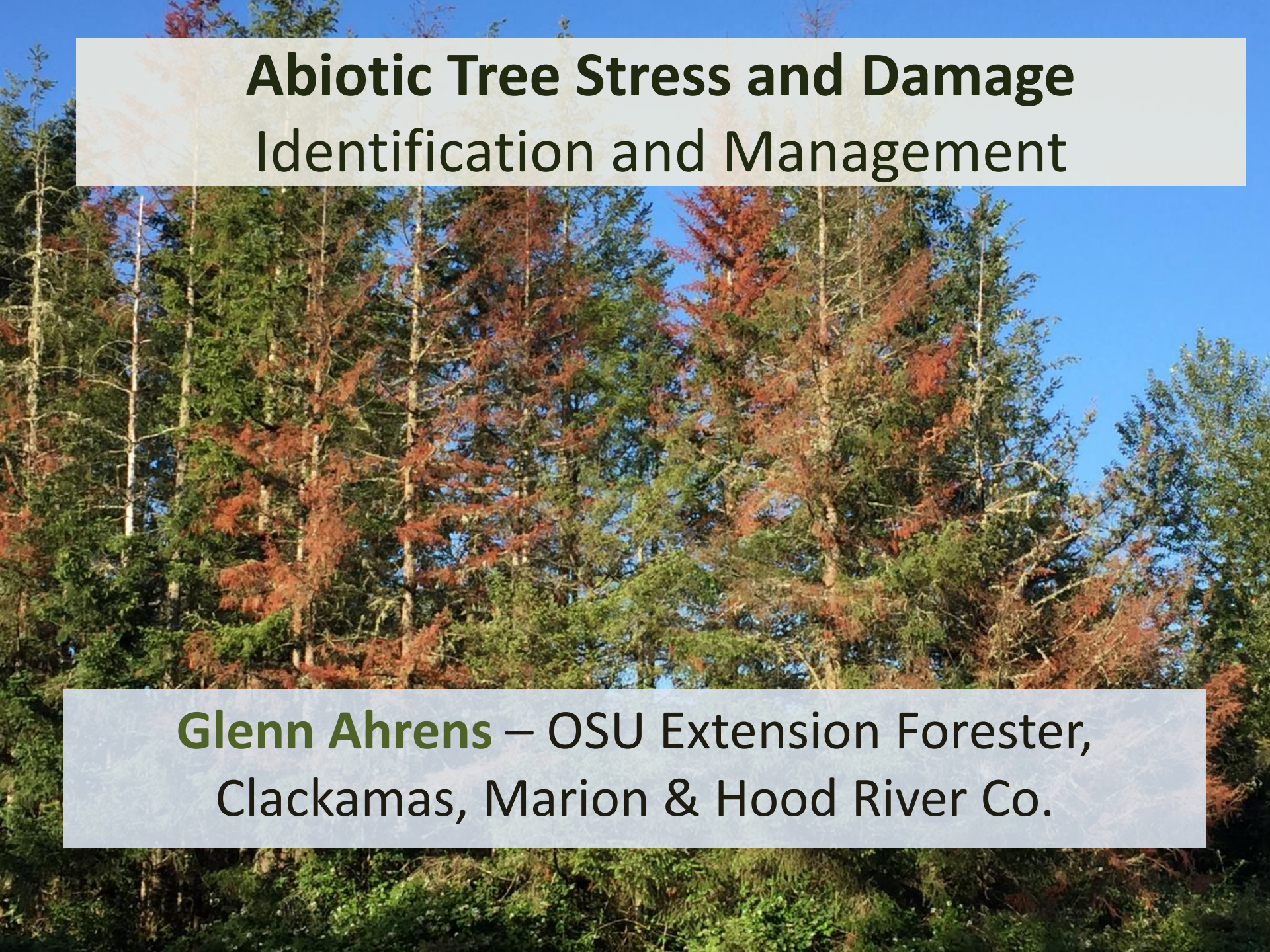
Abiotic Tree Stress and Damage
Identification and Management



Glenn Ahrens – OSU Extension Forester,
Clackamas, Marion & Hood River Co.

