Fire resilience, adaptation and recovery

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Overview

- Oregon Wildfires
- Introduction to OSU Fire Team
- Cohesive Strategy
- Examples of Research at OSU
  - Restore and maintain landscapes
  - Fire adapted communities
  - Response to fire

Westside fires

- Large, severe, fast moving, but not unprecedented
- High severity, low frequency regime
- Intersection of society, ecology, and climate change

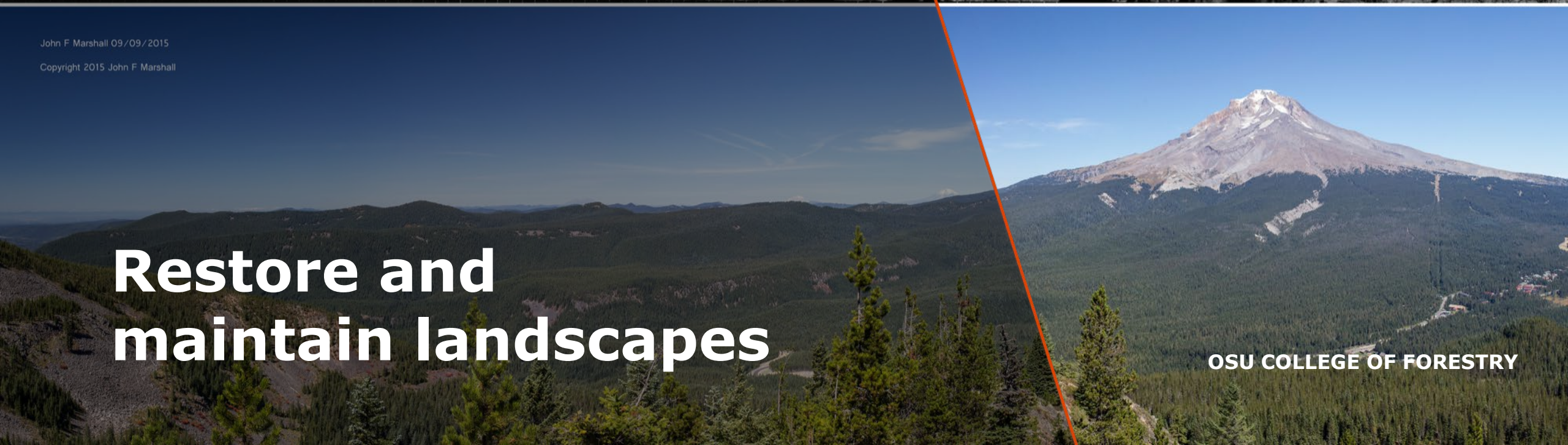
OSU Research and Education in Fire

A few examples

- Fire ecology, fire management
- Silviculture, restoration, adaptation, resilience
- Hydrology, soils and municipal water supplies
- Wildlife biology, adaptation, migration
- Human dimensions of fire and resource management
- Wood science and engineering, fire hardened housing

National Cohesive Wildland Fire Management Strategy Vision

To safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and as a nation, ***to live with wildland fire.***



Restore and maintain landscapes

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Applied science

To restore, maintain, and adapt landscapes in the context of wildfire and climate change

Fire refugia

- *Science to identify locations that are resistant to disturbance from fire, that confer resilience to landscapes*

Invasive plants and fire

- *Science to understand and mitigate how invasive plants are altering fire regimes by changing fuels and plant community, and eroding system resilience.*

Fire history to inform restoration and adaptation

- *Science for planning and decision processes focused on adaptation to living with fire in our west side and east side forests, particularly in the context of changing climate.*

Applied science cont.

