



Harvest Planning for Ecosystem Based Management on Haida Gwaii

Complaint Investigation #17047

FPB/IRC/220

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Board Commentary

Forest management on Haida Gwaii is governed by a 2006 strategic land use agreement between the Province of British Columbia and the Haida First Nation and by the 2010 Haida Gwaii land use objectives order (the Order), which establishes detailed legal objectives for ecosystem-based management (EBM). EBM is one of the most significant forest management achievements in BC in the past two decades. The Province and the Haida also have a shared decision-making framework with a distinctive EBM approach to forest management that is unique in the province.

This complaint provided the Board with an opportunity to see how EBM on Haida Gwaii is working. The complaint raised questions about compliance of planning and practices in the Naikoon landscape unit with the Order and about whether implementation of the Order is meeting the intent of EBM.

The results show that the considerable effort to implement EBM has been effective at shaping forest management in the Naikoon landscape unit on Haida Gwaii. The results of the complaint investigation show that the Order is being implemented to meet the intent of EBM, in particular for cedar stewardship, watershed level hydrologic processes and landscape level conservation of biodiversity. The Haida Gwaii Management Council, the Solutions Table, BC Timber Sales, licensees and community groups such as the Cloudberry Action Group, all deserve credit for their efforts to achieve the intent of EBM.

There will inevitably be conflicts about EBM implementation, as it involves tradeoffs between the two primary goals of ecosystem integrity and human well-being. New issues will also arise based on science and monitoring. However, Haida Gwaii has a strong system in place to continually evaluate these issues and to make improvements as needed. Ultimately, critical dialogue, comprehensive monitoring, shared and collaborative learning and strong leadership will be essential for continued success and improvement of EBM under the Order over time.

Executive Summary

In October 2017, a member of Cloudberry Action Group, a local Haida Gwaii environmental group, (the complainant) submitted a complaint to the Forest Practices Board about planning and harvesting by BC Timber Sales (BCTS) in the Naikoon Landscape Unit (LU) on Haida Gwaii.

The complaint was mainly about the increased rate of harvesting, focused on both western red cedar and yellow cedar, and concentrated along river valleys. The two primary issues are:

1. compliance of planning and practices in the Naikoon LU with specific requirements under the Haida Gwaii Land Use Objectives Order (the Order); and
2. whether implementation of the Order in the Naikoon LU is meeting the intent of ecosystem-based management.

The investigation focused on the complainant's priority interests in cedar stewardship, watershed level hydrologic processes and landscape level conservation of biodiversity.

The Board examined five BCTS cutblocks in the landscape unit, both engineered and planned, in the field and then interviewed professionals involved in various aspects of the shared decision-making framework and BCTS professionals. The Board reviewed relevant background documents and engaged a specialist to examine conditions in the Naikoon LU. The Board also explored emerging implementation questions and concerns related to the matters of most interest to the complainant.

The Board found BCTS planning and practices in the Naikoon LU for sustainable cedar management, watershed level hydrologic processes and landscape level biodiversity are compliant with requirements under the Order. Also, the Board found that implementation of the Order in the Naikoon LU is currently meeting the intent of ecosystem-based management, according to its underlying principles and the necessary requirements to address such a complicated resource challenge.

Implementation questions continue to be raised, discussed and examined. Practices for stewardship of cedar and hydrologic processes are currently evolving and some questions have emerged that require attention at a higher level than the Solutions Table. The lingering cedar harvesting controversy continues to drive much of the concern about planning and practices in the Naikoon LU. BCTS is at the center of this controversy for reasons that go beyond its planning and management under the Order. A comprehensive consensual cedar strategy, as recommended by the chief forester, could go far in addressing this issue.

Introduction

The Complaint

On October 28, 2017, a member of Cloudberry Action Group, a local Haida Gwaii environmental group, (the complainant) submitted a complaint to the Forest Practices Board about planning and harvesting by BC Timber Sales (BCTS) in the Naikoon Landscape Unit (LU) on Haida Gwaii.

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1) compliance of planning and practices in the Naikoon LU with specific requirements under the 2010 Haida Gwaii Land Use Objectives Order (the Order); and 2) whether implementation of the Order in the Naikoon LU is meeting the intent of ecosystem-based management (EBM). The investigation focused on the complainant's priority interests in cedar stewardship, watershed level hydrologic processes and landscape level conservation of biodiversity.

Background

Harvesting Operations in the Naikoon Landscape Unit

The Naikoon LU encompasses 109 582 hectares on the northeastern corner of Graham Island in Haida Gwaii (Figure 1). The Naikoon LU is characterized by a coastal lowland plain, unique on Haida Gwaii to its northern landscape units. The gently rolling terrain is dominated by bog-forest complexes in the lowlands, with well-drained upland areas that wind through the landscape like a web. Operable area with harvestable timber is only found in the uplands. Across the Naikoon LU, forests were broadly disturbed by a large wildfire at the end of the 1800's and now mostly consist of 130-year-old cedar-dominated stands with low-to-moderate productivity. For decades, little harvesting occurred, particularly in the northern half of the LU, as most stands were considered uneconomic to log.