Abiotic Tree Stress and Damage Identification and Management.

- “sick-tree” issues related to abiotic stress from climate extremes and soil or site issues.
- recent problems due to drought, heat, and other abiotic stress, interacting with insects or disease.
- Douglas-fir, western redcedar, and other species.

Urban to Rural - landscape trees, small woodlands, large acreage forestry

Goals

- Understanding of common problems.
- Identification of new or uncommon problems.
- Sharing knowledge and skills to improve capabilities and problem solving.

Follow-up contact, your observations and questions

Calls to the Extension Agent

Q. What's killing my trees?

A. It's a complex interaction of biotic and abiotic factors……


Drought


Drought * *Phomopsis* stem canker fungus

Douglas-fir stem cankers 2017
Drought stress, competition, seedling origin, planting quality?

Drought * stem canker fungus

- Ensure that each tree has adequate growing space, light, water, nutrients.
  - Weed management
  - Spacing and thinning
  - Pruning
- Reduce local infection source – remove and dispose of dead or infected trees or branches.
- Consider alternative tree species?

Too wet, then too dry
+ roundhead borer


Drought * competition stress * woodborers

Too wet * too dry * borers

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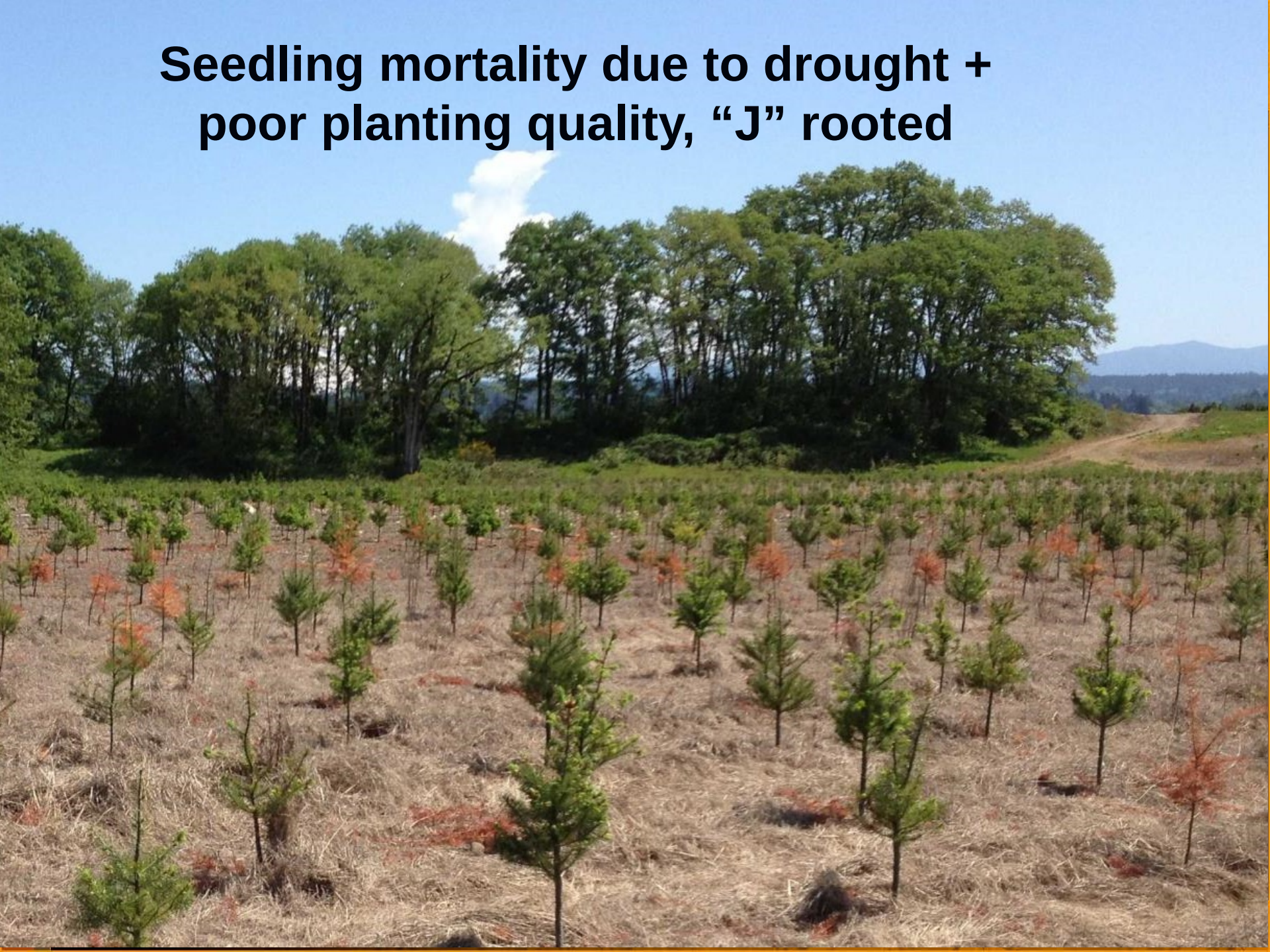
Poor drainage * soil compaction from machines & horses * root disease.

