

Quesnel Timber Supply Area Forest Health Strategy 2006-2007



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1 Introduction

This strategy recommends actions to address forest health issues in the Quesnel Timber Supply Area (QTSA). It specifies forest health conditions, issues and strategies unique to the Quesnel TSA. This strategy will serve to guide operational plans and forest health investments by the TSA members and individually through the Forest Development Plan or Forest Stewardship Plan and Forest Investment Account (FIA).

Operations without forest health objectives are not required to follow this guidance. However, it is expected that proposals that vary from this agreed-upon direction will include a rationale to clarify the purpose of the proposal.

2 Guiding Principles

- Be consistent with current regulations: augment, rather than reiterate policy and legislation
- Provide general direction for management of forest health agents emphasizing the predominant bark beetles, which pose the most immediate forest health threat
- Be consistent with the Cariboo-Chilcotin Land Use Plan (CCLUP) and associated strategies
- Follow provincial guidance provided in “British Columbia’s Mountain Pine Beetle Action Plan 2005-2010”, the Provincial Forest Health Strategy and by the Provincial Bark Beetle Coordinator
- Utilize information provided to the Chief Forester during recent Allowable Annual Cut (AAC) determinations with respect to recommended wildlife tree retention to provide guidance for large scale salvage harvesting
- Utilize the Quesnel Enhanced Conservation strategy
- Enable operational planners to focus on economically viable priorities to get maximum value from the infested trees. Licensees and BC Timber Sales (BCTS) are encouraged to build upon the strategies and tactics contained herein to maximize the available harvesting capacity.

3 Forest Health Objectives

- Identify and prioritize forest health agents and appropriate areas for suppression and salvage activities
- Provide updated strategic guidance for the ongoing forest health management in the Quesnel TSA.
- Identify treatment strategies for forest health management of agents affecting both merchantable and non-merchantable trees (young stands).
- Facilitate co-operative planning between agencies and licensees
- Establish short-term and longer-term harvest guidelines to best address the opportunities given the current pest incidences and infestation levels.
- Facilitate the development of scientifically and ecologically sound operational plans and practices
- Assign responsibility for beetle management to the various major licensees, BCTS and Ministry of Forests and Range (MoFR) and identify where there may be opportunities for small tenure holders, including small-scale salvage operators, to assist in salvage/suppression efforts.

4 Roles and Responsibilities

The obligation of individual licensees to act upon these priority actions are dependent on the legislated requirement under the *Forest and Range Practices Act (FRPA)* and the *Forest Act (FA)*. The majority of these activities (other than the individual licensee’s obligations under FRPA) would be either the responsibility of the MoFR or can be conducted voluntarily by industry as enhanced or incremental activities presently eligible for Forest Investment Account (FIA) and Forests for Tomorrow (FFT) funding.

5 TSA Ranking of Importance of Forest Health Factors

The ranking of the Quesnel TSA forest health factors differs slightly from the Provincial ranking. Within the Quesnel TSA pest species are ranked according to:

- Distribution of pest and current incidence levels,
- Available susceptible host species,
- Known or suspected impacts on forest resource values,
- Availability of operational detection and treatment methods,
- Costs and benefits of applying detailed detection and treatment activities, and
- Overall level of knowledge about the hazard and risk zones.

Table 1: Listing of Forest Health Agents by Priority within the Quesnel TSA

| | | | | |
|-----------|--|-------------------------------------|----------------------------|--------------------------------|
| Very High | Spruce beetle | Douglas-fir beetle | Gypsy moth | |
| High | Mountain pine beetle | Windthrow of Douglas-fir and spruce | Western balsam bark beetle | 2 year cycle budworm |
| | Hard pine stem rusts (3) in young stands | | | |
| Moderate | Western spruce budworm | Warren’s root collar weevil | Spruce weevil | Dwarf mistletoe |
| Low | Windthrow of lodgepole pine | Tomentosus root disease | Armillaria root disease | |
| Very Low | Fire damage | Animal damage | Atropellis canker | Lodgepole pine terminal weevil |
| | Other conifer and broadleaf biotic and abiotic factors | | | |

6 Known Extent of Forest Health Factors

At the time of writing this strategy the Quesnel TSA's aerial overview information was not complete. The information presented below was queried from the dataset accompanying the spatial polygon information. The 2005 aerial overview survey data does not describe the full extent of the forest health factors that were observed in ad-hoc ground reconnaissance and anecdotal information. As more ground-truthing is completed by both the Forest Service and licencees the picture will become more complete.

