Data Submitted (UTC 11): 9/19/2024 4:00:00 AM
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Comments: Dear Forest Service staff - attached are my comprehensive comments on the OGNA. Thank you

WILD HERITAGE
Comments on Amendments to Land Management Plans to Address Old-Growth Forests Across the National Forest System: Draft Environmental Impact Statement for the Old Growth National Amendment (FRN 65356)Submitted for the public record via:https://cara.fs2c.usda.gov/Public/CommentInput?Project=65356Wild Heritage is a science-based conservation group whose mission is to protect primaryforests of all age classes and forest types globally and in North America. Given the scarcityof primary forests in the US (lower 48 states especially), we call for the protection of allremaining primary forests (old growth, complex early seral that has not been logged) inaddition to allowing mature forests to restore old-growth characteristics overtime (i.e.proforestation, Moomaw et al. 2019).We appreciate the opportunity to comment on the Draft Environmental Impact Statement(DEIS) for the National Old Growth Amendment (OGNA) proposed for all 128 nationalforests. We recognize that this has been a monumental task for the agency as initiallydirected by President Joe Biden under Executive Order (EO) 14072. However, we havesubstantive concerns with the analysis and findings that do not provide an adequate range ofalternatives, are not based on best available science, will degrade ecological integrity ofmature and old-growth forests (MOG), and cause undo harm to their biodiversity values andcarbon stores.Wild Heritage has published numerous peer-reviewed studies on old-growth ecology and itsconservation that have national and regional significance in structuring an alternative basedon best available science. We summarily find that the DEIS did not following the bestavailable science largely because it ignored requests from the public and scientists to fix thenumerous problems in scoping and the agency's inadequate treat analysis, and to provideprotection for all of the nation's MOG from logging. Our main concerns with the DEIS aresummarized in the following points.(1) The DEIS does not: (a) provide an adequate range of alternatives nor does it take ahard look at the importance of mature forest protections as well as old growth, (b)must include protection from all forms of logging (thinning or otherwise) in oldgrowthforests on the Tongass National Forest, and (c) lacks a proper analysis ofcarbon loss from management actions, and the appropriate recognition of thesubstantial carbon sink in MOG that will be degraded by the agency's "stewardship"activities. None of the alternatives comply with relevant administrative policies,including, the Glasgow Leaders' Forest Pledge, the Paris Climate Agreement (Article5.1), and US global policy on reducing emissions across all sectors, particularlyforestry.(2) Not a single acre of MOG is protected under the DEIS despite requests made byhundreds of scientists in scoping to use this unique opportunity to prohibit thecommercial exchange of large trees in the nation's older forests. In doing so, theDEIS essentially ignores the overwhelming public and scientific support for strictprotections from logging. In fact, logging levels are projected to go up, especially inthe Pacific Northwest where MOG is concentrated (Threat Analysis, Figure A8.6-7).(3) The alternatives would squander a unique opportunity to end degradation of MOGand is therefore inconsistent with the Glasgow Forest Pledge - that is - logging in theDEIS would result in forest degradation as defined by multiple studies (e.g., Rogers etal. 2022, DellaSala et al. in prep - see below).(4) The DEIS is silent on the 30 x 30 aspects of EO 14008 whereby the agency wasdirected by the president to begin closing the gap on this target - that is-while theForest Service barely responded to the intent of EO 14072, it completely ignored theprotection direction of EO 14008. Compliance with EO 14008 therefore should havebeen analyzed.(5) Does not address the White House road-map on nature-based solutions1 given nothingin the DEIS protects a single acre of carbon-dense MOG from logging that is thenation's best terrestrial carbon sinks (DellaSala et al. 2022a - mature/old growthanalysis).(6) Inappropriately compares all disturbances as having equivalent degradation effects onecosystem integrity while downplaying major differences between commerciallogging and natural disturbances. The threat analysis is an apples to orangescomparison of natural disturbances vs logging because natural disturbances result inessential successional processes in MOG that