Poor drainage * soil compaction from machines & horses * root disease.

- Eliminate cause of soil compaction – separate pasture, traffic areas from trees.
- No Douglas-fir.
- Consider pine, cedar, Oregon ash?
- Ameliorate soil conditions?

Seedling mortality due to drought + poor planting quality, “J” rooted



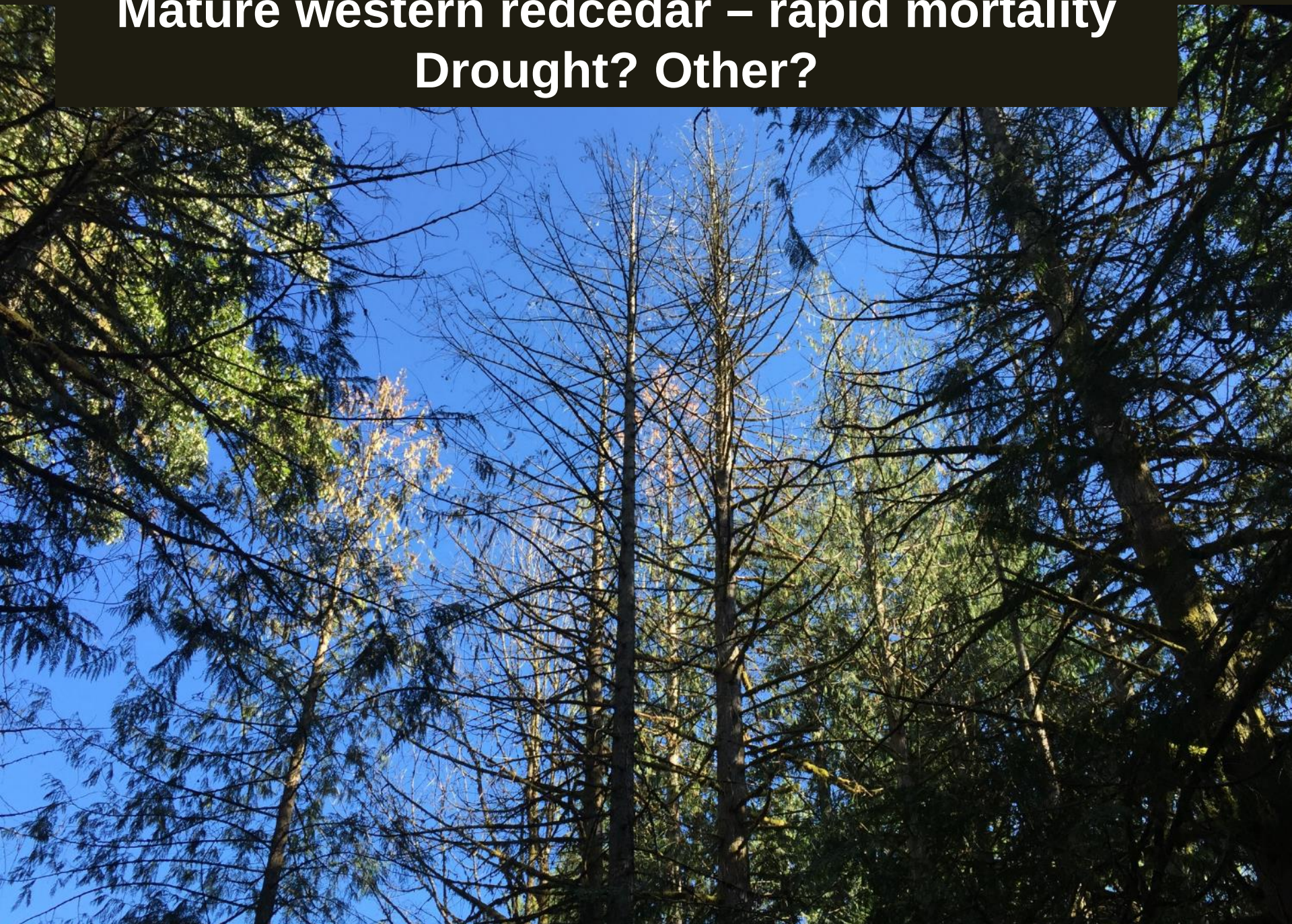
Road Constr. * Drought Stress * *Ips* beetle

