concentrated among a few large corporations. After recent consolidations Canadian Forest Products (Canfor), West Fraser Timber and Tolko Industries account for 24, 13 and 8% of the provincial lumber processing capacity, respectively. Regionally, Canfor (14%), Tolko (27%) and West Fraser (35%) collectively control 74% of the lumber processing capacity. Additionally, West Fraser's facilities produce 100% of the pulp and 68% of the plywood, veneer and other structural panels in the region.

Remanufacturing of wood products is also important to the sector. 'Fingerjointing' plants recover short lumber lengths from sawmills and convert them into structural lumber products. Other firms produce building trusses, door and window components, furniture, cabinets and assorted other micro-scale value-added production. In addition to companies that process logs to produce log homes (Table 3) there are also numerous log-home and timber-frame construction firms located in the region.

Table 3. Principle Forest Product Manufacturers in the Cariboo-Chilcotin (summarized from Province of BC, 2005b)

Product	Company	Location	Division	Capacity
Chips [1]				**'000 BDU**
	Tolko Industries	Williams Lake		72
	West Fraser Timber	Quesnel		56
Log Home [2]				**'000 m^3**
	Caliga Log Homes	93 Mile		2
	Canada's Log People	100 Mile House		5
	Dave Ohrling Log Homes	Lone Butte		
	Original Log Homes	100 Mile House		5
	Pacific Log Homes	Lone Butte		8
	Pioneer Log Homes	Williams Lake		15
	R. Durfield Log Construction	Williams Lake		1
	Reko Log Homes	Quesnel		
	Sitka Log Homes	100 Mile House		5
	Superior Log Homes	93 Mile		2
Lumber [3]				**Mfbd**
	Canadian Forest Products	Quesnel		400
(WoodPanel)	C&C Woodproducts	Quesnel		25
	Chimney Creek Lumber	Williams Lake		2
	Dunkley Lumber Ltd	Strathnaver		480
	Linde Bros. Lumber	Williams Lake		5
	Milrod Enterprises	100 Mile House		4
	Tolko Industries Inc.	Williams Lake	Creekside	250
	Tolko Industries Inc.	Williams Lake	Lakeview	293
	Tolko Industries Inc.	Williams Lake	Soda Creek	103
	Tolko Industries Inc.	Quesnel	Questwood	130
	Sigurdson Bros. Logging	Alexis Creek		72
	West Chilcotin Forest Prod.	Nimpo Lake		74
	West Fraser Timber Co	100 Mile House		237
	West Fraser Timber Co	Chasm		192
	West Fraser Timber Co	Quesnel	Quesnel	264
	West Fraser Timber Co	Quesnel	Northstar	149
	West Fraser Timber Co	Williams Lake		153
	Wildwood Forest Products	Williams Lake		2
Structural [4]				**Msf**
MDF	West Fraser Timber Co	Quesnel	WestPine	279
OSB	Ainsworth Lumber Co	100 Mile House		431
Plywood	West Fraser Timber Co	Quesnel	Weldwood	346
Plywood	West Fraser Timber Co	Williams Lake	Weldwood	310
Pulp [5]				**million t**
	West Fraser Timber Co	Quesnel	Cariboo	328
	West Fraser Timber Co	Quesnel	Quesnel River	331
Other[6]				**units**
Pole	Integrated Pole	100 Mile House		12,000
Shake	W. Boyes Shake & Shingle	100 Mile House		14,000
Shake block	Jack Onefrey	Lac La Hache		

Table 3. (Continued)

Table 3 Notes

[1] Mills with chips as primary output; annual capacity in thousands of bone dry units (BDUs).

[2] Mills that process logs to produce log homes; annual production in thousands of cubic metres (m^3) of logs processed.

[3] Annual lumber production capacity in millions of board feet (Mfbd).

[4] Structural panels including oriented strand board (OSB), medium density fibre board (MDF), plywood and veneer; annual production capacity in millions of square feet (Msf).

[5] Annual pulp production capacity in millions of tonnes (t).

[6] Annual pole production capacity in number of units. Annual shake production capacity in roofing squares (each approximately 100 square feet).

Agriculture

Agriculture, food and beverage businesses employ approximately 5% of the regional workforce. Agriculture contributes significantly to the regional economy with approximately $55 million in annual (1998) farm gate sales from 1,187 farms[1], accounting for 3% of the provincial agricultural output. There are over 36,000 properties in the region either partially or fully within the provincial Agricultural Land Reserve, encompassing over 405,000 ha of private land.

Ranching is primary agricultural activity in the region, accounting or 60% of the regional farm-gate sales. Ranchers husband over 125,000 head, or approximately 20% of the provincial beef cattle herd (2003). The ranching industry is highly dependent on access to crown forage resources managed through the Ministry of Forests and Range. Other key agricultural production includes forages, potatos, honey, dairy products, sheep, horses, poultry and market gardens producing a variety of fruits and vegetables, and is concentrated on private land in the major valley bottoms adjacent to rivers. Agri-tourism and value-added food products have been identified as areas of emerging importance.

There are no large-scale food and beverage processing business located in the region, however, small scale commercial food processing occurs throughout the region. 100 Mile House, Quesnel and Williams Lake have seasonal Farmer's Markets, an important direct-to-consumer marketing outlet for primary and value-added agricultural production.

Mining

Mining and mineral products businesses make a small, but important contribution to the regional economy. Businesses in the sector are principally involved in the exploration and development of aggregate (sand and gravel) and mineral (primarily gold and copper) mines and employs 1.7% of the regional workforce[2]. The industry is characterized by two large metal mining operations in the eastern Cariboo (the Imperial Metals Corp's Mount Polley mine and Taseko Mines Ltd's Gibralter Mine), numerous small placer gold extraction or

[1] Agriculture sector information summarized from Agriculture and forest policy review and development report (Carbioo Geographic Systems, 2003) and Williams Lake Chamber of Commerce (economic base pages) website: www.williamslakechamber.com

[2] Mining sector information summared from BC Ministry Energy, Mines and Petroleum Resources website: http://www.em.gov.bc.ca/Mining/MiningStats/

mineral exploration operations, and an abundance of Crown and privately owned aggregate pits. The Gibralter mine recently resumed operations after a shutdown from 1998 to 2004 due to low commodity prices. Likewise, Imperial's Mount Polley operation was suspended from 2000 to 2005 for the same reason. QR Gold Mine, a large-scale gold operation under development east of Quesnel, has completed the first phase of its exploration program and properties adjacent to the Gibralter and Mount Polley mine sites are being assessed for commercial development. Other mining operations in the region include:

- a Canadian Pacific Railway mine for railway ballast north of Quesnel;
- a pumice and aggregate mine in volcanic deposits near Nazko operated by Canada Pumice Corporation ; and,
- diatomaceous earth mining by Dialite Industries in Quesnel.

The region does not have smelter or refining facilities, although Taseko Mines is assessing the feasibility of a copper smelter at its Gibralter operation in partnership with Teck Cominco. Seismic exploration for petroleum reserves has been completed in the West Fraser / north Chilcotin districts, but no oil and gas developments are active in the region.

Tourism

Tourism has a strong influence on the regional economy and is especially important to the south Cariboo where it is second only to the forest industry in terms of economic impact (Leong 2000). Major tourist attractions include outdoor recreation opportunities, cultural attractions, and a growing number of resorts, agri-tourism (guest ranches, farm stays) and eco-tourism facilities.

Outdoor recreation is a major regional attraction. Major parks (Bowron, Tweedsmuir, Wells Gray and Ts'yl-os among the most important) are an important anchor for backcountry recreation and visits to the region. Other outdoor recreation opportunities are diverse, and supported by numerous trails, campgrounds, recreation sites and an extensive backcountry road network:

- camping;
- hunting and world-class fishing in lakes, rivers and streams;
- skiing (with both cross country trails and down-hill facilities)
- trails for hiking (including world-renowned Nuxalt-Carrier Grease Trail), bicycles, motorized recreational vehicles, and horses;
- boating and river rafting;
- general nature and wildlife viewing.

Cultural attractions in the region include:

- Barkerville, the largest authentic historical site in western North America;
- 108 Mile Heritage Site;
- Xats'ull First Nation Heritage Village;
- Island Mountain Arts School in Wells;
- Local festivals including Billy Barker Days and the Williams Lake Stampede; and,
- Demonstration forests and industrial forestry (mill) tours.

Among a growing number of wilderness resorts and guest ranches in the region, the Hills Health Ranch at 108 Mile, is a world class destination resort focused on health and wellness retreats and services. Services supporting the sector include food and beverage outlets, camping supply and general outfitters, hotels, bed-and-breakfasts, and campgrounds located throughout the region.

3.3 Socio-Economic Indicators

Socio-Economic Index

The Cariboo Regional District ranks in the lowest quintile provincially (22nd of 26 regions) on the index of socio-economic indicators (Province of BC 2004). Examination of the component indices reveals that the region ranked 12th provincially based on economic factors and the low overall ranking was due to very low ratings for health issues, level of education attained and the number of children and youth at risk.

The average (2000) family income in the region is $55,577, approximately 86% of the provincial average. Household income dependency (2000) is highest for the forestry sector (35%) followed by public sector (23%), tourism (6%), agriculture (2%) and mining (2%), exposing a vulnerability to slowdowns in the forestry sector. Approximately 42.5% of the regional workforce are employed full-time, and 15.7% are self-employed. Regional unemployment sits at 5.2% (three month moving average, unadjusted, October 2005), marginally below the provincial of 5.3%, and both near 30 year lows (Province of BC 2005a).

Anticipated Trends

In the coming decade, a strong shift is anticipated in the regional economic and social structure. The current heavy reliance of the regional economy on the forest industries has raised concerns about an impending economic slow down resulting from the MPB epidemic. At present, a massive program is underway to salvage beetle-killed lodgepole pine. The annual timber harvest levels have already doubled in some Forest Districts in the region. Salvage logging and beetle-wood processing are creating short-term economic opportunities. The eventual cancellation of the temporary timber harvest licenses and reduced timber harvesting quotas while the pine forests regenerate, however, could result in significant job losses in the future.

A regional, community-based collaborative initiative, the Cariboo-Chilcotin Beetle Action Coalition, is actively working on a number of economic development strategies (including agriculture, tourism, log homes, value-added forest products, energy and retirement) to mitigate the anticipated regional economic slowdown, but additional support has been requested for economic studies and sector-specific development work.

4 Regional Land Use

4.1 Land Tenure

The Cariboo-Chilcotin encompasses approximately 8.3 million ha, the vast majority (94%) of which is Provincially administered Crown lands. Approximately 5% of the region, or 423,000 ha, is private land (including 195,000 ha of forested land), and small areas are administered Federally for military (30,000 ha) and First Nation reserves (41,000 ha). Fully 12% (approximately 1 million ha) of the region is set aside in parks and protected areas. The Cariboo-Chilcotin contains, or serves as the gateway to, five large provincial parks: Bowron, Mitchell-Niagara, Tweedsmuir, Wells Gray and Ts'yl-os (Province of BC 1995).

