Via Web

January 20, 2015

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OBJECTION: FOUR FOREST RESTORATION INITIATIVE
FINAL ENVIRONMENTAL IMPACT STATEMENT AND DRAFT RECORD OF DECISION

Pursuant to 36 C.F.R. § 218, the Center for Biological Diversity ("Center") objects to the Final Environmental Impact Statement ("FEIS") and Draft Record of Decision ("DROD") for the Four Forest Restoration Initiative ("4FRI" or "project") in the Coconino and Kaibab national forests. Legal notice of opportunity to object published in the *Arizona Daily Sun* newspaper on December 4, 2014, making this objection timely. The Center provided specific written comment on March 14, 2011, on September 2, 2011, and again on May 29, 2013. Therefore, the Center may object per § 218.5.

Project name:	Four Forest Restoration Initiative
Deciding officials:	Forest supervisors, Coconino and Kaibab national forests
Project location:	Coconino County, Arizona
Proposed decision:	The most extensive action ever proposed on National Forest System lands includes mechanical logging and/or prescribed fire on approximately 586,110 acres over at least 10 years. DROD at 13-15; FEIS at 95-101 (Alternative C). It would construct 520 miles of new temporary road, reconstruct 40 road miles, and decommission 960 miles of existing road. DROD at 13. Amendments to the Coconino Forest Plan would add, remove and change standards and guidelines for management of Mexican spotted owl and northern goshawk. DROD at 15-16; FEIS Appendix B.

Objector: **Center for Biological Diversity**
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Objector's interest

The Center is a non-profit public interest organization headquartered in Tucson, Arizona, representing more than 50,000 members, many of whom maintain long-standing interests in management of the Coconino and Kaibab national forests. The Center implements its mission to conserve and recover imperiled fauna and flora and their habitats through science, education, policy and law. The Center is a founding stakeholder in the 4FRI and actively collaborated with the Forest Service throughout the planning process to make the project a reality on the ground.

The Center supports ecological restoration of dry conifer forests in northern Arizona. Events that followed European settlement around 1850 made forests less resilient to natural disturbances including wildland fire. Extensive logging removed old and large trees essential to fire resilience. Livestock grazing and fire exclusion promote dense forests packed with small trees that compete for sunlight, water and soil nutrients. Competition with conifers undermines fitness of grasses, forbs and seed-eating fauna. Stand-replacing fires stimulated by chronic drought, warming temperatures and homogenous forest structure compound long-term ecological changes and harm people. If the current trajectory of forest management continues unabated then ecological and social damages will escalate. Therefore, the Center is part of a broad consensus that active restoration of ponderosa pine forest is urgently needed in a highly stressed ecological system.

Members of the Center use and enjoy, and will continue to use and enjoy, the National Forest lands in the 4FRI project area for observation, research, aesthetic enjoyment and other scientific, educational and recreational uses. Center members actively observe and seek protection for at-risk species associated with forest habitats in the project area because they derive benefits from the existence of the full complement of biological diversity found in the wild places of Arizona. Forest Service violations of law and policy in the 4FRI would harm the Center's interests in recovery of threatened and sensitive species whose viability is in doubt. Violations discussed *infra* result in destruction of forest habitat and food resources for species that are at-risk of extinction. Direct, indirect and cumulative effects of the project harm the Center's interests in conservation of nature and recovery of imperiled wildlife.

Resolution

The reviewing officer may determine whether to discuss resolution. 36 C.F.R. § 218.11. In the Center's view, a final decision implementing the 4FRI project must:

- Comply with Coconino Forest Plan survey and inventory requirements for sensitive northern goshawk prior to implementation of project activities in suitable habitat.

- Require survey and inventory for goshawk prior to implementation of project activities in suitable habitat on the Kaibab National Forest.

- Adopt design features and/or Implementation Plan components to ensure compliance with Coconino Forest Plan guidelines for canopy cover under Amendment 2. *See* FEIS at 617-622 (description); 623-626 (applicability). The management assumption that canopy cover will remain within planning guidelines for each stratum of goshawk habitat requires validation in "upper" Vegetation Structural Stage ("VSS") 4 (mid-aged), 5 (mature forest) and 6 (old forest).

- Exempt from Amendment 2 to the Coconino Forest Plan 38,256 acres of goshawk habitat where there is a preponderance of upper VSS 4, 5 and 6 forests.[1]

- Include in Amendment 2 up to 2,500 acres recommended by the Arizona Game and Fish Department ("AGFD") as corridors for grassland wildlife (Rosenstock and Gist 2014).[2] Apply conservation measures for old growth and large trees within grassland corridors, such as a diameter cap.

- Retain canopy cover in VSS 4, 5 and 6 commensurate with habitat needs of goshawk and prey species in nest, family and forage areas on the Kaibab National Forest.[3] *See* FEIS at 621-622 (Table 112).

- Adopt design features and/or Implementation Plan components to ensure that vertical crown projection is measured using ground-based methods throughout the project area.

- Defer actions that would remove or degrade old growth forest (USDA 1996: 96).

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[1] This item is subject to the caveat that acres to be exempted from Amendment 2 may decrease slightly from what is proposed by the FEIS and DROD if the Forest Service adopts recommendations of the Arizona Game and Fish Department discussed *infra*.

[2] The eight-page AGFD white paper recommending change to the FEIS and DROD is attached to this letter for convenience.

[3] The Kaibab Forest Plan (USDA 2014) contains no desired condition, objective, standard or guideline for canopy cover in northern goshawk habitat, as discussed *infra*.

- Defer creation of so-called "interspace" openings in existing VSS 5 and 6 forests. Focus interspace creation in existing VSS 3 (young forest) and lower-VSS 4 groups.

- Defer Amendment 1 to the Coconino Forest Plan insofar as it would remove or replace language about monitoring of threatened Mexican spotted owl ("MSO"). *See* FEIS at 600-601 (Table 110).

- Include in the project decision and Implementation Plan a complete, repeatable and scientifically defensible plan to monitor treatment effects on MSO and its critical habitat, as required, but not described, by the U.S. Fish and Wildlife Service ("FWS") (USDI 2014) and the applicable Recovery Plan (USDI 2012).

- Defer actions that may adversely affect MSO or primary constituent elements of critical habitat until: (1) a project-specific monitoring plan is peer reviewed and fully funded; (2) protocol surveys establish that MSO is absent from the affected areas; and (3) the FWS issues a valid biological opinion for the project.

Reasons

1. Northern goshawk detection and viability

Northern goshawk is a sensitive species in the Southwestern Region whose viability is in doubt and demography is poorly known.

A. Coconino National Forest

The Coconino Forest Plan requires goshawk surveys prior to habitat modifying activities (USDA 1996). Based on surveys, the Forest Service must establish and map family areas that include six nesting areas per pair of nesting goshawks for known nest sites, old nest sites, areas where historical data indicates goshawks have nested in the past, and where goshawks have been repeatedly sighted over two years or more. The FEIS and DROD do not propose to amend that plan standard. Yet they admit that existing survey coverage of the project area is less than total, and fail to require goshawk survey prior to habitat modifying activities. *See* FEIS at 669-682 (wildlife design features and mitigation). Failure to survey precludes management understanding of shifts in goshawk demography and habitat use over the life of the project, rules out any reasonable possibility that new family areas may be established in the future, and forecloses proper application of guidelines and design features relevant to specific habitat strata including nest and family areas. In effect, nest and family areas that are known to exist today are <u>all</u> that are assured of being so managed. Therefore, the FEIS and DROD violate the Forest Plan and the National Forest Management Act ("NFMA").

B. Kaibab National Forest

The Kaibab National Forest revised its management plan in 2014. The revised plan contains no requirement to survey for northern goshawk prior to habitat modifying activities. Instead, it states that goshawk nest and family areas "should" be located (USDA 2014: 51-52). The revised Forest Plan is a significant retraction of planning standards that applied prior to the revision. An explanation for this change of management approach is needed given uncertainty about goshawk demography and habitat use over time. The lack of survey requirement eliminates any reasonable possibility that new nest or family areas may be established, and forecloses application of plan guidelines for the benefit of goshawk. The FEIS and DROD implement the revised Forest Plan. They admit that survey coverage of the project area is incomplete, and supply no assurance that nest and family areas known to exist today will be augmented if goshawks disperse. Like the Forest Plan itself, they violate the National Environmental Policy Act ("NEPA") and NFMA.

2. Canopy cover in goshawk habitat

Ponderosa pine forest treatments could result in significantly less canopy cover than needed to assure viability of the goshawk and its prey.

A. Coconino National Forest

Plan Amendment 2 would create a wholesale change in management of goshawk habitat. The Coconino Forest Plan identifies Reynolds and others (1992) as its scientific basis for goshawk guidelines. That technical report, like the plan itself, assigns canopy cover minima to VSS 4 through 6. And it defines **VSS** as a forest **"stand."** Therefore, the goshawk guidelines for canopy cover apply to stands, which are generally 10 acres or larger.

Plan Amendment 2 would shift canopy measurement from stands to **"groups"** less than one acre.[4] Cover would be retained only within groups, which may comprise as few as two trees per group. The result is far less forest canopy than needed to assure viability of the goshawk and its prey (USDA 1995, 2006). The FEIS and DROD fail to disclose the effect of this sea change in management approach to goshawk habitat, in violation of NEPA and NFMA.

B. Kaibab National Forest

[4] In notes of an Arizona Game and Fish Department Region II Commission Briefing dated July 27, 2007, attached for convenience, the Department stated, "The Management Recommendations for the Northern Goshawk in the Southwestern United States (GTR-RM-217) defines northern goshawk habitat through the structural habitat attributes of 14 of the hawk's prey species. The canopy cover data described for these prey species, and for the northern goshawk, were measured at the stand level – not the tree group level. By changing the canopy cover targets from the stand level to the group level, the Department is concerned that the Forest Service may not be meeting the habitat requirements for those 14 wildlife species, and also may not be meeting the habitat requirements for the northern goshawk per the 1996 Forest Plan Amendment."

The revised Kaibab Forest Plan has no component addressing canopy cover in goshawk habitat. It therefore repeals guidelines that the Forest Service had deemed important to goshawk and prey viability. The agency may apply best science, but where its own position shifts, it must explain why science previously held to be "best" is no longer so. The FEIS and DROD would implement the revised Kaibab Forest Plan without disclosing effects of the agency's change of direction for goshawk habitat, thereby violating NEPA.

3. Permanent openings in goshawk habitat

"Interspace" describes the mechanical removal of trees to create openings that are intended to be permanent. In the 4FRI, interspace would completely change the management approach to goshawk habitat with significant effects to viability.

A. Coconino National Forest

Coconino Forest Plan guidelines call for VSS distribution in ponderosa pine forest as follows:

- 10 percent VSS 1 (grass/forb/shrub).
- 10 percent VSS 2 (seedling-sapling).
- 20 percent VSS 3 (young forest).
- 20 percent VSS 4 (mid-aged forest).
- 20 percent VSS 5 (mature forest).
- 20 percent VSS 6 (old forest).

The plan and its underlying science (Reynolds et al. 1992) anticipate deviation by ± three (3) percent in each VSS class.

Plan Amendment 2 introduces a new concept of interspace, which is distinct from VSS. *See* FEIS at 618 (interspace is not VSS 1). Interspace is a permanent opening of up to four acres that separates tree groups as small as two trees per group. The FEIS and DROD do not disclose the extent of interspace to be created in the 4FRI project, in violation of NEPA, or its effect to wildlife viability, in violation of NFMA.

