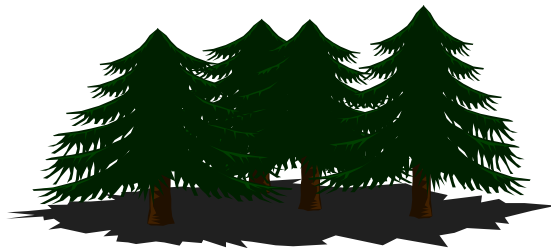

Life Cycle

The life cycle of the Mountain Pine Beetle is comprised of four stages: egg, larva, pupa, and adult. The cycle usually takes one year to complete. In late July or early August adults, which are approximately a quarter inch long with small antennae, fly from the dying trees where they developed to, to living, green trees. Beetle pairs mate and then construct vertical tunnels called egg galleries, which range from 5 to 50 inches long. These are parallel to the grain of the wood in the cambial layer of a tree.

As many as 15,000 adult beetles may infest one tree.

Larvae (white, curved, legless grubs with distinct head and mandibles) hatch and chew feeding galleries at right angles to the parent gallery. They spend the winter under the bark, continuing to feed in the spring and then transform into pupae in June and July. The new adults emerge from the infested tree in late July and early August when the cycle begins anew.

About one year after a tree has been infested, foliage turns yellow to red throughout the entire tree crown. This is evidence that the Mountain Pine Beetle has been successful in killing the host tree.



Rocky Mountain

National Park
Colorado



Mountain Pine Beetle

No doubt you have noticed them as you have traveled in the Rocky Mountains - the clusters of yellow-to red-colored pine trees. They stand out noticeably against the green beauty of their surrounding conifer neighbors.

Beetle Kill

These trees have succumbed to an attack of the Mountain Pine Beetle (*Dendroctonus ponderosa*). This pesky little fellow is native to the forests of western North America and randomly chooses its victims from among lodgepole, ponderosa, Scotch and limber pine trees.

Most susceptible are unhealthy trees weakened by old age, poor growing conditions, lightning or fire damage, overcrowding or compromising of the roots. However, the pine beetle is not totally discriminatory and during epidemic outbreaks will take up residence in healthy trees, which are in close proximity to ones already infested. Thousands of acres can be infested in this manner during a period of drought stress or when tree overcrowding occurs.

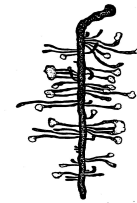
Beetle Effects on Trees

When beetles attack they introduce a blue-staining fungus (*Ceratocystis* species) into the sapwood which blocks transport of water in the tree and aids in killing it.

When attacked, a tree responds with “pitch tubes” on the trunk in an attempt to seal off the beetle. These are popcorn-shaped masses of resin which may be brown, pink, or white in color.

A dry reddish-brown boring dust in bark cracks, crevices and at the base of a tree is further evidence of beetle attack. Larvae can be seen in the inner bark of the tree. ‘J’ shaped egg galleries packed with debris are also in evidence.

From Egg



EGG GALLERY

To Larva



LARVA

To Adult



ADULT

Controls

Woodpeckers and insects can help in the natural control of Mountain Pine Beetles. However, if a major outbreak is underway, these may be of little affect. The best natural control is tree vigor as a healthy tree can “pitch out” pine beetles and defend against their attack. Keeping trees thinned, which in turn promotes vigorous trees, is also a good preventive measure.

Park’s Role

The park’s position in regard to controlling the Mountain Pine Beetle is stated in it’s Resources Management Plan:

“In accordance with the management policies for the National Park Service, park management removed control efforts from most of the park in 1970 and directed . . . efforts to prevent outbreaks of the insect from spreading to forests or trees outside of the park. Any control efforts are presently directed only to developed areas. The policy emphasized that native forest insects and diseases existing under natural conditions are natural elements of the ecosystem. Accordingly, populations of native insects and the incidence of native diseases will be allowed to function unimpeded except when control is required, such as to prevent spread to lands outside the park, or protect aesthetic values in developed recreation areas.”

Infestation Frequency

Outbreaks of Mountain Pine Beetle infestations ebb and flow. Epidemic levels are reached and then subside. Beetles and trees have coexisted for centuries without total forest destruction; there is no reason to expect this to change. Consequently, the visitor may see reddish-colored pine dead or dying trees, but it is all just part of the natural process.