# Forest Health – Establishment Guidelines and Allowances for Strategic Analysis

This Appendix adds to section 6.3.2 in the Management Plan. It includes guidelines for establishment of Sitka spruce and Abies species and summarizes the procedure for making allowances for the impacts of forest pests in strategic timber supply analyses.

Operational strategies for reducing the impacts of disease, insects and wind when managing with variable retention are described in "Guidelines for Designing Variable retention — Layout and Silviculture Prescriptions ", August 1999, revised March 2002 ("SPs for VR"). A current version is included in the text CD attached to this report.

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# 1.0 Planting and Natural Regeneration Guidelines for Sitka Spruce

A. Planting Sitka Spruce (*Picea sitchensis*)

The guidelines to minimize losses to the weevil are:

- No Hazard Zone (Queen Charlotte Islands)

  Sitka spruce planting is unrestricted.

- Low Hazard Zone (Very Wet Hypermaritime [CWHvh] subzone on midcoast mainland and northern tip of Vancouver Island, see map.)

  Plant Sitka spruce within the low weevil hazard zone in accordance with the guidelines in: "A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region, Land Management Handbook No. 28" (Green and Klinka 1994).

- Medium Hazard Zone (Very Wet Hypermaritime (CWHvh) subzone, south of Brooks Peninsula, see map.)

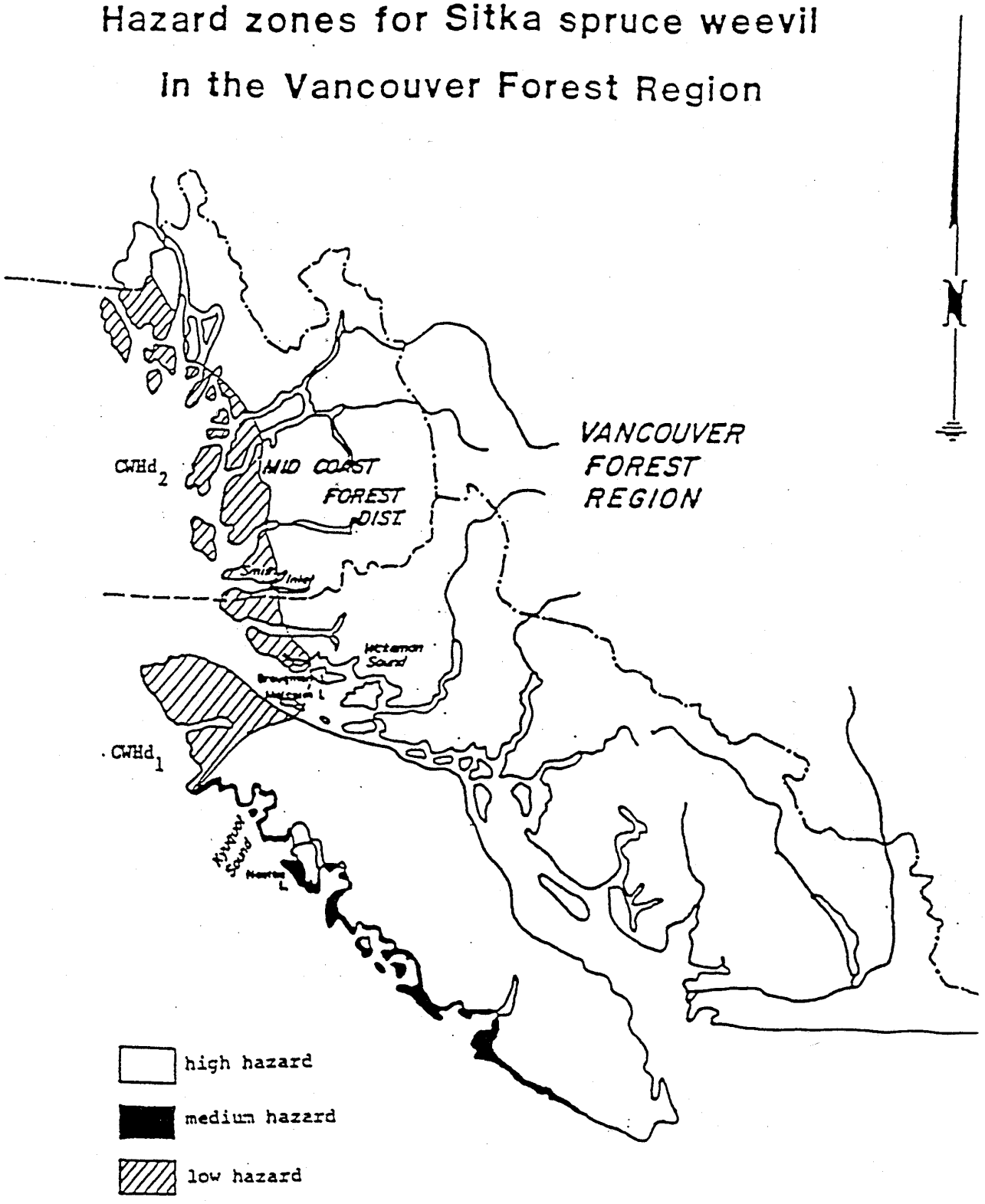
  Up to 20 percent of the stand composition may be Sitka spruce, provided that acceptable alternative species exceed 600 stems per hectare.