The 2012 timber supply review for Haida Gwaii suggested the Naikoon LU contributes approximately 48 000 cubic metres per year of available timber to the allowable annual cut (AAC) for the Haida Gwaii timber supply area (TSA).¹ Since 1994, BCTS and its predecessor, the Small Business Forest Enterprise Program, harvested on average just under 38 000 cubic metres per year within the Naikoon LU. Over the past five years, BCTS has been harvesting more than 72 000 cubic metres per year in the LU. BCTS says the increased harvest level was to take advantage of recent favourable markets.

¹ Only an estimate. The AAC is determined for the TSA and then apportioned to licensees and BCTS. It is not determined by landscape unit.



Figure 1. Naikoon Landscape Unit on Haida Gwaii

BCTS is not the only party harvesting timber in the Naikoon LU. Since 2011, private land owners have harvested two 50- to 60-hectare cutblocks close to the highway, adjacent to Kumdis Slough near Port Clements. The Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) says culturally modified trees² and streams were impacted by this harvesting. As well, harvesting has been conducted on Crown land close to Port Clements on two woodlot licences.

BCTS has operational plans in place for future harvesting in the Naikoon LU beyond cutblocks already authorized, but none have yet been submitted to the BC and Haida governments for review.

Ecosystem Based Management Direction and Decision-making on Haida Gwaii

The Province and the Haida First Nation have designed a shared decision-making framework for Haida Gwaii, which has a distinctive EBM approach to forest management. They also have a comprehensive review process before harvesting plans are authorized, which is unique in the province.

² Culturally modified trees – trees modified prior to 1920 by Haida people as part of their cultural use.

In 2006, the Province of British Columbia (the Province) and the Council of the Haida Nation (CHN) signed a strategic land use agreement after three years of a community-based, consensus-driven land use planning process led by the CHN and the Province.ⁱ The agreement identified new protected areas, special value areas and operating areas for resource development, guided by EBM principles. The Coast Information Team defined EBM as an adaptive approach to managing human activities that seeks to ensure the coexistence of healthy fully functioning ecosystems and human communities.ⁱⁱ The intent of EBM is to maintain ecosystem integrity while providing for societal needs such as cultural, economic and spiritual values.

The **Coast Information Team** was an independent, multidisciplinary group established and supported by the provincial government, First Nations governments, the forest industry, environmental groups, communities and the federal government, as part of the implementation of the *2001 Central Coast Land and Coastal Resource Management Planning Agreement*. The purpose of the team was to provide independent information and analyses for the development and implementation of EBM in the north and central regions of BC, including Haida Gwaii.

The 2010 Order established detailed legal objectives for EBM consistent with the *Haida Gwaii Strategic Land Use Agreement*. The Order was developed jointly between the CHN and the Province in a consensus-based process.ⁱⁱⁱ The two governments developed a companion Background and Intent Document that interprets these objectives for implementation by licensees and BCTS. The Order has been amended twice collaboratively by the governments, once in 2014 with a minor amendment and again in 2017 with a major amendment. An updated Background and Intent Document is currently being developed.

The Province and the CHN implemented a shared decision-making framework under the 2009 *Kunst'aa guu – Kunst'aayah Reconciliation Protocol* and the 2010 *Haida Gwaii Reconciliation Act*. Within this framework, the Haida Gwaii Management Council makes land and natural resource management decisions including those related to implementation of the strategic land use agreement and the Order.^{iv} The Haida Gwaii Management Council also makes AAC determinations for Haida Gwaii,³ and approves amendments to the Order to continue the government-to-government collaborative approach.

The **Haida Gwaii Management Council** is comprised of two members appointed by the Council of the Haida Nation, two members appointed by the Province and a neutral Chairperson, jointly appointed by the two governments. The group works collaboratively to achieve decisions by consensus. If consensus cannot be achieved, the Chairperson will make the final decision.

The Solutions Table Review Process

Forest stewardship plans, licensee road and cutting permit applications and BCTS planning documents for proposed timber sale licences⁴ (timber sale packages) are all reviewed by a joint province-CHN Solutions Table⁵ to ensure consistency or compliance with the Order, prior to being

³ A data package is prepared by the provincial chief forester to allow for an AAC determination by the Haida Gwaii Management Council for all of Haida Gwaii. The Haida Gwaii Management Council pass that determination back to the chief forester who assigns an AAC to the management units, including the TSA.

⁴ BCTS also makes Crown timber available to loggers, wood processors and other forestry businesses through competitive auctions of timber sale licences.

⁵ The Solutions Table reviews development proposals under all provincial Acts and Orders pertinent to Haida Gwaii and highlighted in the *Reconciliation Act*, including the *Forest and Range Practices Act* and the *Haida Gwaii Land Use Objectives Order*.

approved by decision-makers from the province and the CHN. The Solutions Table also provides technical and operational support for the Haida Gwaii Management Council and is supported by a CHN- FLNRORD “integrated stewardship team” of biologists, foresters, planners and analysts.

When BCTS submits its timber sale packages to the Solutions Table for review, it provides a briefing note highlighting key elements requiring some form of protection and referencing all relevant assessments, reports and other information. The integrated stewardship team uses a risk matrix to rank priority questions or issues. It discusses concerns with BCTS, occasionally asking for more information or a field trip to discuss questions on the ground. In such situations, BCTS and the integrated stewardship team each submit a final briefing note to the Solutions Table.

