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Rachel Lee Hall speaking.

This enclosed pamphlet called Forest Under Stress (FUS) contains research and observation gathered over forty years while living in Southern Oregon. All photos were taken in the Rogue River-Siskiyou National Forest between 2017 and 2018.

Why, each year, are there record-breaking crown fires with complete loss of habitat? This question motivated me to complete this research and construct it in a way where it is understood by all who read it. The photo sequence with explanations of each photo below them shows visually and in writing the reasons for the fires. Even though science can be complicated, the photos tell the story. The remedy is expressed succinctly in the conclusion of the pamphlet.

I trust this pamphlet might cause you to consider "why" the FUS is vital. Hopefully, something relevant to the remedy is applied, even if you do not agree with all that FUS presents, perhaps something will be understood better.

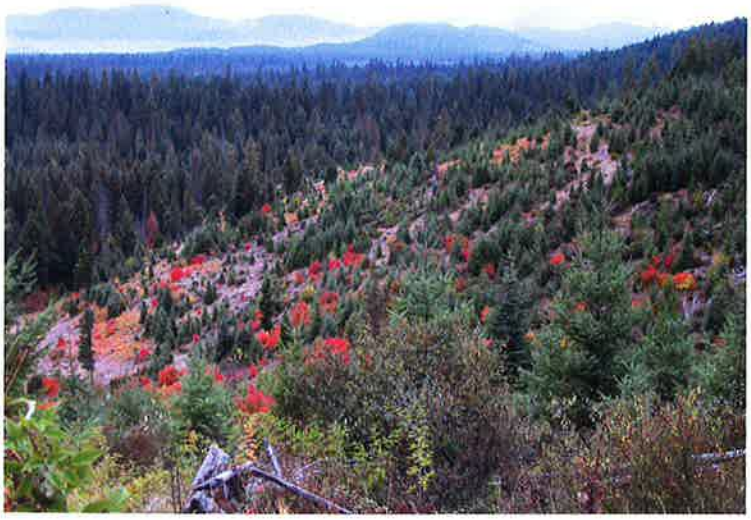
The current and past passive forest management, why it failed, and why it will only continue to fail if critical scientific application along with sustainable financial implementation are not applied, are my concerns and I hope yours, too.

Thank you for your time,

Rachel Lee Hall

Forest Under Stress (FUS)

Rachel Lee Hall - Conservationist



(fig. 1-2) This reforestation shows primary and secondary growth after responsible logging. This is a sustainable, renewable, vigorous young forest--the future of green is a healthy forest and reforestation of burns, logging and diseased beetle kill trees. Photosynthesis is necessary for life on earth. When carbon dioxide is exchanged by green plants (forest, roots, leaves) then stored as a carbon in the living forest, the earth is healthy. When this exchange of carbon dioxide for oxygen by the green healthy forest occurs, oxygen is released into the atmosphere. Oregon's forest, including the Northwest, are the "sink" of sequestration (stored carbon) and oxygen architects for the earth's atmosphere.

(fig. 3-5) This healthy mature forest shows the natural fire cycle uninterrupted, before passive management was applied for decades consisting of ideological forest science that restricted fires, which historically moved quickly through the forest floor burning undergrowth. Old growth was not harmed as scaffolding was minimal before passive intervention caused the volatile fuel loaded forest of today. These photos show limited scaffolding to canopy or crown. Scaffolding acts like ladders; they create pathways for crown fires, once rare, during lightning strikes or man-made fires. Crown fires result in complete loss of ecological systems from applied flawed science of "passive hands-off" forest management by the Bureau of Land Management, National Forest Service and, at times, enforced by the Environmental Protection Agency.

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(fig.6-8) Notice scaffolding to canopy in this fuel-loaded, cluttered forest floor. This creates a path for quick access to the canopy during forest fires resulting in crown fires. Overcrowding marginalizes the full potential of the forest to "store" carbon dioxide and create oxygen through photosynthesis.

--Cause: passive forest management--



(fig. 9-11) The under story fuel load (including juvenile trees) rapid growth competes for nutrients and water with old growth trees under the drip-line of mature trees for limited resources of water in low precipitation or snow budget years. This is an added stress for survival for the mature forests during prolonged drought years. The upper soil horizon where forest clutter roots thrive, because of shallow root systems, receives crucial water first while larger trees with deeper root systems suffer and decline in health, becoming susceptible to disease and insect infestation.

-- Cause: passive forest management--



(fig. 12-14) Forest clutter creates a fuel-loaded forest floor. When lightening strikes, this provides kindling to scaffolding (dead limbs on trees) that are immediate ladders to the canopy during forest fires. Not to be included with forest clutter fuel load are snags, which harbor habitat, windfall, or naturally dying trees from old age, etc.

