

Flatheaded Borers

In Tree Fruit

March, 2016

The Pacific flatheaded borer and the flatheaded apple tree borer are native to North America and are known to be present in British Columbia. Flatheaded borer infestation was reported by a grower in 1-2 year old apple trees in Kelowna in July, 2015. Previous reports of flatheaded borer damage to young apple trees were in the Kelowna area in 2003 and Grand Forks in 1921. Larvae collected from the infested site in Kelowna in 2015 were identified by DNA barcoding as Pacific flatheaded borer by Dr. Robert Footitt, Agriculture and Agri-Food Canada, Ottawa, Ontario. Preliminary surveys conducted in 2015 indicate Pacific flatheaded borer is present at low levels in orchards in the Okanagan and Similkameen valleys.

Identification

Adult

Pacific flatheaded borer adults - flattened wedge-shaped body, about 6-13 mm ($\frac{1}{4}$ to $\frac{1}{2}$ inch) long, dark brown with grey markings on the wings (Figure 1).

Flatheaded apple tree borer - flattened wedge-shaped body, about 6-13 mm ($\frac{1}{4}$ to $\frac{1}{2}$ inch) long, greenish bronze body with zigzag markings on the wings (Figure 2)

Larva

Larvae of both species are cream-coloured, $\frac{3}{4}$ - $1\frac{1}{4}$ inches long, the segment behind the head is broad and flattened (Figure 3).



Figure 1. Adult Pacific flatheaded borer.
Photo credit, Utah State University Extension IPM Program



Figure 2. Adult flatheaded apple tree borer.
Photo credit, Joseph Berger, Bugwood.org



Figure 3. Pacific flatheaded borer larva



Figure 4. Pacific flatheaded borer adult exit hole
Photo credit, Utah State University Extension IPM Program

Life Cycle

The life cycle of the Pacific flatheaded borer in B.C. is not known but information from Washington State indicates adults emerge soon after apple bloom and the female lay eggs on sunny sides of tree trunks from June through July. Eggs hatch from mid-June to mid-August. Larvae bore into bark and feed between the bark and sapwood until fully grown. Mature larvae tunnel into the heartwood to overwinter. Larvae pupate in the spring, and adults emerge after 3-5 weeks. Emergence holes are oval and about 1/4 inch in diameter (Figure 4). There is one generation per year.

Hosts

Hosts include apple, pear, cherry, peach, apricot, plum, elm, maple, willow, mountain ash, oak, poplar and other trees and shrubs.

Damage

Weak, young, injured, drought-stressed and newly transplanted trees are very susceptible to attack. Injured spots on the bark are dark coloured, cracked, with sawdust showing through and there may be sawdust around the base of some infested trees (Figures 5 & 6). Larvae feed by cutting winding tunnels beneath the bark and girdling the trees (Figures 7). Larvae can be found beneath the bark or deep inside the wood (Figures 8). Infested trees show variable leaf symptoms (Figure 9).

Monitoring

Inspect susceptible trees for symptoms. Look for hard-packed sawdust under flaking bark usually on sunny side of trees, larvae beneath the bark, and oval or D-shaped emergence holes on trees. Damage in young trees is usually beneath the graft union.



Figure 5. Infested young apple tree with dark, cracked bark



Figure 6. Infested young apple tree with sawdust at the base.



Figure 7. Girdling by flatheaded borer larva



Figure 8. Flatheaded borer larva inside wood

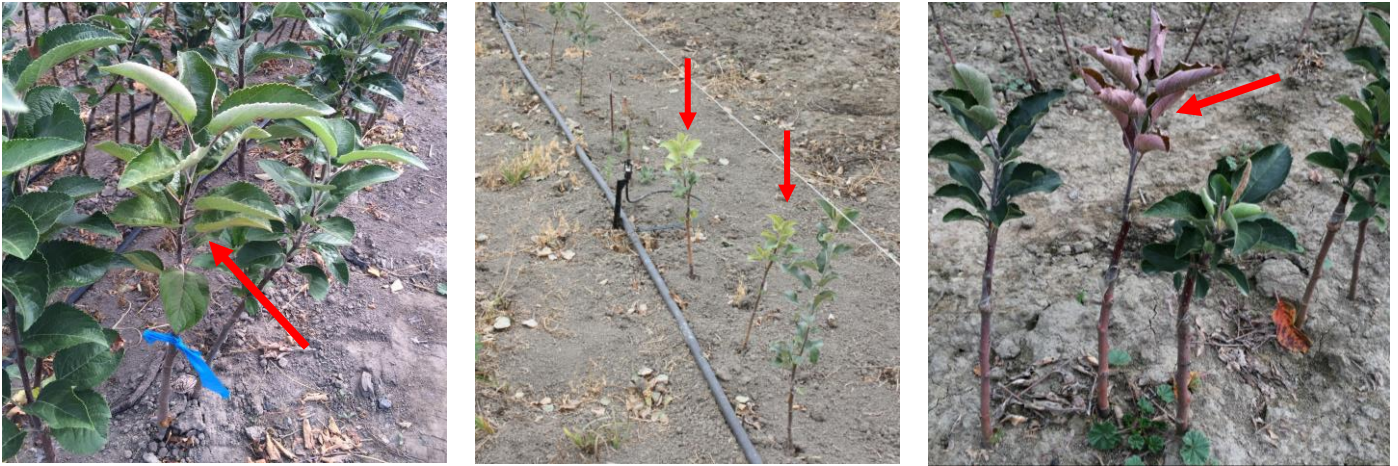


Figure 9. Infested trees showing variable leaf symptoms

Control

Biological control - Woodpeckers and ants feed on larvae. Parasitic wasp species also attack the borer.

Cultural control- Stressed, injured, sunburned, and newly planted trees are susceptible to attack. Remove and destroy young infested trees which will not survive attack. Keep trees healthy and provide adequate irrigation during periods of drought. Paint tree trunks with a mixture of white latex paint and water to prevent sunburn.

Chemical control - Larvae are difficult to control after they have entered the bark. Apply insecticides to newly hatched larvae before they enter the bark. No products are currently registered for flatheaded borer control in tree fruit in Canada. Sevin (carbaryl) and Admire (imidacloprid) used for the control of other insect pests on tree fruit will provide control of flatheaded borers.

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