

Ancient Forest

Socio-economic Benefits of Non-timber Uses of BC's Inland Rainforest
Research Bulletin, December, 2017

Visits to Trail for 2017 Hiking Season

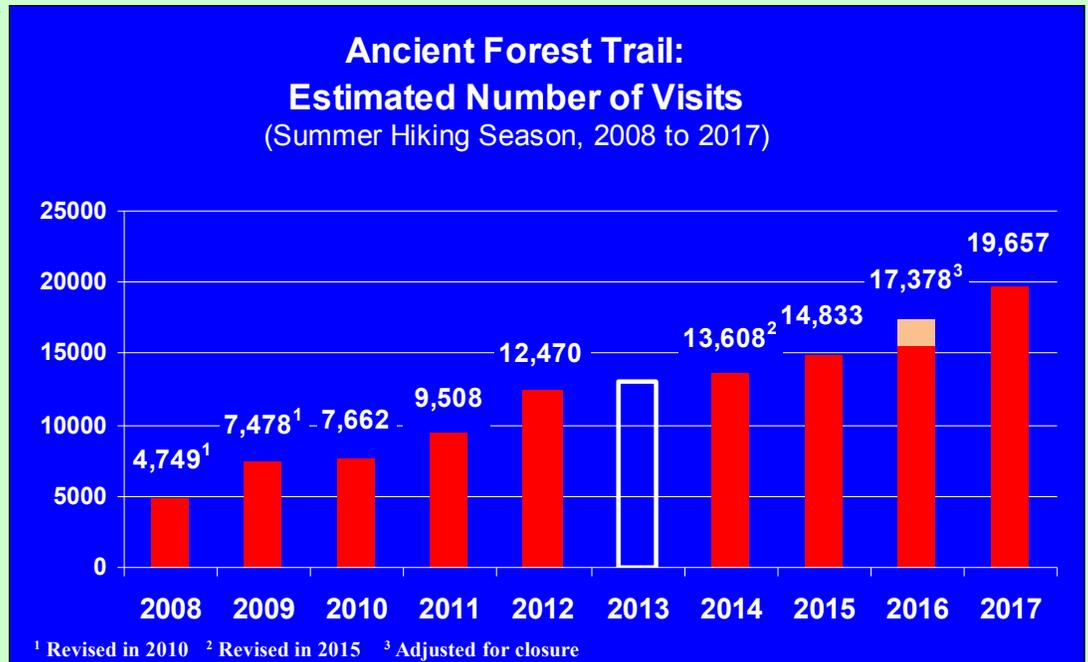
David J. Connell

The estimated number of visits to the Ancient Forest/Chun T'oh Whudujut Provincial Park during the 2017 hiking season was 19,657. As shown in the chart, this increase is consistent with overall trends.

Several important factors must be considered when looking at these numbers. First, the Ancient Forest/Chun T'oh Whudujut Provincial Park was enacted as a Class A park on May 19, 2016. This new sta-

tus meant better promotion, as the new park was included in provincial materials promoting the government's park system, thereby contributing to a potential rise in the number of visitors.

Second, many areas of BC were negatively impacted by extensive forest fires. Extended highway closures and persistent, dense smoke affected people's travel plans. On the one hand, it is assumed that fewer tourists travelled through the area. On the other hand, many of the residents affected by fire in the Cariboo Regional District were evacuated north to Prince George, thereby increasing the amount of traffic across Highway 16.



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The purpose of this research bulletin is to communicate the results of on-going research on the socio-economic benefits of non-timber uses of the inland rainforest of the upper Fraser River valley in British Columbia. The information contained in this bulletin may be distributed freely with proper citation, as follows:

Connell, David J. (Ed.) 2017. *Socio-economic Benefits of Non-timber Uses of BC's Inland Rainforest: Research Bulletin, December 2017*. Prince George, BC: Ecosystem Science and Management, University of Northern British Columbia.

For more information about this study please contact Dr. David J. Connell (email: david.connell@unbc.ca; tel.: 250-960-5835).

Monitoring Off-trail Impacts of Visitors

Ashley Bradley, Research Assistant, UNBC

A new, formal program to monitor off-trail impacts of people using the park's trails was established in 2017. Typically, off-trail impacts include people stepping off the wood planks in order to get closer to the trees.