produce complex early seral forestswith high levels of biodiversity, integrity, and carbon stocks (Swanson et al. 2010),while logging removes legacies, degrades integrity, and releases carbon (Law et al.2018, Hudiburg et al. 2019, Moomaw and Law 2023). This major difference is notanalyzed properly in the DEIS that groups logging together with natural disturbancesas if they are equivalent in impacts to ecosystem integrity (we mentioned thisrepeatedly in scoping and in our comments on the threat assessment). Thus, theagency did not take a hard look at all forms of logging in MOG in relation todegradation as defined in the literature, discussed below, and in our prior comments.(7) Overstates the efficacy of thinning to reduce the intensity and frequency of insectoutbreaks, forest diseases, and wildfires by ignoring published reviews of thesubstantial co-lateral damages from Forest Service logging and fire suppressionactions that are far worse than the beneficial effects of natural disturbances onecosystem integrity and ecosystem dynamics (DellaSala et al. 2022b - Sisyphusarticle).(8) The agency did not analyze an alternative that restricts all forms of commercialexchange of large trees even though large trees and their carbon values have beendefined and analyzed independently (see below) and sent to the agency duringscoping.For these reasons, we request that the Forest Service develop a preferred alternative thatplaces clear restrictions on the commercial exchange of all large trees in MOG nationwide(that includes frequent and infrequent fire systems) and that you include full protections forthe Tongass National Forest because it has the highest concentration of old growth in thenation, is the nation's most vital carbon sink (DellaSala et al. 2022c - Tongass article), ispotential climate refugia (DellaSala et al. 2015 - NWFP article), and does not need thinningin its older forests. While Alternative 3 includes restrictions on commercial harvest, weprefer that you analyze restrictions on the commercial exchange of large trees (definedbelow) given that the agency can still log commercially under Alternative 3 by defining thepurpose and need as something other than a commercial timber harvest.We summarily disagree with the agency's decision to not select Alternative 3 on grounds thatit would limit the application of prescribed fire without commercial removal of large trees(see below). While small tree thinning under limited conditions can reduce the potential forcrown damage, small trees play a vital ecosystem role in resilience strategies as they tend tobe the survivors of beetle infestations (Six et al. 2014, 2016) and may have importantadaptive traits in a warming climate (Baker and Williams 2015).We also disagree with the notion that the action alternatives constitute "stewardship" of oldgrowthecosystems. Removing carbon, degrading wildlife habitat, compacting soils fromthinning, and logging large trees in no way, shape, or form is "stewardship." As an exampleof one of the problems in the agency's notion of stewardship, the Forest Service continues toconduct an inappropriate analysis of carbon stock reductions from its management actions byusing the wrong spatial scale of analysis in comparing timber harvest emissions at the projectlevel to the entire US GHGs in many of its EAs. The agency also routinely overstates woodsubstitution benefits (Harmon 2019), and downplays logging related carbon losses (DellaSalaet al. 2022b). In doing so, the Forest Service has not taken a hard look at the cumulativedegradation of ecosystem integrity from its proposed management (mainly timber harvest) bydownplaying logging emissions and falsely comparing them alongside natural disturbanceprocesses. For these reasons, we request that you conduct a comprehensive carbon life cycleanalysis (Hudiburg et al. 2019), compare the alternatives to one another and not the entire USGHGs, and then select the alternative with the lowest emissions.We now focus our comments on the questions raised by the agency on the DEIS.Question 1: Does the approach outlined in the DEIS appropriately consider place-basedinformation and current land management direction about old-growth forestmanagement?None of the alternatives meet this NEPA obligation as they provide too much localdiscretion, and there is not an adequate range of alternatives to place restrictions on loggingin MOG. While the agency's inventory of MOG was an important contribution thatrecognizes the variability in MOG ecosystems nationwide, the main problem is localdiscretion.We request that the Forest Service take a hard look at local discretion vs national directionfrom historical situations that it likewise struggled with. For instance, prior to the NationalRoadless Conservation Rule, the agency resisted nationwide prohibitions on road building,asking for local discretion and "flexibility" that was the main reason why roadless areas weredeclining in the first place. A similar level of resistance to national direction from PresidentBill Clinton at the time also occurred in the initial rollout of the Northwest Forest Plan, as theagency resisted logging restrictions even though the public and scientists overwhelminglyrejected the local discretion/flexibility argument because the Forest Service needs nationalguidance in order to follow the intent of policies that place any restrictions on logging. Inother words, the agency has a propensity to fit logging into most issues that it is addressingand without national direction will

