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Title:
Comments: Scoping comments in attached PDF for Region 5 Post Disturbance Hazardous Tree Management Project (60950).

CHAD ROBERTS, PH.D.

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SENIOR ECOLOGIST (ESA) (EMERITUS) SENIOR PROFESSIONAL WETLAND SCIENTIST (SWS) (EMERITUS) 08 November 2021 USDA Forest Service Pacific Southwest Regional Office, Ecosystem Planning 1323 Club Drive Vallejo, CA 94592 https://cara.ecosystem-management.org/Public//CommentInput?Project=60950

Subject: Scoping Comments, R5 Post-Disturbance Hazardous Tree Management Project

Greetings,

Thank you for the opportunity to comment on the appropriate scope for assessing hazardous-tree management in Forest Service lands affected by recent large fires in California. For reasons identified below, I believe it[rsquo]s appropriate that the Pacific Southwest Region assume responsibility for a coordinated approach to hazard-tree management in California. However, the scope of that undertaking requires a coordinated partnership arrangement with the individual national forests on which the project elements would be implemented, as well as incorporating the perspectives of relevant stakeholders. In general, the proposed project addresses a need for which Region 5 management is appropriate, but the proposed project does not address most of the forested landscapes affected by large wildfires in the last few years. The Region also needs to provide coordinated leadership for a programmatic response to the effects of climate change and increased wildfire within these landscapes, as described in the following pages.

I.Coordination of NEPA Assessments

This letter reflects and amplifies on comments regarding the scope and subsequent content of the Environmental Assessment (EA) issued by the Mendocino National Forest (MNF) for the proposed Plaskett-Keller Project, major elements of which involve roadside and campground hazard-tree removal in response to the August Complex. The MNF also has other projects underway that involve roadside hazard tree removals, including the Hammerhorn Project and the 4Beetles Project for the August Complex and the Northshore Restoration Project for the Ranch Fire. The Region 5 (R5) scoping notice does not indicate whether the proposed R5 Hazardous Tree Management Project (project) replaces and supersedes the MNF Plaskett-Keller Project and other projects on the MNF, or whether it[rsquo]s to be considered as a separate project in addition to the MNF Plaskett-Keller Project and others. Accordingly, this scoping comment incorporates by reference all scoping comments and EA comments that I sent to the MNF with respect to the Plaskett-Keller Project as if fully set forth herein (all comments are included in the public record for that project; also see discussion below).

Other national forests in northwestern California affected by the August Complex have also initiated individual

projects to begin their own recovery processes, and the same consideration is likely to occur in those cases (see additional discussion re the four Klamath Ecoregion national forests below), if not also for the six Sierra Nevada national forests affected by fires in their own landscapes.

While this letter addresses the proposed R5 Hazardous Tree Management Project, it cannot address the multitude of specific environmental concerns that exist within the many thousands of miles of roads and trails covered by the project, or the dozens of trailheads and campgrounds. The Forest Service (FS) needs to clarify whether the proposed region-wide project is intended to serve as a

programmatic [lsquo]umbrella[rsquo] for hazardous-tree management projects throughout the Region with respect to assessments required by the National Environmental Policy Act (NEPA) and other federal laws and regulations. If so, the Regional Office needs to clarify the relationship between the R5 programmatic assessment and any/all subsequent projects by individual national forests enacted to implement the regional program:

[bull] Is the R5 intention that implementing projects carried out by the individual national forests (identified only generally in the scoping description and maps) are to be addressed by project-specific assessments per NEPA requirements, tiered to this regional NEPA assessment, INCLUDING the identification of more-specific measures to address potential environment effects for each project, WITH opportunities for public review and comment?

[bull] Is the R5 intention that projects by each national forest to implement the proposed region-wide program NOT prepare subsequent project-specific assessments, instead relying on the programmatic assessment and the measures identified in the scoping documents and in any subsequent R5 programmatic NEPA assessment, WITHOUT additional project-specific opportunities for public review?

A brief consideration of the range of ecosystem variability affected by recent large fires across the ten (when the Modoc NF is included) national forests covered by the proposed program implicates a wide range of variation in project elements and natural vegetation patterns. That brief consideration suggests that there[rsquo]s too much variability for the forests identified in the proposal to adequately address, in one assessment conducted in a brief window of time, the range of site-specific conditions that will occur among the many projects developed by ten national forests throughout the highly diverse landscape that is California. On this basis alone it appears to me that NEPA mandates a programmatic approach by R5, tiered to a project-specific assessment for each implementation project proposed by each national forest. Given the region-wide scope of the program, it seems unlikely that the Region can address the effects of the proposal with a NEPA assessment less extensive than an Environmental Impact Statement (EIS).

