

DNR's Climate Resilience Strategy



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Board of Natural Resources
September 1, 2020

Safeguarding our Lands, Waters, and Communities

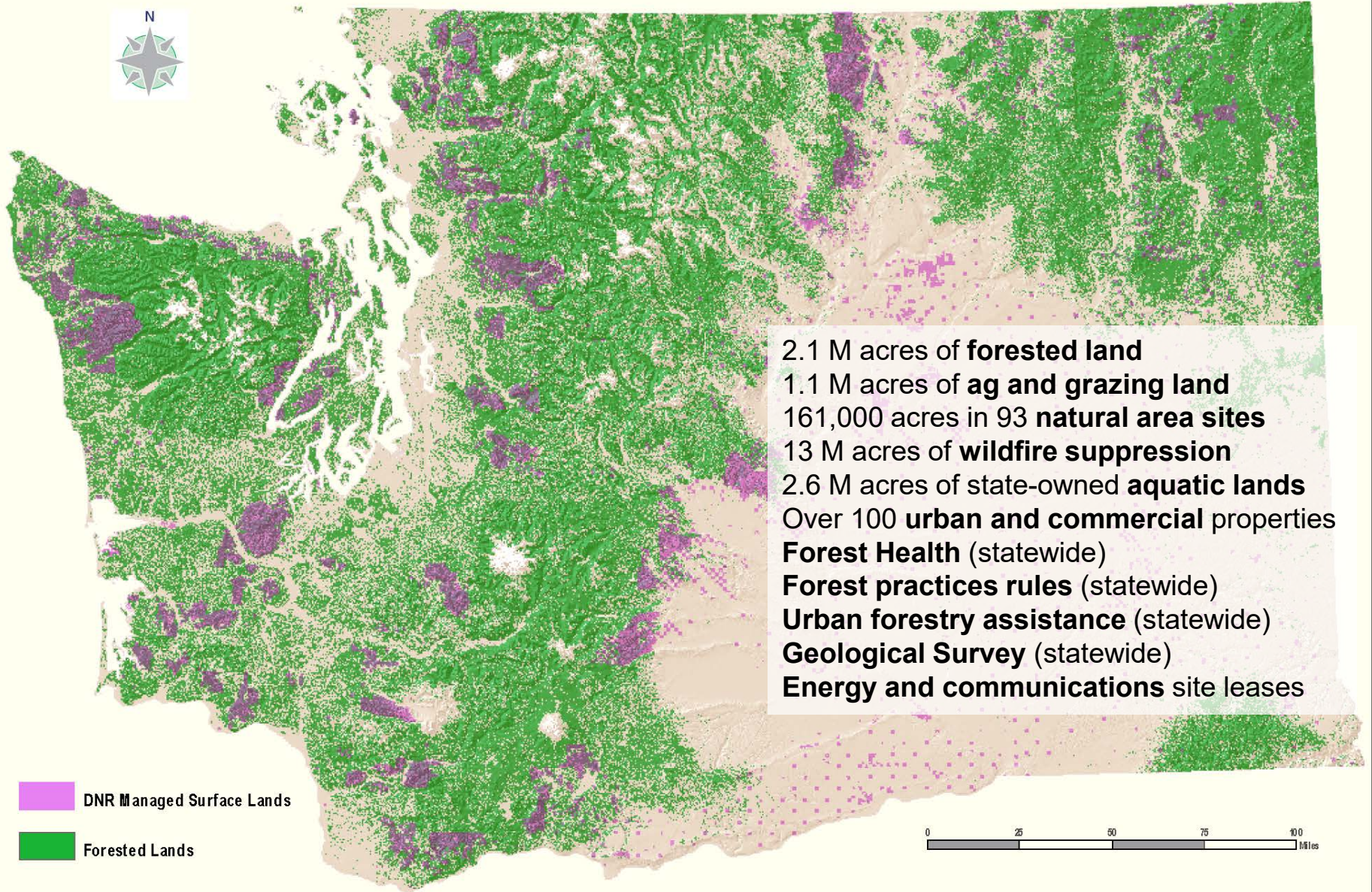


DNR's Plan for Climate Resilience

Board of Natural Resources

September 1, 2020

Forested Lands of Washington with Department of Natural Resources Managed Lands



Purpose of the Plan

To advance climate resilience...