Even though the goal of the Solutions Table is to reach a consensus recommendation on a timber sale submission, occasionally this is not possible.⁶ If the Province agrees with the submission, harvesting is authorized based on the province’s legal framework, even if the CHN decision-maker disagrees.⁷ A non-consensus decision is noted in the Solutions Table sorting ledger. The first 37 briefing notes BCTS submitted to the Solutions Table prior to 2016 all received consensus recommendations. The only briefing notes submitted since 2016 (two for four cutblocks) both received a non-consensus recommendation due to CHN concerns.

Community Expectations and Concerns

New protected areas, implementation of EBM and a shared decision-making framework all raised public expectations on Haida Gwaii for a higher standard of forest stewardship. As well, large protected conservancies set aside under the strategic land use agreement significantly reduced the AAC on Haida Gwaii, shrinking the area available for harvesting timber (known as the timber harvesting landbase or THLB).⁸ In the Naikoon LU, the THLB currently comprises 11 percent of the LU on its western side, between the communities of Port Clements and Masset. This is also a significant operating area for BCTS. Harvesting development is concentrated closer to these communities, some of it visible from the main highway that connects them. As a result, FLNRORD, the CHN and BCTS say that the public is surprised by the amount of harvesting they are seeing on the landscape. Prior to the Order, the public noticed little harvesting even though harvest rates were much higher, because it mostly occurred far from local communities.

The complainant is concerned that recent clearcuts by BCTS “were popping up in the Naikoon area like mushrooms,” with adverse impacts on cedar stewardship, hydrology and biodiversity. The complaint submitted to the Board, says BCTS harvesting in the Naikoon LU does not meet the intent for EBM.

⁶ Non-consensus initially triggers a “stage 4 process” where decision-makers engage directly for 45 days to try to achieve consensus. Occasionally the decision-makers cannot achieve consensus, even after this process.

⁷ The Kunst’aayah– Kunst’aayah Reconciliation Protocol provides that the Haida Nation and BC hold differing views with regard to sovereignty, title, ownership and jurisdiction over Haida Gwaii, under the Protocol the Haida Nation and BC will operate under their respective authorities and jurisdictions;

⁸ THLB - that portion of the Crown forest land base in the TSA that is available for timber harvesting. The Crown forest land base consists of Crown land with forest cover within the TSA, excluding private land and Crown area-based tenures such as tree farm licences, community forests and woodlots. The THLB also excludes unstable terrain and roads, and protected areas, which are set aside for the protection and conservation of other forest values.

Legal Requirements

Licensees working on Haida Gwaii must comply with legal requirements in the *Forest and Range Practices Act* (FRPA) and with the *Haida Gwaii Land Use Objectives Order*.

FRPA requires that results and strategies in forest stewardship plans prepared by forest licensees and BCTS be consistent with government's objectives. Results and strategies establish the rules for planning and practices on the ground. BCTS had a forest stewardship plan approved in 2011 to be consistent with the Order in place at that time. BCTS is currently working on a replacement forest stewardship plan to be consistent with the major amendment to the Order approved in 2017.

Objectives set by government for EBM, as intended in the *Haida Gwaii Strategic Land Use Agreement*, are specified in the Order. This investigation focused on cedar stewardship (section 7), watershed level hydrologic processes: type I and type II fish habitats (sections 10 and 11) and upland stream areas (section 13); and landscape level conservation of biodiversity—ecosystem representation (section 16) and rare plants (section 17).

The Investigation

The Board investigated two primary issues: 1) compliance of planning and practices in the Naikoon LU with specific requirements under the Order; and 2) implementation of the Order in the Naikoon LU to meet its intent for EBM. For both issues, the investigation focused on the complainant's priority interests in cedar stewardship, watershed level hydrologic processes and landscape level conservation of biodiversity.

The complainant was mostly concerned about various aspects of the Order's implementation and whether it met the intent of EBM as it is understood in Coastal BC. Because the Order was designed to meet the intent of EBM, the Board's examination of compliance fits with these concerns and sets the context for a broader examination of Order's implementation challenges.

Compliance with Specific Requirements under the Order

The Board investigated compliance with specific legal requirements in the Naikoon LU under the Order by first examining some BCTS cutblocks, both engineered and planned, in the field within the LU and then discussing BCTS timber sale package reviews for the Naikoon LU generally with the Solutions Table. The Solutions Table review of timber sale package submissions is more comprehensive than in other parts of the province and involves both FLNRORD and CHN forest professionals. The Board used information obtained through discussions with these professionals to supplement its field sampling of cutblocks as part of the assessment of BCTS compliance.

Sustainable Stewardship of Cedar

The Order uses two broad approaches to address long-term sustainable stewardship of cedar—stand level cedar retention and landscape level cedar stewardship areas.

The Order's cedar retention requirements were designed to complement other targets for monumental cedar and culturally modified trees. Patches of mature timber must be retained on cutblocks to meet required targets for total amount of retention and the proportion of cedar retention. To ensure a continuous flow of cedar over time, regeneration in new cutblocks must include the equivalent of the pre-harvest composition of cedar. The Order also has specific requirements at the cutblock level to protect cultural cedar stands, culturally modified trees and monumental cedar (greater than 120 centimeters in diameter).

Board investigators⁹ examined five BCTS cutblocks on the ground in the Naikoon LU south of Pure Lake—one engineered, unharvested, and four harvested. All showed compliance with the Order's requirements for cedar management. All blocks met the requirements for cedar retention with high levels of western red cedar across a range of diameters (Figure 2). As well, three of the four harvested cutblocks had 300-600 planted and protected¹⁰ western red cedar per hectare throughout the harvested area (Figure 3). Culturally modified trees and monumental cedars were identified and protected within reserves.



