Data Submitted (UTC 11): 2/2/2024 5:00:00 AM
First name: Lauren
Last name: McCain
Organization: Defenders Of Wildlife
Title:
Comments: Re: Notice of intent to prepare an environmental impact statementLand Management Plan Direction for Old-Growth Forest Conditions Across the National Forest SystemDocument Number 2023-2787588 Fed. Reg. 88042 (December 20, 2023)Dear Ms. Walker:On behalf of Defenders of Wildlife ("Defenders") and our 2.2 million members and supporters across the country, please accept the following comments on the United States Forest Service (Forest Service or USFS) notice of intent to prepare an Environmental Impact Statement (EIS) on the agency's proposed Land Management Plan Direction for Old-Growth Forest Conditions Across the National Forest System (88 Fed. Reg. 88042 (December 20, 2023)) (proposed action). Defenders is a national, nonprofit membership organization dedicated to the protection of all native animals and plants in their natural communities.We thank the Forest Service for making progress toward developing mature and old-growth forest conservation and restoration policy, as mandated by President Biden's Executive Order 14072 on Strengthening the Nation's Forests, Communities, and Local Economies. This step to conserve and manage the nation's old-growth forests based on ecological concepts.IntroductionWe commend the Forest Service for taking another step toward developing a mature and old-growth (MOG) forest conservation policy. Executive Order 14072 called upon the Forest Service and the Bureau of Land Management to define, identify, and inventory MOG forests across federal lands and then conserve them.1 The U.S. Department of Agriculture issued a secretarial memorandum committing to these mandates,2 and the agencies completed the inventory, on time, by April 22, 2023.3 In its latest action, the Land Management Plan Direction for Old-Growth Forest Conditions Across the National Forest System notice of intent (NOI), the Forest Service has focused its attention on old-growth over mature forests and is hopefully on its way to achieving the full MOG forest conservation imperative articulated in Executive Order 14072.The U.S. has lost over 90% of its old-growth forests,4 largely to clearing and historic logging practices.5 Large, old trees are keystone species6 in forest ecosystems and their loss adversely affects thousands of plant and animal species , including many listed under the U.S. Endangered Species Act (ESA) as threatened or endangered. For example, species dependent on old-growth forests include the northern and Mexican spotted owls, Pacific marten, Canada lynx, fisher, and red-cockaded woodpecker.In the NOI, the Forest Service recognized some of the many values old-growth forests provide, stating,Old-growth forest conditions support ecological integrity and contribute to distinctive ecosystem services[mdash]such as long-term storage of carbon, increased biodiversity, improved watershed health, and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices.7The agency has proposed a management plan amendment (proposed amendment) for 128 national forest and grassland land management plans (LMPs) for the purpose of establishing consistent plan direction to foster ecologically appropriate management across the National Forest System by maintaining and developing old-growth forest conditions while improving and expanding their abundance and distribution and protecting them from the increasing threats posed by climate change, wildfire, insects and disease, encroachment pressures from urban development, and other potential stressors, within the context of the National Forest System's multiple-use mandate.8The scoping notice stated the intent of the amendment "is to foster the long-term resilience of old-growth forest conditions and their contributions to ecological integrity across the National Forest System."9 We appreciate the Forest Service emphasizing "ecological integrity"10 as a grounding principle of the amendment. Conserving existing old-growth and recruiting future old-growth are essential to maintain and restore ecological integrity across the National Forest System (NFS). In addition, ecological integrity requires that the plant and animal species dependent on old-growth forest ecosystems are also sustained.We also appreciate the recognized need to collaborate through consultation with Indian Tribes and other Tribal entities and the incorporation of Indigenous Knowledge to decisionmaking. When Tribes willingly share their expertise, perspectives, or leadership, the nation's forests can be stewarded in a stronger, more equitable way.In these comments, we identify some places where the proposed amendment could be improved. We request the Forest Service make some modifications and additions to the proposed

