

FOREST Pest LEAFLET

Poplar and willow borer

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Introduction

The poplar and willow borer, *Cryptorhynchus lapathi* (Linnaeus), is a medium sized weevil whose larvae bore in stems, primarily of willow and poplar species. Introduced from Europe in the late 1800s, it now occurs across the central latitudes of North America. In British Columbia attacks are focused primarily in young willow stems, which are often killed by larval feeding. Other species are occasionally attacked. Historically, the insect has caused significant economic damage only when ornamental trees in urban areas have been attacked.

Distribution

The native range of *C. lapathi* stretches across Europe, Russia and Japan. Since being introduced into North America it has spread widely, and now occurs throughout southern Canada and all but the southernmost areas of the United States. In British Columbia it is found south of 57 degrees north latitude and is most common on Vancouver Island, the lower mainland, and southern interior valleys. Farther north, populations are limited primarily to the Skeena and Nass river valleys, and the northern Fraser River drainage around Prince George.



Adult weevil

Hosts

The poplar and willow borer is known to breed successfully in species of willow, poplar, alder and birch. Willows are the favored host and, where they occur in abundance, other species remain unattacked. In British Columbia, attacks have been recorded in a broad range of native and ornamental willow and poplar species, as well as in Sitka and mountain alder. Among poplar species, black cottonwood is most frequently attacked.

There are only four records of attack in trembling aspen and two in white birch in the province, and no recorded attacks of red alder.

Description

Egg: The soft white eggs average about 1 mm in length and, although oval when laid, often appear angular when viewed in the bark niche in which they are normally deposited.



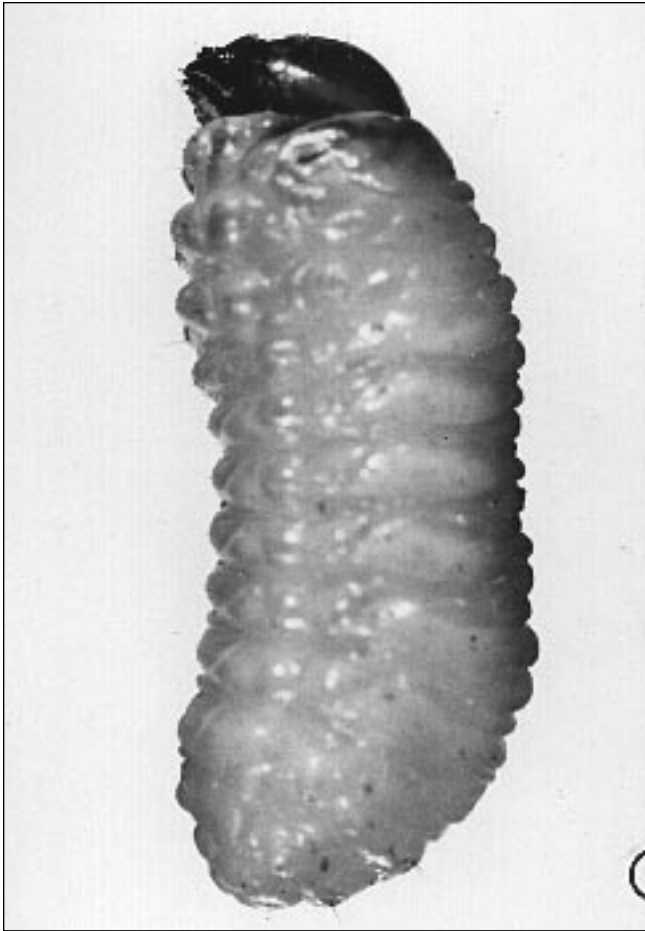
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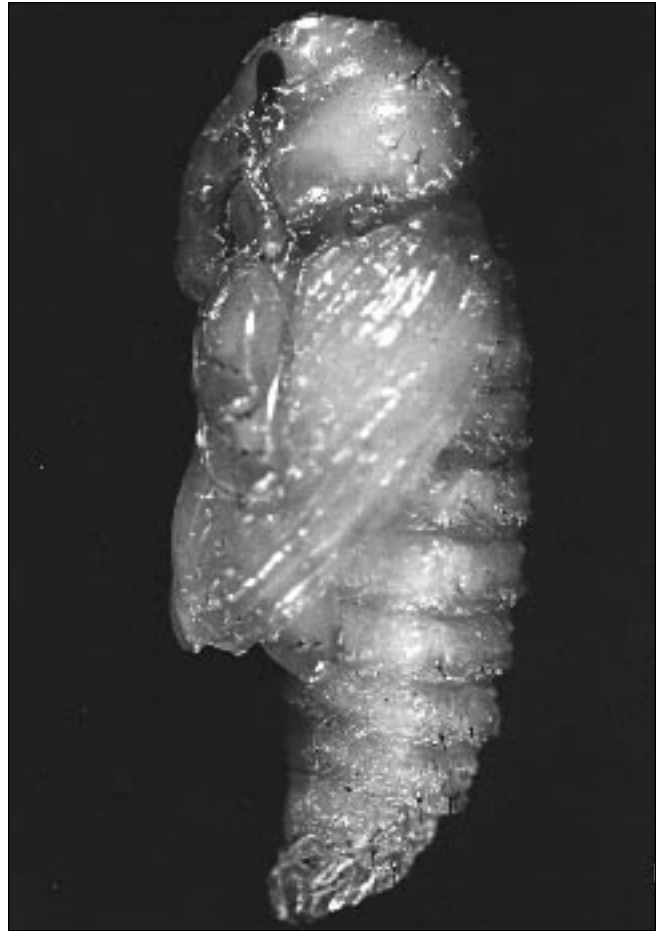
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Mature larva



