



Province of
British Columbia
Ministry of
Forests

Prince George
REGION
Standard Operating Procedure
Number: 4-5

SUBJECT:

Mixedwood stocking guidelines for
deciduous-coniferous mixedwoods in
the BWBS

CHAPTER	MANUAL	SECTION
4.0	Silviculture	4.3

Purpose:

These guidelines will supplement the sections on mixed species and broad-leaved regeneration found in the Establishment to Free Growing Guidebook, Prince George Forest Region (pages 13 and 132), and the Silviculture Surveys Guidebook (pages 40 and 41). 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, Fort St. John and Fort Nelson 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.

Introduction:

The following standard operating procedure is based on the results of operational case studies, operational experience in the boreal forest, and research trials.

The stocking guidelines for deciduous regeneration ('broad-leaved') are in the BWBS are found on page 132 of the Establishment to Free Growing Guidebook, Prince George Forest Region. A separate standard operating procedure has been developed for stratified deciduous - coniferous mixtures in the BWBS. In stratified deciduous - coniferous mixedwoods, depending on the time since disturbance, seedbed and seed source, the white spruce stratum may be of any size from regeneration (<1.3 m) to intermediate or co-dominant crown classes. This advance regeneration would not make up 20% of the net merchantable volume of the stand.

This standard operating procedure is intended to provide guidelines for stands in the BWBS zone in which neither the net merchantable volume of the deciduous component, nor the net merchantable volume of the coniferous component exceeds 80% of the total net merchantable volume of the stand. In the absence of higher level plans, the usual objective of the prescription will be to replace the prevailing mixture of species that was present on the site.

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These guidelines for acceptability of mixtures of deciduous and coniferous species in the BWBS are most appropriate for even-aged stands which may develop into stratified or unstratified mixtures, depending on species selected, silviculture prescription, site and rotation age. The recommendations consider benefits of density management in mixedwoods for both coniferous and deciduous species, and the long term growth response of white spruce to initial vegetation management. If a scenario other than those presented in this Standard Operating Procedure is proposed, it is expected that such a proposal will have specific, quantifiable objectives and be accompanied by a biologically defensible rationale.

Forest Health considerations for broadleaved species and white spruce in the BWBS will be found in the appropriate Forest Health guidebooks.

Interpretation of free growing for white spruce in boreal mixedwood

The Forest Practices Code of British Columbia Act (Section 1) defines a free growing stand as ‘a stand of healthy trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees’. In recognition of the stand structure common to early seral, boreal mixedwood stands (coniferous regeneration overtopped by faster growing deciduous tree regeneration) individual white spruce trees will not be considered to be impeded by competition from overstory deciduous **crop** trees if there is a minimum inter-tree distance of 2.0 m between the Sw crop tree and deciduous crop trees, and if the spruce trees have a height to basal diameter ratio of 70 or less. In such cases, the competing vegetation within a radius of one metre of the tree trunk will only refer to grasses, herbs, shrubs, and non-commercial tree species.

Thus, a healthy, well spaced white spruce in the understory of a boreal mixedwood stand would be considered to be free growing if it met the following criteria specified in the silviculture prescription:

- 1) the minimum height;
- 2) the height of the tree relative to competing vegetation (grasses, herbs, shrubs and non-commercial tree species) within a radius of one metre of the tree trunk;
- 3) inter-tree distance of 2.0 m between white spruce crop trees and deciduous crop trees;
- 4) a height to basal diameter (stem diameter at ground level) ratio of 70 or less
(height in meters / basal diameter in meters) e.g. $2.7 / .045 = 60$.

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Interpretation of free growing for trembling aspen and balsam poplar in boreal mixedwood

A healthy, well spaced aspen or balsam poplar in the boreal mixedwood stand would be considered to be free growing if it met the following criteria specified in the silviculture prescription:

1. the minimum height;
2. the height of the tree relative to competing vegetation (grasses, herbs, shrubs and non-commercial tree species) within a radius of one metre of the tree trunk;
3. inter-tree distance of 2.0 m between white spruce crop trees, and 1.4 m between deciduous crop trees.

Deciduous Stocking Guidelines

Aspen (At) or balsam poplar (Ac) stands, 01 site series, BWBSmw1 and BWBSmw2 subzones

Target stocking 2,500 well spaced stems/ha (2,000 st/ha minimum)
minimum inter-tree distance 1.4 m
up to 15% Ep or Sw accepted
Ac acceptable if not sprouting from a cut stump

Regeneration delay 4 years

Free to grow Assessment 5 years (earliest) to 10 years (latest)

Aspen or balsam poplar minimum height 2.0 m at Free to Grow Assessment

Leading Deciduous Mixedwood Stocking Guidelines

(greater than or equal to 51% but less than 80% deciduous merchantable volume in original stand)

Minimum Sw volume will be 30 - 40% of the harvest volume at rotation age.

01 site series, BWBSmw1 and BWBSmw2 subzones

At, Ac target 2500 well spaced stems/ha, (1000 st/ha minimum)
minimum intertree distance 1.4 m

and Sw target stocking 1200 well spaced stems/ha (700 st/ha minimum)
minimum intertree distance 2.0 m

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To enhance survival and provide initial growing space, a brushing treatment for the Sw component (between years 2-5) of 1.0 m radius around crop trees is recommended.

Regen delay 4 years, 'Free Growing' Assessment 9 years (earliest) to 20 years (latest),

Sw minimum height 2.0 m, ht to diameter ratio 70 or less, 700 well spaced st/ha minimum

150% tree height over competing vegetation

Aspen and Ac minimum height 2.0 m at 'Free Growing' Assessment, minimum 1000 st/ha well spaced,

150% tree height over competing vegetation

Leading Coniferous Mixedwood Stocking Guidelines

(greater than or equal to 51% coniferous merchantable volume but less than 80% coniferous merchantable volume in original stand)

Minimum Sw volume will be 60 - 70% of the harvest volume at rotation age.

01 site series, BWBSmw1 and BWBSmw2 subzones

Sw target stocking 1200 well spaced stems/ha (700 st/ha minimum)

minimum intertree distance 2.0 m

and At, Ac target 1400 total stems/ha maximum

minimum intertree distance, not applicable

To achieve a stand dominated by Sw at the rotation age, two stand entries are recommended: 1) an initial brushing of Sw of 1.25 m radius (between years 2 - 5); and 2) a second Sw brushing treatment in combination with density management of aspen (approx. yr 15), for maximum aspen density of 700 - 1400 st/ha

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Regen delay 4 years, 'Free Growing ' Assessment 9 years (earliest) to 20 years (latest),
Sw minimum height 2.5 m, ht to diameter ratio 70 or less, 700 well spaced st/ha minimum
150% tree height over competing vegetation
Aspen or Ac minimum height 2.0 m at 'Free Growing' Assessment,
maximum 1400 st/ha total.

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