



BC Forest Safety

Trap Tree Resource Package

This resource package is designed for Fallers and Falling Supervisors to safely implement bark beetle trap tree management programs to help mitigate devastating Fir and Spruce beetle infestations.



Released 2020



Purpose

The purpose of this resource package is to provide information and tools to assist those engaged in bark beetle trap tree management programs. The information and tools in this guide are intended to help companies implement a successful trap tree program efficiently while meeting current legal requirements.

These resources are not legislated or intended to add unnecessary workload. However, regardless of which work phase or role you play in any forestry operation, WorkSafeBC (WSBC) Act and Regulations must be adhered to at all times. It is the responsibility of employers and workers to ensure they are in compliance with the regulations and guidelines outlined in the [Workers Compensation Act](#) and the [Occupational Health and Safety Regulations](#).

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This resource package will help identify:

- What a *Trap Tree Program* is.
- What is required to fall trap trees.
- How qualifications to fall trap trees are determined.
- What needs to be in place before work begins.



Spruce tree selected to be felled and become a trap tree for Spruce Bark Beetle.



Fir Trap Tree – multiple trees selected to be felled and left to trap Fir Bark Beetles. These trees will be harvested before the beetle flight.

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Windthrown trees are the preferred habitat of bark beetles

1. Definitions

TRAP TREE PROGRAM

A sanitation harvesting strategy designed to protect a specific area by falling trap trees in approved areas where high levels of beetle activity are prevalent. Hauling and processing the felled trap trees, debarking or prescribed burning is then used to reduce the beetle population and inhibit population expansion. Bark beetle guidelines require minimizing infested material with harvesting practices such as leaving stumps no higher than 30cm and burning debris piles or hauling the trap trees from the infested area before the beetles emerge.

TRAP TREE

Large healthy Spruce or Douglas-Fir trees are felled into shade near infestations that attract and absorb emerging bark beetles. Trap trees that contain these bark beetles must be treated to kill the larvae brood before the adult beetles emerge. Hauling and processing at a sawmill is usually the easiest and most cost-effective method to destroy the brood, but burning the logs on site, or possibly debarking, will also work.

QUALIFIED

WSBC defines qualified as being knowledgeable of the work, the hazards involved and the means to control the hazards, by reason of education, training, experience or a combination thereof.

FALLING SUPERVISOR

OHS Regulation [26.22.1](#) Falling supervisors for forestry operations

- 1) A qualified supervisor must be designated for all falling and associated bucking activities in a forestry operation.
- 2) The supervisor designated under subsection (1) must:
 - a. ensure that the falling and bucking activities are planned and conducted in accordance with this Regulation,
 - b. inspect the workplace of each faller at time intervals appropriate to the risks, and
 - c. keep a record of every inspection conducted under paragraph (b).
- 3) The supervisor designated under subsection (1) must not undertake or be assigned activities which interfere with performance of the supervisor's duties under subsection (2).

HAZARD

WSBC defines a hazard as “a thing or condition that may expose a person to a risk of injury or occupational disease”.

BC FALLER TRAINING STANDARD

This is the safe work procedures for falling trees.

FALLER INSPECTIONS

3.5 General requirement

Every employer must ensure that regular inspections are made of all workplaces, including buildings, structures, grounds, excavations, tools, equipment, machinery and work methods and practices, at intervals that will prevent the development of unsafe working conditions.