amendment that better reflect the interconnections between old-growth forests, ecological integrity, biodiversity, and climate change mitigation and adaptation. We specifically recommend plan components and other content that: 1) upholds the Forest Service's requirement to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area" under the National Forest Management Act11 by contributing to the recovery and persistence of at-risk species associated with old-growth and mature forests, and 2) provides monitoring provisions that require applying the focal species approach, as required by the planning rule, to help track trends toward achieving ecological integrity of old-growth forests and indicate when management plans must change based on decision triggers built into monitoring procedures (i.e., adaptive management).Recommendations to Improve the Proposed Amendment1. Strengthen the linkage between ecological integrity and species diversity.We request the amendment make a stronger connection between the need to conserve old-growth forests with the multiple-use mandate to conserve wildlife. Executive Order 14072 clearly linked sustaining wildlife and overall biodiversity with the need improve MOG forest conservation and health. In Section 1, the executive order stated,Strengthening America's forests, which are home to cherished expanses of mature and old-growth forests on Federal lands, is critical to the health, prosperity, and resilience of our communities [mdash] particularly in light of the threat of catastrophic wildfires. Forests provide clean air and water, sustain the plant and animal life fundamental to combating the global climate and biodiversity crises, and hold special importance to Tribal Nations. (emphasis added)andIt is the policy of my Administration [hellip] to pursue science-based, sustainable forest and land management; conserve America's mature and old-growth forests on Federal lands [hellip] to improve the resilience of our lands, waters, wildlife, and communities in the face of increasing disturbances and chronic stress arising from climate impacts. (emphasis added)Section 2 stated,My Administration will manage forests on Federal lands, which include many mature and old-growth forests, to promote their continued health and resilience; retain and enhance carbon storage; conserve biodiversity; mitigate the risk of wildfires; enhance climate resilience; enable subsistence and cultural uses; provide outdoor recreational opportunities; and promote sustainable local economic development. (emphasis added)The proposed action does not include wildlife or biodiversity conservation or protection as a purpose or need; they are not mentioned at all.We request that the amendment strengthen the connection between plant and animal species diversity and the ecological integrity of old-growth forest ecosystems. The planning rule defines ecological integrity as[t]he quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.12The USFS's ecological integrity definition includes "connectivity" and "species composition and diversity" as key characteristics of integrity. Including measures of species composition (beyond tree species) and diversity are often overlooked in forest plans as key characteristics for assessing the conditions of forest, grasslands, and other ecosystems managed across the NFS.The planning directives explicitly express that animal and plant (e.g., herbaceous plant) species compositional and diversity characteristics be considered as key characteristics. For example, in the planning directives at FSH 1909.12.12.1.b., "[t]he geographic ranges and habitats of at-risk species present within the plan area" is presented as an appropriate scale for assessing integrity. Exhibit 12.13 in FSH 1909.12 provides a list of possible key characteristics to incorporate into condition assessments that includes, "[p]resence and abundance of species at risk," "[p]resence and distribution of species that have a significant effect on species diversity and ecosystem function" (i.e., keystone species and ecosystem engineers such as beaver) as compositional characteristics and "[p]ollination," and "[p]redation at multiple trophic levels" as functional characteristics to help assess the distance between ecosystem conditions and the NRV of an ecosystem. NRV would comprise the full community of species associated with ecosystems being assessed and monitored in an NFS unit, including at-risk species that may have been extirpated from the unit but were once a part of the community.13Integrating these types of characteristics can help assess the baseline conditions of species communities and monitor trends in the status of species associated with various ecosystems such as MOG forests.The Forest Service's decision to use a plan amendment as the vehicle for old-growth policy has the advantage of an existing policy framework to support amendments that make adaptations to management by adding, terminating, or modifying plan component requirements. The Forest Service must adhere to established requirements in the 2012 planning rule.14 The planning rule makes explicit linkages between ecological sustainability and species diversity.15The