- Within DNR
- Throughout the natural resource sectors in which we work
- Among our partners throughout the state, including tribes, cities, counties, stakeholders, and other state agencies



SAFEGUARDING OUR LANDS,
WATERS, AND COMMUNITIES:

FEBRUARY 2020

**DNR'S PLAN FOR
CLIMATE RESILIENCE**



WASHINGTON STATE DEPT OF
**NATURAL
RESOURCES**

HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS

Released February 2020



WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES

dnr.wa.gov

What is Climate Resilience?

Being prepared for, and adapting to, current and future climate-related changes

- For lands and waters, this means increasing the health and integrity of our natural systems and enhancing their ability to absorb and recover from disturbance.
- For people and institutions (i.e., DNR and partners), this means planning for change and projected impacts in order to maintain basic functions, minimize harm, respond effectively when impacts occur, and quickly recover to resume services following disturbances.
- This also means reducing atmospheric GHG concentrations (through reduced emissions and carbon sequestration) to prevent further escalation of climate change impacts.



How We Developed the Plan

2014-2016

- Phase I: Climate Risk Assessment
- Expert Council on Climate and Environmental Change

2017-2018

- DNR strategic plan: Resilience Goal

2018-2019

- Phase II: Develop and assess responses
- Staff workshops and engagement
- Meetings with Climate Resilience Advisory Council

Summer 2019:

- Interviews and workshops with 150 experts and partners from universities, tribes, state and federal agencies, businesses, and non-profits

Fall 2019

- Program work to confirm highest priority program-specific responses

February 2020

- Finalize content and release



Phase I: Climate Risk Assessment

2014-2016

**What are the high-priority
climate-related risks to
DNR's mission, responsibilities
and operations?**



Phase I: Assessing Risks

Consequence to DNR Mission	High	Yellow	Red	Red
	Medium	Green	Yellow	Red
	Low	Green	Green	Yellow
		Low	Medium	High
		Likelihood of Climate Impact		

- Risk to DNR mission & responsibilities
- Focus on higher risk items:
 - Red: High risk
 - Yellow: Medium risk
 - Green: Low risk



Phase II: Developing Responses

**How do we continue to fulfill
our mission and responsibilities
– and take advantage of opportunities –
under changing climate conditions?**



Identifying Response Options

Tweak Current Activities, Policies, etc. (Mainstreaming)	Do New Things	Learn More (Study & Monitor)
<p>Forest Roads and Culverts</p> <ul style="list-style-type: none">• Size culverts for future flows• Prioritize replacement of high risk drainage structures• Design roads to accommodate stronger storms and longer dry periods.		



Identifying Response Options

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Identifying Response Options

Tweak Current Activities, Policies, etc. (Mainstreaming)	Do New Things	Learn More (Study & Monitor)
<p>Forest Roads and Culverts</p> <ul style="list-style-type: none">• Size culverts for future flows• Prioritize replacement of high risk drainage structures• Design roads to accommodate stronger storms and longer dry periods.	<ul style="list-style-type: none">• Activities?• Authorities?• Responsibilities?• Approaches?• Partnerships?• Studies or special projects?• Communications/ public awareness• Others???	<ul style="list-style-type: none">• What would we need to know to make informed decisions?



What's in the Plan?

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Reversing GHG Trends

- Goal of 500 MW of new solar under lease
- Agency-wide emissions reduction plan
- Support energy efficiency and sustainability of materials for construction and renovation
- Explore carbon sequestration
 - Forests, harvested wood products, avoided conversion, ag & soils, geologic, aquatic
 - 2019 Budget Proviso: Carbon Sequestration Advisory Group



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Examples of Program-based Responses

- Forest Management & Uplands Leasing
 - Develop climate-resilient seed management and reforestation approaches.
 - Address forest health and increased wildfire risk on eastern Washington forestlands
 - Design and maintain forest roads to be resilient under current and projected climate conditions.
 - Promote climate-suitable strategies for at-risk species.
 - Develop post-wildfire recovery and restoration strategies.
 - Enhance watershed health and forest drought mitigation.
 - Advance clean energy and carbon sequestration on DNR-managed lands.
- Natural Areas & Natural Heritage
 - Assess vulnerability and enhance monitoring of Natural Areas.
 - Incorporate climate change considerations into Natural Areas site prioritization, selection, and design.