4.2 Natural Resource Tenures and Management

With the exception of the area encompassed by major provincial parks, the majority of the provincially-controlled Crown land is allocated in three timber supply areas (TSAs) under the management of the Ministry of Forests and Range. Forest management is administered through four Forest Districts within the Southern Interior Forest Region. The 100 Mile House TSA is administered by the 100 Mile House District; the Williams Lake TSA administered by the Central Cariboo and Chilcotin Districts; and the Quesnel TSA is administered by the Quesnel District. The Ministry of Forests and Range also administers two Tree Farm Licenses (TFL) and two Community Forests in the region. Grazing, agricultural, mining and commercial recreation activities are also tenured on Crown lands in the region. No tenure exists for non-timber forest products rights on Crown lands in the Cariboo-Chilcotin.

Agricultural and Range Tenures

Livestock grazing and hay cutting is administered on Crown land through the Ministry of Forests and Range, through the four Forest District offices in the profile area. Livestock grazing is tenured on over 3 million ha of Crown range in the region; many of the grazing tenures are coincident and overlapping with timber tenures. Additionally, there are over 500 agricultural leases on Crown land covering over 81,000 ha administered by the Integrated Land Management Bureau of the Ministry of Agriculture and Lands.

Commercial Recreation Tenures

Commercial recreation (also refereed to as eco-tourism, backcountry or adventure tourism) tenures provide businesses and not-for-profit associations with access to Crown land to pursue guided outdoor activities. Commercial recreation is defined as "outdoor recreational activities provided on a fee-for-service basis, with a focus on experiences associated with the natural environment." The Integrated Land Management Agency of the Ministry of Agriculture and Lands is responsible for issuing commercial recreation tenures. These tenures include two types of access: permission to operate for a specific purpose on extensive areas of Crown land; and, authority to build improvements (e.g. a lodge or camp ground) on specific sites to support commercial recreation operations. With the exception of structures erected by the tenure holders, recreation tenures usually do not give exclusive rights to the use of Crown land (i.e. general public access and other resource tenures may also occur).

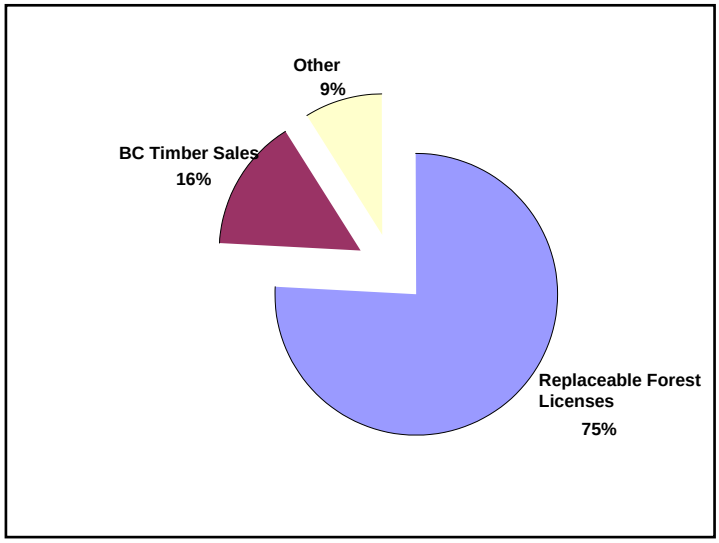
The Cariboo-Chilcotin has approximately 59 commercial recreation tenures, issued for a variety of purposes including camps, lodges, heli-skiing, cross-country skiing and various land activities (e.g. nature viewing, horse pack trips or off-road cycling tours). Tenure locations are distributed throughout the area, with higher concentrations around major parks and less densely populated wilderness areas in the Chilcotin and Quesnel Highlands.

100 Mile House TSA

The 100 Mile House TSA (TSA No. 23) encompasses 1.22 million ha in the southern Cariboo, which includes 885,260 ha administered by the Ministry of Forests and Range, of which 731,207 ha is productive forestland available for timber harvest. The annual allowable cut (AAC) in the 100 Mile House TSA (as set January 1, 2002) is 1,335,600 m^3. Of this amount over 1 million m^3 is apportioned to three major forest licensees: Ainsworth Lumber, West Fraser Timber and Tolko Industries, approximately 90% of which is held in replaceable forest licenses (Figure 2).

Forest Product manufacturers in the TSA process approximately 1.61 million m^3 of wood fibre annually; approximately 80% is derived from the 100 Mile House TSA and remainder from private sources and adjacent TSAs.

Figure 2: Annual Allowable Cut Apportionment in the 100 Mile House TSA (total AAC of 1,335,600 m^3)

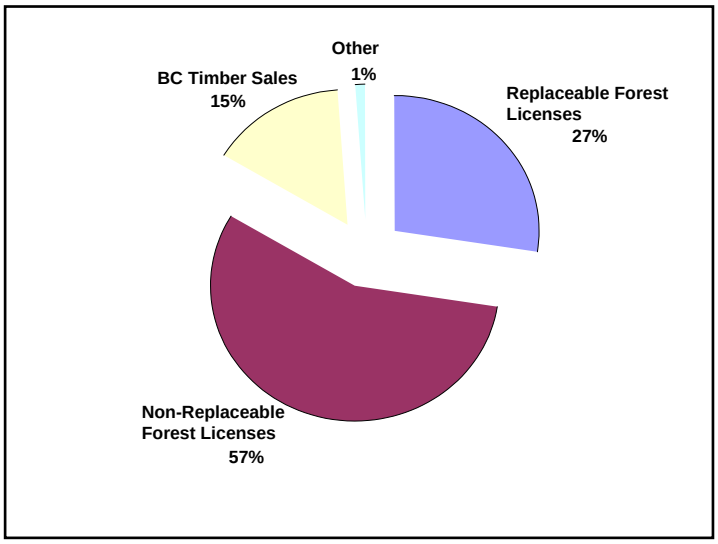


Quesnel TSA

The Quesnel TSA covers 1.65 million ha in the north Cariboo, which includes 1,025,810 ha administered by the Ministry of Forests and Range, of which 1,010,888 ha is productive forestland available for timber harvest. The AAC in the Quesnel TSA (as set October 1, 2004) is 5,280,000 m^3. Of this amount, over 1.95 million m^3 is apportioned to three major forest licensees: Canadian Forest Products, West Fraser Timber and Tolko Industries, approximately 65% of which is held in replaceable forest licenses (Figure 3).

The Mountain Pine Beetle epidemic has hit the abundance of lodgepole in the Quesnel TSA particularly hard. As part of the effort to salvage beetle-killed trees before they deteriorate beyond commercial use, the total AAC in the Quesnel TSA has been increased dramatically. In the past 4 years, it has risen from 2.34 million m^3 in 1996, to 3.34 million m^3 in 2001, to its current level. The AAC additions were issued through an increase in non-replaceable forest licenses. Future increases in the AAC may also be applied as the beetle expands to its population limits over the next decade. After this period a sharp decline in the AAC will be necessary to allow the beetle affected forests to regenerate and supply a sustainable timber supply going forward.

Figure 3: Annual Allowable Cut Apportionment in the Quesnel TSA (total AAC of 5,280,000 m^3)

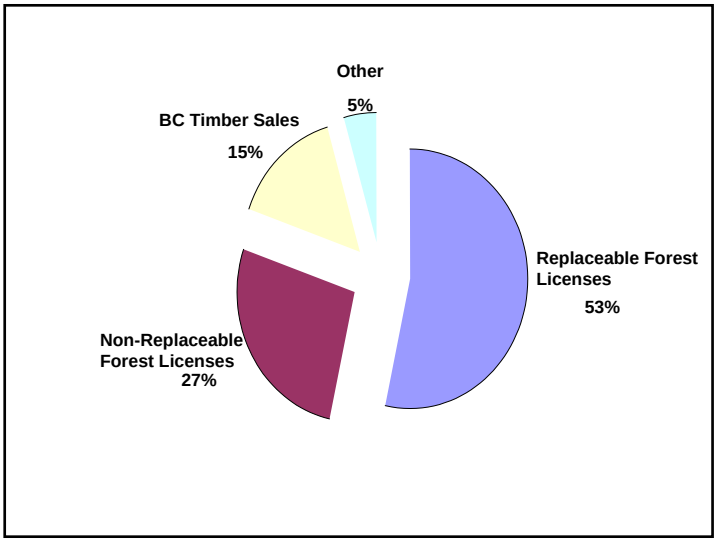


Williams Lake TSA

The Williams Lake TSA covers a broad area through the centre of the region stretching from the Quesnel Highlands in the eastern Cariboo through the central Cariboo and west to the Chilcotin. In total, the TSA covers 4.9 million ha, including 3,145,826 ha administered by the Ministry of Forests and Range, of which 2,096,251 ha is productive forestland available for timber harvest. The AAC in the Williams Lake TSA (as set January 1, 2003) is 3,768,400 m^3. Of this amount, over 2.1 million m^3 is apportioned to two major forest licensees: West Fraser Timber and Tolko Industries, approximately 93% of that is held in replaceable forest licenses (Figure 4).

As with the Quesnel TSA, the MPB epidemic has resulted in dramatic increases in the AAC through non-replaceable forest licenses to conduct salvage logging and infestation containment.

Figure 4: Annual Allowable Cut Apportionment in the Williams Lake TSA (total AAC of 3,768,400 m^3)



Other Major Forest Tenures

In addition to the TSAs, other Crown timber tenures issued in the region include Community Forests, Tree Farm Licenses (TFLs) and Woodlot Licenses. Two Community Forest Agreements are in place in the Cariboo-Chilcotin; both located in the Central Cariboo Forest District. The Likely Community Forest (a partnership between the community of Likely and the Xats'ull First Nation) covers 14,000 ha with an AAC of 12,231 m^3. The Esketemc First Nation Community Forest encompasses 25,000 ha with an AAC of 17,000 m^3. Additionally, the District of 100 Mile House is actively working towards obtaining a community forest agreement. The Quesnel Forest District administers two TFLs in the north east of the region both held by West Fraser Timber. The Mackenzie-Bowron TFL (TFL 5), covers 34,221 ha and has an AAC of 300,000 m^3 (as set January 1, 2003). The Bowron-Cottonwood TFL (TFL 52) bounds 250,000 ha and has an AAC of 570,000 m^3 (as set January 1, 2003). The 100 Mile, Quesnel and Williams Lake TSAs contains 30, 65 and 52 Woodlot Licenses, respectively. These small-scale forest management areas each include a private land base and Crown tenured areas of 600 ha or less in size. The AAC from Woodlot Licenses is 34,950 m^3 (including 2,802 m^3 from the private lands) in the 100 Mile Forest District, 92,048 m^3 (8,501 m^3 from private lands) in the Quesnel Forest District, and 56,032 m^3 (6,027 m^3 from private lands) from the Central-Cariboo Forest District. A small area east of Williams Lake without AAC apportionment is designated for the University of British Columbia's Alex Fraser Research Forest and the University of Northern British Columbia conducts forest ecology research at its Quesnel River Research Centre in Likely.