Pupa

Larva: Larvae are white with a brown head, are sub-cylindrical, slightly curved in shape, and legless. Body length ranges from 1 mm for first-instar larvae to 13 mm just prior to pupation.

Pupa: The pupae average 10 mm in length and have a visible developing snout; the legs and wings are closely pressed to the body. At first they are white, but gradually fade to brown, pink and grey.

Adult: Adult borers are hard-bodied rough-appearing weevils about 8 mm in length. The small round head is largely hidden by the thorax; the forward end tapers into a narrow snout which, when folded, tucks into a ventral thoracic groove. Adults are most readily distinguished by their color pattern: tiny black and either grey or pink scales on the back contrast with the rest of the body, which is predominantly black.

Life History and Habits

The life cycle of the borer is subject to local variation, but normally spans two or three years. The first year of life is spent in immature stages and the remainder as an adult.

Eggs are laid in small holes excavated in the bark of young stems, usually at lenticels, branch bases, or at the edge of damaged portions of bark, normally within 1 m of the ground. An oviposition hole usually contains one egg but as many as five have been seen. Eggs can be laid in any season but are most common from July to October. They hatch in about three weeks, after which the first-instar larvae enter diapause and overwinter under the bark. In spring, larvae become active and commence boring around the circumference of the stem. At about the fourth instar, normally in June, larvae turn 90 degrees and bore

into the wood often to the pith, and then turn again, mining upward for 5-8 cm. Wood shreds are at first pushed out by the larvae but are later allowed to accumulate in the mines.

Following six instars of larval development, pupation occurs at the end of the mine. Adults emerge in about three weeks and bore back through the accumulated shredded material to the outside. Mating and egg laying begin shortly after emergence. Though adults have functional wings, they rarely fly. Frequently the adults are found on the host stems feeding on the succulent bark of new shoots, or feeding and ovipositing on the main stem. In the warm summer months they are most active in the evening and early morning; during the heat of the day they return to bark crevices or duff. When handled, adults produce a distinctive squeaking sound.

Damage and Detection

Poplar and willow borers normally attack stems ranging in diameter from 2 to 8 cm. Attacks often kill the host, and are most often seen as one or more small-diameter dead or dying stems in multi-stemmed willow clumps. Stem weakening as a result of multiple attacks sometimes causes larger trees to “break over”.

Current damage by the larvae is indicated by irregular splits and holes in the bark of host trees, through which sap and moist red-brown and white shavings exude, and by piles of shavings around stem bases. Past attacks are indicated by stems honey-combed with darkened weathered tunnels, and deformed by the callusing of injured areas.

While most of the damage is done by larvae, some injury is also caused by adults that feed on branches and on main stems, showing a preference for young succulent bark. When present in large numbers they may cause noticeable damage to newly developing shoots, but the damage is rarely significant.