rule aspires to offer a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area. Compliance with the ecosystem requirements of paragraph (a) of this section is intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area.16The rule also requires the LMPs contain plan components to provide the "ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area."17We recognize that that the proposed amendment does not leave plant and animal species out of consideration completely. The proposed amendment includes a standard, which is a constraint on projects and activities to protect natural resources of the national forests and grasslands.18 The proposed standard #2(a) directs that[v]egetation management in old-growth forest conditions must be for the purpose of proactive stewardship, to promote the composition, structure, pattern, or ecological processes necessary for the old-growth forest conditions to be resilient and adaptable to stressors and likely future environments.And the standard proposes 11 options for which "proactive stewardship" is to advance, stating,Proactive stewardship activities shall promote one or more of the following:vii. connectivity and the ability of native species to move through the area and cross into adjacent areas;viii. ecological conditions for at-risk species associated with old-growth forest conditions;ix. the presence of key understory species or culturally significant species or values;x. species diversity, and presence and abundance of rare and unique habitat types associated with old-growth forest conditions; [hellip]However, if the proposed amendment is adopted as is, forest supervisors will have complete discretion over whether to include vii, viii, ix, or x as focus.Under an old-growth forest conservation policy focused on the persistence and resilience of old forest ecosystems,19 an approach that reflects the interlinkages between biodiversity and climate change can enhance restoration planning, management, monitoring, and assessment for adaptive management.20Plant, animal, and fungi species can serve as indicators of ecological integrity, which is a central principle of the planning rule and the proposed old-growth amendment. The 2012 planning rule provided for the use of focal species to serve this purpose, see below.212. Create a goal that encapsulates what should be the aim of old-growth policy.We recommend including the following goal:Mature and old-growth forests are conserved and managed to restore or maintain ecological integrity, including species diversity, and promote the long-term, persistence, resilience, and recruitment of old-growth forest conditions across the National Forest System, providing habitat for wide array of native flora, fauna, and fungi.3. Develop desired conditions that include species diversity targets.We largely support the desired conditions included in the proposed amendment. They are necessarily general yet still provide targets for moving old-growth forest conditions toward the ecological integrity. Two of them could use some improvement.[bull] Desired condition #2 indicates an action to be taken, i.e., "active stewardship," that doesn't fully comply with how a desired condition should be written.22[bull] Desired condition #4: "[t]he long-term abundance, distribution, and resiliency of old-growth conditions contribute to the overall ecological integrity of ecosystems and watersheds" seems tautological or is confusing - it seems that managing to achieve the conditions of ecological integrity (structural, compositional, functional, connectivity, and animal and plant diversity characteristics within the natural range of variation (NRV)) would also contribute to the long-term resiliency of old-growth conditions; the desired condition does not provide for managers to determine "types of management actions that may be proposed during the planning period to move toward or maintain those conditions."23We also recommend including these additional desired conditions:1. Mature and old-growth forests exhibit the compositional, structural, functional, and connective characteristics sufficient to support the full complement of native associate species that are well distributed across these ecosystems and enable species to move freely across the landscape. The long-term abundance, distribution, and resiliency of old-growth conditions contribute to the overall ecological integrity of ecosystems and watersheds and increase and maintain biodiversity.242. Trends in representativeness, redundancy, and connectivity of old-growth forest conditions improve, and future forest conditions are resilient and adaptable to stressors, including changing climatic conditions.253. Old-growth forest conditions are dynamic in nature and shift on the landscape over time as a result of succession and disturbance. The return of natural, appropriate fire regimes helps maintain and enhance old forest conditions and restore and maintain a habitat mosaic to support native species communities.Ecosystems that retain the full complement of native species are likely to be more resilient to natural and anthropogenic stressors over time.26 Promoting biological diversity is a

