

Cariboo-Chilcotin
Land Use Plan

Regional Biodiversity Conservation Strategy

UPDATE NOTE # 9

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

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Prepared for:
Cariboo Mid-Coast
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Committee

December
2004



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.

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Introduction

The CCLUP requires management for the Mature plus Old (M+O) seral target but ongoing MPB attack continues to cause high mortality in many mature and old pine stands. Where the M+O seral target has been reached, further harvest of mature stands is constrained despite high mortality of some contributing pine stands. The consequences of this are twofold: limitations on the economic recovery of the dead timber and increasing contributions to the mature seral target by dead and decaying trees. This is especially significant in TFLs because of the defined area within which the licensee must take their AAC.

This strategy is intended to address situations where further harvest would impinge upon the mature component of the M+O seral target. Above this threshold, harvesting of mature is not constrained but should be guided towards high mortality pine stands.

The strategy allows for the temporary, one time drawdown of M+O targets to salvage stands with a high lodgepole pine component and high beetle caused mortality. The objective is to facilitate harvest of priority salvage stands, while ensuring that forest landscapes will be restored to meet M+O targets as soon as possible. Priority salvage of stands with high pine component and high beetle mortality will help to retain the best options for meeting future timber supply and biodiversity targets.

Background

Mature stands contribute to biodiversity by providing forest structure and by providing a potential source of replacement areas when old is disturbed. MPB attack is compromising both the structure and recruitment functions of mature. Without salvage, the dead pine component will still contribute dead wood values to biodiversity but recovery of the live, mature stands will depend upon the natural establishment and growth of a new understory. In some cases natural regeneration will delay stand recovery as compared to a restocked stand.

The intent of the strategy is to accelerate the recovery of pine stands by foregoing some of the dead wood contributions from existing mature stands in exchange for younger green stands. Achievement of this objective is dependent upon the removal of high mortality older stands and retention of younger, green stands for biodiversity and future timber supply.

The definitions for mature seral according the Biodiversity Guidebook are provided in Table 1. For most ecosystems in the Cariboo, mature seral is defined as a minimum of 100 years.

Table 1. Minimum Mature Ages for BEC Zones within the Cariboo-Chilcotin

Minimum Mature Age	NDT – BEC units in the Cariboo-Chilcotin
120 years	ESSF, MH
100 years	All others
80 years	CWH

TFLs

There are two TFLs within the region, both in Quesnel district. Because these tenures are area-specific with their own AACs, the strategy for managing mature seral forest and salvage presents some unique challenges. Significant differences between the TFLs and the TSA are as follows:

1. Harvesting capacity within the TFL is sufficient to address all available salvage opportunities,
2. Any drop in mid-term timber supply linked to MPB-caused pine mortality will be fully borne by the TFL holder because their ability to move harvesting to different locations is limited to the TFL.
3. More accurate forest inventory has been conducted on the TFLs as compared with much of the TSA.

Assumptions

- ? Most pine stands >60 years of age will suffer significant mortality from MPB.
- ? Any harvest approach based on accurate assessment of mortality in the MPB attacked stands is complicated by the difficulty in accurately assessing the proportion of the stand which is or will be dead (reasons: green attack vs. red/grey; multiple attacks over more than one year).
- ? In TFL 52, most pine-leading stands have >30% non-pine within them and a significant proportion of pine leading stands have between 50 and 65% pine.

Implementation Procedure

In recognition of the high MPB mortality among pine stands, the strategy for meeting the M+O seral target in pine-dominated ecosystems is changing. Given the high mortality among mature pine stands, the strategy is intended to facilitate salvage of these stands while they still retain their economic value for milling while minimizing the loss of biodiversity values.

Eligible Stands for Harvest

In landscapes where existing mature + old stands exceed the area required to meet the mature + old seral target, inclusive of OGMAs, this strategy does not apply. However, it is expected that existing harvest of M+O stands surplus to the seral target will focus first on damaged pine stands consistent with the current salvage priorities. The strategy is applicable in situations where the M+O target is limiting further harvest and there are stands made up predominantly of pine with high mortality. This strategy does not apply to any area within OGMAs.

