OLD-GROWTH FOREST NETWORK
Connecting people with nature by creating a national network of protected, mature, native forests

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August 8, 2022

Christopher French, Deputy Chief
U.S. Forest Service

Tracy Stone-Manning, Director
Bureau of Land Management.

Dear Secretary Vilsack and Secretary Haaland,

Executive Order 14072 was presented out of concern for the carbon dioxide levels rising in the atmosphere and concurrent climate change. The scientific community now recognizes that older forests store the most carbon, both in the trees and in the soil, and that harvesting releases much of this carbon. Thus, our mature and old growth federally-owned forests have become globally important as "climate-forests," and they play a significant role in our commitment to reducing atmospheric carbon dioxide.

Comments on 2b -definitions and inventory:

-definitions

This first call for comments asks for help with defining "mature" and "old growth." Defining "old-growth" forests has been called a 'wicked problem'[i] and many thousands of pages have already been written discussing these definitions -- many of them produced by your own agency, the USDA Forest Service.[ii] (For instance, one Forest Service publication about old-growth forests in the eastern US is over five-hundred pages long. [iii]). In one of my books[iv] I quote Tom Spies, research forest ecologist for the Pacific Northwest Research Station who said, "There may never be a single, widely accepted definition of old growth – there are just too many strong opinions from different perspectives including forest ecology, wildlife ecology, recreation,

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spirituality, economics, sociology." And many of the participants of your Partner Engagement Zoom on August 2, 2022, agree that even coming up with a framework for such a definition will be challenging and time consuming.

-inventory

You are tasked with not only defining "old growth" and "mature" but identifying, as well, where these forests occur on federal lands– all by April 2023, a mere eight months away. Considering this timeline, we suggest that instead of spending time on a definition, begin by determining where the federally owned older forests are still located. We urge you to examine the scientific papers being submitted by Dr. Dominick DellaSala of Wild Heritage in response to this RFI. These papers by Wild Heritage, Griffith University (Australia), Woodwell Climate Research Center (Massachusetts) plus scientists from the International Panel on Climate Change and are currently undergoing review. Our understanding is that their mapping methodology uses the latest processed LiDAR (2019) imagery on tree height, canopy cover, plus published ecosystem biomass datasets spatially derived to rank order the structural development of all conterminous U.S. forests from least developed ("young") to most developed ("mature/old growth"). The mapping is at 30-m pixels and uses Forest Inventory and Analysis (FIA) plots for field validation of the rankings of remotely sensed areas. It is state-of-the art and science for defining mature/old growth spatially along with location, extent, ownership, protected status, amount of carbon sequestered, value for drinking water, and the imperiled species in the protected and unprotected mature forests. Mature/old growth in this context is the sum of their highest scorings for the three proxies relative to their surroundings: tree height + canopy cover + ecosystem biomass = mature/old growth forest which is then validated where researchers' polygons overlap FIA plots. In other words, these scientists' data will be the best available science for achieving many of the mapping and inventory goals outlined in E.O. 14072. A critical first step for the Biden administration would be to issue an order halting all logging in areas these scientists' research has identified as exhibiting high levels of stored carbon.

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Although the Dellasala maps are of highest quality and very timely, if you wish to consider other methods of identifying mature and old growth, 'years since last harvest' is the simplest way to identify mature and old-growth on federal lands. The use of the term 'harvest' here includes major thinning and regeneration harvests. Ninety-nine percent of our national forest land was acquired between 1891-1939. This means that almost all our national forests would be a minimum of 82 years old if they had not been harvested since acquisition, and most would be much, much, older than that. Many foresters and conservationists have suggested that 80 years is a reasonable age at which to consider a forest 'mature.' Therefore, any national forests unharvested since acquisition would either be mature or old-growth.

	acres	
Total national forest land	188,336,179	100%
National forest land acquired 1891-1939	186,777,966	99%
National forest land acquired 1940-2022	1,558,213	1%

Using this criterion, one need only determine if records exist for harvesting done on federal lands since they were acquired. If these records exist, simply identify unharvested areas as mature or old-growth. No distinction between these two labels is required at this point, as it can be difficult and time consuming to differentiate between them.

A deeper dive into definitions as time permits (2b continued)

Most of the definitions of old growth contain the following criteria:

1. age of stand
2. lack of human disturbance (e.g., few stumps. no recent entry for thinning or harvesting. no grazing)
3. lack of catastrophic natural disturbance

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We agree with the first and second of these criteria, however natural disturbances, even if catastrophic, should not exclude a forest from being considered mature or old growth. When fires or tornadoes come through most of the carbon is still retained in older forests, and the soil structure, and genetic uniqueness of the forest still exists, despite the natural disturbance. Focus instead on just the questions of age and human disturbance.

Here is a generalized description of an old-growth forest and many exceptions can be found:

Old-growth forests are likely to have large-diameter trees. If it is a multispecies forest, you may find large individuals of different species near each other. The bark of older trees will look different from the bark on the younger trees of the same species. As trees age, the appearance of their bark changes, leading to characteristics such as deeper furrows or bald patches. An older forest also has tall trees, with no lower limbs, and trees twisted by age. The crowns of the trees may exhibit short, angled limbs, almost antler-like since they have faced centuries of environmental assaults. The forest has an overstory canopy layer, with trees of varying ages beneath the canopy. It has wood from dead trees—both standing and on the ground. There are gaps in the canopy and growing beneath the gaps are plants that need the full sun that results from a disturbance. The ground is likely to have pits and mounds from long-ago tree falls.