- High Hazard Zone (all remaining biogeoclimatic units in the Vancouver Forest Region, see map).

  Plant no Sitka spruce.

  For site-specific situations, hazard may be determined from the number of annual degree days by calculation. (Reference: McMullen, L.H. 1976. Spruce weevil damage: ecological basis and hazard rating for Vancouver Island. Can. For. Serv., Info. Rept. BC-X-141, 7 p.)

# Hazard zones for Sitka spruce weevil In the Vancouver Forest Region




Original Date:

Revised:

# 2.0 Guideline for Abies Species

## Purpose of Guideline

**The purpose of this guideline is:**

1. To recognize the recent rapid extension of the Balsam Woolly Adelgid and the mortality occurring in infested stands on Weyerhaeuser forest lands.

2. To minimize future losses and avoid difficult reforestation problems if stands become infested in the next 10 to 20 years.

3. To correct areas stocked with off-site *Abies* spp.

**The guideline:**

- Revises the planting guideline for *Abies* species.

- States a guideline for the acceptance of *Abies* as natural regeneration.

- Requires the assessment of all stands that have significant balsam stocking on a periodic basis.

- To ensure adequate stocking with other species in stands of off-site *Abies* spp.

**Guideline**

### 1.0 Zones

The quarantine zone is defined as the area declared by the Provincial Government Regulation.

The transition zone is the area outside the quarantine zone to the boundaries of the area considered infested by Weyerhaeuser.

The area considered infested by Weyerhaeuser on Vancouver Island is south and south-east of the height of land between the Adam River and the White River, and south of a line extending westerly to the head of Tahsis Inlet. On the Mainland it is the quarantine zone which is south of an east-west line north of Vancouver Island, extending eastwards to the height of land of the Cascade Mountains.

### 2.0 Reforestation with Abies spp

All stands will have at least the minimum number of stems/ha stated in the Silviculture Prescription or Weyerhaeuser standards, as applicable, of a genus other than *Abies*. The minimum number of stems is generally 600 per hectare at the expiry of the regeneration delay and free growing periods. Exceptions require the approval in writing of a TFL Forester. See Section 5 of this guideline.

## 3.0 Planting of Abies species

**3.1** No trees of *Abies* shall be planted outside the area considered to be infested unless they have been grown in a nursery that is at least 80 km from a known balsam adelgid infestation **or** the stock has been treated.

It is illegal under the Balsam Woolly Adelgid Regulations (1992) to move a living *Abies* spp tree from within the quarantine zone to an area in B.C. outside the quarantine zone.

**3.2** *Abies amabilis* should not be planted in the Quarantine Zone and the Transition Zone, except with a TFL Forester's or Forest Practices written permission.