useful climate adaptation strategy; areas with high diversity are more likely to maintain ecosystem functions and maintain ecological integrity over time.27 For MOG forests, increasing the diversity of tree species functional traits, such as shade tolerance, seed size, specific leaf area, ability to resprout, and bark thickness, may give forests a better chance to adapt to uncharacteristic disturbances in a changing climate.28 Plants remove, and store CO2 from the atmosphere. In turn, native fauna promote plant productivity, diversity, and resilience through pollination, seed dispersal, selective herbivory, and the enhancement of soil nutrient supply and organic carbon storage.29 Wildlife can actively enhance carbon sequestration and storage with the way they move across the landscape, forage, create disturbance, deposit nutrients into the soil, and disperse seeds.30 These evolved reciprocal relationships between plants and animals emphasize the deep connections between carbon sequestration, climate change, and biodiversity loss. Given these
interdependencies, it is apparent why rapid changes to climate negatively affects ecosystems and the species that depend on them when biodiversity is diminished.31Conserving the full complement of native species is essential to sustaining ecological integrity. In addition, these species must occur at sufficient abundances to fulfill their functional roles in ecosystems. Research on the causal linkages between climate change and biodiversity loss emphasize the need to address both through policy and management.324. Include focal species monitoring to inform adaptive management.Plan-level monitoring should explicitly require the selection and use of old-growth dependent focal species for monitoring changes in old-growth ecosystem conditions to complement vegetation monitoring. Monitoring provisions should include at least one focal species that appropriately enables the Forest Service to detect changes in old-growth forest conditions and better infer changes in at-risk species abundance and distribution trends. Focal species represent a part of the monitoring requirements for ecological sustainability and diversity of plant and animal communities.33 We make two recommendations below.[bull] We recommend the addition of the following monitoring question as 3(a) in the amendment with the associated indicators and triggers below:o Are passive and active management activities implemented under this amendment and any associated step-down, place-based strategies contributing to progress toward desired conditions?? Indicator: Changes in population and distribution trends of the selected focal species.? Trigger: Threshold population level that activates an evaluation of proactive stewardship activities, assessment of available management alternatives, and adaptations in management when warranted.All monitoring programs should include monitoring triggers to ensure focal species monitoring processes yield useable data to drive adaptive management. The appropriate trigger would in most cases be the focal species' decline to a specific threshold level, triggering an evaluation of how management may be affecting the population, options for management actions that may reverse the downward population trends, management policy and practice adaptations. A standardized methodology should be adopted to select and monitor focal species.34The U.S. Fish and Wildlife Service (2015) explained the concept in its Technical Reference on Using Surrogate Species for Landscape Conservation,Species selected and monitored as environmental indicators are sensitive to particular environmental conditions and are considered representative of other species that require the same or similar environmental conditions. As a result, changes in populations of indicator species are assumed to be representative of changes in beneficiary species (e.g., deteriorating water quality reduces a population of indicator fish species and is assumed to affect other species in that same ecosystem).35Without requiring measurable indicators and management triggers that inform when to change management approach, plan monitoring programs will not yield meaningful information upon which to make adaptive management decisions. Schultz et al. (2012) describe how adaptive management triggers should be operationalized:[T]he integrity of any monitoring plan, coarse- or fine-filter, depends on the articulation of clearly stated objectives and triggers to management actions. A trigger point is a threshold value for a monitoring state variable (e.g., percent area occupied by a given focal species within a national forest planning area) that, when exceeded, triggers a particular management response. A monitoring program without triggers selected a priori to call attention to trends provides little more than a retrospective time series of data with no feed-back[mdash]and therefore little value[mdash]to the management decision-making process.36 (citations omitted)Focal species should be representative communities of "beneficiary species" where tracking the population status of all imperiled species to gauge their responses to natural disturbance, management activities, and threats in a system would be excessively resource-intensive.37 They also enable a focal species or assemblage of species serve as a proxy for imperiled species that are too rare to detect to be useful for monitoring.When management requirements