Figure 2. Cedar in a reserve within a logged block

⁹ The investigation team consisted of two Registered Professional Foresters and a contract Registered Professional Biologist.

¹⁰ Planted western red cedar cannot be successfully regenerated on Haida Gwaii without a tube or cone placed over trees to protect from browsing by introduced Sitka black-tailed deer.



Figure 3. Western redcedar planting in a recently harvested area.

When submitting timber sale packages to the Solutions Table, BCTS indicates mapped cedar retention areas, cultural cedar stands, monumental cedar and culturally modified trees. It also includes management strategies and timber species composition by cutblock from pre-harvest cruise data.

Cedar stewardship areas are defined spatially under the Order, including two in the Naikoon LU close to Masset Inlet. Up to ten percent of these areas may be harvested for commercial purposes, with restrictions on the amount that may be harvested over a 10-year period if specified conditions are met. To date, BCTS has not proposed harvesting in a cedar stewardship area.

Watershed Level Hydrologic Processes

The Order specifies objectives for 31 sensitive watersheds on Haida Gwaii, none of which are within the Naikoon LU. Under the Order, most streams in the Naikoon LU are defined as Type 1 or 2 streams,¹¹ requiring protection with specified reserves.

¹¹ Type 1 stream – a reach of a watercourse and its active floodplain with a continuous channel bed that is greater than 1.5 metres wide, is less than or equal to 5 percent in gradient and is known to be, or has the potential to be, inhabited by fish. Type 2 stream – a reach of a watercourse and its active floodplain with a continuous channel bed that is not classified as Type I fish habitat and is known to be, or has the potential to be, inhabited by fish.

Of the five cutblocks the Board examined in the field, all had Type 1 or 2 streams suitably protected with reserves.¹² The Solutions Table told the Board it reviews the location of Type 1 and 2 streams and associated reserves and management zones, and generally finds them well-designed and protected. As well, FLNRORD, under its Forest and Range Evaluation Program, also monitors stream protection requirements on Haida Gwaii, including impacts of windthrow. FLNRORD members of the integrated stewardship team said they have yet to see a hydrological impact to streams from roads or harvesting under the Order.

The Order protects small upland streams¹³ by requiring 70 percent or more of the forest in upland stream areas to be retained or hydrologically recovered, accounting for improved hydrological conditions as young stands grow. To meet the Order's upland stream requirement, BCTS and other licensees use the total area of a watershed subunit,¹⁴ excluding Type 1 and Type 2 streams and their reserves, to define the "upland stream area."

Watershed subunit analyses for the upland stream area requirement are updated and submitted annually to the Solutions Table for their reference when reviewing cutting permits and timber sale packages. BCTS has a live GIS system to continuously track the status of the upland stream requirement in watershed subunits. The Solutions Table can access this system at any time when reviewing hydrological impacts from proposed development. The Solutions Table believes its review of licensee and BCTS submissions is robust, especially now that LiDAR¹⁵ data is available for the area. FLNRORD has no concerns with BCTS meeting this requirement thus far.

Landscape Level Conservation of Biodiversity

Under the Order, conservation of biodiversity at the landscape level includes protecting areas in conservancies, as well as using management strategies for rare and regionally important species' habitats, rare plant communities and ecosystem representation.

More than half of the Naikoon LU is in several protected conservancies, the largest of which is Naikoon Park. Protection of habitats for species at risk or regionally important species is evolving for some species like northern goshawk, but requirements are in place for a schedule of local species at risk listed in the Order. The Board found no issues with cutblocks examined in the field regarding protection of habitats for species at risk or regionally important species. The Solutions Table also found no issues with BCTS in the Naikoon LU. Investigators noted one cutblock near Pure Lake overlapped with marbled murrelet habitat, but BCTS suitably protected that habitat within wildlife tree retention areas and riparian reserves according to the requirements of the Order.

¹² Type 1 streams require a reserve zone with a minimum width of two tree lengths, measured from the outer edge of the Type 1 fish habitat. Reserve zones on a Type 2 stream require a minimum distance of 1 tree length, measured from the outside edge of the Type 2 habitat.

¹³ Upland streams – not Type 1 or 2 streams.

¹⁴ Watershed subunits are identified and mapped in Schedule 6 of the Order for the purposes of applying the upland stream requirements.

¹⁵ LiDAR (light detection and ranging) is a remote sensing technique that is based on measuring the time it takes a laser pulse to strike an object and return to the source. LiDAR scanners, flown in an airplane and guided by GPS are capable of transmitting and receiving as many as 500 000 pulses of laser light per second, resulting in data that can be used to map the reflecting object in high three-dimensional detail.

The Order protects rare ecosystems by identifying red and blue listed plant communities¹⁶ with requirements to minimize disturbance from harvesting and roadbuilding. The Board found no red or blue listed plant communities lacking the required protection in the field, a finding supported by Solutions Table reviews. In fact, few red- and blue-listed plant communities are found in forested areas in the Naikoon LU.

The Order also has specified targets that must be met at the LU level for representative unmanaged old forest over the full range of ecosystems.¹⁷ To this point none of these targets in the Naikoon LU have been threatened by harvesting. Ecosystems that are close to or below the target for old forest are generally not found where timber harvesting occurs.

