

# Beetles

**Some beetles are destructive pests, especially in their larval stages when they destroy the cambial layer in trees. On the other hand, some beetles are beneficial.**

- Japanese beetle
- Southern pine beetle
- Caterpillar hunter beetle
- Asian longhorned beetle
- Checkered beetle
- Ips engraver beetle
- Smaller European elm bark beetle
- Mountain pine beetle
- Locust leafminer



# Japanese beetles



The range of Japanese beetles is Maine to Georgia, and west to Nebraska! Adults feed on over 275 plant species including shade and fruit trees, ornamental shrubs, small fruits, vegetables, grasses, weeds, and some row crops. Damaged leaves may be skeletonized or they may be almost entirely defoliated.

Larvae are called “grubs,” and they are root feeders. The adult Japanese beetle is about 0.4” long.

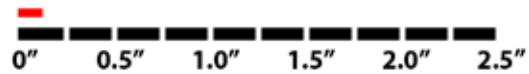


*John A. Weidhass, Virginia Polytechnic Institute and State University, Bugwood.org.*



*David Cappaert, Michigan State, University, Bugwood.org.*

# Southern pine beetles



Southern pine beetles are one of the most destructive pine pests in the southern U.S.

The adult is short-legged, about 1/8" long, and dark reddish brown to black in color. The front of its head is notched, and the hind end of its body is rounded.

The adults bore directly through the outer bark into the living bark, constructing S-shaped or winding galleries for eggs that eventually girdle the tree. At each point of attack, the tree usually exudes resin which forms a small pitch tube about the size of a small piece of popped popcorn. The first sign of tree mortality is foliage discoloration.



David T. Almquist, University of Florida, Bugwood.org.



Ronald F. Billings, Texas Forest Service, Bugwood.org.

## Southern pine beetles, continued



Ronald F. Billings, Texas Forest Service,  
Bugwood.org.

## Galleries

Ronald F. Billings, Texas Forest Service,  
Bugwood.org.



# Caterpillar hunter beetle



The Caterpillar hunter beetle is a common ground beetle (a “searcher”).

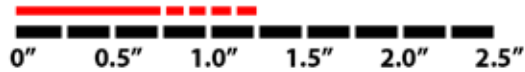
Imported from Europe as a natural predator of gypsy moth in 1906, it is now established throughout the northeast and in many of the mid-Atlantic states. The beetle has a bright metallic green color.

Caterpillar hunter beetles grow to lengths of 1¼". Searchers and their larvae are common in forested areas, and will eat almost any animal small enough to catch, including caterpillars, other insects, and earthworms. Larvae are about the same length as the adults.



*B.M. Drees, Texas A&M University.*

# Asian longhorned beetle



Asian longhorned beetles (ALB) are cambium-girdling insects. Larvae burrow within a tree to feed and eventually kill the cambial layer by girdling. Mature insects are black with white spots ( $\frac{3}{4}$ " to  $1\frac{1}{4}$ " long). The antennae have black and white segments, and the feet have a bluish tinge. Insects emerge late May through October, peaking in July. Maples are preferred species.

Infestations can be detected by looking for ROUND exit holes  $\frac{3}{8}$ " to  $\frac{3}{4}$ " in diameter, often in the larger branches of infested trees. Sawdust (frass) is one sign to look for, as are scuffed-out patches in the bark used as oviposition (egg-laying) niches.

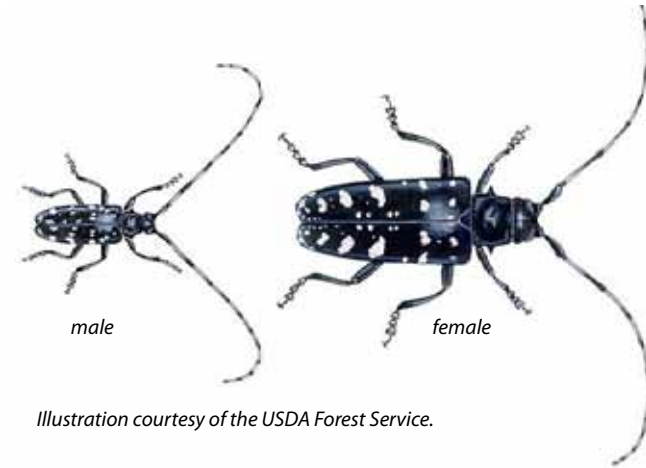


Illustration courtesy of the USDA Forest Service.



Photos courtesy of Dennis Haugen, USDA Forest Service.

