

Proposal for the Establishment of the Quesnel Lake Wilderness Reserve



Submission to the Governments of British Columbia and Canada

On the urgent need to preserve British Columbia's rare Inland Temperate Rainforest and secure greater habitat protection for the second largest population of critically endangered Mountain Caribou.

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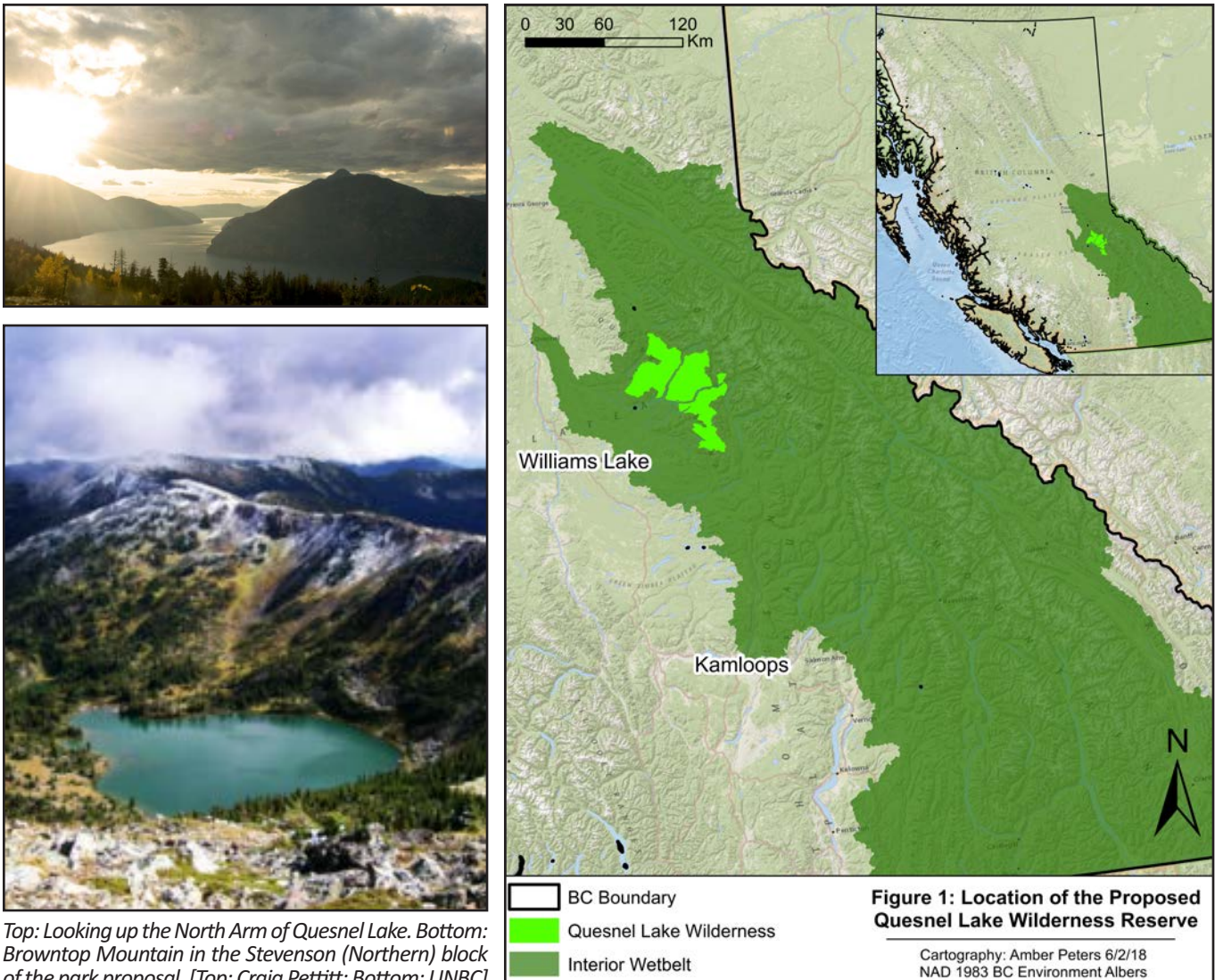
Executive Summary

This is a proposal to protect the wilderness of the North and East Arms of Quesnel Lake, including the Penfold River valley, as a 267,889-ha class-A provincial park in British Columbia's Cariboo Region.

Quesnel Lake and the proposed wilderness reserve are of great significance to the Secwepemc First Nations, including the Xat'sūll (Soda & Deep Creek), T'exelc (Williams Lake), Tsq'escen' (Canim Lake), and Stswecem'c Xgat'tem (Canoe & Dog Creek) bands of the Northern Shuswap Tribal Council that hold treaty rights over the proposal area.

The Quesnel Lake Wilderness Reserve would, if protected, be a major improvement to the provincial park system by adding a significant amount of low-elevation old-growth forest habitat for Mountain Caribou that the adjacent parks system is sufficiently lacking in. It would also support the conservation of three watersheds, including spawning habitat for one of the largest Sockeye Salmon stocks of the Fraser River Basin.