Findings

BCTS planning and practices in the Naikoon LU comply with the Order requirements for cedar stewardship, watershed level hydrologic processes and landscape level conservation of biodiversity. The Board's review on the ground of some BCTS cutblocks was confirmed by the findings of the Solutions Table, based on its pre-harvest reviews of timber sale packages.

Implementation of the Order in the Naikoon LU

To explore whether the Order's implementation is meeting the intent of the Order for EBM, the Board interviewed members of the Solutions Table (both FLNRORD and CHN), professionals on the integrated stewardship team and BCTS professionals. The Board also reviewed relevant background documents and engaged a specialist to examine conditions in the Naikoon LU. The Board focused on emerging implementation questions and concerns related to the matters of most interest to the complainant—how they are being addressed and whether the approach to EBM is suitably adapting and improving over time.

Determining if implementation of the Haida Gwaii Land Use Objectives Order meets the intent of EBM.

Implementation of EBM under the HGLUO is complex. Currently, BCTS is the primary licensee implementing the Order on the ground in the Naikoon LU. However, implementation also involves both governments, the province and the CHN, who designed the order, interpret it, and may amend it from time to time through the HGMC and the Solutions Table.

Appropriate implementation of EBM to maintain ecological integrity while meeting societal needs is challenging. Many objectives are broad with undefined time periods to assess success. EBM intends to balance a goal for ecological integrity with a social goal for human well-being, even though at times the two may be in conflict. EBM could be characterized as a complicated problem that has a number of different solutions and no single right test or true test of a solution.^v

To determine if any approach to EBM, including that described in the Order, truly meets the intent of EBM, the best that can be achieved is for implementation to emphasize learning and adaptation over time such that it may eventually be broadly effective.^{vi} This characterization of appropriate implementation "to meet intent" fits with the original definition of EBM by the Coast Information Team.

¹⁶ Blue-listed ecological communities are designated as threatened by the BC Conservation Data Centre (CDC). Red-listed ecological communities are designated as both rare and threatened.

¹⁷ Representative ecosystems are identified down to site series in BC's biogeoclimatic classification system.

Stewardship of Cedar

The intent of the Order's requirements for cedar stewardship is to maintain a diverse range of ages and diameters to promote resiliency and support the long-term objective of a stable supply of cultural cedar.^{vii}

The CHN have started monitoring effectiveness of monumental cedar management on Haida Gwaii. As well, the CHN certify licensee cutblock-design engineers to conduct pre-harvest surveys of potential cultural heritage features. The CHN regularly audits licensees to maintain this certification. As well, BCTS has best management practices to guide consulting professionals in the collection of stand level retention data for site plan and layout decisions and to build a detailed inventory of retention over time, in part to confirm successful attainment of cedar retention requirements.

There are several large cedar stewardship areas established under the Order near Port Clements, but only several relatively small cedar stewardship areas are found in the Naikoon LU, near Massett. Recently, the Haida Nation House of Assembly¹⁸ approved a resolution to study the area around Pure Lake, in the Naikoon LU, for a new cedar stewardship area to protect lowland yellow cedar, which is considered vulnerable by the CHN. In March 2017, the CHN sent BCTS a letter advising it of the resolution with an offer to "work with any companies doing development within areas south of Masset and North of Watt Lake" to ensure that yellow cedar is retained. The BCTS Timber Sale manager agreed to work with the CHN on this concern.^{viii} Further, BCTS told the Board it recently developed a draft yellow cedar strategy for best management practices, using discussions with researchers and a review of recent scientific literature.

In spite of provisions in the Order, the Cloudberry Action Group, the CHN and some local residents continue to express concern about the amount of cedar harvesting in the Naikoon LU. The complainant and the CHN believe BCTS have been focusing harvest on cedar without a strategy to address consequences to sustainability. Both groups say communities should get a direct economic benefit from this resource and a hand in management to ensure a sustainable flow. BCTS suggests it is being unfairly targeted for criticism, with few people differentiating between the harvesting occurring on private land and that on Crown lands.

In 2013, after an analysis of the TSA timber supply, the Province's chief forester set a non-legal threshold for cedar harvesting at a three-year running average of 38 percent of the AAC. Subsequent tracking of harvest volumes indicated this target was being exceeded. In October 2017, the Haida Gwaii Management Council met with the chief forester who subsequently established the 38 percent threshold as a harvest partition with a limit of roughly 197,000 cubic metres per year. That partition became legal under a Ministerial Order in August 2018. BCTS says it is harvesting the partition across the TSA, proportional to its allocation of the AAC.

Rather than a TSA-level partition, the CHN would like to see every cutblock limited to 38 percent harvest of cedar to build a more resilient landscape, better able to provide well-distributed sustainable cedar harvesting in the future. Also, the CHN say the BCTS annual harvest allocation is

¹⁸ Haida Nation House of Assembly – is enabled by the Haida constitution. To facilitate the ability for all Haida citizens to partake in developing policy for the Haida Nation. Any Haida citizen can propose a resolution and it takes 75 percent support from the House of Assembly to pass. Once a resolution is passed, the CHN explore potential policy options to address it.

too high, believing it has no right to harvest partnership volumes with Taan Forest and a proposed community forest in the TSA.¹⁹ The province disagrees and affirmed this position in a letter to all parties.^{ix}

Due largely to these cedar harvesting concerns, since 2016, the CHN decision-maker for the Solutions Table has not supported BCTS timber sale packages for the Naikoon LU, resulting in non-consensus with the Province. In November 2017, the CHN placed stop-logging signs at the engineered entry points to several BCTS planned cutblocks near Pure Lake in the Naikoon LU. At the same time, the CHN and other community representatives asked the province to withdraw the timber sales for these blocks and replace them with sales outside the proposed community forest area. As well, the Haida Nation's House of Assembly recently passed a resolution to remove BCTS from Haida Gwaii.

