Douglas-fir dieback in SW Oregon

Max Bennett, OSU Extension (retired)

Current dieback episode started in 2015 & is ongoing

Photo credit:
Bill Schaupp

Typical mix of dead, dying, still green

Photo credit:
Chris Chambers

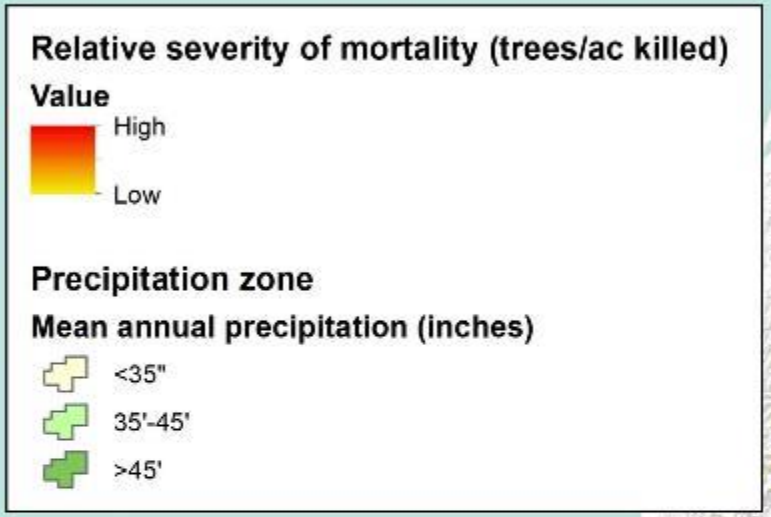

Larger & older trees have been hit harder

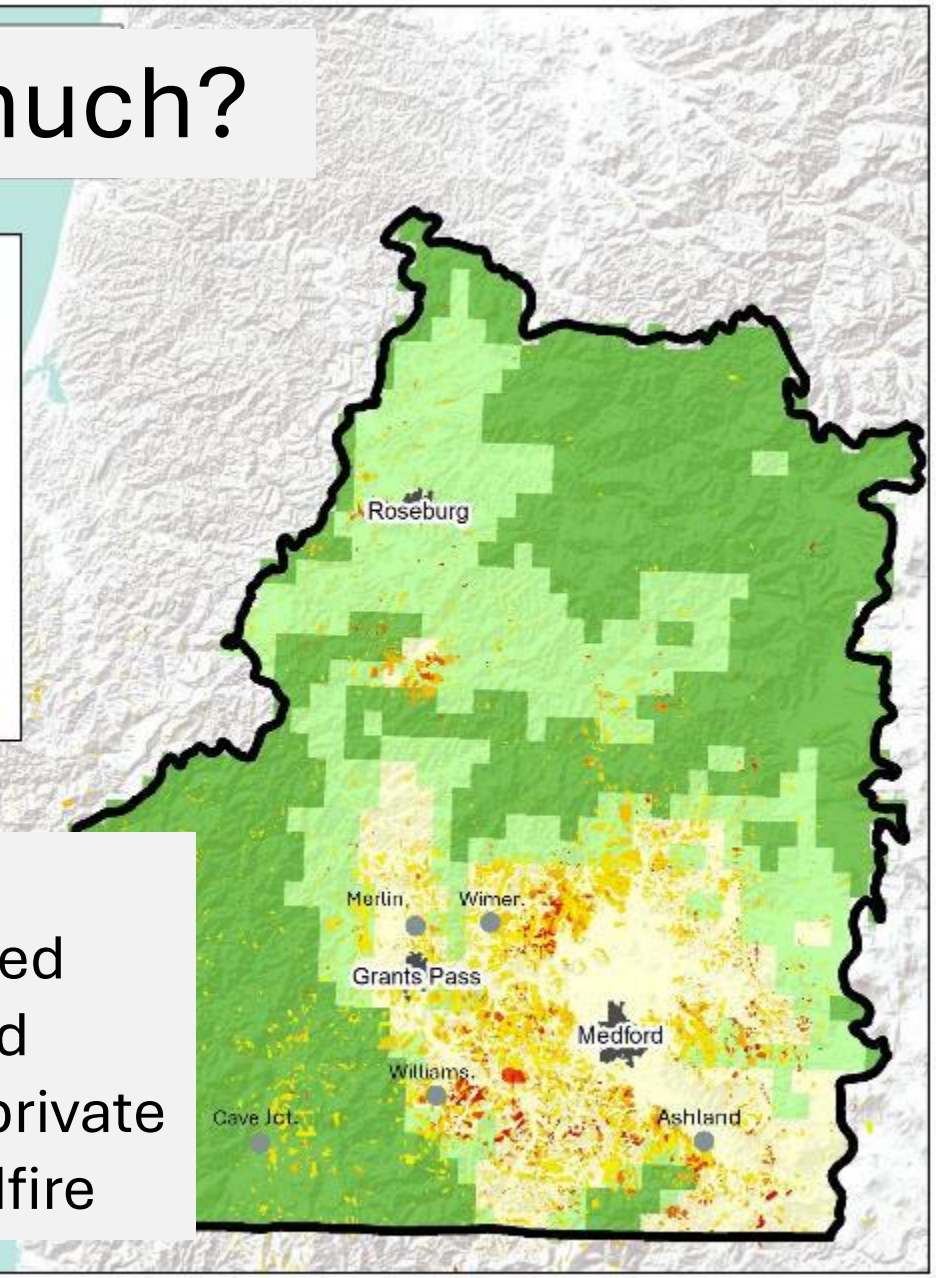

DF dieback tends to occur on hot, dry sites

“Snag patches” – standing dead & downed trees with regrowth of brush & small trees = fuel hazard

Photo credit: Bill Schaupp

Where and how much?

