

29. Cottonwood Borers

Forrest L. Oliveria and James D. Solomon

Hosts

Eastern cottonwood is the major host of the cottonwood borer (*Plectrodera scalator*) and the clearwing borer (*Paranthrene dollii*). Poplars and willows are also affected by these insects.

Distribution

The distribution corresponds closely with the eastern cottonwood range in the Eastern United States. The range of both borers extends westward into the Plains States; *P. scalator* is reported as far west as New Mexico and Montana. The largest populations occur in the Southern and Central States.

Damage

P. scalator larvae hollow, partially sever, or girdle seedling roots, causing structural weakening, loss of vigor, and mortality. Feeding by adult beetles of *P. scalator* often causes terminal death, followed by excessive branching, forking, and crooked stems. Stools for vegetative cutting production heavily infested with *P. dollii* do not produce vigorous shoots for vegetative cuttings. Some breakage occurs at tunneled sites.

Diagnosis

Initially, *P. scalator* infestations may go unnoticed because attacks occur at or below the groundline, and the larvae tunnel downward in the roots. As the infestation increases, look for plant weakening, mortality, and breakage near the groundline. Plants suspected of being infested should be lifted and have their roots examined. Infested roots are usually



Figure 29.1—Galls on roots of cottonwood seedlings infested with *Plectrodera scalator*. Photo by James D. Solomon, USDA Forest Service.

swollen and galled (fig. 29.1). They have breaks and openings in the bark, and frass often protrudes from gallery openings. In contrast, uninfested roots are comparatively smooth and uniform in shape.

Infested root dissection reveals galleries with one or more large, white, legless, longicorn-type larvae (fig. 29.2). Light brown, fibrous (usually excelsior-like) frass (fig. 29.3) is occasionally ejected from bark openings at the groundline.

From June through August, the large, black and white longhorn beetles (fig. 29.4) can be seen feeding on bark and terminals.

Attacks by *P. dollii* occur on the aboveground stem and are concentrated around the basal portion of the plant. Initial attacks are characterized by sap ooze and frass ejected from entrance holes. Attack sites often appear cankered and have enlarged entrances (fig. 29.5).



Figure 29.2—Larva of *Plectrodera scalator* in root of cottonwood seedling. Photo by James D. Solomon, USDA Forest Service, at <http://www.bugwood.org>.



Figure 29.3—Fibrous frass produced by larva of *Plectrodera scalator* at base of cottonwood seedling. Photo by James D. Solomon, USDA Forest Service, at <http://www.bugwood.org>.

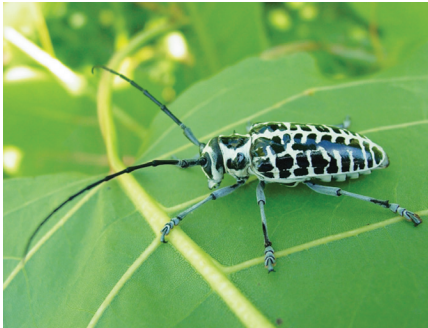


Figure 29.4—Adult of *Plectrodera scalator*. Photo by Charles T. Bryson, USDA Agricultural Research Service, at <http://www.bugwood.org>.

Infested stem dissection reveals galleries with one or more white to pinkish, caterpillar-like larvae with brown heads and thoracic shields (fig. 29.6). Granular frass piles (fig. 29.7), which are different in texture from the fibrous frass of *P. scalator*, often accumulate on the ground at the base of infested plants. Infested stems are commonly drilled by woodpeckers feeding on the larvae during winter.

P. dollii adults are dark, rusty red, clearwing moths (fig. 29.8) that closely mimic wasps.



Figure 29.5—Entrance holes in stem of cottonwood seedling, caused by larvae of *Paranthrene dollii*. Photo by James D. Solomon, USDA Forest Service, at <http://www.bugwood.org>.

Biology

Both borer species overwinter as larvae—*P. scalator* in roots and *P. dollii* in stools, trunks, and branches. *P. scalator* adults emerge mainly during June and July, cut niches in the bark, and lay eggs singly at or just below the groundline. Young larvae tunnel downward into the roots and produce galleries up to 25 mm (1.0 in) wide and 23 mm (0.9 in) long. The life cycle of *P. scalator* requires 1 to 2 years.

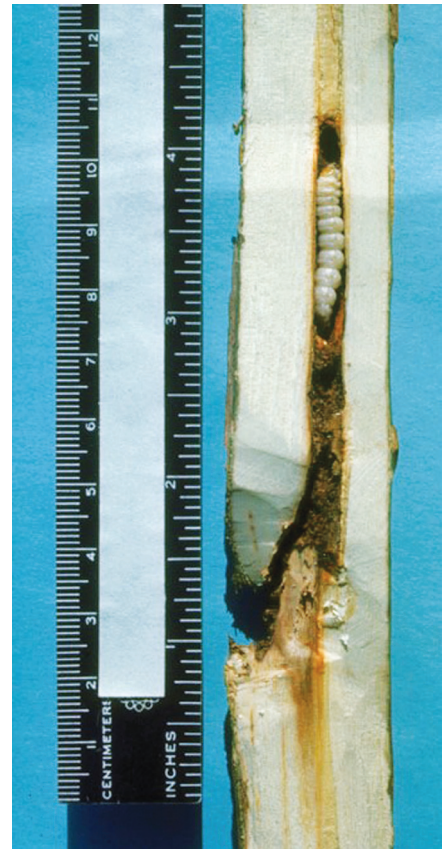


Figure 29.6—Larva of *Paranthrene dollii* in stem of cottonwood seedling. Photo by James D. Solomon, USDA Forest Service, at <http://www.bugwood.org>.



Figure 29.7—Granular frass of *Paranthrene dollii* at base of cottonwood seedling. Photo by James D. Solomon, USDA Forest Service.



Figure 29.8—Adult of *Paranthrene dollii*. Photo by James D. Solomon, USDA Forest Service, at <http://www.bugwood.org>.

P. dollii has one generation per year. In the South, broods overlap, giving rise to moth emergence from April to November; in the North, moths emerge mostly during May and June.

Control

Prevention

Locate the nursery site 0.5 miles or more away from naturally occurring or planted poplars or willows to minimize insect invasion. Establish the nursery with uninfested cuttings or seedlings.

Cultural

Collect and promptly burn all branch, terminal, and basal trimmings and culled cuttings resulting from vegetative cutting operations to destroy hibernating insects.

Infested stools serve as the principal reinfestation reservoir for both *P. scalarator* (in roots) and *P. dollii* (root collar). Therefore, dig and burn all sprout stools at 3-year intervals and replant with borer-free cuttings.

Chemical

The first application should be made 4 to 6 days after the first adults appear (about June 1 in Mississippi).

Selected References

- Morris, R.C.; Filer, Jr., T.H.; Solomon, J.D. 1975. Insects and diseases of cottonwood. GTR-SO-8. New Orleans, LA: USDA Forest Service, Southern Forest Experiment Station. 37 p.
- Solomon, J.D. 1980. Cottonwood borer (*Plectrodera scalarator*)—a guide to its biology, damage, and control. RP-SO-157. New Orleans, LA: USDA Forest Service, Southern Forest Experiment Station. 10 p.
- Solomon, J.D. 1989. Cottonwood borer. In: Cordell, C.E.; Anderson, R.L.; Hoffard, W.H.; Landis, T.D.; Smith, Jr., R.S.; Toko, H.V., tech. coords. Forest nursery pests. Agriculture Handbook 680. Washington, DC: USDA Forest Service: 106–108.