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We appreciate the opportunity to comment on the definition for old-growth and mature forests on Federal lands. Kettle Range Conservation Group is a 501 (c) (3) non-profit, community charity founded in 1976, with the mission to defend wilderness, protect biodiversity, and restore ecosystems of the Columbia River Basin. We work to preserve federal and state roadless areas, to protect critical habitat for native terrestrial and aquatic species; and to safeguard resources of clean water, outdoor recreation and natural scenic beauty.

On July 15, 2022 the Biden Administration published a Request For Information (RFI) in the Federal Register, seeking input on the development of a definition for old-growth and mature forests on Federal lands and requesting public input on a series of questions.

The stated purpose of the RFI is to take a step toward implementing President Biden's April 22, 2022 Executive Order (E.O.) 14072: "Strengthening the Nation's Forests, Communities, and Local Economies." Along with other policy statements E.O. 14072 "calls on the Secretaries of Agriculture and the Interior, within one year, to define, identify, and complete an inventory of old-growth and mature forests on Federal lands, accounting for regional and ecological variations, as appropriate, and making the inventory publicly available."

We appreciate the Biden Administration's pursuit of conservation goals in E.O. 14072.

The RFI requests input on five questions, restated below with our responses.

1. What criteria are needed for a universal definition framework that motivates mature and old-growth forest conservation and can be used for planning and adaptive management?

Old growth originates from complex and interconnected forest ecosystems developing over timescales much longer than a human lifespan. It is undisputed that old-growth forests are structurally complex, feature large, old trees and associated characteristics that develop over relatively long intervals of time, feature large snags and down dead wood, and exhibit variations in forest canopy including small openings caused by various agents of tree mortality. Mature and old growth is structurally distinct from earlier successional stages.

One approach would be to define old growth forest not by the trees themselves, but the presence(s) of, or suitable habitat conditions for, biologically dependent species that have co-evolved with, and depend upon, the specific conditions only found in mature old growth forests. However, such an approach requires monitoring data of which there is far too little to fulfill a national scale set of definitions.

Looking at the "Eastside Screens," the so-called "twenty-one inch rule" promulgated by Region 6, USFS, for the eastern forests of Washington and Oregon, has been shown to be an effective approach that has, for the most

part, worked quite well for over two decades. The Screens had "hard stop" specific size limitations that were basic and straightforward.

Bark patch configuration is another tool that addresses the age component of old structure. Size alone is an insufficient metric in semi-arid, seasonally dry forest and those on the margins of shrub-steppe ecotones and at low elevation.

Historically, the terms "planning and adaptive management" have prioritized resource extraction such as logging and livestock grazing. For this definition, we request alternative language.

The criteria for mature and old-growth forest must prioritize retaining all trees 20 inches or larger in diameter at breast height (dbh) as habitat for dependent animal and plant species, carbon sequestration, aesthetics, and watershed resource protection to protect municipal and agricultural water supplies. In most circumstances, tree size as an indicator of tree maturity is more reliable than age. A pileated woodpecker does not select a nest tree because it is old, but rather because of its size.

Yet an inherent problem with size is it can take 150 years or longer for a tree to reach 20" dbh in dry, rocky and high solar aspects, particularly in the Interior West. This lends strength to bark patch, branch and crown size as potentially suitable metrics in warm/dry biophysical forest environments.

The biologically dependent species found in mature and old growth forests are important indicators as well. Successional stages, even seedlings, are components of complex mosaic old-growth ecosystems. To meet the conservation goals put forward in E.O. 14072 the defining framework must value habitat diversity and complexity and incorporate landscape connectivity.

2. What are the overarching old-growth and mature forest characteristics that belong in a definition framework?

There is a lack of mature and old growth across federal forests. According to one estimate conducted by the USFS, stands of century-old forest now account for only 7% of forest cover in the United States putting the total old growth remaining at five percent of historical levels. To restore historic composition, a benchmark of 80 years of age should be established. This benchmark is particularly important in the Interior West.

In addition to those characteristics noted above, climate change is no longer a future possibility, it is a modern-day reality. Retention of mature trees on the landscape is imperative for carbon sequestration. As the impacts of climate change increase in severity, innovative approaches that challenge and change the status quo are required for adaptation and mitigation. This must happen without delay. But today, the Forest Service is still logging these forests when we need them to remain standing. Forest thinning prescriptions claiming to mitigate wildfire may increase wildfire risk. Thinning removes shade providing vegetation and exposes soil resulting in further drying of vegetation and soils by exposing both to increased heat, sunlight, and wind.

Standing trees are often overlooked as a tool in the fight against climate change, but the reality is that they are one of the most important assets. Mature and old-growth trees sequester carbon from the atmosphere, are more fire-resistant than younger trees, and are critical resources for supplying clean and fresh water to our communities.

