August 30, 2022
Re: Request for Information on Federal Old-Growth and Mature Forests, 87 FR 42493

Deb Haaland
Secretary
US Department of the Interior
1849 C Street, NW, MS 5311
Washington, DC 20240

Dear Secretary Haaland,

Thank you for the opportunity to comment on the Department of the Interior's implementation of Executive Order 14702: *Strengthening the Nation's Forests, Communities, and Local Economies.* EO 14702 requires the Department, along with the U.S. Department of Agriculture, to define old-growth woodlands and forests on Federal lands and complete a nationwide inventory; identify threats to mature and old-growth lands and develop policies to address these threats, coordinate conservation strategies and risk reduction, develop climate-informed reforestation goals, and develop recommendations for economic development.

The purpose of this letter, specifically, is to highlight issues and information relevant to old-growth and mature forests that occur on Bureau of Land Management (BLM) lands as the agency solicits feedback on how "to define, identify, and complete an inventory of old-growth and mature forests on Federal lands."

BLM manages 245 million acres of public land across the United States. Of these 245 million acres, about 56 million acres are forests or woodland ecosystems that may contain old-growth and mature trees. *See* Appendix 1. It is important that BLM use a science-based framework for its inventory of old-growth and mature forests, as this type of comprehensive inventory has never been done across BLM-administered lands and presents an excellent opportunity for BLM to better understand the forested ecosystems it stewards and improve their management and conservation.

BLM manages a diverse range of forest types including some for which old and mature forest characteristics are not well studied

BLM manages an array of forest types (*see* Appendix 1- GIS data) from boreal forests in Alaska to the pinyon-juniper woodlands of the interior west. Each of the forest and

woodland ecosystems within the BLM estate contain different characteristics for what may constitute old-growth and mature forests.

Mixed Conifer Western Forests. In western Oregon and California, BLM manages 2.6 million acres of some of the most productive forests in the United States. Primarily Douglas fir and mixed conifer, these forests are threatened by climate change, wildfire, and timber harvest. These forests sequester vast amounts of atmospheric carbon, provide clean water for the region, and provide wildlife habitat for numerous federally-listed wildlife species including northern spotted owls, marbled murrelets, and several salmonids.

In the Pacific Northwest, BLM has a long history of defining mature and old-growth forests. In the late 1980s and early 1990s, scientists and federal land management agencies developed a universal definition framework that motivated conservation of mature and old-growth forests on federal forestland in the region. In 1993, the Forest Ecosystem Management Assessment Team advanced a definition of "late successional" and "old-growth" to include “the successional stages defined as mature and old-growth, both of which function as old-growth.” This definition is included in the 1994 Northwest Forest Plan (NFP) Final Environmental Impact Statement (FEIS).

While both mature and old-growth forests are at a late phase of forest succession, this phase begins at about 80 years of age in the Pacific Northwest. According to the NFP, “the mature phase of stand development begins around 80 years and is characterized by relatively large live and dead trees.” (NFP FEIS at B-44) Old-growth phase of stand development in the Pacific Northwest begins at about 150 years old. In addition to large overstory trees, old-growth can have multi-layered canopies, large down wood, and standing dead trees. However, late successional or mature forests may not exhibit all of these structural features, such as multiple canopy layers. (Id)

Pinyon-Juniper Woodlands. The pinyon-juniper woodlands and other arid forests have not received as much attention and study of their old and mature elements as other forest types. They occur on tens of millions of acres within BLM’s surface estate. *See* Appendix 1. Careful and meaningful consideration must be given to mature and old-growth forests that have been overlooked in the past. This includes, particularly, the semi-arid and arid regions of the southwestern United States. These regions contain vast amounts of forests that contribute to the overall biodiversity of the flora and fauna in the region, sequester a significant amount of carbon, and play a critical role in resistance and resilience to climate change. They must be inventoried as part of this effort and carefully considered for management as old-growth forests.

Covering 15% of the land area in five states–Arizona, Colorado, Nevada, New Mexico, and Utah–pinyon pine and juniper forests are subject to temperature extremes and limited moisture availability. These forests are often the sole woodland provider for wildlife habitat, vegetative cover, watershed protection, and traditional food and medicine gathering in dryland and arid BLM-managed lands across the west. Pinyon pine trees can reach ages upwards of 600 years old, and juniper up to 1,600 years old (Miller, Tausch, Waichler 1999). These historic forests and associated undisturbed biological soil crusts store a disproportionate amount of carbon in dryland ecosystems and are more resistant to shifts caused by climate change (Li et al. 2017). Old-growth pinyon-juniper forests are home to more than 70 bird species and are often the only suitable habitat for many of these species, whose populations are currently declining rapidly under intense pressure from climate change, development, and drought (Miller, Tausch, Waichler 1999). Although they cover hundreds of millions of acres, provide irreplaceable habitat and ecosystem benefits, and reach thousands of years old, pinyon-juniper forests are among the least-studied and most-ignored North American forest types. According to relevant research:

> Old [pinyon juniper] woodlands usually differ in structure and function from postsettlement woodlands thus adding diversity at the community and landscape levels. Although considerable research has been conducted in old-growth for other conifer species, work addressing old-growth in juniper and pinyon woodlands is very limited. In addition, the concern over the rapid expansion of juniper and pinyon woodlands during this century has overshadowed the presence and values of these presettlement woodlands. Ancient woodlands are frequently overlooked in management plans and inventories where they are often lumped with postsettlement stands.

(Id.). Because of the relative paucity of information related to old and mature pinyon juniper forests, BLM needs to focus attention on these forests in all stages of this project: establishing definitions, conducting inventories, and establishing protective policies.

Regarding an inventory of mature and old-growth pinyon-juniper forests, we recommend that the BLM review existing data sources and identify those with the highest spatial resolution for use in an inventory. The Forest Inventory and Analysis (FIA) Program data may be less useful in a BLM-wide inventory than, for example, geospatial data based on soil site mapping, since FIA plots are generally distributed quite far apart spatially. As we understand, FIA has one sampling location or plot for approximately every 6,000 acres. The application of information from an FIA plot to adjacent areas becomes less defensible in areas with quite varied topography, which characterizes

much of BLM's low-elevation forests, since vegetation types can vary significantly across such a large area.

We are attaching an expert report on pinyon-juniper forests written by Lisa Floyd for Defenders of Wildlife (2021). The report provides information on the current and historic distribution, composition, and condition of these forests, as well as on current threats.

Bristlecone pine forests. The BLM manages select stands of Great Basin bristlecone pine (*Pinus longaeva*), such as in the Henry Mountains of south-central Utah. Bristlecone pine have a much more limited spatial extent than most other conifers on BLM-managed lands, and thus are relatively rare on the landscape. These magnificent trees can grow to become some of the oldest organisms on the entire landscape. We believe that bristlecone pine deserve special attention in the BLM's effort to inventory mature and old-growth forests. Bristlecone pines are primarily threatened by cutting, whether as part of an agency-approved project or through unauthorized cutting by the public. Bristlecone often grow on harsh soils where spacing between trees is large, and thus on such sites fire is less of a threat than in other forest types. Fire is likely more of a threat where bristlecone grow in a denser, mixed-conifer forest. Given the relatively rarity of bristlecone pine on BLM-managed lands, BLM should make a concerted effort to inventory all stands of bristlecone pine. We suspect that nearly every existing stand would have an old-growth component and thus should fall under the purview of this effort.

<u>Recommendations:</u>

- Use best available science to develop a definitional framework for old and mature forest characteristics for forests that occur on BLM lands.
- Give special attention to the more arid forests including pinyon-juniper woodlands that historically have been less studied in regard to their old and mature forest characteristics, management requirements, and trends.
- Review Floyd (2021).

Specific Questions Posed in Request for Information

Along with advocating for the inclusion of each of the above-mentioned forest types within the Department's inventory of mature and old-growth forests, below are our responses to the questions posed in the Request for Information that are relevant to BLM-managed land.

Given the diversity of forest types across both BLM and Forest Service managed lands, a universal definition framework that is implementable is likely to be difficult. We

recommend at least differentiating between dry (e.g., pinyon and juniper, ponderosa pine, and some mixed conifer forests) and moist forest types (e.g., Douglas fir and spruce-hemlock) in a definition framework.

For dry forest types (especially pinyon/juniper and ponderosa pine), the following are what we believe to be the most important overarching old-growth and mature forest characteristics that should be included in a definition framework (*see* Sink 2003):

- presence of trees lacking of a clear growth leader forming the tip of the tree and
- presence of trees that have lost a generally conical shape (round, flat, or uneven top).

In addition to the above, the following characteristics may, but need not, be present in old-growth and mature forest:

- dead segments on live trees and
- large snags and downed wood.