To restore, maintain, and adapt landscapes in the context of wildfire and climate change

Forest and fuels management

- Resilience and fire behavior
  Partial harvests ("thinning"), Prescribed Fire

Treatment placement in the landscape

- How much and where?
- Ownership differences

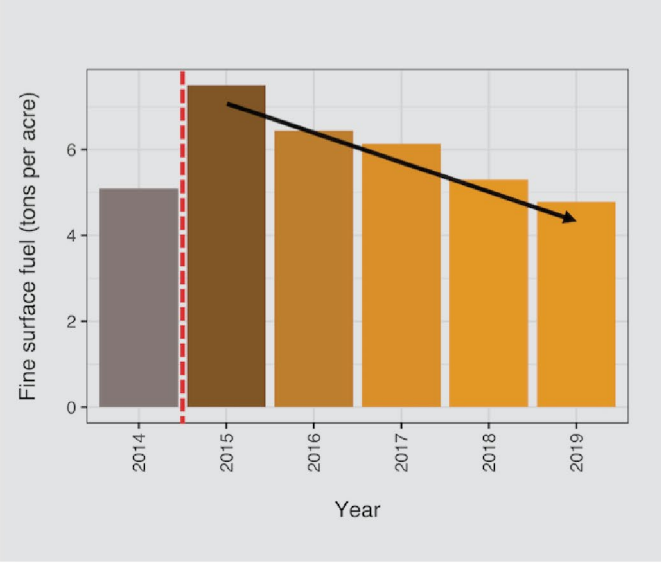
Post-fire dynamics and recovery

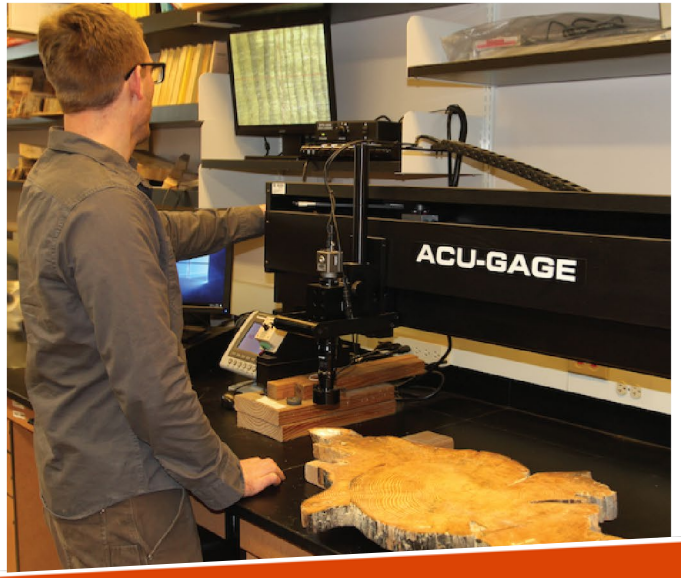
- Salvage and restoration options

Science products

To support collaborative forest restoration

- Collaboratively planned salvage logging to provide wood products and protect habitat
- Engaging with the media, policy makers, and local leaders
- Westside fire histories
- Evaluating fuel reduction projects