The proposal encompasses an area of high biodiversity, including the very wet ancient Inland Rainforest ecosystem inhabited by many endangered species. Preserving the Quesnel Lake Wilderness as a Class A Provincial Park will be a statement to the BC people that we are serious about protecting our endangered wildlife and rare Inland Temperate Rainforest.



The Park Proposal

Quesnel Lake

With depths up to 610 metres, Quesnel Lake is the deepest lake in British Columbia and thought to be the deepest fjord lake in the world. It is a major tributary of the Fraser River; contributing genetically unique salmon of record-breaking size to the Pacific coast (COSEWIC 2002).

Quesnel Lake is sacred to many First Nations communities who, along with other communities and wildlife populations within the Fraser River Basin, greatly depend on its restoration and protection.



Left: Looking toward the Junction block between the North and East Arms of Quesnel Lake. Right: The Penfold River Valley; prime habitat for Grizzly Bears, Mountain Caribou, and other threatened species. [Photos: Craig Pettitt]

Fisheries

The existing park system surrounding Quesnel Lake has left out three major watersheds that contribute significantly to Pacific Salmon stocks. This includes the Quesnel River, a major tributary to the Fraser which is the largest salmon-producing river in the world.



Spawning Sockeye Salmon. [Photo: Craig Pettitt]

Quesnel Lake and Quesnel River support major anadromous Pacific Salmon (*Oncorhynchus* spp.) and resident trout and salmon stocks (*Salvelinus* spp. and *Oncorhynchus* spp.). These stocks maintain diverse and productive aquatic and terrestrial ecosystems across a great distance.

Quesnel Lake stocks have a particularly vast distribution compared to other Fraser River stocks, enriching an extensive area as they migrate as far as Kodiak Island off the coast of Alaska (Beacham 2014).

Quesnel Lake and its tributaries have been estimated to contain a quarter of the natural spawning sites of Fraser River Sockeye Salmon (Babcock 1902). The proposal also covers ample Chinook Salmon spawning grounds; a species necessary to sustain the endangered and declining BC Southern Resident Killer Whales.



Quesnel Lake is a popular destination for guided fishing tours. [Photo: Craig Pettitt]

Quesnel Lake trout and salmon populations sustain multiple commercial, sport, and Aboriginal fisheries.

Secwepemc First Nations



A member of the Xat'süll First Nation with an ancient cedar. [Photo: Craig Pettitt]

The Williams lake band recognizes important cultural heritage sites within the park proposal including multiple Quigley holes or pit-house sites and sites of culturally modified trees.

Archaeological surveys have found signs of Secwepemc Nation occupancy dating back 4000 years within the park proposal.



A member of the Xat'süll First Nation at the shore of Quesnel Lake. [Photo: Craig Pettitt]

The proposed wilderness reserve is of great cultural significance to multiple First Nations bands of the seventeen that form the Secwepemc Nation.

Four of these bands hold treaty rights in the proposal area.

These include the Xat'süll (Soda & Deep Creek), T'exelc (Williams Lake), Tsq'escen' (Canim Lake), and Stswecem'c Xgat'tem (Canoe & Dog Creek) bands that form the Northern Shuswap Tribal Council.

➤ The Secwepemc Nation traditionally relied on this land for fishing, hunting, and gathering of roots and berries (T'exelc Williams Lake Indian Band 2018; Teit 1909).

A joint VWS-First Nations expedition confirmed extreme value for First Nations cultural sites, old-growth rainforest, and an unexpected system of lakeshore-spawning salmon, Grizzly Bear, and Bald Eagle ecology producing the highest concentration of oceanic lichen species ever recorded in the Interior of BC.



A First Nations pit house site; a historic remnant of past inhabitants of Quesnel Lake. [Photo: Craig Pettitt]

