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SUBCOMMITTEE ON PUBLIC LANDS AND FORESTS
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CONCERNING

S. 2895, OREGON EASTSIDE FORESTS RESTORATION, OLD GROWTH PROTECTION, AND JOBS ACT OF 2009

Mr. Chairman and members of the Committee, thank you for inviting me here today to testify on S. 2895, the Oregon Eastside Forests Restoration, Old Growth Protection, and Jobs Act of 2009. My name is Stephen Fitzgerald, and I am a Professor and Silviculture & Wildland Fire Specialist at Oregon State University. I am here on behalf of the Society of American Foresters (SAF), a professional organization of over 14,000 forest managers, scientists and educators. There are nearly 1,000 SAF members in Oregon, including hundreds who have been directly involved in federal forest management. SAF supports and represents the forestry profession in advancing the science, education, technology, and practice of forestry. SAF has not taken a formal position on S. 2895, but my comments reflect a professional perspective with our mission and members clearly in mind, including the input of experienced SAF leaders who have reviewed the bill. In addition, my views are generally consistent with those expressed in several statements (Oregon SAF 2005, 2007, 2008) developed by the Oregon Chapter of the SAF that address issues and concerns reflected in S 2895.

My perspective is somewhat unique in that as an Extension Specialist I am immersed in both the academic arena as an applied researcher and educator as well as in the forest practitioner's realm, which allows me the opportunity to evaluate the application of research and silvicultural methods on the ground. Most of my time is spent in the eastside forests of Oregon and my expertise is in the ecology and management of ponderosa pine, a species of high ecological, social, and economic importance to communities in central and eastern Oregon. It is a species that is experiencing increasing impacts from insects, disease and uncharacteristic wildfire, and, at the same time, it is at the center of debate how to deal with these threats to manage and improve forest health and sustainability in the long run.

First, let me say, Senator Wyden, that you deserve tremendous credit for bringing opposing sides together to compromise and come to agreement on this legislation. I support your goal of creating a strategy to provide for predictability and sustainability for local economies and governments, to address the challenges of climate change, and to restore these forests to a healthy and resilient condition. I am also supportive of your attempts to deal with larger landscapes rather than continuing an approach of random acts of restoration. And, I am grateful that your proposed legislation recognizes the importance of biomass as part of the solution to our goal of energy

independence. I hope that this legislation is offered in the spirit of opening a dialogue for further input and discussion. In that spirit, I offer the following comments for consideration as this bill moves through the legislative process.

SECTION 4. FOREST MANAGEMENT

Language throughout Section 4 of the bill stresses conservation and restoration. I am in strong agreement that there is much restoration work to be completed in the "covered area" as defined in the legislation. However, the restoration focus could be misinterpreted by some to reflect a light entry everywhere, every time. I would note that some forest types in eastern Oregon, such as lodgepole pine, naturally regenerate via stand replacement disturbance. Some natural disturbances, or management to mimic natural disturbance, would not necessarily meet the stated goals in Section 4(a)(2)(B) - increased mean diameter, maintenance of older trees, or retention of old growth as 100-year old lodge pole pine is typically at a stand replacement age. The legislative language allowing for "ecologically appropriate spatial complexity (xi) and spatial heterogeneity (xii)," may be attempting to address this type of situation. I believe the language could be strengthened to make clear that management intervention may be more aggressive as ecologically appropriate.

I am also concerned that the economics of the scale of restoration activities have not been adequately addressed in terms of both operational feasibility and compatibility with existing management mandates. Although forest restoration often emphasizes environmental concerns, economic and social considerations must also be integrated – contemporary views of sustainability recognize these three elements as mutually supporting (Oregon SAF 2007). Neither Section 4(a) or (b) address the economic viability of these restoration treatments, which is a serious concern given the scale of restoration needs and the projected federal deficits. I believe a Section 4(a) (2) (B) (xvi) could be added that would address this oversight. Language such as, "Integrate economic viability of treatments so as to maximize acres treated within the constraints of ecologically appropriate spatial complexity and heterogeneity," could be helpful. In our reading of Section 4(b) (3) (A) (the Ecological exception) it is not clear that such economic considerations are part of the decision tree. Additional language to this section [addition of a subsection (iv) to address economics] would be helpful. Recognition of economic viability in, (B) Administrative Exception section may be appropriate as well.