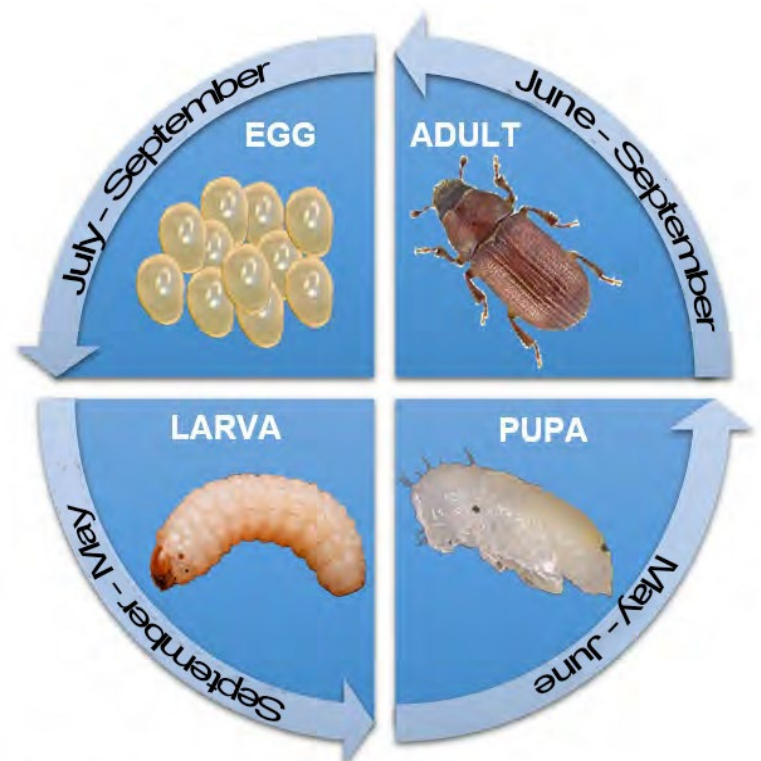
2. Douglas Fir Bark Beetle Facts



Frass (fine sawdust) indicating beetle attack

Douglas Fir Beetle Facts:

- **Colour:** dark brown to black with reddish wing covers
- **Size:** tiny – 4.4 to 7 millimetres long (about half a centimetre)
- **Lifespan:** one year
- **Destroys:** Douglas-fir — mainly felled, damaged and drought-stressed, but also mature living trees
- **Latin name:** *Dendroctonus pseudotsugae*



Douglas-fir Bark Beetle (*Dendroctonus Pseudotsugae*) Life Cycle

FLIGHT PERIOD

MAIN
FLIGHT

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

SECONDARY
FLIGHT

3. Spruce Bark Beetle Facts

Spruce Bark Beetle Facts:

Colour: dark brown to black with reddish wing covers

Size: tiny – 4 to 7 millimetres long (about half a centimetre)

Body: hard, stout and cylindrical

Lifespan: one to two years

Destroys: Large diameter mature spruce trees, e.g. Sitka – usually downed trees or debris

Latin name: *Dendroctonus rufipennis*



Scaling on attacked tree



Adult spruce beetle



Larvae

4. Overview

TRAP TREES

The following list provides some practical guidelines to creating and executing a successful Trap Tree Program.

- Spruce and Fir Bark Beetles prefer blowdown wood that provides a cool shady habitat.
- Conventional trap trees simulate a fresh blowdown event that attracts beetles nearby.
- Fall trap trees as close to beetle flight time during spring.
- Fall healthy mature spruce or Douglas-fir trees 30cm or greater.
- Ratio of 1:4 - use the formula of one trap tree for every four currently infested trees. Providing too much material will exacerbate the attack.
- Fall patches or strips located no further than 800m from attack.
- For chronic beetle areas or scattered infestation, space trap tree sites 400-600m apart.
- Fall trees to lay slightly off the ground using ground debris and material like saplings and hazard trees from creating the falling opening.
- Avoid brushing and manage danger trees in work area.
- Use a low stump. Any stump over 30cm in height, remove bark exposing cambium layer down to the duff.
- Do not limb or buck trap tree.
- Maintain shade and use layer pattern to cover the stem of one tree with the limbs and top of another.
- Using a narrow opening line formation like a skid trail works well to maintain shade, avoid brushing, and facilitate falling and harvesting logistics.
- Avoid scarring and other damage to surrounding timber during falling and harvesting.
- A patch or strip should be 10 – 25 trees in size (one truck load), shaded and accessible for removal.
- To ensure qualified assistance for Fallers, patches or strips should be no more than 10 minutes surface travel time apart.
- Pre-felled ROW, landings and skid trails can be effective trap tree sources. Due to the large volume of timber, the bottom trees are buried enough to create the cool shady environment the beetle prefer.
- Timing of removal of trap trees is crucial or the beetles will mature and fly away to infest a new tree(s).
- Fall and burn treatment is not practical for Spruce Bark Beetle or Douglas Fir Beetle.

