

HOW TO SPOT



the

Mountain Pine
BEEBLE

*Dendroctonus
ponderosae*

MOUNTAIN PINE BEETLE

The mountain pine beetle (*Dendroctonus ponderosae* Hopkins) is the most destructive insect pest of mature lodgepole pines in Western Canada. This beetle can kill enormous areas of lodgepole pine forest in a relatively short time. During the last mountain pine beetle infestation in Alberta from 1977 to 1985, it was estimated that over one million cubic metres of lodgepole pine were killed.

Egg

In late July to early August, the female lays small white eggs along the sides of the egg gallery.

After about two weeks, the eggs hatch into larvae.



Larva

In August, larvae begin to tunnel horizontal galleries by feeding on the living tissue (phloem) under the bark.

From September to May, the larvae overwinter under the bark.

By late June, the larvae mature and construct oval-shaped chambers in which they pupate (process of transformation between larva and adult).



Pupa

In early July, the larvae pupate.

Pupa is white and may show some adult-like characteristics e.g. wing buds.

photo courtesy of Herb Cerezke



Adult

In mid-July, the adult beetle, which is black and approximately 5 to 7 mm in length, emerges from a small, round hole in the bark.

The adult female beetle searches for a host tree to attack and then bores into the bark to construct a vertical egg gallery (long narrow excavation beneath the bark) parallel to the grain.

photo courtesy of Herb Cerezke



The mountain pine beetle spends most of its life cycle beneath the bark of its host where it progresses through four stages: egg, larva, pupa and adult. The beetles usually take one year to complete development.

LIFE CYCLE

HOSTS



In Alberta, the lodgepole pine (*Pinus contorta* Dougl. var. *latifolia* Engelm.) is the main host species for mountain pine beetle. Other pine species, such as western white pine (*Pinus monitcola* Dougl.), limber pine (*Pinus flexilis* James), and Scots pine (*Pinus sylvestris* L.), are also attacked by this beetle.

SYMPTOMS

Common Symptoms to Look For:

Red Trees

The mountain pine beetle usually attacks large pine trees taller than 10 metres or greater than 24 centimetres in diameter. Trees successfully attacked by the mountain pine beetle during the previous season begin to turn yellow in June and July, and reddish brown by August.



Pitch Tubes

The tree will often produce a large amount of sap to help flush out invading beetles. The sap often forms irregular creamy coloured globs called *pitch tubes* on the bark surface; these look similar to crystallized honey.



photo courtesy of Herb Cerezke

DAMAGE

The mountain pine beetle contributes to tree mortality in two ways: by girdling the tree and transmitting blue stain fungi that kill the tree.

Tree Girdling

Feeding larvae are responsible for the majority of the girdling effect, which reduces the tree's ability to transport nutrients.

Blue Stain Fungus

An adult beetle can carry fungal spores from tree to tree on its exterior surface and in a repository found in the mouthparts. It is believed that the fungus spreads throughout the living tissue under the bark, stopping water transportation and pitch flow, thereby killing the tree. The fungi also decrease the quality of the wood, which reduces its commercial value.



Blue Stain Fungus

MANAGEMENT STRATEGIES

Alberta Sustainable Resource Development (SRD) monitors mountain pine beetle populations and co-ordinates the control of infestations before they reach epidemic levels. As well, SRD promotes proactive management of forest stands to reduce the risk of large-scale damage.

1. Population Monitoring



Aerial surveys are the most effective method of detecting the presence of mountain pine beetles over large areas. Annual flights locate red trees that were attacked during the previous year. Red trees are then visited on the ground to confirm the presence of mountain pine beetle.

Pine trees baited with attractants (pheromone) are used to monitor population levels throughout the eastern slopes. At each bait location, surveyors record the number of trees attacked and the number of attacks on individual trees.



3. Proactive Management

To proactively manage Alberta's timber resources against the mountain pine beetle threat, a risk rating has been developed to identify pine stands that would be the most susceptible and/or incur the most significant damage resulting from an infestation. The rating takes into account age, density, and species composition of the forest stand, as well as climatic factors, and proximity to beetle populations. High-risk stands are given priority in the harvest sequence.

SRD is working co-operatively with Parks Canada, forest industry, and other concerned stakeholders to ensure all values at risk are considered when managing the beetles.

2. Control

Predators, parasites and climate naturally control the beetles. However, during mountain pine beetle outbreaks, the effects of predators and parasites are not significant. In these situations unusually cold winters are the most effective natural control.

Mountain pine beetles can be controlled in a number of ways:

1. Removing the bark from standing trees with limited damage;
2. Cutting the tree followed by burning or debarking; and
3. Sanitation harvesting to remove the beetles when the number of infested trees becomes too great for single tree treatment. Pheromone baits can be used in conjunction with control operations to contain and concentrate beetles in cut-blocks prior to treatment.



What You Can Do To Help

Because it is not practical to survey the entire province, Albertans can play an important role in preventing the spread of forest pests. Here are some ways you can help to save Alberta's forests from mountain pine beetle:

1. **Avoid transporting firewood** from one area to another, especially if the bark is still attached. Mountain pine beetle and Dutch elm disease can be transported in firewood to Alberta;
2. **Report suspicious pest findings**, especially red pine trees, to your nearest SRD office, or phone (toll free) 1-877-927-BUGS;
3. **Increase your awareness** about mountain pine beetle issues, especially in areas of known mountain pine beetle infestations, and periodically visit our website; and
4. **Learn to recognize symptoms** of mountain pine beetle attacks: red pine trees and pitch tubes.

For more information visit our website:

www3.gov.ab.ca/srd/forests/health/mpb.html

The logo for the province of Alberta, featuring the word "Alberta" in a stylized, bold, black font.

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