Interspace explodes prior management assumptions (USDA 1995, 2006) and replaces them with a void of information about effects to sensitive wildlife. The Forest Service previously stated twice that the VSS distribution formula described above ensures viability of goshawk and its prey. Red squirrel and six other vertebrate species respond negatively to interspersion of structural stages and require unbroken old forest habitat to persist (Reynolds et al. 1992: 18). The FEIS and DROD overlook prior scientific findings and impose interspace on up to 20 percent of the landscape without attention to species that may be adversely affected by new permanent openings, in violation of NFMA and NEPA.

B. Kaibab National Forest

The FEIS and DROD implement the revised Kaibab Forest Plan, which contains only vague desired conditions and objectives for ponderosa pine forest. For example, it does not say if tree groups should be more or less common than interspace, nor does it preclude interspace from complete domination of the landscape and exclusion of regenerating forest vegetation. Desired conditions call for group selection logging to create interspaces between small (<1 acre) tree groups (USDA 2014: 17). There is no requirement to retain old forest, and prior standards deemed by the Forest Service as important to species viability are jettisoned without explanation. The change of management approach is drastic. The Forest Service may apply best science, but contradictory or inconsistent findings must be addressed. The FEIS and DROD fail to address the change of management approach or its effects, in violation of NEPA.

4. Cumulative effects

A. Plan amendment

Plan Amendment 2 will change management of goshawk habitat. It will: (1) introduce interspace, which is distinct from VSS; and (2) retain canopy cover only in tree groups rather than in larger stands. The amendment is identical to similar plan amendments proposed by the Forest Service in every pending action on the Coconino National Forest affecting goshawk habitat.[5] This systematic, but piecemeal, effort to change goshawk management forest wide includes:

- The February 6, 2013, Decision Notice and Finding of No Significant Impact for the Clints Well project, which amended the Coconino Forest Plan to require interspace, count it separately from VSS, and measure canopy cover in tree groups.

- The February 15, 2013, Decision Notice and Finding of No Significant Impact for the Wing Mountain project, which amended the Coconino Forest Plan to require interspace, count it separately from VSS, and measure canopy cover in tree groups.

- The September 21, 2012, proposed action for the Mahan-Landmark project includes an amendment to Coconino Forest Plan standards and guidelines for goshawk habitat.

[5] The November 20, 2006, electronic mail of Mark Herron to Region 3 leadership regarding site-specific implementation of goshawk guidelines is attached for convenience. It states, "As much as we can, we are adapting current prescriptions to take into account interspaces between groups and we have adjusted these prescriptions to consider group size and how we look at groups … The original analysis and documentation generally looked at how we interpreted the goshawk guidelines in the forest plan in a different manner as we are currently looking at them. … This will lead to a much more open forest over time than previous interpretations of the goshawk recommendations in the forest plans would have."

- The May 2014 Draft Environmental Impact Statement for the Flagstaff Watershed Protection Project also would change Coconino Forest Plan standards and guidelines for goshawk habitat.

The Forest Service must account for the foreseeable cumulative effects of its systematic effort to change management direction for northern goshawk. The Center cannot save the agency from its errant responses to comment. The FEIS and DROD fail to address cumulative effects to viability, controversy, uncertainty, risk or precedent. NEPA forbids an uninformed approach to change of management direction.

B. Livestock grazing

The FEIS and supporting Wildlife Report mention that several grazing allotments overlap the project area and may affect some resources. But they contain no specific information about grazing activities or resource effects. The Center commented on May 29, 2013, "Livestock grazing may cause significant cumulative effects for several reasons ... The DEIS lists many grazing allotments in the project area, but it fails to take a hard look at significant cumulative impacts that may result from the project together with continued grazing and other activities." The Forest Service failed to meaningfully respond to the comment or improve upon the analysis of effects.

5. Old growth forest protection

Old growth forests provide irreplaceable ecological services including wildlife habitat, watershed function, soil retention and storage of greenhouse gasses. Most old growth forests in the project area were destroyed by logging. Stakeholders, including the Center, have repeatedly called attention to the importance of old growth forest protection in the 4FRI.

A. Coconino National Forest

The definition of "old growth" accounts for tree size and age, the number of live and dead trees, the number downed logs and canopy cover (USDA 1996). The Coconino Forest Plan states that no less than 20 percent of each "ecosystem management area" shall be managed as old growth. According to the Forest Service, the project area generally lacks for old growth. *See* FEIS at 57 ("Currently, the project area is deficit of mature and old forest (VSS 5 and 6)…").

The agency "allocates" old growth in the project area, but does not protect it from destruction. *See id*. at 733 (allowing old growth removal). It is impossible for a public reader of the FEIS to know how old growth will be affected by the project, or how much of it will remain after implementation. In violation of NEPA, the FEIS and DROD fail to disclose:

- Any method by which the Forest Service determined that "allocated" old growth meets plan requirements.

- Effects of project activities to existing old growth.

Old growth is less than 10 percent of the project area. *Id*. at 60. Therefore, the Forest Service cannot remove any additional mature or old growth trees, or large trees that may reasonably contribute to old growth in the future, until it demonstrates compliance with the Coconino Forest Plan. *See id*. at 976 ("The deficit of actual vegetative structural stage (VSS) 6 Old Forest is what makes vegetative structural stage (VSS) 4 and 5 Mid-age Forest and Mature Forest important"). To remove existing old growth clearly would violate the Forest Plan and NFMA.

B. Kaibab National Forest

The revised Kaibab Forest Plan (USDA 2014: 18) states a desired condition that "Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth" on landscape areas greater than 10,000 acres. And it has a guideline stating, "Project design should manage for replacement structural stages to assure continuous representation of old growth over time." *Id*. 30. As above, the FEIS and DROD fail to disclose any method by which the Forest Service determined that "allocated" old growth in the project area meets the planning guideline, in violation of NFMA and NEPA. Moreover, the agency fails to demonstrate compliance with a separate guideline stating, "Project 218.8design and treatment prescriptions should generally not remove […] [l]arge, old ponderosa pine trees with reddish-yellow, wide platy bark, flattened tops, with moderate to full crowns and large drooping or gnarled limbs…" *Id.*; *compare* FEIS at 733 (allowing old growth removal). The FEIS and DROD do <u>not</u> assure "continuous representation" of old growth, but allow its continued removal, in violation of NFMA.

6. Large tree retention alternative

On May 29, 2013, the Center commented on page 8 of its letter regarding the 4FRI,

> The Forest Service is in possession of the collaboratively-designed Old Growth Protection and Large Tree Retention Strategy ("Strategy") developed by public stakeholders, including the Center, for implementation in 4FRI forest treatment projects. The Strategy is an agreement-based outcome and product developed in recognition that translation of such agreement can greatly enhance the likelihood of successful implementation, and reduces the risk of conflict. *See* DEIS at 37 ("If the [Strategy] is not incorporated [into 4FRI], the current social support for landscape-scale restoration may be withdrawn. In addition, it may result in the removal of key ecosystem components that include nesting and roosting habitat and large woody debris that is important for wildlife."). Given the enormous commitment of stakeholder time and energy to collaborative development of the Strategy, and its clear importance to the Forest Service's ability to implement the project, it is reasonable to study, develop and describe in detail (rather than mention and dismiss) a stand-alone **<u>action alternative</u>** based on the entire Strategy as it was designed.[6]

[6] The May 29, 2013 DEIS comment letter from the Center is attached to this objection for convenience (*emphasis original*).

The Forest Service has never taken a hard look at effects to the environment that may result from implementation of the Strategy as it was proposed to the agency in good faith by collaborating stakeholders. *See* FEIS at 64 (Strategy written by stakeholders "was not analyzed in detail"). The agency has an arbitrary and capricious rationale for excluding the collaborative Strategy as an action alternative for implementation in the 4FRI project. The Center discussed that rationale in detail on pages 9-13 of its May 29, 2013 comment letter. However, the Forest Service did not respond to the Center's specific reasons stating why elimination of the Strategy is arbitrary and capricious. *See* FEIS at 999-1000 (response to comment on range of alternatives). Therefore, the FEIS and DROD violate NEPA.

7. Grassland connectivity

The Center commends to the Forest Service recommendations of Rosenstock and Gist (2014) wherein the Arizona Game and Fish Department describes benefits to grassland wildlife that may result from management of open forest conditions in specified corridors. Those recommendations should be accommodated in Amendment 2 to the Coconino Forest Plan with meaningful conservation measures to ensure retention of old growth and large trees, such as a diameter cap, in grassland areas.

8. 4FRI scope bigger than EIS

The U.S. Supreme Court stated the principle that if a government agency has not made a certain proposal, it cannot be forced to combine separate actions into an environmental impact statement. But the reverse of this principle is also true: when an agency has made a comprehensive proposal, it has no choice but to evaluate the entire proposal in an EIS. *See Kleppe v. Sierra Club*, 427 U.S. 390, 409 (1976).

The Center stated on May 29, 2013 many reasons why the FEIS and DROD should account for many prior NEPA decisions informing the "4FRI Phase I" contract. The Forest Service responded that this concern is "out of scope" for the project. FEIS at 998. That response is arbitrary and capricious for many reasons. For one, the Fish and Wildlife Service disagrees (USDI 2014).

9. Monitoring threatened Mexican spotted owl

The Endangered Species Act ("ESA") prohibits unauthorized take of listed species. Forest plans merit consultation with FWS regarding effects to listed species and critical habitats. The 4FRI implements the Coconino and Kaibab forest plans. Threatened Mexican spotted owl ("MSO") and its critical habitat are adversely affected by the 4FRI project on both forests.

The FWS previously required the Forest Service to report effects of its actions to MSO and critical habitat with no result. The Forest Service routinely evades monitoring MSO and appears poised to do the same in the 4FRI project.

In 1996, the FWS found "jeopardy" to MSO and adverse modification of critical habitat resulting from even-aged forest management and excessive Forest Service discretion (USDI 1996a). In response, the Forest Service amended forest plans in the Southwestern Region to enforce standards and guidelines based on recommendations of the FWS Recovery Plan (USDI 1995). The new standards and guidelines included MSO habitat protection and population monitoring (USDA 1996). The FWS determined that implementation of the new standards and guidelines would avoid jeopardy to MSO and adverse modification of critical habitat (USDI 1996b). In that biological opinion, the FWS stated that monitoring is a fundamental requirement of MSO recovery.

In 2005, the FWS stated that "no long-term monitoring has been initiated pursuant to the owl Recovery Plan." It required the Forest Service to monitor MSO populations as a condition of continued take of MSO. In 2008, the Forest Service admitted failure to monitor MSO populations and stated that it "likely" exceeded its incidental take permit for the threatened bird. In 2009, the Forest Service told the FWS that it could not monitor MSO take because it lacked capacity to do so.

In 2011, a federal court held the Forest Service in violation of the ESA for failing to monitor MSO. *Center for Biological Diversity v. U.S. Forest Service*, 2011 U.S. Dist. LEXIS 123320 (D. Ariz. 2011).

Large wildfires and related fire suppression activities since 2008 have adversely affected MSO and its critical habitat. The Forest Service commonly uses "back burns," construction of firelines and aerial deployment of chemical fire retardant that harm MSO, resulting in take.