Fire adapted communities

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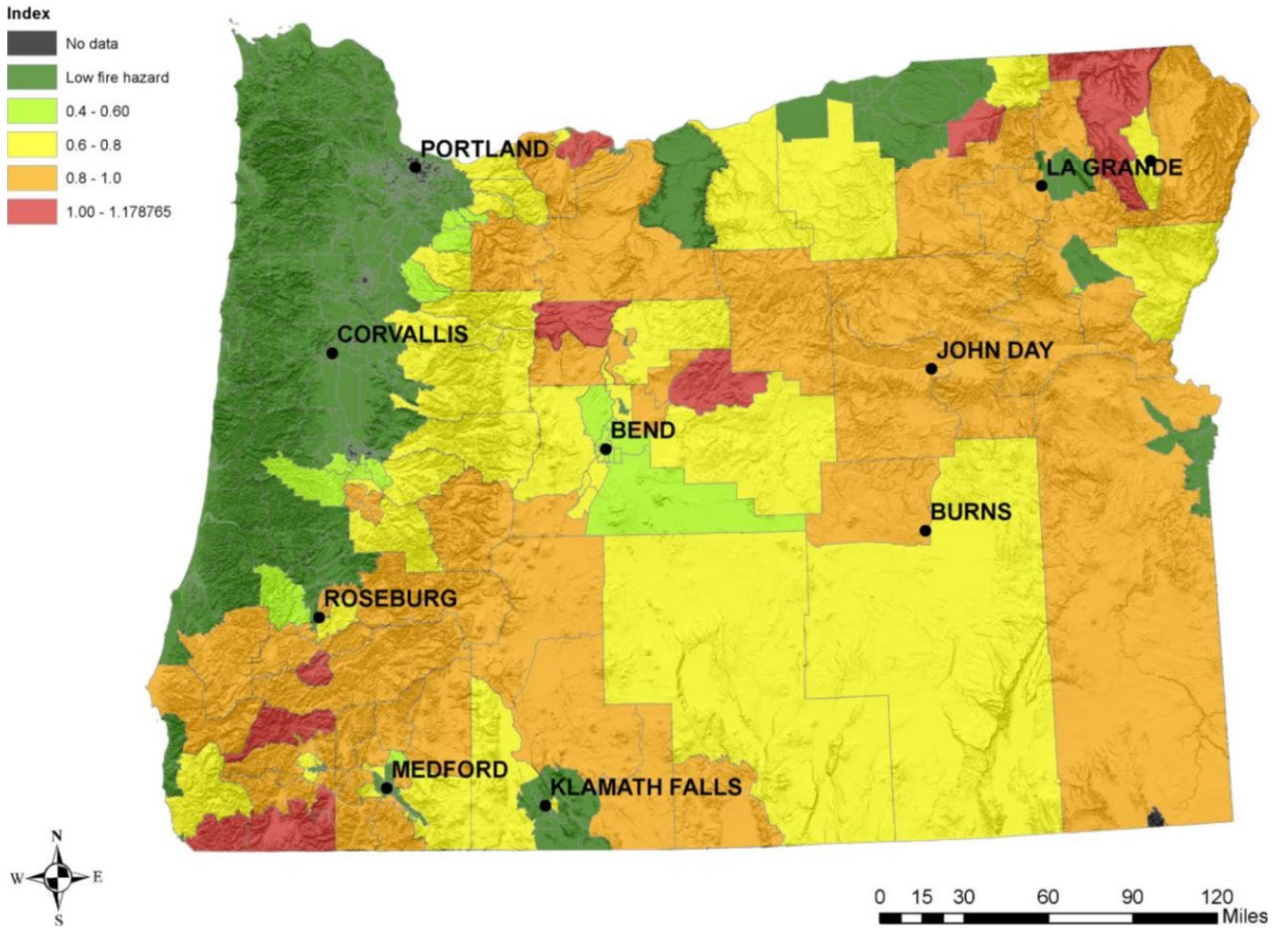
Variables and Themes Included in the Social Vulnerability Index Databases

Overall Vulnerability

Socioeconomic Status	Below Poverty
	Unemployed
	Income
	No High School Diploma
Household Composition & Disability	Age 65 or Older
	Age 17 or Younger
	Older Than Age 5 With a Disability
	Single-Parent Households
Minority Status & Language	Minority
	Speaks English "Less Than Well"
Housing & Transportation	Multiunit Structures
	Mobile Homes
	Crowding
	No Vehicle
	Group Quarters

