

Mountain Pine Beetle in B.C.



A GROWING PROBLEM

The **mountain pine beetle** is just over six millimetres long (about the size of a grain of rice). But the tiny forest insect has infested huge areas of mature pine around the interior of British Columbia, causing colossal amounts of damage to B.C. forests.



The beetle likes mature pine and mild weather. Because B.C. has more old pine than ever before, and has had several consecutive mild winters, mountain pine beetle populations have exploded to epidemic levels.

British Columbia's beetle infestations doubled in size in 2003 over the previous year. About 4.2 million hectares were attacked in 2002 and mapped this year. Varying degrees of mountain pine beetle attacks occur in all forest regions of the province, with the largest infested area extending from the south Cariboo region north to Fort St. James. It has been described as the worst-ever insect infestation in a North American forest.

The beetles attack lodgepole pine, ponderosa pine and more rarely, white pine. Lodgepole pine, the predominant commercial species in the province, accounts for more than half of the growing stock in B.C.'s interior. About 160 million cubic metres of timber is now affected by the mountain pine beetle.

In October 2003 the province's chief forester reported that the mountain pine beetle epidemic may significantly reduce interior B.C.'s timber supply in about 15 years or sooner. It may not be possible to salvage all the beetle-killed trees for traditional uses, making it necessary for stakeholders to explore the potential for innovative and alternative uses.

The damage done by the mountain pine beetle may also add to the risk of wildfire. Mature pine stands have been killed at such an unprecedented rate that not all the wood can be salvaged, posing a fuel-load threat on the forest floor.

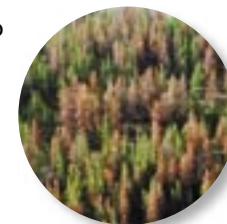
EFFECTS OF THE BEETLE LIFECYCLE

The mountain pine beetle lives for about one year. Females bore through the bark of a tree to the layer underneath, where they emit pheromones to attract males for mating, and lay their eggs. After going through the larval and pupal phases, adult beetles fly in search of new pine for food sources and reproduction purposes. Flights can begin in June, but are generally in July and

August, when trees are most vulnerable to infestation due to water deficiency.

A mountain pine beetle infested-tree will go through three colour stages:

- ▶ Green is the earliest stage. The beetles have infested the tree (from early summer to early fall), but this cannot be detected and mapped from the air. The pine needles are their normal colour and appear healthy.
- ▶ Red is the middle stage. The beetles have left the tree after mining the layer between the bark and the wood. This occurs in the year following the initial attack. The pine needles have turned red, an indicator that the tree is dying because the combined impact of the beetles and a fungus they carry has cut the tree off from its supply of water and nutrients.
- ▶ Grey is the last stage. The beetles are long gone. The tree has been dead for some time and the needles have fallen away, leaving the tree looking grey and barren. This typically occurs in the year following the red stage.

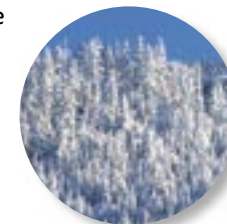


Healthy pine trees can often withstand light attacks by exuding resin to expel invading beetles. Large, whitish pitch tubes may indicate the tree has repelled a beetle attack. Smaller, reddish-brown pitch tubes and lots of dust from boring the bark mean the beetle attack has been successful and the tree will soon die.

Adult beetles also carry a fungus that they deposit into the sapwood. This fungus causes dehydration while inhibiting a tree's natural defences and stains the wood blue. However, these blue-streaked logs are just as strong as other pine logs. Research has proven that beetle-killed wood stained blue by the fungus remains structurally sound and safe for building.

COLD IS THE BEST CONTROL AGENT

There's one thing that really stops the beetle dead – freezing temperatures. Sudden cold snaps (-25 degrees C) in the early fall or late spring, or sustained frigid weather (less than -40 degrees C) in the winter can kill populations of beetles, and help end serious outbreaks.