The newly established park status for the ancient cedars presents a unique opportunity to implement a program now in order to monitor impacts over the long term. For this purpose, UNBC researchers (Dr. Pamela Wright, Outdoor Recreation and Tourism Management, UNBC; Dr. David Connell, Ecosystem Science and Management, UNBC; Ashley Bradley, Research Assistant, UNBC; Rolland Frederick, Research Assistant, UNBC/Lheidli T'enneh), in partnership with BC Parks, developed a Backcountry Recreation Impact Monitoring (BRIM) program. This BRIM program is integrated with BC Park's province-wide Long-term Ecological Monitoring (LTEM) program, which documents ecological changes occurring across BC's landscape.

At the start of the 2017 hiking season, researchers selected six sites for the impact monitoring program. These sites were heavily impacted sites from previous years. Most of these sites experienced high levels of vegetation trampling, damage to the moss/lichen on the tree trunks, and exposure of tree roots. These impacts are assumed to be from recreationalists wandering off trail to look closer at the large, old western cedars. A site for the counts of blueberries (although usually soapberries), as part of the LTEM program, was established off the main trail.

The monitoring program includes visual documentation. A series of photos were taken of the trail at both the beginning and end of the summer to track the changes of the trail. This photo

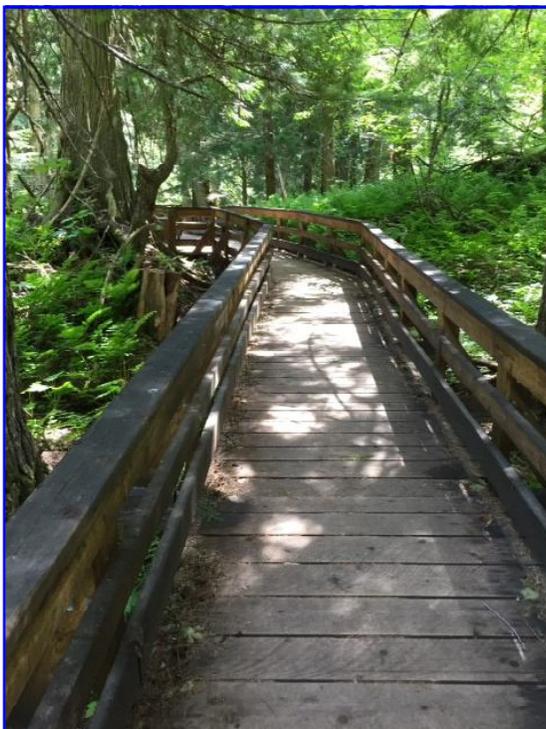
series was started in 2008, thus providing nine years of photos documenting changes in the infrastructure of the trail as well as the ecological impacts of outdoor recreation.

The research team also assessed the condition of the trail using a monitoring program referred to as condition class assessment. Sections of the trail were classified with regard for both level of ecological impacts and level of infrastructure development. The team established Ecological Condition Classes (Classes I-V) representing different ecological conditions based on physical damage to the vegetation, physical damage to the trees/roots, and the general appearance of the site (including presence of non-native plants). Class I, which has the lowest levels of ecological impacts, has the following characteristics: ground vegetation flattened but not permanently damaged; no physical damage to tree bark or roots; site looks natural. Class V, which has the highest levels of ecological impacts, has the following characteristics: more than 75% ground vegetation worn away; extensive physical damage to tree bark; full exposure of tree roots; and extensive bare area with no native plants present.

The Infrastructure Condition Classes are based on the level of development of the walking surface (hardened to full boardwalk) and the presence/development of handrailings (none to fully developed). Class I is characterised as follows: impermanent or little to no infrastructure present (i.e. hardened surface); no hand railings present. Class V is a fully developed boardwalk with fully developed hand railings.

The researchers assessed sections of the trail based on the two sets of class conditions. Using a Global Positioning Systems (GPS),

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Above: Class IV Ecological Condition

Left: Class I Ecological Condition

Monitoring Impacts (continued)

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the trail was walked and waypoints were created where the trail changed classes. Notes were taken along with the GPS waypoints to later create a map using Geographic Information System (GIS) software. This mapping was done to visualize the results and make analysis of the data easier. For the Ecological Condition Class assessment, impacts were considered within two feet on either side of trail.