Paragraph (b), PROHIBITIONS ON REMOVAL OF CERTAIN TREES, calls for a diameter limit of 21 inches above which no trees can be cut. Although I understand the interest in diameter limits -- it gives direct assurance that large trees won't be cut – it cannot be stated more clearly: Permanent, fixed diameter limits are not based on ecology and forest science but rather political science. These artificial limits remain static while forests, and larger ecosystems, are invariably dynamic: that is, they grow, compete for resources, and are continually affected by disturbance.

Given this context, I'd like to talk about restoration of old-growth and restoration treatments in younger stands. But first, there are a couple of ecological truths that I need to explain for background. First, the amount of resources available to trees on an acre of land – sunlight, water, nutrients, physical space -- is finite. This defines the carrying capacity of the site. In the dry, interior forests of the west, water is the most important of these resources because its limited supply directly impacts tree growth and survival. Second, the amount of resources a tree needs to survive and grow is roughly proportional to its size. In other words, big trees with big crowns (a lot of needles/leaves), require more resources to maintain themselves, grow, and reproduce. And, as trees grow, they consume increasingly greater resources. These two ecological truths combine in the fact that a given site can support only so many trees of a given size. That is, it can support a lot of small trees or fewer large trees.

With that as background, I like to discuss historical old-growth structure. This example is from central Oregon, but it is likely to be similar to other historic old-growth forests in central and eastern Oregon. Figure 1 is a graph of trees per acre by diameter class for a virgin old-growth mixed conifer stand from 1917 in south central Oregon, near Klamath Falls (Munger 1917).

