

Cariboo-Chilcotin
Land Use Plan

Regional Biodiversity Conservation Strategy

UPDATE NOTE # 14

The Function and Management of Old Growth Management Areas in the Cariboo-Chilcotin

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Biodiversity
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Prepared for:
The Regional
Management Team

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Biodiversity Conservation Strategy Update Notes are prepared by the Cariboo-Chilcotin Biodiversity Conservation Strategy Committee for purposes of technical clarification or technical additions to the Biodiversity Conservation Strategy report, submitted to the Cariboo-Mid Coast Interagency Management Committee in July 1996. These notes are prepared in response to issues and questions presented to the Biodiversity Committee by the Interagency Cariboo Manager's Committee.

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Previous CCLUP Biodiversity Strategy Updates include:

Update #1: Key Assumptions and Recommendations For Use of the Inventory Adjustment Factor in the Cariboo Forest Region

Update Note #2: Amalgamation of Small NDT-BEC Units in Relation to Assessment of Seral Objectives and Old Growth Management Area Planning

Update Note #3: Definition of the Fir Group and Pine Group for Purposes of Seral Stage Assessments within NDT 4 of the Cariboo-Chilcotin

Update Note #4: An Approach for Patch Size Assessments in the Cariboo Forest Region

Update Note #5: An Integrated Mountain Pine-Biodiversity Conservation Management Strategy

Update Note #6: Procedures for Implementation of the Mountain Pine Beetle-Biodiversity Strategy to Address Current Attack During the Outbreak Phase

Update Note #7b: An Integrated Strategy for Management of Biodiversity and Bark Beetles in Douglas-fir and Spruce Stands

Update Note #8: Strategy for Management of Mature Seral Forest and Salvage of Mountain Pine Beetle-Killed Timber

Update Note #9: Strategy for Management of Mature Seral Forest and Salvage of Mountain Pine Beetle-Killed Timber Within TFLs in the Cariboo

Update Note #10 Management of Transition Old Growth Management Areas with a High Lodgepole Pine Component Heavily Attacked by Mountain Pine Beetle

Update Note #11 New Options for Old Growth Management Areas in Ecosystems with Frequent, Stand Destroying Natural Disturbance

Update Note #12 Stand Level Retention Biodiversity

Updates are available at:

http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/plan/biodiv/index.html#biodiv

Introduction

Old Growth Management Areas (OGMAs) are a fundamental component of the land use balance achieved by the Cariboo-Chilcotin Land Use Plan and are critical to the maintenance of many environmental and non-timber values in a highly managed landscape. OGMAs contribute to the old seral target. In combination with the mature+old seral targets and wildlife tree patches, OGMA's are part of the overall biodiversity strategy designed to help maintain the ecological values and processes of forests in the Cariboo-Chilcotin. Mapped OGMAs currently cover approximately 11% of the productive forest land base (432,072 ha) in the Cariboo-Chilcotin.

Enabling legislation and guidance on retaining old seral forests for biodiversity originated under the Forest Practices Code¹. Old growth conservation targets were legally established as part of the Cariboo-Chilcotin Land Use Plan (CCLUP) and spatial delineation of OGMAs was done through the Sustainable Resource Management Plans. Management objectives and maps of OGMAs were legally established under the Land Use Objectives Regulation.

This extension note provides specific information and guidance for resource management professionals charged with maintaining and managing OGMAs. Part of that guidance is provision of the broad ecological rationale for establishing the set of OGMAs in the Cariboo-Chilcotin. The note also offers insight into the valuable ecological resource provided by OGMAs and advises how to maintain this important legacy into the future.

Ecological Principles

Coarse Filter Management

The coarse filter approach is based on the principle that we can never completely understand or manage all the individual components of natural ecosystems. What we can do is try to keep representative samples of natural ecosystems and hope that this allows all the ecological parts and processes to survive. Ecological representation should occur at the landscape scale and the stand scale.

Coarse Filter Management OGMAs are a major component of the coarse filter approach to biodiversity conservation which strives to keep species and ecosystem functions by retaining representative samples of all ecosystems.

