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## **Biodiversity in the Interior Cedar- Hemlock Forests Near Dome Creek**

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**Complaint Investigation 070762**

**FPB/IRC/137**

**May 2008**



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# Executive Summary

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## Background

Southeast of Prince George, towards McBride, the Rocky Mountain Trench contains unique hemlock and cedar forests that are a part of the interior cedar hemlock biogeoclimatic zone (ICH). The ICH forests in the Prince George Forest District have been classified as 'inland temperate rainforests' based on climatology. The ICH contains plant complexes that also occur in coastal temperate rainforests.

Globally, inland temperate rainforests are a rare forest type. The inland rainforest occurs primarily in British Columbia and the flora that occurs here is many times richer than that of coastal temperate rainforests.

In April 2007, the Forest Practices Board received a complaint from several public groups about the management of biodiversity in the interior cedar-hemlock rainforest near Prince George, and about forest management adjacent to two hiking trails.

The complainants asserted that approved cutblocks and harvesting practices did not address government's biodiversity objectives. The complainants were also concerned about impacts of approved harvesting on the Driscoll Ridge hiking trail and the Ancient Forest hiking trail, both located east of Prince George.

The complainants requested that government: spatially define old growth management areas (OGMAs) to secure the biodiversity of the interior cedar-hemlock rainforest; consider all approved cutblocks as part of this process; and place a moratorium on logging in all known 'antique' cedar stands.

## Conclusions

### Concern about Management of Biodiversity

With regard to the complainant's first concern about the management of biodiversity, the Board found that the licensee's cutblocks were exempted from the requirements of the 2004 *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order), which sets targets for conserving biodiversity. However, with respect to how the Biodiversity Order addresses biodiversity in the ICH forests overall, the Board found that there is a gap in the ability to manage for, and maintain, old growth values because government's "old forest" targets can currently be met without conserving any forest older than 140 years. Biodiversity targets need to be representative of the ecosystem but the current targets are not refined enough to capture old forest stands that have specific moisture regimes and slope positions, which result in some of the richest biodiversity values in the ICH.

Researchers have identified stands in the ICH in wet toe-slope positions that contain rare lichen species and rich biodiversity. These areas are not recognized in the spatial targets set in government's Biodiversity Order. The implementation policy included in the Biodiversity Order allows for spatial establishment of OGMA's if rare biological values are jeopardized or at risk. The Board found that there is sufficient information to warrant spatially locating OGMA's; rare biological values are jeopardized and possibly at risk.

In July 2007, in response to concerns by University of Northern British Columbia (UNBC) researchers and the Prince George Land and Resource Management Planning table, government, through the Integrated Land Management Bureau (ILMB), started the Legacy Project. The project's goal is to develop science-based, spatial OGMA's in the rare forest types of the ICH zone and assess risks to biodiversity, social and economic values. The project was intended to establish spatial OGMA's by March 31, 2008. A report has been completed, but as of May 5, 2008, ILMB has advised the Board that no decision has been made about whether or not to spatially establish any old-growth management areas.

With regard to the complainant's request for a moratorium on logging, a moratorium is possible under Part 13 of the *Forest Act* if government considers the very old forests (or elements of them) to be at significant risk of extirpation.

### **Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails**

As for the complainant's concerns about the hiking trails, both the Driscoll Ridge Trail and the Ancient Forest Trail have not been legally established, nor have management objectives been established for the trails under section 56 of the *Forest and Range Practices Act* (FRPA). Without established objectives, there is no FRPA requirement for licensees to address the recreation values associated with the trails in forest stewardship plans, nor are there requirements under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging the trails.

However, the cutting permit that encompasses the Ancient Forest Trail has now been closed. The forest licence has been sold and the volume transferred to beetle-attacked pine stands in the Prince George Timber Supply Area (TSA).

## **Board Commentary**

### **Need for a Conservation Strategy and Interagency Cooperation**

The complainants raised concerns about old forest stands in the ICH. The ICH ecosystem has unique features that include rare and sensitive species such as cyanolichens. This investigation corroborated the complainant's concern that, although the Biodiversity Order established landscape biodiversity objectives, it may not adequately provide for, or recognize, the unique and rare values in the ICH. Researchers believe there is imminent threat of expiration of rare and previously unknown species. The Biodiversity Order came with an implementation policy that anticipated circumstances where spatial identification of retention areas could be considered. This investigation has confirmed that spatial identification is needed.

ILMB initiated the Legacy Project in 2007 to develop science-based OGMA's in the rare portions of the ICH zone and to assess risks to biodiversity values as well as social and economic values. However, as of May 5, 2008, no decision had been made to advertise or establish OGMA's. At one point, ILMB had directed staff to advertise 57 hectares that have high recreation values as a proposed OGMA under the *Land Use Objectives Regulation* and to identify draft OGMA's on a further 4,770 hectares. The draft OGMA's would constitute non-binding guidance to forest officials and forest professionals. Taking such an approach may not be effective because without identification or assessment of endangered plant communities and rare species, and the incorporation of that information into designated OGMA's, there is no legal constraint on forest practices to balance timber and non-timber resources.

Reliance on non-binding advice to forest professionals contains risk. Such reliance carries the assumption that all forest professionals will give more consideration of, and conservation to, rare species without any legal requirement to do so. However, even if professionals follow the advice, they can only advocate for these goals. The licensee is not obliged to follow the advice.

The public expectation is that FRPA will set objectives for key values including timber, wildlife, biodiversity, recreation, cultural heritage, and designated resource features. Once these objectives are established, FRPA requires licensees' operational plans to include results or strategies consistent with these objectives. In the circumstances of this complaint, information from UNBC and ILMB indicates that there are risks associated with continuing to apply a spatial aspect of the 2004 *Old Growth Order* to manage biodiversity. The targets for old growth in the ICH can be met without adequately considering endangered plant communities and rare species associated with the old (antique) stands.