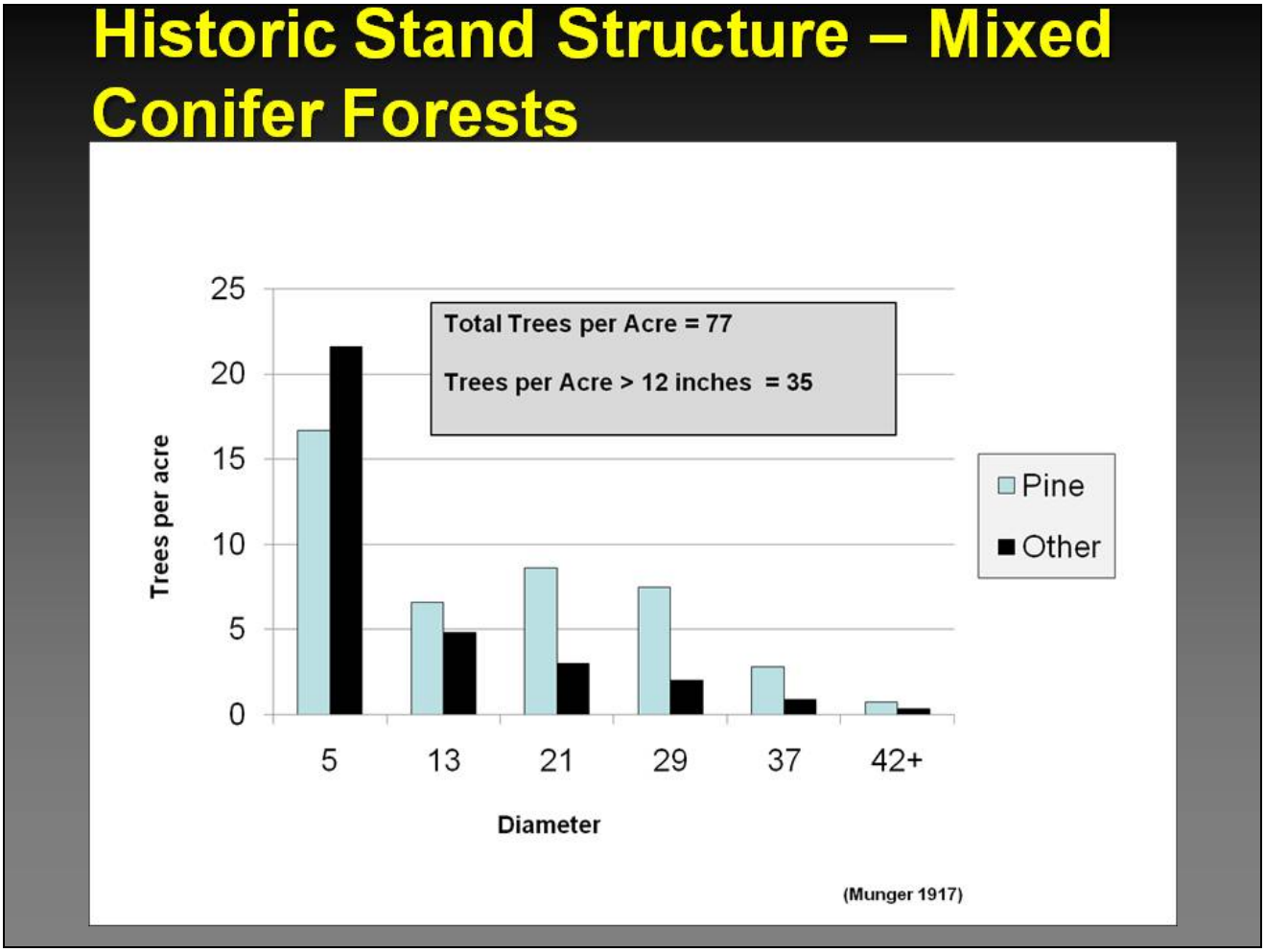


Figure 1 - The diameter distribution of an old-growth mixed conifer stand in Oregon in 1917.

This old-growth stand contains a total of 77 trees per acre ranging from 5 to 42 inches, of which 40 are ponderosa pine. Approximately 25 trees are above 21 inches in diameter, 19 of which are ponderosa pine. Note how the number of trees per acre progressively decreases from the smaller diameter classes to the larger size classes. This multi-aged stand is relatively open as a result of frequent understory fire, which kept the fir species in check (but didn't eliminate them) as they have thin bark and are easily killed by fire. Frequent fire kept stand density and fuels low and favored large fire-resistant pines; however, sufficient small diameter trees usually escaped or survived fire and will eventually replace the larger trees over a long period of time (Fitzgerald 2005). The number of trees per acre by diameter class and the maximum tree size would vary across the landscape according to a site's carrying capacity. For example, a less productive site could have a similar shaped bar graph, but there would be fewer trees in each diameter class and the maximum tree diameter would likely be

smaller. This example represents full stocking or the sustainable tree density for this site. However, most old growth stands in this region today have an overabundance of understory trees, placing the large trees at risk to bark beetle attack and wildfire. Reducing stand density can help increase the health and longevity of large old growth trees on the landscape (McDowell et al. 2003, Kolb et al. 2008).

Because of the wide range of diameters and ages of trees comprising interior old-growth forests, old-growth cannot be defined by a single age or diameter. For example, Figure 2 shows a graph of tree diameter by age (courtesy of J.D. Arney (unpublished)). Looking at the 21-inch diameter line (dashed) on the graph, you can see the large variation around this diameter along with wide variations in age. Others have shown this poor correlation between diameter and age (Van Pelt 2008).