In 2013, the province's chief forester recommended the CHN, licensees, the FLNRORD district and others in government work together to develop an overarching cedar management strategy for Haida Gwaii. The Haida Gwaii Management Council supported this notion. The chief forester reiterated this recommendation in October 2017 and sent a letter in that regard to all parties. Some initial work was done both by the district and licensees, but nothing meaningful has yet emerged.

Watershed Level Hydrologic Processes

The application of EBM on the BC coast recognizes the importance of small non-alluvial²⁰ upland streams at a watershed level to feed water, sediment, nutrients and woody debris into larger alluvial streams in the valley bottom. Because these streams are numerous enough to virtually cover coastal landscapes, protecting them is only feasible by managing harvest disturbance on a watershed basis, rather than by rules for riparian reserves on each stream. The Order's approach to protect upland streams through the management of the upland forest generally over the watershed aligns with the established principle that removal of forest canopy by clearcut harvesting can alter both the peak flow and the total volume of flow in streams.^x

The complainant is concerned that the concentration of harvesting in the Naikoon LU is having a hydrological impact. In 2017, BCTS engaged a hydrologist/geoscientist to examine the effects of harvesting on the bog complexes in the Naikoon area. He pointed out potential impacts of roads and harvesting downslope and upslope of certain bogs.^{xi} At the same time, he noted slower groundwater movement and greater resistance to disturbance in the local wetlands than in upland forests. Overall, he noted a low hazard for proposed harvesting levels and other similar levels of harvesting proposed in the future by BCTS.

¹⁹ In addition to a direct AAC allocation to BCTS in the TSA, the province allocated some AAC to BCTS under a partnership arrangement for a proposed community forest. The province negotiated a revenue-sharing arrangement between BCTS and the participating communities with a five-year transitional volume. BCTS harvested this volume by 2016 and continued harvesting in the area of interest for the proposed community forest, a portion of which is in the Naikoon Landscape Unit. To date, this proposed community forest has not been awarded. Another partnership volume for BCTS was arranged by the province with Taan Forest, a wholly-owned subsidiary of the Haida Enterprise Corporation, in a non-replaceable license for an area in the TSA overlapping the Naikoon LU.

²⁰ Alluvial streams have channels with at least one erodible bank in sediment deposited by water under the contemporary flow regime (not glacial). These streams typically have a floodplain and a gradient less than 5 percent. Non-alluvial streams do not have these characteristics and they generally occur on steeper gradients.

After several years of implementation, CHN professionals are raising questions about the analysis prescribed in the Order to ensure the upland stream requirement is met. CHN's view is the total forest in the upland stream area for the purpose of calculating the 70 percent requirement should apply only to productive forest, not the entire watershed subunit. BCTS, licensees and FLNRORD do not agree. Because most watershed units in the Naikoon LU have extensive area in non-productive bogs and bog-forests, the approach suggested by the CHN could significantly reduce the amount of forest available for harvesting in each subunit. This difference of opinion has contributed to recent non-consensus recommendations by the Solutions Table. The concern is also currently stalling an update of the 2010 Background and Intent document for the Order.

When this concern first emerged, the Solutions Table had some discussions with aquatic specialists but no clear direction was found. The underlying question is whether a bog or non-productive bog-forest acts like a productive forest hydrologically and if it is different, how it influences the amount of harvesting that can occur in a watershed subunit.

FLNRORD believes the upland stream concern should more appropriately be addressed at a higher level, not at the Solutions Table. Recently, the Haida Gwaii Management Council committed to host a workshop on Haida Gwaii with hydrologists and other scientists to try to resolve this issue and establish a consensual approach to the upland stream requirement.

