

MAJOR FOREST DISEASES of IDAHO

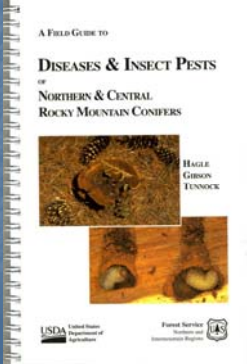
Identification & Management

Kamiah Field Day
June 2020

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Precision Forestry LLC

Photo Credit: Sue Hagle USFS

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Available on line:
Idaho Department of
Lands


Insects and Disease

Field Guide to Diseases & Insect Pests of Northern & Central Rocky Mountain Conifers

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Root Disease the Hidden Menace

- Root disease is a major cause of mortality on 2/3 of the acres in northern Idaho
- Often goes unnoticed - or unrecognized



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Root Disease

p. 72

- These are **NATIVE** diseases
- Caused by fungi that live under ground
- Root disease fungi attack living trees & root systems of fresh stumps
 - Attack and kill tree roots then the trees
 - Live for **decades** in dead roots & stumps
 - **They don't go away!**



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Cause Mortality



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Cause windthrow



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Breakage & Butt Rot



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Decay in Stumps & Roots



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Safety!



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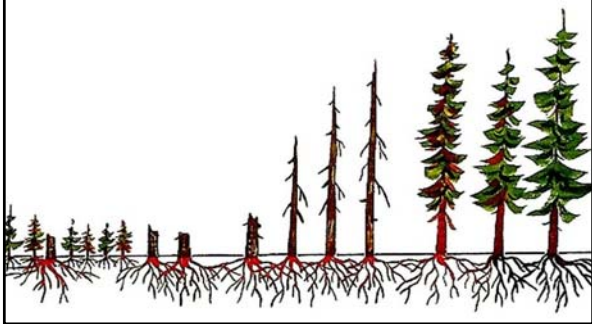
Stand Level Symptoms of Root Diseases

- Root disease often spreads slowly from tree to tree via root contacts.
- Trees die over time - all sizes - not all at once
- Trees in various stages of decline
- Often more than one tree species is affected.
- Mortality can be clumped or scattered.
- Root diseased trees often attacked by bark beetles.

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Root Disease Spreads Slowly

Under ground - difficult to detect



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Various Stages of Decline



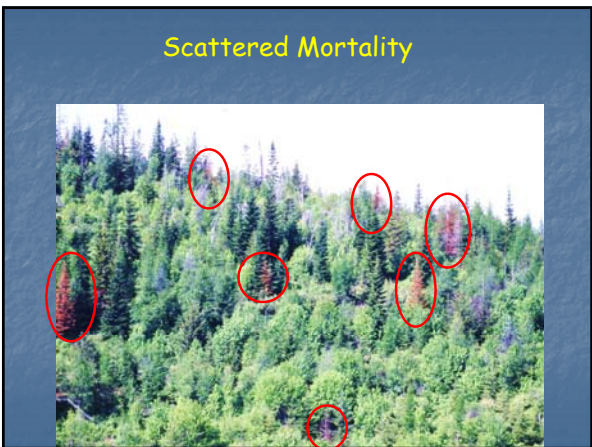
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Root diseased trees are often attacked by bark beetles.



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Thinning foliage
Drought stress



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Basal Pitch Flows

Resin soaked bark



Pitch flow



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Armillaria Fans
Under bark of stump & roots



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Decay in Stump & Butt



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Conks in Hollow Stumps



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Species Susceptibility

- **Most susceptible species:**
 - Douglas-fir
 - Grand fir
 - Subalpine fir
- **Most tolerant species:**
 - Western larch
 - Ponderosa, lodgepole, white pine
- **Others are intermediate**
- **All species are susceptible below age 20**

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Primary Control Method

- Establish & maintain high component of tolerant (or resistant) species
- Resistant does not mean immune
- These generally, but not always are:
 - The pines
 - Western larch
- Reduce the amount of susceptible species as much as possible.