**3.3** *Abies procera* may be planted in a mixture with other species in the quarantine zone and the transition zone where it is suited because of its reported resistance to the Adelgid. There should be a minimum of 600 sph of conifers other than *Abies* spp on the area. All plantations with *Abies procera* should be monitored every five years for a 25-year period and the monitoring schedule entered into the forward planning schedule at the time of planting.

**3.4** *Abies grandis*, because it is susceptible to adelgid attack, will only be planted in the quarantine and transition zones on the most favourable sites and where other conifer species will not grow well. There should be a minimum of 600 sph of conifers other than *Abies* spp on the area. All plantations with *Abies grandis* should be monitored every five years for a 25-year period and the monitoring schedule entered into the forward planning schedule at the time of planting.

## 4.0 Natural Regeneration of Abies species

**4.1** *Abies lasiocarpa* is not acceptable as regeneration on Weyerhaeuser lands.

**4.2** Off-site *Abies amabilis* in Stands at the Reforestation Stage.

All areas which are stocked with *Abies amabilis* which is off-site and where there are insufficient stems/ha of other species to meet compliance (post 1987 harvesting), must be brought to standard immediately with ecologically acceptable species other than *Abies* to meet the minimum requirements of regeneration delay or free growing, as applicable.

Older regeneration (pre 1987) which is off-site and where there are less than 600 stems/ha of other ecologically acceptable conifer species, shall be assessed on a priority basis and shall be brought to the minimum standard where practicable on a timely basis.

**4.3** On Site Abies amabilis and grandis (per the Red Book)

**4.31** Outside the Area Considered Infested

Accept natural regeneration but encourage mixed stands with the objective of having 600 stems/ha of other ecologically acceptable conifers.

**4.32** In the Transition Zone

Assess stocked stands and add other species where practicable.

Manage AAR areas for other species to achieve at least the minimum stems /ha required under the SP/Weyerhaeuser Standards by the regeneration delay and free growing deadlines, as applicable. Exceptions require the approval of a TFL Forester in writing.

**4.33** In the Quarantine Zone

*Abies amabilis* is unacceptable on any current openings or areas which are still AAR at the date of this guideline.