In 2012, the FWS produced biological opinions and take statements for MSO that are specific to the Coconino and Kaibab national forests, respectively. The FWS omitted from those opinions and statements mandatory terms and conditions, as were required in the 2005 opinion and take statement regarding implementation of forest plans, particularly with regard to MSO population monitoring. It did so without explanation for the change. Instead, the FWS only required reporting of incidental take (*i.e.*, PAC disturbance) where it may occur. More, the FWS broke precedent and fragmented its consultation on MSO by issuing separate opinions and take statements for each national forest, citing difficulties in tracking of take. As a result, the newer forest-specific biological opinions fail to account for range-wide impacts to MSO and its critical habitat, and none requires monitoring of MSO population or habitat trends.

Amendment 1 to the Coconino Forest Plan in the 4FRI FEIS and DROD absolves the Forest Service from monitoring MSO populations. In it, the Forest Service accepts monitoring requirements that the FWS may impose in a biological opinion. However, the FWS opinion for the 4FRI project defers to the Forest Service for a monitoring plan. Neither agency takes responsibility for monitoring effects to MSO, in violation of the ESA and NFMA.

Likewise, the Kaibab Forest Plan (USDA 2014) lacks any binding requirement to monitor MSO populations. It punts to the FWS on monitoring. The FWS, in turn, defers to the Forest Service (USDI 2014). No agency takes responsibility to monitor effects of the 4FRI project to MSO.

The Forest Service has admitted failure to monitor owl populations and habitat needed for delisting, as required by the ESA and NFMA. Monitoring of MSO is required to avoid jeopardy and adverse modification, and to assure viability.

The project decision, the Implementation Plan and the FWS biological opinion should contain a complete monitoring plan, including a description of study design and protocols. The Center repeatedly commented that a monitoring plan should be made available for public review before a decision is made to implement the 4FRI project. **We have specific questions regarding the monitoring plan for MSO, including but not limited to:** (1) criteria for selection of paired treatment and control sites; (2) criteria for selection of measurable indicators of change; (3) sampling design power analysis and expected observational error rates; (4) sampling procedures including monitoring cycle; (5) confidence levels to be applied in data analysis and reporting; (6) timeframe for evaluation of results; and (7) triggers for management adaptation using new information.

Please notify me of your decision on this objection, or contact me to discuss resolution at the addresses or phone number shown below.

Sincerely,

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Att.

REFERENCES

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CENTER for BIOLOGICAL DIVERSITY Because life is good.

Via Web

May 29, 2013

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RE: Four Forest Restoration Initiative Draft Environmental Impact Statement

This letter provides comment from the Center for Biological Diversity ("Center") on the Draft Environmental Impact Statement ("DEIS) for the Four Forest Restoration Initiative ("4FRI" or "project") on the Coconino and Kaibab National Forests. The Center is a non-profit public interest organization with offices nationwide, including in Flagstaff and Tucson, Arizona, representing more than 500,000 members and supporters dedicated to the conservation and recovery of fauna and flora at-risk of extinction. The Center is a founding stakeholder in the 4FRI and it previously supplied the Forest Service with detailed scoping comment letters dated March 14, 2011, and September 2, 2011, respectively, each of which responded to different versions of a proposed action for this project.[1] This comment is timely because the notice of availability published in the *Federal Register* states that the comment period shall end on May 29, 2013. *See* 78 Fed. Reg. 19261 (Mar. 29, 2013).

Purpose and need

The Center strongly supports the Forest Service's stated goal of ecological restoration of Mogollon Plateau ponderosa pine forests. European settlement and management of the region since the mid-1800s precipitated significant changes that have made forests less resilient to natural disturbances including wildland fire and insect outbreaks. Historic logging severely depleted the number and distribution of old and large trees. Livestock grazing and fire suppression continue to encourage unnaturally dense stands of small trees, resulting in elevated competition for available sunlight, water and soil nutrients, decreased abundance and diversity of understory grasses and forbs, and increased density of hazardous fuels. These changes promote stand-replacing crown fires of increasing extent that compound ecological change to the detriment of human communities and native species populations. If the current trajectory of anthropogenic change to the landscape continues, ecological damage will accumulate and, with global climate change, likely accelerate. Therefore, the Center is part of a broad scientific, social

[1] The March 14, 2011, and September 2, 2011, scoping comment letters from the Center responding to different versions of a proposed action for this project are attached to this letter for convenience.

and political consensus that restoration of ponderosa pine forests is necessary and urgent to conserve the ecological systems upon which human society and biological diversity commonly depend.

In our view, the 4FRI must strategically integrate community protection, ecological restoration, fire management and biodiversity protection in a landscape context. A centrally important desired outcome of these efforts is to facilitate the safe re-establishment and long-term management of ecologically beneficial fire regimes. Because fire regimes naturally track variability in climate, and because fire plays a keystone ecological role shaping forest structure and composition, ecological restoration that leads to the re-establishment of natural fire regimes at landscape scales will allow forest changes to track climate change over time and promote forest resilience. Coupled with other restorative management, strategic reduction of small tree density and planned burning will reduce the potential for rapid, widespread forest dieback amid foreseeable climate change and large-scale fires. The release of heavily managed forests into a self-regulating, disturbance-maintained condition is fundamentally different than the industrial "sustained yield" forestry model that caused the existing degraded condition of ponderosa pine forests. It will yield ecological benefits including heterogeneity, adaptation, carbon sequestration and conservation of native biological diversity in the coming century.

It is also necessary to inform restoration treatments with spatially explicit landscape-scale assessment of where unplanned fires can be actively managed for resource benefits in order to ensure that treatments are efficiently prioritized to accomplish multiple objectives—including community protection, wildlife habitat protection and restoration of ecological processes. The project should integrate community protection with ecological restoration and combine fire management objectives with vegetation treatments at localized scales. Linking project-scale treatments with fire management at a landscape scale will increase the probability that management will successfully establish functional fire regimes at minimum cost while providing for public safety.

Given the above, the Center regards the 4FRI project as a potentially beneficial activity insofar as vegetation treatments at strategic locations can facilitate landscape-scale restoration of fire-adapted ecosystems. Fire use is essential to forest restoration and a key ingredient of the purpose and need (Allen et al. 2002, Falk et al. 2006). Foreseeable climate change and chronic drought are likely to influence wildland fires to become larger and more frequent at a landscape scale (Running 2006, Seager and Vecchi 2010, Westerling et al. 2006). In the absence of active fuel management and fire use for resource benefits on short rotations compared to the era of total fire suppression, the Forest Service manages landscapes for large-scale, high-intensity fires that outrun suppression resources in extreme weather and create unnecessary management expense and unacceptable risks to human life and resource values. We encourage the Forest Service to design the project to promote fire use for resource benefits while providing for public safety. Adverse effects of fire control practices to the environment are well documented (Backer et al. 2004) and should be analyzed and disclosed where proposed treatments are designed to increase the effectiveness of fire suppression.

A proactive landscape-scale restoration approach must deal with fundamental ecological problems by addressing their root causes. Ultimately, forest structure and fire regime must be

restored in an integrated way (DellaSala et al. 2004). In ponderosa pine forest, this means emphasizing landscape-scale use of fire as the primary self-sustaining regulatory process that will naturally promote ecosystem adaptation and resilience to inevitable disturbances and effects of climate change—and then scaling down to coordinated project-level actions including fuel treatments that accomplish landscape-level objectives (Peterson and Johnson 2007). The environmental analysis should demonstrate that the project fits into a coordinated management strategy. This is best accomplished through spatial modeling of potential fire behavior and treatment effects under conditions that include both severe and moderate (*e.g.*, 97th and 85th percentile) fire weather, as well as different configurations of potential treatments (see "fuel treatments" below). Such analysis will provide ample basis for study and development of action alternatives that consider variable fuel treatment intensities and orientations to give the decision-maker and the public a meaningful basis for comparison of environmental impacts that may result.

EIS requirements

The DEIS is expected to be the only analysis of significant environmental impacts that may result from proposed forest treatments on 587,923 acres over a 10-to-20 year period on two national forests. However, it is so broad in scope that it cannot provide information necessary for the public to understand even basic facts about how treatments will affect forest structure (e.g., tree densities, size class distributions, regeneration openings, interspaces, canopy cover). The lack of site-specific analysis in the DEIS limits the public's ability to raise issues about environmental impacts and precludes those issues from being addressed through meaningful comparison of action alternatives by the decision-maker. The alternatives differ only by the acreage to be affected by a similar menu of treatments, and they contain identical forest plan amendments, which precludes comparison of effects to threatened and sensitive species. *See* DEIS at 62 (alternatives summary). For example, in scoping comments, the Center specifically asked the Forest Service to "develop a proposed action that is sufficiently specific to facilitate meaningful public comment, issue identification and alternative development." As shown below, the DEIS does not provide the requested level of specificity, and it fails to meet requirements of the National Environmental Policy Act ("NEPA").

The Forest Service intends the 4FRI to cover 2.4-million acres on four national forests. Given its enormous and unprecedented scale, the 4FRI should be analyzed in a programmatic environmental impact statement with a decision to be followed by tiered, site-specific analysis of planned treatments at smaller scales. The 4FRI is a comprehensive management proposal warranting analysis in a programmatic EIS, after which site-specific environmental impacts of implementation plans should be studied and disclosed in tiered analysis following NEPA procedures. The U.S. Supreme Court stated the principle that if a government agency has not made a certain proposal, citizens cannot force the agency to combine several truly separate projects into a single environmental impact statement; but the reverse of this principle is that when an agency has made a comprehensive proposal, it has no choice but to evaluate the entire proposal in an EIS. *See Kleppe v. Sierra Club*, 427 U.S. 390, 409 (1976).

We are concerned that the scale of this DEIS precludes the Forest Service from meeting NEPA requirements without a commitment to subsequent site-specific NEPA analyses that are tiered to the programmatic EIS. *See Salmon River Concerned Citizens v. Robertson*, 32 F.3d 1346 (9th Cir. 1994) (court upheld EIS because the government made clear it would prepare site-specific assessments "tiered" to the programmatic analysis); *Marble Mountain Audubon Soc. v. Rice*, 914 F.2d 179, 182 (9th Cir. 1990) (site-specific impacts must be addressed in individual NEPA documents tiered to broader planning documents if the latter do not address such impacts); *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) ("Nor is it appropriate to defer consideration of cumulative impacts to a future date"); *Nat'l Parks Conservation Assoc. v. Babbitt*, 241 F.3d 722 (9th Cir. 2001) (requiring disclosure of environmental impacts in NEPA analysis "before a decision that may have a significant adverse impact on the environment is made"); *also see* 40 C.F.R. 1500.1(b), 1502.5, 1506.1. To comply with NEPA, the Forest Service should have prepared one comprehensive EIS for the entire 4FRI program (rather than segmenting its analysis into component parts) to be followed later by site-specific NEPA analyses.

Moreover, the Forest Service was required to prepare the comprehensive EIS for the 4FRI program before awarding the "Phase 1" contract to Pioneer Forest Products. *See* 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken"); 1501.2 ("Agencies shall integrate the NEPA process with other planning at the earliest possible time"); 1502.2(g) ("Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made"); 1502.5 (the EIS "shall be prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made"). No prior NEPA analysis or decision for the component 4FRI projects named in the Pioneer contract states their connection to, similarity with, or cumulative effects of the overall 4FRI program. As a result, significant cumulative effects to the environment remain undisclosed.