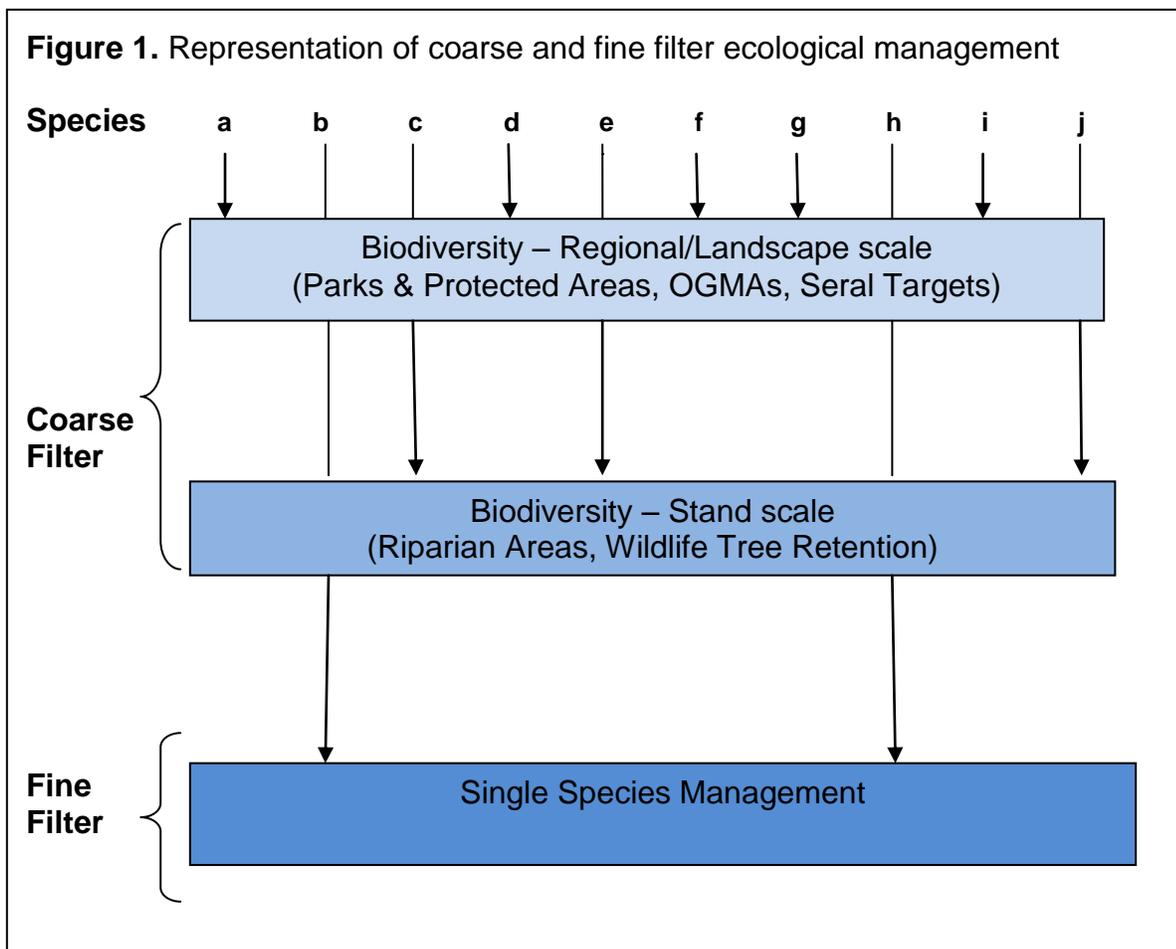
The OGMAs and mature+old seral targets provide coarse filter ecological representation at the landscape scale. The coarse filter approach to biodiversity conservation involves maintaining a variety of sites, attributes and seral stages across each major ecological zone to represent the array of ecosystems found on the landscape. In forested ecosystems, particular ecological communities and species exist in each seral stage, from young forests through mid-seral to mature and old forests. Forests that develop

according to this natural successional path, after natural disturbances such as fire, wind and insect attack, have quite different stand characteristics and ecological processes than those produced through traditional, industrial forest management methods.

At the landscape scale, in the absence of a coarse filter approach, forest management leads to a planned reduction or elimination of older forests. Patch size distribution is usually altered as well, leaving only small remnant patches of older forests after a full rotation.

At the stand scale, young forests established through conventional forest harvesting often have a shortened period of time when they are dominated by herb/shrub complexes and lack structural legacies from the previous stand such as dead trees and large woody debris. Also, patches of undisturbed forest floor are often reduced or missing. Coarse filter management works to maintain a well distributed array of older forests and some young natural forests, initiated by natural disturbance.

The place of the coarse filter approach in multi-scale management to maintain biodiversity is shown in Figure 1. In contrast to the coarse filter, the fine filter approach is directed at managing for specific species such as endangered plants or wildlife.



Natural Disturbance Types

All forest landscapes are dynamic, with continuous death and replacement of trees. However, there are differences between forest types in terms of the rate, intensity and size of the disturbances that act to replace the forest through time. The Biodiversity Guidebook acknowledged these differences by describing four different Natural Disturbance Types (NDTs). Each has its own targets and definitions for old forest.

In the Cariboo-Chilcotin, NDT 1 includes the high elevation forests in the Engelmann Spruce-Subalpine fir (ESSF) biogeoclimatic zone in the wetter, east side of the region. These forests have very infrequent stand destroying disturbances; therefore natural landscapes include a high proportion of very old forest. NDT 2 forests are similar but not as wet as NDT1. In the Cariboo-Chilcotin they include some sub-zones in ESSF, Interior Cedar Hemlock (ICH) and Sub-Boreal Spruce (SBS). In contrast, the forest landscape of most of the SBS and sub-boreal pine-spruce (SBPS) are classified as NDT 3 which is characterized by much more frequent and extensive stand destroying disturbances. The resulting landscapes are comprised of younger forest with few stands ever reaching the age of old forest in NDT 1 or 2. Older forest in NDT3 is primarily found in small patches skipped by fires and in wetter areas adjacent to wetlands, creeks, lakes and other moisture receiving areas. The Interior Douglas-fir (IDF) forests are NDT 4. They have stand-maintaining disturbances such as frequent, low intensity ground fires. This results in mortality of younger trees and shrubs which leads to a patchy, relatively open, multi-aged forest.