continue to use local discretion to push through loggingprojects that degrade MOG by calling them "stewardship," "restoration," "resilience," "foresthealth," etc. In other words, the Forest Service will always find a reason to log by calling itsomething else and by deflecting criticism from the public and scientists.In what is a Deja-Vu moment, the agency is now resisting prohibitions on logging in MOGas it continues to weigh alternatives based on "flexibility" and "discretion" that will causeundo harm to the public's values inherent in MOG. Because of historic logging, we are nowin a situation where every acre of MOG is critically important as the nation's best climateand biodiversity refugia and the Forest Service has most of those acres (DellaSala et al.2022a). Thus, there is a public responsibility on the part of the agency to properly stewardthis limited resource by first and foremost protecting it from timber harvest throughout thenational forest system because this is the only disturbance you can realistically control.Notably, as stated on p. 16 of the DEIS, "None of the alternatives require all areas currentlymeeting the definition (and associated criteria) of old-growth forest to be retained as such.Standard 2.a (DEIS p. 29) allows vegetation management to occur in areas currently meetingthe definition (and associated criteria) of old-growth forest for the purposes of proactivestewardship." We reiterate - this is not stewardship - it's a means to keep timber harvest openvia discretionary language at the local level and this threat is reflected in the threat analysisthat shows timber harvest actually increasing over decades in MOG (Figures A8.6-7). Simplyput, timber harvest is an ongoing cumulative threat and not a stewardship objective.Thus, we request that all large trees of all species be retained in MOG management unitsnationwide (frequent and infrequent fire systems) as the main purpose and need. Protectinglarge trees from logging should be a theme carried through all alternatives that properlydefines the agency's stewardship obligations. Immediately, the agency also needs to cancelall timber sales in MOG currently planned or in the pipeline.Question 2: What would be the impacts if Standard 3 would be updated to read as:"Proactive stewardship in old-growth forests shall not result in commercial timberharvest."First, we support additional restrictions on commercial harvest within MOG. However, asnoted this must include an adequate examination and alternative that is based on "nocommercial exchange," which would tighten the many loopholes in the DEIS.Strengthening protections for not only old growth but for mature would benefit climatemitigation and biodiversity objectives of the agency's stewardship and ecosystem integrityresponsibilities across the national forest system. There is simply no other way to do this andany form of commercial exchange in MOG is damaging to the public's climate andbiodiversity values in MOG. We note that the national forests are no longer the nation'swood basket as minimal amounts of timber volume come from national forests (Oswalt et al.20192). The agency's main multiple use obligation in this situation is to examine the multiplevalues that would be enhanced by restricting commercial exchange in MOG. Those valuesthat need proper analysis include - carbon retention, wildlife habitat, imperiled specieshabitat, drinking water, and recreation as among the top ecosystem services uniquelyprovided by MOG on federal lands (DellaSala et al. 2022a). At a minimum, the agency needsto conduct a proper life cycle carbon accounting (Law et al. 2018, Hudiburg et al. 2019). Theagency could still do fuel reduction through limited small tree removals and prescribed fire(see below).Question 3: Do current standards and guidelines provide enough restrictions to protectcurrent and future old-growth forests from future timber harvest?Neither current standards nor the DEIS provide adequate protections for MOG and the DEISdoes not examine an adequate range of alternatives that restrict the commercial exchange oftrees. While the DEIS is under consideration, the Forest Service continues to log in MOGand needs to cancel those sales and any other MOG sales immediately3. The threat analysisprojects that logging of MOG will continue nationally and in the