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Forest Health Protection and State Forestry Organizations

Management Guide for

Elytroderma Needle Cast

Elytroderma deformans (Weir) Darker

Topics

Elytroderma rarely kills trees but growth loss may occur and severely defoliated trees may be attacked by bark beetles.

Primary host:
- **Ponderosa pine**

Minor hosts:
- **Pinyon pine**
- **Lodgepole pine**

Damage

Elytroderma needle cast causes browning and eventual loss of needles similar to other foliage diseases. The fungus also causes witches' brooms by growing systemically within perennial infections in the branch tips. Infections are heaviest in the lower crowns of sapling and pole-sized ponderosa pine in dense stands on gentle slopes near reservoirs, lakes, or stream bottoms where moist air accumulates. Direct killing is rare, but infected trees are weakened and more susceptible to bark beetle attacks.

Key Points

- Growth rate and form are affected but trees are seldom killed by Elytroderma.
- Moist, stagnant air increases infection rates.
- Seed and crop trees should be selected for apparent resistance.
- Increase air flow by thinning or, perhaps underburning.

Management

Maintaining open stand spacing to allow airflow reduces moisture retention on an infected site and can minimize Elytroderma damage in young stands. Uninfected, or lightly infected trees (more than a three-fifths of the crown without symptoms) should be selected as crop trees. Logging in heavily infected mature stands should be accelerated to salvage valuable timber and prevent losses from secondary causes.

Since Elytroderma needle cast incidence is highest where moist environmental conditions prevail there has been speculation that underburning infected pine stands every 10-15 years will greatly reduce stand incidence and damage by consuming infected needles on the ground and by killing all branches in the lower portion of the crown.

Life History

Spores are disseminated by wind to the current-years needles and germinate if there is rain or heavy dew.

Spores mature in small linear black fungal fruiting bodies during mid- to late- summer on needles that were infected the previous year. Alternatively, fruiting bodies can also form on new needles that emerged from perennial infections on the buds and twigs. In both cases, spores are disseminated by wind to the current-years needles and germinate if there is rain or heavy dew. After germination the fungus grows rapidly through the needle tissues and into the twigs without initially killing the needle. Needles die the next spring, turn reddish-brown, develop fungal fruiting bodies in the summer, and then are shed from the tree during fall rains.

Compact witches broom with red needles.

Identification

Elytroderma needle cast is a perennial disease easily recognized by dramatic reddening of last years foliage in early spring, coupled with numerous compact and globose witches' brooms that are present all year. In smaller trees, the effect of several years of defoliation results in a "lion's tail" appearance of the twigs and branches. Brown dead lesions develop in the inner bark of twigs and branches. The characteristic thin black fruiting bodies are produced on dead and dying needles of the previous year's growth.

Other Reading

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Scharpf, R.F. 1993. Diseases of Pacific coast conifers. USDA Forest Service, Agricultural Handbook 521. 199p.

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