Given the emerging information about the ICH forests and rare species, the Ministry of Forests and Range, the Ministry of Environment and ILMB should continue to communicate and coordinate their efforts. These organizations need to enact effective mechanisms to ensure the conservation of red-listed species (such as lichens) and rare very old forest stands in the ICH.

## Recommendations

### Interior Rainforest and Rare Lichens

- 1. The Ministry of Forests and Range, Ministry of Environment and the Integrated Land Management Bureau should formulate an overall stewardship strategy for the interior rainforest to ensure that biodiversity values are adequately managed and conserved.**

This strategy would include mechanisms such as Part 13 of the *Forest Act*, spatially located OGMA's, wildlife habitat areas, general wildlife measures etc. from the *Forest and Range Practices Act*. Such a strategy should consider and build on the 2004 Biodiversity Order and implementation policy. Government should include research information and public input. The strategy should also clarify the role of licensees and individual ministries in managing biodiversity. Furthermore, the existing Biodiversity Order does not adequately address the definition of old forests in the ICH. Further stratification and re-definition should be considered

so that rare sites can be conserved. The Board's investigation noted that the ILMB Legacy Project focused on rare Tier 1 sites in the ICH only. However, the remaining wet cedar stand types also have significant biological value and warrant further biodiversity management. A complete analysis of the ICH Tier 1 to 3 sites is needed and other ecotypes may also require such consideration.

**Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Forests and Range, Ministry of Environment and the Integrated Land Management Bureau notify the Board of the steps that have been taken to implement the Board's recommendation by May 1, 2009.**

- 2. The Minister of Forests and Range should examine the UNBC research and the ILMB Legacy Project reports to identify vulnerable interior rainforest stands in the Robson Valley and Prince George TSAs and the risk to such values from harvesting. Once areas are identified as vulnerable and at risk, the Minister should designate those areas under Part 13 of the *Forest Act* and suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years.**

The UNBC researchers concluded that cedar-leading stands in wet toe-slope positions represent significant biodiversity hotspots for canopy lichens and are key to the maintenance of biodiversity within much larger regional landscapes. At present, few old growth forests in these wet toe-slope positions fall within designated protected areas or old-growth management zones.

Given the disproportionate level of forest harvesting that has already occurred in wet toe-slope positions in the ICH,<sup>1</sup> there is a real risk of extirpation of an internationally significant assemblage of canopy lichens in the upper Fraser River watershed if further habitat loss occurs in these areas.

Designation under Part 13 of the *Forest Act* is needed to ensure that vulnerable interior rainforest stands in the Prince George and Robson Valley timber supply areas are not subject to new forest licence awards, timber harvesting plans or permits until further scientific information is gathered and that new information is incorporated into the management regime for the ICH.

In 2002, the chief forester recognized the emerging issue of the ancient cedar forests and that the forests appeared to contain rare and sensitive species such as cyanolichens. The chief forester stated that he encouraged

“...staff to complete landscape unit planning objectives for the ICH to ensure that rare biogeoclimatic sites series are identified and protected in OGMAs.”

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<sup>1</sup> ICHvk2

It has been five years since the last timber supply review, and while ILMB has issued a Biodiversity Order, this investigation indicates that rare site series are not protected in OGMAs, and are not likely to be in the near future. The research from UNBC and the ILMB Legacy Project indicates that the current aspatial Order may not guarantee that values in the ICH are conserved. As well, even though ILMB may designate rare sites as old growth management areas, it is possible that this will not address all the values.

**Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Forests and Range notify the Board of the steps that have taken to implement the Board's recommendation by May 1, 2009.**

- 3. The Regional Executive Director of ILMB should provide the Board with a copy of the decision on whether to establish spatial OGMAs, upon the completion of the Legacy Project. The document should incorporate a rationale for the decision including the factors considered and how values and risks were identified and addressed.**

This investigation has highlighted scientific rationale and documented risks from harvesting which in turn support the establishment of retention areas to protect rare ecosystems and species in the ICH rainforests. The goal of the ILMB Legacy Project is to develop science-based OGMAs in the portions of the ICH zone containing rare biodiversity and to provide a business case for establishing spatial OGMAs. The Board recognizes that the existing "biodiversity budget" has already removed timber supply volume to address old growth retention requirements. Therefore, the impact of spatially locating OGMAs should not affect the available timber supply volume, though it may affect some timber licences and profiles. As of May 5, 2008, no decision has been made to advertise OGMAs or provide advice to professionals. The public should be provided with a rationale explaining ILMB's final decision regarding spatial establishment of OGMAs upon the completion of the Legacy Project. The rationale should detail the information currently known about the rare species and ecosystems in the interior rainforest, as well as the risks that were considered, and how those risks were recognised or minimized in the decision.

**Under section 132 of the *Forest and Range Practices Act*, the Board requests that ILMB notify the Board of the steps taken to implement the Board's recommendation by May 1, 2009.**

### **Driscoll Ridge and Ancient Forest Hiking Trails**

- 4. The Minister of Tourism, Sport and the Arts should establish the Driscoll Ridge Trail and the Ancient Forest Trail as recreation trails under section 56(1) of the *Forest and Range Practices Act*.**

The government approved construction of the Driscoll Ridge Trail and Ancient Forest loop portion of the trail. Legally establishing the trails will ensure that the Driscoll Ridge Trail and the Ancient Forest loop are recognised when, and if, other tenures are considered for the area.

As well, legal recognition provides the minimal level of consideration under FRPA to ensure that forest operations do not render the trails ineffective.