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Agency-Level Responses

1. Incorporate climate resilience into authority structures

- Issue Commissioner's Order
- Integrate climate change into legal, policy and guidance documents.
- Complete program-specific Climate Resilience Strategies



Source: Snover, et al. 2018. *The Building Blocks of Climate Resilience*.

COMMISSIONER'S ORDER

NUMBER 202006

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Hilary S. Franz, Commissioner of Public Lands

COMMISSIONER'S ORDER ON CLIMATE RESILIENCE

WHEREAS Washington is experiencing impacts related to a changing climate including health effects from wildfire and wildfire smoke; threats to salmon and orca and other wild stock; infrastructure damage from coastal flooding and changes in precipitation; impacts to agriculture and municipal drinking water from water shortages and drought; and threats to the coastal environment and livelihoods from sea level rise and ocean acidification; and

WHEREAS Average annual Northwest temperatures have increased 1.5°F compared to the first half of the last century (1901–1960). By mid-century in Washington state, average annual temperature is projected to increase 4.3°F to 5.8°F (relative to 1950-1999) for a low and high greenhouse gas scenario; much higher warming is possible after mid-century (Snover, et al. 2013); and

WHEREAS The primary cause of this global warming trend—increasing atmospheric carbon dioxide (CO₂) and other greenhouse gases—continues to rise, from about 280 parts per million (ppm) of CO₂ in 1750 (pre-industrial) to more than 410 ppm in 2019 (a 50 percent increase) (NOAA data accessed 2019). With the current global greenhouse gas trajectory pointing upward, local impacts are expected to become more frequent and severe (Snover, et al. 2019); and

WHEREAS As climate impacts mount, already highly impacted communities and vulnerable populations will face increasing risks; and

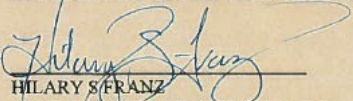
WHEREAS DNR's Plan for Climate Resilience identifies and prioritizes the ways in which climate change impacts our mission and responsibilities, and articulates priority responses for each program, across the agency, and at a statewide level to achieve climate resilience; and

WHEREAS For many climate resilience responses, DNR can take action within our existing resources and authorities;

NOW, THEREFORE, I hereby direct Department leadership and all staff to take all practicable steps within our existing authorities and as guided by DNR's Plan for Climate Resilience to incorporate climate change considerations into all relevant decisions, policies, procedures, and operations including, where relevant, into legal, policy, and guidance documents.

Approved on this 20th day of February, 2020.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES


HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS

“I hereby direct Department leadership and all staff to take all practicable steps within our existing authorities and as guided by DNR’s Plan for Climate Resilience to incorporate climate change considerations into all relevant decisions, policies, procedures, and operations including, where relevant, into legal, policy, and guidance documents.”

- Commissioner Hilary Franz
February 20, 2020

Agency-Wide Responses

2. Enhance capacity to address climate risks and resilience opportunities
3. Incorporate climate resilience into knowledge and learning structures
4. Incorporate climate resilience into motivation and accountability structures



Source: Snover, et al. 2018. *The Building Blocks of Climate Resilience*.

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Statewide Systems-Level Responses

1. Establish an interagency climate resilience leadership structure
2. Provide state-endorsed climate impacts projections to support risk assessment, planning, and regulatory systems
3. Establish mechanisms for funding and financing resilience investments
4. Support and facilitate community-level resilience planning and implementation
5. Enhance education, outreach, and engagement on resilience needs and opportunities



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**VIII. NEAR-TERM IMPLEMENTATION
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Responses Requiring Additional
Authorities and Resources **85**

Support Implementation of Statewide
Systems-Level Climate Resilience Responses . **85**

Implementing the Plan

- Initiating actions that can be implemented with existing resources and authorities
 - Program-specific
 - Agency-wide
- Developing legislative asks for 2021
- Identified resilience “shovel ready” projects for potential stimulus funding
- Including DNR priorities in state’s Climate Resiliency Account list