The results of the condition class assessments are shown in the charts below. The percentages represent the proportion of the trail assessed by each condition class. Almost half (47.5%) of the trail is Class I and II Ecological Condition, indicating either a low or somewhat low level of impact (Chart 1), which also means that half the trail has suffered at least a moderate level of ecological impacts. However, many of these impacts were the result of building the trails and installing bridges and boardwalks. No part of the trail has the highest level of impact (Class V).

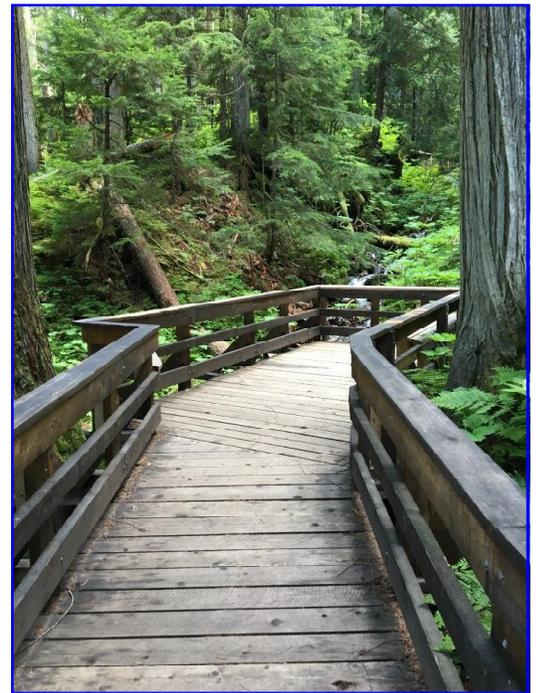
Regarding infrastructure development, most of the trail (76.3%) is Class I and II Infrastructure Condition, indicating a low or somewhat low level of infrastructure (Chart 2). While only 14.8% of the trail is Class V with fully developed boardwalk and hand railings, this level of

infrastructure is a major accomplishment given the reliance on volunteers to complete the work.

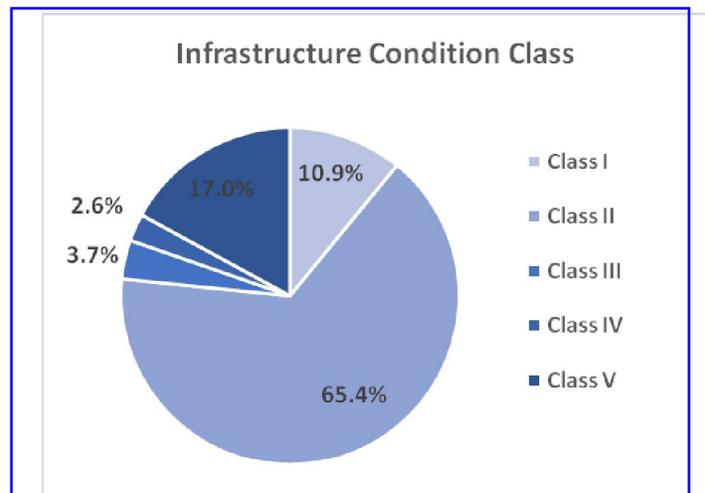
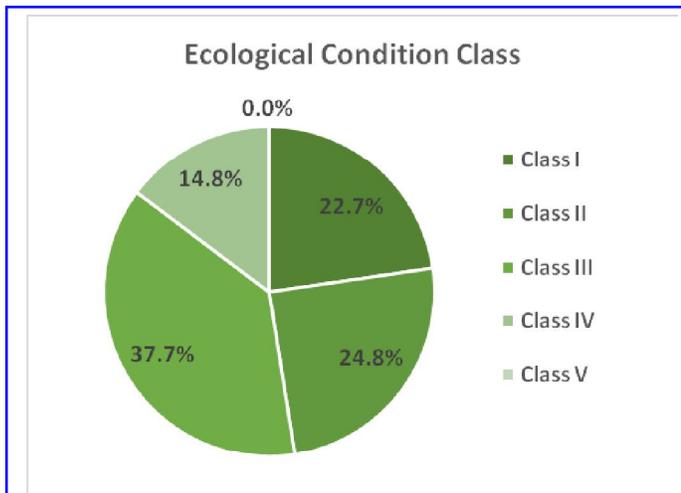
This past year's work established a formal monitoring program of off-trail impacts by visitors to Ancient Forest Chun T'oh Whudujut Provincial Park. Two of these monitoring types are integrated with BC Park's LTEM program. This joint effort directly supports the long-term management of the ancient forests and complements the work of other UNBC scientists on the ecological aspects of the ancient forest. The long-term aim of this monitoring program is to ensure that visitors can enjoy the beauty of the park while also ensuring the ecological integrity of the area is not compromised.