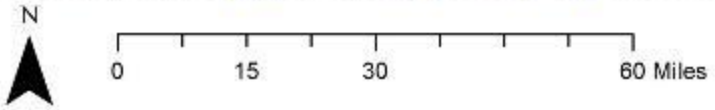




Since 2015…

- Est. 635,000 acres affected
- 1.74 billion board ft. killed
- ~60% federal land, 40% private
- 7 of top 10 CAR from wildfire

Data: ODF/USFS Aerial Detection Survey, PRISM



Impacts

- Fuels buildup & fire risk
- Wildfire suppression difficulty & firefighter safety
- Safety concerns (homes, roads, powerlines)
- Cost of removal/treatment
- Loss of large trees
- Loss of timber value

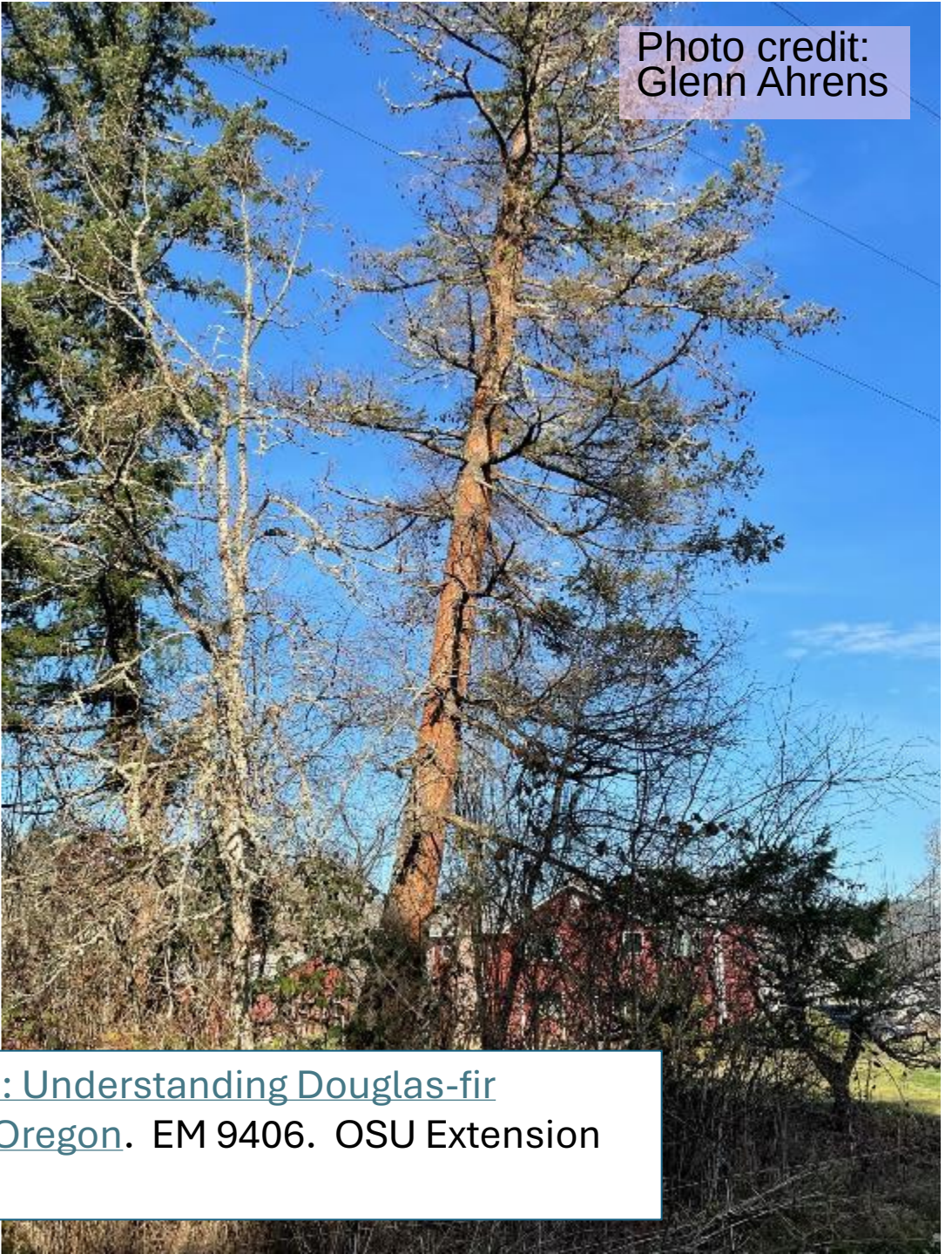
What are the reasons for DF dieback?