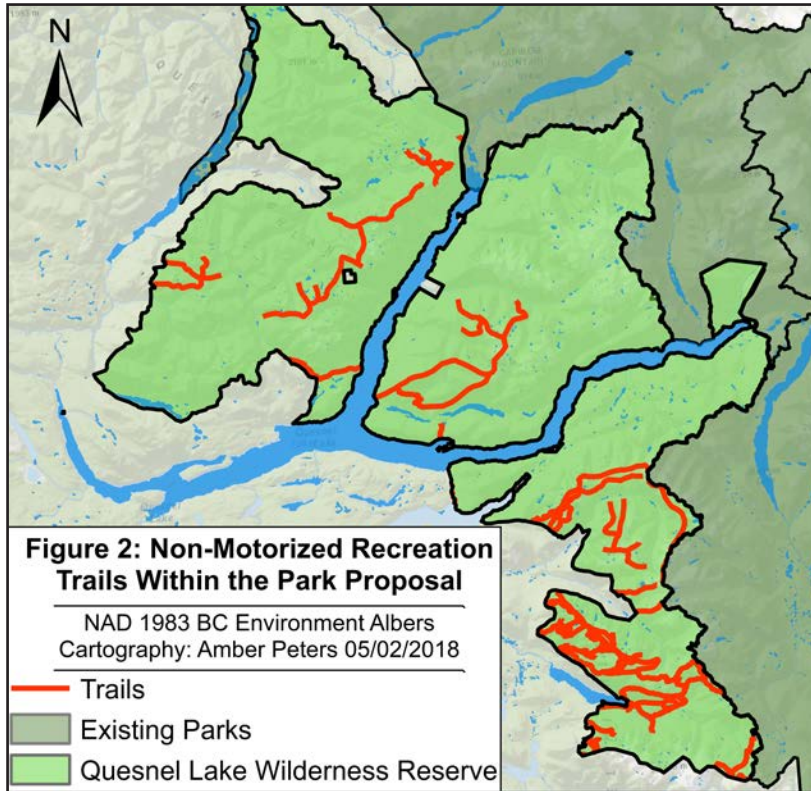
Today, cultural use sites are designated in the existing 872-ha Quesnel Lake Park. There are at least two recorded archaeological sites with high potential for greater archaeological resource discovery within the proposal area (BC Parks 2015).

With clearcut logging encroaching on this remnant wilderness, little remains intact of the traditional territory of local First Nations.

Anglers, nature guides, and local First Nations still rely on Quesnel Lake and its surrounding intact wilderness for their livelihood and for uses of spiritual significance.

Tourism and Recreational Values

With record breaking trophy trout and salmon, Quesnel Lake boasts a sport fishery that is said to be unparalleled anywhere in British Columbia and perhaps anywhere in the world. Sport fishing is extremely renowned, attracting people from all over North America and internationally to the various fishing adventure businesses (Cariboo Regional District 2009). Sandy beaches along Quesnel Lake are another attractive feature, making this wilderness a popular destination for campers and backcountry recreationists.



Popular activities include:

- Canoeing
- Kayaking
- Fishing
- Sailing
- Rock climbing
- Mountain biking
- Wildlife viewing
- Swimming
- Nature tours
- Hiking

This intact wilderness reserve promises high potential for nature-based tourism, providing economic opportunities to First Nations and other groups interested in bear viewing and other local conservation-based industries.

Left: An array of mountain biking and hiking trails already exists within the park proposal.

Biodiversity

The Quesnel Lake Wilderness Reserve will contribute substantial ecosystem diversity to the adjacent park system; creating more suitable habitat for Grizzly Bears and Mountain Caribou. The proposal includes a significant addition of intact old Engelmann Spruce-Subalpine Fir (ESSF) and wet Interior Cedar-Hemlock (ICH wk) forest to the existing park system, totalling 168,472-ha of intact old forest defined in Appendix A. Wetlands, spawning channels, waterfalls, and ancient old-growth cedars form a diverse wildlife habitat that supports an outstanding degree of biodiversity.



*Left: Sockeye Salmon spawning offshore of Quesnel Lake. Middle: *S. venerabilis*, *S. tuckermannii*, *S. fuliginosa*, and *S. oroborealis*. This is the furthest north in the interior that coral lichens *venerabilis* and *tuckermannii* have been found. Right: A healthy population of eagles thrives on spawning fish and deposits nitrates that support lichen growth throughout the forest. [Photos: Craig Pettitt]*

The Inland Temperate Rainforest

British Columbia is home to the only Inland Temperate Rainforest (ITR) on Earth, and it is found almost entirely in the Interior Wetbelt. Surrounding Quesnel Lake is one of the wettest and most species rich ITR ecosystems surveyed in Valhalla Wilderness Society's fifteen-year Inland Temperate Rainforest project. This intact rainforest supports critically endangered Mountain Caribou and other rare and threatened species.



A rare discovery within the park proposal; the lichen species *Sticta oroborealis* in its flowering stage. [Photo: Craig Pettitt]

These forests rarely burn and are home to huge cedars up to four meters in diameter, with many estimated at up to 2000 years old.

Heavy nutrient loading within the ICH forest may be attributed to productive lakeshore fish spawning grounds along Quesnel Lake. Spawning trout and salmon attract eagles, Grizzly Bears, and scavengers that deposit nutrients in the surrounding forest.

A species survey of the ICH forest found oceanic lichen species in abundance and some in forms never before found by science.



Mossy cedar branches are a sign of true rainforest. [Photo: Craig Pettitt]

Although it is an incredibly rare and biodiverse ecosystem, ancient low elevation ITR like that found within the proposed Quesnel Lake Wilderness Reserve is extremely underprotected.

Inland Temperate Rainforest is a type of Interior Cedar-Hemlock forest - the climax forest of low to middle elevations in much of the Interior Wetbelt.

ICH may be classified as dry, moist, wet, or very wet. Many scientists classify only wet and very wet ICH as rainforest - retaining enough moisture through the summer to host coastal rainforest species.

