Restoration of fire-dependent forests:

A sense of urgency

Why the urgency? Unusually large and severe wildfires have become more and more common in dry forests across the West, due to fuel accumulation from decades of fire suppression. Restoration projects, including thinning treatments, can help reduce these hazardous conditions while also providing opportunities to create jobs.

So far the pace of restoration has not caught up with the magnitude of the need. On national forest lands, the U.S. Forest Service spent $1.44 billion fighting wildfire in 2012, compared to $624 million spent on vegetation management.

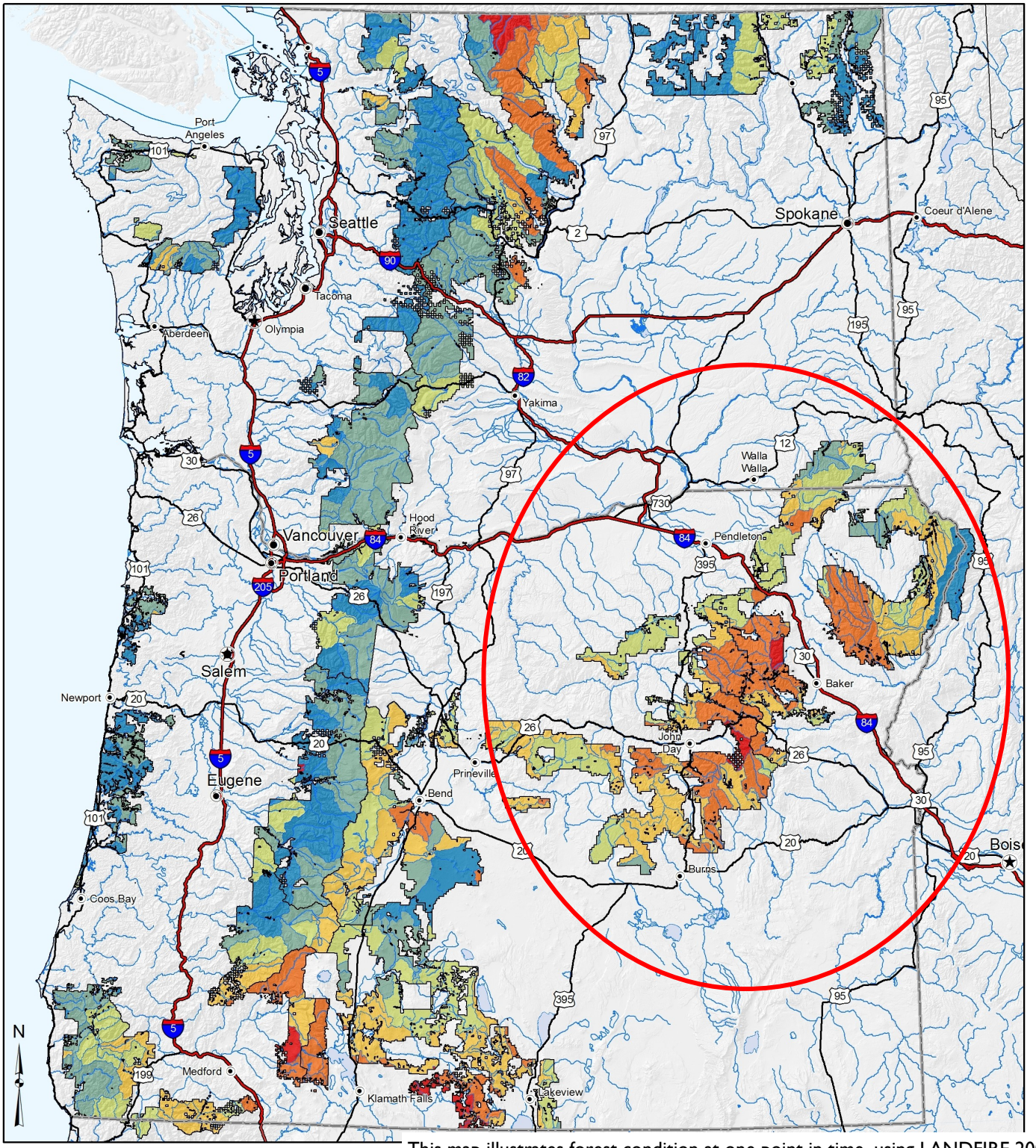
Forests in eastern Oregon's Blue Mountains are particularly at risk to wildfire, insect outbreaks, and disease. As our analysis shows, a third of national forest acres in the Blue Mountains need active restoration.