Table 2: Summary of Disturbance Levels and Intensity Classes, within the Quesnel Forest District, including both the TSA and 2 TFL's. Intensity classes are defined in Table 3 below.

| Disturbance | Damage Agent | Intensity | Polygon Area (ha) | Total (ha) |
|----------------|----------------------------------|-------------|-------------------|------------|
| Mortality | Mountain pine beetle (IBM) | Trace | 132,405 | 1,190,752 |
| | | Light | 159,378 | |
| | | Moderate | 390,264 | |
| | | Severe | 420,801 | |
| | | Very Severe | 87,904 | |
| | Douglas-fir beetle (IBD) | Trace | 1 | 1 |
| | Spruce beetle (IBS) | Trace | 96 | 2,613 |
| | | Light | 1,450 | |
| | | Moderate | 668 | |
| | Western balsam bark beetle (IBB) | Severe | 399 | 70,741 |
| | | Trace | 66,386 | |
| | | Light | 3,903 | |
| | Wildfire (NB) | Moderate | 452 | 59 |
| Severe | 59 | | | |
| Windthrow (NW) | Severe | 503 | 503 | |
| Defoliation | Two-year budworm (IDB) | Light | 15,252 | 15,252 |
| | Western spruce budworm (IDW) | Light | 74 | 74 |
| | | | Grand Total | 1,279,995 |

Table 3: Intensity classes used in aerial overview surveys for recording forest health damage (mortality and defoliation).

| Disturbance | Intensity Class | Description |
|---|----------------------|---|
| Mortality (bark beetle, abiotic and animal damage) | Trace | <1% of the trees in the polygon recently killed. |
| | Light | 1-10% of the trees in the polygon recently killed. |
| | Moderate | 11-29% of the trees in the polygon recently killed. |
| | Severe / Very Severe | 30%+ of the trees in the polygon recently killed. |
| Defoliation (defoliating insect and foliar disease damage) | Light | Some branch tip and upper crown defoliation, barely visible from the air. |
| | Moderate | Noticeably thin foliage, top third of many trees severely defoliated, some completely stripped |
| | Severe | Bare branch tips and completely defoliated tops, most trees sustaining more than 50% total defoliation. |

7 Strategies and Tactics

To keep this strategy document concise, the description of strategies, tactics and other measures is restricted to a citation of information currently available in Forest Health guidebooks, the Provincial Forest Health Strategy and other MoFR documents. A full description is only provided if the procedures deviate from commonly available information.

The provincial forest health strategy identifies three broad zones of management: Aggressive management (populations are managed down to endemic levels), Containment (populations are held static) and Salvage/Limited action (minimal active management of populations).

Within each broad zone there are a possible four strategies: Suppression/Prevention, Holding Action, Salvage, and Monitor (formerly described as abandon).

Spruce beetle (*Dendroctonus rufipennis*)

Spruce Beetle is currently the species of greatest concern due to rapid spread and high attack ratios and shortest “shelf life” due to ecotypes where this beetle is located. The majority of the infestation detected in the aerial overview survey is located in TFL 52, which has its own forest health strategy.

QTSA Tactic: Aggressive Suppression action

Douglas-fir beetle (*Dendroctonus pseudotsugae*)

This agent is predominantly located in the central portion of the TSA, in the Interior Douglas-fir biogeoclimatic zone. It is of particular concern due to its prevalence in the Mule Deer Winter Ranges, where preservation of closed-canopy Douglas-fir stands is paramount. Sanitation and control tactics in these areas must be consistent with existing direction from the biodiversity and the Mule Deer committees

QTSA Tactic: Aggressive Suppression action

Gypsy moth (*Lymantria dispar*)

This pest is very high on the provincial and federal priority list and thus, high on ours. An outbreak brings potential international trade restrictions. So far the moths haven’t been detected in the Cariboo.

QTSA Tactic: Prevention by placing pheromone traps at various sites throughout the District.

