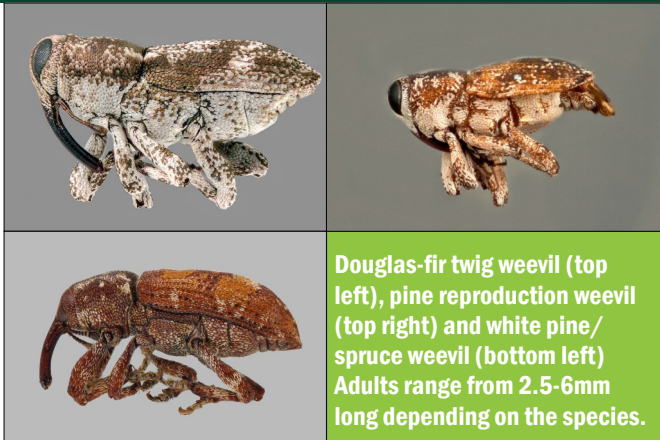




Conifer Weevils

Forest Health Fact Sheet

September 2017



Douglas-fir twig weevil (top left), pine reproduction weevil (top right) and white pine/spruce weevil (bottom left) Adults range from 2.5-6mm long depending on the species.

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Weevils are a group of beetles that can damage foliage, stems, shoots and/or roots resulting in reduced growth, deformation, branch dieback and occasionally tree mortality. This group tends to be more of a problem in orchards and plantations rather than in forest stands. Some of the more damaging weevil pests of trees in Oregon include the Douglas-fir twig weevil, pine reproduction weevil and white pine/spruce weevil. Some weevils can also vector fungal stains such as blackstain, which causes vascular wilt. Most of these species have 1 generation a year but development from egg to adult can span 1 or more years depending on the species and conditions.

Hosts

- Douglas-fir: Douglas-fir twig weevil (also attacks some true fir)
- Pine: pine reproduction weevil
- Spruce: spruce weevil (also known as white pine weevil as it attacks pine in the east)

Douglas-fir twig weevil (*Cylindrocopturus furnissi*)

This pest is present all year but adults are most abundant June-August and lay eggs August-September. Larvae or L-shaped pupal chambers can be found in the xylem or pith August-June.

This insect attacks young, open-grown Douglas-fir weakened by improper planting as well as environmental stress such as drought or waterlogging. Infestations occur on small branches or on the main stem of smaller trees. Larval feeding causes reddish-brown discoloration of bark or swelling in stems. This damage causes forked tops and poor growth form and is common in trees along edges.

Population peaks collapse naturally from generally within 1-2 years. Although weevil-resistant Douglas-fir varieties have been produced in Canada their growth

potential is less than that of varieties native to Oregon. Clipping infested branches before June when immature weevil stages are still present may reduce populations.



Weevil symptoms: adult feeding punctures (left), pitch production (bottom left) or forked terminals (bottom right).

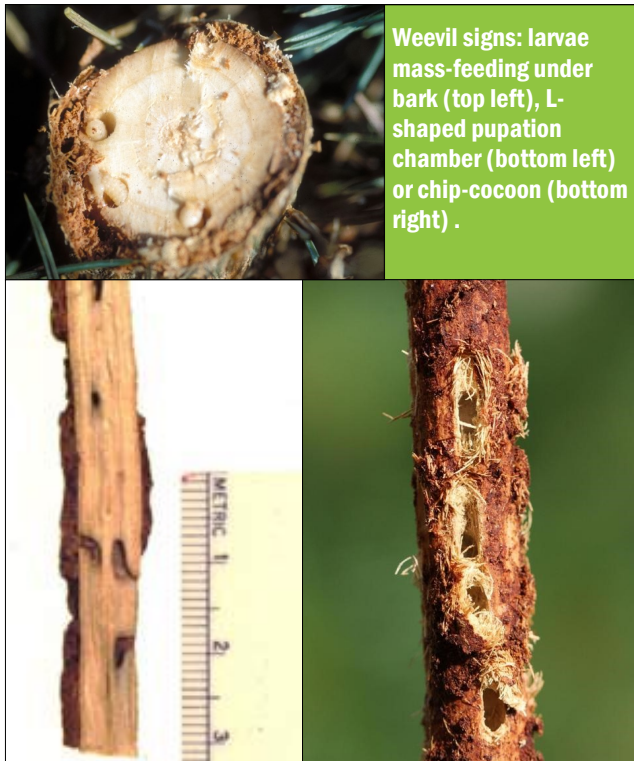


Don Owen, CalFire and Robrt Anderson, USFS and Beth Willhite, USFS Bugwood.org

Pine reproduction weevil (*Cylindrocopturus eatoni*)

Pine reproduction weevil attacks young pine plantations grown at lower elevations. It mostly attacks weak or suppressed trees, and sites with competing vegetation, rocky ridgetops, south-facing slopes or dry conditions. Small outbreaks lasting 3-4 years may occur. Ponderosa is favored but Jeffrey and sugar pine may occasionally be attacked.

Adults emerge and feed on needles, twigs and stems from May to mid-July. Feeding punctures on needles leave tiny brown rings. Larvae feed on cambium and phloem in twigs and stems until late fall. This feeding induces trees to produce pitch globules and can be extensive enough to kill trees. Pupation occurs in spring and takes place in chambers in the outer layers of wood or in the pith of small twigs and stems. Within a couple of weeks new adults emerge leaving tiny emergence holes. Attacked trees start fading from the top down in the fall or spring following attack. This species can vector fungal stains that clog vascular tissues and hasten tree death.



Weevil signs: larvae mass-feeding under bark (top left), L-shaped pupation chamber (bottom left) or chip-cocoon (bottom right) .

Dan Hermis Ohio State Univ. and Steve Katovich USFS Bugwood.org

Management highlights

- Avoid poor planting sites (dry, rocky, etc.)
- Avoid poor or improper planting that results in J-rooting or damage to seedlings
- Reduce competing plants
- Dense planting can force upward growth and reduce bushiness
- When the terminal dies select a lateral below it to take over as the terminal by removing other laterals in that whorl

White pine/Spruce weevil (*Pissodes strobi*)

This pest attacks white pine in the east and various species of native and ornamental spruce in Oregon. It is most commonly a pest of coastal Sitka spruce. They prefer to attack the fastest growing spruce although vigorous trees within the coastal fog belt can also have rapid recovery. Adults feed on needles and lay eggs April-June. Resin drops can be found near the tip of terminals where weevils are present. Larvae feed on inner bark and cause current year needles and 1-year old terminal growth to fade around July. Terminals turn red as new adults emerge in August-September. During this time, bark can be peeled back to find 'chip cocoons' lining pupal chambers. Adults overwinter in duff or on lateral branches. Repeated attacks can cause trees to become bushy, stunted or have drooping terminals.

Infestations tend to decrease around stand age 20 but low levels (<10%) can persist beyond age 40. Dense spacing of spruce or spruce-hemlock stands at sites within fog belts encourages upward growth and thus mitigates weevil damage. Spacing of $\leq 9 \times 9'$ and PCT at age 25 or later is advised at these sites. Clipping infested terminals before August over a period of several years can reduce populations. To avoid multiple, competing tops and bushy growth form after attack, trim all but one lateral branch in the whorl below a dead terminal to encourage new central leader formation.

General weevil management

The best management for weevils is proper planting and site location. Higher densities can force upward growth and reduce bushiness resulting from weevil attacks. In some cases timely application of pesticides or use of genetically resistant stock may reduce incidence of weevil attacks.

When using pesticides, always read and follow the label

More information:

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

Other references:

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

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