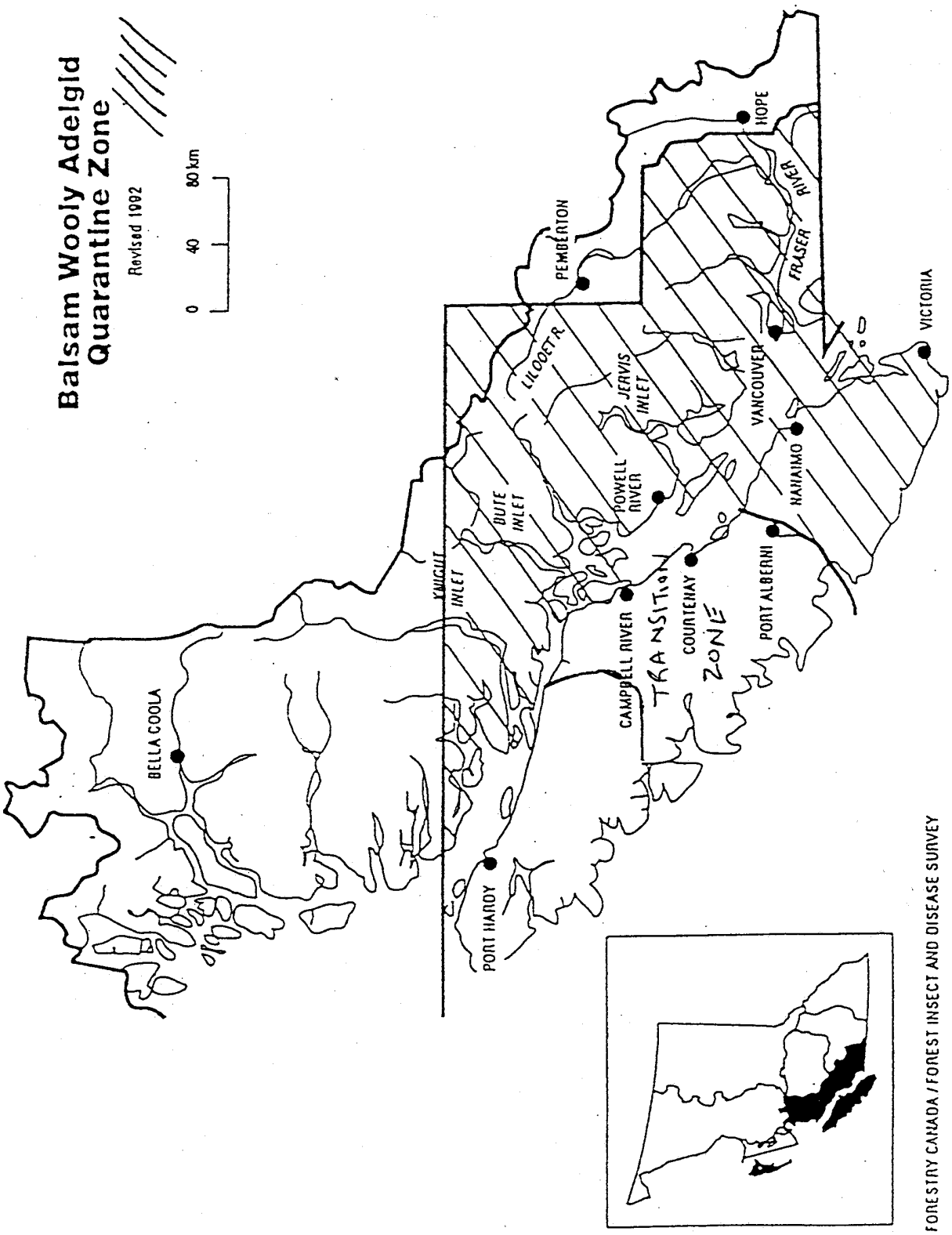
*Abies grandis* is only acceptable on sites where it is clearly the best species and where other species are off-site or marginal, e.g. areas with high water tables.

## **5.0**. **Exceptions**

Exceptions to this guideline shall be approved in writing and may be granted by a TFL Forester but are only permitted under the following circumstances:

- There have been several unsuccessful attempts to reforest the area with ecologically acceptable species other than *Abies* **and**

- The area that is not stocked with the minimum number of sph of other ecologically acceptable species is a small area which is normally less than two hectares and in general is less than one hectare.


Balsam Wooly Adelgid
Quarantine Zone
Revised 1992
0 40 80 km
BELLA COOLA
PORT HARDY
KNIGHT INLET
BUTE INLET
LILOOET R.
PEMBERTON
HOPE
FRASER RIVER
JERVIS INLET
POWELL RIVER
CAMPBELL RIVER
COURTENAY
VANCOUVER
NANAIMO
PORT ALBERNI
VICTORIA
TRANSITION ZONE
FORESTRY CANADA / FOREST INSECT AND DISEASE SURVEY

# 3.0 Allowances for the Impacts of Forest Pests in Strategic Analyses

Losses caused by insects or disease are accounted for in strategic analysis (e.g. the Timber Supply Analysis). Current procedures include:

- The permanent sample plots (PSPs) used to develop and callibrate the yield model, Y-XENO have been measured for periods averaging at least 20 years and up to 60 years. Sampling in the late 1960s and early 1970s showed that *Heterobasidion annosa* was widespread among hemlock PSPs. More recently *Phellinus weirri* was found in 35% of 212 plots surveyed.

- The operational adjustment factor applied to second-growth yields includes an allowance of 2% for pest losses over and above those experienced within the PSPs (and hence considered expressed in the yield tables).

- Volume estimates are reduced for decay, waste and breakage.

- Harvest levels are reduced to account for unsalvaged losses due to fire, pests and windthrow. This factor is currently 1.0%.