**5. The Minister of Tourism, Sport and the Arts should consider setting legal objectives for each of the trails as empowered by section 56(3) of the *Forest and Range Practices Act*.**

Currently, trail construction and management is occurring without approved plans in place and without consideration of future interaction or integration with Crown tenures. Government committed itself to a results-based regime in creating the *Forest and Range Practices Act*. In order to mandate results, the government must have objectives established to direct operational planning. In this case, establishing objectives would serve two purposes: first, any objectives would have to be considered by licensees in any future forest stewardship plans; and second, the objectives would form a basis for management agreements that the Ministry of Tourism, Sport and the Arts (MTSA) may enter into.

**6. The Minister of Tourism, Sport and the Arts should consider designating the Ancient Forest hiking trail as an interpretative forest site as empowered by section 56(1) of *Forest and Range Practices Act*.**

The Ancient Forest hiking trail is used by the public to examine the surrounding forest of large cedar and other ecological values in the antique forest. The trail's value is in the surrounding forest's unique attributes. Such a site may be better suited for use as an interpretative forest site rather than merely a trail.

**Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Tourism, Sport and the Arts notify the Board of the steps that have taken to implement the Board's three recommendations concerning recreation trails by May 1, 2009.**

# The Complaint

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On April 19, 2007, the Dome Creek Forest Information Committee, the Prince George Backcountry Society, and the Save-The-Cedar League (the complainants) submitted a complaint to the Forest Practices Board. The complainants had concerns with the management of biodiversity in the interior cedar-hemlock rainforest and with forest management adjacent to two hiking trails.

The complainants asserted that the approved forest development plan of TRC Cedar Limited (the licensee) conflicted with government's October 20, 2004 *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order). They asserted that the licensee's approved cutblocks and harvesting practices did not address the biodiversity objectives and were inconsistent with several sections of the implementation policy contained in the Biodiversity Order. Further, they said that the licensee's harvesting practices did not mimic natural disturbance patterns because they fragmented the ecosystem and put endangered species and the unique ecosystem at risk.

The complainants were also concerned about impacts on the Driscoll Ridge hiking trail and the Ancient Forest hiking trail, both located east of Prince George. The licensee has an approved cutting permit for a portion of the area accessed by these trails, and the complainants believe that harvesting there will be detrimental.

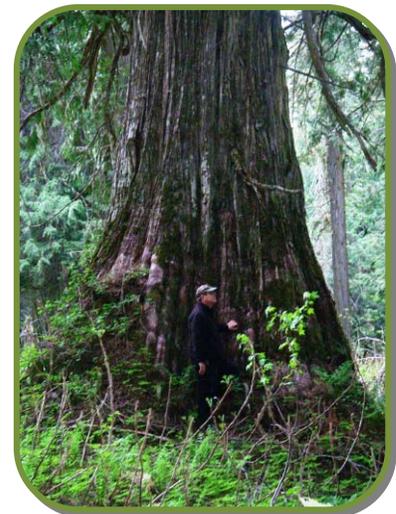
As a remedy, the complainants requested that government spatially define old growth management areas (OGMAs) to secure the biodiversity of the interior cedar-hemlock rainforest; consider all approved cutblocks as part of this process; and place a moratorium on logging in all known 'antique' cedar stands.

The Board's approach to this investigation was to first examine the issues concerning the Biodiversity Order, and then examine the issues concerning the hiking trails.

## Background

### Antique Forests

Southeast of Prince George, towards McBride, the Rocky Mountain Trench contains unique hemlock and cedar forests that are a part of the interior cedar hemlock biogeoclimatic zone (ICH). The ICH contains a diversity of plants and animals. It provides habitat for a variety of threatened or endangered species, including mountain caribou, rare and newly discovered lichens, and forest stands with trees that are sometimes more than 1,000 years old. Such stands have been called 'antique forests' by various researchers and the general public.



Old growth cedar along the Ancient Forest Trail, Dome Creek BC.

## Inland Temperate Rainforests

The ICH forests in the Prince George Forest District have been classified as inland temperate rainforests based on climatology. The ICH contains plant complexes that also occur in coastal temperate rainforests. Globally, inland temperate rainforests are a rare forest type. The inland rainforest occurs primarily in British Columbia and the flora that occurs here is many times richer than that of coastal temperate rainforests. Within the ICH there are specific site series that are geographically very limited, such as wet cedar sites (the ICHvk2<sup>2</sup>) that occur in the northern limit of the ICH biogeoclimatic zone.

## Disturbance Intervals

Forests reflect the influence of natural disturbance agents such as fire, wind, insects, and disease. These agents influence the composition, size, age, and distribution of forest types on the landscape, as well as the characteristics of those forests. The inland rainforests have infrequent and localized disturbances, which results in only the loss of individual trees or small pockets of trees as opposed to entire forest stands. Stand-replacing disturbances, such as fires, are extremely rare, particularly in the wetter portions of the ICH. In some cases, stand-replacing fires happen as infrequently as once every 1,200 years. It is this rarity of natural disturbance that produces antique forests.

## Lichens in the Inland Temperate Rainforest

Lichens are an important component of inland rainforests and are a good indicator of biodiversity. For example, epiphytic lichens require humid forest canopies in rarely-disturbed forests, and, because of the unique antique trees of the inland rainforests, many lichen species not found anywhere else in the world thrive there. Inland rain forest old growth stands contain cyanolichens, which will not grow in younger stands. There is still a limited knowledge about the biological communities in these antique forests, but recent studies show a high diversity of lichens.



Evidence of logging, fire scarring on cedar trees.