- DF is growing at high densities on water-stressed sites where it was not as abundant 100+ years ago
- Recent hotter droughts have greatly magnified DF stress on these sites
- Stressed trees are killed by opportunistic insects

What does the future hold for Douglas-fir in SW Oregon?

- Warmer, drier summers >>
- Increased tree stress >>
- On-going DF dieback on high-risk sites
- Cooler, wetter sites in the Coast range and western Cascades will be much more resilient
- In dieback areas, other trees (e.g., oaks) will persist

Recently killed Douglas-fir on the margins of the Willamette valley



More information: Trees on the Edge: Understanding Douglas-fir Decline and Mortality in Southwest Oregon. EM 9406. OSU Extension Service, Corvallis.

Nick Haile
Oregon Department of Forestry

Forest Resources Manager
Southern Oregon Area

City of Ashland Forestlands Climate Change Adaptation and Douglas-fir Mortality Response

2023-2025

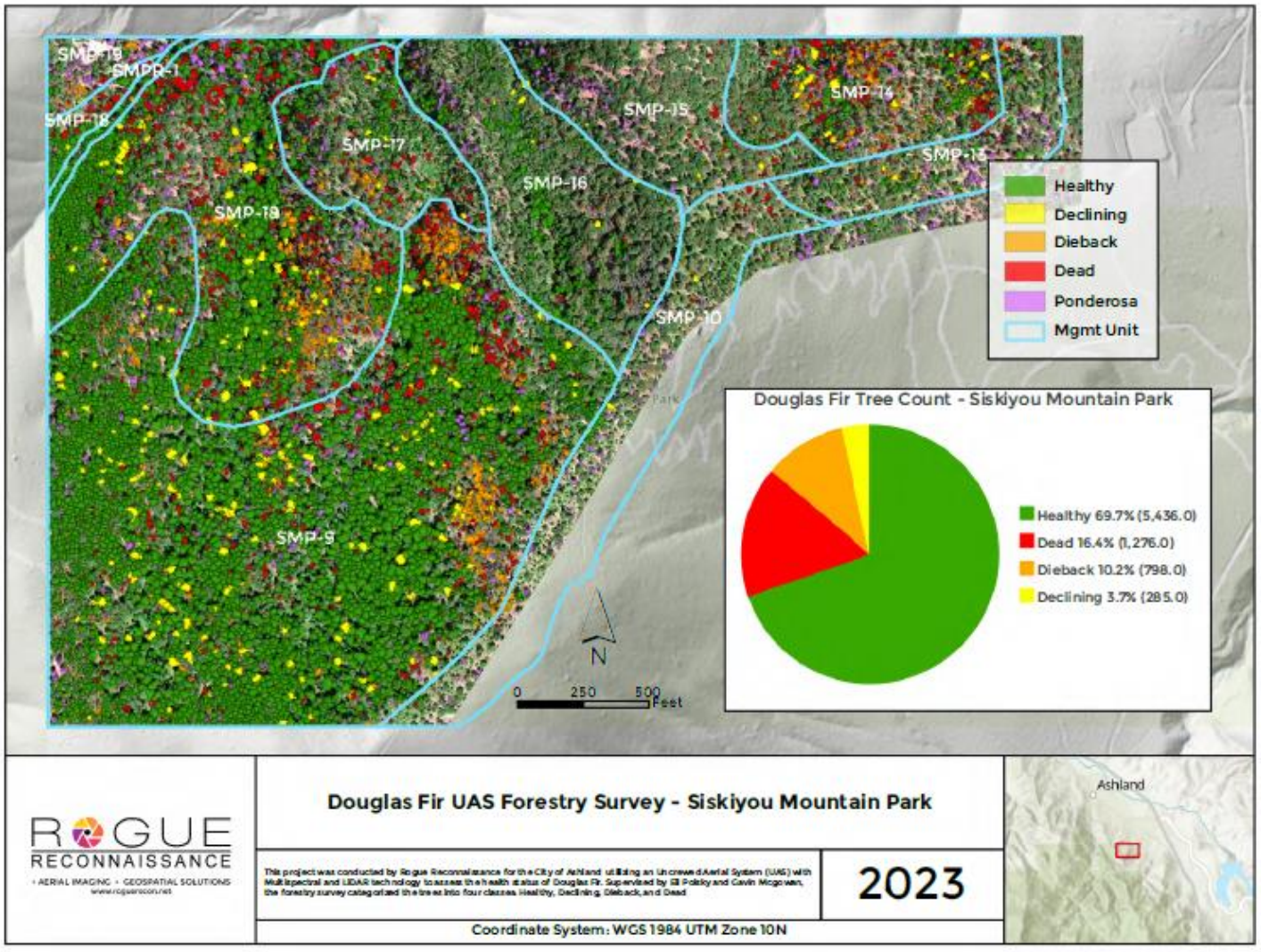
Chris Chambers, Forestry Officer

Final Climate Change Addendum to the 2016 Ashland Forest Plan

Approved by Ashland City Council in April 2023

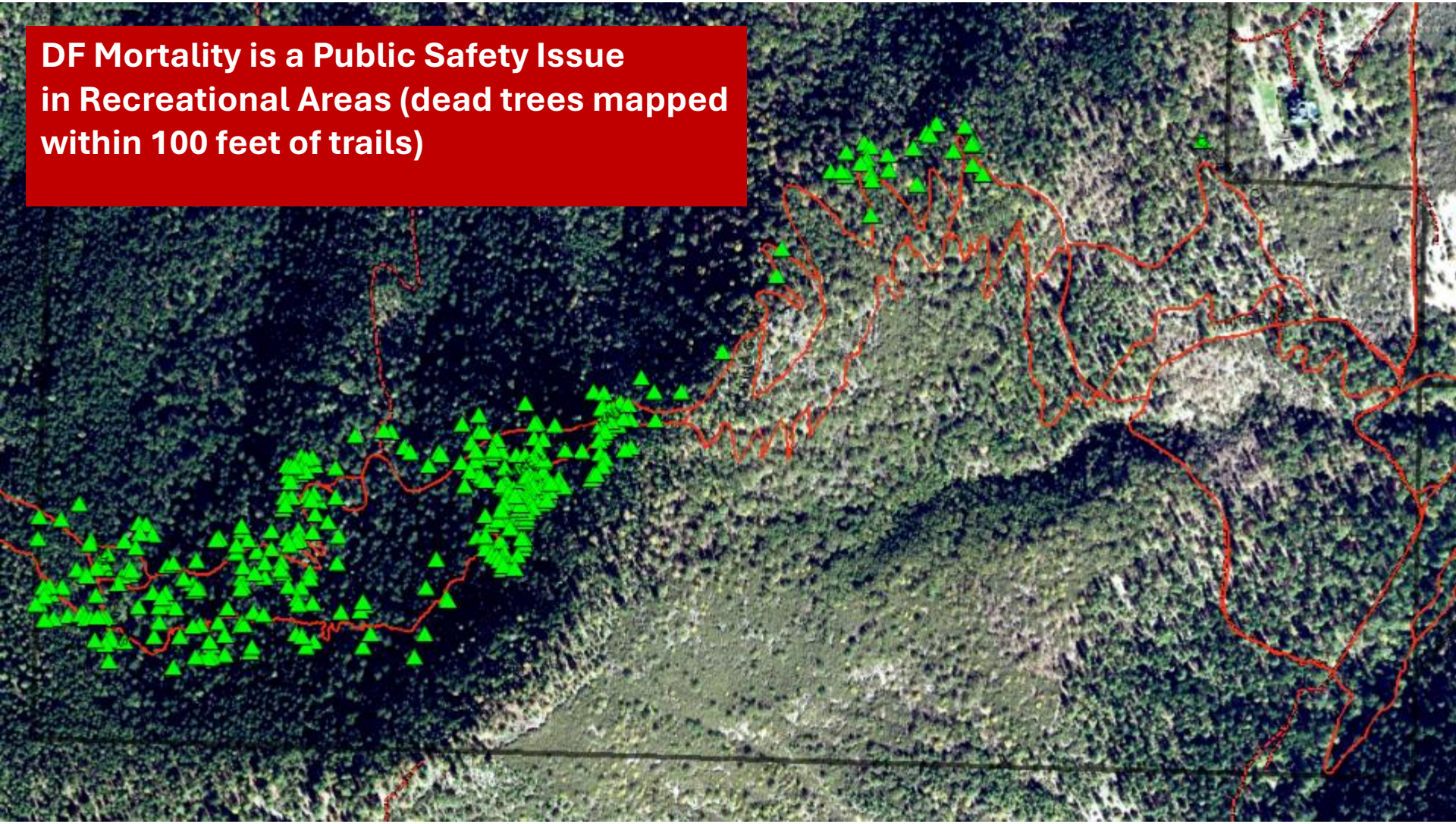
I. Introduction

The 2016 Ashland Forest Plan (AFP) contained a chapter on climate change, but it was general in nature and limited by uncertainty as to the impact climate change would have on the approximately 1,200 acres of forest lands managed by the City of Ashland and Ashland Parks and Recreation Commission (APRC). The increased research and rapid rate of climate change induced impacts on Ashland's forest lands over the past six years have added considerably to the Forest Lands Commission's (FLC, now a management advisory committee) understanding of the urgent need to address climate change impacts through recommendations to the Ashland City Council for planning direction and management actions over the next 25 years. Current drought and temperature-related changes to vegetation on municipal forest lands warrant an improved and more comprehensive analysis of climate-adaptive planning and management beyond what was addressed in the AFP. Adaptive management is a key overarching strategy addressed throughout this addendum to assess both new and changing resource conditions and land management goals, as well as those that remain unchanged at this time.



