



## Skeena Region

### Guidelines for Spruce Beetle Small Scale Sanitation with Conventional Trap Trees

**Spruce beetles** prefer downed and dying, large diameter, spruce timber. A wind event resulting in blowdown is a key target. They can also be found in standing live mature spruce. These beetles generally have a 2-year life cycle; however, a 1-year life cycle can occur with optimal summer conditions.

**Conventional Trap Trees (CTT)** are an effective and efficient method for the control of spruce beetle infestations. The purpose of the CTT is to emulate a blowdown event.

**Sanitation harvesting** for spruce beetle (*Dendroctonus rufipennis*) suppression maximizes the extraction of currently infested spruce stands in order to reduce the existing population and to prevent their spread. The highest priority is given to stands with high levels of new attack, high hazard, and a high risk of spread. (*Spruce Beetle Management in BC* guidebook)

**Salvage harvesting** is primarily conducted to recover damaged timber before it loses wood product value ("shelf life"). These trees no longer have any living broods and therefore, this tactic does not reduce spruce beetle populations but can be used in conjunction with sanitation harvest.

#### What is a Spruce Beetle Small Scale Sanitation with CTT opportunity?

A CTT sanitation opportunity is a site that has been identified as having blowdown or recent IBS attack located near an access road. The goal of an IBS CTT sanitation opportunity is to mitigate the spread of the spruce beetle by creating a sink for adjacent beetle infestations followed by the removal of the infected trees prior to their next flight.

Sanitation opportunities arise from:

- 1) District tactical plans:
  - a. Each District within the Skeena Region conducts Detailed Aerial Overview Surveys (DAOS) to identify IBS locations. (Fall)
  - b. Districts develop a tactical plan and rank areas based on hazard
  - c. Districts engage in communication with Major Licensees for the tactical plan
  - d. Licensees confirm areas that will be managed by them (Early winter)
  - e. Mapping exercise to identify sanitation opportunity sites that are not captured by Major Licensees
  - f. Minor licensee informed by FLNRORD staff of opportunity within their chart area
- 2) Self-identified:
  - a. Blowdown with IBS that is brought to the District's attention
  - b. Site confirmed to meeting criteria by FLNRORD staff

#### Characteristics of CTT



The spruce beetle is attracted to freshly downed, large diameter, spruce timber. They prefer the shadiest and coolest of locations on the tree itself, with room to expand their population. Trees that are branchy (open grown) provide the most suitable habitat since the branches themselves provide shade to the felled tree. Efforts should be made to:

- keep as much branching remaining,
- leave advanced regeneration and mature trees intact
- fell trees in the direction they will receive the most shade

#### **Trap trees should be:**

- felled to be resting off the ground allowing attack on underside of the bole
- felled in small patches of 15-25 trees (truckload) resembling a blowdown event
- spaced roughly 400m along a roadway (alternating sides if possible) and close to known beetle infestations ( max 800m away) for light to moderate populations
- spaced at every 200m for heavier populations
- located along a road or an area accessible for transport, such as a cutblock edge near a road system

#### **Location of trap trees should be:**

- accurately mapped and GPS'd
- numbered with paint and number of trees recorded at each patch to ensure all intended traps are removed

#### **Timing**

Conventional trap trees should be felled prior and as close to the beetle flight in the spring as possible. The beetle flight begins when temperatures in the canopy reach 16 °C. This can occur as early as the first part of May. Monitoring is absolutely necessary to determine when the flight will occur. Snow levels, access and labour will have an impact on the timing. Trees can be felled as early as February, but their efficacy is very weather dependant. The release of attracting pheromones from the felled tree dissipates as the weather warms and the tree decomposes.

#### **Precautions**

- Care must be taken not to create an opening where the shade is reduced
- Trap trees must be healthy and large in diameter
- Do not limb or buck the trap trees
- Where possible and in compliance with WCB regulation, avoid brushing regeneration around trap trees
- Trap trees felled must be treated by whatever means possible. Trap trees left untreated only exacerbate the problem
- During sanitation harvesting and trap tree establishment, trees must be cut as close to the ground as possible since emerging beetles come from the very lowest part of the tree and stump



### Restrictions

- Do not fall trap trees in or into a riparian area
- Do not fall trap trees too early in the winter where they may become covered in snow