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<sup>2</sup> The Biogeoclimatic Ecosystem Classification (BEC) system is used to classify and manage sites on an ecosystem-specific basis. BEC zones are the highest level of classification and are named after the dominant tree species and the general climate or region. In this case, the ICH is the *Interior Cedar Hemlock* zone. Subzones define the climate of an area and in the interior, subzones are divided based on climate and precipitation. The vk2 specifies that the subzone is very wet and cool.

## **Timber Supply Review**

In 2002, BC's chief forester commented on the interior rainforest in his annual allowable cut determination for the Prince George Timber Supply Area (TSA). He noted that the ICH ecosystem has unique features and values due to unique disturbance patterns and fire history; vegetation; lichens; and, wildlife habitat in the area. He also recognized the presence of rare and sensitive species such as cyanolichens. The chief forester stated:

*I encourage staff to complete landscape unit planning objectives for the ICH to ensure that rare biogeoclimatic sites series are identified and protected in old growth management areas (OGMAs). I also encourage and support the on-going research being conducted in the ICH. This research will help improve forest management policies and practices, which can be reflected in future timber supply analyses.*

In December 2007, the Ministry of Forests and Range (MFR) began collecting data prior to conducting another timber supply review for the Prince George TSA. The review can reflect any changes in practices resulting from research as well as establishment of set-asides such as OGMAs. The timber supply review includes provisions for a public review anticipated to occur in the spring of 2008.

## **2004 Order Establishing Biodiversity Objectives**

On October 20, 2004, government established landscape units and three objectives for the Prince George TSA. This was contained in a government order<sup>3</sup>—*Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order). The Biodiversity Order established biodiversity objectives for old forest retention; old interior forest; and young forest patch size distribution. The old forest targets in the Biodiversity Order were not delineated on maps—they were aspatial. These aspatial targets have guided forest management in the Prince George TSA since 2004.

The Biodiversity Order also includes an implementation policy. The implementation policy is not legally binding, but provides guidance for implementation so licensees can ensure their plans are consistent with the Biodiversity Order's objectives.

## **Research Conference**

In 2000, a conference was held in Prince George about issues and research into the wet temperate rainforest. A second workshop is planned for May 21 to 23, 2008, in Prince George. The conference will present results of the latest research and will examine the social and community values associated with the rainforest ecosystems.

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<sup>3</sup> The Biodiversity Order was enacted under section 4(1) and 4(2) of the *Forest Practices Code Act of British Columbia* by the Ministry of Sustainable Resource Management.

## Discussion

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The complaint consisted of two parts – concerns about the management of biodiversity in the interior cedar-hemlock rainforest, and concerns about forest management adjacent to two hiking trails. The complainants asked government to consider all approved cutblocks and to spatially define OGMAs in order to secure the biodiversity of the interior cedar-hemlock rainforest. They also requested a moratorium on logging in all known antique cedar stands.

To address the complaint, the Board examined:

- Concerns related to the Biodiversity Order
  1. whether the licensee’s approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order;
  2. whether retention areas should be spatially defined;
  3. whether the Integrated Land Management Bureau (ILMB) would provide the requested remedy;
  4. whether government can place a moratorium on logging of the antique stands; and
  5. whether identified wildlife provisions in specified in the *Forest and Range Practices Act* (FRPA) can be used to manage rare species and ecosystems in the antique stands.
  
- Concerns with the Driscoll Ridge and Ancient Forest hiking trails
  1. the status of the hiking trails; and
  2. the status of a cutblock over the Ancient Forest hiking trail.

### Concerns Related to the Biodiversity Order

#### 1. Do the licensee’s approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order?

The complainants asserted that the licensee’s approved cutblocks and harvesting practices do not address the biodiversity objectives set out in the Biodiversity Order and are inconsistent with several sections of the Biodiversity Order’s implementation policy.

The 2004 Order stated that any category A cutblocks<sup>4</sup> (those that had been approved on, or before, the effective date) were not affected. This means that existing category A cutblocks, and cutblocks with approved cutting permits, were not subject to the Biodiversity Order. However, new forest development plans, major amendments and forest stewardship plans submitted after the effective date must be consistent with the Biodiversity Order.

The licensee operated under its 2000 forest development plan and associated approved cutting permits. It did not need additional cutblocks, which would have required the preparation of a

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<sup>4</sup> As defined by section 20 of the *Operational and Site Planning Regulation* subject to the former *Forest Practices Code of British Columbia Act*.

forest stewardship plan. Thus there have been no new plans or amendments that would be subject to the 2004 Biodiversity Order.

The Board finds that the licensee's approved cutblocks, having been exempted from the Biodiversity Order, do not conflict with the biodiversity objectives in the Biodiversity Order even though the harvesting may damage canopy cyanolichens.

## **2. Do circumstances warrant locating retention areas spatially?**

The complainants identify the antique stands as biologically significant and at risk until OGMAs are spatially established. Specifically, the complainants assert that the broad and general definition of 'old growth' used in the Biodiversity Order does not reflect the unique qualities of extremely old and biologically diverse cedar stands that occur here. The complainants want category A cutblocks and approved cutting permits to be considered in the Biodiversity Order and they also want OGMAs to be spatially located over those ancient stands.

The Biodiversity Order states that the biodiversity objectives will be periodically updated to incorporate new knowledge and to address changing environmental, economic and social conditions. Under the implementation policy of the Biodiversity Order, the ILMB is responsible for evaluating the compliance and effectiveness of licensees' strategies and deciding whether the biodiversity objectives require amendment.

The policy also states that ILMB may require the establishment of spatially located retention areas. The complainants say that circumstances now warrant spatial location of retention areas, namely OGMAs. The policy identifies three specific circumstances that may require spatial location of retention areas:

1. where licensees have been unable to coordinate aspatial monitoring;
2. where there is a gap in the ability to manage for and maintain the old growth values on the landscape; and
3. where information identifies biological values on the landscape that are jeopardized or at risk.

