

# Foliar Diseases

## Elytroderma Needle Cast *Elytroderma deformans* (Weir) Darker

**Hosts:** Ponderosa pine, piñon, and southwestern white pines

**Symptoms/Signs:** Needles begin to fade in the fall of the year of infection, and by late winter are lighter in color than uninfected needles. By spring, the infected needles turn straw color as the new needles break bud. The fruiting bodies are elongated (average 10 mm in length) and black when visible on dead needles. Distinctive “witches’ brooms” are formed by the sprouting of epicormic buds. Resin cysts can be found in infected twigs.

**Biology:** Spores initially infect new needles through the epidermis following bud break, but infection can continue into the fall until temperatures are too low for spore germination and growth. There are two types of spores: one spore is spread by water and the other is spread by wind. Discharge of spores occurs during and after a rainstorm, when

new needles are probably most susceptible to infection. The fungus spreads throughout the needles and into twigs before the needles are killed. When twigs become infected, the fungus can perennially infect needles on the same twigs.

**Conditions**

conducive to needle infection by spores only have to occur once, after which the disease can progress within the infected tree.



*Figure 186. Witches’ broom formed from Elytroderma infection.*

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**Effects:** Although elythroderma needle cast is known as an occasional disease of ponderosa pine in the Southwest, it is common in some areas. In mature trees, if less than one-fourth of the branches are infected there is little or no effect on the tree, but if more branches are infected, needle cast alone can kill a tree or predispose it to attack by bark beetles.

**Similar Insects and Diseases:** The witches' brooms produced by elythroderma needle cast are similar to those caused by dwarf mistletoe, however, the existence of dead second year needles are indicative of needle cast and not dwarf mistletoe infection. Elythroderma is the only needle cast that is perennial.

**References:** 11, 83, 84, 93



*Figure 187. Cambium of infected branch has pockets of dark resin.*