Thank You



Managing Forested State Lands for Health and Resilience to Climate Change

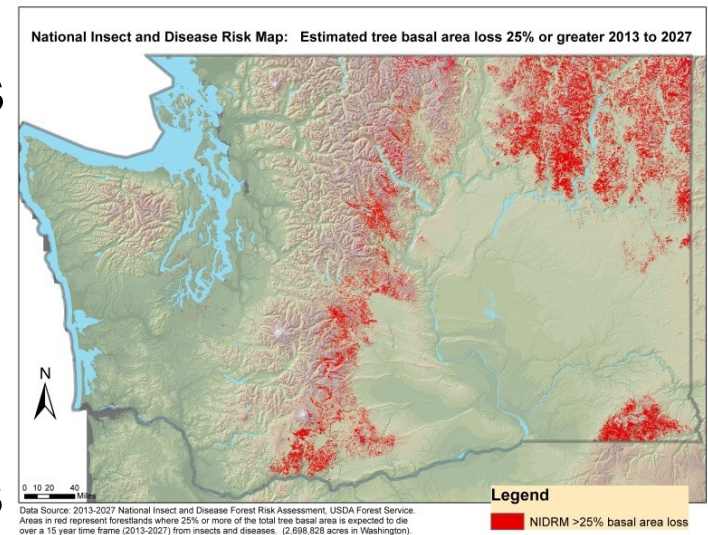


A Brief Overview

Board of Natural Resources
September 1, 2020

Potential Impacts of Climate Change to Forests in WA

- Increased wildfire potential across the state
- Potential increased damage from insects and pathogens
- Potential seed and reforestation challenges
- Potential increases in conditions triggering landslides & debris flows
- Potential changes in forest productivity
- Potential forest road damage
- Potential impacts to at-risk species



Climate-Resilient Seed Management and Reforestation Approaches

Priority Responses:

- Identify resilient seed sources, genotypes, and species
- Plant operational trials to evaluate seed sources over a variety of environments
- Increase seed storage capacity
- Ensure ongoing diversity of seeds and species collected, stored, and managed by DNR
- Study natural regeneration following wildfire



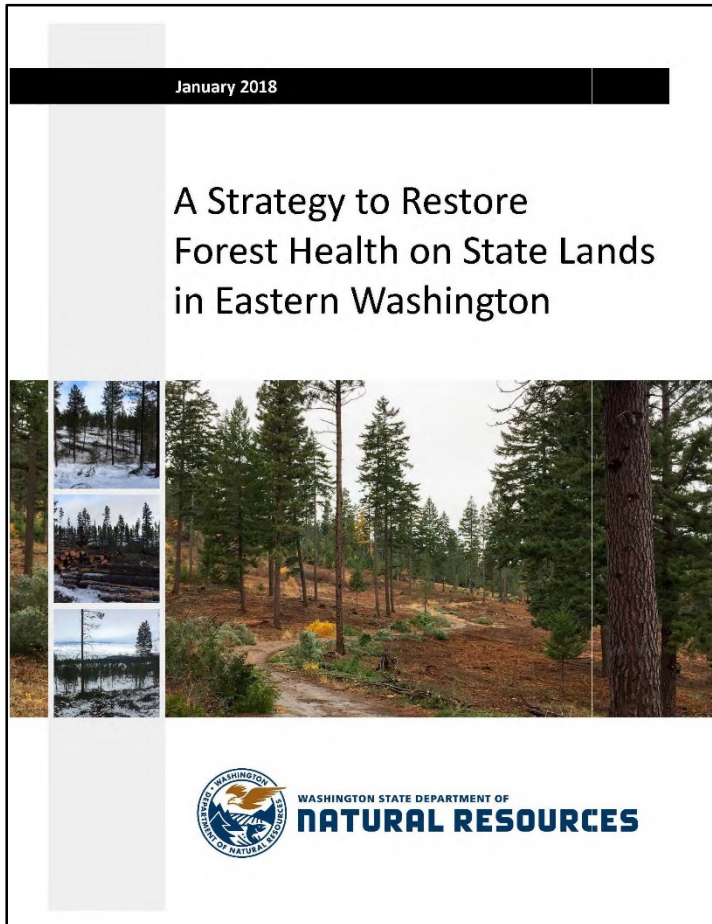
Addressing Forest Health and Increased Wildfire Risk in Eastern WA Forests