include multiple species (e.g., USFS 2012 Planning Rule), one approach is to first group species based on criteria such as taxonomic relatedness, similar distributions, and common threats to persistence. If a defensible argument can be made that the population-level response of one, or a few, species in each cluster is representative of others in the same cluster[mdash]that is, responds in a similar fashion to environmental stressors and management actions[mdash]then surrogacy may be a safe assumption.38[bull] We recommend the following as management approaches for focal species selection and monitoring:Noon et al. (2009) listed the desired attributes for selecting focal species when used as surrogate measures for ecological integrity:[bull] Taxonomic status is well established[bull] Ecology, life history, and demography are sufficiently "known" to allow direct or indirect estimates of relative abundance and spatial distribution[bull] Relatively high detectability allowing for precise estimates of population status (presence-absence or abundance)[bull] Low sampling variability (consistent and high detectability across time and space)[bull] Low process variation in demographic rates, allowing more reliable inferences to causal factors affecting population status[bull] Attributes (4) and (5) allow for high statistical power to detect trends in presence, absence or abundance[bull] Known relationships between environmental stressors and population statusThe basic principles of defensible environmental monitoring programs in general, and focal species monitoring in particular, share a set of common requirements.These include:1)Specify management objectives and legal requirements in terms of measurable, quantitative attributes.2)State the spatial and temporal domain of the population of interest (i.e., an individual National Forest as the sample frame).3)Identify the monitoring state variable (e.g., a focal species abundance or probability of occurrence on a sample unit) and why that state variable was selected.4)State the type of change to detect (e.g., a significant decline in the abundance (distribution) of a focal species).5)Specify the magnitude of change to detect (the effect size; essential for sample design decisions).6)Following (5), specify desired precision for the trend estimate (requires pilot data and a components-of-variance analysis).7)Generate estimates of uncertainty in both current status and temporal trend.8)Specify 'trigger point' (thresholds) in a focal species status that will lead to an adaptive response.9)Specify the management action(s) that will occur when a threshold is surpassed.10)Determine (monitor) the effects of the management response (essential for AM learning process).11)Update sampling design as needed (adaptive monitoring).Survey design and associated statistical model(s) used for subsequent analyses must be decided upon early in the process.39 The logic used for focal species selection should be clearly stated. That is, what species were selected and why, and to what extent they allow inference to other, unmeasured species, and to the goal of sustaining the ecological integrity of NFS lands.5. Add standards that protect old-growth conditions and old-growth associate species.1.The cutting, removal, and sale of old-growth trees for the purpose of timber production is prohibited. The cutting of individual old growth trees is permitted only for the purpose of the protection of public or administrative safety after a declared emergency or for Tribal cultural uses and may not be sold.402.Until the unit's conservation strategy is complete, the cutting and removal of mature trees, except where cutting and removal of mature trees is necessary to conserve old-growth trees and develop old growth conditions, is prohibited. The cutting of individual mature trees is permitted only for the purpose of the protection of public or administrative safety after a declared emergency or Tribal cultural uses and may not be sold.413.Management activities must not degrade or impair the composition, structure, ecological processes, or habitat connectivity in a manner that prevents the long-term persistence of old-growth forest conditions within the plan area.424.Management activities must not damage or remove fine-scale habitat attributes required for at-risk species persistence.435.Management activities must not degrade or impair the composition, structure, ecological processes, or habitat connectivity in a manner