Restoration varies with the fire regime, and can be active or passive. Acres needing active restoration are in most cases mid- or late-seral closed canopy conditions, as well as any uncharacteristic conditions (those that did not occur historically). Active restoration includes activities such as pre-commercial and commercial thinning or prescribed burning. In contrast, passive restoration means a seral stage must essentially be left alone to grow into a seral stage currently in deficit. We focus here on active restoration since it requires action.

for the greatest good

May 2013

Active forested restoration need by watershed on national forest lands, Pacific Northwest Region



Percent of Forest Service land within 5th-field watersheds in need of active restoration

0 - 9	20 - 29	40 - 49
10 - 19	30 - 39	50 - 100

This map illustrates forest condition at one point in time, using LANDFIRE 2008 data. To get an idea of how sustainable national forest landscapes are, we used Fire Regime Condition Class (FRCC), an interagency method to assess ecological departure from a natural range of variation (NRV). For landscapes that were moderately or severely departed, we estimated the number of acres needing restoration to move them to a sustainable range. **The work is intended to identify the magnitude of the terrestrial restoration need across the Region, not to indicate where restoration should occur in specific watersheds.**

The magnitude of the problem

How many acres need active restoration?

Pacific Northwest Region		
National forest land	Outside Wilderness and IRAs[1]	
	Total acres	Active restoration acres
Eastside forests	8,814,379	2,636,579
Westside forests	5,139,460	1,571,359
SW Oregon forests	967,138	291,228
Total	**14,920,976**	**4,499,165**
% of total acres outside Wilderness and IRAs needing active restoration		30%

Blue Mountains		
National forest land	Outside Wilderness and IRAs[1]	
	Total acres	Active restoration acres
Malheur NF	1,307,100	489,573
Ochoco NF	462,300	142,589
Umatilla NF	752,842	219,696
Wallowa-Whitman NF	1,143,802	400,213
Total	**3,666,045**	**1,252,071**
% of total acres outside Wilderness and IRAs needing active restoration		34%

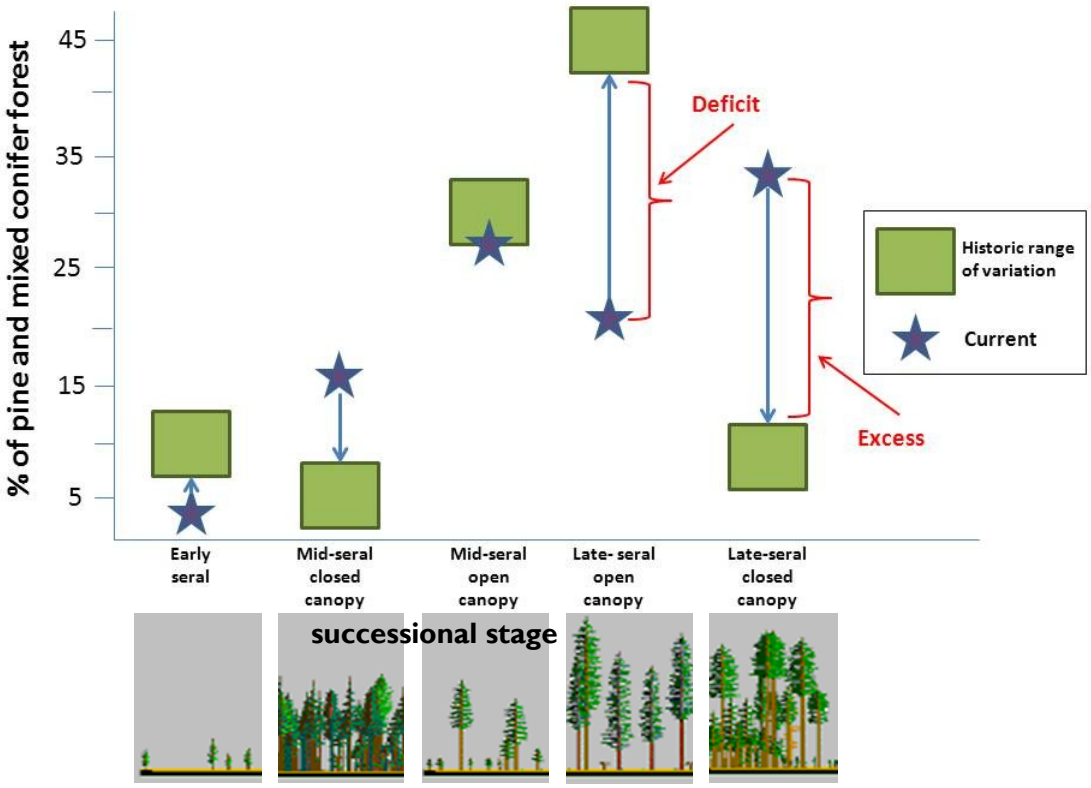
[1] Inventoried Roadless Areas

Our first step was to map the active restoration needs at the Regional scale to get a handle on the size of the problem and which areas are the highest priority. Outside Wilderness and IRAs, 30% of the land needs active restoration. We found a similar departure from sustainable conditions within Wilderness and IRAs, but our focus is outside those areas.