UAS (Drone) Based Assessment

LIDAR and Multi-spectral imaging were used to assess mortality, map treatments, and a repeat flight was done to monitor results.


DF Mortality is a Public Safety Issue
in Recreational Areas (dead trees mapped
within 100 feet of trails)

"The fuel impacts of large-scale forest mortality suggest this could lead to a greater incidence of mass fire behavior. Mass fires strongly contrast with historical fire regimes in frequent fire forests, are not predictable by fire models, and risks are poorly understood. ***Thus, fire departments, communities, and forest managers likely will underestimate the wildfire threat posed to people, homes, and natural resources following severe tree mortality in forests adapted to frequent fire."***

- Scott Stephens Ph.D, U.C. Berkeley (2018 publication)

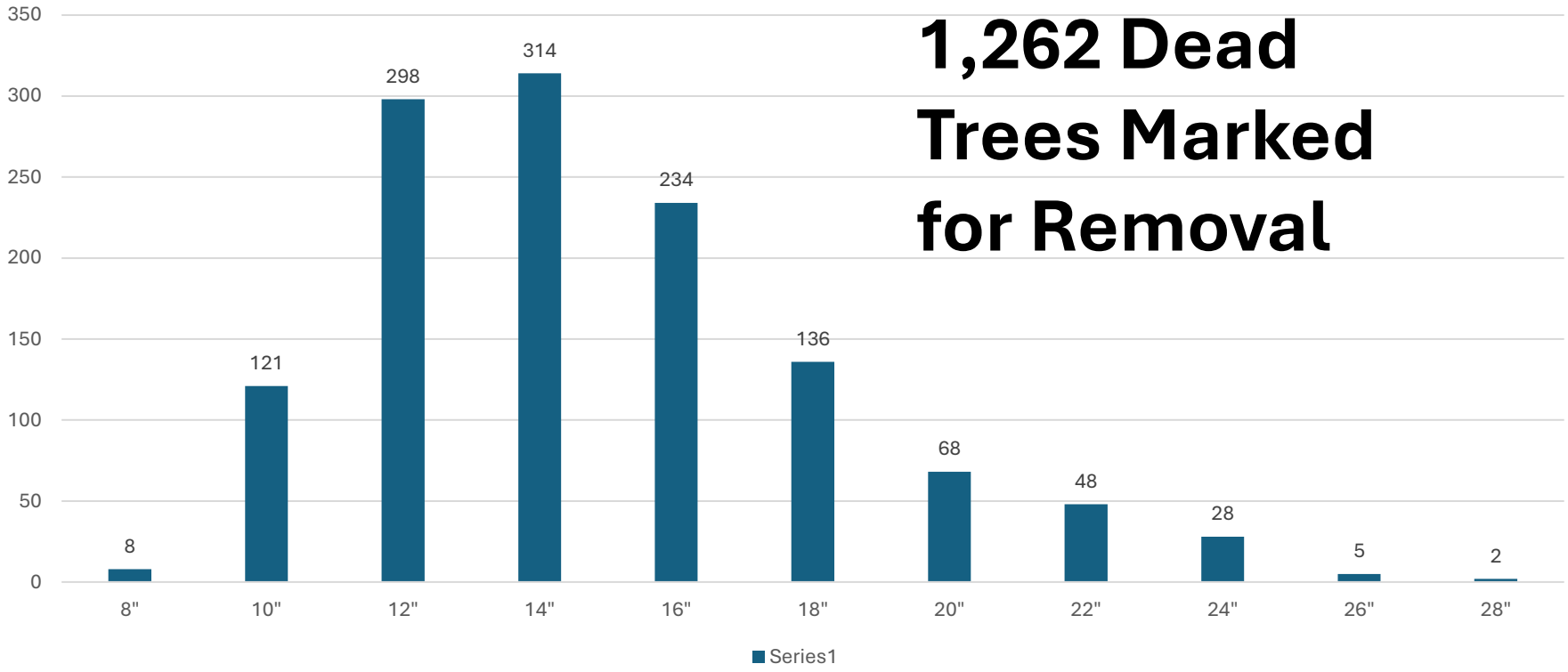
Critical Issue: Can we get ahead of the curve?