Vulnerable Population Risk



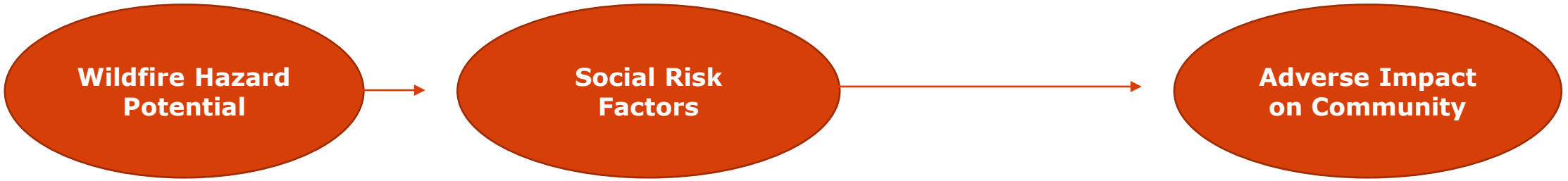
Understanding Social Vulnerability and Resilience to Wildfire Hazard in Oregon

Exposure Risk
(Source of social risk)

Sensitivity Risk Factors *(e.g., poor socio-economic conditions, dependence on ecosystem services)*

Adaptive Capacity Risk Factors *(e.g. Cognition of risk, institutional and societal adaptive capacity)*

Adverse Impact on Communities *(Severity of impact on wellbeing)*



Research Question:

1. What communities in Oregon perceived to have poor wildfire mitigation practices?

Research Questions:

2. What are the most important social risk factors of wildfire affecting the wellbeing of communities in Oregon?
3. What are the most vulnerable communities?

Research Question:

4. What is the nature of adverse impacts of wildfire on community wellbeing?

Safe and Effective Response and post fire recovery

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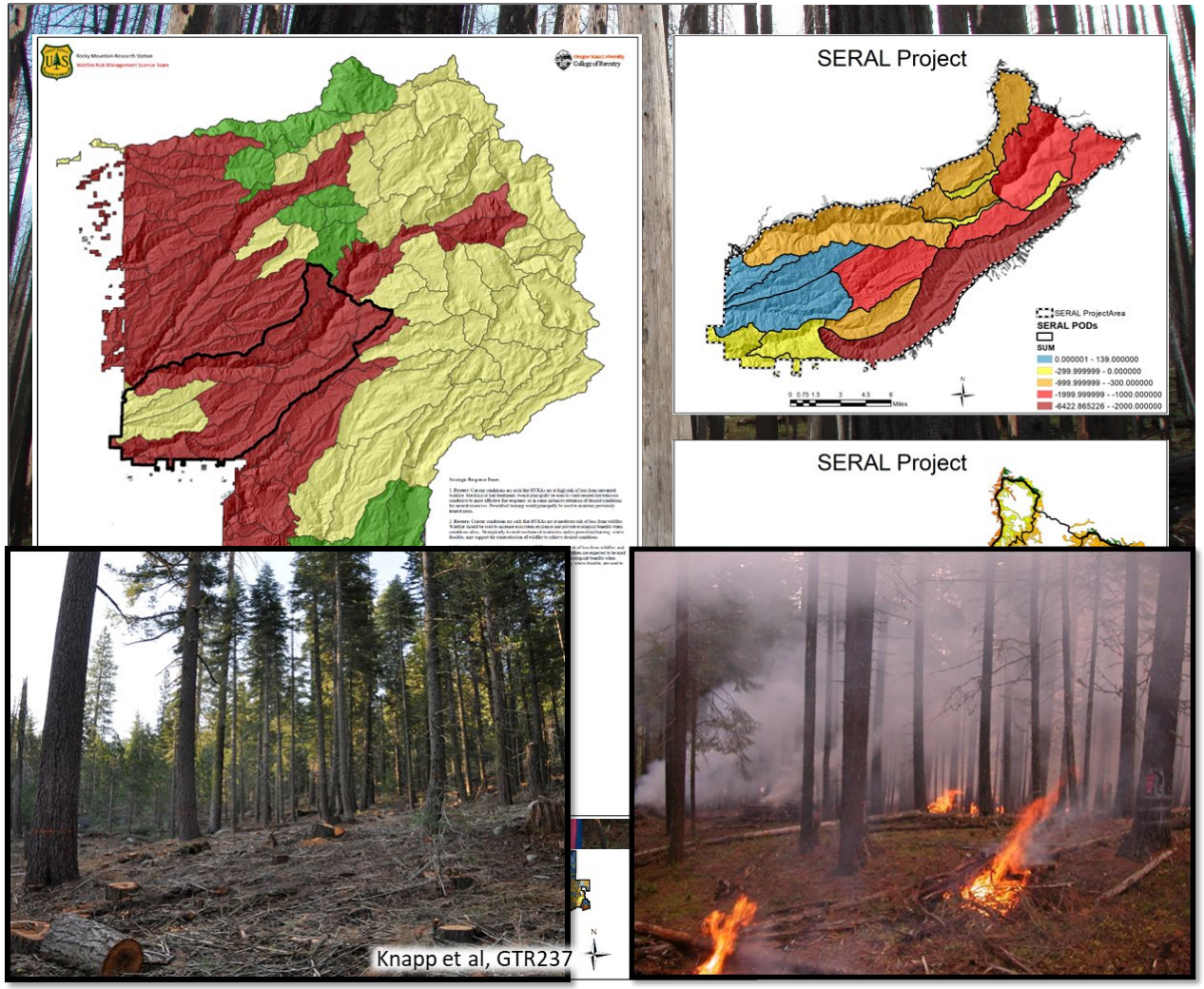
Identify
Assess risks
Examine mitigation options
Implement mitigation strategy
Monitor outcomes
Risk management process