“Parch blight” – dry, cold wind (2015)

“Parch blight” – generally only temporary needle loss, twig dieback

Red alder dieback
Drought * stem canker fungus

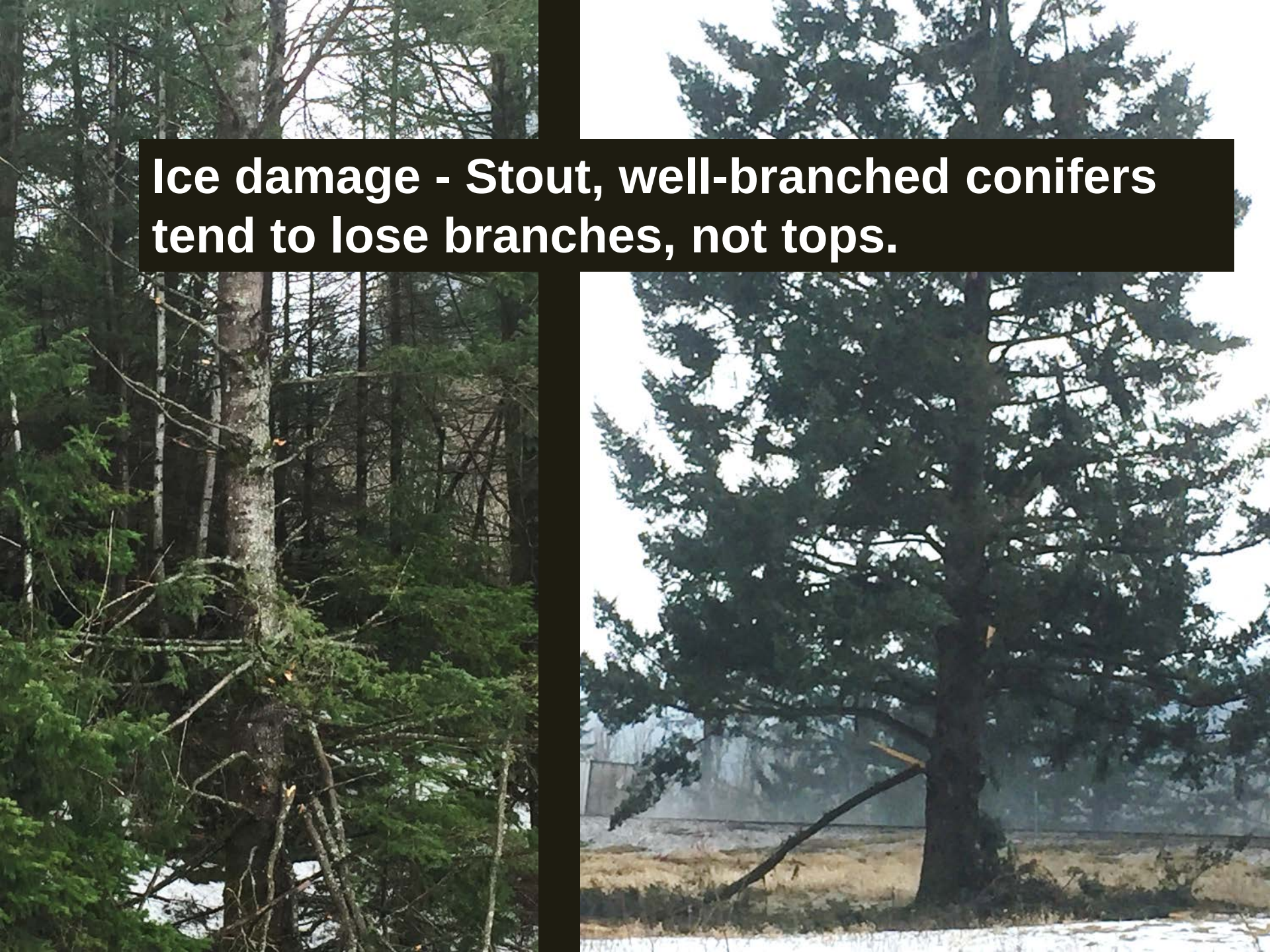
Mature western redcedar – rapid mortality
Drought? Other?