Managing for resilience and adaptation: Green forests as a priority

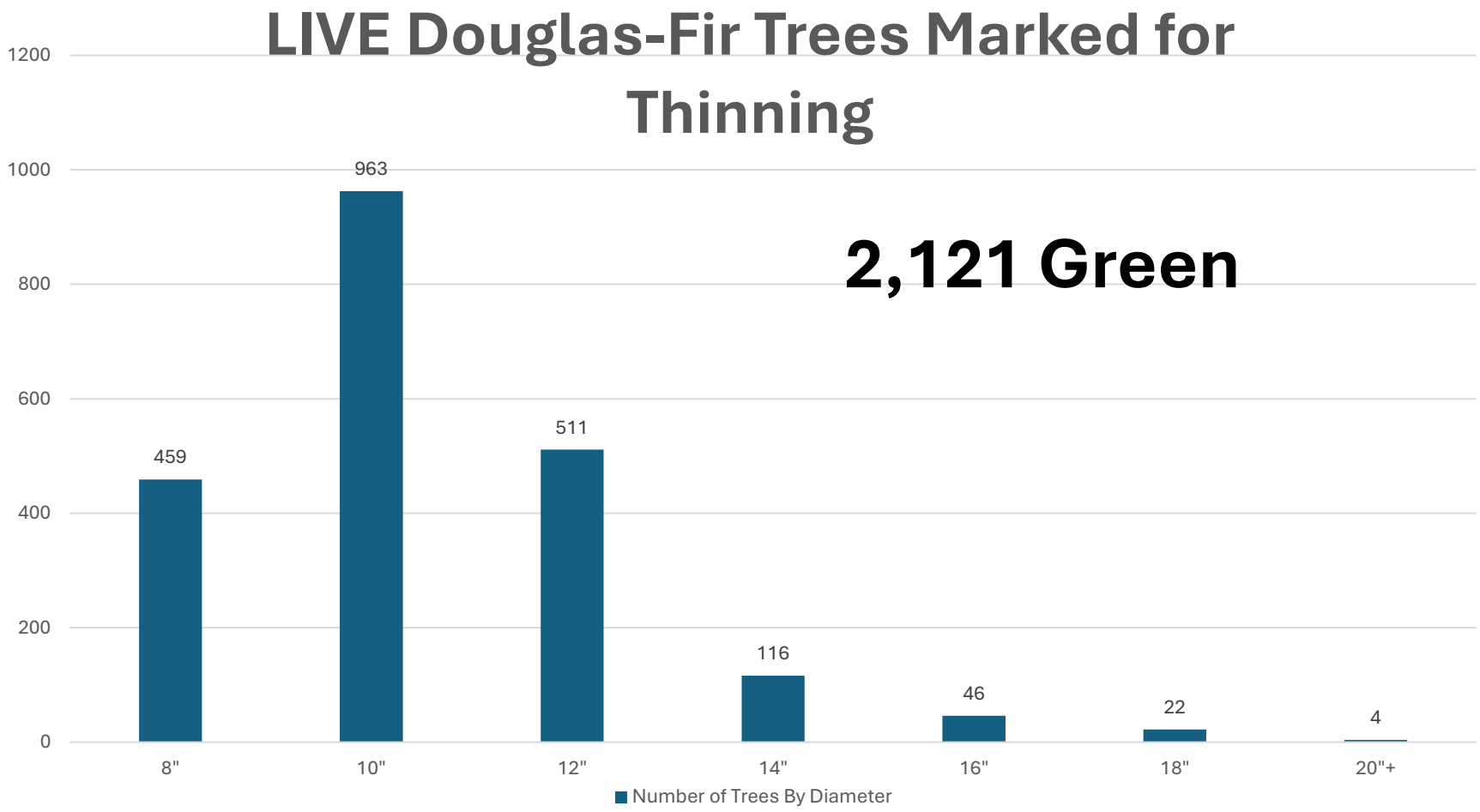
Although dealing with dead trees has become a focus of forest management on many lands in the western US (and a priority where human safety is compromised), for long-term resilience and adaptation to climate change, we need to move beyond triage (e.g., removal of dead and dying trees) to making "green" (live) frequent fire forests more resilient to disturbances.

From: Stephens et al, 2018. *Drought, Tree Mortality, and Wildfire in Forests Adapted to Frequent Fire*

DEAD Douglas-Fir Trees Marked for Thinning at SMP



1,262 Dead Trees Marked for Removal


LIVE Douglas-Fir Trees Marked for Thinning
2,121 Green
1200
1000
800
600
400
200
0
459
963
511
116
46
22
4
8"
10"
12"
14"
16"
18"
20"+
Number of Trees By Diameter


N675TH

Ashland Forestlands Climate Adaptation Project Financial Summary

- Acres completed: 420
- Logging Cost: $1.1 Million
- Dollars back from wood sales: $442,516
- Logging Cost Offset: 40%
- City of Ashland Dedicated Funding: $631,374
- Lomakatsi USFWS Grant: $150,000
- Logging+Piling+Burning Net Per Acre Cost: $2,386
- Value Lost to Sap Rot: 20.6% of value, estimated at $84,827.47!
- **Improvement Value of Buildings Within 1/4 Mile: $81,256,870.00**

Ashland Forestlands Climate Adaptation Project Impact: Fuel Removed = Lowered Fire Hazard

- Log Truck Loads of Wildfire Fuel Removed
  - 176 to Timber Products Co. in Yreka
  - 47 to Roseburg Forest Products in White City for biomass
- 47 Biomass Truck Loads Net Revenue: $8,439
- 170 yards of firewood to JCFC for low-income households(!)
- Estimated **7,000 tons** of wildfire fuel removed from hillsides above Ashland between logging and follow-up prescribed burning
- 3,000 ponderosa and sugar pine planted to date in place of dead Douglas-fir as part of Phase 2, adapting forests to the changing climate.
- Native grasses and other plants are being seeded this week.