Pacific NW, despiteoverwhelming public and scientific support for the opposite as reflected in our priorcomments and that defy true notions of "stewardship." Importantly, in the only nationwideanalysis of MOG that evaluated MOG protection levels, the Forest Service has protected just24% of its MOG with over 50 million acres deemed vulnerable to logging (DellaSala et al.2022a). Thus, the agency's standards and guidelines are summarily too weak to ensuremillions of acres of MOG will not be degraded. The only way to ensure that MOG isprotected is to terminate the commercial exchange and timber targets in MOG and that wasnot properly analyzed by the agency.As mentioned, the Forest Service has not provided an adequate analysis of the carbon storesimpacted by ongoing logging under the alternatives. The agency did not analyze analternative that restricts all forms of logging of large trees even though large trees and theircarbon values have been defined in the literature (Birdsey et al. 2023) and that informationwas provided to the agency in public scoping. Tree diameter distributions are available fromFIA and so are their carbon values. Despite the agency having this information from its owninventory, the carbon and biodiversity benefits of protecting large

trees in MOG were notadequately examined. Thus, there is little mention of the carbon stores and natural climatesolution values of large trees in the DEIS.We cross reference to comments by Dr. Birdsey (submitted separately and the citations are inhis comments) -"Mature and old-growth forests with large trees have characteristics that are beneficial forclimate change mitigation and other ecosystem values such as biodiversity (Lutz et al. 2018),and represent a significant portion of the CO2 that needs to be removed from the atmosphereby the land (Lawrence et al. 2022). MOG forests store far more carbon than youngermanaged forests, and in most cases can continue to accumulate carbon for centuries if notlogged or severely disturbed (Birdsey et al. 2023b; Law et al. 2018; Leverett et al. 2020).For example, large trees in MOG forests on federal lands store between 41 and 84 percent ofthe total biomass carbon stock (Birdsey et al. 2023b; Mildrexler et al. 2020). Furthermore,the largest trees in MOG forests accumulate C faster than smaller trees (Mildrexler et al.2020; Mildrexler et al. 2023; Stephenson et al. 2014). And older undisturbed MOG forestsalso continue to pack away carbon annually in their woody debris and soils, which are largelyprotected from effects of severe disturbance."Additionally, we strongly disagree with the DEIS assertion of the importance of harvestwood pools (HWP), as the DEIS overstates HWP carbon stores and fails to conduct a propercarbon life cycle analysis. Published literature shows the value of HWP is overstated(Harmon 2019) and that most carbon leaves the forest when logged (Law et al. 2018,Hudiburg et al. 2019, Moomaw and Law 2023). Thus, the agency did not conduct a properlife cycle analysis in overstating HWP carbon stores while understating logging emissionsthat are up to 10x greater than natural disturbances combined (Harris et al. 2016).Importantly, the agency's own research has repeatedly demonstrated that older forests withlarger trees are more resistant wildfires (Lesmeister et al. 2019, 2021) then logged areas.Other studies have shown protected forests burn in lower fire intensities (Bradley et al. 2016)and logged areas combine with extreme fire weather that contribute to large wildfires (Zaldand Dunn 2018). This information was not properly evaluated in the DEIS.Other IssuesProblems with Alternative 3 assumptions - the Forest Service rejected Alternative 3 ongrounds that it would restrict the use of prescribed burning. We disagree with this assertionand ask that the agency evaluate these studies that all show how prescribed fire can be usedsafely even in dense forests without mechanical removal of large trees. Many of these are theagency's own publications:Knapp EE, Keeley JE, Ballenger EA, Brennan TJ. 2005. Fuel reduction and coarse woodydebris dynamics with early season and late season prescribed fire in a Sierra Nevada mixedconifer forest. Forest Ecology and Management 208: 383-397. Available on the USFSwebsite - https://www.fs.usda.gov/psw/publications/knapp/psw_2005_knapp001.pdfKnapp, E.E., and Keeley, J.E. 2006. Heterogeneity in fire severity within early season andlate season prescribed burns in a mixed-conifer forest. Int. J. Wildland Fire 15: 37-45. Available on the USFS website - https://research.fs.usda.gov/treesearch/41752Knapp, E.E., Schwilk, D.W., Kane, J.M., Keeley, J.E., 2007. Role of burning on initialunderstory vegetation response to prescribed fire in a mixed conifer forest. Canadian Journalof Forest Research 37: 11-22. Available on the USFS website -https://research.fs.usda.gov/treesearch/34451van Mantgem, P.J., A.C. Caprio, N.L. Stephenson, and A.J. Das. 2016. Does prescribed firepromote resistance to drought in low elevation forests of the Sierra Nevada, California,USA? Fire Ecology 12: 13-25. Available on the USGS website - https://pubs.usgs.gov/publication/70170396van Mantgem, P.J., N.L. Stephenson, J.J. Battles, E.K. Knapp, and J.E. Keeley. 