The Board examined whether current circumstances support the spatial location of OGMAs.

### **2.1 Have the licensees been unable to coordinate aspatial monitoring?**

The implementation policy states that retention areas may have to be spatially located if licensees are unable to coordinate the aspatial monitoring of the biodiversity objectives.

Subsequent to the 2004 Biodiversity Order, the Prince George forest licensees formed a Licensee Landscape Objective Working Group (LLOWG). The LLOWG has agreements and procedures in place that coordinate operations to ensure that biodiversity targets are met. This group organizes and consolidates individual licensee harvesting data and reports on achievement of objectives, including biodiversity and implementation of the aspatial requirements of the Biodiversity Order. The LLOWG provides this information to government agencies. The

implementation policy was revised in December 2005 to refer to a *Reporting Protocol* agreed to between forest licensees and government agencies.

The Board finds that licensees have coordinated the monitoring of the aspatial biodiversity targets, so spatial location of retention areas is not warranted on that basis.

## **2.2 Is there is a gap in the ability to manage for and maintain the old growth values on the landscape?**

The policy anticipates that spatial location of retention areas may be required if there is a gap in the ability to manage for and maintain the old growth values. The complainants assert that the definition of 'old growth' within the Biodiversity Order does not recognise the unique qualities of the very old and biologically diverse cedar stands. Is this a gap in maintenance of those values?

### **2.2.1 Defining Old Forests by Age Class**

The Biodiversity Order established landscape biodiversity objectives for old forest retention, old interior forest and young forest patch size distribution. The Biodiversity Order set representation targets for age class by natural disturbance units. In the ICH, old forests are defined as all forests older than 140 years. There is no recognition of different values in much older cedar stands.



**Vetern cedar partially fallen. The rotten core makes determining its age an estimate only.**

However, forest inventory age classes for cedar forests are suspect. Inventory techniques for determining stand age consist of first selecting representative sample trees and then counting tree rings to determine age. Very old cedar trees generally have rotten cores, making counting growth rings impossible. Consequently, many cedar forest stands may be classified in the inventory as Age Class 8 (141 to 250 years old), but the age is not accurate. Therefore, many Age Class 8 and 9 stands are older than the inventory indicates due to the imprecise way of determining age.

The ICH is characterized by a disturbance regime that functions in gaps in the forest canopy that occur when individual trees become very old and eventually die, creating space for new growth. The resulting stands are very different from those in neighbouring pine forests where large disturbances, such as forest fires, create forests where all the trees are the same age. Cedar trees within stands in the ICH tend to have a wide range of ages, so defining an age class for these stands is often imprecise. Consequently, some stands classified as Age Class 8 are 141 to 250 years old, but there will also be other stands that are much older than Age Class 8 or 9, with very old individual trees.

The implementation policy recognized that the definition of old forests for ICH units required more discussion. A process was to be developed in 2004 to deal with the definition, but that has not yet happened.

The Board finds that, under the Biodiversity Order, the current old forest targets can be met without conserving any forest older than 140 years old, as the definition of 'old' does not segregate and conserve very old stands. Cedar stands in the ICH often contain individual trees that can be up to 250 years old, with some in excess of 600 years old. This is a potential gap in the ability to manage for and maintain the old growth values using aspatial targets.

### 2.2.2 Age Class and Biodiversity

The implementation policy stated that more work was needed to deal with the definition of old forests in the ICH.

Old forests cannot be defined only by age if biodiversity values are to be identified. Appropriate definition should consider age plus stand structure, site series representation and other indicators. Stands of significant biodiversity value may not be captured through aspatial management, as age is only one component of biodiversity.

Old forests include both wet and dry variants which, though different from a biodiversity perspective, are indistinguishable on the basis of age alone. This can create problems, which have been illustrated by the findings of UNBC researchers. When examining forest stands that had been harvested in the ICH in the last 20 years, they found that wet forests (those with high biodiversity value) were preferred and targeted for harvesting over drier forests. They concluded that, if the trend continues, this disproportionate harvesting will result in loss of wet forests sites with high biodiversity. Remaining old forests will be drier sites with lower biodiversity value, low canopy biodiversity and greater susceptibility to fire and insect outbreaks.



Wood quality test holes in cedar trees. Loggers check for soundness of wood to determine if they are worth harvesting.

The Board finds that the definition of old forests by age class does not capture the different moisture regimes and higher biodiversity values associated with wetter sites.

### 2.2.3 Summary

The implementation policy in the Biodiversity Order recognized a need to redefine old forests, but this has not been done. The *Biodiversity Guidebook* noted that the average disturbance interval for ICH forests was 250 years. Research has confirmed that age alone is an inadequate identifier of biodiversity, especially in the ICH where the moisture regimes and slope position influence biodiversity richness.

The Board finds that there is a gap in the ability to manage for and maintain representative old growth values on the landscape. Current old forest targets can be met without conserving any forest older than 140 years, though the highest biodiversity values are in much older forest stands with particular moisture regimes and slope positions in the ICH. Given that gap, spatial location of old growth areas is now required, in accordance with the implementation policy.

### **2.3 Does information identify biological values on the landscape that are jeopardized or at risk?**

The implementation policy states that spatial location of retention areas may be required if information identifies biological values on the landscape that are in jeopardy or at risk. The complainants are concerned that endangered species and the unique ICH ecosystem are both at risk. Is there information indicating that biological values are at risk?

Recent studies and research from UNBC have indicated that there are important ecotypes in the ICH that are both rare and at risk. More information on publications and research on the ICH rainforest can be found at <http://wetbelt.unbc.ca/index.html>.