SERAL Project
SERAL ProjectArea
SERAL PODs
SUM
0.000001 - 139.000000
-299.999999 - 0.000000
-999.999999 - -300.000000
-1999.999999 - -1000.000000
-6422.865226 - -2000.000000
SERAL Project
Knapp et al, GTR237

Affordable Mass Timber Modular Housing Modules for Wildfire Rebuilding

The TallWood Design Institute is engaged with multiple stakeholders and agencies to explore feasibility of rebuilding housing lost in fire-stricken communities using Oregon-grown and Oregon-made mass timber.

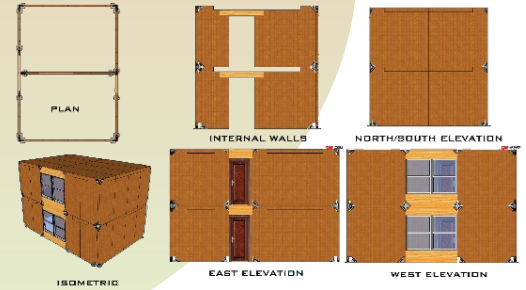
Collaborators:

- Department of Land Conservation & Development
- Freres Lumber Company, Lyons
- Path Architecture/Kaiser Group Inc., Portland
- Port of Portland
- TallWood Design Institute
- Department of Consumer and Business Services
- Oregon Department of Transportation
- Oregon Department of Forestry

Commmunity reconstruction

Preventive landscape treatments

Affordable Mass-Timber Housing Modules for Disaster Response and Community Rebuilding