Natural Disturbance Types

NDT 1 – infrequent stand destroying disturbance

NDT 2 – infrequent stand destroying disturbance

NDT 3 – frequent, expansive stand destroying disturbance

NDT 4 – stand maintaining disturbances

Patch size

In forest landscapes managed for industrial forestry, large patches of mature and old forest tend to decline through time. The size of mature+old forest patches is important in terms of stand stability (resistance to windthrow) and maintenance of interior forest conditions (generally forest that is 100-200 from the edge), with large patches being better. Although guidance has been provided on maintaining a range of patch sizes of forest (BCC Update #4), there is no assurance this will be achieved just by using the mature+old seral targets since they are aspatial. OGMAs are important because they are spatial, so patch size is a consideration in designation and replacement. However, over time, with changes to configuration of some OGMAs, it is important to manage the set of OGMAs, including replacements, with a view to configuring large patches wherever possible.

Patch Size Ecologically, retention of larger patches of older seral forest is important to maintain stand stability and interior forest conditions.

Interspersion of Habitats

OGMAs focus on forested habitat, but maintaining the relationship between forests and other habitat types such as grasslands, wetlands, and streams is an important aspect of the ecological value provided. Many organisms require habitat attributes from both older forests and non-forest habitats. For example, tree nesting waterfowl use trees adjacent to wetlands or ponds for nesting, mule deer use grasslands for food and adjacent forests for security cover, and semi-aquatic mammals use the resources from both aquatic and forest habitats. Effective location of OGMAs can maintain these vital connections between mature/old forests and other habitats.

Natural succession

While OGMAs focus on maintaining forests that are old right now, they can also protect important young forest ecosystems, thereby allowing them to mature through natural succession with minimal intervention. Prime candidates are ecosystems that are sensitive or rare, or becoming rare through the application of conventional forestry. Conventional forest management produces many young forests, but these are quite different from what has been called “young natural forests”¹. The young natural forests develop without intervention after natural disturbances such as fire, wind or insect attack, and include a higher level of ecological legacies from the previous stand. Examples of ecological legacies include patches of live trees and standing dead trees, significant amounts of well distributed coarse wood debris, advanced conifer regeneration and patches of undisturbed forest floor.

Young Natural Forests are stands that have developed after natural disturbance without human intervention. They are an important component of OGMAs and contribute to the maintenance of rare ecosystems and structural legacies over time.

Design and Function of Old Growth Management Areas

Types of OGMAs

Three types of OGMAs have been established in the Cariboo-Chilcotin: Permanent Static OGMAs, Permanent Rotating OGMAs and Transition OGMAs. Together with the

¹ Delong C., 2010. Land Units and Benchmarks for Developing Natural-disturbance Based Forest Management Guidance for Northeastern British. <http://www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr059.pdf>

other CCLUP no-harvest designations, they make up the forest land area required to meet the legally required old forest targets.

While most permanent OGMAs are static; designed to remain in the same location through time, a small component are designated as rotating . The rotating OGMAs were located in landscapes and stand types where forests, on average, do not live as long and have a higher frequency of large natural disturbances. Rotating reserves were established to specifically allow the one-time recovery of timber killed by the MPB before merchantability was lost. The management principle for these OGMAs is harvest and replacement, even though replacement may consist of much younger stands. Specific direction pertaining to the management and replacement of rotating reserves is contained in BCC update #11. Rotating OGMAs are designated primarily in NDT 3 and represent a portion of the old target for that area. As the economically available timber is harvested in designated rotating OGMAs, all replacements will become static OGMAs. This change in approach is necessary to facilitate efficient administration of OGMAs for government and industry.

Transition OGMAs were designed to compensate for other constrained areas deemed to contribute to old seral that were in fact not old forest. Transition OGMAs are a temporary designation meant to exist until the other contributing no-harvest areas in a landscape unit develop into old forest or until twenty years after the Land Use Order was declared (June 2010). Because of their ephemeral nature, transition OGMAs have more liberal management direction than permanent OGMAs with respect to salvage of dead timber. In the short term, transition OGMAs may be ideal candidates for replacing permanent OGMAs that are lost through sanitation harvest or other reasons.

Types of OGMAs Currently, there are three types of OGMAs:

Permanent OGMAs - static

Transition OGMAs

Rotating OGMAs

Rotating OGMAs will be converted to Permanent OGMAs– static. By 2030, transition OGMAs will be retired, leaving only Permanent OGMAs-static.

Historical Development of OGMAs

OGMAs were located with input from various government ministries in a process that took several years and included stakeholder input and review. OGMAs are located in each of the Biogeoclimatic (BEC) subzones within the 160 landscape units in the Cariboo-Chilcotin. The process of locating and distributing OGMAs represented a balance between protection of ecological values and acceptable timber supply impacts.

Consistent with the Biodiversity Conservation Strategy for the Cariboo-Chilcotin Land Use Plan², landscape units were rated as having higher, moderate or lower biodiversity emphasis. This resulted in application of three different levels of biodiversity targets. Application of these three levels of biodiversity emphasis was required by Provincial direction in order to manage the overall impact on timber supply.

The design of OGMAs was strongly influenced both by the state of the forest landscape and the limitations of the CCLUP targets. The state of the forest landscape was essentially the distribution of different aged forest patches across each area. Logging and other land development activities have significantly changed the amount, distribution and patch size of older forest remaining in many landscapes. This baseline condition was the starting point for identification of OGMAs. In some cases there was a very limited amount of older forest available and patches were defined by past harvesting activity.