Priority Responses:

- Use natural regeneration where feasible on low-productivity lands
- Promote more drought, disease and fire-resilient species
- Use alternative funding mechanisms to treat low-value stands
- *Maintain stands at lower density to reduce stress



State Lands Strategy for Improving Forest Health

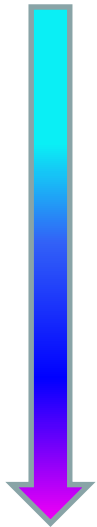


- Manage for trust benefit (realize current value, create future value)
- Manage stands to minimize risk of disturbance and loss
- Invest appropriately based on site productivity
- Manage for long-term

Variability of Eastern Washington Forests

Moisture Stress

Low



High

Vegetation Ecotypes

Subalpine

Cool Moist Mix Conifer

Warm Moist Mix Conifer

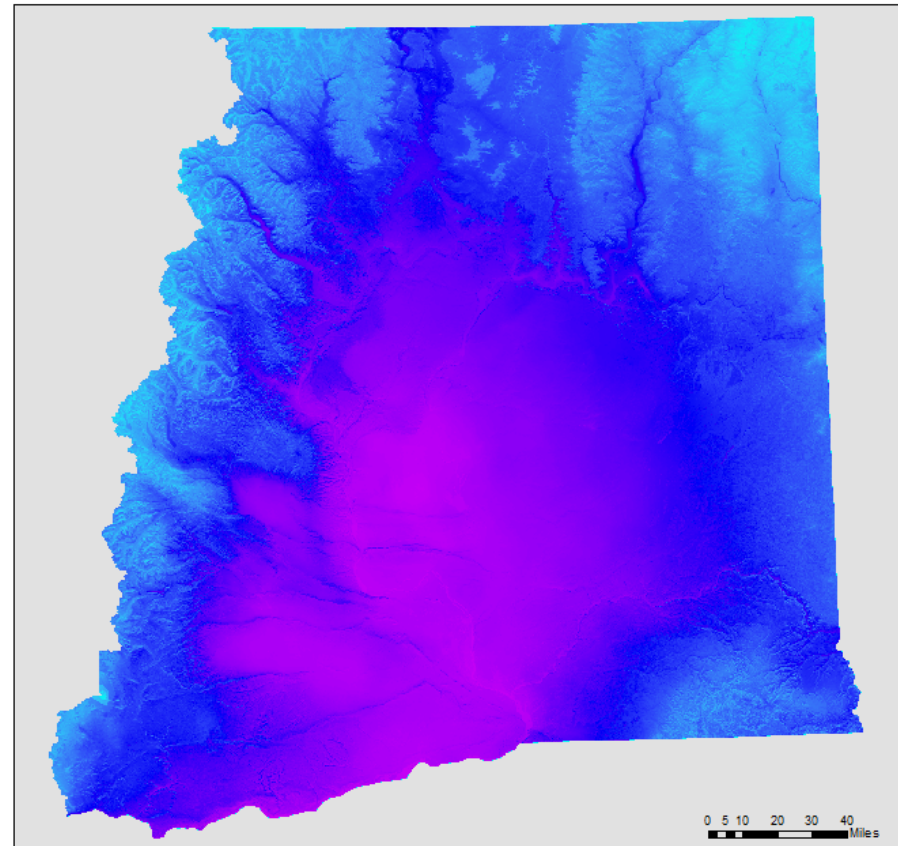
Dry Mix Conifer

Ponderosa-Douglas Fir

Ponderosa

Non-Forest

Vegetation Ecotypes in Eastern WA
(based on climatic water deficit)