First Nations Forest Tenures

First Nation individuals and corporations are engaged in a variety of commercial forest management activities in the Cariboo-Chilcotin including silviculture, harvesting, road construction and vegetation management, but have little direct tenure to timber resources. First Nations' interests hold less than 5% of the AAC in the Cariboo-Chilcotin (over 630,000 m^3 all in non-replaceable forest licenses). The largest First Nation-involved enterprise is West Chilcotin Forest Products Ltd, which operates a timber processing facility on the Chilcotin plateau. West Chilcotin is a partnership between local community members, Yun Ka Whu'ten Holdings (a wholly owned enterprise of the Ulkatcho First Nation) and Carrier Lumber Ltd. Additionally, the Xats'ull (Soda Creek) First Nation (in partnership with community of Likely) and the Esketemc First Nation have community forest licenses.

4.3 Land Use Planning in the Cariboo-Chilcotin

The Cariboo-Chilcotin Land Use Plan (CCLUP) guides land use in the region. The CCLUP was established in 1994 by regional stakeholders to improve certainty of access to natural resources, sustainable resource utilization, maintenance of environmental qualities and values and integration of resource uses on Crown land (Province of BC 1995). The CCLUP has designated four primary land use zones: Protected Areas and three resource management zones. Resource extraction is prohibited in parks and protected areas. The remaining land base is designated for either: Enhanced (40 %), Special (26 %), or Integrated (14 %) use. The Enhanced Resource Development Zone includes areas where economic benefits and jobs are the focus through intensive resource management and development. The Special Resource Development Zone is designated where significant fish, wildlife, ecosystem, backcountry recreation and tourism values exist. Timber harvesting, mining and grazing are permitted within this zone provided they are carried out in a manner that respects the special resource values. The Integrated Resource Management Zone is dedicated for sustained integrated resource use among two or more resource users.

The CCLUP implementation plan (Province of BC 1995) outlines specific targets for access to the land base and resources including NTFPs referenced as "Wildcraft/Agro-forestry." The general target established for NTFPs was to "maintain existing resources and to enhance the level of use." Each subunit within the CCLUP has a target area available for NTFP harvesters by roads versus foot access. Pine mushrooms are the only NTFP referenced by name with the specific goal of maintaining "key pine mushroom harvesting sites in a condition that promotes mushroom growth." Implementation of the CCLUP based on this direction has noted NTFP management as an important consideration in the development of access management of a sub-regional planning.

The unprecedented outbreak of MPB in the region and accelerated timber harvest activities and has unknown impacts on NTFP production and management. Adjustment to the implementation of the CCLUP are expected to accommodate the changes brought about by accelerated timber harvests to salvage and mitigate further beetle damage.

5 First Nations and Non-Timber Forest Products

Disclaimer: Information in this section is based on published ethnobotany sources and discussions with elders and natural resource managers from the Tsilqot'in National Government office and six of the First Nations resident within the profile area (Canoe Creek, Canim Lake, Nazko, Stone, Williams Lake and XeniGwet'in First Nations). Information presented is done so with respect for the rights of the First Nations to their traditional knowledge. The traditional knowledge reported remains the exclusive domain of the respective First Nations, and was gathered in the spirit of recognizing the importance of non-timber forest products to the Cariboo-Chilcotin First Nations and understanding their issues and concerns. This summary is in no way meant to define or limit the rights regarding traditional uses of the First Nations involved.

5.1 Traditional Use of NTFPs

First Nations have inhabited the Cariboo-Chilcotin for thousands of years. All of the region's ecosystems, including the alpine, aquatic, forests, grasslands and wetlands, and including both flora and fauna, have been integral to the culture of the First Nations. Plants and fungi have traditionally been used in all aspects of First Nations' culture, providing food, shelter, tools, medicines, clothing and ceremonial objects. Beyond their importance for products, First Nations also relied upon plants as integral components of ecosystems providing clean water and fish and wildlife habitat upon which they also depended.

Elders in the First Nations are the primary possessors of the traditional knowledge on the collection, processing and uses of NTFPs. There is recognition however, that much traditional knowledge about NTFPs is lost (Hebda *et al.* 1996). Although fewer people retain this information, there is strong interest in ensuring that it is maintained and passed to future generations. Some of the important traditional uses of plants and fungi by Cariboo-Chilcotin First Nations have been recorded (Hebda *et al.* 1996, Smith 1927, Turner 1997, and Turner 1998) and are summarized in Tables 4 and 5.

All of the First Nations members contacted expressed that gathering NTFPs for food, medicines or cultural uses continues to be an important part of their identity and is integral to their culture. NTFPs are collected throughout the region from both reserve lands and on asserted traditional territories. Food collection, especially berries, is widespread and there is considerable consistency in the importance of individual species among different First Nations. Among the most harvested wild berries are blueberries/huckleberries (*Vaccinium* spp.), saskatoon (*Amelanchier alnifolia*), soopolallie (*Sheperdia canadensis*), raspberry (*Rubus idaeus*), strawberry (*Fragaria virginiana*), choke cherry (*Prunus virginiana*), and high bush cranberry (*Viburnum edule*). While not as popular as in elder days, other food plants including cow parsnip (*Heracleum lanatum*), lodgepole pine (*Pinus contorta*) cambium and Labrador tea (*Ledum groenlandicum*) collection and use is ongoing.

Some species have stronger importance to a particular First Nation. For example, wild potatos (aka Mountain potato or spring beauty, *Clatonia lanceolata*) and avalanche lily (aka dog's tooth or bear tooth, *Erythronium grandiflorum*) continue to be important food plants among members of the Xeni Gwet'in First Nation.

Table 4. Traditional Non-Timber Forest Products Used by Most First Nations in the Cariboo-Chilcotin (summarized from Hebda *et al.* 1996, Smith 1927, Turner 1997, and Turner 1998).

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Alder, Sitka Alder, mountain	*Alnus sinuata (aka sitchensis)* *Alnus incana*	stem	craft[1]
Cherry, bitter Cherry, pin Cherry, choke	*Prunus emarginata* *P. pensylvanica* *P. virginiana*	bark, stem berry	craft food
Black currant	*Ribes hudsonianum*	berry	food
Black hawthorn	*Crataegus douglasii*	stem berry	craft food
Black tree lichen	*Bryoria fremontii*	whole plant	food
Blueberry / Huckleberry	*Vaccinium caespitosum* *V. membranaceum* *V. ovalifolium* and others	berry	food
Bracken fern	*Pteridium aquilinum*	root, stem	craft
Cattail	*Typha latifolia*	leaf root	craft food
Cottonwood	*Populus balsamifera*	wood, sap	craft
Cow parsnip	*Heracleum lanatum*	young shoot stem	food craft
Devil's club	*Oplopanax horridus*	root, bark	medicine[2]
Douglas-fir	*Pseudotsuga menziesii*	stem, wood	craft
False Hellebore	*Veratrum viride*	root	medicine
Field mint	*Mentha arvensis*	stem, leaf	food, medicine
Fireweed	*Epilobium angustifolium*	inner stem	food
Gooseberry	*Ribes lacustre*	berry	food
High bush cranberry	*Viburnum edule*	berry	food
Horsetail	*Equisetum arvense*	shoot	craft, medicine
Indian Hemp	*Apocynum cannabinum* *Apocynum androsaemifolium*	stem	craft
Juniper, common Juniper, Rocky Mountain	*Juniperus communis* *Juniperus scopulorum*	berry, leaf, stem	craft, medicine
Labrador tea	*Ledum groenlandicum*	leaf	food, medicine
Lodgepole pine	*Pinus contorta*	cambium pitch, wood	food medicine, craft
Kinnikinnick	*Arctostaphylos uva-ursi*	berry leaf	food medicine
Maple, Rocky Mountain	*Acer glabrum*	stem	craft
Mountain potato	*Claytonia lanceolata*	bulb	food
Nodding onion	*Allium cernuum*	leaf, bulb	food, medicine
Oregon grape	*Mahonia aquifolium*	berry	food

Table 4. Continued.

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Paper birch	*Betula papyrifera*	bark sap	craft food, medicine
Pinegrass	*Calamagrostis rubescens*	leaf	craft
Raspberry	*Rubus idaeus*		
Red osier dogwood	*Cornus stolonifera*	leaf, bark stem	medicines craft
Rose, prickly Rose, Nootka Rose, Wood's	*Rosa acicularis* *R.. nutkana* *R.. woodsii*	fruit (hip), petal root, stem	food, medicine craft
Saskatoon	*Amelanchier alnifolia*	berry stem	food craft
Solomons seal, false Solomons seal, star-flowered	*Smilacina racemosa* *Smilacina stellata*	berry	food
Soopolallie	*Sheperdia canadensis*	berry	food, medicines
Sphagnum moss	*Sphagnum spp*	whole plant	craft
Spruce, Engelmann Spruce, interior Spruce, white	*Picea* engelmannii *P. glauca X engelmannii* *P. glauca*	root, branch, needle, pitch	craft, medicines
Strawberry	*Fragaria virginiana*	berry root, leaf	food medicines
Stinging nettle	*Urtica dioica.*	leaf stem fibre	medicine craft
Subalpine fir	*Abies lasiocarpa*	bark, pitch	craft, medicines
Thimbleberry	*Rubus parviflorus*	berry, young shoot leaf	food craft
Tiger lily	*Lilium columbianum*	bulb	food
Trembling aspen	*Populus tremuloides*	bark, wood cambium	medicine food
Tule	*Scirpus acutus*	stem	craft
Water-parsnip	*Sium suave*	root	food
Whitebark pine	*Pinus albicaulis*	seed (pine-nut)	food
Willow (various species)	*Salix spp*	bark bark, stem	medicine craft
Yarrow	*Achillea millefolium*	leaf	medicine
Yellow avalanche lily	*Erythronium grandiflorum*	bulb	food

[1.] Craft denotes use for any form of technology e.g. dyes, weaving and basket material, tools, clothing, shelter and other structures, smokewood, ceremonial objects, etc.

[2.] Medicines include foods consumed with a health or medical purpose (nutraceuticals) and various preparations (juices, powders, tinctures, smudges, etc.) created from the NTFPs.

Table 5. Non-Timber Forest Products Referenced as Used by Specific Cariboo-Chilcotin First Nations (summarized from Hebda *et al.* 1996, Smith 1927, Turner 1997, Turner 1998 and Secwepemc Nation ethnobotany web resources: www.secwepemc.org).