Area of OGMAs The area of OGMAs in the region and in different zones was governed by land use targets which were determined to provide a socially acceptable balance between conservation and timber availability. The quality and configuration of mapped OGMAs was governed by the condition and availability of forest stands in the managed landscape.

Land Use Targets and Overlaps

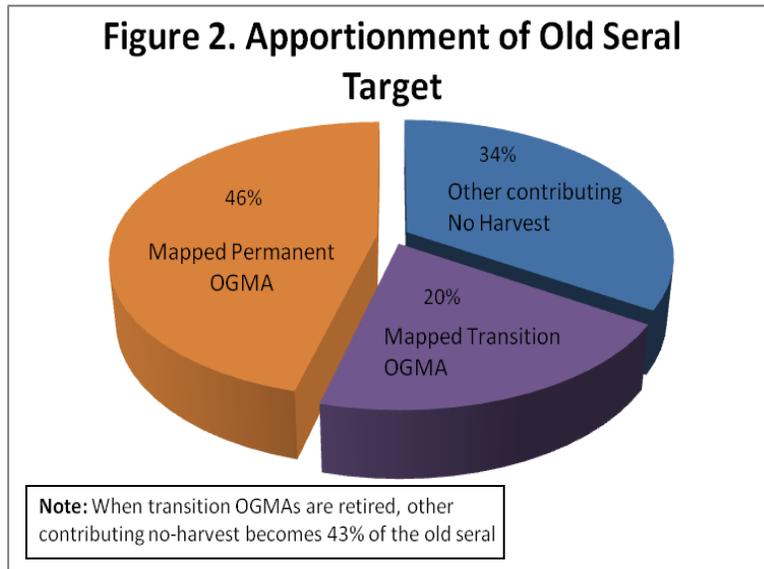
Consistent with the CCLUP, there was a specific target for the amount of area to be conserved as old growth. This is the old seral target. Not all this area was set aside as OGMAs because a number of other land use values were deemed to contribute to meeting the old forest target. These include:

- ❖ parks and protected areas
- ❖ community areas of special concern
- ❖ caribou no-harvest areas
- ❖ class A lake buffers
- ❖ critical habitat for fish
- ❖ riparian reserve zones

Across the region, 34% of the old seral target is deemed to be met through these other areas (figure 2). The remainder of the old seral target has been mapped as OGMAs. As transition OGMAs are retired, the relative proportion of the total old seral target deemed to be met by these other areas rises to 43%.

² Biodiversity Conservation Strategy for the Cariboo-Chilcotin Land Use Plan
http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/plan/biodiv/bio9.pdf

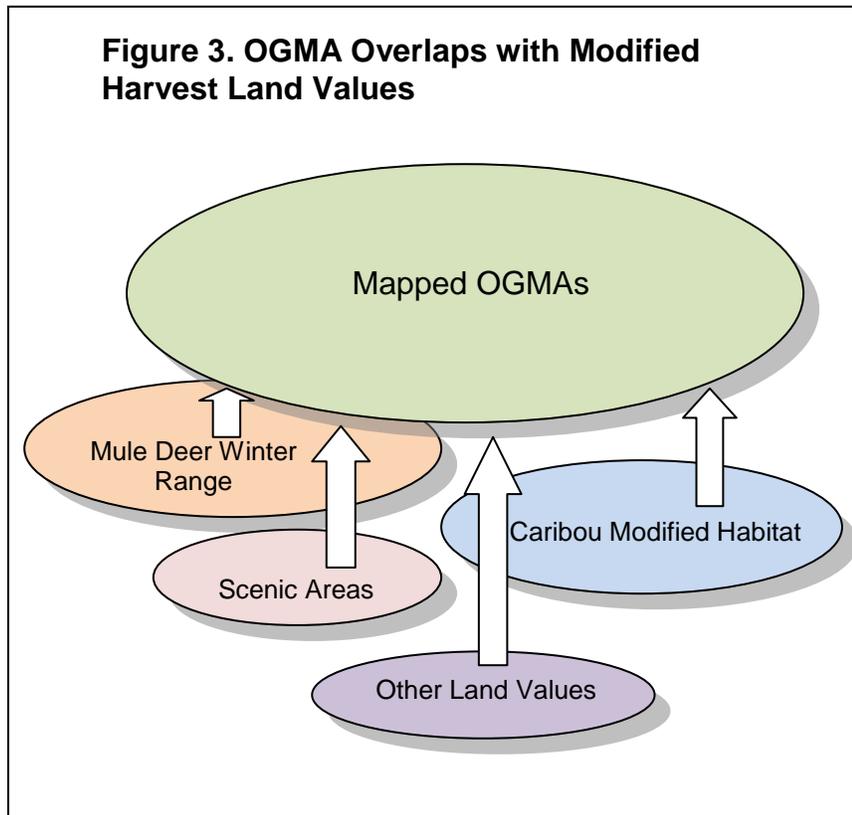
The specific contribution to old seral by other land values in each landscape unit varies depending upon the prevalence of those values. It is important to understand that although these areas are deemed to contribute to the old forest target, they do not necessarily represent the best areas for achievement of ecosystem representation.