The very wet, very old Inland Temperate Rainforest has biodiversity comparable to some tropical forests.



University of Alberta biologist Toby Spribille surveys an ancient cedar for lichens. [Photo: Craig Pettitt]

Sticta oroborealis and *S. fuliginosa*, *Platismatia norvegica*, and the COSEWIC species of special concern *Nephroma occultum* are some of the species found that are usually endemic to coastal ecosystems. These are just a few of the hundreds of lichen species that can be found within the wet ICH rainforest.

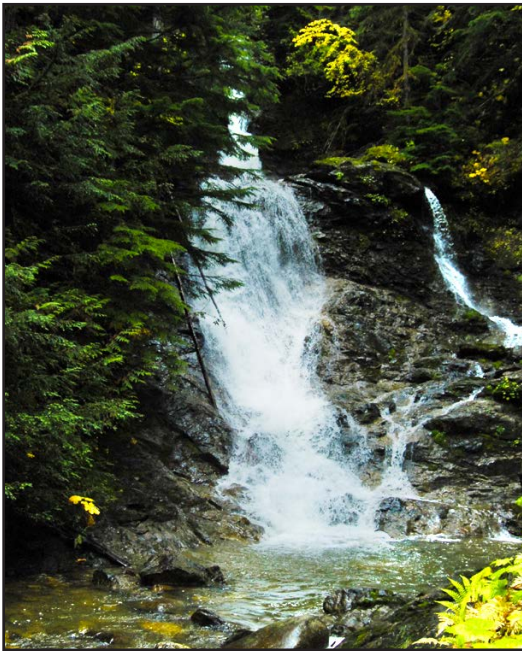
The Inland Temperate Rainforest

The Inland Rainforest contributes to the overall health of the surrounding environment through active carbon sequestration and the supply and filtration of massive volumes of freshwater.

Research on BC forest fires has shown that environmental precipitation is a greater determining factor for forest fires than temperature. The preservation of precipitous ecosystems could contribute to wildfire reduction in British Columbia (Meyn et al. 2013).



Another rare find within the park proposal; the COSEWIC species of special concern *Nephroma occultum*. [Photo: Craig Pettitt]



A waterfall in the Inland Rainforest off the shore of Quesnel Lake. [Photo: Craig Pettitt]

Wildfires and Mountain Pine Beetle outbreaks have devastated the drier ecosystems of the Interior Plateau surrounding the Quesnel Lake Wilderness Reserve.

Designating greater protection for this ancient, humid, and resilient haven of biodiversity now is fundamental to pursuing long-term ecosystem stability amidst a rapidly changing landscape and climate.

Dr. Lance Craighead of the renowned Craighead Environmental Research Institute conducted an in-depth analysis of the Inland Temperate Rainforest Region from which he concluded that:

- 85% of the ITR must be managed in order to maintain biodiversity.
- 55% must be fully protected to maintain species such as salmon, Grizzly Bears, and Mountain Caribou (Craighead 2004).

All of the ICH within the park proposal is of the wet Inland Temperate Rainforest variety.

A 10-year GIS mapping project with Baden Cross of Applied Conservation GIS found dismal protection of the remnant Inland Temperate Rainforest (ICH vk; wk) within the Inland Rainforest Region (IRR).

- IRR land base: 14.31 million hectares.
- Parks in the IRR: 2.44 million hectares (17% of land base).
- Only 15% of forest in the IRR is Inland Rainforest.
- Only 18% of the Inland Rainforest is protected* (263,376-ha of ICHwk & 51,075-ha of ICHvk).
- Only 51,457 hectares of old-growth ICHwk and 10,014 hectares of old-growth* ICHvk exist in fully protected areas.
- Government data shows that one-third of all protected Inland Rainforest is in one park: Wells Grey Provincial Park. Most of this forest burned in the 1940's.
- Only 20% of the protected Inland Rainforest is old-growth (140 yrs +). Ancient old-growth over 1000 years is far less protected.
- Two-thirds of protected ITR are over 1000-m in elevation with far less species diversity than low-elevation ITR.
- 47% protected ITR is on steep slopes largely avoided by Mountain Caribou.

*"Protected" means permanently, legally, and fully protected with designations such as parks, conservancies, and ecological reserves. "Old-growth" describes tree stands of 140 years or older as per BC Forest Service standards.

Endangered Species

Mountain Caribou

The Quesnel Lake Wilderness Reserve is home to the second largest population unit of Mountain Caribou. Supporting this large population is a necessary step to protecting the entire ecotype.

Under the Federal Species at Risk Act, the valley-bottom old growth forest along Quesnel Lake is critical habitat for endangered and red-listed Mountain Caribou.

195,505 hectares of the proposal are already designated as Caribou No-Harvest Wildlife Habitat Area. If this population is extirpated, the weak no-harvest protection could be lifted, putting this incredibly rare ecosystem and its long list of endangered species at risk.