-- Cause: passive forest management--

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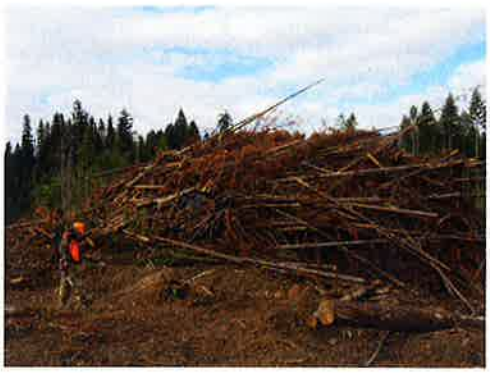
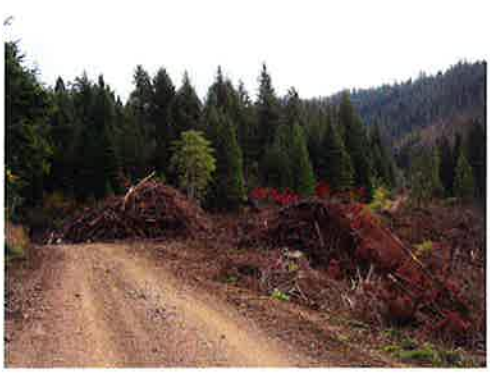


(fig. 15-17) Designated burn piles or "slash" in 2018 with viable biomass and biofuels. Notice adequate road access to transport biomass and biofuels could be accessed easily, instead of burning. This type of fire prevention is not financially sustainable considering the volume of forest at risk for crucial forest floor clean up in the Northwest. Furthermore, burning releases 100 percent carbon into atmosphere, in addition to loss of jobs and bioproducts to replace fossil fuels, which would reduce carbon footprint of fossil fuels.



(fig.18-20) The current method of managing forest floor buildup is to burn viable biomass and bioenergy, which are "carbon neutral" in the fall slash burns causing inversion in many cases and ill health to those living near by. In addition, potential regulatory slash burning and unprecedented crown fires imbalance the earths radiative budget of incoming solar radiation energy (sun-rays). Smoke cloud cover induces "cloud albedo forcing". The size of particles in smoke clouds and the intensities of fires near earth's surface cause "green house forcing" and traps gases below the smoke cloud therefore warming the earth. Results: rapid climate change.


(fig. 21-22) Designated burns in the Rogue Valley from Costco parking lot, November 2017. A 100 percent carbon emission into atmosphere, which is a principal contribution to rapid climate change as the sink of sequestration of carbon in our forests goes up in smoke by man made fires during the fall/winter slash burns or relentless forest fires in the summer fire seasons. This is a complete loss of revenue for potential biomass products and jobs. There are over 30 million acres of forest lands in Oregon. The federal government manages "passively" nearly 60 percent of Oregon's forests, whose management and policies created this current dire situation.

Three of the greatest threats to our National Forests are unprecedented fuel load buildup by interfering with the natural fire cycle, insect infestation from not removing dying or dead beetle kill stands, and the third, which was the catalyst to our state of affairs: failed ideological policy fraught with bureaucracy and enforced over three decades by environmental legal action.

I am Rachel Lee Hall. For over 40 years, I have lived in the Rogue River Valley with my husband Larry, where our children were born. My interests encompass earth dynamics, geology, and forestry while working in and enjoying farming, soils, water, gardening, and education. My hands planted over 240,000 conifers for the government and private sector in Southern Oregon decades ago. To watch them burn is a crime. Forests are lost to the entrenched policies that are destroying our present lives and future.

No models were run of the consequences of such a massive fuel load buildup, before passive management was enforced in our forests. Clearly, this lies within the citizens to consider the narrow time frame left to save our forests and mitigate rapid climate change.

We must: log and thin with discretion and expediency, use biomass as much as possible without burning viable wood, which exacerbates green house effects. Apply financial soundness though private sector jobs for long term sustainability. Harvest, thin, and replant forest burns and beetle infestation quickly. Create more sequestration in dead or dying forests (beetle kill) by removal and reforestation with seedlings. Plant seedlings twice as far apart to extend nursery stock, thus doubling acreage coverage. Planting is usually thinned, therefore the need is costly to continue to plant close while demand is high for nursery stock. Decrease erosion and run-off of soil into waterways by prudently reforesting near waterways and steep terrain first, where water moves quickly causing erosion and hindering loss of soil into streams.

Reforestation is a priority, as newly planted trees drink first in the forest and grow rapidly, helping to reverse damage and, to some extent, drought conditions since a healthy forest cools the forest floors while sequestering carbon. Finally, limiting litigation to one year or less, instead of open ended costly legal battles resulting in loss of timber sales while microbial activity destroys value of wood product (the intent of delay) if left in the forest for two years. This includes beetle kill and burns. The ecological dynamics that sustain life are threatened beyond recovery in a timely manner if critical thinking is not applied promptly.

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