Delineation of OGMA's was based on a set of ecological criteria but wherever possible OGMA's were also overlapped with other environmental and First Nations cultural values. Other broad classes of land use values overlapped with OGMA's include: Caribou modified habitat, mule deer winter range, scenic areas (retention, partial retention, modification), lake management buffers, riparian management zones (stream, lake, wetland), moose habitat. The effect of this overlapping results in better protection for these other land values while minimizing the impact on timber access. It should be noted that OGMA's with embedded, site specific values cannot be replaced without potentially exposing that other value to loss or impact.

Overlaps with Other Land Use Values In order to maximize non-timber benefits while still meeting timber targets, mapped OGMA's are often overlapped with other important ecological and cultural values.

Figure 3. OGMA Overlaps with Modified Harvest Land Values



Reserve Management Model

OGMA's are managed as reserves rather than managing them through a continuous recruitment model. In spite of the ecological differences between Natural Disturbance Types, the use of reserves was done in all NDT's for four main reasons:

1. The timber supply impact of continually recruiting old forest through time is dramatically higher than using geographically fixed reserves to maintain old forests. This is because under the recruitment approach, in addition to leaving the area of old forest required to meet targets, additional forest area would have to be maintained beyond the normal rotation age to provide replacements for those old areas that will eventually be lost to natural disturbance. CCLUP timber targets would not have been met using the recruitment model.
2. The non-timber benefits are maximized by overlaps with other geographically-fixed ecological and cultural values that require special management consideration.
3. Fixed OGMA's also provide greater certainty to developers who do not want to spend energy and dollars on areas where they will have limited ability to operate.
4. Static reserves require much less government resources to administer. Government is responsible for assuring the land use balance is met and consultation with

stakeholders and First Nations is completed when changes to the OGMA are made. With a dynamic model of OGMA management, there is ongoing replacement of OGMA through time, and the level of technical and administrative work required to manage, track and consult on this over the entire forest landscape is onerous. The static, reserve model of OGMA management allows far less replacement and is therefore administratively simpler. The risk of using the reserve approach is that old seral forest will eventually be lost to natural disturbance.

Reserve Model of OGMA Management OGMA are managed as reserves rather than continuing replacement over time in order to minimize timber impacts, help conserve other site specific values and simplify administration.

Mixed Seral stages and Ecological Succession

Given the static, reserve model used for OGMA management, the role of natural disturbance must be addressed. Disturbances like fire and insect attack will, over time change the forest characteristics of some OGMA. Since it is so challenging ecologically and administratively to find replacements for OGMA, it is better to leave them in existing locations and let natural succession take place. These stands still have significant ecological value because the new forest is allowed to develop without harvesting, road building, planting and other silvicultural treatments. The stand will follow a different successional pathway with a longer herb/shrub stage and greater structural diversity than a managed stand. Stands that have developed in this way can provide unique and valuable habitat through time and will be ever more valuable in the future as fewer stands remain unmanaged. Exceptions to this approach would be where serious safety concerns or soil degradation are likely without management intervention.

Mixed Ages and Attributes of OGMA Because OGMA are managed as reserves, and over time natural disturbance will kill some older stands, OGMA include some younger stands which develop according to natural succession.

Management and Administration of OGMA

Legalization

The legal requirement to manage for old growth forests began with the original Cariboo-Chilcotin Land Use Plan in light of the provincial biodiversity direction provided by the Forest Practices Code. These documents directed that a specified amount of old forest be maintained in each Biogeoclimatic unit within each landscape unit. Sustainable Resource Management Plans subsequently delineated specific Old Growth Management Areas across the Cariboo-Chilcotin and the resulting OGMA have been

legalized through the Land Use Order and by inclusion in existing Forest Stewardship Plans. As forest stewardship plans are prepared or revised, results and strategies in those plans must be brought into alignment with the direction contained in the land use order. The land use order is posted at: <ftp://ftpwml.env.gov.bc.ca/dist/Cariboo-Chilcotin%20LUOR%20Order/legal%20order%20document/CaribooChilcotinLUO.pdf>

OGMA Legalization OGMA polygons and objectives for management have been legalized for forestry operations under the CCLUP Land Use Order declared on June 25, 2010.

Administration

Strategic level guidance on application of the CCLUP biodiversity direction, including OGMA, has been provided by an interagency technical working group with members from the Integrated Land Management Bureau, the Forest Service and Ministry of Environment. These members now work in the Ministry of Natural Resource Operations. This group has met regularly since 1994 to deal with strategic level biodiversity issues and questions relating to the implementation of the Cariboo-Chilcotin Land Use Plan. For major issues arising after the completion of the original 1996 Biodiversity Conservation Strategy, the technical working group has prepared Biodiversity Strategy Updates for approval by the Cariboo-Chilcotin Manager's Committee. For smaller issues, the working group generally works with other agencies and stakeholders to provide advice and guidance.

Under FRPA, OGMA developed through Sustainable Resource Management Plans were legalized through inclusion in Forest Stewardship Plans developed by forest licensees. The declaration of the Land Use Order on June 25, 2010, provided additional legal clarity with respect to the management objectives and spatial location of OGMA. These legal objectives will result in more stable and consistent management for OGMA over time in the whole Cariboo-Chilcotin area. At the operational level, management of forestry activities in OGMA is managed by the MNRO (formerly Ministry of Forests) district staff. Allowable activities within OGMA are determined by the results and strategies in approved Forest Stewardship Plans.