Landscape Level Conservation of Biodiversity

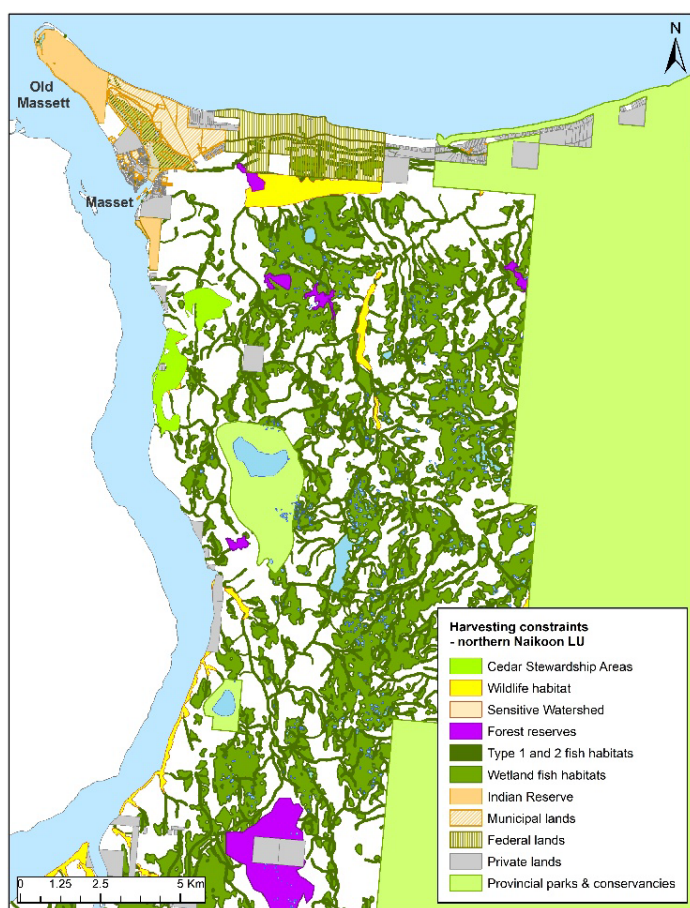
A primary concern for the complainant is the implementation of the old forest representation strategy under the Order. Old forest representation on Haida Gwaii is intended under EBM to provide areas for natural processes, habitat for the variety of plants and animals across the management area and benchmarks to assess how managed areas compare over time. The overall intent is to protect enough old forest to maintain ecological functions and provide healthy populations for all native species, even those we know little about.^{xiii} To explore implementation, the Board examined the approach used in the Order and the general character of the resulting landscape and habitat elements on the ground to this point.

The Coast Information Team developed the EBM Planning Handbook (the handbook) in 2004 as the conceptual basis for implementation of EBM across multiple scales on the Coast. The handbook identified principles, goals, objectives, and key elements of EBM. The complainant correctly points out that the handbook suggested targets be set for old forest representation at both the landscape and watershed scales, with a broader range of different targets for watersheds intended to average to the landscape target. This approach encourages a reasonable distribution of representative old forest ecosystems across the LU. The handbook considered LUs to range in size from 30 000 to 100 000 hectares and watersheds to range in size from 1 000 to 50 000 hectares. The great majority of watershed subunits identified in the Naikoon for calculation of the upland stream requirement are smaller than the minimum size identified in the handbook for watersheds.

When the handbook was written, it was not a consensus document, even among the handbook contributors, because of scientific uncertainty and differences in interpretation. The handbook working group did agree "the Handbook provides a useful starting point for implementing an ecosystem-based approach."

The Order's approach to management for old forest representation targets followed by BCTS and licensees, is applied strictly at the landscape unit level, as in the Great Bear Rainforest on BC's mainland Coast. The ecological principle behind the distribution of representation is that it will provide, along with other reserves and retention, habitat and connectivity for reasonable dispersal of species across the landscape. The Board engaged a conservation biologist to help assess the results of the Order's approach to old forest representation in the Naikoon LU using several key functional conservation elements, including amount of protected area, connectivity²¹ and forest interior habitat.²²

The Naikoon LU has more than 70 percent of its area in protected forest conservancies, a greater proportion than most other LUs on Haida Gwaii, because of the Naikoon Park on the east side of the LU. More than 90 percent of the protected forest provides forest interior conditions, well away from managed, open forest edges. At least 40 percent of the protected forest in the conservancies is old. In the remainder of the LU that is outside the large protected areas, there are riparian reserve connections and coastline reserves that offer connectivity to the ocean.



With 11 percent of the Naikoon LU in THLB, the LU is at a low risk for forest management impacting biodiversity. As a comparison, the entire Haida Gwaii TSA has 19 percent THLB. Reserves for Type 1 and 2 streams wind throughout the Naikoon THLB, comprising more than 15 000 hectares, an area greater than the THLB itself (Figure 4). The large amount of protected area and relatively small THLB was also sufficient for Taan Forest to recently consider portions of the Naikoon LU as high conservation value large landscape level forest²³ for its certification under the Forest Stewardship Council.

Figure 4. The northern portion of the Naikoon LU indicating the THLB (white) which is the area available for harvesting under the Order.

²¹ Connectivity – Linkages of habitats, communities and ecological processes at multiple spatial and temporal scales.

²² Forest interior habitat - Part of ensuring connectivity is ensuring enough interior forest habitat for those species sensitive to edges. Large intact areas of forest allow for a high amount of forest interior.

²³ Large landscape level forests, as defined by the Forest Stewardship Council, contains globally, regionally or nationally significant large landscape level forests, embedded within, or surrounding the managed area, where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance and there is a high likelihood of long-term species persistence.

Although the Naikoon LU has a large amount of protected old forest in conservancies and reserves, this protection is not uniformly distributed. Individual watersheds have varying degrees of protection, which may influence functional elements like connectivity. The Board's biologist did not conduct an analysis of intact watersheds across the Naikoon LU. Only watershed subunits have been identified under the Order and these are very small for conservation planning. However, the biologist considered Haida Gwaii, when viewed as a whole, to have a functional range of protection across watersheds with some clumps of adjacent watersheds having high levels of protection that create large areas of forest interior habitat—a valuable and increasingly rare ecological resource.