For moist forest types in the Pacific Northwest, traditional old-growth definitions often include characteristics such as very large trees, multi-layered canopies, canopy gaps, large snags, and large down wood. However, the Northwest Forest Plan (1994) found that "many mixed-age stands that include scattered individuals or patches of old trees alongside mature trees function ecologically much like classical 'old-growth' stands." NWFP FEIS at B-44. Therefore, in addition to the definitions of classical old-growth, in mesic forests in the Pacific Northwest, scattered old and mature trees over 80 years, wherever they persist, belong in the mature and old-growth definition framework. In drier, fire prone conifer forests in the PNW, the mature successional stage can include the predominance of mature trees and some snags, a stand age over 80 years where self-thinning is occurring, decayed and undecayed logs are on the ground, and understory vegetation is well established (*see* Thomas 1979).[1]

For both dry and moist forest types, we believe that the definition framework should make clear that it is *forests* that are the focus, not individual trees. If old-growth or mature trees are identified based on the above characteristics, the forest of which they are a part, which may include younger trees lacking these characteristics, should be considered old-growth or mature.

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[1] Site specific exceptions to this definition are needed that allow management of trees over 80 years of age where necessary to address fire risk. The majority of fuel reduction can be accomplished by focusing on trees and other vegetation that are less than 80 years of age.

USDA and DOI should define all forests and trees over 80 years as mature and make exceptions for trees over 80 years where cutting such trees are: 1) scientifically necessary; 2) protects forest biodiversity values; and 3) increases forest resiliency.

A definition of mature and old-growth forests needs to capture old-growth that remains in post-disturbance forests. Disturbance from fire, insects, and other events is a central to the successional process and natural in old-growth ecosystems.

Postfire forests continue to store carbon and provide biological legacies that are important to capture in a definition. While small amounts of carbon stored in live and dead trees may be lost in disturbance events, most is retained in biological legacies, including snags, dead and down wood, charcoal, and live remnant trees. Spies et. al., (2018) found after an extensive literature review that postfire management should promote natural recovery, *retain old, large trees and snags*, and protect soils against compaction and erosion (*see* page 178).

> Salvage logging alters postfire vegetation structure by reducing the basal area and density of live and dead trees (McIver and Otmar 2007) and decreasing the persistence of remaining snags (Russell et al. 2006) and altering the microclimate of a site (Marañón-Jiménez et al. 2013). What's more, once a tree dies, it functions as a snag, down log(s), mulch, and charcoal in soils for a period that can far exceed the period spent as a live tree (DeLuca and Aplet 2008), although those dynamics vary widely based upon moisture and fire regimes. Cumulatively, these reductions result in decreases in live and dead biomass (Donato et al. 2013) and reduced soil carbon. (Spies et. al, 2018)

An ecologically-based definition of mature and old-growth forest must capture post-disturbance forest types in terrestrial ecosystems.

<u>Recommendations:</u>

- Differentiate between dry (e.g., pinyon and juniper, ponderosa pine, and some mixed conifer forests) and moist forest types (e.g., Douglas fir and spruce-hemlock) in a definition framework.
- For both dry and moist forest types, the definition framework should make clear that it is forests that are the focus, not individual trees. If old-growth or mature trees are identified based on the above characteristics, the forest of which they are a part, which may include younger trees lacking these characteristics, should be considered old-growth or mature.
- A definition of mature and old-growth forests needs to capture post-disturbance forests where old-growth trees and mature forest characteristics still remain.

BLM must develop and use an ecologically based management standard for mature and old growth forests

Executive Order 14072 establishes the policy of the United States to conserve America's mature and old-growth forests on federal lands and directs BLM to institutionalize science-based "climate-smart management and conservation strategies to address threats to mature and old growth forests. Sections 1 and 2(c)(iii). The first step in carrying out this direction is to define the healthy ecological condition of old growth and mature forests, recognizing, as discussed above, that these likely vary by forest type. Next, BLM should create a management standard that establishes how it will protect and restore the natural ecological conditions of the mature and old growth component of forests.[2]

Recommendation:

- Ensure that the policy vehicle that BLM adopts for old growth and mature forests establishes a management requirement to protect and restore the natural ecological conditions (structure, function, composition) of the mature and old growth component of forests.

Conclusion

Thank you for the opportunity to provide public comment in this first stage of efforts to respond to the President's executive order calling on the Forest Service and Bureau of Land Management to conserve mature and old-growth forests as a climate solution. If continued logging, deforestation, and disturbance in these ecosystems is allowed and carried out without regard for the exact characteristics that provide these climate-mitigation benefits, the important roles these forests play not only on American public lands but on a global scale will be lost. We encourage the Bureau of Land Management to quickly complete an inventory of the myriad important and irreplaceable old-growth and mature forests on the federal lands it manages and propose a durable policy solution that will protect these trees and forests in perpetuity.

Sincerely,

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[2] While the Forest Service has established ecological standards for management, BLM has not. Forest Service ecological management requirements can be found at 36 CFR 219.8 and 9.

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