The R5 scoping documents identify the proposed project as applicable only to hazardous-tree removal operations along roadways and near public-use facilities like campgrounds, trailheads, and FS buildings. It appears to me that having the Region assume responsibility for developing a coherent approach to hazard-tree management in recently burned forestlands throughout the Region is both appropriate and desirable. Such a [lsquo]standard[rsquo] approach lends itself to a programmatic environmental assessment, to which individual national forests and ranger districts can tier projects proposed to implement the strategy.

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II. Use of Forest LRMP Elements Requires Validation

I concur with the R5 hazard-tree project proposal to incorporate as [lsquo]mitigation measures[rsquo] any design features and Best Management Practices (BMPs) developed for dealing with watershed conditions, riparian areas, cultural resources, scenic and recreational resources, and geological resources from adopted LRMPs, subject to their consistency with existing regulatory policies and scientific standards in use among relevant regulatory and trustee agencies for those resources in California. However, measures identified in the scoping documents are unlikely to be the only [lsquo]mitigation measures[rsquo] needed across all the treated landscapes in the subject national forests, and thus constitute a [lsquo]minimum set[rsquo] of measures required to implement the proposal. Site-specific concerns undoubtedly exist, or will arise, that require additional measures to minimize or offset effects of the proposed treatments. These additional measures must be identified by specialists and stakeholders on a site- or project-specific basis by each forest in implementing the proposed project on landscapes with the forest.

Other concerns resulting from reliance on existing LRMPs for topics typically included in FS environmental assessment documents include:

[bull] Measures to avoid or offset wildlife habitat impacts for [lsquo]special status[rsquo] species clearly must be consistent with the requirements of applicable federal and state laws, whether or not those are identified in the R5 proposal.

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III. Assessments Require the Use of Best Available Current Science

The hazard-tree project[rsquo]s narrow focus does not adequately address a larger and extremely important issue for national forest landscape management in an era of climate change and increased fires: the increased probability of subsequent wildfire that was the subject addressed in the Coppoletta et al (2020) JFSP report cited in the scoping documents. The underlying issue is fundamentally the accumulation of fuels throughout entire landscapes, including burned parts of the landscapes. The [lsquo]fuels[rsquo] within these landscapes that need to be considered include any natural advance regeneration of conifers, the well-known ingrowth of shrubs and/or hardwoods resulting from sprouting and/or germination from an abundant seed-bank, and the effects of accumulating ground fuels as burned conifer fall. Any planting carried out to replace large areas of burned

conifers also contributes to these accumulated fuels. Long-term ecosystem management in California forests can[rsquo]t be planned or executed without attending to all these fuels.

As Coppoletta and her colleagues have noted, evidence is accumulating that this climate change-driven dynamic has a significant potential to alter conditions in our national forest landscapes, potentially leading to type-conversions to non-forest. This is a Region-wide issue that requires a coherent strategy for adapting to changing conditions; essentially, we need a [lsquo]planning[rsquo] framework for a Region-wide strategy, requiring that every national forest incorporate climate-change adaptation into its Land and Resource Management Plan (LRMP), including forest-specific Standards & Guidelines tailored to conditions on each forest. The primary focus of the LRMPs must be increasing and maintaining the sustainability and ecological integrity of the forested landscapes, as identified in the National Forest Management Act (NFMA) regulations in 36 CFR [sect]219. The Region has already identified [in the Bioregional Assessment of Northwest Forests (see below)] the importance of developing such a revised planning focus for the [lsquo]dry[rsquo] forests in the Klamath ecoregion, but the need is no less dire for the other national forests in California.

While an existing specification in Forest Service regulations implementing the NFMA (36 CFR [sect]219.15) directs that all national forests base decisions about proposed projects on the content of an adopted LRMP, current Forest Service NFMA regulations explicitly direct that FS decision-makers base their decisions on the [lsquo]best available science[rsquo] (36 CFR [sect]219.3, quoted here for reference):

"36 CFR [sect]219.3 Role of science in planning. The responsible official shall use the best available scientific information to inform the planning process required by this subpart. In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered. The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in [sect][sect] 219.6(a)(3) and 219.14(a)(4). Such documentation must: Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered."

