Elm Leaf Beetles

O & T Guide [O-#05]

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Elm leaf beetles chew holes in elm foliage and skeletonize the leaves as larvae. While making their host trees unsightly, stressed and susceptible to other elm pests, adult elm leaf beetles also can be objectionable household pests in the winter.

Scientifically: Elm leaf beetles belong to the insect order Coleoptera, family Chrysomelidae.

Metamorphosis: Complete
Mouth Parts: Chewing (larvae, adults)
Pest Stages: Adults, larvae.

Typical Life Cycle: Eggs are laid in small irregular clusters or lines along the midribs of leaves on the lower parts of the tree by early summer→ Larvae hatch after 10-14 days and begin skeletonizing host foliage. These molt three times before maturing and crawling down the tree trunk to find a place to pupate.→Pupae can be found in the uppermost layer of loose soil and plant debris surrounding the host tree; occasionally these will lodge in bark crevices especially in crotches of limbs. → Adults emerge in 10-15 days, disperse, mate and begin a new generation. Adults produced in late fall may feed briefly on foliage but soon change physiologically, usually leaving the host tree and entering buildings or other winter shelters. They turn dark olive green, becoming more sluggish and failing to reproduce (called "reproductive diapause"). Overwintering adults emerge in spring and return to their elm hosts now with new foliage. They resume feeding and get more active, gradually turning from olive green to yellowish tan with black stripes and dots.

The adult elm leaf beetle is about ¼ inch long with yellowish-tan and black striped wing covers. Photo: Clemson University – USDA Cooperative Extension Slide Series, , www.forestryimages.org

Females may produce 600-800 eggs each in their lifetimes, laying them in clusters or lines of up to 25 eggs. One to at least three generations occur annually in New Mexico. Tree damage is cumulative over the growing season; large pest populations

Overwintering elm leaf beetles are quiescent, non-reproductive and typically dark gray-green to almost black in color. Photo: Whitney Cranshaw, Colorado State University, www.forestryimages.org

may damage foliage faster than the tree can replace it, depleting stored food reserves within the tree.

Description of Life Stages:

Egg: tiny, pale yellow and lemon-shaped. Female beetles lay them on the undersides of host leaves in loose clutches or lines of up to 25 irregularly placed eggs.

Larvae: Larvae are slow-moving, black and alligator shaped. The body is obviously segmented with three pairs of short legs visible**.** Mature larvae are about 3/8 inch long, mostly black with yellow stripes, and are found on host foliage.

Pupa: Golden pupae about 1/4 inch long. The actual pupa resembles a quiescent "mummy" of the adult beetle, rounded on the back and fairly flat on the underside.

Adult: A ¼ inch long, yellowish tan, somewhat flattened beetle with their wing covers edged in black. Most have two tiny black dots on the bases of the wing covers and up to three tiny black dots between the head and wing covers. The threadlike antennae are about ¼ of the body length.

Overwintering adults are the same size as above but are dark olive green and sluggish.

Habitat and Hosts: The elm leaf beetle occurs throughout the United States. All species and varieties of elm are attacked by this pest. In some years damage can be so severe that affected trees are brown by mid-summer. Although overwintering adults are lethargic and do not feed on anything, homeowners find them objectionable because of their musty odor and sheer numbers.

Damage: Adults chew small holes in the leaves. Larvae feed on the undersides of leaves, leaving behind only a skeleton of dried vascular tissue. Damaged leaves turn brown by mid-summer and often drop off the tree early. With severe infestations, a tree may not be able to grow new foliage faster than the beetles damage it. Severely stressed trees may show twig and limb die back, becoming susceptible to other elm pests such as banded elm bark beetle. In extreme cases, the entire tree can die.

IPM Notes: Treatment of infested trees with contact insecticides should be timed to kill young first-generation larvae; repeat treatments may be required for subsequent generations. Bacterial insecticides (*Bacillus thuringiensis tenebrionis* or the 'San Diego' strain of Bt) formulations may be an effective spray treatment for young pest larvae. In recent years, certain systemic insecticide treatments have been valuable in some areas with large beetle populations. Soil-applied formulations of these systemic insecticides apparently last longer than foliar applications of the same active ingredient. Injectable systemic insecticide treatments also have been used with some success on this pest. In recent years, a minute wasp parasitic on elm leaf

beetle eggs was released in south central New Mexico. Observations continue on its overwintering success and dispersal.

In extreme cases, removal of elm trees may be less expensive and provide more relief from these pests than treatments.

Elm leaf beetle larvae skeletonize the foliage of their hosts, often causing the leaves to turn brown by late summer. Photo: James Solomon, USDA Forest Service, www.forestryimages.org

Egg mass of an elm leaf beetle. Photo: John A. Weidhass, Virginia Polytechnic Institute and State University, www.forestryimages.org

Larva of an elm leaf beetle. Larvae typically skeletonize the foliage of their host. At maturity they are about 3/8 inch long. Photo: Clemson University - USDA Cooperative Extension Slide Series, , www.forestryimages.org

At maturity, elm leaf beetle larvae crawl down the trunk of their host or drop from the foliage where they form golden yellow pupae in the soil litter. Photo: James Solomon, USDA Forest Service, www.forestryimages.org