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Root Rot Management Recommendations

- Stands with excessive mortality:
 - Thin to remove susceptible species
 - IF you have enough disease tolerant species - Pines & larch.
 - Don't thin & leave susceptible species.
 - Regenerate with disease tolerant species

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Root Rot Management Recommendations

- Partial Cutting, thinning & Salvage:
 - In stands with high levels of Douglas-fir and grand fir, partial cutting often increases mortality rates.
 - Disease spreads rapidly through cut & killed root systems
 - This allows the disease spread by leap-frogging to other healthy trees

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Good Ideas That Don't Work

- Stump pulling - usually of limited value in forest situations & expensive
- Fire - not really effective - almost impossible to burn out infected roots
 - It can be used to change species compositions
- Fertilization
- Soil fumigation

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Sapwood Decays

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Pouch Fungus

- Usually spread by bark beetles
- Appear in spring a year following beetle attack
- About when trees turn red
- Rapid decay



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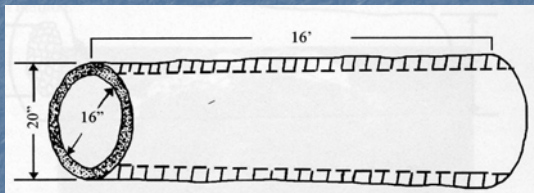
Dead trees Deteriorate

- Blue stain - pines
- Sapwood decay
- Cracks - weather checks
- Fire killed trees degrade rapidly



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Sap Rot Defect: Merchantable volume loss

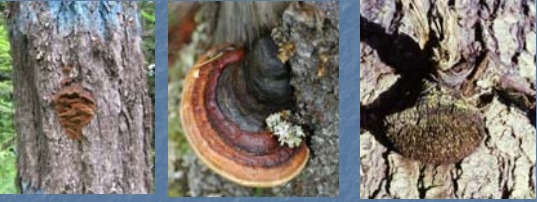


Diameter cut from 20" to 16" = 43% scale volume loss

20" to 18" = 25% loss

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Common Heart Rots

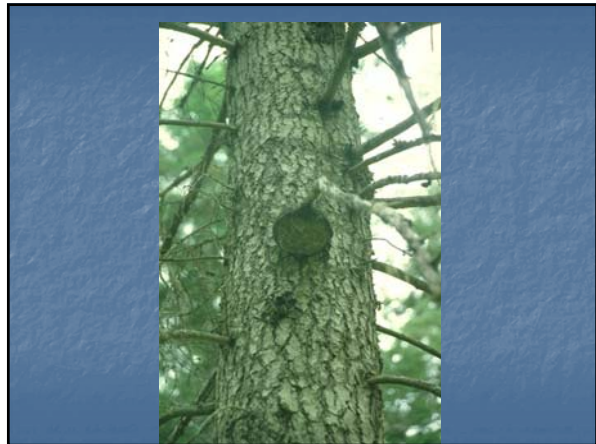


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Indian Paint Decay



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Red Ring Rot



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Red Belt Fungus



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Decay Management Considerations

- Sanitation may not reduce future infections
- Cutting infected trees increases safety
- Decayed leave trees susceptible to wind breakage
- Avoid skinning & barking trees during felling & skidding
- Don't leave skinned trees & broken tops

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Western Gall Rust



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Stem Infections



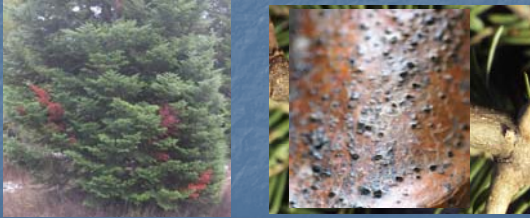
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Western Gall Rust Management Considerations

- Rust spreads from pine to pine
- Prune off infected branches
- Cut trees with trunk galls
- Cut heavily infected trees
- Cut all infected trees if possible

