

Forest Pest Bulletin



DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES DIVISION OF RESOURCE CONSERVATION & FORESTRY

BULLETIN NUMBER 6

Revised: March 2018

ELM LEAF BEETLE

CAUSAL AGENT

Xanthogaleruca luteola

HOSTS

All species of Elm (*Ulmus* spp.) are attacked, Siberian elm (*Ulmus pumila*) is preferred as well as hybrid Elms such as Sapporo Autumn Gold (*Ulmus* 'Sapporo Autumn Gold') and Regal elm (*Ulmus Regal*) that have Siberian elm in their parentage.

SYMPTOMS

Emerging adult beetles chew rough holes on unfolding spring leaves. The larvae feed on the underside of the leaves from mid-May through early summer usually feeding between the leaf veins, a symptom referred to as skeletonizing. Severely damaged leaves will eventually turn brown and curl up. The Elm leaf beetle does not carry Dutch elm disease.

The leaf injury is sometimes confused with that made by the Elm calligrapha (*Calligrapha scalaris*), a defoliator of Siberian elms in the southern half of our state.

LIFE CYCLE

This introduced beetle is very widely distributed having entered the country from southern Europe in the 1800s. Populations of this insect have been largely displaced by the European flea weevil that also defoliates elms. The elm leaf beetle follows a complete metamorphosis with four life stages; egg, larvae, pupa, and adult. The larvae and adult stages are the feeding life stages.

An adult elm leaf beetle is about ¼ inch long, yellow to olive green with black stripes along the outer edges of the wing covers (Fig. 1). Adult beetles overwinter in dry, sheltered areas, under thick bark crevices or in homes, buildings, and other protected outdoor places. The elm leaf beetle does not feed or reproduce in homes but often become a nuisance



Figure 1. Adult Elm Beetle.
Whitney Cranshaw, Colorado State
University, www.forestryimages.org

as the adults become active in the spring and move through the home, crowding on windows. The adult beetles leave their winter shelter about the time elm leaves are expanding and move onto the young leaves to feed and lay eggs.

The female begins laying eggs on the undersides of the leaves in late May. The yellowish-orange, lemon shaped eggs are laid in clusters or irregular rows of 5 to 25 eggs. The eggs turn almost a purple-black in about a week, just before they hatch.

The newly hatched larvae begin feeding on the underside of the young, tender leaves. They are black when first hatched and gradually become green to a dull yellow color with a pair of lateral black stripes down the back as they mature, eventually becoming $\frac{1}{2}$ inch long (Fig. 2). After a feeding period of two to four weeks the larvae crawl down the trunk and pupate openly on the ground, in cracks in the bark, or in crotches of larger limbs.



Figure 2. Larvae of the elm leaf beetle. Clemson University - USDA Cooperative Extension Slide Series, www.forestryimages.org

New adult beetles emerge in a week or two and return to the tree or an overwintering site. Two life cycles or generations can occur in most of the state, particularly during years with warm summers. The cooler summers of the northeastern part of the state can limit the beetle to one generation. The spring generations of larvae are more serious since the loss of young leaves is most damaging to the tree's health. If a second generation occurs, the injury is primarily aesthetic. Adults begin to move to overwintering sites in September.

MANAGEMENT

Excluding adult beetles from the home is difficult due to their small size but can be attempted by sealing all openings. Beetles inside the house can be easily dispatched using a vacuum cleaner.

Most healthy trees can withstand 20 to 30 percent defoliation so treatment is not always necessary to save the tree. If heavier defoliation occurred the previous year or the tree is already stressed by drought or other agents, treatment may be warranted. Treat heavy infestations with products labeled for Elm leaf beetle that contain the active ingredients Acephate (note: some formulations may cause foliar injury to American elm), Azadirachtin (Neem), Carbaryl, or Permethrin when the leaves are fully expanded, and eggs are laid, about three weeks after the buds open. This should take care of the first generation which causes most of the damage. A second spray may be needed in July for second generation larvae. Inspect the undersides of leaves for small, black larvae and spray only if found in large numbers.

Imidacloprid as a soil drench will provide season long control but must be applied at least 60 days before feeding begins. This usually requires applying the treatment in the autumn for control the following summer.

Banding the tree by placing a strip or ribbon of tangle foot or other sticky material around the tree at about chest height is sometimes used as a non-chemical control but

is not very effective. While it will kill the first-generation larvae as they migrate down the trunk to pupa, it does not prevent the first overwintering adults from flying to the tree and laying eggs.

Due to numerous pesticide labels and/or label changes, be sure the product label includes the intended use prior to purchase or use. Please read and follow all pesticide label instructions and wear the protective equipment required. Spraying pesticides overhead increases the risk of exposure to the applicator and increases the likelihood of drift to non-target areas. Consider the use of a commercial applicator when spraying large trees due to the added risk of exposure and equipment needs. The mention of a specific product name does not constitute endorsement of that product by the South Dakota Department of Agriculture and Natural Resources.

For further information contact your nearest South Dakota Division of Resource Conservation and Forestry office. Hot Springs 605-745-5820; Lead 605-584-2300; Mitchell 605-995-8189; Pierre 605-773-3623; Rapid City 605-394-2395; Sioux Falls 605-362-2830; Watertown 605-882-5367.

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