Ecological Compatibility of Selected Land Management Activities with OGMA

OGMAs can be lost or impacted through various land development activities. The LUO and Forest Stewardship Plans apply only to forestry. This section of this document provides guidance on the ecological compatibility with OGMA of various land uses and activities, both forestry and non-forestry. While the examples are not exhaustive, they do provide reference points for evaluating the compatibility of proposed activities within OGMA.

OGMAs and Land Development The legal land use order establishing OGMA currently applies only to forestry. Nevertheless, other land developments are informed by this direction and proponents are encouraged to manage for OGMA retention, consistent with the order.

Generally, land uses or activities that do not disturb the biological community and ecological processes are considered to be compatible with the intent of OGMA. Where land developments impact the structure or function of OGMA, the greater the impact the less compatible it is with the purpose of the OGMA.

One exception to this rule is the treatment of forest pests within OGMA. There can be occasions where it is necessary to treat forest pests within OGMA to help protect the landscape including the OGMA despite the fact those treatments destroy stand structure within the OGMA. The land use order provides for this activity under very specific circumstances. It is critical that these conditions be strictly followed to protect the integrity of OGMA within a framework of responsible forest health management at the landscape level.

Table 1 describes an array of activities and the degree of ecological compatibility of those activities with OGMA maintenance. Note that “incompatible” uses or activities may still be allowed by a statutory decision maker for certain non-forestry activities based on an overall assessment of costs and benefits.

For forestry, acceptable activities have been defined within the LUO. Some of these activities are not fully compatible with the ecological objectives of the OGMA but have been authorized to address pre-existing uses or broader concerns in meeting the objectives of the land use plan.

Where a land development is permitted that is ecologically incompatible with OGMA maintenance, mitigation is recommended. The type and degree of mitigation will vary with the type and scale of impact. Mitigation may consist of on-site activities to prevent soil disturbance or loss of vegetation, or recovery of these attributes over time. Alternatively, where damage cannot be mitigated, designation of replacement areas for the OGMA area should be considered.

The direction referenced under Current Direction in the table is either legal direction as provided in the LUO, or best management practices (BMP). Roads and trails included in OGMAs at the time of LUO declaration will be deemed to be a pre-existing use.

Table 1. Compatibility of Selected Land Uses with Ecological Objectives for OGMAs.

Red = Not Compatible; **yellow** = compatible under certain conditions and with specified mitigation. **Orange** = Activity may not be fully compatible but has been authorized under the LUO.

Proposed Use or Activity	Ecological Compatibility	Current Direction	Comments
Recreation			
Foot paths	Yellow		Trails should be narrow, have very minimal vegetation disturbance and not significantly disturb soil. It is advisable to block access to motorized use
Trails for use by motor vehicles	Red		These trails would typically require significant vegetation removal and cause soil disturbance during construction or subsequent use by motor vehicles.
Lodge, hut or campground development	Red		
Residential or guided hunting	Yellow		Permanent camp structures requiring harvest of trees are not compatible.
Forest Harvesting			
Conventional Harvest	Red	Not consistent with legal LUO	
Salvage harvest – permanent OGMAs	Red	Not consistent with legal LUO	
Salvage harvest – transition and rotating OGMAs	Orange	Legal- LUO BMP-BCC Updates ⁱⁱ (# 7b, 10, 11)	Permitted for transition and rotating OGMAs. under conditions specified in LUO.
Sanitation harvest	Orange	Legal - LUO	Permitted under conditions specified in LUO
Road building for forestry developments	Orange	Legal - LUO	Permitted only when no other practicable alternative is available.

Proposed Use or Activity	Ecological Compatibility	Current Authorization	Comments
Forest Protection			
Fuel Reduction to reduce fire risk		Legal - LUO	Permitted under conditions specified in LUO
Fire Fighting		BMP- BCC letter to MOFR districts	Guidance outlines priorities for fire fighting in OGMA's and mitigation measures
Bark Beetle suppression treatments		Legal – LUO; BMP – Biodiversity Updates	Suppression permitted under conditions specified in LUO
Post fire rehabilitation		BMP- BCC letter to MOFR districts	Guidance emphasizes regeneration using natural methods and avoidance of non-native grass species.
Ecosystem restoration			
Grassland restoration in Grassland Benchmark areas through thinning and/or burning		Legal- LUO BMP – Grassland strategy document iii	Location and design of treatments should be approved by NRO and the interagency biodiversity working group. Grassland benchmark areas are spatially defined in LUO
Agriculture			
Grazing License			Grazing should be well managed to avoid overuse and vegetation damage from livestock
Agricultural Lease			
Fencing		Legal - LUO	Fences are permitted where no other practicable location is available. Fences should be built without developing any permanent road access through the OGMA.