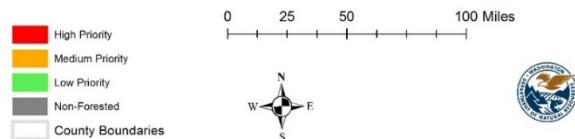
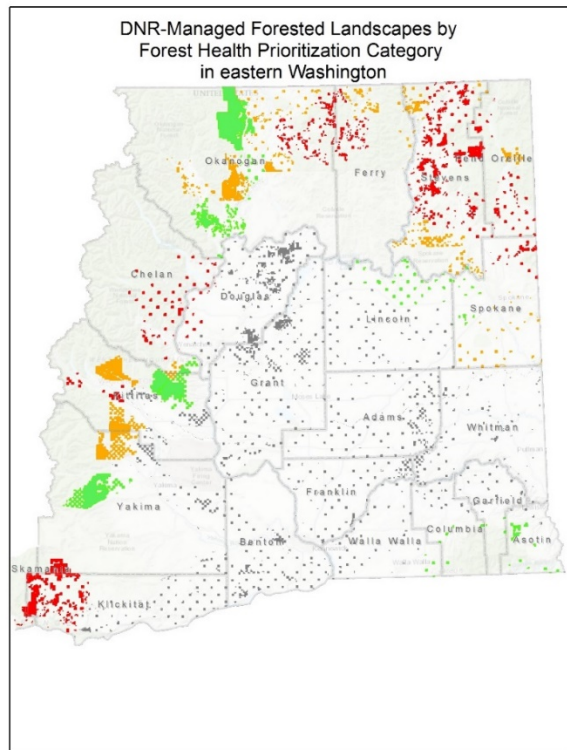
**DIFFERENT
FOREST
TYPES**

=

**DIFFERENT
MANAGEMENT
STRATEGIES**



Prioritizing Treatments in Critical Landscapes



Legislative intent:

- Reduce wildfire hazards/losses
- Reduce insect infestation & disease
- Improved forest health & resilience at landscape scale

Prioritization based on value of:

- Timber or other commercial forest products
- Public infrastructure
- Recreation and tourism
- Ecosystem services, such as water quality

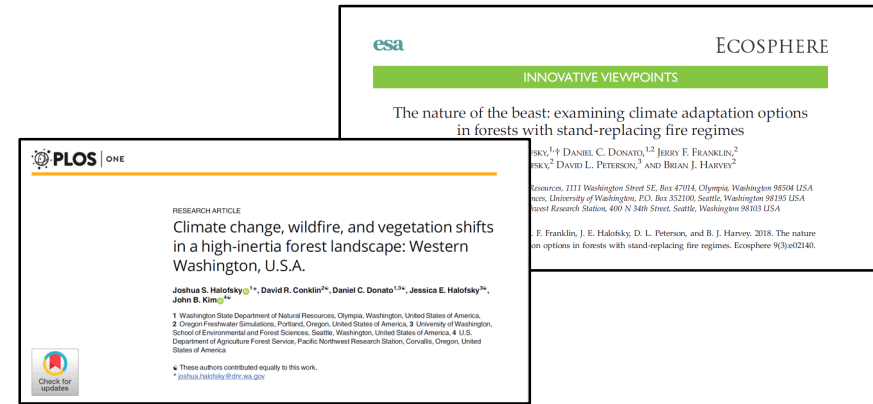
Mean annual acres treated on forested DNR trust lands by landscape priority - 2011-2020

Treatment Type	High	Medium	Low	Total
Commercial	3,500	3,600	1,800	9,000
Non-commercial	6,300	6,300	4,500	17,000
Grand Total	9,800 (38%)	9,900 (38%)	6,300 (24%)	26,000

*Note: The landscape treatment prioritization wasn't completed until fall of 2018.

Research and Monitoring: Post-Wildfire Recovery and Climate Impacts to Washington Forests

- Post-wildfire natural regeneration research
- Studies on post-wildfire seedling planting strategies
- Climate change, wildfire, and vegetation shifts
- Western versus eastern WA forests & climate adaptations



