



# Piñon Ips Beetle

Nevada Division of Forestry-Forest Health Program

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## Piñon Ips Beetle-- (*Ips confusus*)

The piñon ips (PIB) belongs to a group of bark beetles called Ips, or engraver, beetles. The PIB is a native insect in Nevada's woodlands and is typically present in low numbers. As with many forest insects often considered as "pests", the PIB plays an important role in the ecosystem. It kills weak and damaged trees, continuing the important process of nutrient cycling. Additionally, a variety of wildlife depend on the beetles as food. However, when the beetle populations increase to epidemic levels, or the insects infest particularly valuable trees in the home landscape, they are a problem.

## Biology

The PIB attacks piñ on pines throughout the trees' range, and may occasionally attack other pine species. The insect occurs in one of four stages: egg, larvae, pupae and adult, and spends most of its life under a tree's bark. Male beetles, dark brown to black and approximately 4mm long initiate attacks in the spring upon emerging from material infested the previous fall. If the attack is successful, the male beetles release a chemical attractant (pheromone) which draws a mass attack of male and female beetles. The males bore through the bark and construct a nuptial chamber in which they mate with multiple females. The female beetles then bore tunnels (egg galleries) away from the nuptial chamber along which they lay eggs singly along both sides.

Unlike most other bark beetles, Ips egg galleries are free of sawdust and are etched into the wood (hence the name 'engraver' beetles). The eggs hatch into small, white larvae which begin feeding on the inner bark, moving out at right angles from the egg gallery. After a few weeks they have completed their growth and the larvae form a pupal chamber at the end of their feeding gallery. Here they transform into pupae, and then into adults. The adults bore out of the tree and fly to new material to begin another generation.

The beetles produce 3 to 4 generations per year. The first generation emerges in the spring, April to May depending on temperatures, and typically infests freshly killed material from the previous winter such as blown down trees and broken branches. The material is still green and provides a ready food source for the first generation, whereas live trees are most vigorous this time of year and are very resistant to attacks. As subsequent PIB generations are produced, piñ ons enter the drier summer months with declining vigor, and are therefore more susceptible to beetle attacks. The beetles carry a

fungus into the attacked host which grows and clogs the tree's water conducting tissues. The combination of larval feeding in the inner bark and the fungus proves fatal to the tree.

## Evidence of Attack

The most visible symptom of a successful beetle attack is a change in the trees crown color. Foliage turns from green to yellow and finally to a reddish-brown color. By the time the tree crown changes color, the beetles have usually left the tree. Carefully inspect green trees nearby for signs of attack.

Inspection of the branches and trunk will often reveal boring dust collected in the bark crevices and at the base of the tree. Pitch tubes (globules of pitch and boring dust) may be present at the entrance holes. The characteristic egg galleries will be visible beneath the bark.

## Control

The best method of controlling PIB problems is prevention. Since beetle attacks on healthy trees are usually unsuccessful, measures to maintain healthy, vigorous trees will go a long way towards controlling PIB problems. Thinning overcrowded stands of trees and pruning out mistletoe infections will maintain tree vigor. Trees with severe mistletoe infections should be removed. Prevent construction-related damage to trees such as soil compaction, root destruction and "barking" the stem and branches. Avoid paving over tree roots and planting vegetation which requires watering under piñons. All these activities will make trees more susceptible to PIB attacks.

Individual trees can be sprayed with an insecticide to protect them during periods of stress during drought, or following injury. The insecticide must be applied to the main trunk and all large branches as high up as possible. March through early April is the best time to spray. Beetles chewing through the tree's bark will eat the poison and die. This will not save trees which are already infested. Contact the Nevada Division of Agriculture for a list of pesticides registered for use against bark beetles on pine. read, understand, and follow instructions on pesticide labels.

Schedule tree cutting activity for the late summer and fall which will allow time for the slash to dry out. Material larger than 4 inches in diameter should be split to promote rapid drying. Cutting slash in short pieces and scattering it in sunny openings will speed its drying. Removing, chipping or burning slash are also effective methods to prevent PIB problems. By eliminating slash, the first generation of beetles in the spring has very little host material to breed in, and beetle populations can be kept low.

Infested material should be removed from the forest before the insects mature. An alternative is to burn or bury the wood, or peel off the bark which exposes the insects to the weather and predators. If the material is desired for firewood, it should be piled in direct sunlight and covered with thick (= 3mil) clear plastic. The edges of the plastic should be buried underground. Avoid tearing the plastic. This will raise temperatures under the plastic and bake the insects under the bark. Keep the pile covered for 2 to 3 months during sunny weather.

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[For more information click here to go to the USFS Link regarding Pinyon Ips](#)

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