An urgent need for action was quickly apparent in the Blue Mountains because of fuel build-up in frequent fire regimes, leading to a large number of acres currently needing active restoration. As the number in red shows, over a million acres currently need treatment in the Blue Mountains.

Much of the Blue Mountain forest historically experienced frequent fire-return intervals (up to 35 years). Decades of fire exclusion in these ecosystems has altered their adaptive capacity by allowing the rate of fuel accumulation to outpace the rate of fuel reduction. As the fuel build-up in the Blue Mountains continues, the chance of uncharacteristically large, severe, high-consequence fire grows.

Current forest conditions for ponderosa pine and dry mixed conifer forest on national forest lands in the Blue Mountains



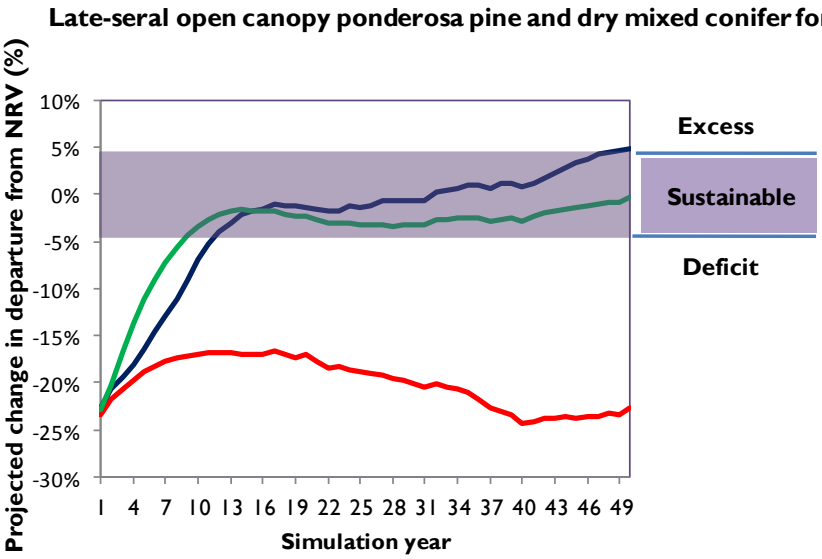
To provide a closer look at conditions in the Blue Mountains, we identified whether seral stages were in excess, deficit, or within the natural range for each vegetation type. As this schematic shows, active restoration is most needed in late-seral closed canopy stands (now in excess of historical reference range).

What will it take to fix the problem?

While vegetation departure is a key indicator of restoration needs, there are other restoration considerations. Aquatic restoration, road density, forest health, socio-economic conditions, and wildlife habitat are also important. The Blue Mountain national forests, in concert with their collaborators, will assess resource conditions, evaluate wildfire cycles, and determine the economic feasibility and ramifications associated with an assortment of active restoration treatments. Working collectively, we can design projects that address a range of regional management concerns.

To help start this conversation, the Forest Service Pacific Northwest Region explored the rate of treatment that would be needed to move the Blue Mountains from an ecologically-departed state to a more resilient one. We simulated our current rate of treatment and compared it to an increased rate of treatment.

This graph shows projected return to sustainable conditions resulting from different treatment levels in mid-seral and late-seral closed ponderosa pine and dry mixed-conifer forests in the Blue Mountains.



Description of simulations:

- **Current treatment.** Year 1-50: maintain current level of treatment (~18,000 acres of prescribed fire and 35,000 acres of mechanical treatment).
- **Scenario 1.** Year 1: current level of treatment. Years 2-10: increase by 20% the number of acres treated the previous year. Years 11-50: maintain treatment level reached in10th year.
- **Scenario 2**. Year 1: current level of treatment. Years 2-3: double number of acres treated the previous year. Years 4-50: maintain the treatment level attained in the 3rd year.
- **Natural range of variation (NRV).**

The bottom line

Reducing fuel build-up will help restore these forests to more open conditions and improve their resilience.

But as our simulations show, unless the rate of restoration is dramatically increased, we will lose the "race" against fuel accumulation, and we risk being unable to make a difference in restoring these fire-dependent ecosystems.

Public support for active restoration is growing broader every day, along with recognition of the array of benefits it can provide: improved wildlife habitat, jobs, reduced wildfire risk, and increased stability in local communities.