

Squamish Forest District

Mountain Pine Beetle information for the landowner

History/Current Situation

The mountain pine beetle, *Dendroctonus ponderosae*, is a native forest insect and an integral component of pine forest ecosystems in British Columbia. This beetle likely migrated northward with pine forests following the last ice age and has probably been active in the Squamish Forest District for many thousands of years. It was first officially recorded in this district in 1960 and has been active somewhere in the district every year since then.

Over the past 30 years it has been particularly active in the Birkenhead/ D'Arcy and Lillooet Lake areas, killing thousands of hectares of lodgepole pine.



Mountain pine beetle infested trees south of Lillooet Lake

The large outbreak in the Soo and Rutherford River area has been active for the past 15 years and has become very noticeable in the past 5 years. The beetle has now spread

southward beyond Whistler to the Cheakamus Canyon area. We anticipate that it will continue to spread southward and intensify. It will probably remain active for many years into the future and it is anticipated that it will only start to diminish when the majority of mature pine have been killed.

Link to Ministry of Forests headquarters mountain pine beetle website:

http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/. This site contains a wealth of information about mountain pine beetle in BC plus many links to additional information.

Biology/Identification

The mountain pine beetle attacks and kills pine trees. Non-pine tree species are not attacked. Once successfully attacked, pine trees will die; **they can not be saved**. The mountain pine beetle has a one year life cycle and spends most of its life feeding in the conductive tissues between the wood and the bark. The beetle does not bore into the wood. The trees are killed by the combination of destructive galleries mined by the beetle and blue stain fungus that is carried into the tree by the beetle (http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/pgfr_53.jpg). The beetle galleries girdle the cambial tissues of the tree, cutting off the transport of water and nutrients within the tree, and the blue stain fungus quickly germinates and clogs conductive tissues within the tree.

It is important to positively identify the symptoms if you suspect your trees have been attacked. Beetle attack occurs in mid-summer – peak flight occurs mid- to late-July. The first sign you will notice is beetle boring dust on the ground and in bark crevices (http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/pgfr_54.jpg). The next sign will be pitch tubes formed by the tree attempting to flush out the beetles with resin, and by the beetles maintaining their gallery openings (http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/mpbbole2.jpg). The trees remain green through the rest of the summer, fall and winter. The foliage of attacked trees then dries out and changes color from green to red in the spring and sometimes into the early summer of the following year (http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/pgfr_52.jpg). Keen observers may detect a fading of the green foliage through the fall and winter.

Lodgepole pine is the most commonly attacked species of pine, but all of our native pines, as well as exotic pines that have been introduced here for landscaping purposes, could be attacked.

Further information about the beetle's lifecycle and biology can be found at the following websites: http://mpb.cfs.nrcan.gc.ca/biology/index_e.html.

Additional photos are available at these websites:

<http://www.forestryimages.org/browse/subimages.cfm?SUB=27>
http://www.for.gov.b.ca/hfp/mountain_pine_beetle/bbphotos.htm.

What can the landowner do?

The mountain pine beetle is no longer a problem limited to British Columbia's deepest back-country forests and wilderness areas. More and more infestations are turning up on private property, even in and around urban areas.

Although not guaranteed to prevent the insect invaders from gaining ground, there are a number of small steps private landowners can take to help alleviate the potential for a beetle infestation on their property.

[http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/bbbrochure.htm]

Control of beetle infested trees to prevent spread to adjacent trees:

[**note:** infested trees can not be saved]

Tree removal: remove the infested tree from the area. (Example: move the tree to a sawmill where the beetles will be destroyed in the debarking process.) The beetles will still emerge from the log in July, so they will need to be dealt with before mid-June. The stump should be debarked and the bark burned.

Fall and burn: fall the infested tree, buck it into manageable lengths and burn the logs until the bark is well burned (completed by mid-June). The stump should also be treated either by burning or debarking (burn the bark). This should be done in the winter preferably. Note: all necessary burning permits must be obtained.



Fall, remove and burn bark: an alternative to burning the logs is to strip off the bark of infested trees and then burn the bark before mid-June.

