

SOUTHERN PINE BEETLE IN KENTUCKY

Introduction

The southern pine beetle (*Dendroctonus frontalis* Zimmermann) (SPB) is the most highly destructive bark beetle found in the southeastern United States. The beetle attacks and kills all species of yellow pine. In Kentucky, the preferred host trees are mature and overmature shortleaf, loblolly, and Virginia pines. In cases of intense outbreaks, the beetle is also known to attack eastern white pine. Trees can be killed singly or in groups, ranging from a few trees to hundreds of acres.

History

Populations of southern pine beetle occur naturally in forests, but usually in low numbers. However, when adverse environmental conditions such as drought or storms create stress in trees, beetle populations can explode. Beetle attacks are cyclical and usually short in duration, lasting two to three years. However, major outbreaks seem to occur every 10 years. The last severe beetle outbreak in Kentucky occurred in 1975 and persisted until 1978. Most recently, beetle attacks intensified in 1999, 2000 and 2001 with epidemic conditions existing throughout south central, southeastern, eastern, and northeastern Kentucky. See figure 1.

**Southern Pine Beetle
2001 Infestation**

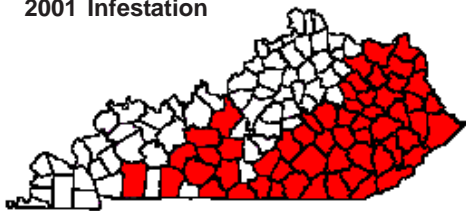


Figure 1

Identification of the Insect

The adult southern pine beetle is short legged, approximately 1/8 inch (3mm) in length, and dark reddish brown to black in color. See

Figure 2



figure 2. The front of the insect's head is notched, and its rear body is rounded. The crescent-shaped larva

is whitish in coloration, with an amber head. See figure 3. Fully developed larva and pupae are the same length as the adults. The eggs are pearly-white and are located in niches along either side of the egg galleries.

Figure 3



Identification of the Injury

Trees that have been attacked by southern pine beetle can be easily identified. Infested trees demonstrate faded foliage, with yellow or red needles. See figure 4.



Other symptoms of beetle attack can be found by examining the bark closely. Adult beetles bore directly through the outer bark into the living cambium. At the point of

attack, the tree exudes resin through the bore hole, forming a pitch tube. These pitch tubes are initially white and resemble kernels of popped corn. See figure 5. Older pitch tubes are reddish-brown in color. If the tree bark is peeled back, distinctive S-shaped egg galleries can be seen. See figure 6. These galleries eventually girdle the tree, blocking the flow of water and nutrients. Adult beetles also carry a fungus, known as blue-stain (*Ceratocystis minor*),

Figure 5



Figure 6



Figure 7



which streaks the sapwood. See figure 7. This fungus clogs the conductive tissues of the tree, causing further damage and eventually death.

Biology

Adult beetles attack the tree in pairs. As they construct their galleries in the inner bark, eggs are laid in individual niches on both sides of the tunnels. The eggs hatch within 4 to 9 days. Upon hatching, the larva mine for a short distance and then bore into the outer bark where they pupate. The developmental life cycle from egg to adult takes place in approximately 30 to 50 days. Three to seven generations per year are possible, depending upon geographic location and season. The beetle overwinters within the bark at all life stages. In the spring, usually when dogwoods are blooming, the adults begin to fly. When females land on a new host tree, they bore through the bark and release a pheromone. The pheromone, or chemical attractant, draws other male and female beetles to attack the tree. Thus, the life cycle is repeated.

Control

When beetle populations are at normal levels, natural enemies, such as weather extremes, disease and insect predators, prevent outbreaks from occurring. Also, the implementation of

sound forest management practices, primarily thinning mature pine stands, keeps beetle populations in check. However, when outbreaks do occur, human intervention is required to rapidly control this pest.

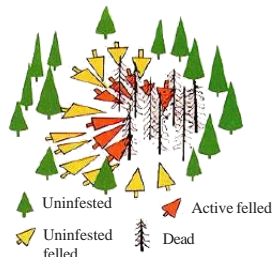


Three methods are highly effective in controlling southern pine beetle: salvage cutting, cut-and-leave, and chemical control. Salvage cutting involves cutting down infested trees, plus a buffer strip of

uninfested green trees on the edges of the spot. See figure 8. This timber can be sold for pulp or sawtimber, although commercial markets for beetle-killed wood may be limited. If the spot is inaccessible, or if there

are no commercial markets, then the best control method may be cut-and-leave. The cut-and-leave procedure involves cutting down infested trees, plus an adequate buffer strip of uninfested trees.

Figure 9



See figure 9. Trees should be felled toward the center of the spot. Finally, chemical control is a method to consider for eliminating the southern pine beetle. However, insecticide application is expensive and labor intensive. The use of chemicals such as Dursban or Lindane can be used in single high-value trees or small groups of trees in the landscape.

Technical Assistance

If a landowner suspects that southern pine beetle is present in his/her pine trees, the Division of Forestry is available to offer technical assistance in identifying infested trees and selecting appropriate control measures. For additional information, please contact the Division of Forestry at 1-800-866-0555.



<http://forestry.ky.gov>

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