In British Columbia, the insect has gained prominence due to concerns that it could damage valuable hybrid poplar plantations established in the Fraser and Skeena valleys.

The only other insect in British Columbia which causes similar damage is the poplar borer, *Saperda calcarata* Say, but this wood boring beetle prefers poplar species, primarily trembling aspen, and rarely attacks willows.

Prevention and Control

In hybrid poplar plantations an effective preventive strategy is the physical or chemical removal of nearby willow clumps, thereby limiting the potential for buildup of *C. lapathi* populations.

Studies in southwest France found that varieties of poplar with rough and corky bark were much

more attractive to ovipositing female adults than smooth-barked varieties.

Prior to planting, young whips should be examined for eggs and young larvae, particularly if the borer is known to be a problem in the area of origin. Some growers wrap the trunks of newly planted trees with burlap or paper to prevent adults from ovipositing. This is maintained until the bark thickens and trees have become well established.

When damage becomes noticeable, it is usually too late for control measures to prevent further damage to a tree in the current season. Cutting and burning of attacked trees is sometimes advisable because borers devel-

oping in these trees may emerge and attack adjacent trees, but this procedure is useful only if low populations and limited host material occur in surrounding areas. It may prove practical to protect small numbers of trees by physically extracting young larvae from surface mines in the spring. The mines can be opened with a razor or sharp knife and the larvae extracted or killed in place without significantly damaging the stem of the tree.

Due to the limited economic impact of poplar and willow borer in North America, little attention has been paid to the study of parasites and predators. Ants and birds are known to occasionally feed on adults and larvae.



Heavily attacked black cottonwood with one stem showing typical “break-over” injury

The habit of attacking basal areas of the stem renders the borers vulnerable to drowning during floods of the lowland areas often inhabited by host willow species and black cottonwood.

Chemical insecticides may be applied to control either adult or immature stages. Since adults emerge at any time throughout the growing season, several treatments may be necessary, usually in the late summer and early fall. Larvae are treatable during the early instars before they bore inward and out of reach of chemical applications. If damage has occurred in previous years, or if young larvae are detected, a systemic insecticide can either be painted or sprayed in early spring, focusing on the basal one metre of the stem, particularly near old attacks and branch bases. Fumigation has proven effective in treating infested cuttings and nursery stock.

References

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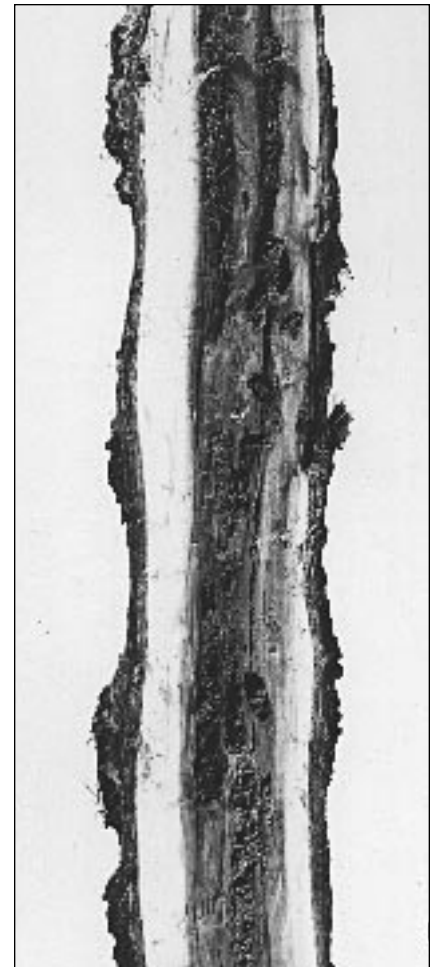
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Ives, W.G.H.; Wong, H.R. 1988. Tree and shrub insects of the prairie provinces. Can. For. Serv. North. For. Res. Cent. Inf. Rep. NOR-X-292. Edmonton, AB.

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Willow stem with several attacks



Poplar stem cut open to show mining by borer larvae

Additional Information

Additional copies of this and other leaflets in this Forest Pest Leaflets series, as well as additional scientific details and information about identification services, are available by writing to:

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