The eligible stands for salvage harvest include mature and mid-seral stands that are made up of = 50% pine. Where these stands are proposed for harvest, signing professionals will be accountable for assuring that the stands meet the requirements of high MPB mortality and high pine composition. This strategy should be implemented consistent with any direction provided by the MOF District Manager in regards to areas within the District that are deemed to be a priority for salvage harvesting.

The pine threshold of 50% was selected because the TFL holder has the harvesting capacity to fully recover the economic value of these damaged stands, and there is opportunity to recruit lower risk stands for biodiversity.

Type of Harvest

Harvesting, under this drawdown policy should partially cut the pine and retain other species where they are wind-firm. Partial harvest is especially applicable to stands that contain Douglas-fir. To this end, the prescribing forester is expected to conduct a windthrow assessment of stands prior to setting the harvesting prescription.

Area of Application

The drawdown will apply according to the following criteria:

- ? Where the MPB management zonation is salvage
- ? Where stands meet the =50% pine limit and exhibit high mortality in natural disturbance types 2, 3 and 4. The ESSF zone is considered low priority for salvage at this time because the colder climate associated with this ecosystem is slowing infection rates.
- ? To the mature portion of the M+O seral target. Old forest requirements are not being drawn down according to this strategy. Where the old forest target has been deemed to be met through the combination of permanent and transition OGMA's, other areas of old are available for harvest provided they are not mixed stands contributing to the mature portion of the M+O target.
- ? In the unconstrained land base. Where mature forest is contributing to spatially-fixed, constrained areas the strategy would apply only where MSRM has determined that the other land values in the constrained area can still continue to be met.

Stand Level Retention

Due to the potentially large cutblock sizes that may result from salvage harvesting, increased in-block retention is warranted. This is consistent with Chief Forester recommendations and modelling done in support of the recent uplift in AAC for the Quesnel TSA. Planners should focus on retaining lower-risk tree species where available, features showing wildlife use, and location of patches according to the maximum 500m inter-patch distance.

Approvals and IAMC Review

The implementation of this strategy will be reviewed by IAMC annually. The review would consider the availability of target stands and compliance with salvage priorities. The drawdown component of the strategy would be discontinued when pine stands in a given landscape unit no longer are being salvaged or salvage priorities are not being complied with. The recruitment component would continue until M+O targets are again being met.

The availability of extra M+O pine stands for draw-down will vary by area according to the stand composition, mortality levels, and BEO. Among landscape units where the BEO is low, the old and

mature + old seral targets are the same for NDT3-SBS; MS; ICH and ESSF, consequently this strategy does not allow any additional harvesting.

MOF District Managers will be responsible for approvals of acceptable harvest areas consistent with the strategy. Priority areas for harvest should be within the MPB salvage zone but may be further stratified where applicable.

Industry planners will be accountable for implementing harvest in priority stands and priority areas. Stand level harvest priority is driven by the relative mortality level among predominantly pine stands. High mortality stands are expected to be harvested first.

Recruitment

A recruitment strategy is required to ensure the M+O seral target is not unduly compromised by releasing mature and mid-seral, pine stands for harvest. Stands available for recruitment will be determined by the stand composition in different landscapes and the amount of existing constrained areas deemed to contribute to mature already.

Under the recruitment strategy stands contributing to the mature seral target will be drawn in order of priority from the stand types/ages listed in Table 2.

Table 2. Heirarchy of Stand Types Contributing to Recruitment of Mature Forest in LU-BEC Subunits Where Drawdowns Have Occurred

Priority	Stand Types	Age of stand (years)		
		ESSF	CWH	Other BEC zones
1 (mature)	>50% non-pine;	>120	>80	>100
2 (mid)	>50% non-pine;	101-120	61-80	81-100
3		81-100		
4		61-80		61-80
5 (young)	Any stand type	41-60	41-60	41-60
6		21-40	21-40	21-40
7		0-20	0-20	0-20

Under this strategy, M+O requirements will be temporarily met by a combination of existing M+O stands plus recruitment stands in the amount required to meet the biodiversity targets. Both current M+O stands and recruitment stands would not be available for harvest until the M+O targets are met with mature or old stands.