Looking for sites with new western redcedar mortality. For soil and root sampling in 2017.
Contact glenn.ahrens@oregonstate.edu

Storm Damage, Ice Damage to trees


Hardwoods are particularly
vulnerable to ice damage



Ice damage - Stout, well-branched conifers tend to lose branches, not tops.

Tree removal, cleanup, disposal, salvage & sanitation

Across the spectrum, urban to wildland.

Appropriate treatments and costs for the situation?

- One tree at a time – can this tree be saved?
- A stand of trees – can this stand be saved? Are there enough good trees left?

http://knowyourforest.org/learning-library/forest-health-columbia-gorge

— KNOW YOUR FOREST —

Learning Library | Landowner Assistance | Assistance Map | Events | About the Partnership | Search

- Getting Started
- What's That Tree?
- Planting Trees
- Thinning My Forest
- Habitat for Wild Animals
- Reducing Fire Hazard
- Forest Health
- Logging and Selling Timber
- Forest Protection Laws
- Forest Management Planning

FOREST HEALTH IN THE COLUMBIA RIVER GORGE

This website provides information and educational resources to assist landowners, land managers, and natur resource professionals in their efforts to sustain forest and tree health and resiliency in the Columbia Gorge. Trees and forests in the Columbia River Gorge face many challenges across diverse topography and climate conditions. In the Gorge, it seems that there are constant threats to forest health from the interaction of wind ice, snow, heat, or drought and hazards due to fire, insects, and diseases.