Proposed Use or Activity	Ecological Compatibility	Written direction	Comments
Land Alienation			
Road right of way to private land			All these decisions are likely to involve vegetation clearing and soil disturbance. Decisions on the best use of the land are at the discretion of the Director, Land Authorizations, NRO.
Road right of way for industrial development			
Resorts or campgrounds			
Sale of crown land for residential or industrial use			
Minor power line right of way for residential property with no permanent road			Compatibility is dependent upon minimal vegetation and soil disturbance
Area based forest tenures			Inclusion of OGMA's within the boundaries of these tenures can be compatible provided the included area is still managed as OGMA.
Industrial development			
Major transmission line disturbance			These are not ecologically compatible because of the road development and site clearing required.
Wind turbine or run-of-river power generation sites			
Roads related to industrial development or mineral exploration			
Mine sites			
Placer mining sites			

Principles for Replacement of Old Growth Management Areas

Introduction

A set of OGMA's meeting CCLUP Old Growth requirements have been legalized under the Land Use Order Regulation^{iv} (LUOR) for the Cariboo-Chilcotin signed in June, 2010. Any changes to this set of OGMA's will require adjustments to the legal OGMA maps. The exact process and responsibilities for amending the OGMA layer over time will be developed in cooperation with the MNRO District Offices. This section contains principles for use in deciding on replacement OGMA's. Some relevant map information is referenced in section 5.

Some ongoing loss and replacement of OGMA's is expected over time for the following reasons:

1. Forest harvest in OGMA's that is consistent with the provisions of the land use objectives in the Land Use Order. These provisions are mostly for suppression harvesting to control beetle outbreaks in all OGMA types or salvage harvest of high mortality stands in Transitional or Rotating OGMA's. Note that salvage harvesting is not allowed in Permanent OGMA's.
2. Loss of OGMA's to other land uses including those areas alienated from crown ownership.

There could also be changes to the OGMA layer over time related to large, catastrophic natural disturbance or from legislated land use changes.

In addition to ongoing minor OGMA loss and replacement, NRO will conduct a one-time "OGMA rationalization" in 2011. This process will adjust the legal OGMA layer for any forest harvesting done in OGMA's to date and consider possible changes resulting from the remapping of BEC lines over the past few years.

Replacement Principles

1. The main function of old growth management areas is to meet ecological needs. Other considerations are secondary. Therefore, rationale for OGMA removal and/or replacement should primarily reflect ecological criteria.
2. Decisions about removal and replacement of OGMA's require assessment and balancing of a variety of interacting ecological factors. Therefore, candidate OGMA areas should be designed and assessed by environmental professionals experienced in coarse filter ecological conservation and knowledgeable about the ecological and habitat features in the specific landscape unit. A team approach, utilizing various specialists will often be useful.
3. Consultation with First Nations, the public and other stakeholders will be required to provide comment on any major changes to the set of legal OGMA's. Major

changes would include any forestry related OGMA deletions that do not meet the requirements contained in the LUO (amendment to the LUO).

4. OGMA deletions that meet the requirements specified in the LUO do not require consultation but do require reporting to NRO consistent with LUO objective 11. A written rationalization (sent to the NRO DM and signed by a licensed forest or biology professional) describing how the proposal meets the LUO direction, should be provided.
5. Replacement OGMAs must be located in the same BEC subzone within the same landscape unit as the area being replaced.
6. Existing Transitional OGMAs should be considered as good potential candidate replacement areas for losses to static or rotating OGMAs since they were located based on ecological criteria and would have lower probability for conflicts with current development.
7. Deletions and replacements from the legal OGMA layer should be completed in periodic batches to allow for efficient work processes, consultation and legalization of the amended layer.
8. The following set of factors should be considered in OGMA replacement decisions. The relative weighting of factors and importance of optimizing several factors in a single OGMA will vary with the situation and should be assessed by experienced and knowledgeable staff. Using the primary factors ensures that OGMAs in each landscape unit represent, well distributed areas of older or undeveloped forest in the major ecological types and that protected blocks will be large enough to provide a useful amount of interior forest. These factors combine to provide good “coarse filter” ecological representation. The secondary and tertiary factors add additional valuable features that should be incorporated where possible. Where the existing set of OGMAs in a landscape unit already provide a good coarse filter, criteria for small replacement additions may place more weight on the secondary factors. Since overlaps to reduce timber impacts were a significant factor in the locating the original set of OGMAs this is a less important factor for locating small replacement additions, but should be considered when possible.

Primary Factors for Replacement OGMAs

- **Size** – Other factors being equal, select the biggest possible areas and consider OGMA additions adjacent to existing ones. This maximizes interior forest condition.
- **Seral stage** – Include old or mature stands when possible but other factors below are also important especially if the area is has not been modified by management.
- **Ecological representation** – Select OGMAs to represent all the site series in each BEC subzone. Less abundant sites series should be over-represented.

- **Distribution** throughout the LU/BEC – Select well distributed OGMA (avoid creating large areas of the LU BEC with no OGMA).

Secondary Factors

- **Locate adjacent to or overlap with important non-forest habitats types** – Select OGMA adjacent to areas such as wetlands, riparian habitat, and grassland habitat.
- **Overlap with rare and endangered plant communities, Wildlife Habitat Areas and Wildlife Features**
- **Overlaps with First Nations Cultural values** – Maximize these overlaps if the 1st Nations value is compatible with the purpose of OGMA.
- **Development** – Exclude or minimize areas that include roads or logging history.
- **Ecological diversity at the stand scale** - Select OGMA that include ecological diversity within individual OGMA.
- **Landscape connectivity** – Select OGMA that can provide important elements to help maintain late seral connectivity. See the Biodiversity Guidebook for guidance of what types of connectivity are most important in each Natural Disturbance Type.