The Quesnel Lake Wilderness Reserve covers much of the habitat range of the Wells Grey North herd of 200 animals. This is the second largest remaining herd and its range overlaps with the Wells Grey South - North Thompson, Barkerville, and North Cariboo Mountains sub-populations of 118, 72, and 146 animals respectively.

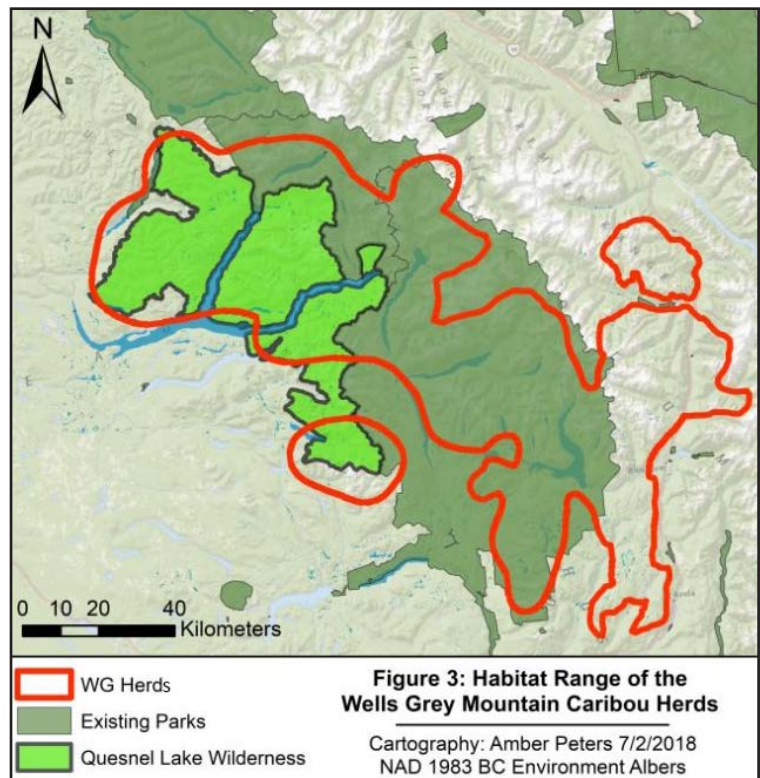
➤ Population mixing is believed to occur between these four sub-populations (Young & Freeman 2001).

➤ The proposal area is an important trans-population migration corridor.

➤ The proposal creates high potential for population gene flow, establishing greater long-term population stability.



Mountain Caribou on the shore of Quesnel Lake. [Photo: Elysia Resort]



Left: The ancient Inland Rainforest along the shores of Quesnel Lake supports the growth of hair lichens (*Alectoria* and *Bryoria* spp.) - a staple food item for Mountain Caribou. [Photo: Craig Pettitt]

Mountain Caribou

Mountain caribou need a wide range of connected habitat types to survive, and their range has been shown to shift slightly each year, demanding a greater protected habitat area for long-term conservation (Seip 1992).

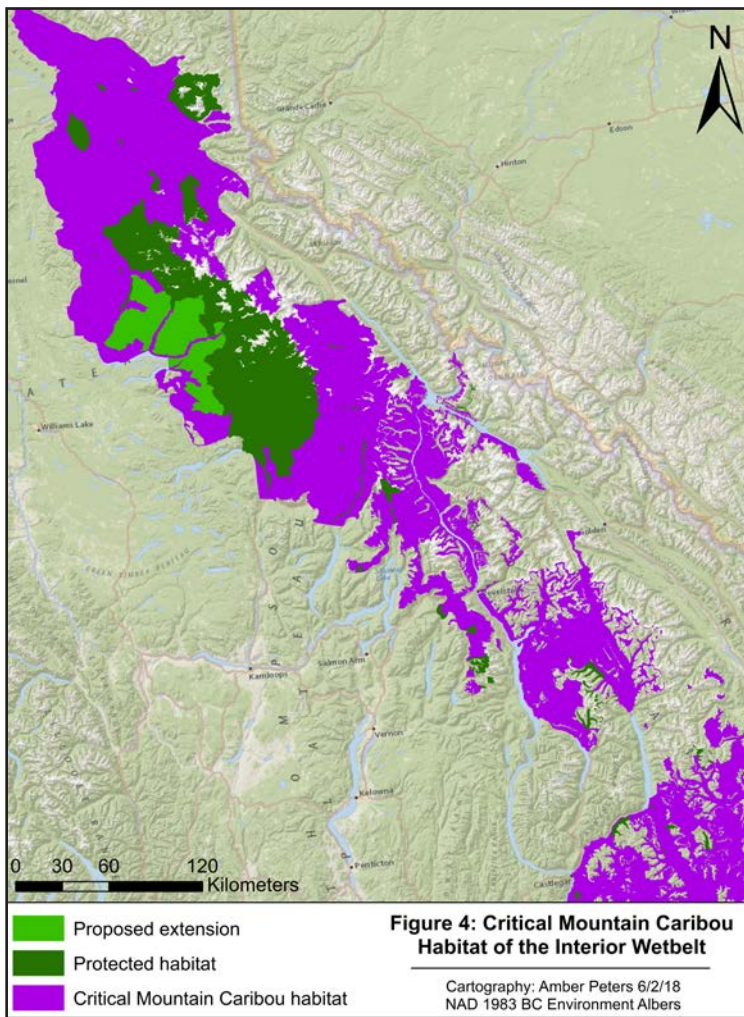
The North Arm of Quesnel Lake and the Penfold Valley may be the largest and most intact body of Inland Temperate Rainforest in existence today, rivalled only by the Walker Wilderness in the Robson Valley.

