



Bronze Birch Borer

Forest Health Fact Sheet

July 2019



Neil Bell, OSU extension

Top dieback can progress throughout the canopy and cause whole-tree mortality

Bronze birch borer (BBB; *Agrilus anxius*) is a native, wood boring beetle in the Buprestidae family. This insect often attacks non-native (European and Asian) birch as well as stressed native birch species. Stress most often comes from lack of shade and/or moisture. Birch species native to Oregon prefer moist, cool soil and are found along streams or at higher elevations. Birch are often planted as landscape trees in areas receiving too much direct sunlight and/or little or no irrigation. Damage from BBB is often first identified by thinning of the canopy or topkill that slowly progresses down the crown. Upon closer inspection, D-shaped exits holes may be seen on the trunk or on large branches.

Hosts

- Major: European and Asian birch, stressed native birch

Bronze birch borer (BBB) can be found across North America wherever birch is grown naturally or ornamentally.

Biology

Bronze birch borer adults lay their eggs May-July on the surface of bark in crevices or in niches they have chewed. Once eggs hatch, larvae burrow into the trunk or large branches to feed on phloem tissue. They make zigzagging galleries under the bark as they feed. This feeding girdles phloem and reduces the amount 'food', made by leaves during photosynthesis, that can reach roots. This eventually causes root death and reduced water uptake. Larvae overwinter beneath the bark and may resume feeding the following spring before they pupate.

Damage

Birch most susceptible to BBB attack are those suffering from drought-like conditions such as lack of water or prolonged exposure to direct sun. Damage to roots or vascular tissues from soil compaction or mechanical



Adults (left) are slender, metallic bronze beetles about 3/8" long. Exit holes are D-shaped (left) and approximately 5mm wide (right).

USFS-NE; Steve Katovich USFS, Bugwood.org

injury also predisposes attack. Damage to roots reduces the amount of water reaching tissues, especially those farthest from the roots (i.e., top of the tree). Dieback becomes visible in the top of the tree usually in early-mid summer and continues to work its way down the crown, eventually resulting in tree mortality.

Drought and BBB elicit the same dieback symptoms, which makes identification of the primary damage agent difficult. Drought and BB may also work in tandem. To determine if a birch tree has been infested with BBB,

look for 5mm wide, D-shaped exit holes along the trunk or large branches. Galleries may be found by peeling back a segment of bark. Bark covering areas damaged by galleries may be raised or ridged from the formation of callus tissue. Dead leaves alone are not a good symptom of drought or BBB attack because they may also occur on trees attacked by defoliating or sap sucking insects.

Trees with >50% crown damage from BBB are unlikely to survive. Tree mortality may occur in as little as a year or may occur after several years depending on the resiliency of the tree. Susceptibility to BBB attack varies among birch species, below is a chart indicating known susceptibility.

BIRCH SUSCEPTIBILITY		
Common Name(s)	Scientific Name	Susceptibility
Jacquemonti Birch, Whitebarked Himalayan Birch	<i>Betula jacquemontii</i>	High
European White Birch, Silver Birch	<i>B. pendula</i>	High
Young's Weeping Birch, European White Weeping Birch	<i>B. pendula</i> 'Youngii'	High
Yellow Birch	<i>B. alleghaniensis</i>	Moderate
Sweet Birch, Black Birch, Cherry Birch	<i>B. lenta</i>	Moderate
Paper Birch, White Birch, Canoe Birch	<i>B. papyrifera</i>	Moderate
Whitespire Birch	<i>B. platyphylla japonica</i> 'Whitespire'	Moderate
Gray Birch	<i>B. populifolia</i>	Moderate
River Birch, Red or Water Birch	<i>B. nigra</i> , <i>B. occidentalis</i>	Very Low
Heritage or Heritage River Birch	<i>B. nigra</i> 'Heritage'	Very Low
Crimson Frost Birch	<i>B. platyphylla</i> var. <i>szechuanica</i> x <i>B. pendula</i> 'Purpurea' 'Crimson Frost'	Unknown

More information:

Oregon Dept. of Forestry, Forest Health
<http://tinyurl.com/odf-foresthealth>
 2600 State St. Bldg. D, Salem, OR 97310
 503-945-7200

Management highlights

- Select birch species native or appropriate to Oregon's climate
- Select appropriate planting location (cool, moist soil and little direct sunlight)
- Water slowly (2-3 hours) and deeply (8/18" soil penetration), weekly during the growing season
- Add mulch to assist with moisture retention
- Do not fertilize during drought periods (increased growth=higher water needs)
- Do not prune May - July because females are attracted to fresh pruning wounds
- Do not overly prune to open the canopy and increase sun exposure

Management

BBB are unable to reproduce within or kill healthy birch trees.

Silvicultural

Plant native birch species in appropriate locations. Our native birch requires cool, moist soil and reduced exposure to direct sunlight. Irrigate and mulch where possible. It is tempting to fertilize a tree that looks to be declining in health but this increases growth and water needs, and may place additional stresses on a struggling tree.

There is some evidence that BBB females are attracted to fresh pruning scars. Avoid pruning May-July and do not overly prune.

Insecticides

Preventative bole sprays, soil drench or injectable systemics are registered for use in Oregon. These products must be applied before infestation. Note: birch flowers may be visited by pollinators as an additional food source, therefore externally sprayed or systemic pesticides may present negative, non-target impacts. Avoid applying pesticides right before and during bloom periods.

When using pesticides, always read and follow the label

Other references:

USFS Forest Health Protection
www.fs.usda.gov/goto/fhp/fidls

OSU Forestry Extension
<http://extensionweb.forestry.oregonstate.edu/>