2011. Longtermeffects of prescribed fire on mixed conifer forest structure in the Sierra Nevada,California. Forest Ecology and Management 261: 989[minus]994. USFS website - https://research.fs.usda.gov/treesearch/38347North, M.P., S.L. Stephens, B.M. Collins, J.K. Agee, G. Aplet, J.F. Franklin, and P.Z.Fule. 2015. Reform forest fire management. Science 349: 1280-1281. Not an open accessjournal - https://courses.seas.harvard.edu/climate/eli/Courses/global-changedebates/Sources/Forest-fires/more/North-etal-2015-short-perspective.pdf"[hellip]fire is usually more efficient, cost-effective, and ecologically beneficial thanmechanical treatments."And here is the abstract from Stephens et al. 2021 on the use of managed wildfire toproactively reduce fuels over large areas with minimally costs:"Reducing the risk of large, severe wildfires while also increasing the security of mountain watersupplies and enhancing biodiversity are urgent priorities in western US forests. After a century of firesuppression, Yosemite and Sequoia-Kings Canyon National Parks located in California's SierraNevada initiated programs to manage wildfires and these areas present a rare opportunity to study theeffects of restored fire regimes. Forest cover decreased during the managed wildfire period andmeadow and shrubland cover increased, especially in Yosemite's Illilouette Creek basin thatexperienced a 20% reduction in forest area. These areas now support greater pyrodiversity

andconsequently greater landscape and species diversity. Soil moisture increased and drought-inducedtree mortality decreased, especially in Illilouette where wildfires have been allowed to burn morefreely resulting in a 30% increase in summer soil moisture. Modeling suggests that theecohydrological cobenefits of restoring fire regimes are robust to the projected climatic warming.Support will be needed from the highest levels of government and the public to maintain existingprograms and expand them to other forested areas."Despite efforts by the Forest Service to reduce fire intensity to MOG and elsewhere,mechanical efforts will fail for at least these reasons:(1) Thinning will become increasingly ineffective in a changing climate as top-down fireweather drives large fires that then combine with logged areas to affect vastlandscapes (Zald and Dunn 2018) and that cause damage to nearby towns when theyescape mainly from fires spilling over from privately logged lands (Downing et al.2023).(2) Thinning costs way more than prescribed fire and managed wildfire use (see below)and can be as effective if not more so than thinning that has carbon and ecosystemdamage/costs (DellaSala et al. 2022b).(3) The odds of a thinned site encountering a fire are really small (<1% Schoenaggel etal. 2017) during the period of low fuels, and expanding the scale, intensity, andfrequency of thinning to improve the odds come at substantial ecological and carboncosts (DellaSala et al. 2022b).(4) The agency's treatments are at distances so far removed from towns (more than 1-kmfrom structures in many cases) to be ineffective at wildfire risk reduction tocommunities (Schoenaggel et al. 2017, DellaSala et al. 2024). Thus, there is nobenefit to communities leaving in proximity to national forests when treatments are sofar removed from structures.We believe that the DEIS fails to provide an adequate range of alternatives by overstatingmechanical treatments as a pre-requisite for prescribed fire, by not providing sufficient costcomparisons in relation to treatment types (prescribed fire, thinning, wildfire use), nor does ittake a hard look at the literature supporting prescribed fire without mechanical treatments.We submit this cost comparison for the Plumas National Forest as an example of how costlymechanical treatments are compared to prescribed burning only.