### Expectations

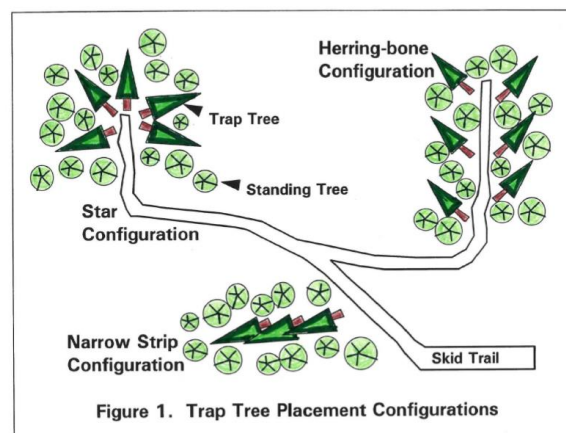
- A trap tree plan in place for pre and post-harvest operations in spruce stands (ie. Number of trees, location, CTT estimated date of removal from site, estimated debris removal/burning date)
- All trap trees felled will be removed or disposed of, ensuring no beetles emerging from intentionally downed timber
- All trap trees felled will be marked in the field ( painted and numbered)
- Accurate reporting as to the location and numbers of trees felled and removed will be submitted with post-harvest reporting.

### Extraction and Disposal

All trap trees felled must be left in place until after August of the same year and then disposed of prior to next year's flight for infestations in a 1 year cycle. The trap tree patches should be skidded and hauled before snow levels prevent efficient sanitation of the site. Tops and branches and all other slash left after extraction must be piled and burned or effectively destroyed by some other means. Slash and residue is to be burnt on top of stumps where possible, and all stumps to be burnt or peeled as well to destroy any remaining beetles.

### What does a trap tree program look like?

A trap tree program can take various forms depending on the site. In essence, the trap tree program is geared to minimize the spread of Spruce Beetle. As mentioned above, the traps trees should be small patches of 15-25 trees and set at intervals. See Figure 1 for trap tree placement configurations. Only the trap trees are to be removed from the site. There may be situations where salvaging of dead and dying trees would occur in conjunction with trap trees, however this would be dealt with, on a case by case basis in order to avoid small patch fragmentation across the landscape.





## Spruce Beetle – Detection

### Boring Dust

- During the first year of attack
- Less conspicuous toward fall and winter due to rain and wind
- Light brown and about as coarse as sawdust from a handsaw
  - Dust produced by ants and engraver beetles is light colored because of the wood content
- May be found in bark crevices
- Heavily scattered at the root collar
- **Care must be taken not to confuse the work of small mining insects to that of spruce bark beetle**



### Pitch Tubes

- Occasionally formed by the tree's resin flowing out of the entrance holes
- Unsuccessful attack = whitish pitch tubes; beetles are repelled by the tree
- Successful attack = reddish brown pitch tubes; pitch mixed with boring dust
- Successful attack with no pitch tubes = late season attack or low vigor trees





### Woodpecker work

- Flaking of outer bark scales by woodpeckers is a conspicuous but not infallible indicator of bark beetle attack



### Foliage

- Foliage discolouration and loss are not apparent until 15-18 months after attack
- Fading of the foliage to a yellowish green
- After needle drop, the twigs will have a reddish appearance from a distance

\*\*\*For more information on Spruce Beetle please refer to the Forest Pest Leaflet 13 by N. Humphreys and L. Safranyik (available online)



## Other Beetles

There are numerous insects that affect spruce trees in British Columbia. Some are often mistakenly identified as IBS and it is important to be able to correctly identify the insect species found. It is important to note the presence of other beetles, but it is vital that these other beetles are not mistaken for IBS.

### Deathwatch Beetle (*Utobium elegans*)

- ***This beetle is often mistaken for IBS***
- External evidence is identical to that of the spruce beetle (entry holes, frass)
- Must chop into the tree to differentiate between IBS and Deathwatch
- This beetle does not kill the tree but is an indicator that the tree is stressed

Distinguishing features:

- Does not carry blue stain fungus
- Found only in the bark
- No galleries in phloem
- Found only in green trees

### Ips Beetle

- Ips are commonly found in association with attacks by the major *Dendroctonus* species.
- May attack and kill living trees but more common to find them:
  - in smaller diameter trees or
  - in upper portions of trees attacked by mountain pine or spruce beetle, particularly spruce beetle trap trees
  - on the top side of blowdown

Distinguishing features:

- Ips gallery patterns are star shaped with a central chamber
- Adults are reddish brown to black
- Adults are easily identified by the concave depression (declivity) at its rear end
- Usually attack dead, dying or damaged pine or spruce

### Ambrosia Beetles

- These insects do not kill trees; they attack recently dead and downed timber
- The boring dust is whitish due to the beetle boring into the sapwood

### Hylurgops rugipennis

- Adult is reddish-brown
- Attacks dead or dying trees only
- Attacks are concentrated at and below root collar

Source: Bark Beetle Identification and Detection – Participants manual version 1.0