Other NTFPS traditionally used by Dakelh First Nations

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Algae	*Various*	whole plant	craft[1]
Bracken fern	*Pteridium aquilinum*	root	food
Bunchberry	*Cornus canadensis*	leaf	medicine[2]
Coltsfoot	*Petasites palmatus*	leaf	medicine
Crowberry	*Empetrum nigrum*	berry	food
Fireweed	*Epilobium angustifolium*	stem, leaf	craft
Marsh cinquefoil	*Potentilla palustris*	root	medicine
Mountain ash	*Sorbus sitchensis*	stem	craft
Pearly everlasting	*Anaphalis margaritacea*	leaf	medicine
Pipsissewa	*Chimaphila umbellata*	leaf	medicine
Raspberry, trailing Raspberry, dwarf	*Rubus pubescens* *R. acaulis*	berry	food
Reedgrass	*Phragmites australis*	leaf	craft
Rice- root	*Fritillaria camschatcensis*	bulb	food
Spiny wood-fern	*Dryopteris expansa*	root	food
Strawberry blight	*Chenopodium capitatum*	berry	craft
Wintergreen	*Pyrolia asarifolia*	leaf	medicine
Wolf lichen	*Lutharia vulpinia*	whole plant	craft
Yellow tree lichen	*Cetraria canadensis*	leaf	medicine

Other NTFPs traditionally used by Secwepemc First Nations

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Balsam root	*Balsamorhiza saggitata*	root	food
Black twinberry	*Lonicera involucrata*	berry	craft
Bracket fungi	*Polyporus spp*	whole fungi	craft
Douglas-fir	*Pseudotsuga menziesii*	seed, pitch	food
Edible thistle	*Cirsium edule*	root	food
False Solomons seal	*Smilacina racemosa*	stalk	craft
Hazelnut	*Corylus cornuta*	stem seed	craft food
Indian paint fungus	*Echinodontium tinctorium*	whole fungi	craft
Mariposa lily	*Calachortus macrocarpus*	bulb	food
Old man's beard (Lichen)	*Alectoria sarmentosa*	whole plant	craft
Round-leaved alum	*Heuchera cylindrical*	leaf	medicine
Showy aster	*Aster conspicuus*	whole plant	medicine
Silverweed	*Potentilla anserina*	root	food
Sitka valerian	*Valeriana sitchensis*	stem, leaf	craft

Table 5. Continued

Other NTFPs traditionally used by Secwepemc First Nations (continued)

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Snowberry	*Symphoricarpos albus*	stem	craft
Western red cedar	*Thuja plicata*	bark, root, stem	craft
Wormwood	*Artemisia frigida*	leaf, stem	craft
Wild sarsaparilla	*Aralia nudicaulis*	root	medicine

Other NTFPs traditionally used by Tsilhqot'in First Nations

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Balsam root	*Balsamorhiza saggitata*	root	food
Dwarf birch	*Betula glandulosa*	leaf	food (tea)
Strawberry blight	*Chenopodium capitatum*	berry	craft
Mariposa lily	*Calachortus macrocarpus*	bulb	food

1. Craft denotes use for any form of technology e.g. dyes, weaving and basket material, tools, clothing, shelter and other structures, smokewood, ceremonial objects, etc.

2. Medicines include foods consumed with a health or medical purpose (nutraceuticals) and various preparations (juices, powders, tinctures, smudges, etc.) created from the NTFPs.

Traditional medicines that are still collected and used among the Cariboo-Chilcotin First Nations include devil's club (*Oplopanax horridus*), kinnikinnick (*Arctostaphylos uva-ursi*), Labrador tea, lodgepole pine, strawberry, subalpine fir (*Abies lasiocarpa*) and yarrow (*Achillea millefolium*). Collection and use of NTFPs for traditional arts and crafts produced by First Nations were also identified. Among many species mentioned, saskatoon and choke cherry branches, birch (*Betula papyrifer*a) bark and spruce (*Picea* spp.) roots are still widely utilized. Sweats are important cultural, as particularly identified by the Secwepemc First Nations. Boughs of cedar (*Thuja plicata*), juniper (*Juniperus communis*) and subalpine fir, as well as wild rose (*Rosa* spp.) are collected and used for sweats. NTFPs are also used for ceremonial and decorative purposes including spiritual gatherings, funerals and weddings. NTFPs from cedar, juniper, Oregon grape (*Mahonia aquifolium*), cat-tail (*Typha latifolia*) and pasture sage (*Artemisia frigida*) are included in this traditional use.

Several of the First Nations contacted wanted to ensure NTFPs were defined to be inclusive of resources and values other than just plants and fungi. In this regard, they view fish and game as products of the forest ecosystems and the food, fur and other products they provide as NTFPs. Likewise, water, minerals and wildlife habitat (forage and browse) were noted as part of a more holistic definition of NTFPs. Elders contacted also noted that the medicinal and spiritual properties of NTFPs often involve more than the plant, animal or fungi involved. The use and effects of a particular medicine can often be linked to a spiritual place and to the manner in which they are collected, prepared and used, emphasizing the interconnection between the land, natural resources and First Nation traditions.

None of the First Nations in the region currently regulate the collection of NTFPs by their community members although an informal division of berry picking and mushroom harvesting areas – that is, certain families/individuals harvest in the same location each year – is utilized in some communities.

5.2 Commercial Use of NTFPs by First Nations

None of the First Nations contacted currently have band-owned NTFP-based businesses, although several expressed an interest in developing business opportunities based on the sustainable use of NTFPs. Individuals from the First Nations are known to be engaged in two commercial NTFP sectors: arts and crafts production and wild mushroom harvesting. Additionally there is one Secwepemc ecotourism business in 100 Mile House offering ethnobotany experiences (Eureka Peak Adventures), and members of the Williams Lake First Nation are employed by the another tour company (Ecotours BC) as guides and interpreters on traditional use of NTFPs. Members of the Canim Lake First Nation are also believed to be among those employed seasonally harvesting plants (principally wild rose hips) for a herbal-product business at 108 Mile.

Individuals from all the First Nations in the region are believed to employed in creating traditional arts and crafts from NTFPs including baskets, carvings, weavings and other works of art. Most First Nations artisans typically work from their own residences, and are believed to be employed in other work in addition to their art creation, although statistics on the exact number of artisans and the amount of time they devote to this vocation are not quantified. Their products are sold in galleries throughout the province and beyond. Regionally, the Cariboo Friendship Centre operates a Native Arts and Crafts retail outlet in Williams Lake, and the Xeni Gwet'in First Nations Government have sold art and crafts created by its members through its website.

Members from most of the First Nations residing in the region are also believed to participate in commercial mushroom harvesting. Participation rates vary from a few individuals to wide participation reported among the Ulkatcho First Nation. As with other workers in this sector, many of the First Nation harvesters work seasonally, and operate throughout the province (and beyond), following the natural emergence pattern of mushrooms in various locations. Morels are collected in the spring and work shifts to pine mushroom harvesting in the late summer, following the mushroom emergence north to south from the Nass Valley to Kootenays and locations in-between. Some of the region's First Nation harvesters are known to travel to Vancouver Island and other coastal locations (as far south California) to pick mushrooms (Hebda *et al*. 1996). Resident harvester participation is greatest among the Ulkatcho First Nation, a reflection of the prime pine mushroom producing areas in their traditional territory in the west Chilcotin. Pine mushrooms have been harvested commercially by the Ulkatcho since the early 1980s. Because of the informal nature of wild mushroom harvesting, no statistics exist on the total number of First Nations employed in this activity. Individual First Nations and tribal associations are aware of members who harvest commercially, but no statistics are kept on the exact employment generated in the sector.

Traditional practices of trading or gifting of NTFPs among First Nations, both within and between nations, and in and outside of the region also occurs. This trade economy includes the exchange of important traditional food plants (e.g. soopolallie, blueberry) and includes plants given as gifts or traded at pow wows or other gatherings that are of high traditional

importance to First Nations outside of region. For example sweet grass (*Hierochloe odorata*) is collected from the southern Cariboo for trade with First Nations in the southern interior and United States.

5.3 NTFP Issues and Concerns Raised by First Nations

First Nations in the Cariboo-Chilcotin are cognizant of the traditional and current importance of NTFPs to their culture and communities. All wanted to ensure the sustainable use of these resources and have the ability to pass them on to future generations. In this regard, several concerns and issues were identified about NTFP management and use, and the impacts of outside factors on their traditional and future uses of these resources. Concerns raised by First Nations centred on four themes:

1. Impacts of other resource uses and activities on traditional foods and medicines;
2. Commercialization of traditional foods and medicines and the intellectual rights to First Nations traditional knowledge;
3. Harvest levels and techniques of pine mushrooms; and,
4. Lack of information and support to allow First Nations governments to manage non-timber resources and develop sustainable NTFP based business opportunities.

Impact of Other Resource Users

In a broad context, several of the First Nations contacted were concerned about the overall integrity of the forest ecosystems in their traditional territories and cited concern and uncertainty about the potential dramatic effects of long-term fire suppression, the current MPB epidemic, global warming, and introduced species (weeds). In this regard, it was emphasized that NTFP health and sustainability was intimately tied to that of watersheds and wildlife habitat (including aquatic ecosystems). Retention of important spiritual areas used to gather medicines as protected areas from commercial resource (forestry, mining or agriculture) extraction was also noted as a high priority.

All of the First Nations contacted had general concerns about the impacts of timber harvesting and forest management on food and medicines, as well as on fish, wildlife, water and spiritual places. Specific concerns expressed included:

- destruction of prime blueberry harvesting patches by timber harvesting equipment.
- clear-cut harvesting and its impacts on Labrador tea production, as well as on wildlife habitat and water quality, particularly in light of the massive salvage logging program underway to harvest MPB-killed trees.
- the potential for rising water tables after forest harvesting, and rising water temperatures in riparian zones devoid of a forest overstory.
- impacts of herbicides applied for silvicultural purposes on foods and medicines; several of the First Nations stated their preference for a minimal use of pesticides within their traditional territories.
- unknown effects on non-timber resources of proposed spraying of a bacterial agent for forest pest control.

Conversely, it was also noted that timber harvesting was probably also beneficial to the production of some traditional foods, in particular saskatoon and soopolallie.

First Nations, primarily in the south Cariboo and Chilcotin also expressed concern about impacts of livestock grazing on NTFPs. Some Tsilhqot'in and Secwepemc First Nations are concerned about "extensive" overgrazing by cattle on some range units, both for its removal of NTFPs through grazing, and the deposition of animal waste on NTFP gathering sites and traditional camping areas. Concern over changes in the level of government oversight and/or management input brought about in the new Forest and Range Practices Act was also raised. There is perception that under the new regulations there is a lack of control over range management activities on Crown lands with potentially more significant impacts on traditional harvesting areas by overgrazing in the future. A specific concern was also identified about the impacts of cattle grazing on wild potatos (*Clatonia lanceolata*) growing on spring ranges in Xeni Gwet'in territory in the Nemaiah Valley. A research project has begun to quantify cattle effects on this important food plant.

Mining activity in the Cariboo-Chilcotin did not raise general concerns, most likely a reflection of the small land area directly affected by mining relative to the size of the region. One First Nation, however, did raise concerns about access to a traditional harvesting area being impeded by gates put in place by a major mining operation.

Commercialization of NTFPs / First Nations Intellectual Rights

General concerns were expressed about the potential that commercialization of certain traditional foods and medicines might lead to impacts on traditional First Nations uses. No specific NTFPs were cited, but one First Nation natural resource worker cited examples of corporate interests trying to access traditional use information for the purpose of developing commercial products without the participation of the First Nation involved. While commercial utilization of NTFPs in the Cariboo Chilcotin is generally very low at present, general concerns were also expressed about the potential of future commercial harvests to cause resource scarcity and thus impinge on traditional use.

Similarly there is a great deal of emphasis placed on ensuring the intellectual rights to First Nations' traditional knowledge is maintained and respected. This concern centres on potential for commercialization to corrupt the spiritual value of certain medicines, and also a general fear that outside interests will co-opt or patent the biological resources, and thereby restrict First Nations' rights and free traditional uses.