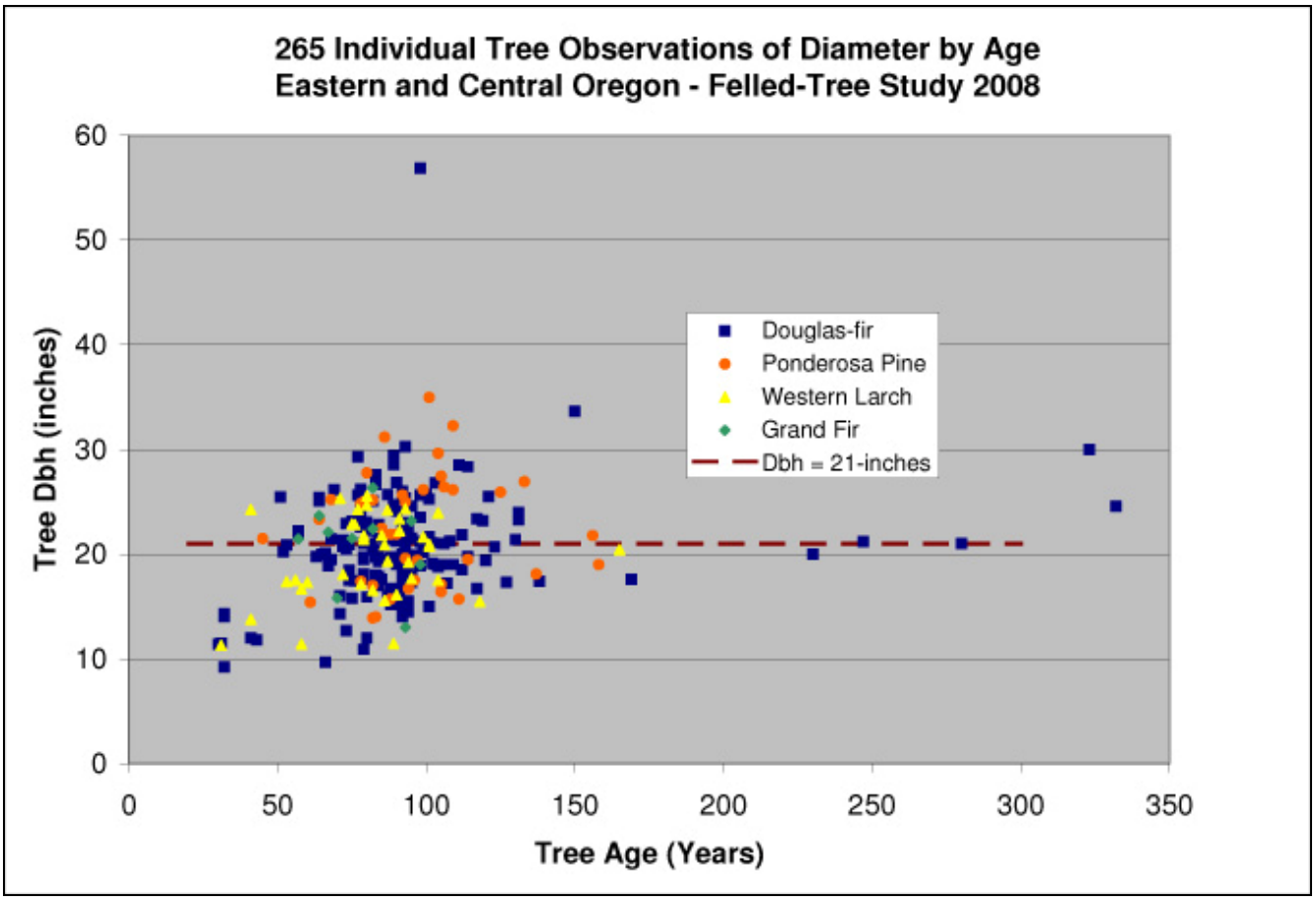


Figure 2. The poor correlation between age and tree diameter for ponderosa pine and other species in central Oregon (courtesy of J.D. Arney (unpublished)).

Therefore, old-growth forests, and goals for their restoration, should be defined or based upon their structural conditions, consistent with the professional definition of old-growth (SAF 1998). For a given plant association, this includes: a range of tree diameters; multiple age classes; a mix of tree species likely to occur with disturbance; snags and downed wood; and a range of trees per acre. Legislation can provide directives to improve health and resiliency, but to be most effective; forest scientists and mangers need flexibility to develop specific stand structural objectives and metrics based

on plant associations, historical information, current research and local experience. If, after specifying this "target" structural condition, more trees grow into any one of the specified diameter classes, those excess trees would be thinned to maintain the health of residual trees and promote the desired old-growth structure. This approach would create a working landscape that provides a suite of benefits: old-growth aesthetics; resilience to insects, disease, fire and climate change; mature forest habitat for wildlife; carbon sequestration; and some level of sustainable timber output.