Someone who has visited many old-growth forests begins to develop an eye for these indicators, but not everyone is trained for that. In addition to identifying the age of a forest by visual indicators, there are other useful tools as well. Historic aerial photography is one tool. Many regions were photographed by plane as early as 1937, and these images are readily accessible through government websites. Areas that were continually forest covered at that time and up to the present are likely to be at least 100 years old (2022-1937=85 years + 15 year old forest in image = 100). Thus, they would be included in the “mature and old growth” category.

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There are also recorded histories of forests that can be used to age them, and soil profiling techniques that can be used as well. Coring individual trees, living or dead, is another way to determine forest age.

We suggest that work proceed as rapidly as possible to put on the comprehensive map the known forests that meet the criterion of 80 years and older. And then for the more complex cases, utilize trained teams with the experience necessary to help determine the age of a forest through the multiple techniques described above. Their data could also be gathered in such a way that it would help inform a later more refined definition of forest age. Our knowledge will grow as this important work of identifying and protecting forests progresses, so the issue of a definition should be regarded as an on-going issue in which the simple definition adopted for the present work will be refined over the years.

Comments on 2c – protection and management

Although this first call for comments on Executive Order 14072 asked for assistance with definitions, it was stated that comments on section 2c, protection and management, were welcome as well.

Our national forests should no longer be thought of as merely a source of timber, but they need to be honored for the role they play as a carbon sink, in addition to their other ecosystem services. Currently just 5% of our domestic wood products are sourced from National Forests, so setting aside that use should not be insurmountable.

To retain the most carbon and the most biodiversity within these ‘climate forests’ we make the following suggestions:

1. National forest lands that have not been harvested since acquired by the USFS and BLM, or that are identified as mature or old growth on the Dellasala maps, should be considered ‘climate-forests’ and remain undisturbed by thinning and harvesting.

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2. If a National Forest has less than fifty percent of its land in this category (not harvested since acquired or map-identified), adjacent younger forests should be identified and be allowed to age and bring the total acreage of the National 'Climate-forests' to at least fifty percent.
3. Climate-forests should not be thinned in the name of 'wildfire control.'
   Recent research has shown that older, protected, forests are less vulnerable to intense fires, and the most vulnerable are the younger forests[v]. Therefore, if thinning and prescribed burns are considered for the urban-wild interface they should not be done in the 'Climate-forests'. Instead, more should be done to educate and control humans on home-hardening to prevent wildfire damage – the one aspect of wildfire we can effectively manage.
4. Climate-forests should not be salvage logged after a wildfire since large amounts of carbon are held even in fire-killed trees.
5. Climate-forests should not be cut or chemically treated to control native insects. Chemical control is acceptable only for non-native invasive insects.
6. Climate-forests should not be silviculturally treated, even to advance old-growth structural characteristics since some old-growth characteristics emerge only with sufficient time. For example. it takes time for large coarse woody debris to develop even with silvicultural manipulations, or for logs to reach advanced stages of decay.

In summary, the U.S. Departments of Agriculture and the Interior jointly published a Federal Register notice seeking public comment on plans around federal old-growth and mature forests in response to Executive Order 14072: Strengthening the Nation's Forests, Communities, and Local Economies. The comments above are a response to that call, they represent the viewpoint of the Old-Growth Forest Network (OGFN). OGFN is the only national organization focused solely on preserving old-growth forests in the US and connecting citizens to them. Our membership includes scientists, foresters, and concerned and active citizens in every state. We belong to numerous coalitions that speak for the nation's forests, including Stand4Forests and Climate-Forests.

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In conclusion we request an immediate moratorium on cutting in forests identified as mature or old growth, and the implementation of a rule to codify these guidelines as soon as possible.

For the forests,

Joan Maloof, PhD

Founder and Executive Director, Old-Growth Forest Network

Professor Emeritus, Salisbury University

Author: *Teaching the Trees; Among the Ancients; The Living Forest; Treepedia; Nature's Temples: A Natural History of Old-Growth Forests*

[i] Anthony, Pesklevits & Duinker, Peter & Bush, Peter. (2011). Old-growth Forests: Anatomy of a Wicked Problem. Forests. 2. 10.3390/f2010343.

[ii] A good collection of publications defining old-growth, which are already used by the Forest Service is the interim Field Guide for the Healthy Forests Initiative and Healthy Forests Restoration Act. It may be found at this weblink: https://www.fs.fed.us/projects/hfi/field-guide/web/page24.php.

iii Tyrrell, Lucy E.; Nowacki, Gregory J.; Buckley, David S.; Nauertz, Elizabeth A.; Niese, Jeffrey N.; Rollinger, Jeanette L.; Crow , Thomas S.; Zasada, John C. 1998. Information about old growth for selected forest type groups in the eastern United States. General Technical Report NC-197. St. Paul, MN: U.S. Dept. of Agriculture, Forest Service, North Central Forest Experiment Station

[iv] Maloof, Joan. *Nature's Temples: The Complex World of Old-Growth Forests,* Timber Press, 2016

v Lesmeister, Damon B.; Davis, Raymond J.; Sovern, Stan G.; Yang, Zhiqiang. 2021. Northern spotted owl nesting forests as fire refugia: a 30-year synthesis of large wildfires. Fire Ecology. 17(1): 11770-. https://doi.org/10.1186/s42408-021-00118-z