Overarching characteristics should include the ability of the forest:

* to store and sequester anthropogenic atmospheric carbon for long periods of time;

* to safeguard biodiversity and serve as climate refugia;

* to reduce flood and erosion risk as precipitation patterns change;

* to increase the availability of clean drinking water for communities and agriculture struggling with climate change induced drought impacts; and

* to be resistant to fire and resilient to fire impacts.

3. How can a definition reflect changes based on disturbance and variation in forest type/composition, climate, site productivity and geographic region?

By embracing old-growth ecosystems and old-growth landscapes holistically, the disturbance and variation in forest type/composition, climate, site productivity and geographic region would be inherent in the definition, all occurring naturally.

Agencies must limit forest management and the human-inflicted impediments inherent in our tinkering. Recovery of forest ecosystems to a natural resilient condition will maximize carbon sequestration potential, and feature abundant, well-distributed old growth forest conditions along with clean water, clean air, and recovered populations of rare and endangered species. These awe-inspiring conditions are where people find aesthetic appreciation, spiritual renewal, and a sense of full cultural connection to place.

4. How can a definition be durable but also accommodate and reflect changes in climate and forest composition?

Forest ecosystems are constantly evolving, and yet reach their most stable state when reaching mature and old growth composition. The inevitable result of climate change will be altered forest composition to a degree we lack the capability to predict fully and accurately. Nature is resilient and adaptable. Forest composition will geographically morph as forests adapt to increased heat and decreased moisture resulting from climate change. A durable definition will be an adaptable definition that can be adjusted to meet changing conditions and needs to preserve biodiversity.

A typical business cycle is less than 20 years. The problem with managing forests concurrent with a business cycle is it is contrary to durability. Forest durability is greatest in mature and old trees that have adapted and survived multiple environmental changes in their lifespan. Tree branches are higher off the ground and bark is thicker and thus mature and older trees are most resistant to wildfire. Seed produced by mature and old trees is more abundant and important to wildlife. Mature and old trees contain unique genetics critical to future forest health. Their existence is proof of their genetic resistance to drought, fungi, mistletoe, or bark beetles. Every tree left standing is an evolutionary opportunity for adaptation to climate change.

5. What, if any, forest characteristics should a definition exclude?

Any definition whose conceptual basis facilitates or promotes resource exploitation must be excluded from this framework. Any definition that prioritizes human manipulation of forests to maximize resource extraction or favors short-term economic gains and results in ecologic loss should be excluded. To exclude burned forests, for example, embraces logging dead trees-an industrial process which harms a fragile ecosystem status while undervaluing the critical ecological benefits of wildland fire.

Finally, the Forest Inventory Analysis must be excluded from the methodology for conducting the inventory process, as mandated in the E.O. FIA is for sampling, and does not yield spatially explicit or accurate information that discloses the location and extent of mature and old-growth forests.

Our experiences with Region 6, USFS, makes us skeptical that federal land management agencies will genuinely be "making the inventory publicly available" as required by the E.O. For decades the Forest Service has been

promoting a fear-based agenda based on misinformation on our National Forests to garner support for resource extraction. Fear the forest, for it imperil you with catastrophic fire. The forest is too dense, infested with insects, and filled with "hazard trees." This agenda is pushed forward to discourage citizen challenge of the agencies' industrial extraction agenda.

Mature old growth forest has value beyond human definition. Our forests are home to sentient and sapient non-human beings with inherent value. Life in all its forms should be valued and preserved.

Thank you for soliciting and considering our input on the Request For Information.

Sincerely,

Tim Coleman

Executive Director

Kettle Range Conservation Group Kettle Range Conservation Group

FOOTNOTES:

1 Maloof, J. (2016). *Nature's Temples: The complex world of old-growth forests*. Timber Press.

2 Old growth. (2022, February 28). Forest Stewards Guild. <https://foreststewardsguild.org/old-growth/>

3 Hessburg, P. F., Singleton, P. H., Peterson, D. W., Charnley, S., Wendel, K., White, R., White, E. M., Halofsky, J. E., Gray, A. N., Spies, T. A., & Flitcrof, R. L. (2020). The 1994 Eastside screens large-tree harvest limit: Review of science relevant to forest planning 25 years later.

4 <https://www.fia.fs.fed.us/library/brochures/docs/2000/ForestFactsMetric.pdf>

5 Luysaert, S., Schulze, ED., B[oum]rner, A. et al. Old-growth forests as global carbon sinks. *Nature* 455, 213-215 (2008). <https://doi.org/10.1038/nature07276>

6 Harris, L. B., Scholl, A. E., Young, A. B., Estes, B. L., & Taylor, A. H. (2019). Spatial and temporal dynamics of 20th century carbon storage and emissions after wildfire in an old-growth forest landscape. *Forest Ecology and Management*, 449, 117461. <https://doi.org/10.1016/j.foreco.2019.117461>