Testimony of Dr. Michael J. Medler
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Before a Hearing on "Forest Resilience and Management for Wildfire"
State of Oregon, Senate Committee on Natural Resources and Wildfire Recovery
Oregon State Capitol (Remotely), March 15, 2021

Chairman Golden, Vice-Chair Heard, and members of the committee, I want to thank you for this chance to testify about wildland fire management. It is an honor to be here.

My name is Michael Medler, and I teach at Western Washington University. I have also worked as a wildland firefighter for the U.S. Forest Service, based out of the area that was hit so hard by the Holliday Fire last summer. In the 1990s I went on to get a Ph.D. developing systems for mapping and modeling wildland fires. Since then, I have served as the president of The Association for Fire Ecology, and I was the founding editor of the scientific journal *Fire Ecology*. Now, I work each year with students that are studying wildfire and heading back to the fire-lines each summer.

The fires that Oregon experienced last summer were certainly unprecedented in the last century. However, with our current climate trajectories, we may well experience similar fire seasons in the near future. We also now understand that the last century of fire suppression and land management strategies have removed fire from the landscape, allowing many of the forest in Oregon to undergo changes that leave them vulnerable to hotter and more extreme fire behavior. Though fire is an integral part of most of Oregon's ecosystems, these changes have been radically altering the landscape in ways that change fire behavior.

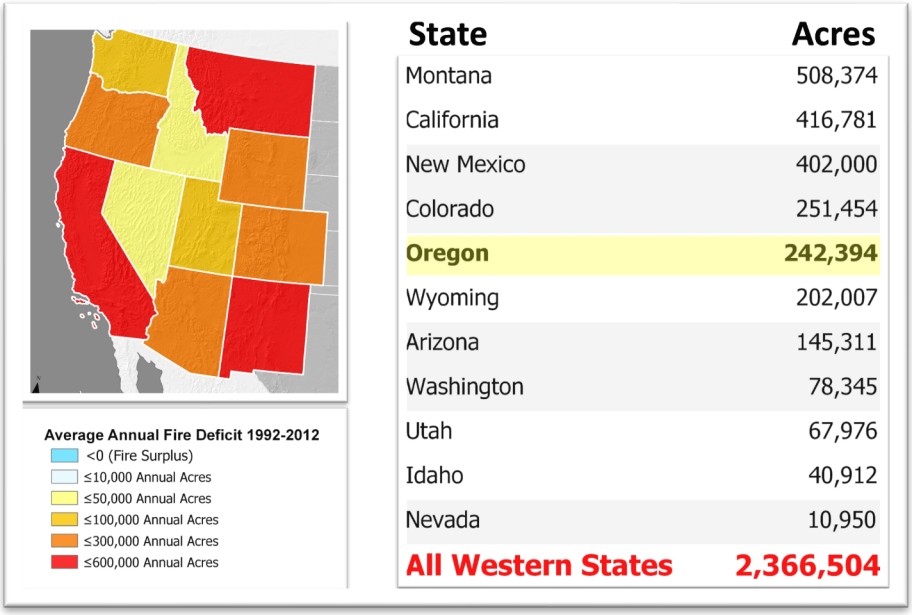
Fire Deficit

One useful way to think about the last century of fire in Oregon is to consider a "fire budget." Each ecosystem has an associated fire regime that includes variables like how often fire occurs and how large they tend to burn. If you make changes in these fire regimes, (such as suppressing fire), you start to see other ecological changes that change how the ecosystem operates and also the way the next fires will burn.

Even with the larger fires of the last decade, Oregon has been running a large fire deficit. Recently I have been conducting some basic geographic analysis to determine the scale of this deficit. Using historical fire records and comparing the total acers burned to the acreage we would expect to burn with suppression, we have found that Oregon has been falling behind about 250,000 acres a year. This means that in just the 40 years since we began to see an uptick in fire sizes in the region in the early 1980s, **Oregon has fallen behind at least 10 million acres**. (See figure 1)

Figure 1.

Average annual fire deficit in the western U.S., 1992-2012



State	Acres
Montana	508,374
California	416,781
New Mexico	402,000
Colorado	251,454
Oregon	**242,394**
Wyoming	202,007
Arizona	145,311
Washington	78,345
Utah	67,976
Idaho	40,912
Nevada	10,950
All Western States	**2,366,504**

WUI Lands

Additionally, over the last few decades, Oregon has drastically increased the accourage of land in the Wildland Urban Interface, or Wildland Urban Intermix zones (WUI). As of the most recent assessments **Oregon has roughly 2.5 million acres now in WUI**.