When the adopted LRMPs are not consistent with current [lsquo]best available science,[rsquo] an internal conflict is created that must be resolved by having the appropriate Region 5 decisionmakers direct national forests to follow the current science rather than what[rsquo]s in the outdated LRMPs.

Moreover, even the current Trump-era CEQ regulations for implementing NEPA (40 CFR [sect]1500 et seq.) direct that federal agencies incorporate current science into the NEPA process when developing and approving projects:

"40 CFR [sect]1501.2 Apply NEPA early in the process.

"(a) Agencies should integrate the NEPA process with other planning and authorization processes at the earliest reasonable time to ensure that agencies consider environmental impacts in their planning and decisions, to avoid delays later in the process, and to head off potential conflicts.

"(b) Each agency shall:

"(1) Comply with the mandate of section 102(2)(A) of NEPA to utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man[rsquo]s environment, as specified by [sect] 1507.2(a) of this chapter." [hellip]

The scoping notice indicates explicitly that the individual forests, when implementing the proposed R5 hazard-

tree project, incorporate elements from their existing LRMPs (see below). However, for many of these forests the LRMPs are based upon, and specifically direct that projects be

implemented consistently with, science and technical approaches developed between the 1960s and the early 1990s. For example, the MNF[rsquo]s current LRMP was adopted in 1995, incorporating amendments necessitated at that time by the then-recent adoption by the Forest Service of the Northwest Forest Plan (NWFP), addressing the then-understood ecological needs of the Northern Spotted Owl (NSO) and several aquatic species listed under the federal Endangered Species Act (ESA). [The LRMPs of all four national forests in northwestern California (the Klamath ecoregion forests, identified in the scoping notice as the [lsquo]northern zone[rsquo] forests) were adopted in the mid-90s, based upon the same science and the same set of mandates, and all four LRMPs suffer from similar misapplications of outdated information.]

The scoping notice does not require that the implementation of the proposed R5 project by these forests incorporate an understanding of current science relevant for management and decision-making developed by the Forest Service itself. In July 2020, the Forest Service regional offices for California (Region 5) and Washington and Oregon (Region 6) issued a document entitled the [lsquo]Bioregional Assessment of Northwest Forests[rsquo] (BioA)1 for public review. The BioA accompanies the 2018 Science Synthesis2 as a document on which the in-progress forest plan revisions for each of 19 national forests in Washington, Oregon, and northwestern California are to be based. The Science Synthesis and the BioA are thus identified by the Forest Service as the current scientific basis to be used in FS decision-making within the NWFP region.

Given the formal endorsement of the science in these published Forest Service summaries by the R5 and R6 offices, the conclusion is inescapable that the Klamath ecoregion forests should incorporate the contents of the Science Synthesis and the BioA as the science on which the R5 hazard-tree management project must be based in order to comply with current NEPA regulations, as well as in meeting the NFMA directive for information used in decision-making in 36 CFR [sect]219.3. The LRMPs of the three northern Sierra Nevada forests included in the R5 project were also adopted in the late 20th Century, at about the same time as the Klamath ecoregion forests[rsquo] LRMPs, and were largely based on the same or very similar science. Elements in all these LRMPs may be consistent with current best available science, but the LRMP Standards & Guidelines in the adopted LRMPs cannot be concluded to be consistent with current scientific understanding unless and until each standard and guideline is independently verified by comparison with practices that are consistent with current science (particularly, for the Klamath ecoregion forests, with the understanding reflected in the Science Synthesis and the BioA).

IV. Regional Assessment Must Differentiate Ecologically Different Forest Types Within the Region and Incorporate Effects of Climate Change and Increased Fire

The forests in the Klamath ecoregion are ecologically similar to forests in the Sierra Nevada, but there are regional differences in temperature and moisture gradients, substrate conditions, plant community composition, and forest structure that must be considered in addressing management requirements such as wildlife habitat requirements. For the Klamath ecoregion forests, a consideration of differences among forested ecosystems hosting the NSO across R5 (and R6)

emerges clearly from considering the altered understanding of the ecology of the Northern Spotted Owl reflected in the US Fish & Wildlife Service(USWFS, FWS) 2011 NSO Recovery Plan.3