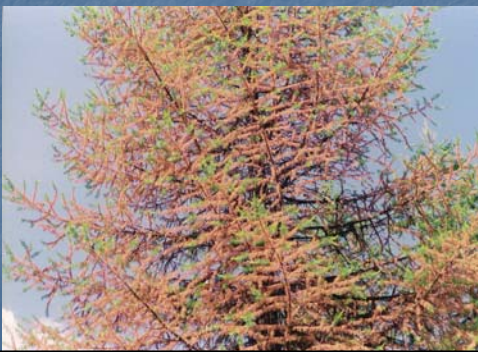
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Branch Cankers



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Needle Diseases



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Needle Diseases

- Often dramatic
- Usually appear in the spring - often before bud break
- Usually affect only one age of needles
- Growth impact proportional to defoliation
- Symptoms usually disappear when infected needles drop and new growth begins
- Generally host specific
- No practical controls

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Larch Needle Diseases

Needle blight p. 122 Needle cast p. 123



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Needle Cast in Pines



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In Pines


Fall needle drop Needle cast
Spring & summer



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Dwarf
Mistletoes
p. 88

- Symptom:
 - Witches broom
 - Abnormal crown form or branch shapes



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Ponderosa
Pine



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Douglas-fir



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Western Larch



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What Trees Do They Affect?

- Host specific - each species affects limited number of species
 - Ponderosa pine - Ponderosa pine
 - Douglas-fir - Douglas-fir
 - Western larch - Western larch, occasionally lodgepole pine
 - Lodgepole pine - Lodgepole pine, occasionally western larch

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Management Strategies: Regeneration

- Cut heavily infected trees
- Favor regeneration of non-host species
- Create a 60+ ft. non-host buffer around the unit
- If possible, leave clean seed trees
- Cut or kill infected overstory trees ASAP or before the seedlings are 10 years old

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Elytroderma Needle Cast

p.95

- *Elytroderma deformans*
- Hosts:
 - Ponderosa pine
 - Lodgepole pine
- Damage
 - Curling branches
 - Dying needles
 - Witches brooms
 - Growth loss



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Elytroderma Needle Cast versus Dwarf Mistletoe (DM)



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A FIELD GUIDE TO
DISEASES & INSECT PESTS
 OF
 NORTHERN & CENTRAL
 ROCKY MOUNTAIN CONIFERS
 HAGLE
 GIBSON
 TUNNOCK

Available on line:
 Idaho Department of
 Lands
 Insects and Disease
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 Insect Pests of Northern
 & Central Rocky Mountain
 Conifers

USDA United States Department of Agriculture Forest Service
 Idaho Department of Lands

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Thank You

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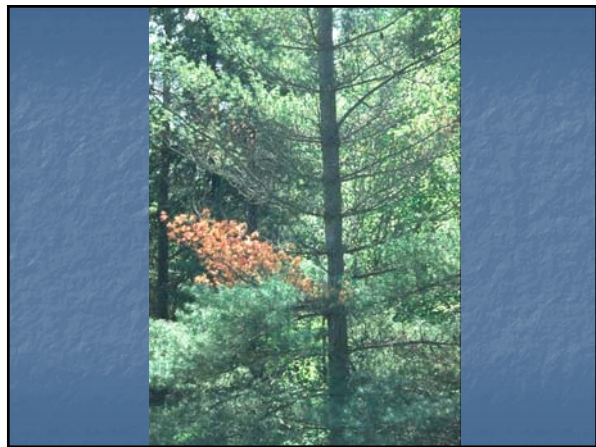
White Pine Blister Rust

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Blister Rust

- Affects 5-needle pines (white pine)
- Reached Idaho before 1930
- Rust mortality eventually removed white pine as a dominant species
- Resistant seedlings became available in late 1970s.
- Rust **CANNOT** spread from pine to pine

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Management Recommendations Thinning

- Cut trees
 - Trunk cankers
 - Dead tops
 - Numerous flags
- Leave Trees
 1. Clean - no flags, no trunk cankers
 2. No trunk cankers, less than 5 flags - the higher up the tree and the farther out on limbs the better

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Management Recommendations Pruning

- Removes infected branches
- Most infections occur below 5 ft.
- Can allow infected trees to reach merchantability
- Effective only before infections reach the trunk

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