



Province of
British Columbia
Ministry of
Forests

Prince George REGION

Standard Operating Procedure

Number: 4-6

SUBJECT:

Retention of White Spruce (*Picea glauca*) advance regeneration in multi-storied stratified deciduous-coniferous mixedwoods in the BWBS

CHAPTER

4.0

MANUAL

Silviculture

SECTION

4.3

Purpose:

These guidelines will supplement the sections on advance (or "advanced") regeneration found in the Establishment to Free Growing Guidebook, Prince George Forest Region (pages 28, 38-42, 160-162, and Table 3), and the Silviculture Surveys Guidebook (pages 8, 9 and Table 1). The information provided in this procedure is to help users exercise their professional judgement in developing site-specific management strategies and prescriptions to accommodate resource management objectives.

They are proposed as interim guidelines in the Dawson Creek and Fort St. John Forest Districts for a two year period beginning April 15, 2001. Revisions of these guidelines are expected to occur with increased operational experience and availability of new information in the future.

Understory white spruce retention in boreal mixedwood stands is an opportunity to enhance both deciduous and coniferous AAC, reduce stand establishment costs and enhance wildlife habitat. In the absence of higher level plans, understory retention of white spruce in BWBS mixedwoods will meet the objective of retaining the prevailing mixture of species that was present on the site before timber was harvested.

Introduction:

The following standard operating procedure is based on the results of operational case studies, operational experience in the boreal forest, and research trials. They were reviewed in July 1996 by an independent expert panel in the Fort Nelson Forest District, and found appropriate.

This standard operating procedure for acceptability of white spruce advance regeneration as timber crop trees has been developed for, and is most appropriate for even-aged or uneven-aged silvicultural systems in which a primary or high-priority management objective is coniferous sawlog production. These standards cover basic forest health and form requirements.

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To meet higher-level plans or specified non-timber objectives for stand management, some even-aged or uneven-aged silvicultural systems will maintain stand structures or specified leave-tree characteristics that deviate from this standard operating procedure. Where such exemptions are proposed, the individual preparing the Silvicultural Prescription shall ensure the rationale for such proposed exemptions be documented in the Silvicultural Prescription. Leave tree characteristics, and existing and proposed residual stand structures, specified in the Silvicultural Prescription shall be quantifiable and measurable as per Forest Practices Code of B.C. Act requirements.

Procedures

The Tree Species Selection recommendations of the Establishment to Free Growing Guidebook, Prince George Forest Region, are maintained as the standard for determining ecological suitability of tree species as crop trees for timber management objectives.

Survey procedures for both the pre-harvest and post-harvest assessments, will have to be modified to account for the multiple layers and ages which may be present. Large scale photographs taken during the 'leaf-off' period are recommended for developing appropriate Silviculture Prescriptions.

The silvicultural system prescribed must specify treatments (including, but not limited to, harvest methods and post-harvest treatments) that will minimize the incidence and severity of damage. These treatments must be consistent with management objectives, and with ecological characteristics of white spruce. Further, measures deemed necessary to meet stand structure, species composition, and density objectives in the residual stand (e.g. - fill planting with white spruce, timing of current and future stand entries, sanitation or stand improvement harvesting or thinning) should be considered and included in the Silviculture Prescription.

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Table 1. Summary of key characteristics for Advance Regeneration Protection Guidelines and Priorization of Harvest Entry.

Characteristic				
Sw Understory 2 - 7 m in height ¹ Well spaced intertree distance 2.0 m	None	↔400 st/ha	↓400 <700 st/ha	↓700 st/ha
Primary Objective	At management	At management	Mixedwood	Mixedwood ⁴
At stocking guideline	2500 st/ha well spaced (1.4 m)	2500 st/ha well spaced (1.4 m) ²	Comment ³	Comment ³
Sw retention guideline (well spaced, and undamaged)		incidental retention for biodiversity and aesthetic values	minimum 40 % of pre-harvest stems 2 - 7 m ht	minimum 40 % of pre-harvest stems 2 - 7 m ht

- Where 20% of the total white spruce stems are greater than 7 m in height, the Sw component is highly susceptible to windthrow. Harvest entry in these high risk stands would need to be justified (eg. in the context of higher level plans).
- Stocking standards for At do not apply to retained clumps of Sw regeneration.
- Aspen stocking of up to 2500 well-spaced stems/ha, depending on height, size and distribution of retained Sw within survey strata.
- Low priority harvest areas until harvesting methods achieving 40% Sw retention have been demonstrated.

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Regeneration Acceptability Guidelines

The height requirements for white spruce advance regeneration reflect the balance between: 1) the harvest entry acting as a release treatment for the white spruce (minimum height 2.4 m to stay above developing aspen canopy), and 2) initial windthrow susceptibility of spruce taller than 7 m. White spruce trees with height (m) to diameter at breast height (cm) ratio's in excess of 100 are susceptible to windthrow.

Form and Health Criteria

General principle: Acceptable white spruce leave trees may have minor logging damage or existing defects at the regeneration survey stage, but at the free growing survey stage, all acceptable trees should be free of defect with all logging related damage healed over.

Individual white spruce regeneration shall be deemed acceptable as crop trees for the following Silviculture Prescription target dates if the following physical criteria are met:

Regeneration Survey Guideline

- Tree has greater than 50% continuous live crown ratio¹, good crown colour, vigour and stem form;
- Tree has NO gouges², no broken tops exceeding 2 cm diameter at the break, frost cracks, conks or other visible pathological indicators;
- Tree may have a wound³ with a horizontal width at its widest point 20% or less of the circumference of the tree at that point.

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Free Growing Guideline

- Tree has greater than 50% continuous live crown ratio¹, good crown colour, vigour and stem form;
- Tree has no wound³ of any size, no gouges², no broken tops exceeding 2 cm diameter at the break, frost cracks, conks, or other visible pathological indicators;
- Height to diameter (at 1.3 m) ratio < 100;
- Tree must be free of competing vegetation.

- 1 Continuous live crown ratio is the length of continuous green foliage on a tree expressed as a percentage of its total height. "Continuous" live crown refers to foliage on adjacent live green branches that forms the main part of the crown of a tree and extends over at least half of the circumference of the tree.
- 2 A gouge is an injury which penetrates into the sapwood.
- 3 A wound is an injury in which a portion of the bark and/or cambium is removed from the tree, exposing but not penetrating into the sapwood.

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