

Cariboo-Chilcotin  
Land Use Plan

# Regional Biodiversity Conservation Strategy

## UPDATE NOTE #11

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

Prepared by:  
Biodiversity  
Conservation  
Strategy Committee

Prepared for:  
Cariboo Mid-Coast  
Interagency  
Management  
Committee

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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 or recognized by the members of the Committee.**

**Members of the Biodiversity Conservation Committee include: Robin Hoffos – chair (MSRM), John Youds (WLAP), Harold Armleder (MOF), Rick Dawson (MSRM)**

**Previous Biodiversity 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 #7: Interim Strategy for Sanitation of Douglas-fir Beetle in Old Growth Management Areas

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

Updates are available at:

<http://srmwww.gov.bc.ca/car/planning/cclup/biodiv/>

## A. INTRODUCTION

Currently, all Old Growth Management Areas (OGMAs) in the Cariboo-Chilcotin Land Use Plan (CCLUP) area are considered to be permanently fixed on the landscape. Only minimal management interventions are currently permitted in OGMAs. The Cariboo Region Biodiversity Conservation Committee recognized in 1995 that the management approach for OGMAs in Natural Disturbance Type 3 (NDT 3) should be re-evaluated in the future because of the severity and frequency of natural disturbances in this NDT. The frequency and extent of stand destroying disturbance events in NDT 3 is significantly higher than in the other natural disturbance types. The current mountain pine beetle epidemic, although unusually severe, is a dramatic example of a major disturbance common in NDT 3. This update provides a brief background behind the development of a new approach to designating and managing OGMAs in the Cariboo-Chilcotin NDT 3 ecosystems, and then describes the approach and its implementation.

The Biodiversity Guidebook (Forest Practises Code, 1995) describes NDT 3 as composed of “ecosystems with frequent stand-initiating events”. Stand-initiating events are disturbances which cause a high proportion of the stand area to return to an early successional state. Such stand initiating events in NDT 3 are caused by disturbance agents such as crown fires, mountain pine beetle and catastrophic windthrow, either individually or in combination with each other. The biodiversity guidebook describes the mean return interval for disturbance in NDT 3 of between 100 to 150 years depending on the biogeoclimatic subzone. Of course, many stands in each forest landscape live much longer than the average disturbance interval. Also, naturally disturbed stands often retain significant features of the pre-existing stand. These include surviving mature and old trees, snags and down dead wood, and the soil organisms, understory vegetation, and arboreal life forms associated with patches of surviving mature trees.

OGMAs can be used to maintain important components of natural ecological succession (seral stages) that are being diminished or lost in intensively managed forest landscapes. Two seral stages that are being reduced in the managed landscape are old forest and unmanaged early seral ecosystems. These unmanaged early seral ecosystems are quite different from their managed counterparts.<sup>1</sup> Differences include the large component of dead tree material, the patchy, uneven nature of the disturbance that generated them and the much longer time period that they are able to exist in a state not dominated by conifers. These attributes of unmanaged early seral ecosystems will influence the composition, habitat characteristics and ecological processes throughout the whole successional sequence. To effectively maintain biodiversity in intensively managed landscapes, each landscape unit should be designed to maintain a component of both old forest attributes and unmanaged earlier successional sequences.

Maintaining a component of permanent, minimal intervention OGMAs, even in the face of catastrophic disturbance, maintains important ecological values. These areas will provide habitats that have dead wood inputs similar to those of natural ecosystems. They maintain the potential for

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<sup>1</sup> Useful discussions of the differences between harvested and naturally disturbed forests and the ecological implications can be found in the following publications:  
Spies, T. 1997. Chapter 2 :Forest Stand Structure, Composition and Function, in *Creating a Forestry for the 21<sup>st</sup> Century*. Edited by K. Kolm and J. Franklin. Island Press.  
Bunnell F and L. Kremseter. 1990. Sustaining Wildlife in Managed Forests. *NW Envir. Journal* 6:243-269  
Hanson, A.J., T.A. Spies, F.J Swanson, and J.L. Ohman. *Conserving Biodiversity in Managed Forests – Lessons from Natural Forests.* *Bioscience* 41:6 382-393.

genetic selection for disease and insect resistance from trees that survived attacks from insects and diseases. The habitats created as forest succession proceeds in these areas will be rare and valuable within intensively managed landscapes. The lack of road and trail access in these areas will maintain undisturbed forest floor, will minimize access for firewood cutters and minimize the introduction of weedy non-native plants.

