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Thank you for the opportunity to comment on Executive Order 14072: Strengthening the Nation's Forests, Communities, and Local Economies. EO 14072 requires USDA and DOI to define mature and old-growth forests on Federal lands and complete a nation-wide inventory; identify threats to mature and old-growth forests and develop policies to address the threats; coordinate conservation and wildfire risk reduction and develop climate-informed reforestation goals; and develop recommendations for economic development.The Federal Register notice announcing this comment period references to the Secretary's Memorandum 1077-004 (SM): Climate Resilience and Carbon Stewardship of America's National Forests and Grasslands (issued June 23, 2022, by the Secretary of Agriculture, https://www.usda.gov/directives/sm-1077-004 ). The SM specifically references EO 14072 implementation and other actions. There is no companion Secretarial Order from the Department of Interior.Timber Sales Continue to Threaten Mature and Old-Growth Forests on Federal Lands - We offer our input on the definition framework below, but we must clarify that logging is indeed a significant threat to mature and old-growth forests on federal land. While EO 14072 correctly enumerates the many threats that climate change-enhanced drought and disturbances pose to mature and old-growth forests, it erroneously fails to include on-going logging as a specific threat to these forests. SM 1077-004 speaks to the importance of both mature and old-growth forests for carbon storage and biodiversity values, then states that the "primary threat to old-growth stands on national forests is no longer timber harvesting." The SM offers no clarity as to whether a primary threat to mature forests continues to be timber harvest. While perhaps no longer the primary threat to both mature and old growth forests, logging remains a significant threat to these forests, particularly in the Pacific Northwest. In the SM, USDA contends that older forests are included in congressionally or administratively designated areas that are designed to preserve their natural values and that "all national forests currently protect or limit management actions in old-growth stands through forest specific land management plan components or by specific Secretarial direction." This statement does not accurately reflect conditions on the national forests in our region, or to the Oregon and California (O&C) lands managed by the Bureau of Land Management (BLM).While some mature and old-growth forests may have congressional or administrative protection, it is not the case that all or even most of the mature and old-growth forests enjoy the protection inferred in the SM. In the Pacific Northwest, forests administered by USDA are managed under the 1994 Northwest Forest Plan (NFP) that established late-successional reserves and matrix land use allocations, among others. The matrix allocation encompasses approximately 4 million acres and allows for industrial logging of approximately one million acres of older forests. There are projects such as Flat County on the Willamette National Forest that propose to cut down and remove these very forests.Moreover, DOI's 2016 Resource Management Plans (RMPs) covering 2.6 million acres of Bureau of Land Management (BLM) administered forestlands in Western Oregon allows the logging of trees 40 inches in diameter and 172 years old (USDI BLM, 2016). Projects such as Poor Windy on the Medford BLM and Blue and Gold on the Roseburg BLM target mature and old-growth forests and trees for logging, contradicting the Executive Order and Secretarial Memo that such actions are no longer a primary threat to mature and old-growth forests.USFS Land and Resource Management Plans and BLM RMPs do not protect old-growth forests in the Pacific Northwest, although they do define mature and old trees. Agency projects actively target mature and old-growth forests and trees through timber sales. Please amend the Secretarial Memo to correct this inconsistency: continuing to publicly stating incorrectly that local forest plans protect older forests undermines the federal agencies' credibility and crucial public trust of the agencies. Land management agencies should refrain from actions that degrade or remove mature and old-growth forests in the course of vegetation management planning and project design, layout, and implementation.Request for Information (RFI) on a Definition Framework for Federal Old-growth and Mature Forests - The USDA and DOI are seeking input on a definition framework for old-growth and mature forests on Federal land. Below we provide our responses to the questions posed in the Request for Information that are appropriate to the Pacific Northwest (Oregon, Washington, northern California).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?In the Pacific Northwest, the USDA and DOI have 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 (FEMAT) advanced a definition based on the best scientific evidence at the time. In 1994, the NFP adopted the FEMAT 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." NWFP FEIS at 3&4-13. DOI and USDA have used that definition since 1994.