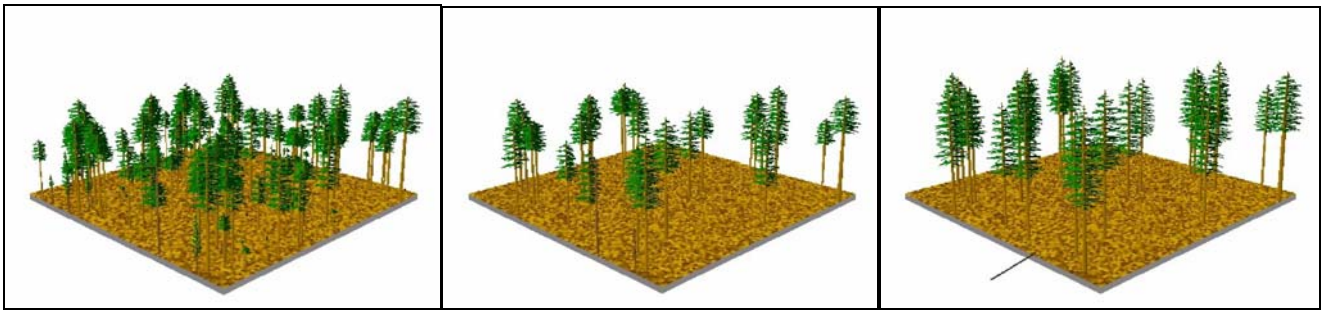
For dense, younger forest stands, it is often unclear what the overall long-term restoration goal is. In the short run, improving resiliency to insects and fire and improving habitat diversity may be vital ecological needs and will require a variety of management tools (Busse et al. 2009). But, in the long run, is the goal to move these forests to an old-growth condition? The 21-inch diameter limit seems to reflect that intent, but what might be the actual outcome of such a limit? Assuming the objective is to move younger stands to a larger tree structure -- or some semblance of old-growth –then the 21-inch limit could become very cumbersome and cause problems in the future. I will illustrate with an example from a research study I have implemented on the Deschutes National Forest in central Oregon.

Figure 3a shows a dense 80-year old ponderosa pine stand that I marked for a wide thinning (leaving the larger trees) to promote stand health and vigor, reduce ladder fuels, and to accelerate large tree development. The thinning reduced stand density from 148 to 44 trees per acre (Figure 3b). Because this is National Forest, the trees were marked with the 21-inch diameter limit that is current Forest Service policy in this region. Because the average tree diameter was 10.7 inches before thinning, the 21-inch limit did not pose a significant problem for the thinning objective at this time, and harvest of small- and medium-size sawtimber was possible. Figure 4 depicts a computer simulation of the thinning and the subsequent stand growth over a 40-year period as the average tree diameter grows to about 20 inches. At this point, the 120 year-old stand will need another thinning to reduce competition as the trees will be much larger and consuming more resources (Fitzgerald and Emmingham 2005). With the likely range of tree diameters shown here (Figure 2), removing trees both above and below the 21-inch limit will be needed to maintain forest health and vigor of residual trees and move towards the desired large-tree structure. Although this seems a long way off, there are stands that are at this stage now. A case in point is shown in Figure 5. This is a 130-year old ponderosa pine stand that is already at this stage and will require thinning of trees above 21 inches to maintain the health of this stand and promote even larger trees.