Despite the value of maintaining permanent, no-harvest reserves, management of all OGMA as permanent reserves in landscapes subject to frequent, high intensity natural disturbances will result in a reduction of some old growth values over time. This is especially true if many OGMA are disturbed at the same time. Development of OGMA rotation strategies to complement the current fixed OGMA strategy for NDT 3 will provide a greater range of management options to maintain old forest values over time since recruitment of some old forest characteristics will be more rapid from mid-seral stands than from high mortality stands.

## **B. THE NEW MANAGEMENT APPROACH**

The new approach described in this update maintains existing Biodiversity Guidebook age definitions and proportions of old, but adds another type of OGMA in addition to the current “Permanently Reserved” OGMA type. The new “Rotating Reserve” OGMA type would allow for replacement of an OGMA following salvage harvesting in OGMA stands with high levels of beetle attack or after an OGMA reaches an extended rotation age. The Permanent Reserve OGMA would remain permanently fixed on the landbase with management interventions restricted to carefully controlled sanitation harvests. The currently established permanent OGMA will form the total pool of OGMA to which this policy would be applied. Within this pool, individual OGMA will be designated by the Ministry of Sustainable Resource Management (MSRM) as either permanent or rotating reserve OGMA. Targets are provided for the proportion of the total OGMA area outside of other no-harvest areas to be designated as Rotating vs. Permanent Reserve OGMA in each LU/BEC<sup>2</sup>. The proportions of each OGMA type will vary depending on which of three ecological strata they fall into.

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<sup>2</sup> “LU/BEC refers to discrete land areas defined by the biogeoclimatic ecosystem units at the subzone variant level within each landscape unit.

## 1. Implementation Strata

Three ecological strata are used to tailor the implementation of this strategy to the variety of BEC subzone/variants in the Cariboo-Chilcotin. This policy applies only to the BEC units specified in Table 1 below. These BEC units are all in NDT 3 with the exception of “Pine Group” ecosystems in IDF dk3/4 and SBSwk1 ecosystems in NDT 2. The three strata are differentiated based on the rate of natural disturbance and succession, the proportions of the landscape dominated by lodgepole pine and the degree to which non-pine tree species occur in the understory.

**Table 1.** Definition of implementation strata

NDT	BEC units in each implementation strata		
	Strata 1	Strata 2	Strata 3
2	None	None	SBSwk1
3	MSxv - south of Quesnel District, SBPSxc/dc	MSxv - Quesnel District, MSxk/dc2/dv SBPSmk/mc SBSmc	SBSmw/dw
4	Pine Group <sup>a</sup> stands in IDFdk3 and IDFdk4	None	None

<sup>a</sup> The IDF “Pine group” is defined for use in the CCLUP in Biodiversity Strategy Update #3. Mature stands with less than 15% Douglas-fir are included in the Pine Group.

## 2. OGMA Type Targets

Table 2 shows the maximum proportions available as Rotating OGMA for each OGMA type in each of the three strata. These targets are expressed as a percent of the OGMA area outside of other no-harvest designations in each LU/BEC. OGMAs are the only type of “no-harvest” areas that are potentially available to be designated as rotating reserves. Other no-harvest areas within the Cariboo-Chilcotin Land Use Plan include: riparian reserves for lakes, streams and wetlands, critical fish zones, caribou no-harvest areas, and protected areas. Any harvest in rotating reserve OGMAs that overlap modified harvest designations must meet the requirements of the modified harvest designation. Modified harvest designations in the CCLUP include mule deer winter range, caribou modified harvest, visually sensitive areas and riparian management zones. Areas harvested under this policy would be subject to all the standard harvesting requirements including the normal stand-level retention requirements and any increased stand-level retention that is applied to MPB salvage areas.

**Table 2.** Targets for proportions of OGMA area in each LU BEC (outside of other no-harvest areas) available for Rotating Reserve OGMAs in each of three ecological strata. Note that for the IDFdk3/dk4 biogeoclimatic subzones, these target percentages apply only to the area of “Pine Group” OGMAs.

