Data Submitted (UTC 11): 8/29/2022 4:00:00 AM
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Organization:
Title:
Comments: Re: Request for Information on Federal Old-growth and Mature Forests

Thank you for the opportunity to respond to the Federal Register Notice as the BLM & USFS seek to define mature and old growth forests. I write as a professional forest ecologist and conservation biologist with 40+ years' experience working in the forests of the eastern and Midwestern U.S. My 200+ publications (see http://www.researchgate.net/profile/Donald_Waller2) include two books:

Alverson, W.S., W. Kuhlmann, and D.M. Waller. 1994. Wild Forests: Conservation Biology and Public Policy. Island Press, Washington, DC. 300 pp.

Waller, D.M., and T.P. Rooney, eds. 2008. The Vanishing Present: Wisconsin's changing lands, waters, and wildlife. Univ. of Chicago Press. 507 pp.

I also serve as a science advisor to the Environmental Law & Policy Center (ELPC.org) based in Chicago where I have been engaged on forest and wildlife management issues for more than 20 years.

Your current job is to figure out just how to implement President Biden's Executive Orders on "America the Beautiful" (aka '30 by 30' - EO 14008) and "Strengthening the Nation's Forests, Communities, and Local Economies" (EO 14072). These initiatives represent long-overdue responses to two national and international crises, namely catastrophic recent declines in biodiversity and continuing increases in greenhouse gases. Both these crises have been exhaustively analyzed making two things clear:

1. Current population declines and species extinctions have increased dramatically and now represent a global extinction catastrophe on a par with other mega-extinction events.
2. Rates of climate change have also accelerated dramatically in recent decades making our climates warmer, drier and wetter (in different places), and more prone to unpredictable extreme events, including massive fires, floods, and windstorms. Most of these trends are occurring faster than initially predicted by forecasting models.

Action is urgently needed on both these crises as evidenced by a long succession of international scientific conventions and multiple international meetings, treaties, and declarations of intent (e.g., IPCC, IPBES, and their recent joint workshop). These recent U.S. Executive Orders represent an important opportunity for the U.S. to reassume a position in line with other nations to address these twin primary challenges of our era.

The single most important, efficient, and effective step the BLM and USFS can take at this key moment in time to address both the extinction crisis and global climate crisis is to immediately ban the commercial logging of mature and old-growth forests across the U.S. Logging these forests eliminates scarce habitats critical for sustaining many threatened elements of biodiversity while also providing the simplest and most efficient way to increase carbon sequestration and storage on U.S. public lands. By "mature" and "old-growth" I am referring to forestlands that are at least 60-80 years old (i.e. forestlands with an appreciable fraction of trees aged 60+ years). These forests will generally include now (or in the near future) many larger trees (i.e., those with a diameter at breast height (DBH) of 50 cm or more) of a size known to grow and sequester carbon much faster than smaller trees.

Why is it important to protect mature and old-growth forests from logging and other intensive forms of anthropogenic disturbance? The points below provide a rationale for this request and recommendation. These points are not conjecture or opinion, rather they reflect the work of many ecologists including myself. Although I

omit citations here, I can support all the statements made in this letter if that is deemed necessary or advisable.