Class I Infrastructure Condition



Class V Infrastructure Condition



Chun T'oh Whudujut: Rolland's Perspective

Rolland Frederick worked as a Research Assistant at the Ancient Forest/Chun T'oh Whudujut Park during the summer 2017.

My name is Rolland Frederick (Letric Ch'ò: Bigger of the Dominick's) and I am from Lheidli T'enneh.

Chun T'oh Whudujut in Carrier (Dak'elh) means "a large area of growth, over a big amount of time" and "oldest trees." The Ancient Forest is part of the traditional territory that has been and is still used by a local First Nation, the Lheidli T'enneh. The traditional territory extends eastward to the Rocky Mountains, westward to Cluculz Lake, northward to Summit Lake, and southward to Hixon (see map).

The Lheidli T'enneh are "the people of where the two rivers meet," the Nechako and the Fraser Rivers. The Lheidli T'enneh people hunted and fished up and down the Nechako and Fraser rivers since before time immemorial and continue to practice their traditions. We have used these traditional territories for thousands of years for medicinal and cultural purposes, including foraging for berries, roots, and other vegetation, as well as for hunting, fishing, and travel in order to trade with neighbouring nations.

The Lheidli T'enneh people are not the only First Nation in this area, as neighboring Nations' traditional territories overlap with the Lheidli T'enneh. These neighboring Nations have worked with each other for as long as they have been here and we lived in harmony in a respectful, honorable manner. The First Nations used the wood for shelter, transportation, and as an energy source, as well as the vegetation and water, as these uses are essential to sustain life. First Nations give back to Mother Earth and The Creator by paying their respects through recycling, replenishing, and rejuvenating what Mother Earth has let them take. The resources were never over-fished, over-hunted, or abused. Recycling, everything recyclable, as that is the First Nations people's way. We always pay respects to the elements of life and to the providers of life.

This stroll through the history of our territory comes from the testimonies of our Elders and through documented historical evidence. This evidence backs the truth of the Lheidli T'enneh people and their traditional uses of the area.

This brings me to why I am writing this report. Simply, I want to share my experiences of working at the Ancient Forest for the University of Northern British Columbia (UNBC) during the summer of 2017 and what I learned while working there. I was hired to conduct interviews with people visiting the park and assist with an environmental impact monitoring project.

First, let me acknowledge the people who made this opportunity possible, and that is Chus Sam of the Lheidli T'enneh and David Connell of UNBC. When I was first approached by Chus about representing the Lheidli T'enneh at the Ancient Forest, I must admit I was very reluctant because I have never been offered an opportunity such as this before, and it was an overwhelming feeling. Nevertheless, I accepted the opportunity and I am extremely pleased that I stepped outside my box

for a change and grasped this challenge. Later, I realized that this project was not a challenge but an opportunity, and I am glad I made that decision. My motto is to persevere and conquer whatever I put my mind and heart to.