Community Protection Buffers

Previous research by the U.S. Forest Service has indicated that a managed buffer of about ¼ mile is sufficient to control most wildland fires as they approach communities. These buffer zones need to have reduced fuel loads and road infrastructure for easy movement of fire fighters and equipment. Such buffers could vastly reduce the likelihood of a flame front entering a community from adjacent wildlands. If such buffers were developed and maintained in the WUI regions around communities, we would expect to see a large decree in the number fires entering communities. These are the areas that thinning efforts would be best targeted if we are to make a real difference in community protection. Therefore, we also set out to identify just how many acres of potential WUI buffers there are in Oregon.

First, we downloaded a data set from the US Census that contained map polygons that represent every named community recognized by the Census. This is an extensive data set that includes the nation's cities and towns, but it also includes the thousands of much smaller communities that surround those towns, and even small, isolated clusters of homes in the backcountry. We then added 400-meter (roughly ¼ mile) buffers around all these communities. Next, we clipped these

buffers to remove all the buffer land that was not in designated WUI. This produced maps that let us total all the lands that fit these criteria (see appendix 1). **The result is that these community protection buffers make up only 165,519 acres of the state of Oregon.** (see figure 2)

Figure 2

Acres of WUI Inside 400 Meter Populated Places Buffer, Western States

State	WUI Interface	WUI Intermix	WUI Interface and Intermix
Arizona	81,625	158,836	240,462
California	333,987	479,741	813,728
Colorado	80,578	145,685	226,263
Idaho	33,442	47,682	81,124
Montana	44,355	62,349	106,704
Nevada	21,479	24,920	46,399
New Mexico	56,288	143,484	199,772
Oregon	68,138	97,381	165,519
Utah	68,942	42,261	111,202
Washington	133,569	240,479	374,048
Wyoming	25,863	38,862	64,725

Takeaway

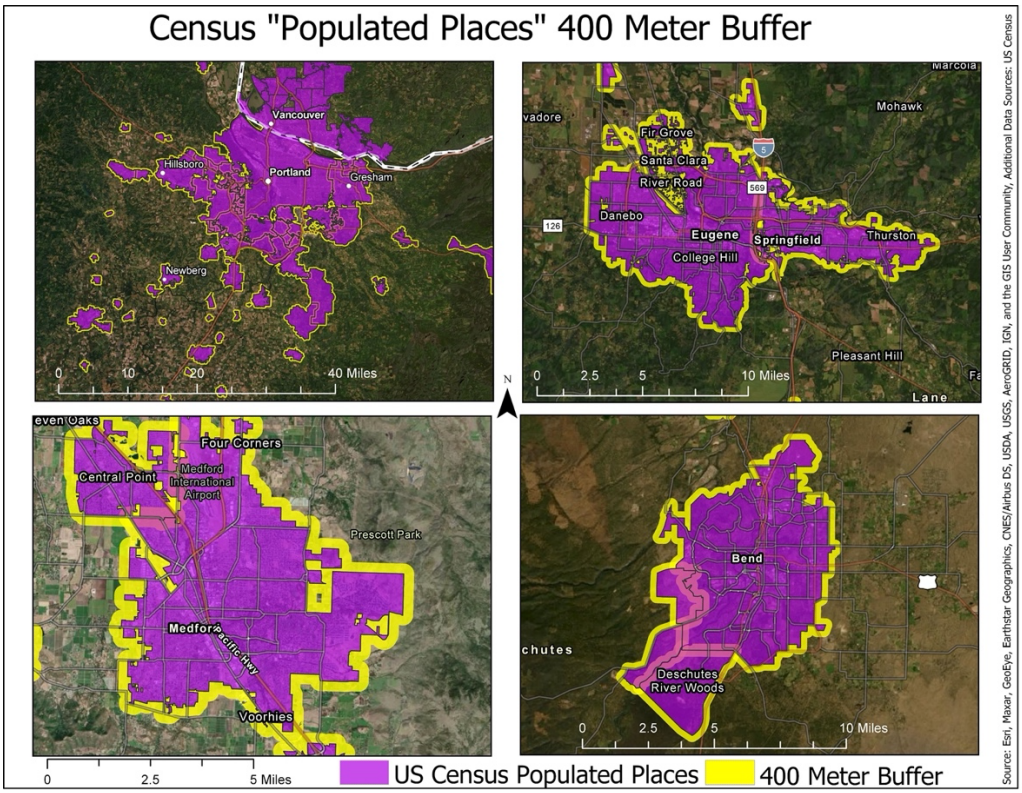
- **Acres in Oregon: 63 Million**
- **Acres needing fuels treatment: 10 Million**
- **Acres in WUI: 2.5 Million**
- **Acres in Community Buffers: 165,519**