"A programmatic [EIS] is a broad-based, long range plan that discusses the overall environmental impacts of a proposed action." *City of Tenakee Springs v. Block*, 778 F. 2d 1402, 1403 n.1 (9th Cir. 1985) (citing *Nat'l Wildlife Fed. v. U.S. Forest Serv.*, 592 F. Supp. 931, 940 n. 17 (D. Or. 1984)), amended on other grounds, *Nat'l Wildlife Fed. v. U.S. Forest Serv.*, 643 F. Supp. 653 (D. Or. 1984), order vacated in part, appeal dismissed in part, *Nat'l Wildlife Fed. v. U.S. Forest Serv.*, 801 F.2d 360 (9th Cir. 1986). Council on Environmental Quality ("CEQ") regulations implementing NEPA establish a process of "tiering," in which agencies prepare a broad impact statement and subsequently narrow the focus of NEPA analysis to account for site-specific impacts that may result from implementation of a programmatic management decision. *See* 40 C.F.R. §§ 1502.20, 1508.28. The first tier in NEPA analysis is the programmatic EIS, which "should focus on broad issues such as mode choice, general location and [] land use implications...," and reflect the "broad environmental consequences" of the choice to be made. *Nat'l Wildlife Fed. v. Appalachian Regional Comm'n*, 677 F.2d 883, 888 (D.C. Cir. 1981) (a programmatic EIS was not required for a large scale highway project where site-specific impact statements were being conducted). The second tier includes analysis that discloses site-specific environmental impacts. *See* 40 C.F.R. § 1508.28. In our view, this style of "tiered" NEPA

analysis is ideally suited to the hierarchical planning, implementation and monitoring needs of the 4FRI.

Actions that are closely related, similar in timing or geography, and/or which may have cumulatively significant impacts to the environment must be analyzed together in a single EIS. The CEQ regulations "define the circumstances under which multiple related actions must be covered by a single EIS." *Thomas v. Peterson*, 753 F.2d 754, 758 (9th Cir. 1985). "Agencies shall use the criteria for scope (1508.25) to determine which proposal(s) shall be the subject of a particular statement. Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." 40 C.F.R. § 1502.4(a). The Ninth Circuit interprets this regulation to mean that, while agencies should be given "considerable discretion" in defining the scope of NEPA analysis, they are required to consider more than one action in a single EIS if they are part of a single proposal or are "connected actions," "cumulative actions," or "similar actions." *Native Ecosystem Council v. Dombeck*, 304 F.3d 886, 893-4 (9th Cir. 2002). The 4FRI meets the criteria for a single EIS.

CEQ regulations also prohibit agencies from breaking a project down into small component parts in an attempt to avoid disclosing significant environmental impacts. 40 C.F.R. § 1508.27(b)(7). "[T]here are situations in which an agency is required to consider several related actions in a single EIS. Not to require this would permit dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." *Thomas v. Peterson*, 753 F.2d at 758; *also see West Chicago v. U.S. Nuclear Regulatory Comm'n*, 701 F.2d 632, 650 (7th Cir. 1983) ("'[S]egmentation' allows an agency to avoid the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by segmenting an overall plan into smaller parts involving action with less significant environmental effects.").

On May 18, 2012, the Forest Service awarded a contract to Pioneer Forest Products for implementation of "Phase 1" 4FRI treatments on 300,000 acres in four national forests.[2] Contracting documents provide evidence of the "comprehensive" nature of the 4FRI effort reaching beyond the scope of actions and environmental impacts considered in the DEIS now at comment, which considers only a portion of the 4FRI program in an area of less than one million acres on two national forests. They raise questions about inappropriate segmentation of NEPA analysis.[3] In a similar case, the Forest Service violated NEPA by breaking down its overall post-fire management strategy for the Umatilla National Forest into smaller individual projects:

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[2] *See* the May 18, 2012, news release of the Forest Service stating, "Pioneer Forest Products was selected as the contractor to perform treatments on the Coconino, Kaibab, Apache-Sitgreaves and Tonto national forests in northern Arizona," attached to this letter for convenience.

[3] *See* the 2011 Request for Proposals ("RFP") document issued by the Forest Service for "Phase 1 of Four Forest Restoration Initiative, Apache-Sitgreaves, Coconino, Kaibab, and Tonto National Forests," attached for convenience. It states on page 2, "The Four Forest Restoration Initiative (4FRI) is a landscape level project that aspires to restore approximately 2.4 million acres of ponderosa pine forests on portions of the Apache Sitgreaves, Coconino, Kaibab, and Tonto National Forests in Northern Arizona over the next 20 years," and further, "Some NEPA decisions have already been completed and those treatment units will provide the initial set of task orders that will be issued after award of the resulting contract(s). Environmental analysis for the remaining area of the resulting contract(s) is currently in progress with a Record of Decision expected in April 2012." On page 7, the

> Here, however, all of the proposed sales were reasonably foreseeable. They were developed as part of a comprehensive forest recovery strategy. In fact, all five sales were disclosed by name to a coalition of logging companies, along with estimated sale quantities and timelines even before the Big Tower EA was completed. At the very least, these sales raise substantial questions that they will result in significant environmental impacts. A single EIS, therefore, was required to address the cumulative effects of these proposed sales.

Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1215 (9th Cir. 1998). As in that case, 4FRI contracting documents clearly demonstrate that the 4FRI is a "comprehensive" proposal that includes foreseeable actions and impacts that are outside the scope of this DEIS. Indeed, the contract itself contradicts the stated position of the Forest Service that it has "insufficient information for analysis" of potentially significant cumulative effects of 4FRI activities in the other two national forests. DEIS at 697 ("The Four-Forest Restoration Initiative, Apache-Sitgreaves NFs and Tonto NF, has no tangible information that would be meaningful for this cumulative effects analysis."). The reason given for failing to consider and disclose cumulative effects is contrary to available facts and it is unreasonable. Agencies are required to ensure professional integrity of NEPA analysis. *See* 40 C.F.R. § 1502.24.

The Forest Service was required to prepare one comprehensive EIS for entire 4FRI program before awarding the "Phase 1" contract to Pioneer Forest Products. *See Metcalf v. Daley*, 214 F.3d 1135 (9th Cir. 2000); 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken"); 1501.2 ("Agencies shall integrate the NEPA process with other planning at the earliest possible time"); 1502.2(g) ("Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made"); 1502.5 (the EIS "shall be prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made"). None of the prior NEPA analysis or decision documents for contracted 4FRI projects on the Apache-Sitgreaves or Tonto national

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RFP specifies that the contract will include treatments on "up to 24,000" acres of the "TAS working circle," which it defines on page 3 to include the Payson Ranger District of the Tonto National Forest and the Black Mesa Ranger District of the Apache-Sitgreaves National Forests. Further, the RFP states on page 11, "The general location of this project is northern and eastern Arizona within the boundaries of the Kaibab, Coconino, Apache-Sitgreaves, and Tonto National Forests. Site specific locations will be provided on maps attached to each task order. It is anticipated that most of the task orders during the ten year contract term will be located within the area identified for the first EIS, displayed on 'First EIS Area' map. The first task orders for the first several years use existing project areas on all four forests." On page 12, the RFP displays a schedule of task orders for treatments in 2013 and 2014, which includes 1,000 acres in the "Christopher" (1,000 acres) and "Myrtle" (1,000 acres) project areas on the Tonto National Forest and in the "Timber Mesa" (10,000 acres) and "Rim Lakes" (5,000 acres) project areas on the Apache-Sitgreaves National Forests. In addition, the May 18, 2012, contract (AG-8371-C-12-0001) between the Forest Service and Pioneer Forest Products contains similar or identical statements to those quoted above regarding the scope of work under the project entitled, "Phase 1 of Four Forest Restoration Initiative, Apache-Sitgreaves, Coconino, Kaibab, and Tonto National Forests" (see esp. pp. 11-12). Appendix E of the contract on pages 11-12 also references comprehensive timber cruise data for all Phase 1 project areas, as well as maps of the project areas, including those listed above in the Apache-Sitgreaves and Tonto forests.

forests (*i.e.*, Christopher, Myrtle, Timber Basin and Rim Lakes) states their connection to, similarity with, or cumulative effects of the 4FRI program.

Alternatives

The DEIS identifies five "significant issues," each of which are suitable for comparison of action alternatives to inform the decision-maker and the public about the range of significant environmental impacts that may result from the project. However, it proposes three action alternatives that are virtually identical except for the acreage proposed to be affected by a common suite of treatments and forest plan amendments. For example, no alternative would implement the Coconino and Kaibab Forest Plans as they currently exist. This is a matter of concern to us because the plan amendments would jettison many standards and guidelines that are designed to ensure continued viability of threatened and sensitive species and old growth forests (USDA 1996). Lacking an action alternative that would implement the project without amending those standards and guidelines, the DEIS presents no basis for the public to understand the significance of impacts that may result from the amendments themselves. In addition, the Forest Service unreasonably excluded alternatives that meet the purpose and need for action while addressing the significant issue of large tree conservation, as explained below. By failing to rigorously explore and objectively evaluate all reasonable alternatives in the DEIS, the Forest Service violated NEPA. 40 C.F.R. § 1502.14(a).

Large trees

Most old growth forests that historically existed in the project area and throughout the Southwestern Region were eliminated by logging (Covington and Moore 1994). The ecological significance of old growth habitat and large trees that comprise their structure is amply documented (*e.g.*, Friederici 2003, Kaufmann et al. 1992). Large tree removal is not necessary or beneficial to restoration of fire-adapted forest ecosystems (Arno 2000, Allen et al. 2002).

Landscape-scale assessment of ecological conditions and wood supply in ponderosa pine forests of northern Arizona identified a "zone of agreement" in which forest management is likely to proceed with little or no controversy (Hampton et al. 2008). To comply with NEPA, 40 C.F.R. § 1502.14, and better meet the purpose and need for this proposal, the Center encourages the Forest Service to study, develop and describe action alternatives in detail that maximize retention of existing large trees (>16-inches diameter) outside of a wildland-urban interface ("WUI") zone that includes forest lands located one-quarter (¼) mile distant from established residential and other essential community infrastructure.

Live conifer stems larger than 16-inches diameter are extremely rare at a landscape scale in ponderosa pine forests of the Southwestern Region. According to Forest Service data, live trees larger than 16-inches diameter comprise approximately three percent (3%) of ponderosa pine forests in Arizona and New Mexico (USDA 1999, USDA 2007a). The same data indicate that more than eighty-two percent (82%) of ponderosa pines in the region are smaller than 11-inches diameter; approximately ninety-six percent (96%) are smaller than 15-inches; and less than one-tenth of one percent (.01%) are larger than 21-inches (Table 1). Clearly, the size distribution of trees is heavily skewed toward small-diameter stems, and this condition is

Table 1. Tree size class distribution in southwestern ponderosa pine forests.

Size class	Distribution
< 11 inches dbh	82%
< 15 inches dbh	96%
> 16 inches dbh	3%
> 21 inches dbh	0.1%

Source: Forest Inventory and Analysis National Program
Forest Inventory Data Online (FIDO). http://www.fia.fs.fed.us/tools-data/

dramatically different from historical conditions (Fulé et al. 1997). Given the rarity of large trees and the overabundance of small trees, a high burden of justification applies to a proposed action that would remove trees larger than 16-inches diameter in a project framed around a purpose and need to increase forest resiliency. *See* DEIS at 8-9; *also see id*. 675 (large and old trees are "rare" in the project area).

