



Elm Borer

Saperda tridentata

Order Coleoptera, Family Cerambycidae;
longhorned beetles, roundheaded borers
Native pest

Host plants: American elm, slippery elm, other elm
(*Ulmus*) species

Description: This is a pest of stressed or dying trees. Adult male beetles have antennae almost as long as the body, while females have shorter antennae. Adults are 9-17 mm long, with dense gray pubescence and three orangish oblique crossbars on the elytra and narrow stripes on the pronotum and elytra. They also have two black spots on each side of the pronotum and on the base of the elytra.

Life history: Adults emerge from early May into summer. Adults feed on leaves and petioles and lay eggs in cracks in stressed trees. Females live for one month laying single eggs in bark cracks at night. There is usually one generation per year, but recently killed trees may harbor larvae that take longer to complete development.

Overwintering: Pupal cells in the sapwood.

Damage symptoms: Adult feeding can cause leaf damage and flagging at the petioles. Larvae tunnel under bark, feeding on cambium and phloem. Numerous larvae can weaken and kill stressed and dying trees. Beetles vector *Ophiostoma (Ceratocystis) ulmi*, the causal agent of Dutch elm disease. If borers are contaminated with *O. ulmi*, they transmit the disease to healthy trees. The foliage of diseased branches wilts, turns yellow, then brown, and finally dies.

Monitoring: Monitor for adult beetles from May to August. Look for thin, dying foliage, or flagging and yellowing branches in crown terminals. Also look for frass extruding from tiny openings in the bark; the bark may peel off easily.

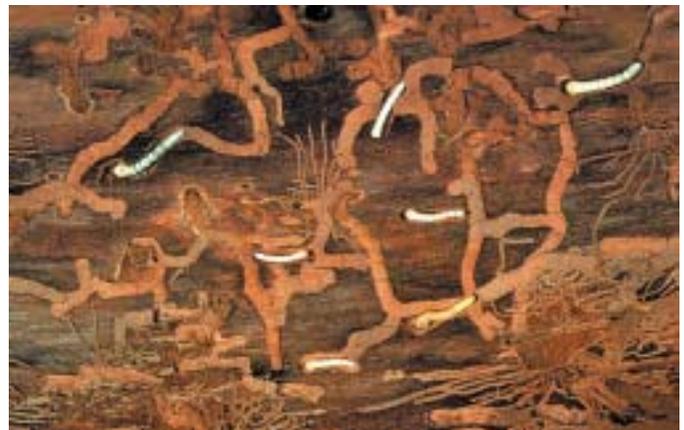
Monitor American elms for wilt symptoms throughout the summer, but particularly in April and May. Remove any suspicious branches and send them to a diagnostic laboratory for analysis. Carefully watch the tree for any signs of further wilting. If wilt occurs in more than 25% of the tree crown, it cannot be saved. Look in May for flagging and yellowing in crown terminals.

Physical control: For valuable trees, young larvae can be removed mechanically. Heavily infested trees should be removed and destroyed to reduce the borer populations.

Cultural control: Follow practices that increase tree vigor, such as mulching, fertilization, and watering. Pruning outside the dormant season should be avoided.



Emergence hole and damage caused by elm borer. (88)
Photo: James Solomon, USDA Forest Service, The Bugwood Network University of Georgia



Galleries produced by elm borer larvae. (89)
Photo: James Solomon, USDA Forest Service, The Bugwood Network University of Georgia



Elm borer adult. (89)
Photo: John Davidson



Elm borer (continued)

Chemical control: Spray trunks of trees with an insecticide with long residual activity. Spray foliage to kill feeding adults.

Certain systemic fungicides are labeled for preventive and therapeutic control of Dutch elm disease. These chemicals are injected into root flares and are translocated throughout the tree. Tree injection should only be attempted by trained personnel. Do not attempt injections unless you have been trained to do so! Therapeutic injection is risky. It is only effective on trees showing less than 5–10% crown symptoms and not at all effective on trees infected through root grafts. Even under these conditions, there is no guarantee that the treatment will be effective. Injection should be used in conjunction with eradicator pruning. Consult a trained arborist before proceeding with therapeutic injections. Also, injection of specimen trees should be considered for treatment. Fungicides currently labeled for preventive injection specify that the fungicide activity in the tree will last for approximately three years. Trees must then be re-injected. Injection is not a substitute for sanitation. Do not expect to save your elms by injection alone.

Biological control: Six species of parasitic wasps help to reduce infestation, but do not prevent economic damage. These species are *Atanycolus simplex* and *A. ulmicola*, *Cenocoelius saperdae*, *Heterospilus* sp., *Spathius benefactor*, and *Xorides albopictus*.

Plant mortality risk: High

Biorational pesticides: None

Conventional pesticides: chlorpyrifos (nursery only), imidacloprid, permethrin, bidrin. Use of a fungicide-injection program is most beneficial to protect valuable specimen trees. Use copper sulfate pentahydrate (Phyton 27), debacarb (Fungisol), propiconazole (Alamo), thia-bendazole (Arbotech).



Elm borer adult. (89)
Photo: John Davidson