Although S. 2895 allows for exemptions to the 21-inch diameter limit, it appears that this would require agreement of the collaborative group, the science advisory panel, or both. How difficult would this process be? Would the two panels need to visit each and every tree? For the previous example, this might encompass a handful of trees on ten acres; 50 trees or more on a hundred acres; and tens of thousands of trees on 100,000 acres, far too many for either group to realistically examine. How will this be accomplished efficiently, both for stands now in this condition and those that grow into this condition in the future? Fixed diameter limits constrain our ability to adjust stand density as appropriate for each site and set of management objectives, and may result in slow tree growth, hinder understory vegetation development, and affect tree regeneration (Abella et al. 2006), and they can have economic implications (Larson and Mirth 2001). The reduction in treatment effectiveness due to diameter limits depends on how high or low the diameter limit is set relative to the current average stand diameter and density. But we have not adequately addressed such questions for future stands in which a majority of trees begin to exceed the diameter limit and again compete fiercely for site resources. This could result in yet another forest health crisis down the road – the problem that S. 2895 seeks to solve.

Figure 3a – Second-growth ponderosa pine stand before thinning. Trees marked with orange paint are marked to leave.

Figure 3b – After thinning.



Age 80, before thinning 2002 | After thinning 2005 | 2042--Age 120, 40 years after thinning

Figure 4 – Simulated thinning of an 80 year-old ponderosa pine stand in central Oregon, and conditions 40 years after treatment. (adapted from Fitzgerald et al. 2005)

Wide Thin

YEAR	Trees/Ac.	Avg. Diam.
2002	148	10.7
2005	44	15.4
2012	43	16.3
2032	41	18.7
2042	40	19.8

Figure 5 – Thinning needed in this 130-year old ponderosa pine stand where most of the trees are at or above 21 inches.

Although such conditions would take time to develop, forestry professionals have a long-term perspective and our experience shows that treatment prescriptions must change (sometimes dramatically) as forests change.

I would like to add a few final comments that, while less detailed than the previous discussion, I believe are also very important to consider:

First, my sense is that this legislation is prescriptive and narrowly defines forest management on federal lands. The legislation seemingly redefines the purpose of federal lands by reframing forest management to a "restoration-centric" emphasis with timber as a by-product (e.g., Section 9(c)(5)(A)(ii)). Moreover, it is unclear how this bill meshes with existing federal law and mandates such as those under the Organic Act, the National Forest Management Act, the National Environmental Policy Act, and others. The legislation is vague in this regard. Perhaps your staff could develop a flow chart to help illustrate how this legislation dovetails, overlaps, or is in conflict with these other laws.

Second, the forest management and other issues that S. 2895 seeks to address do not stop at the Oregon border. This bill, and other state-specific federal forest legislation (e.g., Montana Senator Tester's *Forest Jobs and Recreation Act)*, are a symptom of a much larger problem—the lack of a clear and consistent national or regional policy for our National Forests, with specific management goals that effectively integrate the diverse mandates of existing laws. Clearly, federal forest management today is not working and our forests and communities suffer and show the consequences. A piecemeal approach to federal forest policy may provide some local, short-term relief, but over time it is likely to create more problems than it solves. In contrast, a comprehensive approach could leave an enduring legacy, perhaps not unlike the laws that established our National Forests over a century ago. I know that the forestry profession would welcome such a legislative effort and SAF would be ready to assist in any possible way. We need to have a national dialogue to develop a shared vision of what we want our national forests to be and, more broadly, what goods and services we want them to provide society in perpetuity.

Third, in SECTION 15 AUTHORIZATION OF APPROPRIATIONS, the appropriation of $50,000,000 is extremely important and necessary to implement this legislation. I am concerned that if funds are not authorized by Congress, that some groups will get their objectives met while others won't get what was promised, and the Forest Service and taxpayers are left with unfunded mandates and additional regulation. In the end, forests and communities will lose out if this does not happen.

Lastly, S. 2895 seems process heavy and would add to an already substantial array of regulatory requirements, require much assessment and analysis, and runs the risk of achieving less on-the-ground results. Perhaps your staff could map out all the meetings, reports, assessments, interim periods, etc., directed by S. 2895 alongside the existing procedural requirements for the Forest Service, to clarify the additional process burden it would place on the agency.

In closing, I hope that these comments about S. 2895, Oregon Eastside Forests Restoration, Old Growth Protection, and Jobs Act of 2009 are useful to the Committee. Thank you for your time and attention, and for the opportunity to provide a perspective from the forestry profession on this legislation.

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