At the time the Recovery Plan was adopted, the FWS already understood that the forested ecosystems occupied by the NSO differed throughout the owl[rsquo]s range (the history of this science through the first decade of the

century is summarized in the Recovery Plan; an additional decade[rsquo]s worth of NSO-relevant science is covered in the Science Synthesis). The2011 NSO Recovery Plan identified a focus on [lsquo]dry forests,[rsquo] a different habitat type standing alongside the [lsquo]moist forests[rsquo] that had been the model for [lsquo]old growth[rsquo] NSO habitat when the NWFP (and consequently themid-90sKlamath ecoregion LRMPs)was adopted. [lsquo]Dry[rsquo] and [lsquo]moist[rsquo] forests differ in several significant ways, and have developed under substantially different [lsquo]disturbance regimes,[rsquo] particularly different [lsquo]fire regimes.[rsquo] [lsquo]Dry forests[rsquo] are also frequently characterized as [lsquo]frequent-fire forests,[rsquo] owing to the general relationship that exists between frequent low-or mixed-severity fires and the more open structure exhibited by these landscapes.

Characteristics of [lsquo]dry[rsquo] [lsquo]frequent-fire[rsquo] forests, and their relationships to forest management, are discussed in detail in the Science Synthesis and the Bio A (and in the scoping comments I provided to the MNF for the Plaskett-Keller Project). Those documents recognize, as does the FWS NSO Recovery Plan, that ecosystem composition, structure, and dynamic processes in [lsquo]dry forests[rsquo] are different from the composition, structure, and dynamic processes in the [lsquo]moist forests[rsquo] on which the original NWFP was based, and that current and future management of [lsquo]dry[rsquo] forests require a fundamentally different approach.

[For purposes of summarizing a number of important ecological processes occurring in the [lsquo]dry forests[rsquo] in the Klamath ecoregion, a summary of ecological relationships and management considerations initially submitted to the national forests in the Klamath ecoregion is attached and incorporated fully into this scoping comment (Attachment A: Climate Change & Fire Adaptation in Northwestern California National Forest Landscapes, dated March 2021). The summary reflects ecological processes that occur in all California forested landscapes, but is explicitly directed to ecological processes important for the Klamath ecoregion, including the Siskiyou region in southwestern Oregon. The degrees of similarity and difference between Klamath ecoregion landscapes and those in the central and southern Sierra Nevada are not unimportant, either scientifically or for management purposes, but a full characterization vastly exceeds the scope of this comment. Attachment A also incorporates extensive consideration of adapting Klamath ecoregion forested landscapes to the effects of increased fire and climate change; these elements are directly relevant to the scope of the R5 hazard-tree project, and should be addressed as a central element in the Region[rsquo]s approach.]

For the [lsquo]frequent-fire[rsquo] forests, the significance of post-fire fuels on subsequent wildfire fire severity[the specific focus of the Coppoletta et al (2020) JFSP report identified in the scoping documents] is clearly a necessary element to be considered in planning for the future. Relationships among snags, downed logs and other coarse woody debris, and future fires are fundamentally an important management issue raised when relying on the outdated LRMPs in the northern California forests, which assumed that low-and mid-elevation conifer forests were all [lsquo]moist forest[rsquo] with abundant coarse woody debris and abundant snags, in addition to dense, multistoried canopies. The outdated LRMPs consequently include Standards & Guidelines intended to retain abundant snags and coarse woody debris, which is directly contrary to the actual management approaches needed for [lsquo]dry[rsquo] [lsquo]frequent-fire[rsquo] forests.

For example, the MNF LRMP includes direction to provide 5-20 tons per acre of coarse woody debris, based on directions in the 1996 NWFP for wildlife habitat in what are now known to be [lsquo]moist[rsquo] forests. In NEPA assessments for fire-recovery projects after the 2018 Ranch Fire, fuels-management staff on the MNF identified the low end of the range (ca 5 tons/acre) as potentially consistent with managing the forest under warming climate and intensified fire regimes, although even 5 tons/acre was identified as being a higher loading than is desirable if the intent were to maintain fuels consistent with an increased fire regime.4

Such conflicts are clearly not desirable if the goal is to achieve long-term landscape sustainability in a time of warming climate and increasing fire. The direction provided by the existing MNF LRMP is not even consistent with the array of stand structures that are now considered to be ecologically typical of natural variability in

[lsquo]old-growth[rsquo] [lsquo]frequent-fire[rsquo] forests, which have been identified as having generally been more open, typically with large, fire-resistant conifers in a matrix of grasses, shrubs, and/or hardwoods [see Reilly & Spies (2015), cited in Attachment A, and other discussion in Attachment A].