Modular design

Small log processing

MTP fabrication

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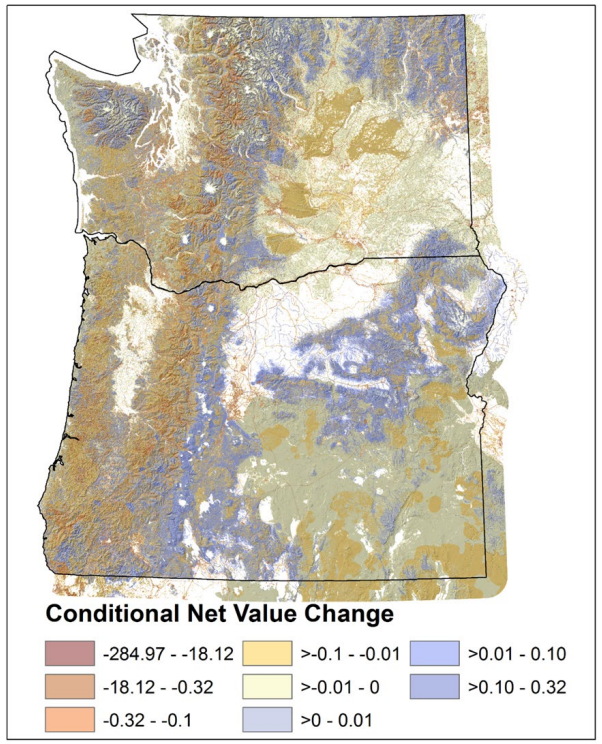
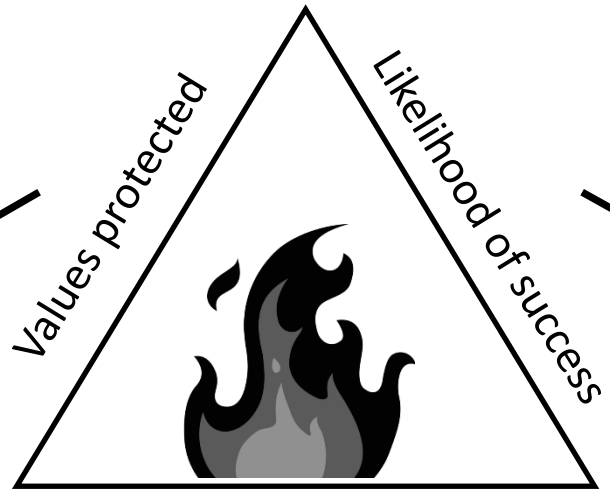
Response to Fire