USEFUL LINKS

Use these links to access reference materials and information on Spruce and Fir Beetle management.

- [Spruce Beetle Management in BC](#)
- [Douglas Fir Beetle Management in BC](#)
- [Provincial Bark Beetle Technical Implementation Guidelines \(2003\)](#)

5. Roles & Responsibilities

PLANNERS

A pre-work walk through of the project should be done by a qualified person to identify hazards in the work area and confirm the layout and work plan can be achieved.

A site hazard assessment needs to be completed to document the general hazards identified during the walk through. The control measures for these hazards need to be described and included on the document.

A First Aid site assessment needs to be completed for the site. Prior to work commencing, all the appropriate First Aid requirements must be readily available on site including the First Aid equipment.

An Initial Safety meeting discussion needs to be documented and include review of the Emergency Response Plan (ERP), the site hazards and controls, the designated First Aid attendant and the location of the First Aid equipment, fire tools etc. The communication system, radio channel, man check system, signage and general work plan also needs to be discussed and documented.

A system to document and alert affected workers to the existence of a specific hazard should be in place. Use a hazard report form with a Corrective Action Log (CAL) to document any specific hazards that are identified at any time during the project. The hazard report must be shared with workers and other phases that may be affected by the hazard.

As the project progresses, any relevant changes to the original work plan needs to be documented and shared with any workers affected by the changes.

Consider using an all in one document like this fillable [ERP and Block Plan](#) pdf form which streamlines the documentation requirements.

Having an accurate and detailed map of the project is also required and a key component of a successful work plan. Maps should show access roads, trap tree patch locations, trails, landings, and any other important landmark references. Maps can be used in conjunction with the daily work plan to show location of work activities, known hazards and other vital information. Every member of the crew should be provided with a copy of the map and have access to the block documents on site.



Roles & Responsibilities continued

FALLING SUPERVISOR

A qualified Falling Supervisor must be designated and available to control and direct the falling activity. This includes planning and documenting the daily activities and faller inspections.

The Falling Supervisor is responsible for planning the work to ensure all the steps have been taken to prepare for the falling activity. This includes making a falling plan that ensures qualified assistance is available to each Faller, the ERP is accurate and has been tested for effectiveness and the work area is controlled.

The Falling Supervisor must ensure each certified Faller is qualified to fall trees in the timber and terrain where they will be working. They must observe the faller's work and complete a documented faller inspection to ensure the Faller is using the safe work procedures provided in the BC Faller Training Standard.

The Falling Supervisor should ensure:

- Each faller knows the work plan and how to create effective trap trees utilizing the conditions and characteristics of the work area.
- Access and egress trails are cleared and marked.
- An effective check-in procedure and communication system is established and followed.
- Regular safety meetings with the crew's participation are conducted and documented.
- Other workers are identified and are made aware of the falling activity.
- Alternate falling methods are available.

In many cases trap tree projects are small scale programs and brief. Often the crew consists of two Fallers and the falling is completed in one or two days. One of the Fallers needs to be a Qualified Falling Supervisor and take on the responsibilities required. Regardless of whether the project is one day or multiple days, all the steps listed above are required.

FALLER

The Faller is responsible for carrying out the work plan. To do this successfully they must be knowledgeable of the plan, the goal, and the methods to achieve the desired outcome.

- Review the work plan documents and have access to them.
- Participate in the initial safety meeting and document review and sign off.
- Follow the work plan, stop work if the plan cannot be achieved or an unsafe condition is encountered.
- Use safe work procedures provided in the BC Faller Training Standard.
- Follow check-in procedures and qualified assistance guidelines.
- Have a map and be able to implement the ERP.

By understanding the criteria that make a good trap tree, the Faller can use knowledge and experience to make the project a success.