Mountain pine beetle (*Dendroctonus ponderosae*)

Mountain pine beetle has been assigned a high priority due to the impracticality of continuing suppression activities in the midst of an epidemic situation. The species is still of high concern due to the accelerated spread and high attack levels not only in older age classes and at lower elevations but also in stands that were expected to replace the mature growing stock.

The general strategy in the “salvage” zone is to harvest affected stands before their economic value is degraded while managing current and future forest values in the context of sustainability.

QTSA Tactic: Salvage action

Windthrow

Scattered windthrow in Douglas-fir stands and leave trees during wind events have the potential to trigger substantial increases in infestations of Douglas-fir beetle. Windthrow patches should be addressed promptly to minimize the expansion of beetle populations, especially in the vicinity of MDWR's and OGMA's.

Blowdown spruce and Douglas-fir trees attract bark beetles. It may be appropriate in some areas to leave blown-down trees on the ground until after the beetle flight and utilize them as trap trees. Windthrown trees should be removed prior to the beetle flight of the following year so that attacked blowdown does not contribute to increases in beetle attack.

QTSA Tactic: Salvage harvest Douglas-fir and spruce blowdown within one year of windthrow event to reduce opportunities for bark beetle build-up.

Western balsam bark beetle (*Dryocoetes confusus*)

The western balsam bark beetle trace and low attack levels are extensive, and includes the Mount Tom caribou habitat area. Looking into the life cycle of this pest revealed that, given the appropriate conditions, balsam bark beetles can be responsible for extensive tree mortality in stands containing a large percentage of the preferred host. Normally, however, less than 5% of a stand is attacked in a single season, with the damage usually scattered throughout the stand. The brick-red foliage of the attacked tree may be retained for up to five years.

QTSA Tactic: Containment and ground-truth the extent of the infestation.

Two-year budworm (*Choristoneura biennis*)

This pest attacks subalpine fir and spruce, of all ages. It is important to consider because these two species are important for our mid-term timber supply. Tree mortality can occur after several successive years of severe defoliation, particularly on immature or suppressed trees. Other damage includes top-kill (resulting in stem defects), reduced seed production due to damaged cones, and height and volume loss.

QTSA Tactic: Containment and ground-truth the extent of the infestation

Hard pine stem rusts: commandra blister rust (*Cronartium commandrae*), stalactiform blister rust (*Cronartium coleosporiodies*) and western gall rust (*Endocronartium harknessii*)

The hard pine stem rusts impact young pine forests that will form our timber supply. Locally, these rusts can cause mortality, unacceptable damage to stems and plantation failure.

QTSA Tactic: Containment and treat detected infestation areas in accordance with provincial best management practices and guidebooks.

Western spruce budworm (*Choristoneura occidentalis*)

Western spruce budworm is an insect that defoliates Douglas-fir. This pest is of high significance as it not only has the potential to cause mortality in the current growing stock but also stresses the Douglas-fir trees, increasing future vulnerability to bark beetle attack.

QTSA Tactic: Containment and treat moderate and severely defoliated high-value stands of Douglas-fir with *Bacillus thuringiensis* var. *Kurstani* (B.t.k.), coordinated by the Southern Interior Region.

Warren's root collar weevil (*Hylobius warreni*)

As our mature pine forests die, this pest is moving into adjacent plantations. Lodgepole pine may be completely girdled at the root collar and die. Older trees are often partially girdled at the root collar, and may be completely girdled around some of the roots; however, no mortality results.

In addition to direct mortality, damaged trees may suffer growth loss and increased susceptibility to root rot, blue-stain fungi, windthrow, and snow press. This is of particular concern to our mid-term timber supply.

QTSA Tactic: Contain and treat individual blocks to maintain stocking. The latest research suggests that planting spruce near timber edges may discourage the weevil from entering the plantation.

Remaining agents

The remaining forest health agents on the priority list will be in containment status and be addressed in accordance with the provincial best management practices and applicable guidebooks.

8 Maps

The aerial overview maps for 2006 are available on the Quesnel Forest District ftp site at <http://www.for.gov.bc.ca/ftp/DQU/external/!publish/District%20Composites/Forest%20Health/>

A map of the Beetle Management Units "aggressive" zones for control of spruce beetle and Douglas-fir beetle is also available. The maps can be accessed at http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/maps/ebbma/index.htm