Thank You



Developing climate-resilient seed management and reforestation approaches

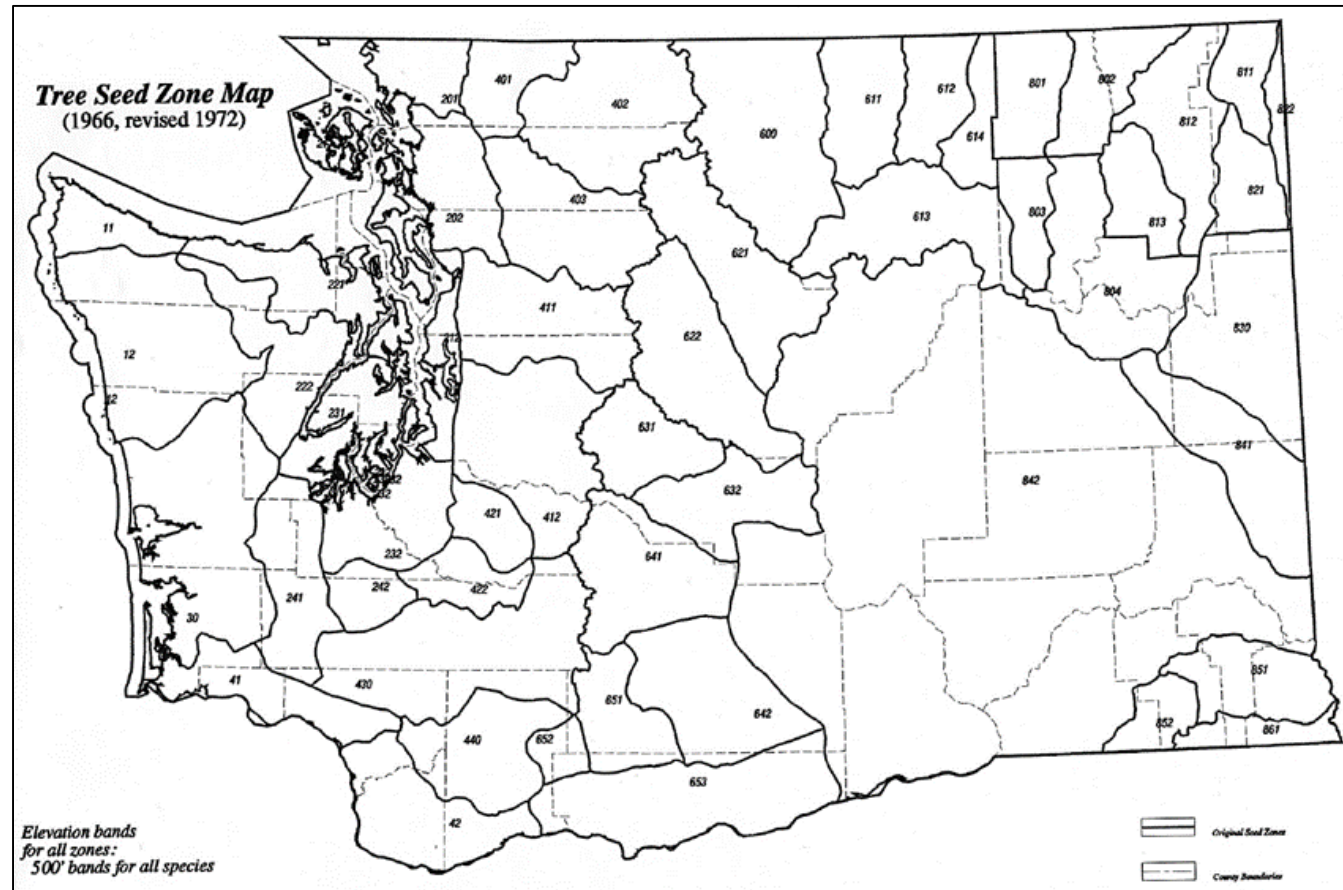
What do we think about from a reforestation viewpoint?

What are we doing about it?