## Asian longhorned beetle, continued



*Kenneth R. Law, USDA APHIS PPQ, Bugwood.org.*



***Notice the sawdust in the crotch of this tree.***

*Robert A. Haack, USDA Forest Service, Bugwood.org.*

# Checkered beetle



Checkered beetles are one of the most important insect predators. They attack forest insect pests such as bark beetles.

Adults are active, antlike, brightly colored, hairy beetles that prey on adult beetles. The adult is 0.3" to 0.4" long with the head, thorax, and base of the wing covers being a dull red. The antennae and legs are red to black, and the wing covers are mostly black with crossbands of whitish hairs.

Larvae live in the galleries and tunnels of bark beetles and woodborers and destroy the immature stages of these insects.



*USDA Forest Service Archive, USDA Forest Service, Bugwood.org.*



# Ips engraver beetle



This insect kills more pine trees in the south than any insect besides the Southern pine beetle.

It attacks injured and recently-felled trees. Ips engraver beetles are red-brown to almost black, about  $\frac{1}{10}$ " to  $\frac{1}{4}$ " long. The rear end of the insect is sunken or "scooped out", with 4 to 6 spines along each side of the sunken area. Egg galleries are roughly H-, I-, or Y-shaped and radiate outward from a central area called a "nuptial chamber" that male beetles construct to attract female beetles for mating.



*David T. Almquist, University of Florida, Bugwood.org.*

## Ips engraver beetle, continued



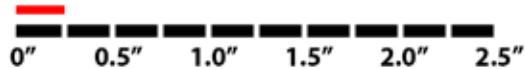
***The photo above shows the central nuptial chamber and the egg galleries radiating from it.***

*Ronald F. Billings, Texas Forest Service, Bugwood.org.*



*J.R. Baker & S.B. Bambara, North Carolina State University, Bugwood.org.*

## Smaller European elm bark beetle



This beetle is the prime vector of the Dutch elm disease fungus.

Adults are reddish-brown beetles about  $\frac{1}{4}$ " long. The underside of the posterior is concave and has a prominent projection or spine on the undersurface of the abdomen.

Adults excavate a 1" to 2" straight egg gallery parallel with the wood grain. Larval mines are roughly perpendicular to the egg gallery, resulting in a design resembling a long-legged centipede on the inner bark and wood surface. New adults emerge by boring directly through the bark, leaving it peppered with tiny "shot holes."



*J.R. Baker & S.B. Bambara, North Carolina State University, Bugwood.org.*

## Smaller European elm bark beetle, continued



*Maja Jurc, University of Ljubljana, Bugwood.org.*

**Vertical galleries  
(parallel to the grain).**

*J.R. Baker & S.B. Bambara, North Carolina State University, Bugwood.org.*



## Mountain pine beetle



This beetle is native to North America where it is found from the Pacific Coast east into the Rocky Mountains. It's about  $\frac{1}{8}$ "– $\frac{1}{3}$ " long, roughly the length of a grain of rice.

All life stages of the beetle are spent under the bark of trees with the exception of a few days during the summer when adult beetles fly to new trees.

Under the bark, female beetles construct straight, vertical egg galleries in phloem (inner bark) averaging 10 inches in length. They lay small white eggs along the sides of the galleries in summer and early fall. Eggs hatch into white, legless larvae that feed on the phloem and construct galleries at right angles to the egg gallery. About 10 months later, larvae mature and chew oval cells in the bark in which they pupate. Within several days of emerging, beetles begin to attack other trees.



## Mountain pine beetle, continued



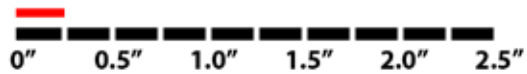
USDA Forest Service—Rocky Mountain Region Archive, USDA Forest Service, forestryimages.org.



### **Vertical galleries.**

USDA Forest Service—Ogden Archive, USDA Forest Service, Bugwood.org.

# Locust leafminer



The major hosts for this insect are black locust and honeylocust trees.

The adult is a small, elongated, flattish beetle, about ¼" in length. The head is black, and the thorax and most of the wing covers are orange. Full-grown larvae are yellowish, flat, and slightly larger than adults.



Bruce W. Kauffman, Tennessee Department of Agriculture, Bugwood.org.

Adults skeletonize and eat holes in the leaves, whereas larvae selectively eat layers between the leaf surfaces ("mining"). The larvae mine the leaves in finger-like ("digitate") patterns that often begin in the center of the leaflet — this is more destructive overall than just eating holes through the leaves. Eggs are deposited on the undersides of locust leaflets. They overlap like shingles in groups of three to five and are cemented together.

Note the digitate leaf mining pattern in the center leaf in the photo below.



Chris Evans, River to River CWMA, Bugwood.org.