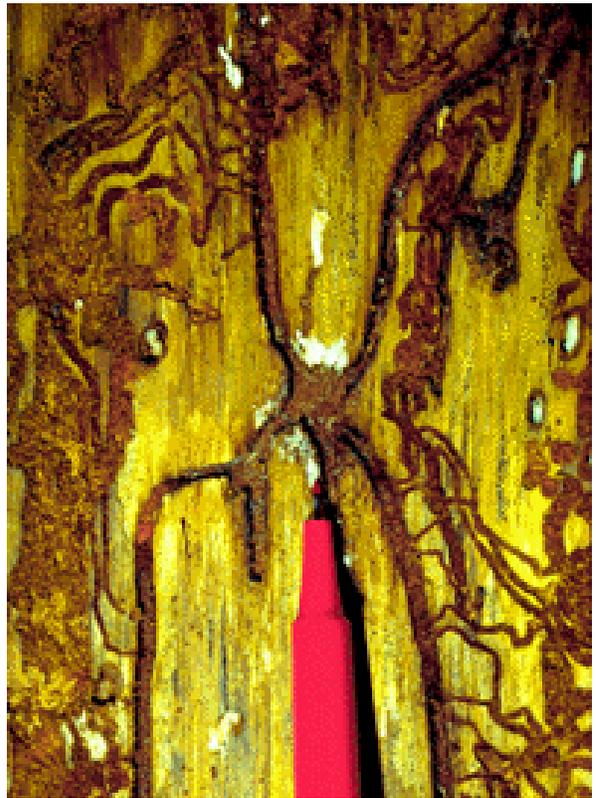


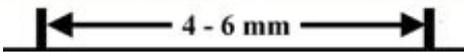
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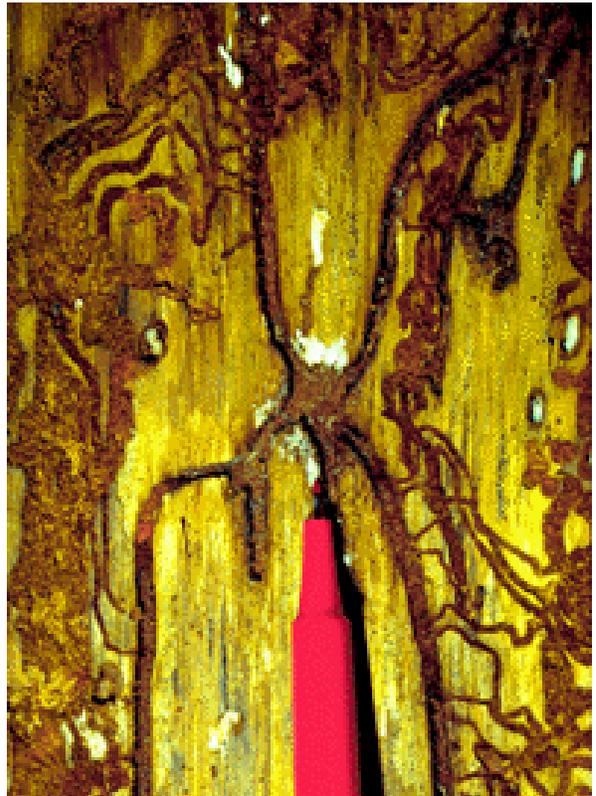
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## Ips engraver beetles

***Ips avulsus* (Eichhoff), *Ips grandicollis* (Eichhoff),  
and *Ips calligraphus* (Germar)**

Ips engraver beetles kill more pine timber in the South than any other forest insect, with the exception of the southern pine beetle. Ips beetles usually attack injured, dying, or recently felled trees and fresh logging debris. Infestations are particularly common in trees weakened by drought or lightning strikes.

Adult beetles are dark red-brown to almost black and 1/8 inch to 1/5 inch (3 to 5 mm) long. They are distinguished from other bark beetles by their scooped-out posterior with 4 to 6 spines on each side. Larvae have white bodies with orange-brown heads and are legless. Pupae are waxy-white and similar to adults in size.

The first signs of attack are reddish-brown boring dust in bark crevices or reddish-brown pitch tubes about the size of a dime on bark surfaces. If the bark is removed, there are Y- or H-shaped egg galleries with short larval galleries extending perpendicular to them. Egg galleries will usually be free of boring dust. The foliage of Ips-killed pines will eventually turn yellow, and then red about the time the beetles complete development under the bark. Often only the top portion of the crown is killed, leaving lower branches green. Blue-stain fungi, introduced when the beetles attack the tree, is visible in the sapwood and hasten the death of the trees.

The female constructs an egg gallery and lays her eggs beneath the bark of attacked trees. The larvae make individual feeding galleries in the inner bark and pupate at the end of their galleries. New adults emerge after 21 to 40 days during the summer or after several months during the winter.

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