The Forest Service is in possession of the collaboratively-designed Old Growth Protection and Large Tree Retention Strategy ("Strategy") developed by public stakeholders, including the Center, for implementation in 4FRI forest treatment projects.[4] The Strategy is an agreement-based outcome and product developed in recognition that translation of such agreement can greatly enhance the likelihood of successful implementation, and reduces the risk of conflict. *See* DEIS at 37 ("If the [Strategy] is not incorporated [into 4FRI], the current social support for landscape-scale restoration may be withdrawn. In addition, it may result in the removal of key ecosystem components that include nesting and roosting habitat and large woody debris that is important for wildlife."). Given the enormous commitment of stakeholder time and energy to collaborative development of the Strategy, and its clear importance to the Forest Service's ability to implement the project, it is reasonable to study, develop and describe in detail (rather than mention and dismiss) a stand-alone **action alternative** based on the entire Strategy as it was designed.[5]

[4] The DEIS references the September 13, 2011, "Old Growth Protection and Large Tree Retention Strategy" document collaboratively developed by 4FRI stakeholders, including the Center, and it is part of the planning record for this project. *See* DEIS at 379.

[5] The agency has never taken a hard look at effects to the environment that may result from implementation of the Strategy as proposed by the public.

The DEIS eliminates from consideration an alternative that would "utilize the original large tree retention strategy." DEIS at 48; *also see id*. 56 (alternative based on stakeholder Strategy "was not analyzed in detail"). Instead, Alternative C incorporates "key components" of the Strategy in its "implementation plan." *Id*. 47; *also see id*. 48 ("A modified version of the original stakeholder developed large tree retention strategy is only applicable to the implementation plan in alternative C") (emph. added).

In the implementation plan for Alternative C, the Forest Service selectively interprets and significantly revises the Strategy. In particular, the agency misapplies its precautionary "exception categories" for large tree removal as affirmative commands to mine large trees from the landscape. *See id*. 708-709 ("Exception categories include the WUI and the following ecological sites where young tree encroachment is inhibiting ecological function: seeps and springs, riparian areas, wet meadows, grasslands, aspen forest and woodland, pine-oak forest, within-stand openings, and heavily stocked stands (with a high basal area) generated by a preponderance of large, young trees. Elsewhere, those trees would be retained…"). The Forest Service's interpretation of the Strategy ignores the express intent of 4FRI stakeholders that old growth forest should be retained in all instances and large, post-settlement trees generally should be retained in most instances except where explicitly defined circumstances, ecological objectives and selection criteria apply at site-specific scales. The stakeholders plainly did not intend to apply a blanket exemption to the Strategy in all of the contexts listed by the Forest Service (4FRI Stakeholders 2011: 3) ("'The Path Forward'—a foundational document of the 4FRI—calls for blanket old growth protection, regardless of tree size. It states that, 'No old-growth trees (pre-dating Euro-American settlement) shall be cut.' The document also includes broad recommendations for retaining large post-settlement trees with some carefully specified exceptions."). The implementation plans for Alternative C related to old trees and large trees contain none of the criteria proposed by the stakeholders, and replace them with "desired conditions" that allow unlimited management discretion to remove old and large trees. *See* DEIS at 644 ("Exceptions would be made for threats to human health and safety, and those rare circumstances where the removal of an old tree is necessary in order to prevent additional habitat degradation."); 646 ("There may be additional areas and/or circumstances where large post-settlement trees need to be removed in order to achieve restoration objectives."). As a result, the Forest Service has divided the 4FRI stakeholders on the question of whether to support the agency's reinterpretation of the collaborative Strategy, which may result in jeopardy to the project.

The Forest Service advances an arbitrary and capricious rationale for excluding the collaborative Strategy as an action alternative from this DEIS. The first reason given is that it would not allow creation of "regeneration openings" in two of the eight ecological settings that comprise "exception categories" (*i.e.*, within-stand openings and stands dominated by large, post-settlement trees). *Id*. 57. The DEIS fails to explain why regeneration openings need to be created in those ecological settings. It demonstrates that large trees are extremely rare in the project area. *See id*. 12-13 (Tables 4 and 5 showing deficit of VSS 5 and VSS 6 distribution relative to forest plan desired conditions); *id*. 12 (in "all stands" of ponderosa pine forest outside of goshawk post-fledging areas ("PFA"), "[T]he young and mid-aged forest structural stages are surplus, and the grass/forb/shrub, seedling/sapling, mature, and old forest stages are deficit relative to forest plan direction," and PFA habitat is dominated by "young and mid-aged forest

structural stages with very little representation of the other structural stages. VSS 3 and 4 are overrepresented and VSS 1, 2, 5, and 6 are deficit."). Created openings that remove large trees from existing VSS 5 and VSS 6 structural stages will exacerbate the deficit of mature and old forest in the project area, perpetuate the "imbalance of size classes," undermine "movement toward sustaining the older, larger trees," and hinder "tree recruitment into the largest size classes." *Id*. 57.

The agency's appeal to forest plan requirements for "within stand openings" as a basis for excluding the Strategy as an action alternative in this DEIS is particularly specious because the project-specific desired conditions that drive treatment design in all of the action alternatives are based on proposed forest plan amendments. *See id*. 61 ("crosswalk" analysis); 64 (Alternative B plan amendments); 81-82 (Alternative C plan amendments); 88-89 (Alternative D plan amendments); 440 (Table 91 displaying forest plan amendments for all action alternatives that (1) add desired percentage of interspaces within uneven-aged stands, (2) add interspaces distance between tree groups, (3) add language regarding canopy cover measurement, (4) allow 29,017 acres on Coconino NF and 27,637-to-27,675 acres on Kaibab NF to be managed for open reference condition, and (5) add definition to forest plan glossaries for the terms, "interspaces," "open reference condition," and "stands."). The forest plans, as they are currently written, contain no direction regarding "interspace" and "open reference condition." The Forest Service fails to articulate any divergence of the collaborative Strategy from desired conditions in the existing forest plans or, in the alternative, to propose plan amendments that would accommodate implementation of the Strategy and a hard comparative look at environmental impacts. Staking action alternatives on proposed amendments to the forest plans while eliminating the Strategy from detailed consideration as an action alternative based on alleged plan violations unsupported by the analysis is arbitrary and capricious.

The second reason given for eliminating the Strategy as an action alternative is because the Forest Service does not wish to consult stakeholders "should a new exception category be found during implementation." *Id*. The agency introduces the possibility of a "new exception category," but the Strategy does not address this possibility. Rather, it states, "[T]he stakeholder group considers the guidance offered for these exception categories sufficient to operationalize large tree retention/removal per these criteria across the 4FRI area" (4FRI Stakeholders 2011: 25). The Strategy holds out the possibility that, "The 'Large Young Tree' exception category listed in this document will require additional collaborative analysis and clarification," but it clearly does not anticipate the emergence of any "new exception category" during implementation. *Also see* DEIS at 58 (54,358 acres of project area outside of Strategy exception categories "do not necessarily mean a new category has to be developed," and "based on the vegetation data [] these acres could be moved toward desired conditions without needing to cut trees larger than 16-inch d.b.h."). Once again, the Forest Service arbitrarily distorts the Strategy and fails to supply a good-faith response to controversy over the removal of large and old trees.

The third reason given for excluding the Strategy as an action alternative is because "[M]ovement toward the desired condition in pine-oak was constrained to [Mexican spotted owl] habitat. This would preclude moving toward desired conditions in non-MSO habitat." DEIS at 57. In fact, the Strategy includes exception criteria for large tree removal in pine-oak forest both "in MSO restricted habitat" and "outside MSO restricted habitat" (4FRI Stakeholders 2011: 20).

Apart from its clearly false characterization of the Strategy regarding pine-oak forest, the Forest Service fails to recognize its own definition of "restricted areas" under the amended Forest Plans (USDA 1995), which "include all mixed conifer, pine-oak, and riparian forests outside of protected areas" (Fletcher et al. 2012: 31) (emph. added); *also see id*. 58 ("Ponderosa pine – Gambel oak habitat is managed as Restricted Habitat under the MSO Recovery Plan…"). As a matter of policy, there is no such thing as "non-MSO habitat" in pine-oak forest.

Finally, the Forest Service opines that the Strategy's exception categories would cover most of the project area, and that modifying them into "desired conditions" made it "easier to translate them into treatment designs." *Id*. 57-58. Again, those project-specific desired conditions and treatment designs are based on proposed forest plan amendments that are unique to the action alternatives developed by the agency. *See id*. 60-61 (Table 15); 440 (plan amendments); 610-639 (desired conditions and treatment designs incorporate plan amendments). The Forest Service fails to take a hard look at impacts of a reasonable action alternative that would implement the existing forest plans as written. In the alternative, it fails to propose other plan amendments to accommodate implementation of the collaborative Strategy. Both failures are arbitrary and capricious.

The collaborative Strategy, as presented by stakeholders to the Forest Service, is a reasonable alternative to the proposed action, which the Forest Service was required to fully analyzed as an alternative in the DEIS, for additional reasons. First, it meets the purpose and need by actively managing hazardous fuels and forest structure, even to the extent that it specifically allows for removal of large trees in limited circumstances, as distinct from a broad "diameter cap."[6] Second, the Strategy avoids significant cumulative impacts that may result from excessive and unnecessary removal of large, fire-resistant trees, which are deficient in the project area and in the Southwestern Region as a whole (USDA 1999, USDA 2007a). More, it mitigates adverse effects to threatened and sensitive wildlife species that require closed canopy forest habitat for essential life behaviors. Each of the above reasons is explained in further detail below.

(1) Large tree retention meets the purpose and need.

Large tree retention is fundamentally important to restoration of fire-resilient forests (DellaSala et al. 2004). Large ponderosa pine and Douglas-fir trees possess autecological characteristics such as relatively thick bark and insulated buds that promote resistance to heat injury (Arno 2000, Weaver 1951). Self-pruning mature ponderosa pines feature high branch structure and open canopies, which discourage torching behavior (Keeley and Zedler 1998). Finally, mature ponderosa pines have a high capacity to survive and recover from crown scorch (McCune 1988). Thus, large tree structure enhances forest resistance to severe fire effects (Arno 2000, Omi and Martinson 2002, Pollett and Omi 2002), whereas removing them may undermine forest resilience (Brown et al. 2004, Countryman 1955, Naficy et al. 2010).

[6] The 4FRI stakeholders developed the Strategy to avoid reliance on strict diameter-limits while addressing the significant issues of old growth protection and large tree retention in ponderosa pine and mixed conifer forest with an explicit intent to facilitate implementation of landscape-scale forest restoration treatments with minimum controversy.

Research demonstrates no advantage in fire hazard mitigation resulting from treatments that remove large trees compared to treatments that retain them. Treatments that removed only trees smaller than 16-inches diameter were marginally more effective at reducing long-term fire hazard than so-called "comprehensive" treatments that removed trees in all size classes (Fiedler and Keegan 2002). Thinning small trees and pruning branches of large trees to increase canopy base height significantly decreases the likelihood of crown fire initiation (Graham et al. 2004, Keyes and O'Hara 2002, Omi and Martinson 2002, Perry et al. 2004, Pollett and Omi 2002), which is a precondition to active crown fire behavior (Agee 1996, Graham et al. 2004, Van Wagner 1977). Low thinning and underburning to reduce surface fuels and increase canopy base height at strategic locations effectively reduces fire hazard at a landscape scale and meets the purpose and need.

(2) Large tree retention avoids significant cumulative impacts.