that prevents the long-term persistence of old-growth forest conditions within the plan area. Passive management of mature trees and forests to achieve old growth forest conditions is permitted.446.In forests where the unit's conservation strategy indicates that the cutting and removal of some mature trees is necessary to recruit and conserve old-growth trees and develop old-growth conditions, proactive stewardship is limited to activities that foster or increase resilience to disturbances and stressors that may have adverse effects on old growth forest conditions at stand or landscape scales. Management actions must promote structural characteristics, attributes, and ecosystem processes that characterize old-growth forest conditions for the relevant ecosystem.7.Each unit or collaboration groups of units develop and implement a conservation strategy as described in the objectives.8.All standards should apply forestwide.6. Remove or modify flawed standards.[bull]Proposed Standard #1 should include "connectivity" and "species diversity" to better reflect the elements of ecological

integrity, and read:Vegetation management activities must not degrade or impair the composition, structure, ecological processes, connectivity, or species diversity in a manner that prevents the long-term persistence of old-growth forest conditions within the plan area.[bull]Proposed Standard #2(a) requires some modification; 2(a)(viii) is a requirement under 36 CFR 219.9(b)(1) and 219.9(b)(2); and 2(a)(x) is a requirement under 36 CFR 219.9(a)(2). The amendment should make it explicit these are requirements that must be met in the amended LMPs. Additionally, active management should be moving forest conditions toward desired conditions; this proposed standard seems to imply that only one characteristic of integrity needs to be advanced.[bull]Proposed Standard #2(b)(ii) as written, could be loophole, that could undermine old-growth forest conservation. We acknowledge the need to respond to legitimate public health and safety threats. However, such a standard must include specificity regarding what constitutes public health and safety threats and conditions under which such an exception would apply.Proposed Standard #2(b)(v) is an exception that puts the whole amendment direction in jeopardy. It should be removed from the amendment.[bull]Proposed Standard #3 does not provide an enforceable constraint on "growing, tending, harvesting, or regeneration of trees for economic reasons," despite the inference that it does.[bull]Proposed Standard #4 should be deleted. For the following reasons.First, the Southeast Alaska Sustainability Strategy (SASS) is a management approach that the agency is currently implementing in the Tongass but is not defined or described in any permanent way. The agency can change the goals, strategies, definitions, guiding principles and key components of the SASS at any time. Because it can be easily changed, the Forest Service should not memorialize the SASS in this regulation as something with which implementation necessarily warrants an exception from the old-growth management standards.Second, there is no compelling reason why the Regional Forester would need to seek an exception from those standards, beyond those already provided, to implement the current SASS. Announced in July 2021, the SASS is intended to support a diverse economy, enhance community resilience, and conserve natural resources in Southeast Alaska.45 To accomplish this, the SASS finally ended large-scale old-growth logging in the Tongass and now focuses management resources on forest restoration, recreation, and resilience, including for climate, wildlife habitat and watershed improvement.46 Implementation quantified to date has led to measurable progress toward these goals.47The current Forest Management component of the SASS does allow for an average 5 MMBF of old-growth timber harvest annually, which is presumably why the Tongass exception is proposed.48 That policy stems not from any clear SASS imperative, however, but from the underlying Tongass Land Management Plan (TLMP), with which management approaches like the SASS must remain consistent. A 2016 TLMP amendment accelerated a planned transition away from old-growth logging that culminated, based on the analysis and policy direction in place at the time, with an average 5 MMBF expected annual old-growth harvest in perpetuity.49Since that time, scientific understanding and social awareness of the invaluable nature of our mature and old-growth forests and the values they provide have evolved substantially. This proposed rule and background provided in the Notice of Intent summarize these values and describe the significant policy direction from the President and Secretary of Agriculture placing new and greater emphasis on protecting this rare forest type. Remaining wed to the TLMP's vestigial allowance for old-growth logging by carving out the proposed exemption here would be both unnecessary and contrary to the goals of the rule.