6. Qualifications

QUALIFIED CONTRACTOR

A qualified contractor will have references, a sound work plan for the project and all the necessary people and equipment for the task. This can be confirmed by asking for and checking references, requesting documentation from previous projects and discussing the crew experience/qualifications.

QUALIFIED FALLING SUPERVISOR

The Falling Supervisor is required to control and direct the hand falling for the project. Refer to the definition of a Falling Supervisor in Part 1 that also describes the roles and responsibilities in accordance with WSBC Regulation.

A qualified Falling Supervisor will have knowledge of their role, previous experience and may have attended a [Falling Supervisor training course](#).

To ensure the Falling Supervisor is qualified, check references, discuss their experience and their plan for conducting the project. They should be able to provide documentation from previous projects they have supervised that will include the documents discussed above along with regular documented faller inspections. Their experience should include projects similar to yours in similar timber and terrain and similar objectives.

CERTIFIED FALLER

A certified Faller should have current certification from one of the three approved Administrators of the BC Faller Training Standard. Ask for a current wallet card and logbook if available.

The logbook should have past work experience and contact information for references. A qualified person needs to ensure the Faller has the experience to perform the work required of them in the timber and terrain they are placed. This can be done by checking work references, through discussion and by observing the Faller's work.

7. Best Practices

When considering using a trap tree program, engage the people who will be performing the work in the planning stage of the project. Educate them to the relevant details of the beetle management strategy and use their knowledge and experience to develop a successful and efficient plan.

Consult with WSBC to ensure all aspects of the plan meet or exceed Regulation. WSBC may also have valuable input for the success of your plan.

An effective ERP can be a challenge for trap tree hand falling activities. A small crew covering a large area means constantly moving from site to site throughout the day. Access to and from each site needs to be assessed and the ERP adjusted to compensate for the site changes.

Hand falling is a high risk activity and a risk assessment needs to be completed for each site. The number of workers on the crew and the barriers to access and egress for Medivac need to be considered. Additional First Aid gear and assistance may be required. There are specific requirements that need to be addressed if the Medivac plan is helicopter dependent.



Cutting out the work area



Using saplings for elevating trap trees



Falling a trap tree into a patch



Falling a trap tree into an opening

8. Trap Tree Resources

WorkSafeBC

WorkSafeBC – Occupational Health and Safety Regulation:

<https://www.worksafebc.com/en/law-policy/occupational-health-safety/occupational-health-safety-regulation>

WorkSafeBC – Occupational Health and Safety Regulation 26.22.1:

<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-26-forestry-operations?origin=s&returnurl=https%3A%2F%2Fwww.worksafebc.com%2Fen%2Fsearch%23q%3D26.22.1%26sort%3D%2540fcomputedohsorderfield343%2520ascending%26f%3Acontent-type-facet%3D%5BOHS%2520regulation%2520%2526%2520related%2520materials%5D%26f%3Alanquage-facet%3D%5BEnglish%5D#61EA11DFEAB946CD9A163C3CBF6772C4>

Workers Compensation Act:

<https://www.worksafebc.com/en/law-policy/workers-compensation-law/workers-compensation-act>

BCFSC

Emergency Response Plan and Block Plan:

www.bcforestsafes.org/files/frn_xERPAndBlockPlan.pdf

BCFSC Faller Supervisor Training:

www.bcforestsafes.org/node/2216

BC Ministry of Forests

Harvest Prioritization in Response to Spruce Beetle Outbreaks - Chief Forester Expectations:

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/harvest_prioritization_in_response_to_spruce_beetle_outbreaks.pdf

Spruce Beetle Management

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/forest-pests/bark-beetles/spruce-beetle>

Douglas Fir Beetle Management

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/forest-pests/bark-beetles/douglas-fir-beetle>

Identifying Bark Beetle Damage

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/forest-health-docs/field_guide_to_forest_damage_in_bc_web.pdf

Bark Beetle Management Guidebook

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/bark_beetle_management_guidebook.pdf

Provincial Bark Beetle Technical Implementation Guidelines (2003)

<https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/fh-strategies/provbbstrategy.pdf>