In 2007, a UNBC researcher gave the Prince George Land and Resource Management Plan monitoring committee a presentation entitled *Conservation Biology Priorities for Management of BC's Inland Rainforest*. The researcher evaluated ICH forests and discussed different types of forest stands, dividing the ICH rainforest into three tiers based on location; Tier 1 stands occupies the "toe" area of slopes where seepage and small streams irrigate the soil, even in the driest conditions; Tier 2 stands occupy productive, well drained sites often found at mid-slope; and, Tier 3 stands occupy rocky soils on hill slopes.

The researcher then discussed each tier's attributes and the risk of extirpation and concluded that Tier 1 stands were at immediate risk. Tier 1 sites tend to be the best sites, and are usually found on north facing exposures. It is on these sites that the largest and oldest trees, sometimes more than 1,000 years old, are found. These areas also have a high level of lichen diversity, probably because the consistent availability of groundwater promotes growth. As well, canopy lichens thrive due to high relative humidity within the lower canopy which provides increased nutrient availability and reduces fire return intervals (allowing the accumulation of rare species over time). These unique toe areas are also at greatest risk from forest development.

In March 2008, after discussing their work with ILMB, UNBC researchers provided the Board with a draft manuscript containing statistics and data supporting the contention that portions of the ICH are rare and at immediate risk. The researchers noted that, over the last several decades, high biodiversity sites (such as the Tier 1 stands) have been disproportionately harvested compared to their area on the landbase. Those sites also have very low representation regionally in protected areas. For example, protected areas containing wet cedar-leading forest stands represent only two percent of regional landscapes. The researchers advised that the continued loss to forest harvesting, "threatens the extirpation of old-forest associate canopy lichen communities in the upper Fraser River watershed." They estimate that less than six significant Tier 1 forest stands remain in the Headwaters and Prince George Forest Districts.

The researcher also contended that loss of the remaining Tier 1 stands would impact the entire landscape because the Tier 1 stands contain core lichen populations that colonize surrounding poorer quality habitats. As Tier 1 sites are lost, the loss in canopy lichen biodiversity will be amplified over the broad regional landscape. The researchers recommend the immediate conservation of the remaining old forest stands in wet toe-slope positions, given the disproportionate significance of Tier 1 stands to sustaining lichen biodiversity.

In the Board's opinion, a more detailed stratification of forests in the ICH is required because some of these forests contain very important biodiversity values. Past harvesting preferences have concentrated harvesting in these rare stands, but that has met the current aspatial targets in the Biodiversity Order.

ICH stands in wet toe-slope positions, with their rare lichen species and rich biodiversity, are not specifically recognized nor separated out in the aspatial targets in the Biodiversity Order. The aspatial targets, without more stratification, fail to represent and protect the antique forest types. The Board finds that there is sufficient information to warrant spatially locating retention areas (by using OGMAs), as rare biological values on the landscape are currently at risk.

### **3. Has the Integrated Land Management Bureau provided the requested remedy?**

The complainants asked that government spatially define additional OGMAs to secure the biodiversity of the interior cedar-hemlock rainforest.

In late 2006, ILMB proposed a project as part of a province-wide plan for to complete biodiversity planning. The project was entitled *Legacy Biodiversity Completion in the Prince George Rare Interior Cedar Hemlock Zone* (Legacy Project). The project was to identify candidate (OGMAs) in the ICH stands in the Prince George Forest District for designation under the *Land Use Objectives Regulation*.

#### **3.1 What is the goal of the Legacy Project and could it meet the requested remedy?**

ILMB initiated the Legacy Project in July 2007 in response to concerns by UNBC researchers and the Prince George Land and Resource Management Planning table. The project goal is to develop science-based, spatial OGMAs in the rare forest types of the ICH zone and assess risks to biodiversity values as well as to social and economic values. The project was intended to establish spatial OGMAs by March 31, 2008. Upon completion, the regional executive director of ILMB will consider whether to spatially establish OGMAs using the *Land Use Objectives Regulation*.

The Legacy Project includes a spatial analysis to identify high, medium and low biodiversity value forests in two of the ICH biogeoclimatic subzones (ICH vk2 and wk3) that are currently outside existing OGMAs, parks and protected areas. The project will compare the high value stands with recent and planned harvesting of blocks that have category A (approved) status, or with issued cutting permits, in order to assess the effectiveness of the current aspatial approach to biodiversity. The project includes consultation with identified stakeholders including the

members of the Prince George Land and Resource Management Plan table, tenure holders, First Nations, UNBC researchers and the complainants. It also includes a formal public review and comment aspect.

The complainants asked government to spatially define additional OGMA's to secure the biodiversity of the ICH rainforest, and to consider the category A cutblocks as part of this process. ILMB began analyzing this request in the Legacy Project. The Legacy Project should provide ILMB with the information necessary to assess whether the current existing spatial targets are sufficient to manage the values within the ICH rainforests.

### **3.2 What is the current status of the Legacy Project and has it met the requested remedy?**

On March 7, 2008, ILMB provided an update on the Legacy Project, indicating that it had prepared a draft report with recommendations. On April 3, 2008, ILMB wrote to the Board providing the outcomes of the Legacy Project and indicating direction that had been provided to staff. At that time, ILMB intended to advertise 57 hectares with high recreation values as a proposed OGMA under the *Land Use Objectives Regulation*. This advertisement would be designed to solicit public comment for consideration by the regional executive director as well as to identify draft old growth management areas on a further 4,770 hectares. The draft OGMA's were intended to provide non-binding guidance to professionals. On April 23, 2008, ILMB noted that there would be a delay in both the advertising of OGMA and the non-binding guidance. Then, on May 5, 2008, ILMB again wrote to the Board to clarify that no decision had been made to advertise OGMA's or any other information.

