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Comments: EO14708, Strengthening the Nation's Forests, Communities, and Local Economies, offers the two federal land management agencies a fabulous opportunity to frame the value of trees and their services for the foreseeable future. Even though the informational webinar of July 21, Request for Information (RFI) on Federal Old-growth and Mature Forests, asked the audience to consider only Part b, it would be a lost opportunity to ignore the rest of the executive order at this juncture. The BLM and FS final definition of 'Old-growth' forest will affect a wide range of environmental professions and forest lands. Landowners might be tasked with obligations and management options for municipalities might be restricted. The final definition should be evaluated for the effect it could have on law, policy, management, and forest service/function. Each management perspective (preservation, restoration, conservation) should find relevance in the final definition.

Since there are large gaps in our knowledge of forests and their functional communities, the definition should anticipate the need for a definition which can fold new information under its broad umbrella. For example, as we learn more about soil microbes, their role in creating healthy soil communities should be possible to include in the larger definition even if not called out specifically.

In addition to being able to handle new information, a robust final definition requires inclusion of multiple know conditions, even if they are not directly cited in the adopted definition. A priori consideration for the following parameters could promote a definition of use and value throughout the USA - local, state, federal government, nonprofit, corporate and private individual owners.

Location: Does the definition work for all settings: city, state, rural, urban, territory...?

Ownership: private (individual, group, organization, corporation) or public (city, state, territory, federal)

Ownership status: Does the definition have the potential to place an obligation on the forest owner for management requirements? Is it even possible to obligate the owner (i.e., is this tribal land? Should tribes then be included in vetting the final definition?)

Age: At what age is Old-growth function met? Is it too stringent to ask that the forest have never been managed like Maloof (2011)? Is there an age at which the trees are old enough to be considered old? Should a particular number of generations without harvest be required to designate a forest as 'old'?

Size: Is there a lower limit to the size of a forest? How many trees count as a forest?

Ecological integrity: Which functions will contribute to acknowledgement as an old-growth forest? How will deer browse or pests and disease affect forest designation?

Range of ecological function: Is there a way to capture stability of forest functions? Should an old-growth forest be expected to provide any of the following? Should thresholds be established?

\*hydrological function

\*oxygen production

\*carbon sequestration

\*wildlife habitat

\*host wildlife

Forest quality: Will native-ness of species make a difference to the designation? Should a percent native be considered? How could natural disasters effect old-growth status (e.g., Could erosion or tree blowdown associated with a hurricane or a tornado, create so much devastation that the definition of old-growth no longer applies?)? Would an old-growth forest still be old-growth even if it was naturally damaged? Is the undeveloped land the key to the definition such that natural disasters might change the composition and the level of ecological services offered but the forest is still old-growth? Is climate change a 'natural' damage?

Other considerations/concerns: What conditions would cause a forest to change designation from old-growth/mature to something else? Is an old-growth forest a few trees under assault from land use pressure? How will tree age be determined? Should ecological function be centered on the physical functions (stormwater interception, reduced runoff, air quality improvements, increased groundwater recharge, oxygen production, carbon sequestration) or include human services, too (mental & physical health & wellbeing, human resiliency after a disaster)? Should the definition accommodate definitions of forest or forest services from international bodies like the UN or the WHO?

Given the confluence of variables I propose a definition of old-growth forests that is broad enough to include forests which have been touched since colonization but not so broad that land left fallow for a few years qualifies. Clearly it is larger than a few trees, yet, does not have to be as large as a national forest. It should offer ecological services (e.g., improved air quality) through normal forest functions (e.g., canopy tree leaf out). An old-growth designation would be more restrictive and might have elements of prior land use restricting this classification. Mature forests would be less restrictive and might even apply to areas where prior human use significantly disturbed the underlying abiotic conditions.

Starting point idea: Old-growth forests are places with naturally occurring abiotic conditions largely undisturbed by concerted human activities for at least 100 years. Old-growth forests are recognized by the assortment of living species established on the site: mature canopy trees, an understory assortment of woody and herbaceous plants, and a range of associated wildlife. Ecological services (e.g., carbon sequestration, oxygen production, stormwater interception) are delivered within a range associated with average rates of function (not the high rates of a rapidly growing, young tree stand but the stable plateau associated with an established community).

Mature canopy trees are of sufficient age to be biologically reproductive.

Joan Maloof, *Among the Ancients: Adventures in the Eastern Old-Growth Forests*. Washington, DC: Ruka Press, 2011.