However Mother Nature has not been co-operative the last several years. Successive hot, dry summers combined with mild winters in much of central B.C. have allowed the beetle to multiply, and even expand its range to areas that were once historically too cold for the insect to survive.

It is impossible for human intervention to halt the beetle epidemic in its tracks at this stage in the infestation. Until the epidemic ends, British Columbia must work together to slow and contain the spread of the infestation, and lessen the associated threats to the province's economic well-being.

TAKING ACTION

The Province has taken an aggressive course of action to counter the infestation, and worked to lessen the impacts of this forest health crisis. Mitigation tactics used in the overall battle against the beetle include:

- ▶ Committing more than \$100 million over the last three years;
- ▶ Striking a government caucus task force in June 2001 to immediately address the epidemic and guide the Minister of Forests in developing a strategic plan;
- ▶ Launching the Mountain Pine Beetle Action Plan in November 2001 to implement wide-ranging strategies recommended by the task force, industry and other affected stakeholders;
- ▶ Appointing a provincial bark beetle co-ordinator to oversee the action plan, provide technical expertise, coordinate cross-agency liaison and report directly to the Minister of Forests;
- ▶ Increasing some allowable annual cuts in north-central B.C. to help reduce the rate of spread, and to salvage growing volumes of damaged timber;
- ▶ Logging 22 million cubic metres of beetle wood last year alone to reduce further spread;
- ▶ Cutting away regulatory red tape for more efficient and effective management of the problem.

Common management strategies used against the mountain pine beetle include aerial and ground detection, pheromone baiting, falling and burning, and a variety of logging techniques.

Every precaution is taken with salvaged logs to ensure the forest pest is not spread to a new area. The B.C. Forest Service maintains tight controls on the hauling and milling of infested logs. Forest companies must have plans, reviewed by Ministry of Forests officials, for safe storage and transportation of beetle wood.

British Columbia is also fighting back against the beetle with key research projects.

The battle with the beetle is reviewed and adjusted on an ongoing basis. In November 2003, the Premier hosted a symposium so that community leaders, forest managers, forest-health authorities, industry experts, First Nations, environmental representatives and other stakeholders could discuss implications of the beetle infestation. It was an opportunity to review previous and existing management strategies, and to look for ways to lessen the beetle's long-term impact on jobs and communities.



HOW PRIVATE LANDOWNERS CAN FIGHT BACK

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:

- ▶ **Look for the mountain pine beetle. Early detection, during the July to September summer flight season, is key.**
 - Look for holes and dust created by the beetles drilling into the bark, pitch tubes, increased woodpecker activity, or discoloured needles.
 - Peel away bark to expose larvae galleries and beetles.
 - Especially important to check for the insect when hauling pine firewood.
- ▶ **If infested, log the trees and mill or debark them before the beetle flight season begins.**
 - The bark should be burned, buried or submerged under water (where environmentally safe).
 - Infested logs can also be buried under the ground until after the flight season, and then used.
- ▶ **Fall and burn beetle-infested trees on site.**
 - Do this only in winter, to reduce the risk of starting forest fires.
 - Remember to obtain all necessary burning permits.

- ▶ **Spray trees (standing or fallen) in late June with a two per cent solution of Sevin, a registered insecticide for topical treatment. Emerging beetles will die when they ingest the treated bark.**
 - Spray until the trunk is dripping.
 - Follow label directions exactly.
 - Landowners can only apply Sevin or other pesticides on private property, and not on public land.
- ▶ **Cut down and buck the tree to manageable lengths so they can be wrapped in a clear, heavy-gauge plastic tarp. This approach relies on the solar heat generated inside the log package to keep beetle populations controlled and their survival rates reduced.**
 - Establish treatment by mid-spring at the latest.
 - Align logs at a right angle to the sun and occasionally rotate the logs (the north aspect of the tree contains the highest density of beetles).
 - Do not stack higher than two layers of logs.

It's always a good idea to contact your local district or regional office to enquire about applications or permits required for performing these and other beetle management activities.

For more information about the mountain pine beetle visit the Ministry of Forests web site at

<http://www.for.gov.bc.ca>