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 (NRC 2000). According to the NFP, "the mature phase of stand development begins around 80 years and is characterized by relatively large live and dead trees (Spies and Franklin, in press1), although multiple canopy layers may not yet be well developed." NWFP FEIS at B-44.Moeur, et. al. 2005 found that forest age is an important defining attribute in most old-forest definitions, but age is difficult to infer directly from remotely sensed information and may be difficult to measure in the field. As a result, they rely on more readily measurable attributes as proxies for stand age such as tree size. In the Cascades, they found that late-successional conifer forests are "dominated by conifer trees that are 21 to 32 in diameter breast height (d.b.h.), characterized by a single canopy layer (also called 'medium/large single-storied conifer') and stands dominated by conifer trees that are greater than 32 in d.b.h., and characterized by two or more canopy layers (also called 'medium/large multistoried conifer')."If USDA/DOI find that age is a difficult criterion for a definitional framework for mature and old-growth forest, tree size can be used as a proxy for age. Moeur et al 2005:Average large-tree size is a useful attribute because it is easy to measure and well correlated with age, when local site and stand density factors are controlled for. Large trees are also fundamental to old-forest structure, function, and composition and are the precursor to large snags and down logs. In this assessment, we use tree size as the primary attribute for determining older forest status. Other measures provide additional information about older forest status and condition, but they may be less important than size, or less easy to characterize reliably.Decision support tools exist that use morphological characteristics to identify old trees. See, Van Pelt, R. 2007. Identifying Mature and Old Forests in Western Washington. Washington State Department of Natural Resources, Olympia, WA. 104 p.; Van Pelt, R. 2008. Identifying Old Trees and Forests in Eastern Washington. Washington State Department of Natural Resources, Olympia, WA. 166 p.; James D Johnston, Amanda A Lindsay, Development of Tools to Age Grand Fir to Aid in Collaborative Restoration of Federal Lands in Eastern Oregon, Journal of Forestry, Volume 120, Issue 4, July 2022, Pages 379-391, https://doi.org/10.1093/jofore/fvac003. Collectively, these resources can be used throughout the Pacific Northwest (Oregon, Washington, northern California) to identify mature and old growth trees based on physical characteristics of trees.What are the overarching old-growth and mature forest characteristics that belong in a definition framework?In the Pacific Northwest, late-succession and old-growth successional stages include mature and old-growth age classes. The NFP intentionally used this ecological definition. When deciding what overarching mature and old-growth forest characteristics belong in a definition framework, it is important that ecological functions and processes are captured.While classical old-growth definitions for the Pacific Northwest often include characteristics such as very large trees, multi-layered canopies, canopy gaps, large snags, and large down wood, the NFP 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. 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 pursuant to EO 14072. In drier, fire prone conifer forests in the PNW, the mature successional stage can include the predominance of mature trees and some snags, and patches of trees 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).How can a definition reflect changes based on disturbance and variation in forest type/composition, climate, site productivity and geographic region?Forests are dynamic and subject to natural disturbances that are projected to increase in frequency and severity with climate change. The mature and old-growth forests of today developed from disturbance patterns driven by past climatic conditions. The current structure and composition of mature and old-growth forests may not occur again under modern climates and

disturbance regimes. In order to retain the diversity of mature and old-growth in the Pacific Northwest and recognize the potential for ecosystem reorganization under future climate scenarios, a broad definition that includes all trees over 80 years is needed to capture the majority of mature forest across forest types. There are rare cases where certain species, such as aspen, reach maturity in 50 years. These can be described and captured in secondary definition. This definitional framework can both help recover more mature and old-growth forests and reflect discreet settings while best accommodating novel climate regimes.According to the 2018 NFP Science Synthesis, ecological processes including disturbances are essential to the maintenance of mature and old-growth forest ecosystems.Ecological processes include those natural changes that are essential for the development and maintenance of late-successional and old-growth forest ecosystems. Although the processes that created the current late-successional and old-growth ecosystems are not completely understood, they include: (1) tree growth and maturation, (2) death and decay of large trees, (3) low-to-moderate intensity disturbances (e.g., fire, wind, insects, and diseases) that create canopy openings or gaps in the various strata of vegetation, (4) establishment of trees beneath the maturing overstory trees either in gaps or under the canopy, and (5) closing of canopy gaps by lateral canopy growth or growth of understory trees. These processes result in forests moving through different stages of late-successional and old-growth conditions that may span 80 to 1,200 years for forests dominated by long-lived species.Site specific exceptions to this definition are needed that allow the active management of trees over 80 years of age that are the result of fire exclusion policies, the absence of Indigenous fire use, and past large tree and clearcut logging practices. To this end, the Northern Spotted Owl Recovery Plan (2011) provides important direction that we support for managing older forests in dry, frequent fire landscapes. The majority of fuel reduction and forest resiliency projects can be accomplished by focusing on trees and other vegetation that are less than 80 years of age and that are the result of fire exclusion. However, fire suppression was effective in the frequent fire forests of the Pacific Northwest for over 100 years in certain areas, leading to an ingrowth of trees that can be older than 80 years. In some forests (e.g. closer to communities where fire fighting was effective for the longest period of time), trees that are a result of fire exclusion may be older than 80 years.Additionally, there are historic logging sites that include densely planted forests over 80 years of age. Climate-smart conservation and management also necessitates approaches that ensure forest resiliency