Recent scientific investigations of National Forest landscapes throughout the western United States (including the Science Synthesis and the BioA) support an overarching conclusion regarding adaptations for climate change and increased fire, particularly in overly dense [lsquo]dry[rsquo] [lsquo]frequent- fire[rsquo] forests: stand densities need to be reduced, then subsequently maintained at lower densities, to create ecological conditions that are more resilient in a hotter, dryer climate. It appears to me that Region 5 should explicitly identify reducing stand densities as a significant objective for every project enacted as part of the fire and fuels management program, including this one.

Attachment A (intentionally) doesn[rsquo]t address potential [lsquo]turnover thresholds[rsquo] or [lsquo]tipping points[rsquo] for fire and fuel dynamics in forested landscapes. However, evidence from recent large, high-severity fires has begun to indicate that [lsquo]tipping points[rsquo] may be important in determining future landscape compositions in western forested landscapes.5 The essential considerations in this model for future fires include these elements:

(i) Increased climate warming will lead to increasing future vapor pressure deficit/Climate Water Deficit, which will have an unavoidable effect in increasing the likelihood of fire in future landscapes, including an increased fire frequency and an expanding area burned each year;

(ii) An increased fire frequency and area burned will reduce the volume of fuels in forested landscapes; eventually the reduced availability of fuels will result in fuels-limited landscapes and a reduction in further burning;

(iii) Fuels limitation occurs because increased fire results in significant alterations in the dominant vegetation in the affected landscapes, with reduced tree cover and increased

dominance by shrubs and hardwoods, and a potential conversion of forests to shrublands, or even conversions from forests and shrublands to grasslands.

The national forests in California should consider the implications of the above dynamic as an alternative future. Increased fire frequency will clearly favor a potential conversion of more densely forested landscapes to open forests, or to shrublands. The evolutionary history of California[rsquo]s vegetation exhibits an [lsquo]alternative stable state[rsquo] coexistence dynamic involving conifers, hardwoods, shrubs, and grasslands, distributed throughout the regional landscapes in a [lsquo]shifting mosaic[rsquo] pattern through time (as summarized in Attachment A).

As a general comment about this and other management focuses for national forests in California, it seems to me that Region 5 needs to identify fuels management as an essential element for all individual national forests, and for Region 5 itself. A management program to address climate change and fire must include elements for monitoring fuels accumulations throughout the Region[rsquo]s forests. Future re-treatment of fuels in strategic landscape locations (including locations treated as part of the current program) should be identified as an essential element in managing future fires.6 Better fire and fuels management is an essential component of Forest Service landscape management in California. The amended National Forest Management Act provides explicit direction to maintain ecosystem functions and services on a landscape basis, which is perhaps the best overriding goal the Region could specify for managing NF landscapes.

Closing

Please incorporate the concerns addressed in this letter and its attached report into the NEPA assessment for the R5 Post-Disturbance Hazardous Tree Management Project. Thank you for your continuing commitment to conserving our public environmental resources. Please feel free to contact me if there are questions.

Sincerely,

Chad Roberts

Conservation Ecologist

Attachment A: CLIMATE CHANGE & FIRE ADAPTATION IN NORTHWESTERN CALIFORNIA NATIONAL FOREST LANDSCAPES

CHAD ROBERTS, PH.D.

P.O. BOX 2173 [bull] DAVIS, CA 95617

SENIOR ECOLOGIST (ESA) (EMERITUS) SENIOR PROFESSIONAL WETLAND SCIENTIST (SWS) (EMERITUS) 08 November 2021 USDA Forest Service Pacific Southwest Regional Office, Ecosystem Planning 1323 Club Drive Vallejo, CA 94592 https://cara.ecosystem-management.org/Public//CommentInput?Project=60950

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hardwoods resulting from sprouting and/or germination from an abundant seed-bank, and the effects of accumulating ground fuels as burned conifer fall. Any planting carried out to replace large areas of burned

conifers also contributes to these accumulated fuels. Long-term ecosystem management in California forests can[rsquo]t be planned or executed without attending to all these fuels.