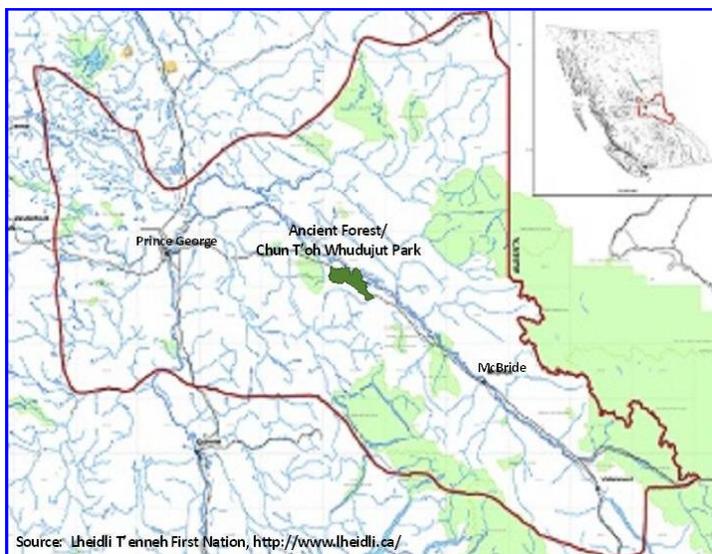
I am pleased to report that my experience was bar none, and trust me when I say that I reaped it for all it is worth. I interviewed people from all parts of the world who had travelled to see and experience our Ancient Forest. I gained a life's worth of knowledge and met a vast number of people with many different ideologies, religious beliefs, and views, from tree-hugging locals to an elderly couple from Kazakhstan who had never seen an ancient forest. Until now that is, thanks to their locally-born and raised Prince Georgian son-in-law who suggested they travel to Prince George to see the Ancient Forest and to take advantage of the wheelchair accessible boardwalk, as both parents are wheelchair bound. Among the people I met, their knowledge of Canada and Canadian history was astounding and heartening, and I was delighted to share with them information about the Lheidli T'enneh way of life and uses of our traditional territory.

I will take from this experience that I am extremely grateful that I was born in such a beautiful part of Canada, and how much I have taken for granted this blessing. This experience prompts me to pursue other adventures involving my traditional territory and education. I will also explore Canada and learn more about what our country has to offer. I encourage others to explore and learn about our country, people, and its history. Pass this knowledge on to your children, and keep the ball rolling.

I was honoured to work with Ashley and Dave and grateful that I was given the opportunity to meet the people who visited the trail. Amazing experience!

Respect, and blessings. Hok'ah!

Figure 1. Traditional territory of the Lheidli T'enneh



Proposed Act to Protect Old-growth Forests

Michelle Connolly, Conservation North

Finding a balance between industrial logging and conservation of forests is a matter of on-going debate in British Columbia. As this debate continues, Conservation North, a non-profit organisation in central interior BC, believes that there is an unhealthy imbalance, and that too many old-growth forests have been harvested.

Working in collaboration with the Ancient Forest Alliance and others, Conservation North is calling on the BC government to support proposed legislation to protect the province's remaining old-growth forests. Conservation North has asked the provincial government to create an *Oldgrowth Forest Protection Act* to safeguard these endangered places and their dependent plants and animals.

Old-growth forests can be hundreds to thousands of years old, have never been logged, and are home to lichens, plants and animals that could otherwise not exist. These forests provide food, clean air and water, harbour rich First Nations histories, and are a source of spiritual wonder and inspiration.

Old-growth forests in BC's interior have experienced a century of unsustainable, industrial-scale logging. This loss of old forests to logging is even more critical in light of climate change. These combined pressures have placed a high value on our remaining old forest stands and the critical wildlife habitats they support, including shelter and food for moose and caribou.

In 2013, the University of Victoria's Environmental Law Centre completed a review of the current state of legislative protection for old-growth forests in BC. Two central concerns are that existing old-growth retention targets are insufficient and current regulatory protection is "soft" and inconsistent. The report also presents a framework for new legislation to protect old-growth forests.

The intent of the present call for new legislation is not only to protect old-growth forests but also to transition to a more sustainable forest industry that is based on value-added, second-growth forests. To achieve this goal, the new legislation would be based on the following actions:

- Place an immediate moratorium on logging in high biodiversity cedar stands in interior BC.
- Turn non-legal spatially defined Old Growth Management Areas (OGMAs) into legally binding spatially defined reserves.
- Stop issuing BC Timber Sales permits in old-growth forests and in caribou winter range.

In addition, the new legislation must be combined with economic support for First Nations and a planned transition to a sustainable second-growth forest industry.

