37. Cottonwood Borers

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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 range of eastern cottonwood 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

Larvae of *P. scalator* hollow, partially sever, or girdle the 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, infestations of *P. scalator* 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 swollen and galled (fig. 37-1).

Figure 37-1—Galls on root of cottonwood seedlings infested with *Plectrodera scalator*.

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.

Dissection of infested roots reveals galleries with one or more large, white, legless, longicorn-type larvae (fig. 37-2). Light-brown, fibrous (usually excelsiorlike) frass (fig. 37-3) is occasionally ejected from bark openings at the groundline.

From June through August, the large, black and white longhorn beetles (fig. 37-4) 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. 37-5).

Dissection of an infested stem reveals galleries with one or more white to pinkish, caterpillarlike larvae with brown heads and thoracic shields (fig. 37-6). Piles of granular frass (fig. 37-7), different in texture from the fibrous frass of P. scalator, often accumulate on the

Figure 37-2—Larva of *Plectrodera scalator* in root of cottonwood seedling.

Figure 37-3—Fibrous frass produced by larva of *Plectrodera scalator* at base of cottonwood seedling.

Figure 37-4—Adult of *Plectrodera scalator*.

Figure 37-5—Enlarged entrance holes in stem of cottonwood seedling, caused by larvae of *Paranthrene dollii*.

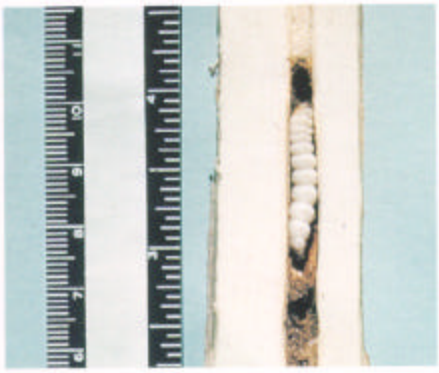

Figure 37-6—Larva of *Paranthrene dollii* in stem of cottonwood seedling.

Figure 37-7—Granular frass of *Paranthrene dollii* at base of cottonwood seedling.

Figure 37-8—Adult of *Paranthrene dollii*.

ground at the base of infested plants. Infested stems are commonly drilled by woodpeckers feeding on the larvae during winter.

Adult of *P. dollii* are dark, rusty red, clearwing moths (fig. 37-8) that closely mimic wasps.

Biology

Both borer species overwinter as larvae—*P. scalator* in roots and *P. dollii* in stools, trunks, and branches. Adults of *P. scalator* 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 1 in wide and 8 in long. The life cycle of *P. scalator* requires 1 to 2 years.

Paranthrene 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 half a mile 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. scalator* (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—Apply three weekly applications of carbaryl, chlorpyrifos, or diazinon to control *P. scalator* adults. The first application should be made 4 to 6 days after the first adults appear (about June 1 in Mississippi). Although effective in recent experimental tests, these insecticides are not presently registered for controlling these insects in nurseries. Chemical controls for *P. dollii* have not been adequately tested.

Selected References

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