[Tables from Environmental Assessment - Community Protection - Central and west slope Project for Plumas National Forest showing the cost of treatments per acre and by alternative]Ecological Integrity vs "Stewardship"The Forest Service is obligated under the NFMA Rule of 2012 to maintain ecosystemintegrity on the national forest system and yet its logging activities are taking the nation inthe opposite direction as they are a form of forest degradation.We provide excerpts from DellaSala et al. in peer review that pertains to the differencebetween degradation and integrity and integrity should be the agency's touchstone inevaluating whether it is actually stewarding MOG.Abstract: Forests harbor almost two-thirds of Earth's terrestrial biodiversity and play acrucial role in sequestering and storing carbon that is linked to their ecological integrity andbiological diversity functions. Forest degradation[mdash]the loss of forest-ecosystem integritymeasured by changes to native-species composition, functional processes, and keystonestructures[mdash]is a major source of emissions and serious cause of biodiversity decline.Addressing this loss is critically important for fulfilling the Paris Climate Agreement and thepost 2020 Kunming-Montreal Global Biodiversity Framework. Additionally, most forestedcountries have signed pledges to end degradation along with deforestation by 2030.However, many countries, particularly in the Global North, fail to fully acknowledgedegradation as a problem within their own borders, and no country is on track to meet theKunming-Montreal pledge. We propose a framework that would enable monitoringdegradation of large, old trees to intact landscapes along a continuum of forest-integrity lossrelative to reference conditions derived from primary, mature, historic, or semi-naturalconditions. Examples of degradation include multiple forms of commercial logging and roadbuilding that alter native species composition, structure, and functionality. Case studies fromtemperate, boreal, and tropical biomes illustrate how expansive the degradation footprint isglobally. We highlight an urgent call for countries to better detect and assess the cumulativedamages of forest-degradation and to end it as promised.? Ending forest degradation has been an emerging multilateral policy issue since theformation of the United Nations Forum on Forests in 2000. It was noted as a priorityin the United Nations Forest Instrument, and again in the United Nations StrategicPlan for Forests. At the United Nations Climate Change Conference, 145 nationssigned the Glasgow Leaders' Declaration on Forests and Land Use ("GlasgowLeaders' Declaration"), which seeks to "facilitate the alignment of financial flowswith international goals to reverse forest loss and degradation" by 2030 and commitssignatories to halting and reversing deforestation and land degradation by 2030. TheKunming-Montreal Global Biodiversity Framework proposed 23 action-orientedglobal targets, including ensuring that at least 30 percent of lands and waters areprotected and degraded areas are under effective restoration by 2030. In addition,Goal A of this framework emphasized the need to

ensure that "integrity, connectivityand resilience of all ecosystems are maintained, enhanced, or restored, substantiallyincreasing the area of natural ecosystems by 2050." Target 1 of this framework alsoseeks "to bring the loss of areas of high biodiversity importance, includingecosystems of high ecological integrity, close to zero by 2030."Additionally, ecosystem condition (the relative level of ecosystem integrity) can bebased on the state, processes, and changes in the ecosystem, including (1) carbon andnutrient stocks, (2) abiotic physical and chemical states such as water quantity andquality; (3) biotic composition, structure, and function; and (4) landscape diversityand connectivity (Rogers et al. 2022). In this approach, a forest with native speciescomposition, keystone structures (e.g., biological legacies: large, old trees, snags,down wood, native understories), and functional processes (e.g., natural disturbances,food web complexities, pollinators, below ground processes, soil integrity) has highintegrity compared to one where anthropogenic disturbance have destabilized thesekey elements in various degrees. Conversely, we refer to degradation asanthropogenic disturbances that trigger the immediate and long-term deterioration ofintegrity (Rogers et al. 2022, Mackey et. al. 2024b).What the agency is proposing in the DEIS is more akin to degradation as defined above then"stewardship" and will compromise ecosystem integrity by the removal of important legacylarge trees, compacting soils, drying out understories, releasing carbon, and impactingwildlife habitat (DellaSala et al. 2022b). In sum, that is a form of degradation and notstewardship or integrity. As stated in DellaSala et al. in review, MOG needs to function asthe reference condition in assessing integrity vs. degradation. Given that the agency wants tocontinue logging in MOG, the DEIS is impacting reference conditions needed to determinethe efficacy of its forest management practices, is downplaying cumulative impacts oflogging in MOG that are glossed over, nor can it claim that what it is doing is stewardship,restoration, or resilience.To fix the numerous problems in the DEIS, we request that you:? Develop a new alternative or substantially revise Alternative 3 by prohibiting anyremoval of commercial materials