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Reference SB530

Senator Golden and members of the Senate Committee on Natural Resources and Wildfire Recovery:

I write as a retired university biology faculty member with some 30 years of experience teaching, many of these years teaching ecology, conservation biology, environmental science and process of science. I also write as a small woodland owner manager, and resident of 20 acres of forest in the Applegate Valley of Jackson County. Thus, I write not as a representative of out-of-state Timber Investment Management Operations or Real Estate Investment Trusts but as a rural Oregonian forest owner.

Over the decade that I have lived in Southern Oregon, particularly the most recent few years, I have been aware of the increasing death that has been plaguing several tree species, particularly our Douglas firs. In exploring this issue, I learn that the most likely factor causing this trend is our changing climate.

Exploring further the evidence regarding the ongoing viability of our tree species, I learn that recent research (e.g., Jarecke *et al.* 2023) challenges previous findings (e.g., Restaino *et al.* 2016) that the main problem confronting regional tress is water deficit. Rather, the more recent research suggests that the problem is less the loss of soil moisture than the loss of humidity, measured in terms of the vapor pressure deficit. Whether the primary driver of forest death is decreasing soil moisture or water vapor, there can be little doubt the the rising temperature that global warming imposes on our landscape from global warming and the drying atmosphere. Whether the problem is water deficit, or low atmospheric water vapor – presumably increasing the evapotranspiration flow and need for water uptake – is not as critical as recognizing that global warming is the root cause.

I have, over the last few years, spent considerable time exploring the impact of climate change on western U.S. tree species and have been considerably troubled by what the assessments warn us. For example, analyses and maps offered by Rehfeldt and Crookston (2023) and their team suggest that if (globally) we continue on the current climate trajectory, the area of Oregon that is climatically appropriate for Douglas fir will substantially decline. Several other ecologically and commercially relevant species will also likely exhibit reduced range: notably Western hemlock, Ponderosa pine, Grand fir, Western larch, Sugar pine, White fir, Pacific madrone, Western juniper, Western redcedar, Tanoak, and California laurel. Meanwhile, the following species will likely find the Oregon climate completely outside their range (i.e., they will be extirpated from the state): Sitka spruce, Engelmann spruce, Lodgepole pine, Subalpine fir, and Jeffrey pine. On the other hand, Oregon white oak will likely exhibit expanded range but reduced viability and California black oak may exhibit expanded range. These projections suggest that a dramatic shift in the composition of Oregon forests is likely if we collectively

do not address the climate crisis. This well-understood concern should stimulate those in forestry to be the first to urge climate action on every government entity they can find. The absence of such a position among timber executives remains a source of astonishment to me. Since our agricultural systems and fisheries are dependent on acceptable values for the same two variables (temperature and precipitation), the climate projections also spell a threat to these human systems and directly to us. For parallel reasons, I am astonished that agricultural interests such as the Farm Bureau, who claim to represent farmers and ranchers, are not vociferously demanding climate action.

There exists abundant evidence suggesting what we collectively should do on a global scale (including Oregon) to avert the most unfortunate outcomes that an ongoing climate crisis will present us. We know that our first target must be reducing emissions of the greenhouse gases that are driving the current destructive climate trajectory. However, our second target must be to sequester (capture and store) from the atmosphere gases already emitted since many of these (notably carbon dioxide) have longevities of decades to centuries. Most importantly, among the options for sequestration of these gases are those involving promoting the natural processes of photosynthesis which captures carbon dioxide and converts it to carbohydrates and plant tissue. This can be undertaken most effectively both by promoting the health and growth of our forests, rather than harvesting on short-term rotations, and engaging in regenerative agriculture activities that restore soil health degraded by decades to centuries of destructive industrial agriculture based on tilling the soil (driving soil erosion and destruction of the biotic soil system) and applying chemicals (pesticides and fertilizers) derived from a fossil fuel and energy intensive system.

A number of technological approaches have been proposed to address the climate crisis – such as Solar Radiation Management (SRM) that essentially reflects incoming radiation back into space – and Carbon Dioxide Removal (CDR) – which involves capturing the carbon dioxide in the atmosphere via technological schemes that remove the gas and store it. The technological approaches have critical problems: SRM, if successful, would not address the problem of ocean acidification that is destroying marine ecosystems and our fisheries while CDR technological approaches have yet to be demonstrated as economically viable. Among the options for sequestering carbon dioxide from the atmosphere, the most viable involves reversing our historic behavior of disrupting natural systems by converting forests and grasslands to agriculture and rangeland and replacing these with Natural Solutions that rely on promoting photosynthesis.

In order to contribute our state's fair share to addressing the global climate crisis, state agencies have responded effectively to Governor Brown's Executive Order 20-04 by developing programs that reduce emissions. However, these have not sought to promote carbon sequestration.

In response to the Oregon Global Warming Commission's Natural and Working Lands report that encouraged carbon sequestration, SB530 has been developed to encourage and incentivize efforts that will benefit rural Oregon by promoting carbon sequestration in our natural and working lands. While I understand why the bill includes, as a goal "Increasing long-term fiber supplies;" (Section 2 – 3 – I – H), given the nature of the climate crisis, I suggest that this should be a second-tier goal, with the first-tier goals comprising those that lead to enhanced carbon sequestration.

I do, however, have two concerns, one regarding use of the term ‘sequester,’ and the other regarding the definition of ‘climate resilience.’

My first concern related to repeated use of the phrase 'sequester and store' or some derivation from that phrase. I know that the term 'sequester' has been often used for various reasons to mean just 'capture.' This is not correct! The term sequester means 'removal of CO2 from the atmosphere by plants and micro-organisms and its storage.' A good illustration of this meaning can be found in Climate Change Connection (2023) “Biological (or terrestrial) sequestration involves the net removal of CO_2 from the atmosphere by plants and micro-organisms and its storage in vegetative biomass and in soils.” I suspect that a little poking around would reveal many other similar uses. I suspect that there was/is a reason for misusing the term, but I suggest that ’sequester’ should be used correctly. An appropriate definition of that usage can be included in the Definitions of Section 1, if necessary. To me, the Oregon Legislature is better served by going on record as defining a term it uses correctly than following a practice of misuse – whatever the reason is for that misuse.

My second concern involves the definition of 'climate resilience.' The language employed, it seems to me, makes the definition relevant only for human communities, yet throughout the bill, the phrase is applied to natural communities. Thus, I recommend deleting the definition: ‘the capability to anticipate, prepare for, respond to and recover from significant climate-related threats with minimum damage to social well-being, the economy and the environment.’ I would replace it with a handy definition that is used in the 2022 IPCC Summary for Policymakers: “the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure as well as biodiversity in case of ecosystems while also maintaining the capacity for adaptation, learning and transformation. Resilience is a positive attribute when it maintains such a capacity for adaptation, learning, and/or transformation.” I like this definition because it can be applied to both human and non-human systems.

I stress that my support for the bill does not require these adjustments. I merely offer them as a way of strengthening the bill.

As a rural Oregonian and forest owner, I laud the efforts of those developing SB530 and encourage passage of this proposal by the Senate Committee on Natural Resources and Wildfire Recovery with a ‘Do Pass’ recommendation.

Respectfully Submitted

Alan Journet

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