

# SOUTHERN PINE BEETLE

An Invasive Species Threatening Pine in Canada



Photo: Erich G. Vallery, USDA Forest Service – SRS-4552, Bugwood.org

## What is it?

Southern pine beetle (*Dendroctonus frontalis*) is a tiny (about 2-4 mm) wood boring beetle that attacks and kills pine trees. Beetles will tunnel under the bark and introduce blue stain fungi, disrupting nutrient and water flow.

## Where is it?

Southern pine beetle (SPB) is native to the southeastern United States and Mexico but has been expanding its range northward due to climate change. While SPB can now be found as close as Maine, New Hampshire, and New York, it has not been detected in Canada. Pine forests in Canada are predicted to become more climatically suitable if temperatures continue to warm.

## Trees at risk

All species of pine are susceptible to SPB attack, but host preference can vary depending on geographic location. SPB usually attack weakened, stressed, or dying mature trees but have been known to target healthy pine during outbreaks. Some pine species found in Canada that may be at risk include Scots, red, white, and jack pine. It has also been reported attacking Norway spruce, red spruce, and eastern hemlock.

## Signs and symptoms

- Popcorn-shaped clumps of resin on the bark, known as pitch tubes, that can range in colour from white to red
- S-shaped galleries under the bark from larval feeding
- Foliage that fades to dull green, yellow, then reddish-brown
- Small circular exit holes in the bark left by emerging adults
- Sawdust around exit holes or at the base of the tree



Photo: Erich G. Vallery, USDA Forest Service – SRS-4552, Bugwood.org

## Impacts

- Loss of valuable habitat and resources for wildlife, especially those that rely heavily on pine forests
- Changes in ecological processes, such as nutrient and water cycling
- Increased fire risk during outbreaks from dead trees and reduced canopy cover
- Timber loss and reduced salvage value
- Reduced property values and appeal of residential areas
- Reduced recreational activities like hiking and birdwatching

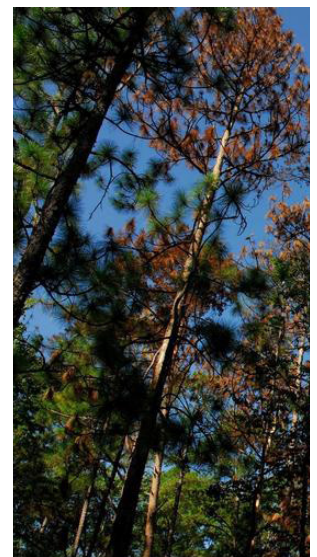


Photo: Erich G. Vallery, USDA Forest Service – SRS-4552, Bugwood.org

## How they Attack



Photo: Southern Forest Insect Work Conference, Bugwood.org

- Adults are active in warmer temperatures, emerging in the spring and present until the fall.
- Adult females will search for a host. Trees weakened by drought or injury are most vulnerable to attack, but southern pine beetle can infest seemingly healthy trees when abundant numbers overwhelm host defenses.
- Females release aggregation pheromones to attract more adults, including males. After mating, females drill into the phloem between the bark crevices.
- As they move through the tree, adult females can introduce blue stain fungi which spreads through the sapwood and disrupts the flow of water from the roots towards the crown.
- Females lay eggs under the bark in the tunnels they create.
- Hatched larvae create s-shaped galleries in the wood as they feed.
- Larvae will pupate into adults, which emerge from trees and fly to a new host.
- SPB infestations weaken trees and make them more susceptible to attacks from other beetles, fungi, etc.
- Tree mortality usually occurs from a combination of initial stress, beetle tunneling, and fungus introduction. Infested trees can die within a few months.

## How they Spread

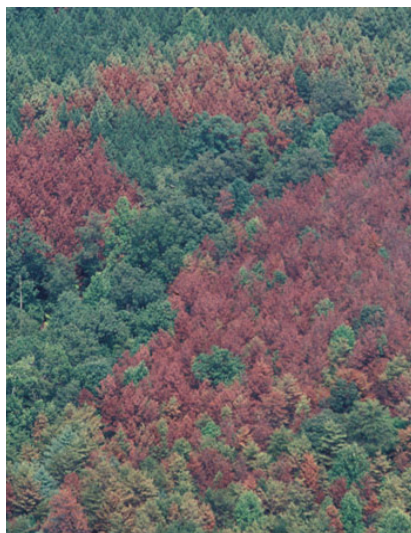


Photo: Andrew J. Boone, South Carolina Forestry Commission, Bugwood.org

- Smaller populations can be difficult to detect under normal conditions.
- Populations can grow rapidly during outbreaks, which occur every year somewhere within their range in the United States.
- Warming in the northeastern climates likely promotes range expansion into new areas previously unoccupied by SPB.
- Adult beetles can fly several kilometers to neighbouring trees, creating widespread groups of dead pine.
- All life stages of SPB can be found in firewood and other infested materials, then transported through human-activity.

If you see signs and symptoms of southern pine beetle, report the sightings to:

- The Canadian Food Inspection Agency (CFIA)  
[www.inspection.gc.ca](http://www.inspection.gc.ca)
- EDDMapS  
[www.eddmaps.org](http://www.eddmaps.org)

For more information on southern pine beetle, visit:

- Invasive Species Centre:  
[www.invasivespeciescentre.ca/invasive-species/meet-the-species](http://www.invasivespeciescentre.ca/invasive-species/meet-the-species)