As Coppoletta and her colleagues have noted, evidence is accumulating that this climate change-driven dynamic has a significant potential to alter conditions in our national forest landscapes, potentially leading to type-conversions to non-forest. This is a Region-wide issue that requires a coherent strategy for adapting to changing conditions; essentially, we need a [lsquo]planning[rsquo] framework for a Region-wide strategy, requiring that every national forest incorporate climate-change adaptation into its Land and Resource Management Plan (LRMP), including forest-specific Standards & Guidelines tailored to conditions on each forest. The primary focus of the LRMPs must be increasing and maintaining the sustainability and ecological integrity of the forested landscapes, as identified in the National Forest Management Act (NFMA) regulations in 36 CFR [sect]219. The Region has already identified [in the Bioregional Assessment of Northwest Forests (see below)] the importance of developing such a revised planning focus for the [lsquo]dry[rsquo] forests in the Klamath ecoregion, but the need is no less dire for the other national forests in California.

While an existing specification in Forest Service regulations implementing the NFMA (36 CFR [sect]219.15) directs that all national forests base decisions about proposed projects on the content of an adopted LRMP, current Forest Service NFMA regulations explicitly direct that FS decision-makers base their decisions on the [lsquo]best available science[rsquo] (36 CFR [sect]219.3, quoted here for reference):

"36 CFR [sect]219.3 Role of science in planning. The responsible official shall use the best available scientific information to inform the planning process required by this subpart. In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered. The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in [sect][sect] 219.6(a)(3) and 219.14(a)(4). Such documentation must: Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered."

When the adopted LRMPs are not consistent with current [lsquo]best available science,[rsquo] an internal conflict is created that must be resolved by having the appropriate Region 5 decisionmakers direct national forests to follow the current science rather than what[rsquo]s in the outdated LRMPs.

Moreover, even the current Trump-era CEQ regulations for implementing NEPA (40 CFR [sect]1500 et seq.) direct that federal agencies incorporate current science into the NEPA process when developing and approving projects:

"40 CFR [sect]1501.2 Apply NEPA early in the process.

"(a) Agencies should integrate the NEPA process with other planning and authorization processes at the earliest reasonable time to ensure that agencies consider environmental impacts in their planning and decisions, to avoid delays later in the process, and to head off potential conflicts.

"(b) Each agency shall:

"(1) Comply with the mandate of section 102(2)(A) of NEPA to utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man[rsquo]s environment, as specified by [sect]

1507.2(a) of this chapter." [hellip]

The scoping notice indicates explicitly that the individual forests, when implementing the proposed R5 hazard-tree project, incorporate elements from their existing LRMPs (see below). However, for many of these forests the LRMPs are based upon, and specifically direct that projects be

implemented consistently with, science and technical approaches developed between the 1960s and the early 1990s. For example, the MNF[rsquo]s current LRMP was adopted in 1995, incorporating amendments necessitated at that time by the then-recent adoption by the Forest Service of the Northwest Forest Plan (NWFP), addressing the then-understood ecological needs of the Northern Spotted Owl (NSO) and several aquatic species listed under the federal Endangered Species Act (ESA). [The LRMPs of all four national forests in northwestern California (the Klamath ecoregion forests, identified in the scoping notice as the [lsquo]northern zone[rsquo] forests) were adopted in the mid-90s, based upon the same science and the same set of mandates, and all four LRMPs suffer from similar misapplications of outdated information.]

The scoping notice does not require that the implementation of the proposed R5 project by these forests incorporate an understanding of current science relevant for management and decision-making developed by the Forest Service itself. In July 2020, the Forest Service regional offices for California (Region 5) and Washington and Oregon (Region 6) issued a document entitled the [lsquo]Bioregional Assessment of Northwest Forests[rsquo] (BioA)1 for public review. The BioA accompanies the 2018 Science Synthesis2 as a document on which the in-progress forest plan revisions for each of 19 national forests in Washington, Oregon, and northwestern California are to be based. The Science Synthesis and the BioA are thus identified by the Forest Service as the current scientific basis to be used in FS decision-making within the NWFP region.

Given the formal endorsement of the science in these published Forest Service summaries by the R5 and R6 offices, the conclusion is inescapable that the Klamath ecoregion forests should incorporate the contents of the Science Synthesis and the BioA as the science on which the R5 hazard-tree management project must be based in order to comply with current NEPA regulations, as well as in meeting the NFMA directive for information used in decision-making in 36 CFR [sect]219.3. The LRMPs of the three northern Sierra Nevada forests included in the R5 project were also adopted in the late 20th Century, at about the same time as the Klamath ecoregion forests[rsquo] LRMPs, and were largely based on the same or very similar science. Elements in all these LRMPs may be consistent with current best available science, but the LRMP Standards & Guidelines in the adopted LRMPs cannot be concluded to be consistent with current scientific understanding unless and until each standard and guideline is independently verified by comparison with practices that are consistent with current science (particularly, for the Klamath ecoregion forests, with the understanding reflected in the Science Synthesis and the BioA).