Large trees are not abundant at any scale in ponderosa pine or mixed conifer forests in the Southwestern Region (Covington and Moore 1994, Fulé et al. 1997, USDA 1999, USDA 2007a, USDI 1995). They are the most difficult of all elements of forest structure to replace once they are removed (Agee and Skinner 2005). The ecological significance of old growth forest habitat and large trees comprising it is widely recognized (Friederici 2003, Kaufmann et al. 1992). There is no scientific basis for extracting large trees to promote fire resistance in ponderosa pine and mixed conifer forest (Allen et al. 2002, Brown et al. 2004, DellaSala et al. 2004).

In addition to their rarity, a variety of factors other than logging threatens the persistence of the remaining large trees in Southwestern conifer forests. Prescribed fire can injure exposed tree roots that have migrated into accumulated duff layers and cause high levels of post-treatment mortality among large trees (Sackett et al. 1996). Burning of pine stands with high surface fuel loading also can produce high fireline intensities and result in large tree mortality due to cambial injury by heat (Hunter et al. 2007). Prescribed fire also may render large trees susceptible to delayed bark beetle infestation (Wallin et al. 2003). In addition, large tree mortality has indirectly resulted from mechanical thinning activities (Hunter et al. 2007). Large standing dead trees ("snags") and downed logs supply critical habitat for primary and secondary cavity-nesting species (including threatened Mexican spotted owl and its prey) and may be destroyed by fuel treatments (Hunter et al. 2007). Prescribed fire may create coarse woody habitat by killing live trees, but gains generally do not offset losses, as existing coarse wood is irretrievably destroyed (Randall-Parker and Miller 2002). Recruitment of large trees, snags and large woody debris will become more limiting over time as climate change imposes chronic drought, reduced tree growth rates, and more

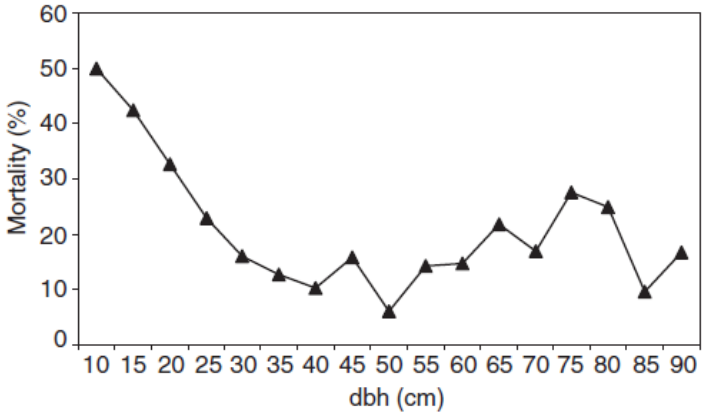

Fig. 3. Observed percent mortality of ponderosa pine 3 years after fire by 5 cm dbh class for data combined over three fires in northern Arizona. Data are not shown for dbh classes with <3 trees.

widespread tree mortality (Diggins et al. 2010, Savage et al.1996, Seager et al. 2007, van Mantgem et al. 2009, Williams et al. 2010).

McHugh and Kolb (2003) describe unplanned and prescribed fire effects on ponderosa pine forest structure in northern Arizona reflecting a "U-shaped" tree mortality curve in which mortality was lowest among trees sized 30 – 60 centimeters ("cm") (approx. 12" – 24") diameter, and highest among the smallest trees as well as in the 75 – 80 cm (~29.5" – 31.5") diameter (Figure 3 above). Resistance to fire-induced mortality was greatest among trees sized 35 – 75 cm diameter. Mortality effects occurred despite relatively uniform "crown damage" across tree size classes, indicating that cambial injury and root scorch fire effects were most significant among the smallest and largest trees, whereas intermediate-sized trees were relatively uninjured and may have benefited from the disturbance (McHugh and Kolb 2003). A large tree retention alternative would maintain trees that are most likely to survive fire injury and supply recruitment structure that will support the recovery of old growth forest habitat in the future.

(3) Large tree retention mitigates effects to wildlife.

If significant reductions of crown bulk density are necessary to meet the purpose and need then it is unlikely that the project will maintain habitat for threatened and sensitive wildlife species associated with closed-canopy forest (Beier and Maschinski 2003, Keyes and O'Hara 2002, USDI 1995). Large tree removal reduces forest canopy and diminishes recruitment of large snags and downed logs, which in turn affects long-term forest dynamics, stand development, and wildlife habitat suitability (Quigley et al. 1996, Spies 2004, van Mantgem et al. 2009). A large tree retention alternative would maintain wildlife habitat in the short-term and mitigate adverse direct and indirect effects of proposed treatments.

Old growth

Old growth forests differ in structure and function from younger forests. They comprise preferred habitat of many sensitive wildlife species and provide a host of ecological services including watershed function, clean water, soil retention, and storage of greenhouse gasses (Kaufmann et al. 1992, Luyssaert et al. 2008). Old growth habitat consists of large trees with fire-resistant "plated" bark structure and tall canopies, snags with nesting cavities and broken tops valuable to wildlife, as well as vertical and horizontal structural diversity within stands. Most of the former old growth forests throughout the ponderosa pine and mixed conifer formations were destroyed by logging (Covington and Moore 1994). Indeed, numerous analyses by the Forest Service and others demonstrate that logging significantly affects long-term recruitment of coarse wood and the availability of old growth habitat (*e.g.*, Quigley et al. 1996, Spies 2004, van Mantgem et al. 2009).

The 1996 Plan Amendment for the Southwestern Region (USDA 1996) includes mandatory standards and guidelines for old growth habitat management. Each national forest, including the Coconino and Kaibab, must allocate no less than 20 percent of each forested "ecosystem management area" to old growth habitat. In order to properly determine old growth habitat, the Forest Service must refer to a specific table included sets forth detailed minimum numeric criteria for various forest types, including the size, age and number of live and dead

trees, down trees and canopy cover. Forested sites must meet or exceed these numeric structural attributes in order to be considered old growth habitat. In addition, the amended forest plans require the agency to analyze old growth habitat at multiple scales: (1) the ecosystem management area; (2) one scale above the ecosystem management area; and (3) one scale below the ecosystem management area. The amount of old growth that can be provided and maintained must be evaluated at the ecosystem management level and be based on forest type, site capability and disturbance regimes. The Forest Service also must analyze and disclose how many acres within the ecosystem management area currently meet the minimum numeric criteria for old growth habitat set forth in the forest plans; assess potential impacts to old growth habitat at the required scales; allocate no less than 20 percent of each management area to old growth as depicted in the forest plans; and must not log any of the remaining large trees within the project area until it meets these mandatory requirements.

The DEIS does not demonstrate compliance with the forest plan standards and guidelines for old growth forest described above. It defines "restoration subunits," which range in area from 4,000-to-109,000 acres, as the equivalent of "ecosystem management areas," and states that 194,804 acres (38 percent) of the 512,178 acres of ponderosa pine forest in the project area "are the closest to meeting old growth conditions." *See* DEIS at 15-16 (Table 8 displays "old growth allocation acres" in ponderosa pine forest); 6-7 ("restoration units"). On the basis of this information, the analysis concludes, "Currently, all restoration units meet or exceed the 20 percent minimum forest plan requirement." *Id*. 15. However, it also states, "Most sites currently do not fully meet the minimum criteria for old growth conditions as listed in the forest plans." *Id*. (emph. added); *also see* McCusker (2013: 46-47) (Table 21 quantifies the overall lack of old growth attributes in stands allocated to "old growth").

The DEIS renders conclusions about old growth forest that contradict data in the underlying specialist reports. For example, according to the DEIS, there are 145,793 acres of ponderosa pine forest in Restoration Unit 1 ("RU1"), and 65,189 acres (45 percent) of that area contains "ponderosa pine old growth acres." *Id*. 79 (Table 22). However, the Silviculture Specialist Report indicates that only 6,224 acres of ponderosa pine forest in RU1 comprise Vegetation Structural Stages ("VSS") **5C** (closed canopy mature forest) or **6C** (closed canopy old forest) (McCusker 2013: 26-27 – Tables 5 (VSS description) and 6 (existing VSS)). Those VSS categories are the most likely to be actual old growth since they feature live trees larger than 18-inches diameter at breast height ("dbh") and canopy cover exceeding 50 percent (McCusker 2013: 33) (defining "closed" as "<25% interspace"); Fletcher and others (2012: 137) ("Old trees are assumed to be at least 18 inches dbh or larger"); *id*. 528-29 (desired conditions for old growth). Those VSS 5C and 6C stands comprise just four percent (4.27%) of all ponderosa pine forest in RU1. No reader can independently deduce from the given data how much additional old growth may exist in RU1 because it groups together the "open" and "moderately closed" VSS 5 ("A or B") and VSS 6 ("A or B") (McCusker 2013: 27 – Table 6), making it impossible to distinguish open stands with "40-70% interspace" from moderately closed stands with only "25-40% interspace." Clearly, many of the open ("A") VSS 5 and 6 stands do not meet forest plan criteria for old growth, which require a minimum of 50 percent canopy cover. For the sake of argument, even if all of the VSS 5 ("A or B" and "C") and VSS 6 ("A or B" and "C") were to be counted as old growth, that would amount to just 15,363 acres, or about 10 percent (10.54%) of ponderosa pine forest in RU1. Therefore, the Forest Service

includes in its presentation of "ponderosa pine old growth acres" for RU1 a minimum of 49,826 acres of forest that are not old growth by any definition, and in doing so, it grossly exaggerates the extent of old growth in the unit. DEIS at 79 (Table 22); *also see* Fletcher and others (2012: 689-94) (Table 190 displays existing forest structure in goshawk habitat); *id*. 697 (Figure 140 shows that VSS 5/6 comprises 8% of goshawk habitat in RU1).

The discrepancy of actual old growth, which is rare, from the Forest Service's grossly inflated "allocation" of old growth is the result, in part, of its inclusion of non-old growth in the "allocation":

> The old growth allocation acreage/percentage for ponderosa pine includes 100 percent of MSO protected habitat, 100 percent of MSO target/threshold habitat, 40 percent of MSO restricted habitat that is uneven-aged with low dwarf mistletoe infection, and 80 percent of MSO restricted habitat that is even-aged and mid-aged to old with low dwarf mistletoe infection. In goshawk habitat, the old growth allocation acreage/percentage for ponderosa pine includes 100 percent of goshawk nest stands, 40 percent of goshawk PFA and foraging areas that are uneven-aged with low dwarf mistletoe infection, and 80 percent of goshawk PFA and foraging areas that are even-aged and mid-aged to old with low dwarf mistletoe infection.

DEIS at 15 (emph. added); *also see* McCusker (2013: 5-6) (defining "mid-aged" as VSS 4). It is not clear from the analysis if the Forest Service surveyed any of the mid-aged stands it allocated to old growth and verified that they are, in fact, "close" to meeting old growth criteria. Nor is it clear if the agency simply deducted 20 percent of the MSO and goshawk habitats described above and arbitrarily grouped them into the old growth allocation. Either way, the public must receive the underlying environmental data from which Forest Service experts derive their conclusions. *See Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998).

In sum, the DEIS *hides the ball* and precludes the public from making an independent determination that the project meets forest plan standards and guidelines for old growth at each of the prescribed spatial scales. It does this in four ways:

(1) It fails to analyze old growth at all of the required spatial scales. One cannot tell, for example, how much old growth exists scaled below each restoration subunit.

(2) "Most" of the ponderosa pine forest "allocated" to old growth does not meet forest plan standards, and the DEIS fails to disclose the actual extent of old growth.

