OMINECA REGION

GUIDELINES FOR ESTABLISHING CONVENTIONAL TRAP TREES

1 Background

Conventional trap trees are an effective and efficient method for the control of spruce beetle (*Dendroctonus rufipennis*) infestations. The spruce beetle itself, during endemic situations, prefers downed and dying, large diameter, spruce timber. Though they can be found in standing live mature spruce, the normal abundance of fresh blowdown timber is usually sufficient to maintain a static, endemic population. It is this situation that conventional trap trees attempt to emulate. In an epidemic situation, the task is much more difficult trying to attract the emerging beetles to a location where the timber can be removed and transported to a facility where the beetles are destroyed in the milling process.

2 Characteristics

The characteristics of trees that can be utilized for trap trees varies by location, but the same general rules apply. 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 must be made to keep as much branching remaining on the felled tree as possible. The advanced regeneration in the area should also be left intact along with other mature tree species. Preferably the first felled tree receives shade from the crown of the second felled tree lying on its bole and so on.

Individual trees must be felled in the direction where they will receive the greatest amount of shade for the longest period of time. Trees should not be resting on the ground but be close allowing attack to occur on the underside of the bole of the tree. The trap trees should be felled in small patches of 15 to 25 trees (truckload) spaced roughly 400 m along a roadway, on alternating sides of the road, if possible, close to known beetle infestations (~800 m, preferably less). This level of distribution should be sufficient for light to moderate populations. For heavier populations, spacing of a higher frequency is required such as every 200 m on alternating sides of the road. Freshly blown down spruce in a given area must be worked into the trap configuration as these provide the most ideal habitat, and may already have populations building in them.

3 Location

Conventional trap trees must be felled in close proximity to a known population that is confirmed to be emerging in the upcoming spring. This information is provided from a formal beetle survey, but can be determined by other means such as during block layout by experienced personnel. Trap tree patches must be located along a road or in an area easily accessible for transport, such as a cutblock edge near a road system.

Individual locations of patches must be GPS'ed and accurately mapped, with the number of trees felled at each patch recorded. Painted numbers on each tree to be removed is a good practice also, to ensure all intended traps are removed. Follow up monitoring will be required for these sites. This data should be entered into a tracking spreadsheet.

The spruce beetle has been known to infest debris piles, (stumps, tops etc.) and these sites must be included, utilized and addressed in a good trap tree program. These sites could be monitored similar to the trap tree sites and added to the tracking spreadsheet as they get burned or controlled in some other manner.

4 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^{o}C. This can occur as early as the first part of May.Mmonitoring 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 dependent, having the trees felled close to the flight ensures the best possible circumstance for control. The release of attracting pheromones from the felled tree dissipates as the weather warms and the tree decomposes. For an effective trap tree program, annual programs will need to be established in areas of known beetle activity.

5 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 the next year's flight. There remains a potential for a growing population to emerge from that tree prior to this time. Beetles remaining in the trap tree after August are likely committed to that host eliminating any chance of emergence. The trap tree patches should be skidded and hauled before snow levels preclude the absolute efficient cleanup 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.

During extraction it is important to fell and remove any standing infested tree in amongst the trap trees.

6 Monitoring

Monitoring of the beetle populations in the surrounding timber as well as in the trap trees is essential to a good trap tree control program. Bark samples at various locations on the bole of the tree, throughout the summer, to capture life cycle data is considered good practice. To aid in determining the timing of the flight from the infested area to felled trees, pheromone traps could be used. Pheromone traps are very good at monitoring flights and not so much at control of a situation (details on data collection can be found within the *Omineca Region Guidelines for Spruce Beetle Haul and Mill Strategies*). Data collected from the sites must be recorded.

7 Precautions

- Care must be taken not to create an opening where the shade is reduced and barriers to beetle flight are decreased.
- 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.

8 Restrictions

- Do not fall trap trees in or into a riparian area, if there is a chance they may not get removed.
- Do not fall the trap trees too early in the winter where they may become covered in snow, or access may not be sufficient at time of extraction or disposal.

9 Other Similar Tactics

9.1 Log Decks

Winter felled wood can be left at roadside or landings through the spring flight. These decks can attract beetle, in spite of the fact they will not likely be in the shade. The outer logs will provide shade to the inner logs creating habitat for the flying beetles.

9.2 Trap Tree Trails

Where there may not be opportunity for the number of trap trees desired on a particular road system, narrow and long trails can be established into a stand where known infestations are occurring. Trails should be oriented to minimize the amount of sunshine the trees and the trail could receive throughout the day.

9.3 Pre-development

Pre development of blocks and road systems can be effective at controlling impending beetle flights. This option requires another level of planning and relies on several uncontrollable factors such as weather and lumber markets.

10 Consider

In known spruce beetle areas that are being harvested to control the beetle population, the brood emerging the spring after the winter harvest will be emerging from the stumps and slash in that cutblock. It is an acceptable practice to leave log decks on site (or trap trees) to attract as many of the flying beetles as possible before removing that wood for transport.

11 Expectations

- A trap tree plan in place for pre and post-harvest operations in spruce stands
- 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.
- Accurate locations of trap trees will be collected with the use of GPS
- Accurate reporting as to the location and numbers of trees felled and removed will be submitted to DPGWGRP@gov.bc.ca , including all information in the data dictionary found at *\DPG\external\!publish\SpruceBeetle.*

REFERENCE:
Use of trap tree for Spruce Beetle Management in BC 1979-1984

For additional information on spruce beetle suppression, please contact your local FLNR office.

BRITISH COLUMBIA