Mushroom Harvest Concerns

Concerns around commercial mushroom harvests in the Chilcotin centred on two issues:

- improper harvest techniques /over-harvest of pine mushroom patches; and,
- impacts of all terrain vehicles (ATVs) and mushroom harvester camps on wilderness areas in the First Nations' traditional territories.

Overharvest of pine mushroom patches and mistreatment through either inappropriate harvest techniques or ATV access causing soil disturbance is of concern in the Chilcotin. Likewise conflicts have arisen among First Nation and non-native harvesters over location and intensity of use. In specific areas, patches have been set aside by the resident First Nations pickers primarily for older First Nations' women to utilize and gain income. Overuse and damage of these patches by other commercial harvesters is of ongoing concern.

A large supply of morels in the Nemaiah Valley in 2004 resulted in an influx of non-resident harvesters. This led to concerns about the impact of mushroom harvester camps on the Xeni Gwet'in National Government's traditional territory, principally from the garbage left in the forest camps and ATV use. In order to pay for clean-up and control access in the most sensitive areas, the Xeni Gwet'in National Government implemented a one-time permitting system for ATVs and harvest rights in their traditional territory. Additional information on this permitting is detailed in section 6.2.

Lack of Support for NTFP Management

Some of the First Nations contacted noted that a lack of quantitative NTFP inventory and use information limited their ability to support non-timber resources management and development of sustainable NTFP based business opportunities. Several of the First Nations expressed an interest in economic development based on NTFPs, particularly as a means of diversification in light of the current MPB epidemic, but few had ready access to the information necessary for developing management prescriptions. None appear to have inventory information about key NTFPs they collect from the region, or records describing the quantities being gathered.

Canoe Creek, Soda Creek, Williams Lake, Canim Lake, and the Esketemc First Nations as well as the Tsilhqot'in National Government have completed traditional use studies of their traditional territories (Province of BC 2001c) which include information on NTFPs. Moreover, the Stewardship Council of the Tsilhqot'in National Government is also currently developing "Tsilhqot'in Stewardship Plans" (a national level Land Use Plan) for their traditional territory, and is interested in incorporating NTFP information in that framework.

A lack of resources dedicated to supporting First Nations' resource management was noted as a barrier to bridging the NTFP information gaps.

6. Commercial Non-Timber Forest Products Sector

6.1 Overview of Key Non-timber Products

Relative to other areas of the province, overall commercial NTFP activity in the Cariboo-Chilcotin is limited. The largest single commercial sector by participation is wild mushroom harvesting, although regionally, this sector almost exclusively consists of individuals, seasonally harvesting and selling to processors/exporters outside of the region. Other sectors, including floral greenery, herbal health and cosmetic products, arts and crafts, other foods (e.g. birch syrup) and eco-tourism based on ethnobotany/NTFP experiences are not widespread in the region. Each sector is generally characterized by a limited number of small or micro-sized businesses operating primarily to serve local markets. Although the tourism sector attracts the majority of their business from visitors from outside of the region and there is a trend among all sectors towards greater sales to into other markets. The following sections profile the dominant NTFP business areas in the Cariboo-Chilcotin.

6.2 Wild Mushrooms

Key Species

Two types of mushrooms, the pine mushroom (*Tricholoma magnivelare*) and morels (*Morchella* spp.) account for virtually all of the commercial harvest from the region.

The pine mushroom is a large, aromatic mushroom closely related to the Japanese matsutake (*T. matsuta*ke) and highly desired in that country. Pine mushrooms are the fruiting body of a mycorrhizal association (tree root-fungus symbiosis) between the fungi and a number of tree species. In general, its biology and exact habitat requirements are poorly understood but is known to vary with its distribution that extends along the coastal and interior mountain ranges of western North America from California to Alaska (de Geus 1995). In BC this mushroom is primarily found in association with older (>100 years old) stands of lodgepole pine, Douglas-fir or western hemlock (*Tsuga heterophylla*) forests (Berch and Wiensczyk 2001). Pine mushroom has been noted to grown in the Coastal Douglas-fir (CDF), Coastal Western Hemlock (CWH), Interior Douglas-fir (IDF), Engelmann Spruce–Subalpine Fir (ESSF), Interior Cedar–Hemlock (ICH), Sub-Boreal Spruce (SBS), Mountain Hemlock (MH), Montane Spruce (MS), Sub-Boreal Pine–Spruce (SBPS) and Boreal White and Black Spruce (BWBS) biogeoclimatic zones (De Geus 1995).

Morels (aka May mushrooms) are saprophytic fungi associated with decaying forest vegetation. Morels harvested in BC include a number of separate species, but primarily include the “true morels”: *Morchella elata* and *M. esculenta* (Chapman 1995). Morels emerge in the spring (hence the common name “May mushroom”) and can be abundant in the first few years following a forest fire. There may also be a relationship between morels and insect or disease caused tree mortality (Chapman 1995). Morel fruiting depends on various factors including the weather, and thus morel production is difficult to predict even in recently burned forests.

The economic significance of other mushroom harvesting in the region is not well documented, but is believed to be limited. By one account, there was a buyer of diverse mushroom species active in the region 7 to 8 years ago, but went out of business due to a lack

of profitability. Mushroom species that grow in the region that have been suggested as candidates for commercial harvest include (Chapman 1995):

- Brain mushroom (*Gyromitra esculenta*);
- Giant western puffball (*Calvatia booniana*);
- Bolete (*Boletus edulis*);
- Oyster mushroom (*Pleurotus ostereatus*);
- Honey mushroom (*Armillaria ostoyae*);
- Slippery jacks (*Suillis tomentosus*);
- Shaggy mane (*Coprinus comatus*);
- Birch bolete (*Leccinum* spp);
- *Ganoderma* spp.; and,
- *Phaeolus schweinitzii*.

Key Production Areas within the Cariboo-Chilcotin

The Chilcotin Plateau is recognized as one of the most important pine mushroom harvesting areas in the province (de Geus 1995, Berch and Wiensczyk 2001). Biogeoclimatic associations important to pine mushroom habitat in that area include the very dry, very cold variant of the ESSF, and the very dry, cold and very dry, very cold variants of the SBPS (Berch and Wiensczyk 2001). Ecological zones associated with pine mushroom production elsewhere in the province including MS, ICH, IDF are also abundant in the region, but have not generally been extensively utilized for harvesting in recent years. On the Chilcotin Plateau important pine mushroom harvesting areas occur at elevations of 960- to 1320-m and are associated with lodgepole pine as the dominant forest cover, a scant understory vegetation on dry, sandy soils with thin litter layers.

Pine mushroom production in the region is largely unquantified. Mushroom harvesters have the greatest first-hand knowledge on the location and production of pine mushrooms, but are highly reluctant to reveal that information. In lieu of extensive inventory data, the following site characteristics have been delineated for classifying "good potential pine mushroom producing areas" (GPPPA) in the west Chilcotin:

- Soil texture > 60% sand and < 5% clay;
- Soil moisture regimes of sub-xeric, mesic or sub-mesic;
- Mor humus form and forest floor depth < 10 cm;
- Little understory vegetation;
- Stand age > 70 years;
- "Old Forest" Structural Stage; and,
- lodgepole pine or Douglas-fir overstory dominants in ESSF, SBPS, MS, IDF, and ICH biogeoclimatic zones.

Given these criteria, there is an estimated 77,222 ha of GPPPA in the west Chilcotin (Chapman 2004). Chapman (2004) notes however, that of GPPPA in the region, only a small proportion (<10%) actually produces mushrooms. Unpublished production data (cited in Chapman 2004) from a 5-year study indicated pine mushroom yields of up to 370 kg ha^{-1} yr^{-1} on productive sites. Extrapolating from the production data and the proportion of GPPPA believed to be in mushroom production, this equates to a potential annual production of 2.8 million kg of pine mushrooms in the west Chilcotin.

Commercial pine mushroom harvests have previously been conducted in Alkali Lake, Anahim Lake, Chilco Valley, Tatlayoko Valley, Tweedsmuir area and in the vicinity of Williams Lake (De Geus 1995), but are now principally carried out in the Anahim Lake basin.

Morel production in quantities sufficient enough to support commercial harvesting is highly variable, and generally can be found on recently burnt areas (up to 3 years after the fire), and thus key production locations vary from year to year. Significant harvests from the Charlotte Lake area of the west Chilcotin have occurred in the last two years.

Industry Structure

As in the rest of the province, mushroom harvesting is largely unregulated. Mushroom harvesting is allowed on provincial forest land without any permit, but is not permitted in national and provincial parks, federal defense lands, protected areas including ecological and special reserves and recreation areas, including Forest Service recreation sites and trails. Permission is required on private land, leased public land and First Nations' reserves.

To generate funds to pay for garbage clean-up and to regulate ATV use in sensitive habitats, the Xeni Gwet'in National Government implemented a permit system for morel harvesters in their traditional territory in 2004. The permitting system was only implemented that year to deal with a large influx of non-resident harvesters and was modeled on permitting systems in place in the United States. Approximately 500 permits were issued for ATV use and harvest rights (access limited to a defined area for a 7 day period) at an average cost of $25 each. The Xeni Gwet'in National Government did not keep statistics on the volume of mushrooms harvested in the permit areas.

The wild mushroom industry for the province as a whole involves harvesters, field buyers operating from mobile buying stations or established depots, and processors / exporters. Past estimates indicate 2,000 to 5,000 persons harvest pine mushrooms in BC (De Geus 1995). A lack of formal structure in the industry however precludes confirmation of these numbers, nor can the number of Cariboo-Chilcotin residents participating in the harvest be quantified. Most mushroom harvesters in the Chilcotin (approximately 75 %) are thought to be local residents supplementing their incomes (Chapman 2004). In agreement, one mushroom buyer characterized the Chilcotin pine mushroom harvesters as being almost entirely residents of the area, although there are certainly non-resident harvesters from elsewhere in the region, and from other parts of the province and country. Conversely, it is believed that morel harvesters are primarily from outside the local harvest areas, a reflection of the more transient nature of morel harvesting locations.

Morel harvesting is conducted in the region from April to June. The pine mushroom-harvesting season in the Chilcotin Plateau generally begins in mid-to-late August and extends to mid-to-late October. Transient harvesters may participate in both these harvests before moving to other areas in the province, as other mushrooms become available.

Field buyers are most often agents financed by the mushroom processors and exporters. Five mushroom buyers were known to operate out of Anahim lake area during the 2005 pine mushroom season, purchasing on behalf of at least 3 companies that process and export mushrooms. Additionally 1 or 2 buyers may set up buying stations in the Nemaiah Valley annually. During a large flush of morels in 2004, five buyers set up in Nemaiah valley for

purchasing morels, all of which were believed to be from lower mainland BC. Some morel harvesters were known to be drying their mushrooms in the field camps in the Nemaiah Valley in 2004 and transporting the dried product out of the area before sale.

Three of the buyers in the Anahim Lake area are believed to be long-time residents, but the status of the others is unknown. Mushrooms are graded and weighed at the field buying stations and harvesters are paid in cash based on the prices set by mushroom processing and exporting companies. In other areas of the province, field buyers work under contract with mushroom companies who advance funds to purchase the mushrooms (de Geus 1995). The wholesale mushroom purchasers also typically arrange and pay for transport of fresh mushrooms out of the region. Fresh mushrooms are generally flown to greater Vancouver each day where they are cleaned, regraded and shipped overseas.