* Mature and old-growth trees and forests sequester and store far more carbon than younger forests. For example, I am currently working with John Schwartzman (retired state of Wisconsin forester) and Dr. Kristel Kern, USFS research forester, to analyze growth patterns of 9400 trees of 20 species growing in forest stands located in the 'northwoods' of northern Wisconsin. These stands have been actively managed by the Wisconsin Bureau of Commissioner of Public Lands for long-term commercial productivity - they are not lands 'set-aside' for conservation. Preliminary analyses of these data show that DBH has a strong positive effect on current growth (basal area increment, proportional to the increase in total above-ground tree carbon). It is, by far, the single most important predictor of this growth. Together with other variables (height, species, crown dominance), DBH om this statistical model accounts for 63% of the total variation in tree growth across these 9400 trees. Bigger trees grow faster, sequestering and storing far more carbon than younger trees.
* Other research indicates that older forests also store far more carbon below ground not only in the form of fine and coarse roots but also in the form of coarse and fine woody debris, mycorrhizae, and soil organic carbon. Much of this long-term carbon storage is threatened when forests are logged, killing roots and mycorrhizae and exposing soil to hotter, drier conditions which can oxidize considerable soil organic carbon.
* Older forests and trees provide cooler, moister forest conditions that shelter and provide habitats for species sensitive to hotter or drier conditions. This both supports their current populations and provides key opportunities for such sensitive species to gradually migrate to suitable climatic zones capable of supporting them in the future as climates continue to change. Strong evidence exists that many species sensitive to warmer and drier climatic conditions are already in decline or disappearing from large parts of their former range.
* Logging results in large immediate or short-term releases of greenhouse gases (GHG's) as trees die, logging tops and fine and coarse roots decompose, and soil organic carbon is oxidized. Additional GHG releases occur as part of logging via road building, logging and skidding activities, the transportation and processing of logs and forest products, the oxidation of sawdust and other wood wastes, and the decomposition of derived wood products over shorter and longer time periods (e.g., paper and wood products, respectively). Research has shown that 80% of the carbon in a logged forest is emitted or in a landfill within 100 years. In managed forests, it has been estimated that the initial releases of oxidized carbon from logging are not 'repaid' in terms of compensatory growth of young trees and on-site absorption of carbon for 10 to 30 years. It takes even longer for tree growth and rates of carbon absorption and storage to return to levels present in the logged stand.
* Any accounting for forest carbon dynamics should emphasize the value of short-term carbon sequestration and storage and avoided emissions from deferred logging while properly discounting eventual carbon sequestration and storage that will not occur until decades into the future.
* Logging in the United States contributes as much carbon to the atmosphere annually as all the coal we burn. Emissions of GHG's from logging greatly exceed that from all wildfire, insect, and wind disturbances - by a factor of five times. Large-scale biofuels derived from harvesting trees makes little economic or ecological sense given the considerable emissions associated with logging, transporting, and processing these fuels.
* According to Forest Service and university scientists (Birdsey et al. 2014 - attached), logging is causing us to miss out on major opportunities to sequester and store more carbon in northern Wisconsin. Here, ecosystem carbon is currently increasing at a rate of 1.5 million Tg per year but this could almost triple - increasing to 4.3 million Tg per year over the next 50 years - if we defer timber harvests. This major opportunity should not be missed.
* Nationally, only about 24% of BLM and USFS mature / old growth forestlands are protected. This means the remainder (>50 million acres) could be logged. Logging these additional unprotected forests would release the equivalent of 18% of US annual emissions within one decade. Given this and the several additional co-benefits of protecting mature trees and old-growth forests, these forests deserve immediate protection.
* Many of the forest species in decline in North American forests are sensitive to logging and other forms of human disturbance like road building. Some of these species are directly sensitive to these disturbances while others are prone to decline or disappear when their habitats are disrupted, shrink in size, or become more isolated. Disturbance-, area-, and isolation-sensitive species are in widespread decline. These include many migratory songbirds, wide-ranging predators, large ungulates (elk, moose, and caribou), and species susceptible

to the meso-predators and nest parasites that thrive in landscapes where logging creates more edge habitat.
* Mature and old-growth forests are characterized by abundant standing snags, fallen trees, logs, and coarse woody debris (CWD) in various stages of decay. The loss of these in logged forests robs many species of key resources they need to persist and thrive. Research my group did showed that the majority of seedlings for many late successional species (including yellow birch, eastern hemlock, northern white cedar) occurred primarily on logs or other CWD even though these occupied only a small fraction of the forest floor area. Many animal species also depend on dead wood for food (woodpeckers, beetles, fungi, etc.), habitat (denning mammals, salamanders, etc.), or cover and runways (e.g., American Marten).
* Forest landscapes that retain their cover of mature trees and intact soils also act as sponges to absorb rainfall, limiting immediate runoff, erosion, and flooding. Logged landscapes, in contrast, are notoriously susceptible to soil erosion, gulley formation, silt loads into streams, and risks of downstream flooding. Retaining mature forested landscapes thus enhances water quality while limiting the disruptive effects of major rainstorms and other extreme weather events, adding resilience to our forest landscapes as these events become more common with climate change.
* Evidence is also accumulating that mature and old-growth forests are less susceptible to the damaging effects of catastrophic wildfires. This appears to reflect the more shaded, humid conditions they create as well as the fact that they often support lower fuel loads on the forest floor and in the form of 'ladder' fuels that allow ground fires to spread to the canopy. Mature forests also appear to cause fires to behave differently, generating more variable (spottier) fires and cooler fires.

These observations make clear the importance of protecting remaining mature and old-growth forests and trees from active logging and similar heavy disturbances. This is especially important for the forestlands that the BLM and USFS oversee as federal forestland management sets a standard for other public and private forestland managers, both here in the U.S. and abroad.

It is also important to stress that similar opportunities and threats exist across the U.S., meaning that we must seek to protect mature and old-growth forests not only in the Pacific Northwest or the Southeast but also in the Midwest. In fact, many Midwestern forests are just reaching the point of maturity where tree growth is accelerating making them particularly important sinks for carbon. In addition, logging in the National Forests has increasingly focused on these maturing Midwest forests with total yields increasing considerably in recent years.