City of Ashland Forestlands Climate Change Adaptation and Douglas-fir Mortality Response

2023-2025

Chris Chambers, Forestry Officer

ASHLAND PARKS & RECREATION

Better Together

FIRE ASHLAND RESCUE 1887

CITY FORESTLANDS

Climate Change Adaptation Project

3,000 New Trees for a Healthier Forest

In 2023, thousands of Douglas-fir trees died above Ashland after years of drought and extreme heat. To reduce fire danger and support a more resilient forest, the City removed dead and dying trees and replanted 3,000 drought and heat-tolerant pines in Siskiyou Mountain Park in 2025, with more planting planned in coming years on City forests.

Learn more about Ashland's forest restoration efforts:

ashlandoregon.gov

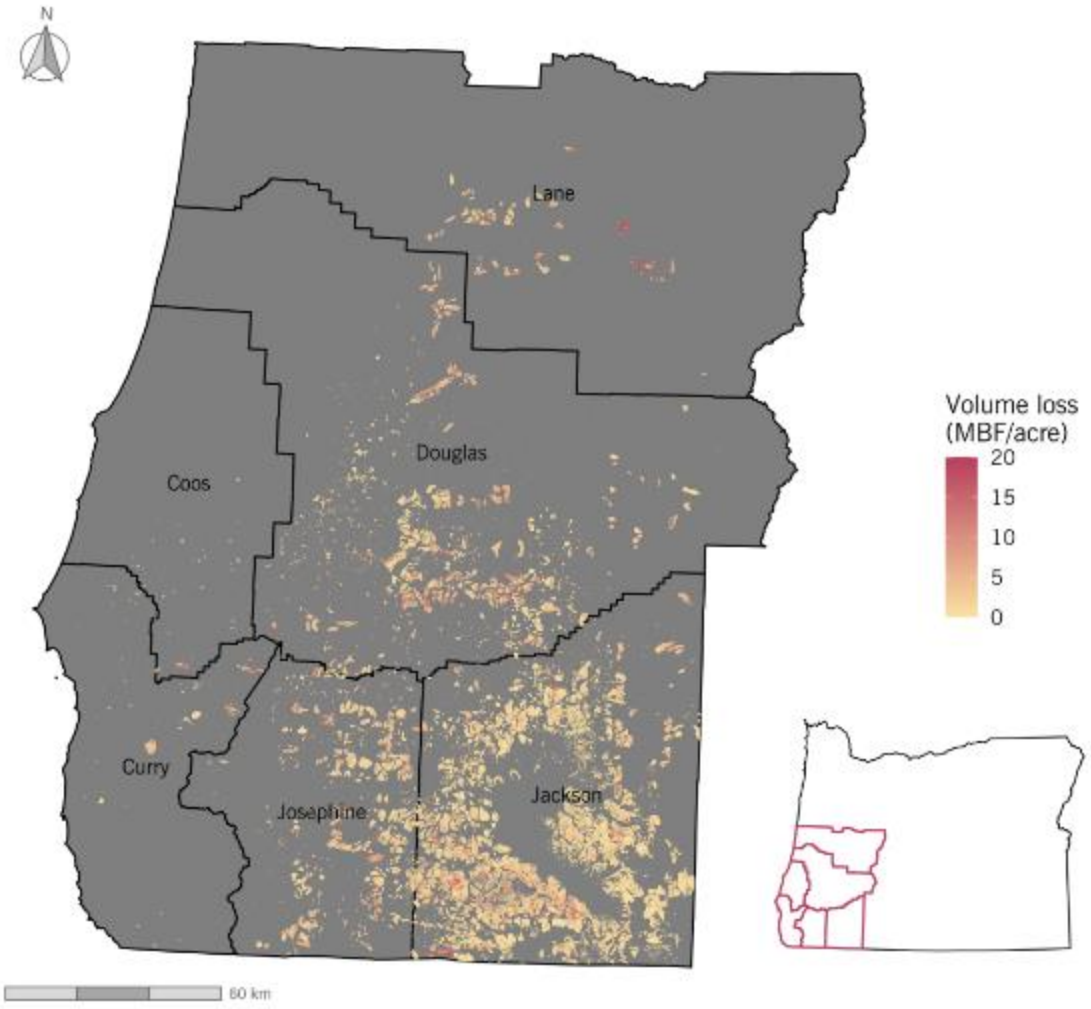
Scan here to learn more about our work

Douglas-fir Mortality in Southwest Oregon Wrap Up and Summary

Terry Fairbanks, Executive Director
Southern Oregon Forest Restoration Collaborative