While ILMB has indicated that it has not made a decision on establishment of the 4,770 hectares as of OGMA's at this time, it could do so at its discretion in future. There is no current commitment by ILMB to do as the complainants requested and spatially define additional OGMA's to secure the biodiversity of the ICH rainforest.

## **4. Can government place a moratorium on logging to protect the antique forests?**

The complainants requested a moratorium on logging. Such a moratorium is possible if government considers the antique forests (or elements of them) to be at significant risk of extirpation.

Part 13 of the *Forest Act* allows government, through MFR, to suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years in designated areas. Part 13 has been used to temporarily defer logging on Crown lands while determining land use issues, conservation requirements for rare species, etc.

MFR previously identified issues about the ancient cedar forests during its 2002 timber supply review process. During that process, the chief forester encouraged the completion of landscape unit planning objectives for the ICH so as to ensure that rare biogeoclimatic sites series were identified and protected in OGMA's. Depending on the outcome of the ILMB Legacy Project,

there could be outstanding issues and concerns that MFR may wish to consider in the next timber supply review or elsewhere, such as the use of Part 13.

Information from UNBC supports MFR use of Part 13. UNBC researchers reported that the old forest stands in the upper Fraser River watershed, especially cedar-leading stands in wet toe-slope positions, need immediate protection from development. They concluded that these sites represent significant biodiversity hotspots for canopy lichens, and are important to maintaining biodiversity within much larger regional landscapes. The very old stands not only contain rare lichens and represent rare ecosystems; but these sites are threatened with global extinction as well. Government could declare these forest stands as designated areas under the *Forest Act* if they concur that only a half dozen significant Tier 1 stands remain and that these forest stands need immediate protection. A moratorium on logging would require a careful analysis of the ecological values identified; the risk the ecological values face from forest development or land use; and the social costs.

Government can place a moratorium on logging if it considers antique forests (or elements of them) to be at significant risk of extirpation under Part 13 of the *Forest Act*.

## 5. Can identified wildlife provisions in FRPA be used to manage rare species and ecosystems in the antique forests?

Many agencies are engaged in this issue and all have recognized the emerging values in the ICH. The ILMB Legacy Project may result in the spatial identification of OGMAs to conserve rare and representative ecosystem types in the ICH. However, the Ministry of Environment (MOE) also has tools under the FRPA that enable it to provide direction, policy, procedures and guidelines for managing species at risk, which can include plant communities as well as individual species.



Twisted cedar bark. Thick furrowed bark can provide habitat to a variety of flora and fauna.

As rare species and ecotypes are identified, MOE can make use of the identified wildlife provisions in FRPA. A species or plant community can be classified as red listed, then included or listed in the accounts for identified wildlife. Subsequently, MOE can establish corresponding general wildlife measures and or wildlife habitat areas (WHAs) using the *Government Actions Regulation*. Wildlife measures and habitat areas would have to be considered by licensees for their forest operations under FRPA.

An example of this is one ICH old forest plant community that has been listed as identified wildlife under FRPA—the Western Red Cedar/Devil's Club/Ostrich Fern community.<sup>5</sup> Designating it as such clearly shows that wildlife habitat area designation under FRPA is a possibility for this plant community. However, MOE noted that a critical resource feature of the very old stands is the lichen community, which

<sup>5</sup> ICHvk2/05

includes a number of rare species. Lichens are extremely vulnerable to edge effects, so small, long or narrow retention patches are likely to lose species over time and not be effective as conservation areas.

MOE confirmed that OGMA designation is preferred over WHAs for conservation because OGMAs can be large enough to retain the lichen component. MOE would use WHAs to address any small occurrences of the cedar/devil's club/ostrich fern community outside of OGMAs. Another reason to limit use of WHAs is that such designation is restricted by a one percent cap in terms of impact on the timber supply. The larger biodiversity budget that applies to OGMAs is better able to cover the required area.

In summary, identified wildlife provisions in FRPA can be used to manage small localized values in the very old stands. However, MOE believes that the Legacy Project and the establishment of spatial OGMAs are the most suitable tools to ensure ICH values are not compromised.

## **Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails**

### **1. What is the status of the Driscoll Ridge and Ancient Forest hiking trails?**

The complainants identify antique forests as biologically significant and at risk. Two hiking trails were built east of Prince George to access and view these forest stands. The complainants are concerned about continued harvesting in the area near the trails. In particular, the licensee has an approved cutting permit that the complainants believe should not be harvested because doing so will be detrimental to old growth values.

Permission to build recreation trails is required under section 57(1) of FRPA. Section 57(1) requires ministerial approval to build a trail. On January 31, 2006, MFR received an application by the complainants to build a hiking trail east of Prince George and just west of Dome Creek, along the Driscoll ridge. The ministry considered the request and sought public input on the proposal. The licensee had an active cutting permit in the area but the proposed trail did not encroach on it. During the public review and comment period provided for the trail application, MFR received a proposal to add a small loop trail adjacent to Highway 16. That addition was incorporated into the proposal. The Ancient Forest hiking trail was not discussed with the licensee, but on May 2, 2006, the Ministry of Tourism, Sport and the Arts (MTSA) granted permission for the trail, including the loop, to be built.

Section 57(2) of FRPA allows the minister to attach conditions to approvals, which occurred in this case. The approval recognized the existing cutting permit, stating that the construction of the trail would not limit or preclude future industrial activities such as harvesting or road construction, nor would it conflict with designated OGMA objectives.

The conditions include a requirement that the Caledonia Ramblers Hiking club enter into an agreement with the government which would establish the terms and conditions for use,

construction, improvement, and maintenance of the trail. The Caledonia Ramblers signed a management agreement for the Driscoll Ridge trails in December 2007.