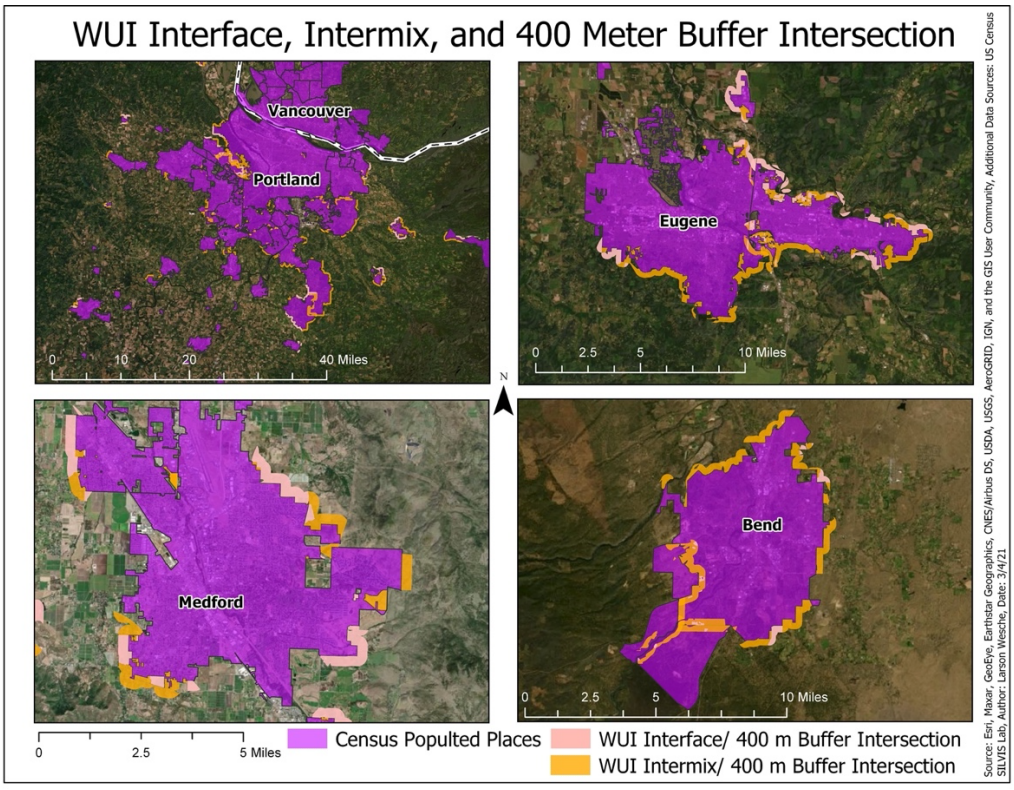
Conclusion

In conclusion, 10 million acres identified in Oregon as in need of fuel treatment is simply too large of an area to effectively thin. However, of those 10 million acres, less than $1/60^{th}$ of that is found in the buffers directly around communities. What this means is that we should be targeting the lion's share of our efforts in these buffers if we are serious about protecting these communities from fire. As an extra benefit, this would also allow more latitude for the use of prescribed fire and wildland fire use in the backcountry, which is realistically the only way we will ever make real headway in reducing the fuels building up in the backcountry. Another benefit of this tactic would be the employment of Oregonians in the zones around their own communities and the production of wood products in easy transport distance that would make it more profitable to process the smaller sorts of fuels we see from thinning.

Thank you for your time and I'd be happy to answer any questions.

Appendix


Census "Populated Places" 400 Meter Buffer
Vancouver
Hillsboro
Portland
Gresham
Newberg
0 10 20 40 Miles
Mohawk
Fir Grove
Santa Clara
River Road
Danebo
Eugene
Springfield
Thurston
College Hill
Pleasant Hill
0 2.5 5 10 Miles
Four Corners
Central Point
Medford International Airport
Prescott Park
Voorhies
0 2.5 5 Miles
Bend
Deschutes River Woods
0 2.5 5 10 Miles
N
US Census Populated Places
400 Meter Buffer
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Additional Data Sources: US Census


WUI Interface, Intermix, and 400 Meter Buffer Intersection
Vancouver
Portland
0 10 20 40 Miles
Eugene
0 2.5 5 10 Miles
Medford
0 2.5 5 Miles
Bend
0 2.5 5 10 Miles
N
Census Populted Places
WUI Interface/ 400 m Buffer Intersection
WUI Intermix/ 400 m Buffer Intersection
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Additional Data Sources: US Census
SILVIS Lab, Author: Larson Wesche, Date: 3/4/21