SASS implementation doesn't require a continued allowance of an average annual old-growth harvest. Problematically, the 5 MMBF annual average could be cited as support for large logging projects at some point, because actual harvest has consistently trended well below that amount. When the TLMP is revised or amended to include the direction provided by this rule, it need not and should not carry that allowance forward because it no longer reflects applicable policy direction.Finally, should the Forest Service choose to retain a Tongass-specific exception to the old-growth vegetation management standards, it should define its purpose and scope in the rule itself. Future use of such an exception would be evaluated based on the text of the rule, not on the latest iteration of the SASS and an associated rationale. To be clear, we oppose any Tongass exception. But if the agency nonetheless includes one, then it should be well-defined in the rule itself and very narrow.ConclusionThe proposed action includes some promising elements. As noted above, it includes "ecological integrity" as a guiding principle. It has some potentially impactful plan components, such as a standard (Standard 1) that states, "Vegetation management activities must not degrade or impair the composition, structure, or ecological processes in a manner that prevents the long-term persistence of old-growth forest conditions within the plan area." Unfortunately, the proposed amendment also has flaws that, in some cases, significantly undermine its

ability to achieve the stated purposes of "maintaining and developing old-growth forest conditions," improving and expanding the abundance and distribution of old-growth conditions, and protecting old-growth forest ecosystems from threats.50 We ask the Forest Service to consider the recommendations above.1 87 Fed. Reg. 24851 (April 22, 2022). Executive Order 14072, Strengthening the Nation's Forests, Communities, and Local Economies.2 Secretary's Memorandum 1077-004 (June 23, 2022). Climate Resilience and Carbon Stewardship of America's National Forests and Grasslands. U.S. Department of Agriculture.3 USDA, Forest Service and DOI, Bureau of Land Management. (2023). Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management. April.4 Barnett, K., Aplet, G. H., & Belote, R. T. (2023). Classifying, inventorying, and mapping mature and old-growth forests in the United States. Frontiers in Forests and Global Change, 5, 1070372.5 Despite this loss, harvest of old-growth trees on USFS lands continues today.6 A keystone species is "a species that has a disproportionately large effect on its natural environment relative to its abundance," See Mills, L. S., Soul[eacute], M. E., & Doak, D. F. (1993). The keystone-species concept in ecology and conservation. BioScience, 43(4), 219-224.7 88 Fed. Reg. 88046 (December 20, 2023).8 88 Fed. Reg. 88044-88045.9 88 Fed. Reg. 88042.10 36 CFR 219.19 (definitions).11 16 USC 1604(g)(3)(B).12 36 CFR 219.19 (definitions).13 This is consistent with the best available scientific information (See Comer, P. J., Hak, J. C., Reid, M. S., Auer, S. L., Schulz, K. A., Hamilton, H. H., ... & Kling, M. M. (2019). Habitat climate change vulnerability index applied to major vegetation types of the western interior United States. Land, 8(7), 108).14 36 CFR 219 subpart A.15 See 36 CFR 219.8 and 219.9.16 36 CFR 219.9, preamble.17 36 CFR 219.9(b)(1). Species of conservation concern are "species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area." 36 CFR 219.9(c).18 36 CFR 219.7(e)(1)(iii).19 as the Forest Service's proposed amendment is.20 Gupta, H., & Singh, N. K. (2023). Climate Change and Biodiversity Synergies: A Scientometric Analysis in the Context of UNFCCC and CBD. Anthropocene Science, 2(1), 5-18.21 See 36 CFR 219.12 and 219.19.22 See FSH 1909.12.22.11.2.d.23 See FSH 1909.12.22.11.2.e.24 Britting, S., Brown, E., Drew, M., Esch, B., Evans, S. Flick, P., Hatch, J., Henson, R., Morgan, D., Parker, V., Purdy, S., Rivenes, D., Silvas-Bellanca, K., Thomas, C. and VanVelsor, S. (2012). National Forests in the Sierra Nevada: A Conservation Strategy. Sierra Forest Legacy. August 27, 201; revised in part March 14, 2013.25 See Brown et al. (2024). Scoping Comments Regarding Land Management Plan Direction for Old-Growth Forest Conditions Across the National Forest System, Notice of Intent to Prepare an Environmental Impact Statement; Britting et