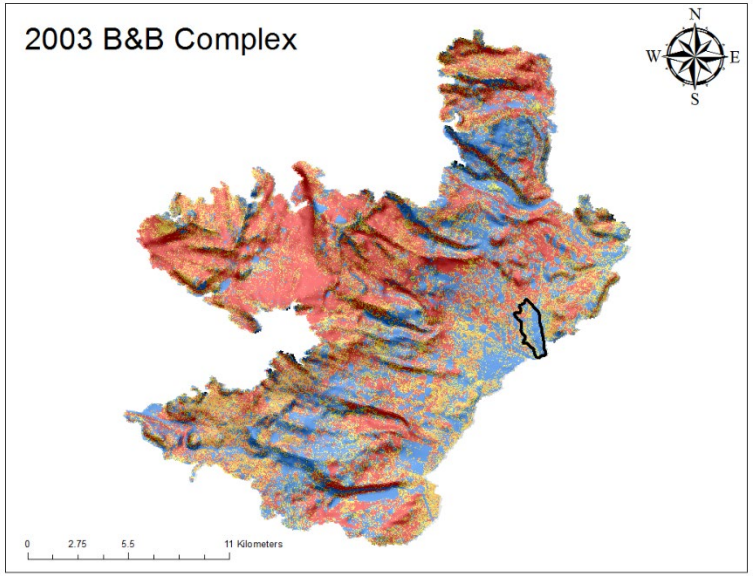
Quantitative wildfire risk assessment



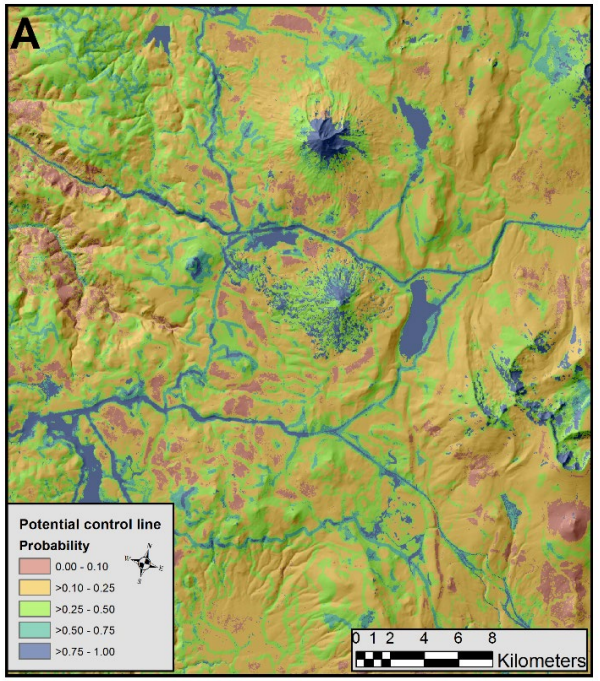


Responder hazards

Post-fire snag hazard



Rating wildfire containment opportunities



Shared Stewardship in Action

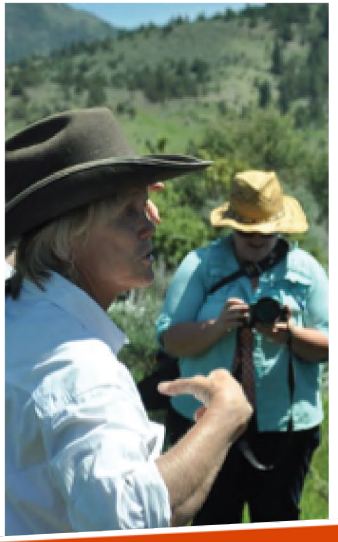
Implementing the goals of the National Cohesive Strategy

The Klamath–Lake Forest Health Partnership in Klamath and Lake Counties

185,000 acres of Federal and private land, near Chiloquin Community Forest and Fire Project.

Federal, State, County, College of Forestry and private partners signed a MOU to work across boundaries to reduce the risk of wildfire and improve forest health in the project area (Shared Stewardship).

RECIPIENTS OF THE 2020 USFS CHIEF'S AWARD AND USDA AWARD



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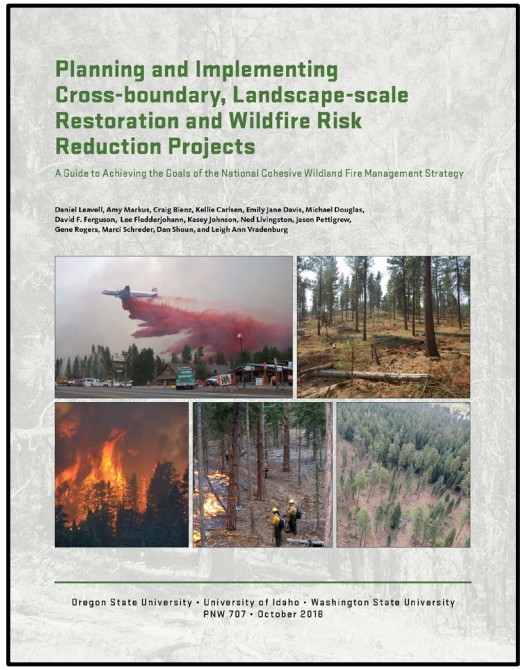
OSU Extension Service Fire Program

A guide to achieving the goals of the National Cohesive Strategy:

1. Restore and Maintain Landscapes
2. Fire Adapted Communities
3. Responses to Fire

The Forestry & Natural Resources Extension Fire Program plans to build partnerships and create fire-adapted infrastructure, communities, and landscapes across the state of Oregon through awareness, education, and outreach.