from all mature and old-growth forests as identifiedin the agency's mapping of MOG and related published accounts (DellaSala et al.2022a). This includes the use of prescribed fire in fire-adapted forests withoutmechanical removal of any large trees and judicious understory removals that whilefocused on lowering fuel levels must also retain representative small tree densities,native vegetation, soil integrity, soil and understory microclimates, mycorrhizalnetworks, and biological legacies. That is - see the forest for more than just the trees.? A revised alternative 3 or new alternative would also restrict post-disturbance"salvage" logging as this form of logging is most degrading to complex early seralforests, successional processes, wildlife habitat, and carbon stocks (Thorn et al.2018).? Include in a new alternative or revised alternative 3 the concept of "proforestation"(Moomaw et al. 2019) by allowing mature forests to fully develop old-growthcharacteristics overtime to begin recovering the greatly depleted old-growthecosystem and further build carbon stocks.? Provide an adequate evaluation of the impacts of logging relative to naturaldisturbances that clearly distinguishes the two using published definitions ofdegradation and integrity and not some unclear notion of "stewardship," "resilience,""restoration," and "forest health."? We define ecological integrity as a measure of the composition, structure, andfunction of an ecosystem in relation to the system's natural range of variation. Thisintegrity concept integrates different characteristics of an ecosystem that collectivelydescribe its ability to achieve and maintain its optimum operating state in the face ofthe prevailing environmental drivers and anthropogenic stressors, while continuing tomaintain its self-organisation and regeneration capacity (Mackey et al. 2024b). Weadopted the approach of Rogers et al. (2022) in identifying foundational elements forecosystem integrity that include representative structures, processes, native species,and resilience.Provide an adequate range of alternatives that is based on the comments providedherein, the omission of data and studies provided in our scoping comments, and thatfully restricts all forms of logging within MOG with the exception of some small treeremovals in specialized cases.? Analyze the importance of large trees to carbon stocks, fire resistance, and wildlifehabitat and use published sources (e.g., Birdsey et al. 2023) to determine nationalforest specific diameter limits in large-tree definitions and logging thresholds.? Analyze how the agency's "stewardship" objectives can best comply with the ParisClimate Agreement (Article 5.1 on natural climate solutions), Glasgow Leaders'Forest Pledge (end degradation as defined herein), and the 2020 Kunming-MontrealGlobal Biodiversity Framework. Importantly, this should include a comprehensiveGAP analysis to identify levels of protection using recognized GAP status codes foreach of the MOG types and how best to meet the 30 x 30 directive of EO 14008.None of the alternatives analyzed this and therefore there is not an adequatealternative that truly "conserves" older forests and complies with EO 14072.? Adopt and analyze a

definition of ecosystem integrity that includes the publishedliterature (e.g., Rogers et al. 2022) and not some nebulous notion of stewardship.In closing, Wild Heritage has presented the Forest Service during scoping and in invitedMOG research summits on each of these points raised. However, our information andscoping comments have been ignored in the development of alternatives and thus the DEISdid not take a hard look at the issues raised, did not use the best available science, andprovided an inadequate range of alternatives. The Forest Service can and must do better totruly steward the nation's dwindling and best natural climate solution.Dominick A. DellaSala, Ph. DChief Scientist*literature submitted as attached pdfsATTACHMENT: WildHeritageOGNAcomments9-19-24.pdf - this is the same content that is coded in text box; it was originally only included as an attachment. Additional articles are included in this attachment and are called out separately below:Baker, William L. and Mark A. Williams. 2015. Bet-hedging dry-forest resilience to climate-change threats in the western USA based on historical forest structure. Frontiers in Ecology and Evolution. Perspective Article. January 2015. Volume 2. Article 88. Page 1- 7. - conclusion: "Removal of most small trees to reduce wildfire risk may compromise the bet-hedging resilience, provided by small trees and diverse tree sizes and species, against a broad array of unpredictable future disturbances.Birdsey RA, DellaSala DA, Walker WS, Gorelik SR, Rose G and Ram[iacute]rez CE (2023) Assessing carbon stocks and accumulation potential of mature forests and larger trees in U.S. federal lands. Front. For. Glob. Change 5:1074508. doi: 10.3389/ffgc.2022.1074508 - conclusion suggest that not cutting large trees can significantly avoid increasing carbon emissionsBradley, C. M., C. T. Hanson, and D. A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? Ecosphere 7(10):e01492. 