The reasons for this approach are as follows:

1. The shift in prevailing disturbance type from fire to MPB has profound implications for biodiversity. Where site conditions permit, some existing pine stands may now be on a trajectory towards non-pine climax.
2. Retention of stands with significant non-pine present will offer the best opportunity to maintain stands to mature age for biodiversity.

3. Where there are non-pine stands in mid-seral classes, recruitment of these stands will minimize the recovery time for biodiversity.

The proportion of the mature target identified for retention as mixed mature stands will vary according to stand composition in individual LU BECs.

Aspatial Implementation

Implementation of this strategy will be done aspatially, by identifying both the stands available for harvest and the stands needed for recruitment according to the stand type and age class. MSRM, in conjunction with the TFL holders, will annually assess availability consistent with forest inventory information and with harvesting updates provided by MOF.

MSRM will provide the following assessments necessary for implementation of this strategy:

- ? The area of mixed, mature stands currently contributing to the mature seral target and unavailable for harvest.
- ? Assessment of required stand contributions by age class and stand type to recover the mature seral target and unavailable for harvest.
- ? The area of mixed stands surplus to the M+O target and therefore available for harvest.
- ? The area of mature pine available by LU NDT-BEC in the unconstrained land base.

Using the information provided by MSRM, it will be necessary for MOF to track harvest approvals to ensure mixed stands contributing to mature and mature recruitment are not logged.

Further implementation direction may be provided as required.

Table 3. Mature Seral Drawdown: Assessment of Harvest Opportunities and Identification of Required Contributions for Mature Seral Target Maintenance and Recovery

Year XXXX LU – NDT/BEC subunit XXXX

Stand Types and Associated Area Required to Meet or Recruit to the Mature Seral Target ¹			Stand Types Potentially Available for Harvest in Year XXXX			
			Non-Pine ²		Pine ³	
Priority	Stand Types	Area (ha)	Stand Types	Area (ha)	Stand Types	Area (ha)
	>50% non-pine;		>50% non-pine		=50% pine	
1	>120 years ⁴		>120 years		>120 years	
2	>100 years		>100 years		>100 years	
3	81-100 years		81-100 years		81-100 years	
4	61-80 years		61-80 years		61-80 years	
	Any stand type		Any stand type		Any stand type	
5	41-60 years		41-60 years		41-60 years	
6	21-40 years		21-40 years		21-40 years	
7	0 – 20 years		0 – 20 years		0 – 20 years	

Notes on use of table 3:

1. This represents the area of stands needed to meet the mature target from within the unconstrained land base. The kind of stands (age and percent non-pine) and the stand priority is listed from top to bottom. These stands are removed from harvest since they will contribute to the recovery of the mature seral target. This analysis assumes that all stands with $\geq 50\%$ of mature or old pine in the unconstrained land base will be harvested.

Since the mature target can be met in constrained areas, the target area used in this table is the remainder of the mature target still outstanding after contributing area from constrained areas (including both no-harvest and modified harvest) has been accounted for. The target area used in the table therefore applies only to the unconstrained productive forest land base.

The old portion of the M+O target is deemed to be met by the combined total of permanent and transition OGMAs.

2. This represents the area of stands with $>50\%$ non-pine that is potentially available for harvest. Where these stands are needed to contribute to mature seral they will have been allocated as such, beginning with the highest priority stands. Only area surplus to meeting the mature target will be listed as available for harvest. Only stands in the unconstrained land base (ie. outside of no-harvest and modified harvest areas) are potentially available for drawdown harvest under this policy.

3. This represents the area of pine stands ($= 50\%$ pine) that is available for harvest. Where current forest condition exceeds the M+O seral target, the area of available stands includes that surplus plus any increment that is available due to the drawdown. Again, only stands in the unconstrained land base (ie. outside of no-harvest and modified harvest areas) are potentially available for drawdown harvest under this policy.

4. Consistent with table 2, 120 years defines the mature threshold only for the ESSF zone in the Cariboo.

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