KLFHP PROOF OF CONCEPT FOR THE EXTENSION FIRE PROGRAM

FIRE TEAM OF STATE AND REGIONAL SPECIALISTS AND PROGRAM MANAGER

Oregon State University
Extension Service
Fire Program

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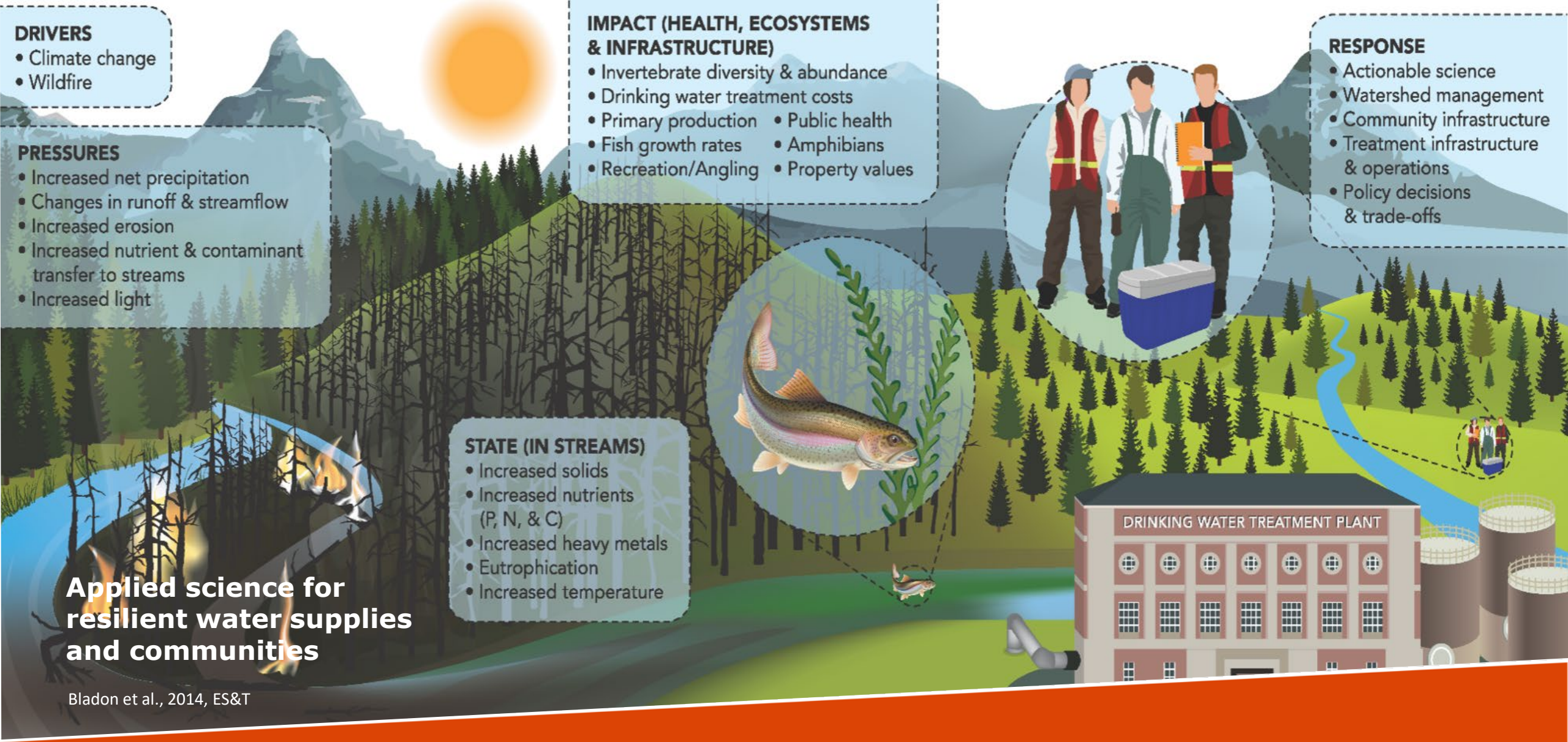

Applied science for resilient water supplies and communities

Bladon et al., 2014, ES&T

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FOREST ECOHYDROLOGY AND WATERSHED SCIENCE LAB

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Thank You!
Questions?
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