This population is the largest to exist predominantly within a protected area, and focussing on the expansion of this habitat is a logical strategy for their conservation.



The Mountain Caribou is an iconic Canadian animal whose decline is an indicator of overall ecosystem health. [Photo: Wayne McCrory]

Much of the low-mid elevation ICH old growth needed by Mountain Caribou in spring and early winter is outside of the existing park system boundary.



69% of the ICH within the park proposal is outside of the no-harvest boundary, and that inside the boundary is still subject to mining, mineral tenure logging, and development, leaving this wet lakeside ITR Mountain Caribou habitat grossly unprotected.

Virtually all old-growth ICH in the park proposal is outside of the No-Logging Wildlife Habitat Area (WHA), and much of the ICH that is designated as a no-logging zone is covered in one of 163 mineral tenures in the proposal.

The 2014 federal recovery strategy reveals that 65% intactness is necessary for Mountain Caribou survival (Environment Canada 2014). The Quesnel Lake Wilderness Reserve would add substantial intact ESSF, ICH, and wet Inland Rainforest ICH to the existing park system (see Appendix A).

Protection of the remaining old growth forest around Wells Grey Park is the most urgent necessity for the second largest population unit of this iconic Canadian migratory animal.

Grizzly Bears

The BC Auditor General's review of Grizzly Bear management (2017) found:

- Major uncertainty in population estimates.
- Unsustainable maximum allowable mortality rate has persisted despite the uncertainty.
- British Columbia's fragmented park system cannot sustain Grizzly Bears long-term.
- Cumulative effects of decline should ring alarm bells for urgent protection.

The Quesnel Lake Wilderness Reserve includes ample habitat for a large population of blue-listed Grizzly Bears.

At the North and East Arms of Quesnel Lake, critical spawning habitat for salmon and Bull Trout are abundant at the convergence of most rivers and creeks (Cariboo Regional District 2009).

Wide-bed Sockeye Salmon spawning habitats create plentiful foraging sites for Grizzly Bears and viewing areas for various wildlife tourism businesses within the proposal area.



The range of Grizzly Bears has decreased severely across North America. [Photos: Craig Pettitt]

Other Endangered Species

The following endangered species are listed both provincially and federally with known occurrences in biogeoclimatic zones ESSF, ICH, and IMA within the forest districts that adjoin our park proposal. (Quesnel (DQU) and Central Cariboo (DCC)) or directly within the park proposal (BC Species & Ecosystems Explorer 2018):

Red listed species

Yellow-breasted Chat (*Icteria virens*)
 Lewis's Woodpecker (*Melanerpes lewis*)
 Caribou (southern population) (*Rangifer tarandus*)
 Badger (*Taxidea taxus*)



Blue-listed species

Bull Trout (*Salvelinus confluentus*)
 Grizzly Bear (*Ursus arctos*)
 Great Blue heron (*Ardea Herodias*)
 Short-eared Owl (*Asio flammeus*)
 Western Painted Turtle (*Chrysemys picta pop.*)
 Wolverine (*Gulo gulo luscus*)
 Fisher (*Martes pennanti*)
 Fringed Myotis (*Myotis thysanodes*)
 Long-billed Curlew (*Numenius americanus*)
 Olive-sided Flycatcher (*Contopus cooperi*)
 Black Swift (*Cypseloides niger*)
 Bobolink (*Dolichonyx oryzivorus*)
 Rusty Blackbird (*Euphagus carolinus*)
 Barn Swallow (*Hirundo rustica*)
 Magnum Mantleslug (*Magnipelta mycophaga*)
 Northern Myotis (*Myotis septentrionalis*)

Why We Need More Parks

Wide-Ranging Species



The Quesnel Lake Wilderness Reserve will enhance the current protected areas, creating a more viable range for long-term protection of Mountain Caribou and other wide-ranging species such as Grizzly Bears.

➤ **Other methods of protection are not working.**

Since the Mountain Caribou Recovery Implementation Plan was announced in 2008, the Wells Grey North herd has dropped from 265 to 200 individuals in 2016, and the Wells Grey South herd from 223 to 118 individuals.

Starting in 2001, the Quesnel Highland Wolf Project significantly reduced and sterilized wolf populations within the proposal area. The substantial reduction in wolves and increases in hunters' bag limits and season lengths all failed to produce a significant increase in Mountain Caribou (Roorda & Wright 2004, Hayes 2013).

