



The Notorious Bark Beetle

Preventing and managing mountain pine beetle infestations

It's hard to live on a rural property in Western Canada these days and not be aware of the mountain pine beetle epidemic that's decimating pine populations throughout British Columbia and parts of Alberta.

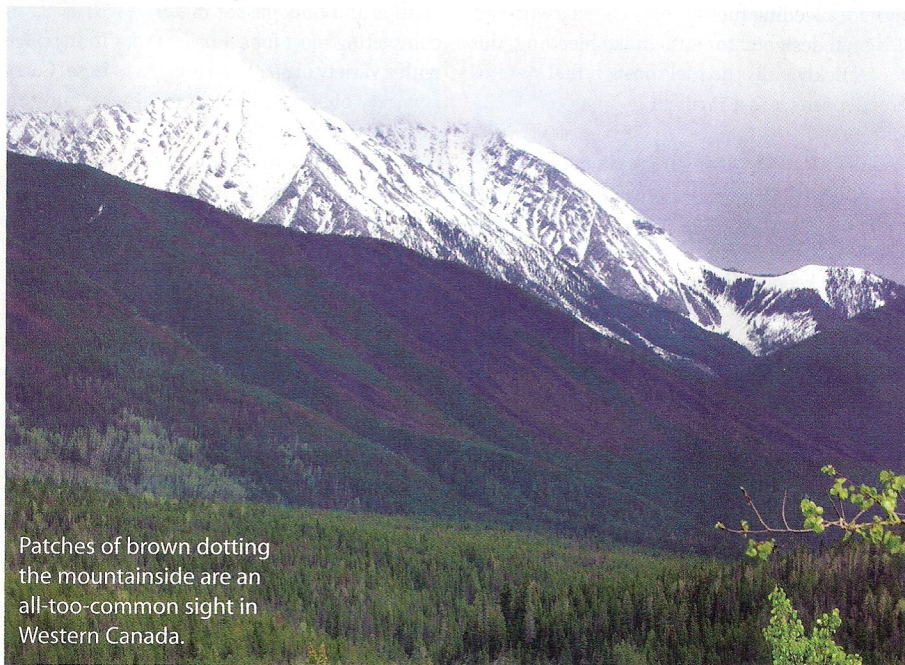
The current epidemic is due in large part to three factors over which rural residents have no control: decades of successful fire suppression that have filled our forests with the aging pines beetles prefer, mild winters that no longer reach the -40°C required to kill off the bugs, and summer droughts that weaken trees, making them susceptible to colonization.

The good news is we aren't powerless in the face of the worst insect infestation our pine forests have ever seen, but if we're going to minimize the impact these beetles have on our trees, we need to detect any infestations when the pine needles are still green. Once they've turned bright red, the tree is already dead and the beetles have flown off in search of other pines to colonize.

The first and most important thing we need to do is inspect our pines for any signs that the beetles may already be present.

Pitch tubes are a dead giveaway. These gobs of yellow or reddish-brown resin look sort of like calcified popcorn, and are produced when a healthy tree ejects attacking beetles out the same hole they bored their way in through. You'll usually find these pitch tubes located within the bottom 6 feet of the trunk and often on the north side of the tree. Their presence is a sign that the tree has successfully defended itself against an attack.

What you don't want to see is a reddish-brown mixture of sawdust and insect droppings known as frass. You'll find this substance in the ridges of bark just below the pine beetles' entry holes or at the base of the tree, and its presence means the beetles have been successful in colonizing the tree. If its needles are still green, the beetles, larvae and/or eggs are likely still present in its phloem layer, which is located just beneath the bark. You can confirm this by cutting into the bark with a hatchet wherever you see any entry holes and peeling it back to reveal the tunnels



Patches of brown dotting the mountainside are an all-too-common sight in Western Canada.

(or "galleries" as they are also known) that have been made by the colonizing beetles.

During your inspection you may also find the exit holes the beetles made when they left your pine in search of a new food source. These exit holes are small (between 2 and 3 millimetres in diameter) and so neat they look as though someone tapped a nail into the bark in numerous locations. Unlike the entry holes, there is no frass or pitch associated with the exit holes.

Believe it or not, one of the signs of a possible mountain pine beetle infestation is the increased presence of woodpeckers. Woodpeckers are a natural predator of pine beetles, and prior to beetle populations reaching epidemic levels, these industrious birds were able to keep them in check. There are now so many beetles the woodpeckers can't keep up, but that doesn't mean they aren't trying. As a consequence, whenever mountain pine beetles move into an area, woodpeckers aren't far behind. Any increase in woodpecker populations or activity is cause for concern.

And let's not forget the blue-stain fungus. It hitches a ride on the bodies and heads of the

pine beetles and colonizes a tree's phloem, turning it blue or grey. You can't see these stains while the pine is still standing, but once you cut it down, the ring of discolouration located just inside the bark will be obvious.

If you find nothing to indicate that mountain pine beetles are currently ravaging your trees, you can concentrate on implementing prevention methods designed to maintain and improve the health of your pines, making them less attractive targets for the beetles. To do this, it helps to know a bit about why these beetles attack certain pines while ignoring others in the same area.

Mountain pine beetles prefer to mass attack pines in excess of 80 years old because they have a thick layer of phloem that the beetles like to tunnel through to create their egg galleries. When these eggs hatch, that thick phloem layer is used as food by the emerging larvae. Unfortunately, the phloem is what transports nutrients throughout the tree and its destruction interrupts the pine's food supply. To make matters worse, the blue-stain fungus interferes with the pine's water supply, causing it to dehydrate.

This combination proves deadly.

Although mountain pine beetles prefer to attack older pines, they will attack younger ones, particularly if they are dehydrated. Since dehydrated pines can't form the pitch tubes necessary to repel attacking beetles, the hot, dry summers that have become commonplace in this region greatly contribute to the chances that pine beetle attacks will be successful in trees of all ages.

In fact, a tree that's been weakened by any cause is more likely to succumb to a pine beetle attack than one that's healthy.

There's not much we can do about the droughts, but we can thin our woodlots to reduce the competition for water, air and nutrients. We can also selectively remove some of the older trees attracting the beetles to our properties. Pruning the remaining trees to remove damaged, diseased or dead limbs will improve their overall health and make them less susceptible to beetle damage.

While we're at it, diversifying the trees in our woodlots isn't a bad idea either. The closer a local ecology is to a monoculture, the more likely it is to be destroyed by a pest—any pest—that targets a specific plant species, so mixing spruce, fir and other trees in with our pines will inevitably build a stronger, more sustainable forest.

There are other prevention methods that can be used to protect our pines from mountain pine beetle attacks, including pheromone repellents or traps, chemical sprays and/or trunk wrapping. However, anyone contemplating these methods would be well advised to contact a professional who can devise a strategy that is both best suited to your property, and evaluates the pros and cons of each method before implementing it.

If when inspecting your property you discover that one (or more) of your pines is infested with mountain pine beetles, you'll need to cut it down as soon as possible. Once felled, you have the option of burning the tree as soon as the weather allows you to do so safely, or alternatively, you can cut the tree into logs and stack them no more than two high before encasing them in a clear plastic tarp and allowing the summer sun to raise temperatures under the plastic high enough to kill the insects. You can also bury the logs and dig them up again in the fall for use as firewood.

Should you choose to either superheat the logs or bury them, they'll need to remain covered until after the traditional flight season for mountain pine beetles—normally June to September—has ended.

And remember, never transport a beetle-infested tree off your property without first milling or debarking it, then burning or burying the bark. 🌲

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