OGMA Type	Proportion of OGMA type by LU/BEC		
	Strata 1	Strata 2	Strata 3
Rotating Reserve	Up to 40%	Up to 30%	Up to 20 %

### 3. Criteria for Designation of Permanent Reserve vs. Rotating Reserve OGMAs

Designation of permanent reserve OGMAs by MSRSM will be based on the combination of several criteria including:

1. Species composition:
  - OGMAs with a greater component of non-pine or mixed species and;
  - OGMAs that are predominantly pine, but which incorporate other important OGMA features such as proximity to riparian features.
2. Overlap with or proximity to important habitat values such as riparian, mule deer winter range, or rare ecosystems/rare plant communities.
3. Size, configuration, and distribution
4. Degree of habitat diversity
5. Minimal roading or past timber harvest within the OGMA
6. Isolation from road development

The choice of designation cannot be made based on rigid rules for single stands or single OGMAs because the choices need to be made relative to what is available in the whole current set of OGMAs in each LU/BEC and how they are distributed in terms of size, location and configuration.

Rotating OGMAs will only be designated in LU/BEC units where the area of available rotating OGMA would be at least 100 ha.

#### 4. Harvest Access Criteria

This section describes the criteria for harvest access to both OGMA types. To meet management objectives, permanent reserve OGMAs need to exclude management intervention that is not absolutely required for bark beetle sanitation.

##### **Harvest Access Criteria for Permanent and Rotating Reserve OGMAs**

###### **Permanent Reserve OGMAs;**

- harvest allowed for bark beetle sanitation only under the conditions provided in the following documents<sup>a</sup>:
  - Biodiversity Update # 5 or 6 for Mountain pine beetle
  - Biodiversity Update #7 for Douglas-fir bark beetle
  - Biodiversity Update<sup>b</sup> #13 for Spruce bark beetle
- no salvage harvest allowed

###### **Rotating Reserve OGMAs**

- harvest is allowed for bark beetle sanitation under the conditions provided in the following documents:
  - Biodiversity Update #5 or 6 for Mountain pine beetle
  - Biodiversity Update #7 for Douglas-fir bark beetle
  - Biodiversity Update<sup>b</sup> #13 for Spruce bark beetle
- harvest with replacement is allowed for:
  - salvage when mature conifer mortality exceeds 50% by basal area or;
  - stands that have achieved 2.5 times their normal rotation age<sup>c</sup> (i.e. 200 years for pine and 300 years for other species)

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<sup>a</sup> Additional UPDATES in the future may also be applicable. Check the following website for the latest updates: <http://srmwww.gov.bc.ca/car/planning/cclup/biodiv/>

<sup>b</sup> A biodiversity update dealing with potential sanitation harvest in Spruce OGMAs attacked by bark beetles will be produced in the future. At present, harvest is not recommended in these OGMAs.

<sup>c</sup> “Normal rotation” is defined for implementation of the CCLUP as 80 years for lodgepole pine and 120 years for all other stand types

## **5. Selection of Replacement Areas for Harvested Rotating Reserve OGMA's**

After harvest, rotating reserve OGMA's will be replaced. Where only part of an OGMA has been harvested, a judgement will be made during the annual MSRM review to determine whether the remaining portion of OGMA forms a viable unit. If not, then the whole OGMA area will be replaced and the remaining portion of the previous OGMA would become available for harvest.

At the discretion of MSRM, a portion of the relocated OGMA area could be used to create new Permanent Reserve OGMA's. This would be done to improve the existing set of permanent reserve OGMA's and to take into account new information such as location of sensitive habitats, rare ecosystems, or other values that are best maintained through permanent reserves. No more than 10 % of the area outside of other no-harvest areas would be harvested and replaced with new permanent reserve OGMA's over the whole area of application.