Conservation North can be contacted directly at info@conservationnorth.org

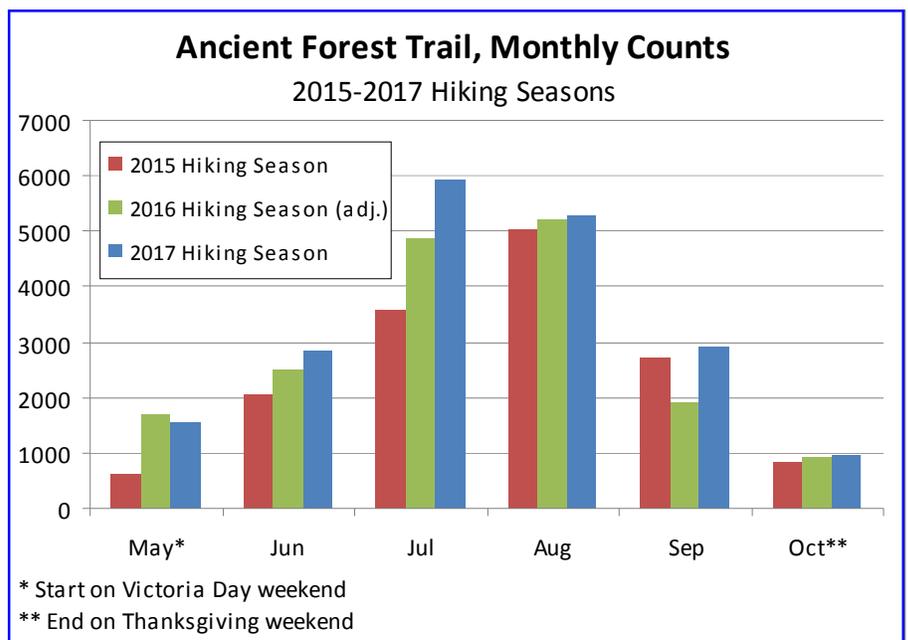
Visits to Trail

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This increased level of highway traffic resulted in a higher number of visits to the park in July, as evident in the chart below. Correspondingly, this change in traffic pattern may have contributed to a drop in the proportion of tourists among all visitors during the season, from 50% to 43.3%.

In addition to factors affecting this year's visits, one must also consider what happened last year. Most importantly, access to the park was closed on weekdays from September 6 to October 7, 2016, due to highway access improvements and re-construction of the parking area. Visits on weekends during this period were also down compared to the previous year. To account for the negative impact of the park closure on visits to the trail we adjusted the total estimated number of visits for the full hiking season in 2016 to 17,378 (refer to the 2016 issue of the Ancient Forest research bulletin for more details).

When the 2017 hiking season numbers are compared to the adjusted 2016 estimate, there is an annual increase of 13.1%.



Assessment of Plant and Lichen Biodiversity: Update

Darwyn Coxson and Curtis Björk

Research in the Plant Ecology Laboratory at UNBC has continued to focus on assessments of plant and lichen biodiversity in the three parks and protected areas that constitute the candidate World Heritage Site proposal area, namely Slim Creek Provincial Park, the Ancient Forest/Chun T'oh Whudujut Provincial Park and Protected Areas, and the Sugarbowl-Grizzly Den Provincial Park and Protected Areas. This research has been conducted in a partnership with Curtis Björk and Trevor Goward from the Beaty Biodiversity Museum (UBC) and Enlichened Consulting.

These three parks and protected areas occupy a cool, wet portion of the Robson Valley in central British Columbia (BC). The climatic conditions support rare inland rain forest. A large portion of the study area encompasses very old rain forest of *Thuja plicata* and *Tsuga heterophylla* as well as riparian forest, subalpine and alpine habitats, cliffs, various wetland types, and waterfall spray zones.

In total, 1613 taxa (species, subspecies, and varieties) were detected in 2016 and confirmed in laboratory work in winter 2017. These determinations include 651 lichens, 387 bryophytes (280 mosses and 107 liverworts), and 575 vascular plants. The number of exotic species found was 67, all of them vascular plants. These high species richness values were detected within an area of only 124 km sq. in the Slim Creek and Ancient Forest area. Many of the species are characteristic components of vegetation of the coast of BC, a testament to the moist conditions in the study area. Results from the 2017 field work in Sugarbowl Park are still pending, but initial indications are that the flora of that park is at least as rich as the flora recorded in the 2016 field work in Ancient Forest and Slim Creek Parks.