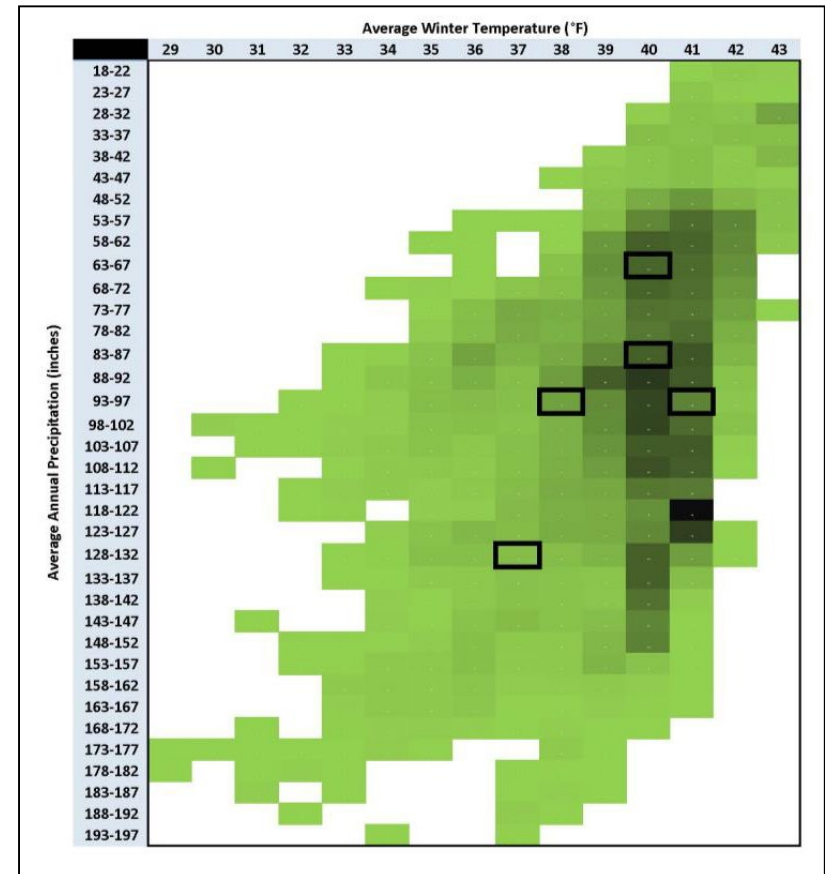
Matching seed source to environment

Right plant,
right place



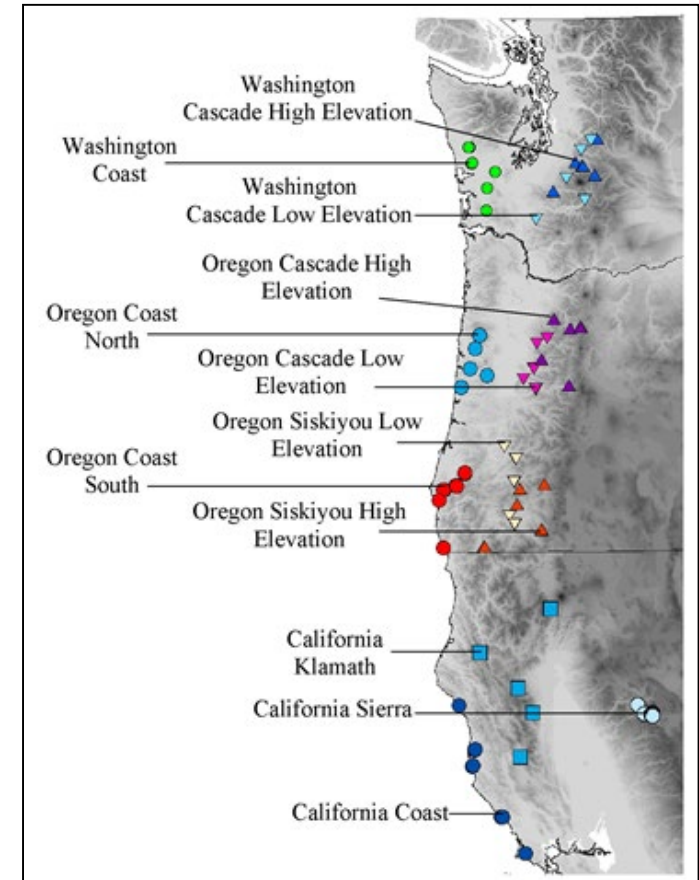
Seed source & climate change

Shift from geographic variation to temporal variation



Engaging with regional projects

- Seed source movement trial
- Oregon drought study
- Seedlot Selection Tool
- DNA markers



Developing information that we need to make decisions

- Cooperative testing and evaluation
- Measure adaptive traits (cold, drought tolerance)
- Operational seed source trials



Putting structure in place to facilitate adaptation to the future

- Land management database (LRM) structure
- Westside ponderosa pine orchard and eastside seed production areas
- Include wood stiffness in our selection criteria
- Choose trees with stable performance across environments



Same seed source, different environments



Thank You

