Forest Disease Management Notes

United States Department of Agriculture

Forest Service
Pacific Northwest Region

Annosus Root and Butt Rot

Annosus root and butt rot is caused by the fungus, *Fomes annosus.* Estimates of loss are not available for the Pacific Northwest. The disease causes growth loss, root and butt rot, uprooting, and tree killing. Damage is increasing in pine and true fir stands.

Hosts: All conifers, especially common in western hemlock and white fir. Damage is seldom seen except in pines, hemlock, and true firs.

Recognition: Resinous hosts, especially pines, exhibit decreased terminal growth, needle yellowing, pitch soaking of root wood, decline, and death; non-resinous hosts exhibit stain or a white stringy rot in roots and butts; wind-throw may occur. Rot often has small black specks.

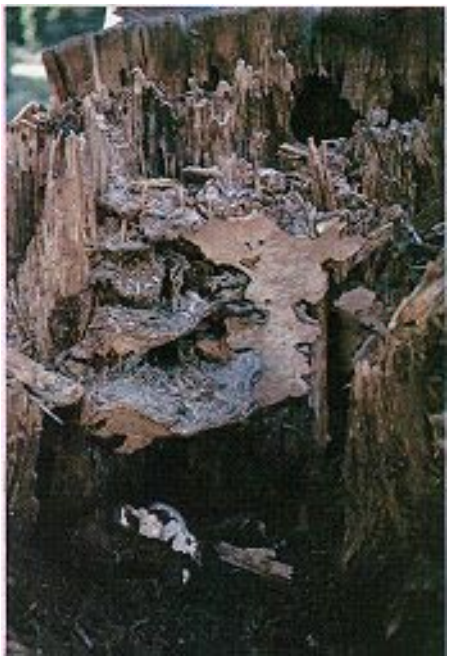
Perennial, flat, button, or bracket-shaped leathery conks in hollows, crotches, or on root collars of dead trees or stumps, often below the duff surface; conks are brown to tan with a lighter colored sterile margin and white pore surface.

Disease Spread: Windborne spores germinate on freshly cut stump surfaces; the fungus colonizes the stump and roots; roots of surrounding live trees that are in contact with those of the stump become infected as well; infection also may occur through wounds on live trees; tree to tree spread continues across root grafts and contacts; secondary attack by bark beetles is common.

Management: Careful logging practices aimed at minimizing injury to residual trees; removal of severely wounded trees during stand improvement activities. Short rotations (40-120 years) in western hemlock and true firs will minimize decay loss. Trees with decay associated with wounds or with root or butt rot should be treated in recreation areas. When stain or decay is not present, treat fresh stumps with borax to prevent infection in recreation areas. Infected stumps could be removed in high value sites.

May be Confused With: Laminated root rot, Armillaria root rot.

Stain and decay caused by *Fomes annosus* in western hemlock



Fomes annosus conks in white fire stump

Typical *Fomes annosus* conks on western hemlock

Fomes annosus infection area centered around stump