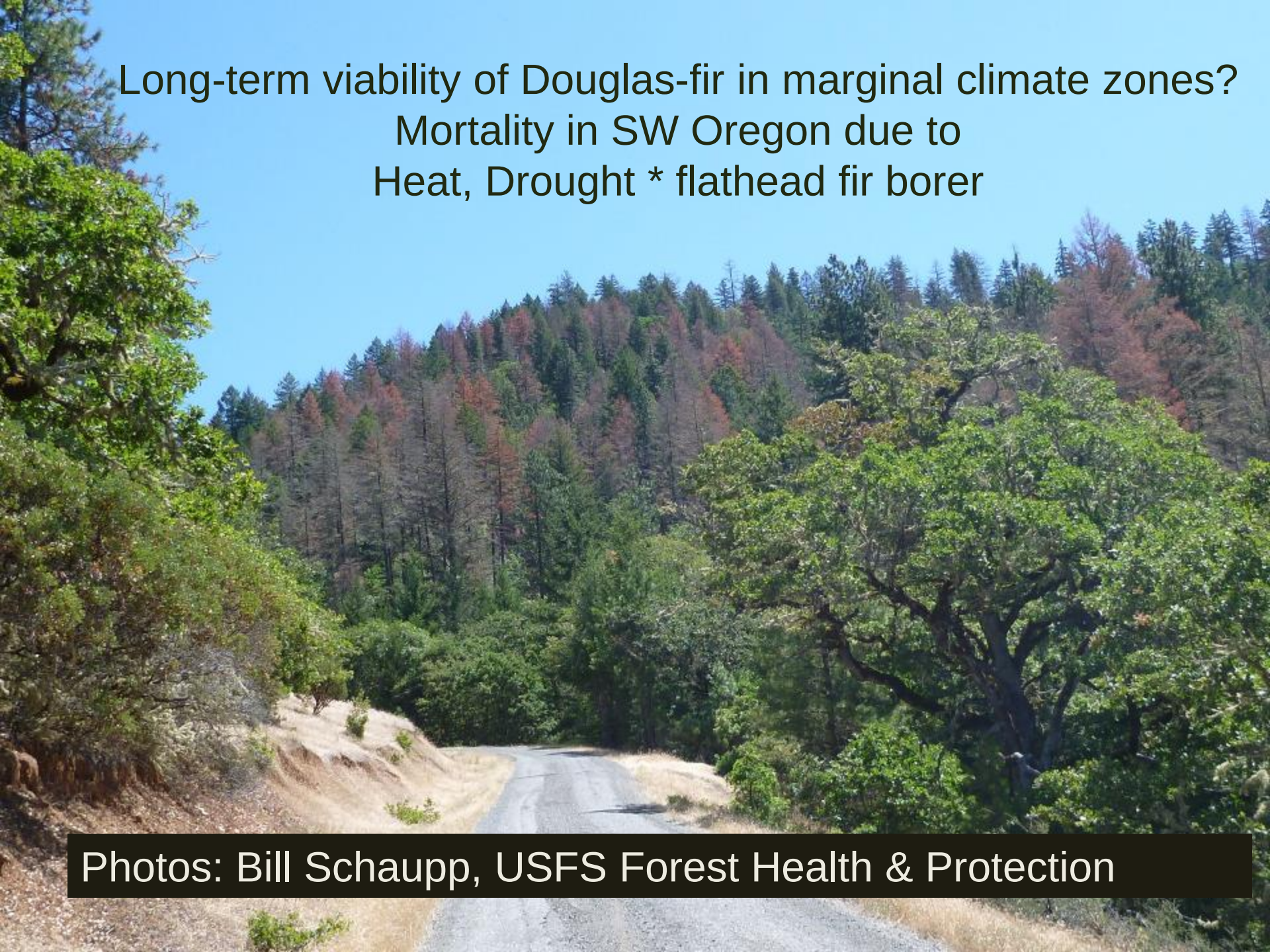
Contents

Managing for healthy trees and forests

- Prevention – Do no harm.
- Assess soil/site & climate conditions and hazards.
- Choose species that are well-adapted and resilient.
- Maintain tree vigor – adequate growing space.
- Monitor tree and forest health.
- Remove/Sanitize unhealthy trees or debris
- Avoid attracting or introducing pests.
- Apply specific treatments, control measures if available.

Prevention – Do no harm

- Avoid “wrong tree in the wrong place” - match species to site
- Matching seedling or sapling stock type to site and care regime.
- Use proper irrigation practices –occasional deep watering, not frequent shallow watering
- Proper fertilization practices – low and slow.
- Pruning practices – proper timing and amount.
- Avoid development impacts
- Avoid changes in drainage
- Avoid soil compaction – human traffic, animals, machines
- Avoid physical damage to trees from tools and machines.


Long-term viability of Douglas-fir in marginal climate zones?
Mortality in SW Oregon due to
Heat, Drought * flathead fir borer
Photos: Bill Schaupp, USFS Forest Health & Protection

More Q & A ?