Forest Disease Management Notes

United States Department of Agriculture

Forest Service
Pacific Northwest Region

Fir Broom Rust

Fir broom rust, caused by the fungus *Melampsorella Caryophyllacearum,* is occasionally seen in Pacific Northwest true fir stands. Damage is seldom extensive enough to be serious.

Hosts: Primary hosts- true firs; alternate hosts-chickweed.

Recognition: Causes formation of conspicuous dense, upright witches-brooms on true firs; needles on broom twigs are extremely yellow and shorter and thicker than healthy needles; broom foliage dies in the fall, causing the broom to appear dead in the winter; can be confused with dwarf mistletoe brooms, but contains no dwarf mistletoe plants; severe infection may result in stem malformation, growth loss, and occasionally, mortality; causes a leaf or shoot blight of chickweed.

Yellow spore pustules (aecia) appear in great numbers on needles of witches'-brooms in summer; orange spore pustules (uredia and telia) occur on chlorotic chickweek leaves in spring and summer.

Disease Spread: Both fir and chickweed hosts are required for completion of the life cycle; windborne basidiospores, infect newly opened fir buds in spring-, the mycelium becomes perennial in the fir host, causing production of a witches'-broom; aeciospores are produced the following summer (and each summer thereafter), are windborne and infect chickweed; infection on chickweed also may be perennial and is intensified by urediospore infection; infection is favored by moist conditions.

Management: Remove trees with main stem infections when practical; other control measures are not considered economically feasible and are seldom warranted.

May be Confused With: Dwarf mistletoe.

Witches'-broom in true fir caused by *Melampsorella caryophyllacearum*

Needle bearing aecia of *Melampsorella carypphyllacearum*