The lichen flora in the Ancient Forest area is notably rich, and includes a large number of species belonging to non-taxonomic groupings (guilds) characteristic of forests of old-age, or that have disappeared over much of their global range due to air pollution and/or habitat loss. This loss includes 44 pin lichens, which nearly all rely on old forest microhabitats, and 105 cyanolichens, which rely on good air quality and higher pH substrates.

One of the most remarkable finds from the 2016/2017 Ancient Forest species inventory work was a large number of species that may be new discoveries for science. Each of these species exhibits a suite of traits not known to occur among published species. More work is needed before any of these putative new species could be published. Most of the new discoveries are lichens, although one liverwort is among these, as well as six vascular plants.

The summer 2017 field work focused on several habitats not previously examined, including alpine areas in Sugarbowl-Grizzly Den Park and Protected Areas. It is expected that these results, when collated during the coming winter, will reveal a great deal more lichen and plant species for this area. This work provides important supporting information for the pending application for consideration of this area as a World Heritage Site.



Extensive wetlands and fens on lower elevation slopes of the Ancient Forest/Chun T'oh Whudujut Provincial Park have proven to be a rich repository of rare plant species (photo Curtis Björk).



Sticta wrightii, also known as the Greater Green Moon Lichen, is a red-listed lichen species in British Columbia, and was one of many rare cyanolichens found in biodiversity surveys in wet temperate rainforests of the Ancient Forest/Chun T'oh Whudujut Provincial Park. Photo by Curtis Björk (<http://www.waysofenlichenment.net/>).

Ancient Forest Trail Development and Maintenance

Nowell Senior, Caledonia Ramblers Hiking Club

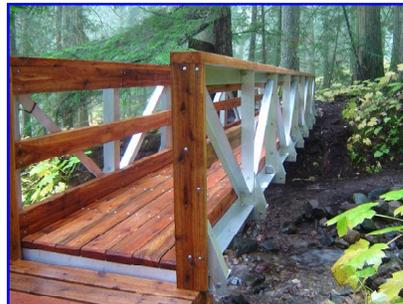
Volunteer members of the Caledonia Ramblers, with support from tohers, completed the following activities at the Ancient Forest/Chun T'oh Whudujut Provincial Park in 2017.

Tasks completed:

- Railings installed at Treebeard
- Wooden stairways built east of Radies Tree
- Restoration railings and platform built at Radies Tree
- Shingles attached to entire Ancient Forest boardwalk
- For added strength, gussets were attached to the Universal Boardwalk legs and cross members
- Bridges built at the falls and downstream (by contractor)
- The west-end of the Driscoll Ridge Trail was re-routed

Resources:

- Number of trips: 67
- Distance travelled: 15,410 km
- Number of volunteers: 17
- Total volunteer hours: 1,363
- Materials moved into forest by helicopter: 7 tons



UNESCO World Heritage Site Application: Update

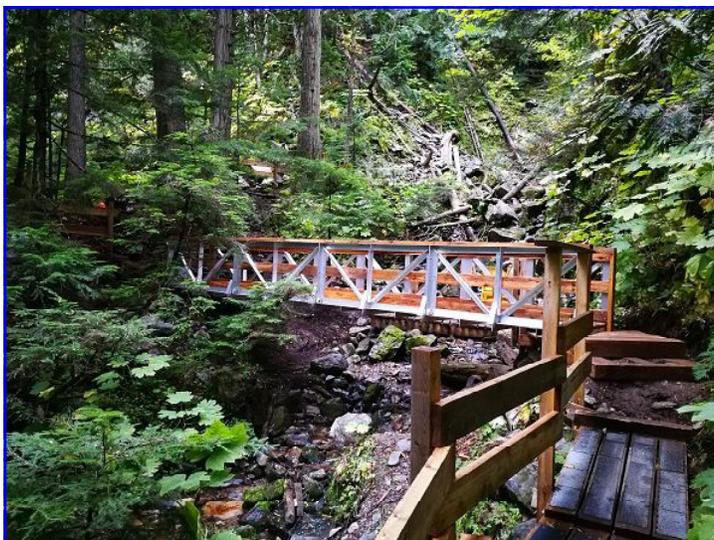
Parks Canada added eight places to Canada's Tentative List for World Heritage Sites. Unfortunately, the Ancient Forest/Chun T'oh Whudujut proposal area was not selected. The eight new places are:

- Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs (British Columbia)
- Stein Valley (British Columbia)
- Wanuskewin Heritage Park (Saskatchewan)
- Anticosti Island (Québec)
- Heart's Content Cable Station Provincial Historic Site (Newfoundland and Labrador)
- Qajartalik (Nunavut)
- Sirmilik National Park and the proposed Tallurutiup Imanga/Lancaster Sound National Marine Conservation Area (Nunavut)
- Yukon Ice Patches (Yukon)

The Ancient Forest/Chun T'oh Whudujut proposal area was one of 42 applications submitted as one of Canada's exceptional places that are considered to have outstanding universal value. There are 18 World Heritage Sites in Canada.



Photos by M. Palangio



FEATURE OLG-GROWTH FOREST

The Parthenon Forest

Hugh Perkins

In the Rocky Mountain Trench, along the toe slope of Humbug Ridge, lives a unique stand of ancient cedar. This slope faces south while most of the old cedar in this area are found on north facing slopes. The area was burned about 400 years ago and appears to have succeeded directly into cedar trees. This is quite unique as most forests in this climatic zone require a nurse forest to protect the young cedar from weather extremes. Small Groves of very old trees can be found inside this stand which probably seeded the area following the fire. We refer to these as The Mother Trees.

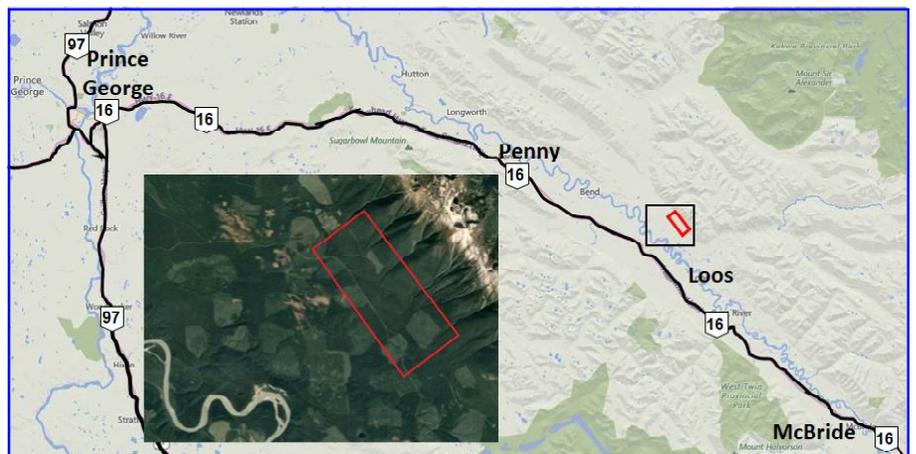
What we find now is an even-aged and even-spaced stand of almost exclusively cedar. Like the columns of the Greek Temple, the trees have few lower branches and the canopy creates a “roof”. The experience for humans entering the forest can invoke great majesty and awe.

The toe slope is situated above the lower valley where cold air pools in winter. The alluvial soil provides good drainage, unlike the lacustrine soils that support the spruce stands in the valley floor. Snow melt and mountain runoff water the forest. The canopy and mild microclimate provide a very special environment for animals to winter. Mountain caribou, moose, mule deer, white tail deer, wolverine, fisher, wolf, cougar, lynx, and many others use this area as a wintering ground.

Recent disturbances of this area include several logging blocks and access roads. While much of the remaining area has limited protection as old growth management areas, there are areas within the stand that had been laid out for logging and remain unprotected. A high level of protection of this unique forest will be required to prevent future fragmentation.

For more information:

<http://ancientcedar.ca/html/parthenon.htm>



Location of the Parthenon Forest