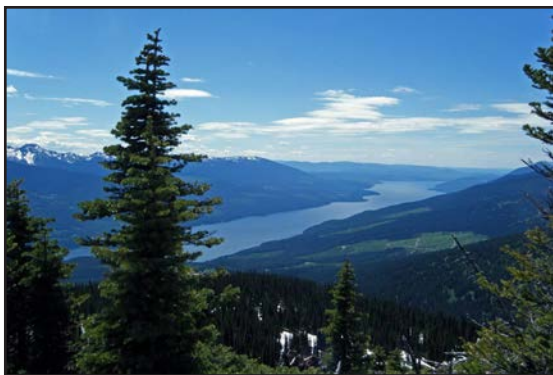
Room for Restoration

Historically, The Quesnel River produced the largest Sockeye Salmon runs in the entire Fraser Basin. Construction of the Quesnel River Dam and the Hell's Gate rockslide caused drastic declines in this salmon run. In the late 20th century, the Quesnel River began to once again outnumber the famous Adams River Sockeye run, making it the largest Sockeye producing river in the Fraser Basin (Department of Fisheries and Oceans 1995).



Despite the decline, Wells Grey herds are in numbers far higher than all but one herd of remaining Mountain Caribou [Photos: Jim Lawrence].

Though the Mt. Polley tailings pond breach of 2014 is a serious concern for wildlife and people inhabiting the Quesnel Lake area, we have repeatedly witnessed the incredible resilience of nature and its ability to bounce back from catastrophe if given the chance to rejuvenate without further disturbance.



The Mitchell and Horsefly Rivers are the two greatest sources of Sockeye Salmon to the Quesnel Lake stock. These stocks have experienced steep declines throughout history, but have shown great potential for restoration with rapidly increasing returns from extreme lows to 1.6 million and 11 million respectively in 1993 (Department of Fisheries and Oceans 1995).

Impacts of the tailings pond breach on fish populations are yet to be fully known. Further disturbance to the area could cause catastrophic effects for the entire Quesnel Lake ecosystem and others within the Fraser River Basin.

Supporting this stunning wilderness through its process of restoration is important to all British Columbians. The Quesnel Lake Wilderness Reserve would provide the protection the caribou and the Inland Rainforest need, and be a cultural and ecological legacy for British Columbia to proudly pass on to future generations.

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Appendix A

Intact* Old Forest Breakdown by Biogeoclimatic Zone:

Quesnel Lake Park proposal

BEC Zone	Area (ha)	%
ESSFwc 3	44751.51	36.68%
ESSFwcp	4331.03	3.55%
ESSFwcv	12259.55	10.05%
ESSFwk 1	30164.00	24.72%
ICH wk 2	28384.45	23.27%
ICH wk 4	1871.17	1.53%
IMA un	4.30	0.00%
IMA unp	234.40	0.19%
TOTAL	122,000.42	100.00%

Total ESSF	91,506.09	75.00%
Total ICH	30,255.62	24.80%
Total wet ICH (wk & vk)	30,255.62	24.80%

Cariboo Provincial Park

BEC Zone	Area (ha)	%
ESSFwc 3	10794.16	25.52%
ESSFwcp	1363.40	3.22%
ESSFwcv	1944.97	4.60%
ESSFwk 1	9892.04	23.39%
ICH wk 1	0.00	0.00%
ICH wk 2	14568.66	34.45%
ICH wk 4	3070.03	7.26%
IMA un	55.89	0.13%
IMA unp	600.42	1.42%
TOTAL	42,289.58	100.00%

Total ESSF =	23,994.57	56.74%
Total ICH =	17,638.69	41.71%
Total wet ICH (wk & vk)	17,638.69	41.71%

Horsefly Provincial Park

BEC Zone	Area (ha)	%
SBS dw 1	19.90	10.76%
ICH mk 3	165.06	89.24%
TOTAL	184.96	100.00%

Bowron Provincial Park

BEC Zone	Area (ha)	%
BAFAun	0.57	0.00%
ESSFwc 3	11791.91	21.87%
ESSFwcp	1364.16	2.53%
ESSFwk 1	18592.90	34.49%
ICH mk 3	1467.58	2.72%
ICH wk 4	6894.33	12.79%
IMA un	0.00	0.00%
IMA unp	381.06	0.71%
SBS vk	596.15	1.11%
SBS wk 1	12825.06	23.79%
TOTAL	53,913.73	100.00%

Total ESSF	31,748.97	58.89%
Total ICH	8,361.91	15.51%
Total SBS	13,421.21	24.89%
Total wet ICH (wk & vk)	6,894.33	12.79%