(3) It fails to disclose the method by which the agency determined that "allocated" stands are "closest" or "best meet" forest plan standards for old growth, or supply any qualitative analysis of how they diverge from plan standards.

(4) It fails to disclose effects of treatments under the action alternatives (*i.e.*, reduction) to the distribution and extent of existing old growth.

At no point does the DEIS discuss the condition of existing old growth habitat or effects of the action alternatives this rare and important habitat. *See* DEIS at 79-80 (Tables 22 and 23 and Figure 30 display "old growth allocations," not actual old growth); 61 (modification to the

collaborative large tree retention strategy for the purpose of creating "regeneration openings" by removing large trees); 644 (alluding to unspecified "exceptions" for old tree removal). NEPA requires a hard look at impacts to old growth habitat. *See* 40 C.F.R. § 1502.1 (the EIS "shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment"); 1502.2(d) ("Environmental impact statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of [NEPA] and other environmental laws and policies"); 1502.16 ("The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented"). On this point, the 4FRI stakeholders collectively commented to the Forest Service on this DEIS, "What is unknown is to what degree there will be 'safety and human health' or 'habitat degradation issue' situations as part of project implementation (new road construction, landings and skid trails), and to what extent project activities might affect old tree mortality (prescribe burning mostly, and some harvest activity)." More, "It is difficult to tell from information provided in the DEIS, what level of impact the almost tripling of road miles might have on the preservation of old trees."

Old growth removal, as allowed by all of the action alternatives, will violate forest plan guidelines requiring the Forest Service to "[D]evelop or retain old-growth function on at least 20 percent of the naturally forested area by forest type in any landscape." Coconino Forest Plan at 70-1; Kaibab Forest Plan at 32 (emph. added). As explained above, old growth is not likely to exceed 10 percent of the project area in its current condition. Because the agency is so far from meeting the mandatory standards and guidelines for old growth habitat, it cannot remove any additional old growth trees, or large trees that may contribute to old growth in the future, until it demonstrates compliance with the forest plans. *See Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1377 (9th Cir. 1998) (to comply with old growth standard in a forest plan, agency must show that minimum requirements would be met within affected areas after timber sale); *Lands Council v. Vaught*, 198 F.Supp.2d 1211, 1224 (E.D. Wash. 2002) ("Plaintiffs claim that even if the Project does not log old growth, compliance with the [Forest Plan's] old growth standards must be demonstrated to ensure that the mature trees logged under the Project are not needed to fill any shortfall in the required old growth acreage …") (emph. added); *also see* USDA (2007b: 8) (Forest Service cannot "thin" large trees in an attempt to "promote faster growth" unless it is in compliance with the 20% old growth requirement).

Moreover, because old growth is deficient in the project area, the Forest Service is hard pressed to demonstrate that removing more will maintain the viability of old growth dependent species, as required by NFMA. The agency cannot simply assert without supporting scientific analysis or data that logging additional large and old trees, as proposed in this project, will somehow improve the remaining habitat for old growth dependent species. *See Ecology Center v. Austin*, 430 F.3d 1057, 1064-65 (9th Cir. 2005) ("The agency cannot simply treat its prediction that logging these large trees will benefit old growth dependent species as a fact instead of an untested and debated hypothesis"). It must disclose scientific uncertainty regarding its

assumption that proposed logging of large and old trees will meet the purpose and need to restore the ecological condition of ponderosa pine forest and the improve old growth habitat and dependent species that remain (*e.g.*, Allen et al. 2002, Brown et al. 2004, DellaSala et al. 2004).

Created openings

At the landscape scale, proposed treatments will result in a significantly more open forest condition, with both short and long term impacts to forest canopy and canopy dependent species, than assumed in prior environmental analysis underlying the forest plans (USDA 1995, 2006). "Post-treatment openness" is a significant issue for analysis, and it is one evaluation indicator for measuring canopy cover in northern goshawk habitat. *See* DEIS at 124; *also see* McCusker (2013: 8) ("canopy density and openness" considered together). The Forest Service has not adequately explained how using a silvicultural tool designed to project forest structure at the stand level can be accurately applied to model structure at smaller group scales (*i.e.*, <1 acre). It also has not explained how restricting the retention of closed canopy forest structure to small tree groups will avoid negatively impacting canopy dependent species.

The proposal to create "interspaces" within ponderosa pine forest and count them separately from Vegetative Structural Stage ("VSS") 1 (grass/forb/shrub) will result in significantly less closed-canopy ponderosa pine forest than needed to support viable populations of sensitive species, including northern goshawk and its prey (AGFD 2007).[7] Design features common to all action alternatives that relate to the adjacency of interspaces and regeneration openings are likely to result in the reduction in area of closed canopy tree groups in the higher intensity treatment types to far less than one acre.

Thinning percentages for mid-aged (VSS 4) and mature (VSS 5) forest, as expressed by stocking densities and residual canopy cover, have the potential to result in a significantly more open landscape than the DEIS indicates. *See* DEIS at 710 (Table 161). The Forest Service needs to clearly state how these percentages were derived and which goals each percentage is designed to achieve. Table 161 appears to apply desired within-group densities to all VSS 4, 5 and 6 (old forest) proposed for treatment, as these structural stages are listed under the "Species/Resource" column of that table. The agency proposes to thin approximately 50% of the mid-aged (VSS 4) groups to the lower range of desired stocking conditions. Higher percentages of interspaces and regeneration openings in proposed treatments already result in overall basal areas on the very low end of the stated desired conditions. It is unclear what impact the proposed "within group density" percentages in Table 161 will have on overall forest structure. *See id*. 654 (Table 140).

Bridge habitat

We support the intention of the 4FRI project to provide "bridge habitat" for canopy dependent wildlife to span the time between restoration treatments and development of a more

[7] The Coconino and Kaibab Forest Plans define VSS 1 as "grass/forb/shrub" forest openings that include tree regeneration intended to develop into other VSS classes. VSS 1 is distinct from the novel concept of "interspace," as described in the DEIS, because the latter is intended to comprise permanent forest openings that are not managed for tree regeneration. *See* USDA (2007b).

uneven-aged forest structure. As the discussion in DEIS Appendix G notes, the current closed canopy conditions are largely the result of smaller diameter trees, and it will take time for a mature forest structure to emerge. However, we question the assumptions and conclusions made in Appendix G in regards to the provision of adequate bridge habitat to maintain viable populations of canopy dependent species. The "conclusions" section of Appendix G relies on four assumptions:

- 42 percent of treated ponderosa pine forest would remain in "moderately closed" to "closed" condition.

- Old growth allocations accounting for 38 percent of the ponderosa pine treatment area would be well-distributed across the landscape.

- A patch mosaic of small deferrals ("skips" and "gaps") would provide key habitat features across the project area.

- Implementation guidance in MSO and northern goshawk habitats provides higher density canopy cover relative to the surrounding landscape.

See DEIS at 713. Regarding the first assumption above, the analysis only relates to post-treatment density based on the percent of area left at various interspace levels. *See id*. 701 (Tables 158, 159). It does not include proposed regeneration openings, which will have a short-to-mid term impact on overall "openness" of forest structure. Regeneration openings range from 10-to-20 percent of tree groups. Table 140, on page 654 of the DEIS, best illustrates the relationship between potential openings and canopy in tree groups, as well as residual basal area. Looking at actual proposed treatment densities in Table 140 illustrates the potential impact of regeneration openings on the assumptions used to declare that the moderately closed category provides for adequate bridge habitat. Lower treatment intensities in the 10-to-25 percent range are more open than the analysis in Appendix G suggests. In that treatment intensity, with 20 percent of treated areas in interspaces, just 80 percent of them would consist of tree groups, with potentially 20 percent of the tree groups as "regeneration openings." The result would be 40 percent of the current forest in created openings, which is double the proportion displayed in the "openness" category. To use an example from the moderate density category (Table 140, page 654 of the DEIS): An area with 30 percent interspace, 70 percent tree groups, and 20 percent of the tree groups replaced with regeneration openings would result in 50 percent of the total area in created openings (see Table 2 below). As the percentage of tree groups shrinks in relationship to openings, the tree group basal area also rises to achieve basal area retention of 50-to-70 ft^2/acre, as stated in the treatment designs. This could have an impact on achieving objectives related to fire and large tree retention. The first assumption above is not supported by analysis in the DEIS and associated specialist reports.

The second assumption above only refers to old growth allocations, not existing old growth forest. The old growth discussion in DEIS Appendix G references forest plan requirements for old growth and states that the allocated acres "most closely resemble old growth, but do not currently meet all the forest plan parameters of old growth." Without information regarding how many of the old growth allocated acres actually meet forest plan

criteria at each of the prescribed spatial scales, and their location, this assumption is premature. Furthermore, the conclusions drawn in the DEIS regarding the achievement of old growth requirements are often in conflict with data displayed in various specialist reports, as discussed above. It is important to know how many of the allocated old growth acres currently are VSS 5 (mature forest >18-inches dbh) and VSS 6 (old forest >24-inches dbh). Appendix G relies on the assumption that all of the allocated old growth acreages overlapping Mexican spotted owl and northern goshawk habitat will meet the needs of canopy dependent species following treatments. The allocation includes:

- All Mexican spotted owl protected habitat.
- All Mexican spotted owl "target/threshold" habitat.
- Forty percent (40%) of Mexican spotted owl restricted habitat that is uneven-aged with "low" dwarf mistletoe infection.
- Eighty percent (80%) of Mexican spotted owl restricted habitat that is even-aged, mid-aged (VSS 4) to old (VSS 6), with "low" dwarf mistletoe infection.
- All northern goshawk nest stands.
- Forty percent (40%) of goshawk post-fledging areas ("PFA") and foraging areas ("LOPFA") that is uneven-aged with "low" dwarf mistletoe infection.
- Eighty percent (80%) of goshawk PFA and foraging areas that are even-aged, mid-aged (VSS 4) to old (VSS 6), with "low" dwarf mistletoe infection.

Following this explanation is Table 20 in the Silviculture Specialist Report (McCusker 2013: 45), which presents "allocated" old growth acres and percent by restoration unit and subunit. What should follow is a single table illustrating the percentages of bridge habitat available in the old growth allocations. Instead, a reader must compare a dozen or more separate tables just to estimate the bridge habitat quality and quantity represented in Table 20. Having done this, it appears to us that the ponderosa pine old growth acres in Table 20 merely represent the total acreages of Mexican spotted owl and northern goshawk habitat types listed above. In other words, the designation of "bridge habitat" appears to result from an arbitrary desktop mapping exercise rather than from any site-specific assessment and field verification of the availability of such habitat within those digital polygons.

Furthermore, Tables 16, 17, 18 and 19 in the Silviculture Specialist Report (McCusker 2013: 41-44) describe the structural stage percentages for northern goshawk habitat from which the old growth allocations are drawn. Totaling the percentages for VSS 5 (mature) and VSS 6 (old) in those tables and combining that data with other tables leads the reader to estimate potential acreages for old growth in goshawk habitat. However, the actual extent of old growth habitat, especially in all even-aged categories and in uneven-aged LOPFA, is significantly below the minimum criteria for old growth established in the forest plans. Therefore, the assumption

that old growth "allocations" will meet the habitat needs of canopy dependent species is not supported by the project analysis.

Third, even if the assumption that "small deferrals" would provide habitat is correct, it does not meet the habitat needs of canopy dependent wildlife for two reasons: (1) the Forest Service admits that it does not know how much of those deferrals are currently in a "closed" or "moderately closed" condition; and (2) it fails to consider cumulative effects of other projects. It clearly does not consider the Flagstaff Watershed Protection Project, and no specific information about ongoing or foreseeable actions in the project area is provided.