al. 2012.26 Zina, V., Ordeix, M., Franco, J. C., Ferreira, M. T., & Fernandes, M. R. (2021). Ants as bioindicators of riparian ecological health in Catalonian rivers. Forests, 12(5), 625.27 Messier, C., Bauhus, J., Doyon, F., Maure, F., Sousa Silva, R., Nolet, P., ... & Puettmann, K. (2019). The functional complex network approach to foster forest resilience to global changes. Forest Ecosystems, 6(1), 1-16.28 Grossiord, C. (2020). Having the right neighbors: how tree species diversity modulates drought impacts on forests. NewPhytologist 228 (1), 42 49; Messier et al. 2019.29 Schmitz, O. J., & Sylv[eacute]n, M. (2023). Animating the Carbon Cycle: How Wildlife Conservation Can Be a Key to Mitigate Climate Change. Environment: Science and Policy for Sustainable Development, 65(3), 5-17.30 Schmitz & Sylv[eacute]n 2023.31 IPBES-IPCC report. https://zenodo.org/records/5101125.32 Gupta, H., & Singh, N. K. (2023). Climate Change and Biodiversity Synergies: A Scientometric Analysis in the Context of UNFCCC and CBD. Anthropocene Science, 2(1), 5-18.33 FSH 1909.12.32.13c.34 See Noon et al. 2009; Tingley, M. W., Darling, E. S., & Wilcove, D. S. (2014). Fine-and coarse-filter conservation strategies in a time of climate change. Annals of the New York Academy of Sciences, 1322(1), 92-109; USFWS 20015.35 US Fish and Wildlife Service. (2015). Technical reference on using surrogate species for landscape conservation. Washington, DC, USA. p. 11.36 Schultz, C. A., Sisk, T. D., Noon, B. R., & Nie, M. A. (2013). Wildlife conservation planning under the United States Forest Service's 2012 planning rule. The Journal of Wildlife Management, 77(3), 428-444. p. 31.37 Wiens, J. A., Hayward, G. D., Holthausen, R. S., & Wisdom, M. J. (2008). Using surrogate species and groups for conservation planning and management. BioScience, 58(3), 241-252; Burgas, D., Byholm, P., & Parkkima, T. (2014). Raptors as surrogates of biodiversity along a landscape gradient. Journal of Applied Ecology, 51(3), 786-794.38 Noon, B. R., McKelvey, K. S., & Dickson, B. G. (2009). Multispecies conservation planning on US federal lands. Models for planning wildlife conservation in large landscapes/Joshua Millspaugh, Frank R.

Thompson.39 Given specific monitoring state variables for focal species (e.g., abundance, occupancy, geographic distribution), sampling objectives including desired statistical power, effect sizes, and statistical precision require a priori identification of specific statistical methods. Failure to do this makes it impossible to perform basic sample size calculations and to allocate optimally sampling effort across time and space.40 Brown et al. 2024. Scoping Comments.41 Brown et al. 2024. Scoping Comments.42 Modified from proposed amendment.43 For example, plan standards and guidelines for snag size and density are typically not sufficient for species needing large tree cavities, such as the boreal owl (see Hayward, G. D., Hayward, P. H., & Garton, E. O. (1993). Ecology of boreal owls in the northern Rocky Mountains, USA. Wildlife Monographs, 3-59; Hayward, G. D. (1994). Conservation status of boreal owls in the United States. In: Hayward, GD; Verner, J., tech. editors. Flammulated, boreal, and great gray owls in the United States: A technical conservation assessment. Gen. Tech. Rep. RM-253. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. p. 139-147, 253; Hayward, G.D. 2008. Response of Boreal Owl to Epidemic Mountain Pine Beetle-caused Tree Mortality Under a No-action Alternative. Additionally, Hutto (2006) proposed that Forest Service post-disturbance snag retention guidelines were rarely adequate to support intact communities of bird species and recommended targets of 80-120 snags per acre (without regard to snag size in d.b.h.), Hutto, R. L. (2006). Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. Conservation Biology, 20(4), 984-993.44 Modified from the proposed alternative Standard 1.45 U.S. Forest Service, Southeast Alaska Sustainability Strategy, available at (last viewed January 12, 2024).46 Id.47 U.S. Forest Service, Economic Impact of the USDA Southeast Alaska Sustainability Strategy (August 2023), available at.48 U.S. Forest Service, Southeast Alaska Sustainability Strategy Forest Management (April 2022) at 3, available at (last viewed January 12, 2024).49 TLMP at 5-13.50 88 Fed. Reg. 88044.ATTACHMENT: DefendersOfWildlife_USFS_Old-growth_ScpCmts_2-2-2024.pdf - Letter contents.