10.1002/ecs2.1492 - Conclusion: "forests with higher levels of protection had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading. Our results suggest a need to reconsider current overly simplistic assumptions about the relationship between forest protection and fire severity in fire management and policy."DellaSala, D.A., et al. 2015. Building on two decades of ecosystem management and biodiversity conservation under the Northwest Forest Plan, USA. Forests 6:3326-3352. - Review of NWFP concluding that rather than reducing conservation measures in favor of increasing timber harvest, agencies should build on the NWFP to ensure continuing success and urge managers to, "
(1) protect all remaining late-successional/old-growth forests; (2)identify climate refugia for at-risk species; (3) maintain or increase stream buffers and landscape connectivity; (4) decommission and repair failing roads to improve water quality; (5) reduce fire risk in fire-prone tree plantations; and (6) prevent logging after fires in areas of high conservation value."DellaSala, D.A., B.C., Baker, C.T. Hanson, L. Ruediger, and W. Baker. 2022. Have Western USA fire suppression and active management tactics become a contemporary version of Sisyphus? Biological Conservation: Special Feature on Ending Human Domination of Nature.
https://doi.org/10.1016/j.biocon.2022.109499 - Paper concludes that agressive management of timber stands to reduce fire impacts is ineffective and "urge land managers and decision makers to address the root cause of recent fire increases by reducing greenhouse gas emissions across all sectors, reforming industrial forestry and fire suppression practices, protecting carbon stores in large trees and recently burned forests, working with wildfire for ecosystem benefits using minimum suppression tactics when fire is not threatening towns, and surgical application of thinning and prescribed fire nearest homes."

DellaSala DA, Mackey B, Norman P, Campbell C, Comer PJ, Kormos CF, Keith H and Rogers B (2022) Mature and old-growth forests contribute to large-scale conservation targets in the conterminous United States. Front. For. Glob. Change 5:979528. doi: 10.3389/ffgc.2022.979528 - Authors assessed Mature and old growth forests and determined federal lands had the greatest concentration and conservation values but many of the best carbon storage areas were vulnerable to logging and should be protected to sequester carbon and meet Paris Climate Agreement and Presidential Executive Orders
DellaSala, D.A.; Africanis, K.; Baker, B.C.; Koopman, M. An Ecoregional Conservation Assessment for the Southern Rocky MountainsEcoregion and Santa Fe Subregion, Wyoming to New Mexico, USA. Land 2024, 13, 1432. https://doi.org/10.3390/land13091432 - examined conservation targets for four species in connection with wildfire risk reduction efforts and concluded that, "
Strategically targeting the built environment for fuel treatments would improve wildfire risk reduction and may allow for expansion of protected areas held up in controversy. Stepped-up protection for roadless areas, adoption

of wilderness proposals, and greater protection for MOG and riparian forests are critical for meeting representation targets"DellaSala, D.A.; Gorelik, S.R.; Walker, W.S. The Tongass National Forest, Southeast Alaska, USA: A Natural Climate Solution ofGlobal Significance. Land 2022, 11, 717. https://doi.org/10.3390/land11050717 - Quantified biomass and reviewed where carbon stock was located, concluding that young growth accounted for just 5% of total carbon stock and Inventoried Roadless areas accounted for over 50%, concluded that young stands should be allowed to recover carbon stalk and old growth, IRAs and priority watersheds should have increased protection as natural climate solutionsDowning, W.M., Dunn, C.J., Thompson, M.P. et al. Human ignitions on private lands drive USFS cross-boundary wildfire transmission and community impacts in the western US. Sci Rep 12, 2624 (2022). https://doi.org/10.1038/s41598-022-06002-3 - Examined USFS-private land cross-boundary fires and concluded that they were primarily caused by humans on private lands. Concluded that, " Effective crossboundary fire risk management will require cross-scale risk co-governance. Focusing on minimizing damages to high-value assets may be more effective than excluding fire from multijurisdictional landscapes." - commenter highlighted multiple passages in this article in the pdf.

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