IV. Regional Assessment Must Differentiate Ecologically Different Forest Types Within the Region and Incorporate Effects of Climate Change and Increased Fire

The forests in the Klamath ecoregion are ecologically similar to forests in the Sierra Nevada, but there are regional differences in temperature and moisture gradients, substrate conditions, plant community composition, and forest structure that must be considered in addressing management requirements such as wildlife habitat requirements. For the Klamath ecoregion forests, a consideration of differences among forested ecosystems hosting the NSO across R5 (and R6)

emerges clearly from considering the altered understanding of the ecology of the Northern Spotted Owl reflected in the US Fish & Wildlife Service(USWFS, FWS) 2011 NSO Recovery Plan.3

At the time the Recovery Plan was adopted, the FWS already understood that the forested ecosystems occupied by the NSO differed throughout the owl[rsquo]s range (the history of this science through the first decade of the century is summarized in the Recovery Plan; an additional decade[rsquo]s worth of NSO-relevant science is covered in the Science Synthesis). The2011 NSO Recovery Plan identified a focus on [lsquo]dry forests,[rsquo] a different habitat type standing alongside the [lsquo]moist forests[rsquo] that had been the model for [lsquo]old growth[rsquo] NSO habitat when the NWFP (and consequently themid-90sKlamath ecoregion LRMPs)was adopted. [lsquo]Dry[rsquo] and [lsquo]moist[rsquo] forests differ in several significant ways, and have developed under substantially different [lsquo]disturbance regimes,[rsquo] particularly different [lsquo]fire regimes.[rsquo] [lsquo]Dry forests[rsquo] are also frequently characterized as [lsquo]frequent-fire forests,[rsquo] owing to the general relationship that exists between frequent low-or mixed-severity fires and the more open structure exhibited by these landscapes.

Characteristics of [lsquo]dry[rsquo] [lsquo]frequent-fire[rsquo] forests, and their relationships to forest management, are discussed in detail in the Science Synthesis and the Bio A (and in the scoping comments I provided to the MNF for the Plaskett-Keller Project). Those documents recognize, as does the FWS NSO Recovery Plan, that ecosystem composition, structure, and dynamic processes in [lsquo]dry forests[rsquo] are different from the composition, structure, and dynamic processes in the [lsquo]moist forests[rsquo] on which the original NWFP was based, and that current and future management of [lsquo]dry[rsquo] forests require a fundamentally different approach.

[For purposes of summarizing a number of important ecological processes occurring in the [lsquo]dry forests[rsquo] in the Klamath ecoregion, a summary of ecological relationships and management considerations initially submitted to the national forests in the Klamath ecoregion is attached and incorporated fully into this scoping comment (Attachment A: Climate Change & Fire Adaptation in Northwestern California National Forest Landscapes, dated March 2021). The summary reflects ecological processes that occur in all California forested landscapes, but is explicitly directed to ecological processes important for the Klamath ecoregion, including the Siskiyou region in southwestern Oregon. The degrees of similarity and difference between Klamath ecoregion landscapes and those in the central and southern Sierra Nevada are not unimportant, either scientifically or for management purposes, but a full characterization vastly exceeds the scope of this comment. Attachment A also incorporates extensive consideration of adapting Klamath ecoregion forested landscapes to the effects of increased fire and climate change; these elements are directly relevant to the scope of the R5 hazard-tree project, and should be addressed as a central element in the Region[rsquo]s approach.]

For the [lsquo]frequent-fire[rsquo] forests, the significance of post-fire fuels on subsequent wildfire fire severity[the specific focus of the Coppoletta et al (2020) JFSP report identified in the scoping documents] is clearly a necessary element to be considered in planning for the future. Relationships among snags, downed logs and other coarse woody debris, and future fires are fundamentally an important management issue raised when relying on the outdated LRMPs in the northern California forests, which assumed that low-and mid-elevation conifer forests were all [lsquo]moist forest[rsquo] with abundant coarse woody debris and abundant snags, in addition to dense, multistoried canopies. The outdated LRMPs consequently include Standards & Guidelines intended to retain abundant snags and coarse woody debris, which is directly contrary to the actual management approaches needed for [lsquo]dry[rsquo] [lsquo]frequent-fire[rsquo] forests.