Three companies appear to purchase the majority of the pine mushrooms and morels harvested from the region, none of which are based in the Cariboo-Chilcotin: Joe Chung (operating as Joe Chung's Mushrooms and Canadian Rockie Matsutake), Matsumora Enterprises and Betty's Best Mushrooms. All of these companies purchase other types of mushrooms as well, and also buy pine mushrooms and morels from other parts of BC, other provinces and the United States. Mushroom companies are not subject to licensing or permitting requirements in order to purchase mushrooms from the Cariboo-Chilcotin beyond that normally associated with doing any type of business in the province.

Harvest Volumes and Values

Annual mushroom harvest levels can be highly variable dependent on a number of production factors (precipitation, fall temperatures, previous years production) and the number of harvesters active in a given area. A quantitative assessment of the wild mushroom sector is not possible given that the resource is unregulated (thus there are no government records itemizing location or volume of harvest) and industry participants are highly secretive. Of the three main mushroom companies known to buy from within the region, Matsumora Enterprises would only discuss general issues about the industry and would not disclose specific volume or price information, Betty's Best Mushrooms did not respond to a request for information, and Joe Chung Mushrooms/Canadian Rockie Matsutake was uncooperative and refused to provide information on the sector. Air shipments of fresh mushrooms from the region, however, can be used as a metric of the annual harvest levels.

Pine mushrooms are typically shipped fresh to Japan within three days of harvest in BC (de Geus 1992). Given the remote location of the principal production area, fresh mushrooms are generally shipped by air from Anahim Lake to processors/exporters located in greater Vancouver. Cargo manifests from the Anahim Lake airport indicate approximately 2,565 kg (5,655 lbs) of pine mushrooms and 877 kg (1933 lbs) of morels were shipped in 2005. In 2004, 13,894 kg (30,630 lbs) of pine mushrooms were shipped by air (2004 morel information was unavailable). These estimates are limited given that they do not include fresh mushrooms transported by ground, or by air through the next nearest airport in Bella Coola. Moreover, an indeterminate portion of the morel harvest is also dried in the Chilcotin and shipped by ground out of the region. The air cargo data however, does correspond with harvesters' reports of a "bumper crop" of pine mushrooms in 2004 and scant production in 2005. Large wildfires in the Chilcotin in 2003 (Charlotte Lake and other areas) were followed by a large production of morels and an influx of morel harvesters in 2004. A

smaller morel harvest in 2005 was characterized by one source as more "typical" of the area. Total annual morel production in BC is estimated to vary from 10,000 to 225,000 kg (Wills and Lipsey 1999)

The only other quantitative source of Chilcotin production data (De Geus 1995) reported 900 kg of pine mushrooms were harvested from the Anahim Lake area in 1993 (less than 1% of the provincial harvest that year); a year that was characterized as "poor" for production.

Pine mushroom values are based on weight and grade with the field station values for each grade determined by the mushroom processors/exporters. Mushrooms are scored on a 6-tiered scale: from grade 1, the most valuable, when the mushroom is at the button stage with the veil intact, to the least valuable grade 6 mushrooms, over-mature with a fully expanded cap (de Geus 1995). Prices for pine mushroom vary annually with production and market conditions, but have averaged about \$10 kg^{-1} in recent years (Chapman 2004). De Geus (1995) reported an average price of over \$32 kg^{-1} paid to Chilcotin harvesters in 1993. Postings on a wild mushroom industry website (matsuman.com) noted a price range of \$3.50 to 8.50 kg^{-1} in 2005 for top grade pine mushrooms in the Anahim Lake area, and prices as low as \$0.90 kg^{-1} in 2004 (believed to be the lowest price paid in 25 years). By one account the price paid for morels in the Nemaiah Valley averaged \$2.25 kg^{-1} in 2004. The average price paid for fresh morels in 2005 was approximately \$1.50 to 2.00 kg^{-1}in Anahim Lake.

Most of the wild mushroom harvest is exported to either Europe or Japan (de Geus 1995). The primary markets for morels are in Germany, France and Italy; pine mushroom exports are almost exclusively to Japan. Wills and Lipsey (1999) report that Canadian pine mushrooms are sold at a discount in the Japanese market due to a high rate of insect infestation and because they have a slightly different appearance than the highly desired Japanese matsutake. The average price paid to exporters in recent years is approximately \$11 kg^{-1} (\$20 USD lb^{-1}) (Wills and Lipsey 1999). Japanese mushroom auctions in 2005 indicate North American pine mushrooms selling for \$11 to16 kg^{-1} (\$20-30 USD lb^{-1}). Domestic markets are not well developed, but small amounts are sold to high-end restaurants and gourmet food retailers in major urban centres in BC. Dried morels have retailed in Europe for \$120 to 150 kg^{-1} (Wills and Lipsey 1999).

Sector Issues

Secrecy among harvesters and buyers, and general the lack of industry structure limits a formal assessment of sector issues. Price, mushroom habitat retention and land use planning concerns appear to be the primary issues in the sector. The only buyer - identified issue (only one buyer active in the region would comment) was that, although the Chilcotin was "rich" in resources, the sector was likely to decline because as world prices for mushrooms are expected to continue to fall, it would be unlikely to find enough people willing to work for lower harvesting wages.

Harvesters also lament declining prices for wild mushrooms in recent years. Part of the decline in prices paid to harvesters is attributed to international supply factors. As noted by de Geus (1995) and Wills and Lipsey (1999), wild mushroom markets are global in nature, with BC being only one supplier. European and Japanese markets for the principle mushroom species harvested from the Cariboo Chilcotin are increasing supplied with product from eastern Europe and central Asia and other global regions with much lower labour costs. An accusation of price manipulations by the buyers is also common among the harvesters.

Given the small number of mushroom buyers active regionally, and that one buyer (Joe Chung, operating as Joe Chung's Mushrooms and Canadian Rockie Matsutake) is purported to control 75% of the pine mushroom business in the entire Pacific Northwest (Stutz 2005), harvesters have speculated that collusion exists among the buyers to keep the prices paid to harvesters artificially low.

Similar to First Nations concerns identified (see Section 5.3), resident harvesters in the west Chilcotin are also concerned with harvest practices and pine mushroom habitat protection. The diminishing area from which commercial harvests are possible due to clear-cut logging to salvage pine beetle killed trees was also noted by harvesters.

A lack of formal industry structure for harvesters and representation of the wild mushroom sector in land use planning is also recognized as a limitation to sustainability of sector. Chapman (2004) noted a lack of inventory data to facilitate land use planning and sector development as threats to the industry, in particular with integrating activities with timber harvesting. Chapman's (2004) strategy for pine mushrooms in the west Chilcotin notes that because pine mushrooms are predominantly associated with mature forest stands (i.e. 80 years and older) on the Chilcotin Plateau there is a potential conflict with timber harvesting interests where the standard forest harvest rotation length is 60 to 80 years. With this type of dominant silvicultural system in place there could be very little mushroom production in 2nd growth forests before they in turn are harvested (Chapman 2004).

The current pine beetle (MPB) epidemic is also expected to have a major impact on pine mushroom producing areas in the region. Most mushroom producing areas have beetle-killed snags from previous MPB outbreaks, as is expected because these are old growth forests and beetle outbreaks in the west Chilcotin are common (Chapman 2004). In fact a more open stand created by a mild beetle attack could benefit pine mushroom production and also increase morel production. However, the unprecedented level of MPB attack in the current infestation is resulting in complete stand mortality in many areas and this will likely eliminate mushroom production for many years. 'Beetle proofing' (partial cutting systems to increase the space between live trees) to preserve older trees in unattacked stands is suggested as the only viable option for preserving pine mushroom production in these areas.

Chapman (2004) also emphasizes the need for stronger inclusion of pine mushroom concerns in regional land use planning. Utilization of "special management options" at landscape level to protect at least two-thirds of the GPPPA is seen as essential, as well as changes to forest management practices to increase the timber harvest rotation length and restrict harvest in prime mushroom sites. The need for better inventory of prime production areas to protect them and assess forest management effects on them has also been noted to be limited by secrecy among the harvesters who want to "monopolize prime sites." Initiatives identified for other resources values in the Cariboo Chilcotin Land Use Plan could be adapted to protect GPPPA (including compatible use in old growth management areas, Wildlife Tree Patches, visual management areas, Caribou Strategy modified harvest areas, and Natural Disturbance Seral Distribution Zone.

6.3 Floral Greenery and Christmas Trees

Key Species and Harvest Information

The primary NTFPs commercially harvested from the Chilcotin Cariboo are Christmas trees and conifer boughs used for wreaths and garlands (Table 6). Other NTFPs harvested for floral/decorative purposes include moss, lichen, dead branches, live stems, inflorescences, leaves, cones and small amounts of wood are used primarily to dress the wreaths and garlands or are sold to craft producers.

Christmas trees, boughs and other NTFPs appear to be predominantly harvested from private land, immature forests, and power line right-of-ways. There were approximately 20,000 cultured Christmas trees in production in 2004 with an additional 1,800 planted in 2005. Approximately 400 cultured trees were harvested and sold in 2004. The volume of commercial harvested wild Christmas trees is not quantified but was estimated be approximately 10,000 annually. Commercial harvest of wild Christmas trees appears to be primarily from private property and power line right-of-ways.

Five to six, half-ton truck loads of fresh conifer boughs (only bough tips are generally harvested for commercial use in wreath making), or approximately 750 kg of plant material, were harvested in 2004. Additionally 20 hectoliters of conifer cones were collected and an indeterminate, but smaller amount of NTFPs (moss, lichen, stem, inflorescence and leaves) from other plant species were used. Virtually all of the commercial conifer bough harvest in the region is from the Quesnel TSA, but some species (e.g. Ponderosa pine) are harvested in small quantities from other locations in the region and transported to Quesnel for wreath production. The harvest level is currently so small relative to the total amount of the resource there have been no reports of conflict with other resource or conservation objectives.

Industry Structure and Sector Issues

Commercial harvesting of greenery and boughs from the Cariboo-Chilcotin is done on a small scale by resident businesses, primarily from private land. There are at least seven resident businesses that focus on seasonal sales of wild harvested Christmas trees, however this varies annually. Two businesses located in Quesnel are engaged in culturing Christmas trees on private land: Jim Dyer and Moose Meadows Farm. They are both small, family-based businesses that retail their product direct to consumers in the local area. Kersley Christmas Trees has been in business for several years, while Moose Meadows Farm has recently begun production. According to the long-time producer, the business is not very profitable and is primarily a “hobby” in his retirement. Abundant local competition from sellers of wild harvested Christmas trees, as well as, school and not-for-profit groups that harvest and sell Christmas trees for fundraising were cited as bringing pricing pressure into the local markets. Moreover, the majority of sales of Christmas trees in the Cariboo-Chilcotin is believed to be through chain stores of large food retailers in the region, and these businesses import and sell cultured trees from other jurisdictions. Large numbers of residents harvest their own Christmas trees from private land or with a free permit from the Ministry of Forests and Range entitling individuals to collect up to 2 trees annually from Crown land. In addition to profitability, sector issues identified by Christmas tree growers centred on production related issues (e.g. disease and pest control), and a general concern that promotion of the industry would encourage additional local production and competition.