The Board biologist noted there are tradeoffs when distributing reserves in a LU—some areas with a high proportion of reserves means there are some other areas with a low proportion of reserves. Some portions of the Naikoon LU are totally reserved while others have a high proportion of the area that could be logged. Whether the distribution of reserves and THLB across various watersheds in the Naikoon is optimal for conservation of biodiversity is outside of the scope of this investigation. Also, the proportion of upland (harvestable) area in reserves is not clear, but meeting the representation requirements in the landscape unit ensures all ecosystem types in the LU are reserved to required amounts.

An important aspect of providing connectivity is to supplement landscape-level reserves with stand-level retention in harvested areas for species that require older trees or stand conditions but cannot move easily or quickly in or away from harvested areas. For all of the cutblocks the Board examined in the field, most stand level retention designated for the purposes of meeting requirements in the Order was in landscape level reserves, such as Type 1 and Type 2 stream reserves, occurring along the edges of the blocks. BCTS designated an additional one to seven percent retention on three of the five blocks examined to meet the stand level cedar retention requirements in the Order. In the Board biologist's opinion, if a watershed in the Naikoon LU falls below 30 percent for mature forest reserves or protected area, additional stand level retention, over and above that left for Type 1 and Type 2 streams, should be considered when harvesting.

Ultimately, to determine if the approach used on Haida Gwaii for conservation of landscape level biodiversity is truly effective to meet the intent of EBM, comprehensive monitoring of species' responses to management will be necessary, something that has not happened to this point.

Findings

The results of the complaint investigation show that the Order is being implemented to meet the intent of EBM. Implementation is adapting over time, true to the underlying principles of EBM and the necessary requirements to address a complicated resource management challenge. Questions continue to be raised, discussed and examined and practices are evolving, although some issues are still in the process of being addressed.

Stewardship of cedar on Haida Gwaii is suitably evolving in a number of ways. Monitoring and inventory work are providing useful data. BCTS has agreed to work with the CHN to help protect lowland yellow cedar in the Naikoon LU, while the CHN is collecting information to propose a new cedar stewardship area. A persistent concern about overharvesting of cedar on Haida Gwaii eventually led to a legal partition of the AAC in 2018. Disagreement remains between the province and the CHN about the required scale for ensuring cedar sustainability. BCTS has become the focus of lingering cedar harvesting concerns for reasons that go beyond its planning and management under

the Order. As the Province's chief forester has recommended several times, a comprehensive consensual cedar strategy is needed to improve this situation.

Management of watershed level hydrologic processes is also adapting as it should under EBM. The CHN recently raised questions about the approach used to meet the upland stream requirements under the Order. The Haida Gwaii Management Council is planning to host a workshop with scientists to try to resolve these questions, while BCTS has been working with a specialist to try to better understand hydrological hazards and risks.

Conservation of landscape level biodiversity is satisfactorily evolving in the Naikoon LU. More than 15 years ago, the EBM Handbook provided the conceptual starting point for EBM on the North and Midcoast and later, on Haida Gwaii. The approach to conserve landscape level biodiversity changed somewhat as it was applied and implemented in these jurisdictions. Based on a broad review of several important conservation features, it is the Board's view that current management of landscape level biodiversity in the Naikoon LU is appropriate. Adjustments to stand level retention may need to be considered at some point in some watersheds. Nonetheless, the only way to determine if management in the LU is truly effective is to monitor species responses over time, something that has not yet been done.

Conclusions

The Board found BCTS planning and practices in the Naikoon LU for sustainable cedar management, watershed level hydrologic processes and landscape level biodiversity are compliant with requirements under the Order. As well, the Board found that implementation of the Order is currently meeting the intent of EBM, according to its underlying principles and the necessary requirements to address such a complicated resource challenge.

Implementation questions continue to be raised, discussed and examined. Practices for stewardship of cedar and hydrologic processes are currently evolving. Some questions have emerged that require attention at a higher level than the Solutions Table.

It appears the Haida Gwaii Management Council is already taking some positive steps to understand the questions emerging about the management of upland streams. To truly understand the effectiveness of the Order's planning and practices for conservation of landscape level biodiversity, an evaluation of species responses will be needed at some point. If necessary, the CHN and the Province could agree to amend the Order in future. Until then, watershed level context may be helpful when considering stand level retention. The lingering cedar harvesting controversy continues to drive much of the concern about planning and practices in the Naikoon LU. BCTS is at the center of this controversy for reasons that go beyond its planning and management under the Order. A comprehensive consensual cedar strategy, as recommended by the chief forester, could go far in addressing this issue.

ENDNOTES

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- ^{iv} Haida Gwaii Management Council. 2018. Forest views: making decisions together on Haida Gwaii. The HGMC newsletter.
- ^v Rittle, H. 1972. On the planning crisis: Systems analysis of the “first and second generations.” *Bedrifts Okonomen* 8: 390-96.
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- ^{ix} Donaldson, D. 2017. Letter to Kil tlaats’gaa Peter Lantin, President Council of the Haida Nation. October 16, 2017. Office of the Minister. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. Victoria BC.
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- ^{xii} D.J. Huggard and L.L. Kremsater. 2009. Ecosystem representation: sustaining poorly known species and functions. IN: Bunnell and Dunsworth ed. *Forestry and Biodiversity – Learning How to Sustain Biodiversity in Managed Forests*. UBC Press. 5-16.



**Forest
Practices
Board**

PO Box 9905 Stn Prov Govt

Victoria, BC V8X 9R1 Canada

Tel. 250.213.4700 | Fax 250.213.4725 | Toll Free 1.800.994.5899

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