ENY-639

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Southern Pine Beetle in Florida[1]

J. L. Foltz[2]

The Southern Pine Beetle, *Dendroctonus frontalis*, is the most aggressive and destructive of 5 bark beetles species infesting pines in the southern United States. In recent years outbreaks in northern Florida have increased in frequency and severity owing to the increasing acreage and maturity of loblolly pine, the beetle's most important host. This document provides a brief overview of SPB biology, behavior, dynamics, and control. It will help citizens across the state to monitor beetle populations in dying pines and, when appropriate, initiate community-wide suppression activities. As demonstrated in the Gainesville area in 1994-1995, quick detection and prompt treatment of all infested trees will substantially reduce the duration and severity of SPB outbreaks. If you suspect SPB activity, contact your local office of the Florida Division of Forestry or the University of Florida Cooperative Extension Service.

Biology and Behavior

The adult SPB is a reddish-brown to black cylindrical beetle about 3 mm long (Figure 1), smaller than a grain of rice. Females initiate the attacks on trees and emit a pheromone that attracts males and additional females. Within a few days thousands of beetles may colonize the tree and overwhelm its defenses. Excess beetles often land on and colonize nearby trees. Females tunnel through the inner bark, periodically constructing a niche and laying an egg. Males follow the females and close the gallery behind them with boring dust. After about a week of egg laying, parent beetles emerge to infest additional trees. Larvae feed on inner bark for about 2 weeks, then pupate in the outer bark. New adults begin emerging just 4 weeks after initial attack, about the same time the tree crown is turning from yellow-green to red. These beetles may fly 1 or 2 miles before attacking a new tree.

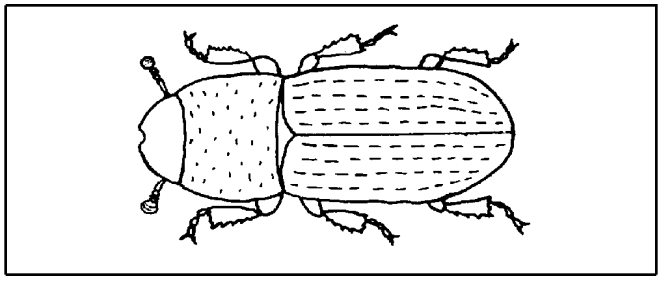

Figure 1. Southern pine beetle

Detection and Identification

SPB infestations usually occur in spots that gradually enlarge with time. Red-crowned pines and

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2. J. L. Foltz, associate professor/forest entomologist, Department of Entomology and Nematology, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

surrounding green trees should be examined for signs of infestation. Popcorn-like pitch tubes, boring dust, and numerous holes through the bark are signs of bark beetle infestation. A southern pine beetle infestation is distinguished by the winding and overlapping galleries (Figure 2) constructed under the bark by females as they lay eggs. The egg galleries of the *Ips* beetles, in contrast, are I-, Y-, or H-shaped with 2 to 4 relatively straight galleries radiating out from the "nuptial chamber" constructed by male beetles. The black turpentine beetle infests around the base of the tree and makes only a short, mostly vertical gallery before laying a large clutch of eggs. All five species often occur on the same infested tree, so a tree should be examined at several heights on the trunk to avoid overlooking an SPB infestation.

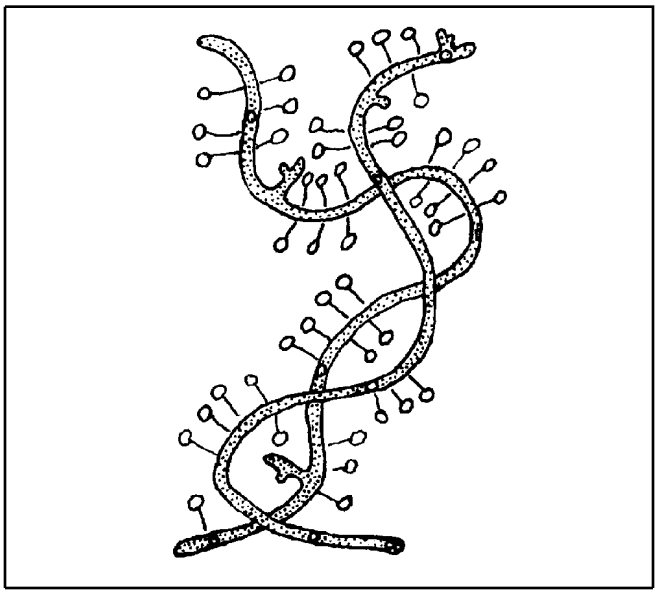

Figure 2. Southern pine beetle galleries.

Identifying Outbreak Conditions

The SPB, like most bark beetles, may be present for many years as an innocuous scavenger of dead and dying pine trees. Occasionally, populations explode to levels where thousands of beetles will infest and kill healthy trees. Criteria for assessing population status include the distance between beetle spots (clusters of beetle-infested trees), spot size, spot growth, and the abundance of the SPB relative to other species of bark beetles. No suppression is required when small, inactive spots are separated by great distances and the SPB accounts for only a small percentage of the bark beetles present. Signs of outbreak conditions include an increasing number of spots, more infested trees per spot, spots continuing to enlarge beyond the initial cluster of infested trees, and the SPB being the dominant species infesting the main stem. During outbreaks, quick detection and rapid treatment of small spots will greatly reduce tree mortality and SPB-caused disruption of management plans.

Control

Because of the dispersal and aggregation abilities of this insect, it is important that all infested trees over a large area be treated during outbreaks. If possible, remove newly infested trees and destroy or treat the infested bark before beetles mature and emerge to attack surrounding trees. Once beetles have emerged from a tree, removal is unnecessary except to protect life and property from falling branches and stems.

Prevention

Infestations often start on stressed and injured trees in older-aged dense stands, so cultural practices that promote healthy trees will reduce the frequency and severity of infestations. During outbreaks, avoid pruning and other activities that produce terpenes and attract dispersing beetles. If nearby trees are infested, homeowners may wish to have a pest control service apply insecticide to their uninfested trees. Currently the only registered insecticide with demonstrated efficacy is Onyx™, a bark-adhering formulation of bifenthrin. The insecticide should be applied on dry bark, to the point of runoff, from at least the base of the crown down to the ground line. If *Ips* beetles are abundant and aggressive, then the upper stem and larger branches should also be treated. When carefully and properly applied, these insecticides dry in a few hours and pose little danger to birds, squirrels, or humans.

More information about pine bark beetles is available on the web at http://entomology.ifas.ufl.edu/foltz/eny3541.