Table 6. Key Greenery and Bough Species Harvested in the Cariboo-Chilcotin.

Christmas Trees

Common Name	Scientific Name	Source
Douglas-fir	*Pseudotsuga menziesii*	wild harvest, cultured
Lodgepole pine	*Pinus contorta*	wild harvest, cultured
Spruce	*Picea engalmannii*	wild harvest, cultured
	Picea glauca	
	Picea engelmannii x glauca	
Subalpine fir	*Abies lasiocarpa*	wild harvest, cultured

Boughs and Other NTFPs used for Wreaths and Crafts

Common Name	Scientific Name	
Alder	*Alnus sinuata*	wild harvested
	Alnus incana	
Aromatic cedar	*Juniperus virginiana*	cultured
Cattail	*Typha latifolia*	wild harvest
Common juniper	*Juniperus communis*	wild harvest
Douglas-fir	*Pseudotsuga menziesii*	wild harvest
Falsebox	*Paxistima myrsinites*	wild harvest
Lichen	*various*	wild harvest
Lodgepole pine	*Pinus contorta*	wild harvest
Moss	*various*	wild harvest
Mugo pine	*Pinus mugo*	cultured
Norway spruce	*Picea abies*	cultured
Ponderosa pine	*Pinus ponderosa*	wild harvest
Red-osier dogwood	*Cornus stolonifera*	wild harvest
Subalpine fir	*Abies lasiocarpa*	wild harvest
Tall Oregon grape	*Mahonia aquifolium*	wild harvest
Western red cedar	*Thuja plicata*	wild harvest

Two businesses were identified in the region utilizing conifer boughs and other NTFPs for floral/decorative products. Moose Meadows Farm collects fresh boughs and NTFPs and does value-added processing by making wreaths, garlands and swags for the Advent, Christmas and other special occasions. Moose Meadows produced 250 wreaths (each wreath incorporating approximately 3 kg or 150 bough tips) in 2004, and they expect to double production in 2005. Most of Moose Meadows' products are destined for local and regional markets, however they are expanding through internet sales and have shipped product to other locations in Canada. In addition to the two principles involved in the business they currently employ 4 persons, part-time, seasonally. Harvesting is done primarily by the principles, although others do a small portion of the NTFP harvesting and are paid in-kind with finished wreaths or other products (eggs/honey/jellies). Meadow Ranch wild harvests a variety of NTFPs for sale to craft businesses and for inclusion in floral arrangement. Meadow Ranch harvests spruce and pine cones, lichens, dead and weathered branches (of various species), bark and moss from both their private land base and adjacent Crown lands.

Bough harvesting is not subject to any licensing or permitting requirements in order to harvest products from Crown land in the region outside of parks and protected areas. Unlike in other areas of the province (de Geus 1996, Wills and Lipsey 1999), no business or harvesters were identified in the large scale harvesting of conifer boughs or floral greenery for sale into major markets in Greater Vancouver or for export.

The price range (before shipping) for wreaths is approximately $40 to $75 each. Cultured Christmas tree values vary by species and size, but averaged approximately $25 each in 2004. Wild harvested tree prices vary considerably from commercial to charitable operations and can range from $5 to 20.

Given the low level of industry activity in this sector, there were no resource access, tenure or management issues identified by the commercial participants. A general concern was expressed over the potential for tenure of NTFPs to restrict access to bough collecting areas, and a general concern over the pace of industry development and the potential of expansion bringing too much competition into the local market. Market research and development support was by identified by industry proponents as currently limiting the sector.

6.4 Herbal Health and Cosmetic Products

Key Species and Harvest Information

A variety of herbal teas, salves, creams, soaps, essential oils, spa, health and medicinal products are produced from NTFPs harvested in the Cariboo Chilcotin (Table 7). This sector is characterized by small or home-based businesses, and with the exception of wild rose (*Rosa* spp.) and chamomile (*Matricaria chamomilla*), annual harvests levels are minimal (1-10 kg of each species per year).

Industry Structure and Sector Issues

Three businesses account for the majority of Cariboo-Chilcotin herbal health and cosmetic NTFP harvest: The Hills Health Ranch, Hidden Forest Farm and Winding Path Soap Company. All three use NTFPs in the making of proprietary products. Additionally there are at least 3 small scale enterprises based around production of a limited number of herbal products including a soap maker in 100 Mile House, a herbal salve producer in 150 Mile House and a naturopath/herbal practioner in Horsefly. Unlike other regions of the province where wild harvest for export is prominent (Wills and Lipsey 1999), no businesses were identified that harvest NTFPs from the Cariboo-Chilcotin and sell them to health and cosmetic product manufacturers elsewhere in Canada or for export.

The largest business in the sector is The Hills Health Ranch in 108 Mile. Through considerable research and development work in partnership with government and university researchers, they have developed a number of natural herbal spa and health products (including oils, lotions and facial scrub) based on rose hips, chamomile and field mint. Their products are sold direct to consumer via the internet, through the Health Ranch's store or included in spa treatments such as facials and massage sessions at their facility. Most of the NTFPs used in their proprietary products are sourced locally, including collection from within their commercial recreation permit area (greater than 6,000 ha). The business employs up to 150 part-time, seasonal harvesters to collect up to 1,000 kg of rose hips and 800-1,200 litres of chamomile flowers. Harvesters are paid $15 per 4-litre bucket of rose hips or chamomile. The buyers estimate that it takes approximately 45-60 minutes for an experienced harvester to collect each bucket full. The business utilizes the fact that they wildcraft their botanical products from a natural, high elevation setting as a marketing tool. The management indicates strong growth in their business with an expectation of an increased harvest level of NTFPs for existing products and the development of additional products in conjunction with partners at the University of Northern British Columbia.

Hidden Forest Farm, in Quesnel is a family-run herbal product and aromatherapy business. They utilize wide variety of plant material, all sourced from 65 ha of private land. "Plant saver guidelines" (ethical wildcrafting) employed by the firm, dictates that small amounts of each species are harvested annually (<1 kg). Products ranging from herbal teas, body care products and essential oils for aromatherapy are produced and marketed primarily in the north Cariboo through internet sales, direct to consumer at their farm and the Quesnel farmers' market, and through a limited number of retail outlets in Quesnel and Williams Lake. Hidden Forest has two harvesters (all harvesting done by hand) working for approximately 6 hours per day, from May through August.

Table 7. Key Non-timber Forest Products Harvested for Health and Cosmetic Products in the Cariboo-Chilcotin.

Common Name	Scientific Name	Part(s) Used	Principle Use(s)
Arnica	*Arnica cordifolia*	flower	
Blueberry	*Vaccinium ovalifolium*	berry	
Chamomile	*Matricaria* spp.	flower	
Coltsfoot	*Petasites palmatus*	leaf	
Common Juniper	*Juniperus communis*	berry	soap
Dandelion		flower, leaf root	tea cream
Devil's club	*Oplopanax horridus*	root, bark	
Field mint	*Mentha arvensis*	stem, leaf	tea
Fireweed	*Epilobium angustifolium*	flower, stem	tea
Goldenrod	*Solidago canadensis*		
Kinnikinnick	*Arctostaphylos uva-ursi*	berry, leaf	tea
Labrador tea	*Ledum groenlandicum*	leaf	tea
Lodgepole pine	*Pinus contorta*	sap	
Mullen	*Verbascum thapsis*	leaf	
Pipsissewa	*Chimaphila umbellata*	leaf	tea
Raspberry	*Rubus idaeus*	fruit	
Rose, prickly Rose, Nootka Rose, Wood's	*Rosa acicularis* *R.. nutkana* *R.. woodsii*	fruit (hip) seed petal	essential oil facial scrub craft
Sagebrush	*Artemisia tridentata*	leaf	soap
Strawberry	*Fragaria virginiana*	berry root	tea
Stinging nettle	*Urtica dioica.*	leaf	tea
Tansy	*Tanecetum vulgare*	leaf	
Willow (various species)	*Salix spp*	bark	tea
Wormwood	*Artemisia campestris*	leaf	
Yarrow	*Achillea millefolium*	leaf	tea

The Winding Path Soap Company in 100 Mile House produces a variety of hand-made soaps, creams, bath products and therapeutic lotions; part of their production (characterized as "small quantities") comes from NTFP materials wild harvested in Cariboo-Chilcotin. Products are sold through their own retail outlet in 100 Mile House, internet sales, and consigned through a number of other independent retailers in 100 Mile House and Williams Lake. The owners indicated they would like to obtain more herbal inputs for their products from local sources and a derived from a wider variety of native plant species.

None of the herbal health and cosmetic business that collect and process their own NTFPs indicated any problem accessing or sourcing materials. All indicated that the current harvest levels were a small fraction of the total production of these species. Neither did any of the businesses indicate other resource or regulatory concerns for continuation or expansion of the industry. The Hills Health Ranch noted the importance of its Commercial Recreation Tenure to its overall business viability, but indicated there was not pressure from any source to restrict or diminish it area of operation. Two additional herbal body care manufacturers, Amber Moon Botanicals in Williams Lake and Porcupine Designs in Quesnel do not currently utilize NTFPs from the region in their products but indicated they would source local botanical materials if they were available and priced competitively.

Concerns raised by "wildcraft" interests as part of the public input for the 100 Mile House TSA Annual Allowable Cut review included the potential extirpation of some medicinal plants as a result of harvesting old-growth forests (Leong 2000). The summary document does not however itemize the species of concern or the specific business or First Nations interests at risk.

Research and development support was seen as a key to future growth in the sector. Work on use, efficacy and processing of NTFP products was seen as an area of tremendous importance. A general concern was raised over unknown implications of upcoming Federal regulations for labelling and certification of herbal product contents. It was believed to be a "manageable transition" if the government implemented the changes with sensitivity to small business concerns.

6.5 Other Commercial Non-timber Forest Products

Birch Syrup

Two Cariboo businesses, Birch Place Farm in Quesnel (producing Sugar Spring Classic Birch Syrup) and Sweet Tree Ventures in Big Lake, manufacture birch syrup from sap collected in the region. Each makes a slightly different finished product; Birch Place's syrup is made solely by evaporating water from birch sap to a designated sugar content and consistency (approximate ratio of 80:1 for sap to syrup conversion; Sweet Tree Ventures also reduces birch sap, but also adds fructose to attain the desired sugar content in the finished product.

Birch Place Farm operates entirely from private land and tapped approximately 450 trees in 2005. Sweet Tree Ventures tapped from 200 trees on 1 ha (within a total birch stand of approximately 6 ha) on Crown Land. Sweet Tree Ventures does not have exclusive tenure rights to the birch sap, but has agreement with the BC Ministry of Forests and Range allowing production from the site. On average, mature birch generate 12 litres of sap per tree per day, during a 3-4 week period in the early spring (from March onward). In total the two producers collected approximately 68,000 litres of raw saw and produced approximately 790 litres of finished syrup in 2005. Both producers sell their product direct to consumer and through a variety of retail outlets in the region and around the province. Birch syrup retails for approximately $15 per 250-ml bottle.