Recently, MTSA staff have noted the amount of people using the Ancient Forest hiking trail has increased, which brings with it several issues. First, the trail needs to be assessed to ensure that trail design can accommodate current and future levels of foot traffic. Second, an assessment of facilities is required to support the anticipated number of tourists and hikers, such as bus and car parking, restrooms and picnic tables.

While permission to build the hiking trails was granted under section 57 of FRPA, the trails have not been formally established. Under section 56(1) of FRPA, recreation trails and sites can be established. Management objectives can be set under section 56(3). However, unless recreation features are formally established, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans. Further, unless the recreation trails are also established as a resource feature, the protective conditions of the FRPA regulations will not apply. Section 5 of the *Government Actions Regulation* (GAR) lets the minister responsible for the *Forest Act* identify resource features, including recreation trails. Section 70 of the *Forest Planning and Practices Regulation* prohibits licensees from damaging a resource feature through primary forest activities.

In March 2008, MTSA informed the Board that the Caledonia Ramblers had submitted a proposal requesting establishment of the Driscoll Ridge hiking trail as a 'trail' under section 56 of FRPA. The Ramblers also proposed that the Ancient Forest hiking trail and the surrounding area be designated as a recreation site under section 56. The proposals are currently being considered.

In summary, both the Driscoll Ridge and the Ancient Forest hiking trails have not been legally established, nor do they have management objectives under section 56 of FRPA. Without established objectives, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans and there is also no requirement under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging recreation trails.

## **2. What is the status of Cutblock 486, which encompasses the Ancient Forest hiking trail?**

The Ancient Forest hiking trail was located and built within an area that is part of an approved cutting permit, which has caused concerns for both the complainant and the licensee.

Preliminary information from the ILMB Legacy Project indicates that the cutting permit for Block 486 contains one of the best remaining examples of a cedar-leading old forest stand in a wet-toe slope position (i.e., a Tier 1 site with the highest canopy biodiversity values).

The approval to build the hiking trail specified that the trail would not limit or preclude harvesting or road construction. However, the licensee found its operations under its forest licence to be uneconomic for value-added manufacturing. The stumpage charged for cedar meant that the licensee's costs would have exceeded revenue for its products. Instead, the

licensee sought to transfer its forest licence volume from cedar-hemlock stands to pine stands, allowing it to harvest mountain pine beetle attacked stands elsewhere in the TSA.

In February 2008, a transfer of the forest licence was approved. As a result, the forest licence no longer applies to cedar-hemlock stands. All existing cutting permits are closed (including CP 35 block 486) or harvesting is complete. All of the category A cutblocks are obsolete. Therefore, the area covered by both the cutting permits and category A cutblocks will be unencumbered and allow government agencies to consider options for management without conflicts with timber tenures. This includes establishment of OGMAs, recreation trails, sites and interpretative forests.

As of February 28, 2008, the cutting permit that encompasses the Ancient Forest hiking trail is closed.

## Conclusions

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### Concerns Related to the Biodiversity Order

#### 1. Do the licensee's approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order?

**No.** There may be damage to canopy cyanolichens—in particular from harvesting approved cutblocks—but the Biodiversity Order specifically exempted approved cutblocks.

#### 2. Do circumstances warrant locating retention areas spatially as specified by the implementation policy of the Biodiversity Order?

**Yes.** The implementation policy identifies three circumstances that may require spatial location of retention areas, and two of those apply.

First, there is a gap in the ability to manage for and maintain the old growth values because current old forest targets can be met without conserving any forest older than 140 years. Biodiversity targets need to be representative of the ecosystem but the current targets are not refined enough to capture the moisture regimes and slope positions that influence the richness of biodiversity in the ICH.

Second, researchers have identified stands in the ICH in wet toe-slope positions that contain rare lichen species and rich biodiversity. These are not recognized in the aspatial targets in the Biodiversity Order. There is now sufficient information to warrant spatially locating retention areas by using OGMAs; rare biological values are jeopardized and possibly at risk.

#### 3. Has the Integrated Land Management Bureau provided the requested remedy?

**No.** The complainants requested that government spatially define additional old growth management areas to secure the biodiversity of the interior cedar-hemlock rainforest. ILMB initially indicated that it intended to advertise for establishment of one OGMA that is 57 hectares in size. As well, it proposed to provide information on 4,770 hectares of draft OGMAs

as information or non-binding guidance to forest professionals. ILMB then noted that there would be a delay in both the advertising of OGMA and the non-legal guidance. Lastly, ILMB clarified that, as of May 5, 2008, no decision had been made to advertise OGMA or any other information.

#### **4. Can government place a moratorium on logging to protect the antique forests?**

Yes. A moratorium on logging is possible under Part 13 of the *Forest Act* if government considers the very old forests (or elements of them) to be at significant risk of extirpation.

#### **5. Can identified wildlife provisions in FRPA be used to manage rare species and ecosystems in the antique forests?**

Yes. However, MOE notes that it supports the Legacy Project and the establishment of spatial OGMA as better suited to ensure ICH values are not compromised.

### **Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails**

#### **1. What is the status of the Driscoll Ridge and Ancient Forest hiking trails?**

The Driscoll Ridge and the Ancient Forest hiking trails have not been legally established, nor have management objectives been set for them under section 56 of FRPA. Without objectives, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans and there is also no requirement under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging recreation trails.

#### **2. What is the status of Cutblock 486 which encompasses the Ancient Forest hiking trail?**

The cutting permit that encompasses the Ancient Forest hiking trail has been closed. The forest licence has been sold and the volume transferred to beetle attacked pine stands in the Prince George TSA. The forest licence no longer applies to cedar-hemlock stands.