Insecticide: Carbaryl (e.g. Sevin®) is a proven insecticide for the control of bark beetles. Spray the bark surface of infested trees (standing or fallen) in late June with a two percent solution - follow label directions. Spray the main stem of the tree well up into the branches and ensure all bark crevices are coated. Emerging beetles will die when they ingest the treated bark. This product can be purchased from most home and garden shops that sell pesticides. The vendor will also have information about its use. Please note that this is a toxic pesticide and appropriate precautions need to be taken. It is recommended that a qualified pest management company be utilized.

Plastic wrap: An alternative to burning involves wrapping logs from the infested tree with clear 6 mil plastic sheeting. Fall the infested tree in the spring; the sooner this is started the better as this requires at least 2 months under treatment prior to beetle emergence in July. Buck the felled tree into 4 foot lengths and wrap in 6 mil plastic sheeting, ensuring there are no holes or gaps for the beetles to escape. The logs should be lined up east to west in an open area to maximize exposure to the sun - do not pile them. Also, face what was the northern side of the tree toward the sun (the north side of infested trees have higher beetle densities). Rotating the logs (as long as this is not done after the

end of June) may help as well, but re-wrap well. This is not a 100% control; some of the beetles will survive. It is the heat of the sun and the resulting high temperatures that kill the beetles. Keep them wrapped until September or later. Spraying the logs with a pesticide such as carbaryl (e.g. Sevin®) will improve results – caution is advised with use of any pesticide.

Pheromones (not recommended for the homeowner): the use of attractant pheromones can be utilized to direct attacking beetles to specified trees. Healthy green trees can be pheromone baited to draw in attacking beetles. This will help contain the beetles within an area and help prevent spread. It may also facilitate control (e.g. falling and burning) by directing the beetles to more accessible trees. The baited trees, however, will be sacrificed to beetle attack and **must** receive follow-up treatments. The use of pheromones also involves the risk that more beetles than anticipated may be drawn in with many adjacent trees also being attacked. For this reason pheromones are not recommended for homeowner use.

Preventing beetle attack on healthy green trees:

Insecticide: Carbaryl (e.g. Sevin®) is a proven insecticide to protect uninfested trees from bark beetle attack (directions are on the label). Spray the tree's bark surface well up into the branches in late spring/early summer (before mid-June). Attacking beetles are killed. This product can be purchased from most home and garden shops that sell pesticides. The vendor will also have information about its use. Please note that this is a toxic pesticide and appropriate precautions need to be taken. It is recommended that a qualified pest management company be utilized.

Physical barriers: Wrapping trees with a breathable landscaping fabric or possibly a fine wire mesh screen has been suggested. This is an untested method that **can only be recommended as a trial**. Wrap the tree and staple tightly, or somehow close the edge of the wrap so beetles cannot crawl inside. Wrap it as high as possible and maybe prune the first few branches to facilitate this. Pull it down as low as possible and cover the bottom with loose dirt/sand to prevent beetle access. Check often to ensure the integrity of the barrier. Leave it on until the end of August. Warning: the landscaping fabric may overheat and damage the tree.

A related suggestion is to spray the top of the tree bole above the wrap with carbaryl (as discussed above).

Other potential treatment options that can not yet be recommended:

White-wash: this is **experimental and can not yet be recommended**. However, early trials suggest that attacking beetles may not attack white-washed pine trees (white latex house paint). The beetles may not recognize them. This will leave the tree stems painted white.

Pheromone trapping: mass trapping does not work (e.g. Lindgren funnel traps with lures). The traps will catch beetles but in insufficient numbers to have a controlling effect. The reasons for this are not well understood. The pheromones used will attract beetles to the area that may then attack adjacent live pine trees. **Not recommended.**

Anti-aggregation pheromones: anti-aggregation pheromones (verbenone) may be available in the future, however at this point their use is still under development and is not yet registered for use by the federal Pest Management Regulatory Agency. As a result they are **not available for purchase.**

There are also reports of homeowners protecting trees with soap sprays. This is also unproven and can not yet be recommended.

For further information, contact Regional Entomologist (email: don.heppner@gov.bc.ca; phone: 250-751-7107).

Updated: January 12, 2006