The birch syrup producers indicated a large potential market at present with demand exceeding production. That said, they also indicated that the broader market for birch syrup outside of a niche specialty product has not been defined and there is a need for market and marketing research and support if the industry is to grow sustainably. Sweet tree ventures noted that profit margin is most limited by the labour intensive nature of production. They also noted that while access to Crown resources was not currently a limitation, it might limit future growth of sector if other producers without a private land base begin production. Both producers are investigating other products for their raw birch sap as a possible nutraceutical or health drinks. Birch Place Farms has also investigated creating birch wine, but noted the onerous amount of regulations involved in obtaining a cottage winery license currently made that venture infeasible.

Honey and Other Wild Foods

No businesses were identified engaged in the harvest of wild honey. Given that many regional commercial apiaries are close to forestland however, a portion of conventional honey production undoubtedly is derived from forests. For example, a major honey producer in Quesnel, Dragon Heart Apiary, estimated that 25 to 30% of its total 4,800 kg annual honey production comes from forestland and this amount could double with expansion of the business in 2006. Dragon Heart produces a variety of flavoured honeys, utilizing essential oils sourced from outside the province; they indicated they would use Cariboo-Chilcotin NTFPs (in particular hazelnut and pine) for flavouring if they were available.

No businesses were identified that are engaged solely in the harvest, processing and sale of wild fruits or other foods. Small amounts of NTFP based foods however, are made from in conjunction with other activities. For example, Moose Meadows Farm in Quesnel produces small quantities of two jellies made from rose hips and dandelion (*Taraxicum officinale*) – blossoms. Moreover, a small-scale food producer in Prince George (Wildberry Wholesome

Foods) occasionally harvests an indeterminate portion of its annual strawberry, raspberry, blueberry, highbush cranberry and saskatoon needs from the north Cariboo.

BioFuels

Fuelwood is historically an important source of energy for heating and cooking in the region and continues to provide a small amount of jobs through firewood businesses. One business located in each of Quesnel, Williams Lake and 100 Mile House engaged in fuelwood services (cutting and delivery to residential customers) were identified, as well as numerous individuals sporadically offering firewood sales.

Two large scale biofuel businesses are located in the north Cariboo. Trans Canada Power LP operates a 66-megawatt electricity generation plant in Williams Lake. Electricity is generated from burning 600,000 tonnes of waste wood annually to drive steam turbines. The electricity generated is sold on a long-term contract to BC Hydro. Pinnacle Pellet Inc manufactures compressed fuel pellets from wood waste material at its facility in Quesnel. Pellets are sold direct to consumers and through a variety of retail outlets for use in speciallydesigned pellet stoves for home and commercial space heating. Pinnacle Pellet also exports pellets for sale in western Europe where large scale electricity generating plants are run on this fuel. Both large scale biofuel business areas are experiencing growth. A large scale (300 MW) wood waste power plant has been proposed for Quesnel to utilize the enormous amount of dead pine in the wake of the pine beetle epidemic that will deteriorate beyond the point that other forest products are viable before it can be harvested.

Arts and Crafts

No large scale arts and crafts business that utilize local NTFPs were identified, although a substantial number of individuals operating at a small scale make use of non-timber resources. One retailer in the south Cariboo estimated there are approximately 55 artisans active in the region producing a variety of arts and crafts ranging from carvings to picture frames. Species that are known to be used in art and craft manufacture include saskatoon, alder, paper birch, common juniper, lodgepole pine, and western red cedar.

NTFP-based Tourism

While most wilderness tourism businesses in the region rely on NTFPs as part of their nature viewing opportunities, two businesses in the region specifically offer tourism products based on ethnobotany or NTFP-based experiences. Ecotours-BC based out of Williams Lake and operating in the Quesnel Lake watershed sells excursions based on nature study including the ethnobotanical use of NTFPs, with local First Nations and prominent botanists as guides. The sector is characterized as “growing rapidly” and an important draw for visitors outside the region (and country). Ecotours-BC estimates that 40% of its business is derived from ethnobotanical tours and 80% of the ethnobotany tour business is from foreign visitors. Eureka Peak Adventures of 100 Mile House offers Secwepemc’ ethnobotanical experiences (craft production, traditional foods) and interpretative walks with First Nations elders as part of a 5-day guided tour in the South Cariboo wilderness.

7 Directory

Local Governments & First Nations

Cariboo Regional District
Suite D, 180 North 3rd Avenue
Williams Lake V2G 2A4
Phone: (250) 392-3351
Email: mailbox@cariboord.bc.ca

City of Williams Lake
450 Mart Street
Williams Lake V2G 1N3
Phone: (250) 392-2311
corporateservices@williamslake.ca

City of Quesnel
410 Kinchant Street
Quesnel V2J 7J5
Phone: (250) 992-2111

District of 100 Mile House
P.O. Box 340,
100 Mile House V0K 2E0
Phone: (250) 395-2434
district@dist100milehouse.bc.ca

District of Wells
PO Box 123, Wells V0K 2R0
Phone: (250) 994-3223
info@wellsbc.com

Alexandria First Nation
102 - 383 Oliver St,
Williams Lake V2G 1M4
Phone (250) 392-3918

Alexis Creek First Nation
PO BOX 69,
Chilanko Forks V0L 1H0
Phone (250) 481-3335

Canim Lake First Nation
PO Box 1030
100 Mile House V0K 2E0
Phone (250) 397-2227

Canoe Creek First Nation
General Delivery
Dog Creek V0L 1J0
Phone (250) 440-5645

Esketemc First Nation
PO Box 4479
Williams Lake V2G 2V5
Phone: (250) 440-5611

Kluskus First Nation
PO Box 4639
Quesnel V2J 3J8
Phone: (250) 992-3232

Nazko First Nation
469B Anderson Dr
Quesnel V2J 5J4
Phone: (250) 992-9085

Red Bluff First Nation
PO Box 4693
Quesnel V2J 3J9
Phone: (250) 747-2900

Soda Creek First Nation
3405 Mountain House Road
Williams Lake V2G 5L5
Phone: (250) 989-2323

Stone First Nation
General Delivery
Hanceville V0L 1K0
Phone: (250) 394-4295

Tl'etinqox-t'in Government
PO Box 168
Alexis Creek V0L 1A0
Phone: (250) 394-4212

Toosey First Nation
PO Box 80
Riske Creek V0L 1T0
Phone: (250) 659-5655

Ulkatcho First Nation
PO Box 3430
Anahim Lake V0L 1C0
Phone: (250) 742-3260

Williams Lake First Nation
2672 Indian Drive
Williams Lake V2G 5K9
Phone: (250) 296-3507

Xeni Gwet'in First Nations Government
General Delivery
Nemaiah Valley V0L 1X0
Phone: (250) 394-7023

Companies Buying Wild Mushrooms from the Cariboo-Chilcotin

Betty's Best Mushroom Co.
Contact: Ann Barnes, Lynne Cook
PO Box 24
Britannia Beach V0N IJ0
Phone: (604) 896-0075

Joe Chung Mushrooms; Canadian Rockie Matsutake
Contact: Joe Chung
110-8740 Beckwith,
Richmond V6X 1V5
Phone: (604) 270-0699

Matsumora Enterprises
Contact: Kay Matsumora
8296 Ontario St, Vancouver
Phone: (604) 325-1751

Non-Timber Forest Product Businesses

Birch Place Farm
(birch syrup)
Contact: Kim McIvor / Pete Thumand
7251 Lee Rd, Quesnel V2J 6R6
Phone: (250) 747-8455
sugar_spring@uniserve.com

The Dragon Heart Apiary
(flavoured honey)
Contact: Tom Swanky
2151 Johnson Rd
Quesnel V2J 6G1
Phone: (250) 747-0604

Ecotours - BC
(ecotourism)
Contact: Gary Zorn
Box 4299, Williams Lake V2G 2V3
Phone: (250) 296-9100
adventure@ecotours-bc.com

Eureka Peak Adventures
(ecotourism)
Box 1332, 100 Mile House V0K 2E0
Phone: (250) 397-2445
Toll Free: 877 538-6566
info@eurekapeakadventures.co

Goose Lake Botanicals
Contact: Crystal Elwick
Box 4, Horsefly V0L 1L0
Phone: (250) 398-7263

Hidden Forest Farm
(herbal products/aromatherapy)
Contact: Pertti Laine
7051 Northern Ranches Rd,
Quesnel V2J 6R2
Phone: (250) 983-2232
herbalmedicine@hiddenforestfarm.com

The Hills Health Ranch
(health and ecotourism, herbal health and spa products)
Contact: Pat Corbett
Box 26, 108 Mile V0K 2Z0
Phone: (250) 791-5225 ext 222

Kersley Christmas Trees
(Christmas trees)
Contact: Jim Dyer
5245 Hill Lake Road, Quesnel V2J 3H5
Phone: (250) 747-4424
jimdyer@telus.net

Meadow Ranch
(craft and floral stock)
Contact: David and Nicola Finch
Box 4744, Williams Lake V2G 2V7

Moose Meadows Farms
(wreaths and Christmas trees)
Contact: Ted Traer,
Heloise-Dixon Warren
2861 Nazko Road
Quesnel V2J 7E5
Phone: (250) 249-5329
info@moosemeadowfarm.ca

Sweet Tree Ventures
(birch syrup)
Contact: Cheri Lynn Bailey
Box 46, Big Lake V0L 1G0
Phone: (250) 398-2636

Wildberry Wholesome Foods
(wild berry jams and jellies)
1728 6th Avenue
Prince George V2L 3N6
Phone: (250) 563-0570

The Winding Path Soap Company
(herbal body products)
Contact: Susann Collins
Box 1647, 100 Mile House V0K 2E0
Phone: (250) 395-4440

Retailers of Cariboo-Chilcotin NTFPs

South Cariboo Farmers' Market
Contact: Marjorie Nicolson
100 Mile House
Phone: (250) 395-3390
rlceeds@bcinternet.net

Old Courthouse Square Farmers' Market
Courthouse Square,
Oliver St., Williams Lake
Phone: (250) 296-4210

Quesnel Olde Time Farmers' Market
Contact Rob Borsato
Helen Dixon Centre,
Carson Ave, Quesnel
Phone: (250) 747-2321

River Valley Health Products Ltd.
351 Reid Street, Quesnel V2J 2M5
Phone: (250) 991-0298

Natural Food Warehouse
3-25 4th Avenue,
Williams Lake V2G 1J6
Phone: (250) 392-1920

The Hobbit House
Contact: Leanne Kunka
235 Cameron Street
Williams Lake, BC V2G 1S7
Phone: (250) 392-7599

Cariboo Accents Bath and Bedding
150 Horse Lk Rd
100 Mile House V0K 2E3
Phone:(250) 395-1136

Chris Harris Studio Gallery
Box 333, 108 Mile Ranch V0K 2Z0
Phone: (250) 791-6631
photography@chrisharris.com

Jay's Nest Tea Shoppe and Gallery,
320 - 1st Street
100 Mile House
Phone: (250) 395-3210

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Province of BC. 2005 a. 2001 census profile of British Columbia's Regions: Cariboo Development Region. BC STATS, Service BC, BC Ministry of Management Services, Victoria, BC, 18 pp.

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