Replacement Rotating Reserve OGMA's would be selected based on the following criteria:

1. preferred stand age of at least 60 years of age
2. within the same LU/BEC
3. emphasis on non-PI or mixed species stands where available, but not excluding all pine stands
4. minimal prior roading or harvest disturbance
5. emphasis on large patches but not excluding smaller high quality patches
6. distribution throughout the landscape unit if possible

## **6. Implementation Roles and Process**

- MSRM will designate each OGMA in the affected LU/BEC units as a permanent or rotating reserve OGMA based on criteria and considerations from section 3.
- Forest Industry can propose harvest in any designated rotating reserve OGMA that meets the harvest access criteria from section 4. An RPF must sign and seal a statement specifying how the proposed stand meets the harvest access criteria. This information must be provided for each OGMA or portion of an OGMA proposed for harvest.
- MOF district staff will approve or disapprove harvest proposals based on licensee submission. MOF will annually provide information on approved harvest proposals to MSRM in the form of a digital map coverage showing each area approved for harvest and a table showing area of OGMA harvested by LU/BEC.
- Annual OGMA reviews by MSRM will audit the OGMA's harvested. MSRM and WLAP, with input from other stakeholders, will identify and map new OGMA's to replace those harvested.
- MSRM will annually produce a new seral map with harvested OGMA's removed and new OGMA's added.



## **Appendix 1. Interim process for licensee selection of rotating reserves for harvest.**

If dead timber “shelf-life’ considerations make it necessary to begin harvest of some stands before MSRM has completed OGMA designation, a temporary process will be used to allow for some OGMA harvest within high mortality stands. Once completed, the MSRM designation of rotating reserve OGMA will replace this temporary process.

MSRM will supply a table of area potentially available by LU/BEC within each district for this temporary process. Under this temporary process, up to 40% of the target Rotating Reserve OGMA area outside of other no-harvest units within an LU/BEC could be selected by licensees for harvest based on following criteria:

- At least 50% of mature conifer basal area is dead and;
- PI %  $\geq$  70% by basal area <sup>3</sup> in MS, SBPS or SBS biogeoclimatic subzones or PI %  $\geq$  85% by basal area in IDF and;
- Within one of the following BEC units: SBS, SBPS, MS or IDFdk3/dk4 pine group and;
- No overlap with other no-harvest or modified-harvest designations and;
- Entire OGMA is more than 1 km from a riparian feature, excluding streams less than 1.5m in width and lakes or wetlands less than 1 ha in area and;
- Does not overlap rare ecosystems or other important values known to licensee and;
- No more than 40% (cumulative from the start of the program) of the Rotating Reserve OGMA target has been approved for harvest within the LU/BEC in which the proposed harvest is located and;
- Licensee RPF signs and seals that the above criteria have been met for each proposed harvest area.

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<sup>3</sup> Within this range (70-100% PI) stands with a higher % PI are preferred.

## Appendix 2. Checklist for Harvest Approval

Each question must be answered with a yes before approval should be given for harvest in a designated Rotating Reserve OGMA under this policy.

1. If the stand is designated as rotating reserve OGMA by MSRM, does the proposal meet one of the following three criteria for harvest approval?

a. the criteria for harvest from Biodiversity Update #5 or #6 for lodgepole pine or #7 for Douglas-fir?

**Or**

b. mature conifer mortality exceeds 50% by basal area?

**Or**

c. Stand age is >200 years for pine stands ( $\geq 70\%$  Pine) or >300 years for stands with <70% lodgepole pine?

Yes \_\_\_\_\_ No \_\_\_\_\_

2. Does the proposal include the specific information, signed and sealed by an RPF, to support harvest access under the criteria in outlined in #1 above?

Yes \_\_\_\_\_ No \_\_\_\_\_

3. If in the period before MSRM has designated Rotating Reserve OGMA's, have the following criteria been met:

- At least 50% of mature conifer basal area is dead and;
- No overlap with other no-harvest or modified harvest designations and;
- Entire OGMA is more than 1 km from a riparian feature excluding streams less than 1.5m in width and lakes or wetlands less than 1 ha in area and;
- Does not overlap rare ecosystems or other important values known to licencees and;
- PI %  $\geq 70\%$  by basal area<sup>4</sup> in MS, SBPS or SBS biogeoclimatic subzones or PI %  $\geq 85\%$  by basal area in IDF and;
- No more than 40% (cumulative from the start of the program) of the Rotating Reserve OGMA target has been approved for harvest within the LU/BEC in which the proposed harvest is located and;
- RPF signs and seals that the above criteria have been met.

Yes \_\_\_\_\_ No \_\_\_\_\_ NA \_\_\_\_\_

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<sup>4</sup> Within this range (70-100% PI) stands with a higher % PI are preferred.