Protecting mature and old-growth forests from logging and other major disturbances represents perhaps the simplest, cheapest, and most effective way to achieve U.S. biodiversity and climate policies and goals. Conversely, not protecting these forests represents reckless and damaging actions that we should avoid as we seek to manage our public forestlands in an ecologically informed and responsible way. We have a special opportunity here to protect mature and old-growth forests for their great value in achieving critical biodiversity and climate-related objectives.

It would be foolish to ignore such "low hanging fruit." A new policy to protect federal mature and old-growth forestlands would be easy to achieve in that it requires very little in the way of additional efforts or expenditures. In fact, in the short term, almost nothing needs to be done beyond combining our USFS FIA data with additional ground and remotely sensed data to create accurate maps of where mature and old-growth forests exist. We also have a golden opportunity in doing this mapping over the next year to map out the proximity of mature forest stands to ensure, whenever possible, that these habitats be connected and combined to increase their effective area. This would help us meet biodiversity as well as carbon sequestration / storage goals by providing more suitable habitat for area-, edge-, and isolation-sensitive species.

Given these commanding and persuasive arguments, it makes little sense to continue logging mature trees and older-growth forests on federal, state, and county forestlands. Here in Wisconsin, this includes the Four-Mile Project on the Chequamegon-Nicolet National Forest (CNNF) which proposes to selectively harvest maturing second growth stands in a sensitive region. Forest stands slated for logging include Management Area 2B (future

old-growth) areas immediately adjacent to six Wisconsin State Natural Areas that provide critical habitats for many rare and threatened species. Despite years of effort and advice aimed at pointing out the ways this (and similar) projects threaten diversity and the potential of the landscape to sequester and store carbon, the Forest Service persists in pursuing this inappropriate project in its original form - even arguing that it is not responsible to analyze the impacts of this project on carbon storage potential and climate change! Given our increasing recognition and understanding of the key roles maturing trees and forests could play in ameliorating climate change and slowing declines in biodiversity, this is a highly irresponsible way to manage our public forests.

In addition to damaging projects like the Fourmile on the Chequamegon-Nicolet National Forest, the BLM and USFS are also pursuing logging in many areas out West under the guise of preventing forest fires (or salvaging the value of trees in partially burned forests). While it is important to redirect forest management to reduce wildfire risk, these efforts should focus on the small-diameter trees that contribute to dangerous fuel loads and high tree densities - NOT larger-diameter mature trees. Such inappropriate and improper interpretations of mandates for public forests argue in favor of declaring an immediate moratorium on logging mature trees and old-growth forests until suitable inventories are complete and a clear policy applying solid protections is in place. Individual trees and stands, whether burned in a fire (dead or alive) or unburned, that are 60 years old or older, should be excluded from cutting and removal and not be cut or removed in areas where logging operations have already been approved. Note: Logging operations involve the cutting and removing of trees and are often described using terms like thinning, clearcutting, shelterwood cut, group selection, fuel break, restoration, reforestation, fire risk reduction, hazardous fuels reduction, etc. This 60-year benchmark would ensure protection for our most carbon-critical forests while mapping is finished and a clear and consistent policy is put into place. The forests fitting this definition contain most reproductively mature conifer stands and the carbon currently stored in federal forests. These mature trees and old forests are the cornerstone of our forest ecosystems and provide vital habitat and biodiversity benefits as well as critical freshwater resources.

In sum, the U.S. Department of Agriculture and the Department of the Interior should work together to initiate a rule-making process based on a definition of mature trees and forests to protect trees 60 years old and older - i.e., those that are ready now and in the near future to sequester and store the most carbon. President Biden's Earth Day Executive Order rightly recognizes the critical role mature and old-growth forest ecosystems play as a climate solution and the urgent need to confront the threats that forests face, but time is running short. It is critical that you fulfill the President's directive to provide lasting protections for these areas. Historical extensive (and increasingly intensive) logging across the United States has largely robbed us of the magnificent large trees and mature forests that once covered much of North America. Logging these forests contributed greatly to the vast releases of carbon dioxide that have altered our climates and continues to do so. Let us start now to rebuild those forests to regain the resilience, beauty, and value they provide to help us address our current biodiversity and climate crises.

Sincerely,

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Birdsey, Richard; Pan, Yude; Janowiak, Maria; Stewart, Susan; Hines, Sarah; Parker, Linda; Gower, Stith; Lichstein, Jeremy; McCullough, Kevin; Zhang, Fangmin; Chen, Jing; Mladenoff, David; Wayson, Craig;

Swanston, Chris. 2014. Past and prospective carbon stocks in forests of northern Wisconsin: a report from the Chequamegon-Nicolet National Forest Climate Change Response Framework. Gen. Tech. Rep. NRS-127. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 52 p.

ATTACHMENT: Birdsey-2014-C-stocks-N-Wisc-CNNF-USFS-Rept..pdf