Wells Gray Provincial park

BEC Zone	Area (ha)	%
ESSFmm 1	8.29	0.00%
ESSFmmp	1.98	0.00%
ESSFwc 2	76111.58	29.57%
ESSFwc 3	17969.33	6.98%
ESSFwcp	5489.39	2.13%
ESSFwcv	39750.36	15.45%
ESSFwk 1	12658.79	4.92%
ICH dw 3	5,912.86	2.30%
ICH mw 3	32,628.80	12.68%
ICH vk 1	16,635.51	6.46%
ICH vk 1c	1,007.89	0.39%
ICH wk 1	49,010.38	19.04%
ICH wk 2	147.62	0.06%
IMA un	29.35	0.01%
TOTAL	257,362.11	100.00%

Total ESSF =	151,989.71	59.06%
Total ICH =	105,343.05	40.93%
Total wet ICH (wk & vk)	66,801.39	25.96%

* "Intact" forest analysis was guided by the criteria and definitions developed by Global Forest Watch Canada.

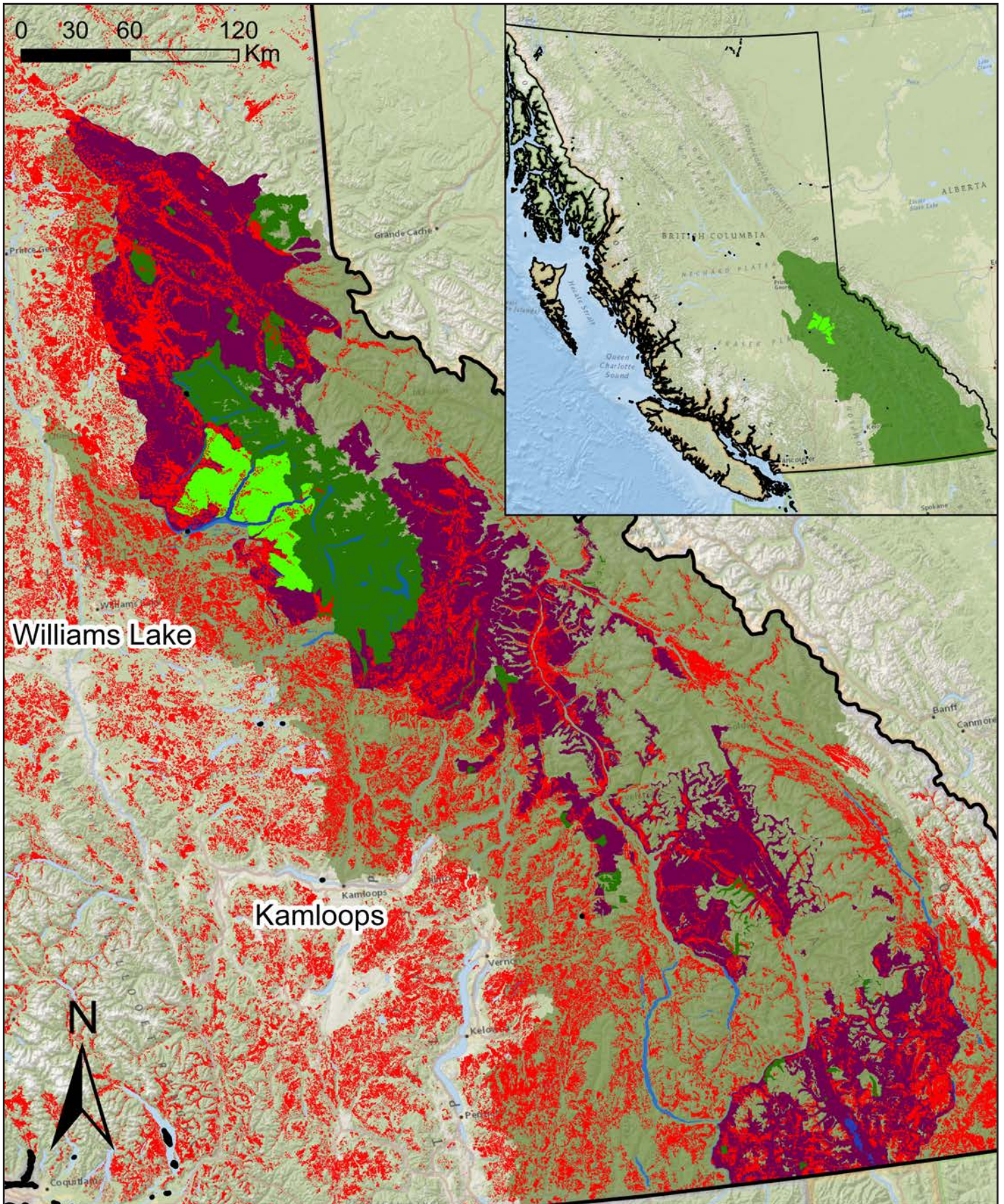


Figure 5: Harvested Areas in Critical Mountain Caribou Habitat

Cartography: Amber Peters 8/5/18
NAD 1983 BC Environment Albers

-  BC Boundary
-  Cutblocks
-  Protected habitat
-  Proposed extension
-  Interior Wetbelt
-  Critical Mountain Caribou habitat