from increasing heat and associated stress on forests. In some circumstances, particularly in drier forests, cutting and removal of trees older than 80 years can increase forest resiliency and protect forest biodiversity and/or hasten the onset of old-growth characteristics. USDA and DOI should protect all forests and trees over 80 years and make exceptions for trees over 80 years where cutting such trees are: 1) scientifically defensible; 2) accomplishes ecological objective, 3)protects forest biodiversity values; 4) increases forest resiliency; and 5) restores older forest structure and function.How can a definition be durable but also accommodate and reflect changes in climate and forest composition?A definition of mature and old-growth forests needs to capture post disturbance forests in the Pacific Northwest. Disturbance from fire, insects, windthrow and other events is a central to the successional process. Fire is perhaps the most ubiquitous and postfire forests across all fire regimes should be captured in the mature and old-growth forest definition in the Pacific Northwest.After fire events, 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, retainold, 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 (Mara[ntilde][oacute]n-Jim[eacute]nez 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 should 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.What, if any, forest characteristics should a definition exclude?A broad, inclusive definition of mature and old-growth will help ensure the restoration of mature and old-growth forest ecosystems in the Pacific Northwest. Since the time of European

settlement, approximately 72% of the original old-growth conifer forest has been lost in the Pacific Northwest, largely through logging, development, and clearing. See Strittholt et. al, 2006. A universal definition framework of mature and old-growth forest conservation must include all forests and scattered trees that are 80 years old or older. Such an approach will better ensure that there is enough redundancy in the definition of mature and old-forest to allow for natural disturbances and subsequent losses over time under climate change.However, as mentioned above, forest characteristics that are the result of management actions such as industrial logging and fire suppression should be excluded from the definition where they don't contribute to the recovery of the distribution and abundance of old forest conditions. Commercially motivated logging and planting has resulted in trees that are over 80 years old, but many are densely planted in artificial tree plantations. Fire suppression has also resulted in forests with an ingrowth of trees and brush, some of which may be older than 80 years. In drier forests, restoring fire as a keystone ecological process is critically important, but that must be incorporated while maintaining adequate areas of spotted owl habitat that will shift across the landscape as fire and successional processes operate (Spies et al 2018).Initial Policy RecommendationWe understand that the Forest Service and BLM will make available additional public comment opportunities to discuss Section 2(c)(iii) of EO 14072, which directs USDA and DOI to "develop policies[hellip]to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands." While we eagerly await that official public comment opportunity, we wish to provide two initial policyrecommendations here.First, we understand that wildfire and other climate-driven disturbances are major threats to the conservation of mature and old trees. However, these perturbations are not the only threats to older forests: commercial timber harvest remains a significant threat, particularly in the Pacific Northwest. Forest Service timber sales such as Flat Country, and BLM timber sales such as Poor Windy, North Landscape, Bear Grub, Round Oak, N126, and Integrated Vegetation Management Project ("IVM," including the Late Mungers timber sale) propose to harvest thousands of acres of mature and old forests in western Oregon. We also understand that the agencies are considering how EO 14072 should be implemented on the ground. It is common sense that the agencies should preserve the status quo by conserving rather than logging old forests located in these timber sale planning areas. Failing to do so will contribute to the significant credibility gap that the land management agencies already confront, and will make collaborative restoration of degraded forests even more difficult.Second, we recommend that the Forest Service initiate a climate-smart forestry updates to the Northwest Forest Plan that would: 1) conserve mature and old forests from programmed timber harvest by setting aside these forests as not suitable for timber production; 2) develop plan components that prioritize dry, frequent fire forests for active restoration and utilize ecological forestry principles to build resilience in cold and moist forests; and 3) evaluate the current Late-Successional Reserve network for efficacy in light of a climate-constrained world, and consider climate smart terrestrial reserve strategies, if appropriate. Because national forestland management will necessarily implicate adjacent O&C lands in Oregon, we recommend that the BLM be brought into this effort as a cooperating agency. And, for the same reason, BLM should consider adopting a similar update applicable to O&C lands inOregon.ConclusionThank you for the opportunity to provide the forgoing information as the agencies' implementation of EO 14072. Please feel free to contact our organizations if you have any questions regarding this correspondence.Sincerely,ReferencesForest Ecosystem Management Assessment Team. [FEMAT] 1993. Forest ecosystem management: an ecological, economic, and social assessment. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [and others].Franklin, Jerry F.; Cromack, Kermit Jr.; Denison, William; McKee, Arthur; Maser, Chris; Sedell, James; Swanson, Fred; Juday, Glen. 1981. Ecological characteristics of old-growth Douglas-fir forests. Gen. Tech. Rep. PNW-GTR-118. 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