

Southern Pine Beetle



Dendroctonus frontalis



Dense forest affected by southern pine beetle



S-shaped galleries behind the bark



Exit holes



Pheromone trap

The southern pine beetle is a destructive pine pest found from the United States, through Mexico, and into South America. Southern pine beetles attack most species of pines, but in New Jersey the beetle prefers dense, unmanaged stands of pitch pine. These trees, stressed by drought, disease or soil compaction, become vulnerable to southern pine beetle attacks.

Without intervention, southern pine beetle can spread rapidly, affecting thousands of trees. From 1973-77, an outbreak of southern pine beetle in the southern states killed enough trees to build 266,272 two-thousand square-foot homes.

Successive days of extreme temperatures of cold (below 0°) or heat (above 95°) can reduce populations.

When southern pine beetles attack a tree, the tree's needles turn yellow, then red, and within as little as a month, may become brown. Often an outbreak goes undetected until multiple trees are infected and begin to change color.

Beetle monitoring

New Jersey foresters monitor beetle populations in the spring with traps baited with pheromones and pine turpentine. Pheromones are chemicals produced naturally by female beetles to attract males. Turpentine mimics the scent of stressed or wounded trees. Foresters send trap contents to the US Forest Service who identify southern pine beetles and their predator, checkered beetles. The US Forest Service

reports the ratio of southern pine beetle to checkered beetle to New Jersey foresters. With this information, foresters predict the severity of upcoming infestations.

Population Control

In one summer, the population of southern pine beetle can increase tenfold, infesting pine trees up to 50 feet per day.

Often foresters spot dying trees affected by southern pine beetle while conducting an aerial survey. The foresters inspect the site from the ground for telltale signs of southern pine beetle such as pitch tubes, "S" shaped galleries under the bark and exit holes.


To control populations, foresters first cut a 40'-70' buffer strip around the affected area. Then the foresters chip trees or spray them with insecticide.

Outbreak prevention

Often crowded, dense stands of trees become susceptible to southern pine beetle and other insects and diseases. To maintain vigor, foresters perform periodical thinnings, which improve growth and health of the forest.

STOP THE SPREAD

- ◆ Thin pine stands to maintain vigor and minimize mortality
- ◆ Don't transport infested trees
- ◆ Chip infested trees



Pitch tubes where beetles entered tree

Southern Pine Beetle Life Cycle

The beetles can over-winter in any life stage: egg, larval, pupal, or adult, and produce three to seven generations a year. In New Jersey, the northernmost range of southern pine beetle, beetles usually overwinter in the pupal stage and produce around two generations per year.



Blue-stain fungi

A pair of beetles bore galleries into the tree's inner bark for the female to deposit eggs. The eggs hatch into larvae, which feed on the tree's bark. The larvae then become non-feeding pupae, and finally adult beetles. The adults exit the host tree and fly, sometimes several miles, to a new tree.

The "S" shape of the galleries distinguishes this beetle from others. Galleries are created by the larval stage of the insect as it devours the tree's critical inner bark. These galleries girdle the tree while the beetles transmit blue-stain fungi (shown above). The fungi stop water from circulating within the tree. The girdling and fungus may kill the tree within two months after the initial attack.

SPB and NJ Woodland Owners

Landowners enrolled in the NJ Forest Stewardship Program (FSP) or the Farmland Assessment Program (FLA) should contact a Consulting Forester for a southern pine beetle evaluation. If the Consulting Forester determines that southern pine beetle populations may affect the stand, the forester will implement suppression and pre-suppression activities to reduce outbreak severity.

Landowners not enrolled in these programs that have 5 acres or more of woodland should contact the NJ Forest Service or a consulting forester to enroll. The FLA program provides property tax break incentives and the FSP will provide cost-share of up to 75% for the development of the plan. Both of these programs contribute to proper forest management while providing sustainable forest resources.



FOREST RESOURCE EDUCATION CENTER
New Jersey Forest Service
Department of Environmental Protection
www.njforestrycenter.org

References

- Almquist, David T. Southern pine beetle adult. 21 August 2003 <<http://www.forestryimages.org/browse/detail.cfm?imgnum=2516003>>.
- Billings, Ronald F. Southern pine beetle damage. 21 December 2005 <<http://www.forestryimages.org/browse/detail.cfm?imgnum=2108048>>.
- Billings, Ronald F. Southern pine beetle galleries. 21 December 2005 <<http://www.forestryimages.org/browse/detail.cfm?imgnum=2108048>>.
- Billings, Ronald F. Southern pine beetle lifecycle. 12 January 2007 <<http://www.forestryimages.org/browse/detail.cfm?imgnum=2108042>>.
- Billings, Ronald F. Southern pine beetle pheromone trap. 12 January 2007 <<http://www.forestryimages.org/browse/detail.cfm?imgnum=5005008>>.
- New Jersey Forest Service. Forest health evaluation of southern pine beetle infestations in southern New Jersey 2002. 12 November 2002 <<http://www.nj.gov/dep/parksandforests/forest/2002njSPB.pdf>>.
- New Jersey Forest Service. Forest health evaluation of southern pine beetle infestations in southern New Jersey 2003. 5 March 2004 <<http://www.nj.gov/dep/parksandforests/forest/2003njSPB.pdf>>.
- Price, Terry. Southern pine beetle infestation. 04 February 2002. <<http://www.forestryimages.org/browse/detail.cfm?imgnum=2733001>>.
- Thatcher, R.C. and P.J. Barry. 1982. Southern pine beetle. U.S.D.A. Forest Service Forest Insect & Disease Leaflet 49.
- Vallery, Erich G. Southern pine beetle exit holes. 05 September 2007. <<http://www.forestryimages.org/browse/detail.cfm?imgnum=5289050>>.
- Vallery, Erich G. Southern pine beetle damage. 28 March 2001. <<http://www.forestryimages.org/browse/detail.cfm?imgnum=0745063>>.