SOFRC
Southern Oregon Forest Restoration Collaborative

County-by-County Timber Losses



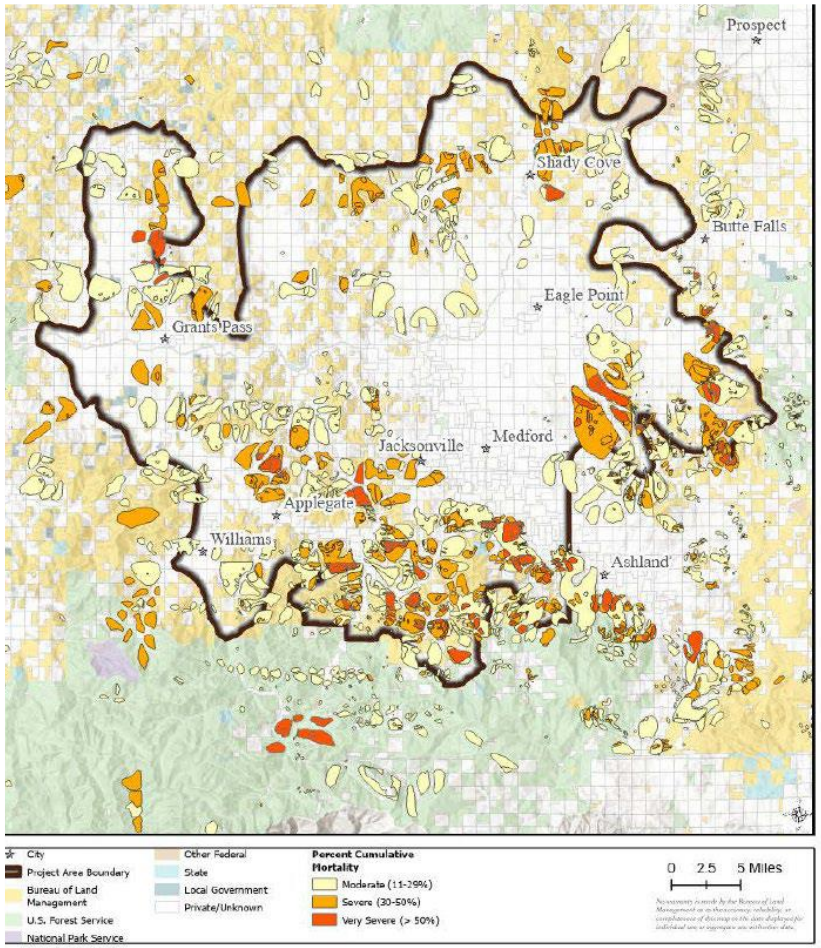
Jackson County
49% of total mortality
$529 million

Douglas County
26% of total mortality
($296 million

Josephine County
14% of total mortality
$158 million

Coos, Curry & Lane Counties
11 % of total mortality
$118 million

Affected Areas by Ownership



Example from BLM Project Map

Private lands

43% (273,000 acres)

BLM lands

38% (239,000 acres)

USFS lands

19% (117,000 acres)

Quantified Economic Impacts

$1.1 billion in lost timber value

$500 million in potential road hazard costs across 12,600 miles

1,500 miles of emergency evacuation routes with hazard trees

635,000 total acres affected across the six-county region since 2015

273,000 acres of private land

Safety, Social and Health Impacts

- Wildfire suppression difficulty
- Private property damages in interface areas
- Emergency response costs
- Health impacts from smoke exposure during fires
- Ecosystem service changes (water quality, erosion control)
- Recreation infrastructure maintenance needs

Why is this more than another insect infestation?

- Effect on fire suppression
- Value of Douglas-fir as a commodity
- Key component of wildlife habitat
- Highly populated areas in 2 MSAs (metropolitan statistical area)
- Vegetation type changes

Barriers to solving this crisis

- Multiple ownerships
- Extreme fire hazard such as experienced in California
- Over 12,500 miles of road hazard
- Small private landowners not able to pay for treatments
- Egress and ingress hazards during fire
- Recreation impacts
- Planting and seed stock for small landowners not available
- Lack of coordination for helping landowners
- Tax liabilities

Need for assistance

- **Landowner Support**
  - Blanket planting waivers and planting guidance
  - Organizational assistance—soil and water districts, OSU extension, ODF, nonprofits
  - Funding support—match to federal funding
  - tax deferral

Infrastructure and Capacity

- Wildfire mitigation--rebates, incentives
- Subsidies for moving material so it can be processed to help reduce cost
- ODF capacity

Coordination

- Working group across organizations
- State/Federal/Private partnerships

Thank you, for your attention and time

- Max Bennett, OSU Extension, retired
- Nick Haile, Oregon Department of Forestry
- Chris Chambers, City of Ashland
- Terry Fairbanks, SOFRC