For example, the MNF LRMP includes direction to provide 5-20 tons per acre of coarse woody debris, based on directions in the 1996 NWFP for wildlife habitat in what are now known to be [lsquo]moist[rsquo] forests. In NEPA assessments for fire-recovery projects after the 2018 Ranch Fire, fuels-management staff on the MNF identified the low end of the range (ca 5 tons/acre) as potentially consistent with managing the forest under warming climate and intensified fire regimes, although even 5 tons/acre was identified as being a higher loading than is desirable if the intent were to maintain fuels consistent with an increased fire regime.4

Such conflicts are clearly not desirable if the goal is to achieve long-term landscape sustainability in a time of warming climate and increasing fire. The direction provided by the existing MNF LRMP is not even consistent with the array of stand structures that are now considered to be ecologically typical of natural variability in [lsquo]old-growth[rsquo] [lsquo]frequent-fire[rsquo] forests, which have been identified as having generally been more open, typically with large, fire-resistant conifers in a matrix of grasses, shrubs, and/or hardwoods [see Reilly & Spies (2015), cited in Attachment A, and other discussion in Attachment A].

Recent scientific investigations of National Forest landscapes throughout the western United States (including the Science Synthesis and the BioA) support an overarching conclusion regarding adaptations for climate change and increased fire, particularly in overly dense [lsquo]dry[rsquo] [lsquo]frequent- fire[rsquo] forests: stand densities need to be reduced, then subsequently maintained at lower densities, to create ecological conditions that are more resilient in a hotter, dryer climate. It appears to me that Region 5 should explicitly identify reducing stand densities as a significant objective for every project enacted as part of the fire and fuels management program, including this one.

Attachment A (intentionally) doesn[rsquo]t address potential [lsquo]turnover thresholds[rsquo] or [lsquo]tipping points[rsquo] for fire and fuel dynamics in forested landscapes. However, evidence from recent large, high-severity fires has begun to indicate that [lsquo]tipping points[rsquo] may be important in determining future landscape compositions in western forested landscapes.5 The essential considerations in this model for future fires include these elements:

(i) Increased climate warming will lead to increasing future vapor pressure deficit/Climate Water Deficit, which will have an unavoidable effect in increasing the likelihood of fire in future landscapes, including an increased fire frequency and an expanding area burned each year;

(ii) An increased fire frequency and area burned will reduce the volume of fuels in forested landscapes; eventually the reduced availability of fuels will result in fuels-limited landscapes and a reduction in further burning;

(iii) Fuels limitation occurs because increased fire results in significant alterations in the dominant vegetation in the affected landscapes, with reduced tree cover and increased

dominance by shrubs and hardwoods, and a potential conversion of forests to shrublands, or even conversions from forests and shrublands to grasslands.

The national forests in California should consider the implications of the above dynamic as an alternative future. Increased fire frequency will clearly favor a potential conversion of more densely forested landscapes to open forests, or to shrublands. The evolutionary history of California[rsquo]s vegetation exhibits an [lsquo]alternative stable state[rsquo] coexistence dynamic involving conifers, hardwoods, shrubs, and grasslands, distributed throughout the regional landscapes in a [lsquo]shifting mosaic[rsquo] pattern through time (as summarized in Attachment A).

As a general comment about this and other management focuses for national forests in California, it seems to me that Region 5 needs to identify fuels management as an essential element for all individual national forests, and for Region 5 itself. A management program to address climate change and fire must include elements for monitoring fuels accumulations throughout the Region[rsquo]s forests. Future re-treatment of fuels in strategic landscape locations (including locations treated as part of the current program) should be identified as an essential element in managing future fires.6 Better fire and fuels management is an essential component of Forest Service landscape management in California. The amended National Forest Management Act provides explicit direction to maintain ecosystem functions and services on a landscape basis, which is perhaps the best overriding goal the Region could specify for managing NF landscapes.

Closing

Please incorporate the concerns addressed in this letter and its attached report into the NEPA assessment for the R5 Post-Disturbance Hazardous Tree Management Project. Thank you for your continuing commitment to conserving our public environmental resources. Please feel free to contact me if there are questions.

Sincerely,

Chad Roberts

Conservation Ecologist

Attachment A: CLIMATE CHANGE & FIRE ADAPTATION IN NORTHWESTERN CALIFORNIA NATIONAL FOREST LANDSCAPES