Tertiary Factor

- **Overlap with other timber constraints** – The current OGMA layer already includes a high degree of overlap with areas where timber harvest is constrained or not allowed. The relatively small areas added in the future as OGMA replacements should maximize the ecological benefits. Select replacement OGMA that overlap with other constrained areas only when these areas also provide the best available combination of the primary and secondary factors.
- **Logical boundaries** - Where possible, use landscape features as boundaries that are identifiable on maps and in the field.

Glossary of terms and acronyms

- BEC unit** - An ecological subzone or subzone/variant within the provincial Biogeoclimatic Ecosystem Classification
- BMP** - Best management practices
- BCC** - Biodiversity Conservation Committee
- CCLUP** - Cariboo-Chilcotin Land Use Plan
- FRPA** - The Forest and Range Practices Act enacted in 2004
- ILMB** - The former Integrated Land Management Bureau within the Provincial Government
- LU** - Landscape Unit, a unit of land identified as part of the 1996 CCLUP Biodiversity Strategy for the implementation of Biodiversity targets
- LUO** - Land Use Order declared in 2010 for CCLUP objectives
- LUOR** - Land Use Order Regulation, a regulation under the Land Act that enables the establishment of resource management objectives that then guide forest planning
- MOFR** - The Ministry of Forest and Range
- MOE** - The Ministry of Environment

Natural Disturbance Type

- A classification of forest land used to describe zones that are similar with respect to the general type, size and frequency of natural disturbances to forests caused by agents such as beetles and fire. The natural disturbance type is defined in the provincial Biodiversity Guidebook and used for determining landscape level targets for Old Forest and seral stage distribution.

MNRO - The Ministry of Natural Resource Operations

OGMA - Old growth Management Area

Salvage Harvesting

- Harvesting of dead trees to recover their value before they deteriorate

Sanitation Harvesting

- Forest harvesting to remove live trees infested with a pathogenic organisms to limit spread of the forest pest

Transition OGMA

- Means an old growth management area (OGMA) which only exists until it is replaced by other old forest in that LU-BEC unit or 20 years from the effective date of the LUO, whichever is less.

Permanent OGMA -static

- Means an old growth management area (OGMA) which retains a fixed location in the landscape.

Permanent OGMA -rotating

- Means an old growth management area (OGMA) that contributes to the long-term OGMA target area, but can be harvested under the conditions specified in the LUO.

Appendix 1

Information Resources

Maps

These maps provide information to assess the ecological and land use characteristics of proposed OGMAs deletions and replacements in the Cariboo-Chilcotin. While these maps provide significant information, assessment and interpretation of this information by qualified and knowledgeable individuals is essential. Other information may also be required.

The first four maps are displayed with one landscape unit per page and include OGMAs plus a variety of information useful to assess the value of potential OGMA candidate areas.

1. **CCLUP value maps** – Maps include all major CCLUP ecological and protected designations as well information on pine percentage, non-forest types, private land, grazing leases, woodlots and community forest tenures, and locations of Conservation Data Centre species at risk. Created in February 2010
\\granite\work\srm\wml\Workarea\arcproj\P10_0200_ogma\reconciliation\outputs\maps\CCLUP
2. **Ecological representation maps** – Predicted Ecosystem maps of Biogeoclimatic Ecosystem Classification site series with two classes of high conservation priority ecosystems highlighted. Created in May 2009.
\\granite\work\srm\wml\Workarea\arcproj\P10_0200_ogma\PEM_Analysis\outputs\maps
3. **Seral Maps** – Include forest cover information on seral stage, dominant tree species, topographic contours as well as some CCLUP designations. The 2010 seral update will be posted soon to the following address.
<ftp://ftpwml.env.gov.bc.ca/dist/forest/seral/>
4. **Harvest Maps** – Display recent harvest history on a background of recent (summer/fall 2009) Canada Landsat imagery. Created in Dec. 2009
\\granite\work\srm\wml\Workarea\arcproj\P10_0200_ogma\reconciliation\outputs\maps\landsat_v2

Embedded values – work is underway to complete documentation of OGMAs containing embedded values and or information. Contact MNRO – Resource Management for information on this initiative.

Relevant Literature

Hunter. M.L., 1990. Wildlife Forests and Forestry : Principles of managing Forests for Biological Diversity. 370 pp.. Prentice Hall

Hunter. M.L. (editor). 1999. Maintaining Biodiversity in Forested Ecosystems. 698 pp. Cambridge University Press, Great Britain.

Voller, Joan and Scott Harrison (editors). 1998. Conservation Biology Principles for Forested Ecosystems. 242pp. UBC Press, Vancouver.

Reports and Legal Documents Referenced in this Extension Note

ⁱ Forest Practices Code Biodiversity Guidebook

<http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>

ⁱⁱ Cariboo Chilcotin Land Use Plan Biodiversity Conservation Strategy and Updates

http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/plan/biodiv/index.html#biodiv

ⁱⁱⁱ Best Management Practice Guidelines for Harvesting Treatments on CCLUP
Grassland Benchmark Sites

http://archive.ilmb.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/news/files/reports/grasslands_strat/grassland_bmps_aug_2007.pdf

^{iv} Cariboo-Chilcotin Land Use Order, June 25, 2010.

http://ilmbwww.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/index.html