Finally, the forest plan amendments will significantly change measurement of canopy cover, as discussed below. It is not valid to assume, in light of those plan amendments, that retaining canopy cover at the small tree group scale (<1 acre) will maintain adequate forest cover to support viable populations of sensitive and threatened species. Clearly, habitat of Mexican spotted owl will have a higher average post-treatment basal area and canopy cover than other settings in the project area. However, many of the same design features and treatment intensity levels apply throughout other habitat settings, which could result in a very similar degree of openness across the project area. New goshawk guidelines (USDA 2007b), which are incorporated into all of the action alternatives by the forest plan amendments, will not result in a higher density of canopy relative to the surrounding landscape (AGFD 2007). Even if canopy densities vary within tree groups, the new guidelines contained in the plan amendments are likely to result in a uniform level of openness at a project scale.

Northern goshawk

All of the action alternatives in the DEIS include amendments to standards and guidelines of the Coconino and Kaibab Forest Plans, as amended (USDA 1996), for management of sensitive northern goshawk in ponderosa pine forest. Alternative C (preferred) would require plan amendments that: (1) "add the desired percentage of interspace within uneven-aged stands" (excluding goshawk nest areas); (2) "add the interspace distance between tree groups"; (3) "add language clarifying where canopy cover is and is not measured"; (4) allow between 27,675 acres (Kaibab) and 29,017 acres (Coconino) to be managed "for an open reference condition"; and (5) define in the plan glossaries the terms "interspaces," "open reference condition," and "stands." DEIS at 82; *also see id*. 440 (Table 91); 499 (description); 520-27 (Alternative C).

The Center and the Arizona Game and Fish Department share concerns regarding the Forest Service's emergent interpretation of standards and guidelines for management of northern goshawk habitat in ponderosa pine forest. In particular, the state agency commented to the Forest Service that changing the spatial scale at which canopy cover is measured to the tree group level, as proposed in this DEIS, "has the potential to significantly reduce the amount of forest cover within treated areas."[8] Table 2 below demonstrates the difference between stand-

[8] A letter dated June 2, 2007, from the Arizona Game and Fish Department to the Coconino National Forest regarding the Jack Smith-Schultz Project, which overlaps the 4FRI project area and initially was very similar or identical in its approach to managing northern goshawk habitat, is attached to this letter along with minutes of the July 27, 2007, "Region II Commission Briefing" of the Arizona Department of Game and Fish. Each document states the serious concern of the state agency with the Forest Service's new interpretation of goshawk guidelines.

Table 2. Prescription intensities and canopy cover percentages measured at stand and group scales.

Prescription Intensities: % of Stand in Interspace / Groups	Stand-scale Canopy Cover at 50% Canopy Retention "Within Groups Only	Stand-scale Canopy Cover at 40% Canopy Retention "Within Groups Only	Stand-scale Canopy Cover at 50% Canopy Retention "Within VSS 4, 5 and 6 Groups Only"	Stand-scale Canopy Cover at 40% Canopy Retention "Within VSS 4, 5 and 6 Groups Only"
100 / 0	0	0	Cannot Predict	Cannot Predict
90 / 10	5	4	Cannot Predict	Cannot Predict
80 / 20	10	8	Cannot Predict	Cannot Predict
70 / 30	15	12	Cannot Predict	Cannot Predict
60 / 40	20	16	Cannot Predict	Cannot Predict
50 / 50	25	20	Cannot Predict	Cannot Predict
40 / 60	30	24	Cannot Predict	Cannot Predict
30 / 70	35	28	Cannot Predict	Cannot Predict
20 / 80	40	32	Cannot Predict	Cannot Predict
10 / 90	45	36	Cannot Predict	Cannot Predict
0 / 100	50	40	Cannot Predict	Cannot Predict

Prescription Intensities: % of Stand in Interspace / Groups	% of Area in VSS1 (Plan Direction is 10%)	% Area in VSS2 (Plan Direction is 10%)	% Area in VSS3 (Plan Direction is 20%)	% Area in VSS4 (Plan Direction is 20%)	% Area in VSS5 (Mature Forest, Plan Direction is 20%)	% Area in VSS6 (Old Forest, Plan Direction is 20%)
100 / 0	100	0	0	0	0	0
90 / 10	91	1	2	2	2	2
80 / 20	82	2	4	4	4	4
70 / 30	73	3	6	6	6	6
60 / 40	64	4	8	8	8	8
50 / 50	55	5	10	10	10	10
40 / 60	46	6	12	12	12	12
30 / 70	37	7	14	14	14	14
20 / 80	28	8	16	16	16	16
10 / 90	19	9	18	18	18	18
0 / 100	0	10	20	20	20	20

and group-level canopy cover that may result from implementation of different interpretations of relevant forest plan guidelines. It describes forest treatments in a way consistent with the proposed action, listing the amount of forested (tree groups) and non-forested (openings or "interspace") that may result.[9] This schematic demonstrates that the proposed action may fall short of canopy cover requirements set forth in the Coconino Forest Plan and may significantly impact sensitive wildlife species dependent on closed canopy forest habitat at a level of intensity that exceeds what was analyzed and disclosed prior environmental analysis (USDA 1995, 2006).

In addition to shifting interpretation of Forest Plan guidelines for canopy cover in northern goshawk habitat, the Forest Service also appears to change its accounting of forest openings set forth in the Vegetation Structural Stage ("VSS") classifications of the forest plans. According to the new interpretation (USDA 2007b), "interspaces" located in between small tree

[9] Table 2 assumes that drip lines, rather than root zones, describe "forested" areas. Root zones extend beyond drip lines, so the table likely overestimates canopy cover.

groups (<1 acre) are not to be included in VSS 1,[10] which may result in significantly more openings than anticipated in prior environmental analysis (USDA 1995, 2006).

> As much as we can, we are adapting current prescriptions to take into account interspaces between groups and we have adjusted these prescriptions to consider group size and how we look at groups […] The original analysis and documentation generally looked at how we interpreted the goshawk guidelines in the forest plan in a different manner as are currently looking at them […] This will lead to a much more open forest over time than previous interpretations of the goshawk recommendations in the forest plans would have. [11]

The new goshawk guidelines are significant new information requiring NEPA analysis because their implementation may significantly impact the environment in a different manner than expected by past impact statements underlying the current forest plans (USDA 1995, 2006). In the final EIS supporting the 1996 Plan Amendments, including the existing goshawk guidelines, the Forest Service clearly intended to provide wildlife habitat associated with herbaceous and shrub-dominated vegetation communities within the VSS classification system:

> Some species totally depend on one or more of these cover types and respective vegetation structural stages (VSS), while others are casual uses. Regardless of the degree of use, it is important to maintain a diversity of cover types and vegetation structural stages across landscapes to sustain healthy wildlife populations and communities.
>
> This programmatic analysis of the alternatives is primarily based on three broad habitat characteristics that can be evaluated at the programmatic EIS level. These three wildlife habitat characteristics are cover type, vegetation structural stages (VSS), and forage production. Cover type and VSS represent the overstory characteristics of the habitat and forage production represents the understory. The structural stages are grouped by early, mid and late stages (VSS 1&2, VSS 3&4, and VSS 5&6, respectively).

USDA (1995: 28-29). The Forest Service previously assumed that VSS 1 and 2 would be sufficient to provide for wildlife species that require "forage production" as a critical element of habitat. *Id.* 30 ("The alternatives that would produce the most forage, in decreasing order, are E, A, F, C, D and G. Since understory habitat is important for many of the non-TES wildlife species and [sic] there is a need to increase understory habitats").

The 4FRI stakeholders commented to the Forest Service on this DEIS, "It is [] unclear in the document at what scale the USFS will be balancing the distribution of structural stages, as they relate to regeneration openings, interspaces and tree groups. We know from the DEIS that percentages have been assigned at small spatial scale. What is unclear is how these will be

[10] The Coconino and Kaibab Forest Plans define VSS 1 as "grass/forb/shrub" forest openings that include tree regeneration intended to develop into other VSS classes. VSS 1 is distinct from the novel concept of "interspace," as described in the DEIS, because the latter is intended to comprise permanent forest openings that are not managed for tree regeneration. *See* USDA (2007b).

[11] The November 20, 2006, electronic mail of Mark Herron, Kaibab National Forest silviculturalist, to Forest Service planners, including Marlin Johnson (now of Pioneer Forest Products), regarding implementation of new goshawk guidelines, is attached to this letter for convenience.

distributed across the mid-scale (100 to 1,000 acres)." They recommend adding assurances in the analysis and decision that clearly state old trees will not be cut to create regeneration openings. Further, the stakeholders suggest including visually graphic examples of regeneration openings applied at the fine (<100 acres), mid-scale (100-1,000 acres) and restoration unit scale. We echo their comments here because the forest plans require analysis of goshawk habitat at multiple scales.

The Forest Service asserts that the plan amendments affecting northern goshawk are "a specific, one-time variance" for the 4FRI project that would "not apply to any other forest project." DEIS at 520 (Coconino NF – Alternative C); 536 (Kaibab NF – Alt. C). However, that characterization of the amendments is misleading to public understanding because the agency is simultaneously advancing similar or identical amendments to the Coconino Forest Plan in concurrent projects including:

- The Clints Well Decision Notice changed management direction affecting 7,695 acres of goshawk habitat in the Coconino National Forest.[12]

- The Wing Mountain Decision Notice changed management direction affecting 8,922 acres of goshawk habitat in the Coconino National Forest.[13]

- The Rim Lakes Final Environmental Impact Statement proposes new plan direction affecting 16,835 acres of goshawk habitat in a 4FRI "Phase 1" contracted action the Apache-Sitgreaves National Forest.[14]

- The Mahan-Landmark proposed action would amend plan direction affecting about 25,000 acres of goshawk habitat in the Coconino National Forest.[15]

- The Flagstaff Watershed Protection Project proposed action would change plan standards and guidelines on 3,130 acres in the Coconino National Forest.[16]

The Forest Service is required by NFMA and NEPA to take a hard look at the overall cumulative effect of these numerous plan amendments on the viability of sensitive species and their prey.

Furthermore, standards and guidelines of the Coconino Forest Plan for northern goshawk are scientifically controversial as a means of ensuring population viability. Beier and others

[12] *See* pages 38-46 (Appendix A) of the February 6, 2013, Decision Notice and Finding of No Significant Impact for the Clints Well Forest Restoration Project.

[13] *See* pages 39-46 (Appendix A) of the February 15, 2013, Decision Notice and Finding of No Significant Impact for the Wing Mountain Forest Restoration Project.

[14] *See* pages 25-28 of the Rim Lakes FEIS describing proposed amendments to the Apache-Sitgreaves Forests Plan.

[15] *See* pages 16-18 of the September 21, 2012, proposed action for the Mahan-Landmark Forest Restoration Project.

[16] *See* pages 8-9 and 14 of the April 5, 2013, proposed action for the Flagstaff Watershed Protection Project.

(2008) studied influences of ponderosa pine forest structure on northern goshawk reproduction and concluded that the Forest Service should reconsider its decision to apply the guidelines to most of the forested lands in the Southwestern Region. "Production of fledglings decreased as the breeding area's similarity to the goshawk guidelines increased" (Beier et al. 2008:347). The Coconino Forest Biologist wrote that the study "sort of rocks the world for the 1996 goshawk guidelines."[17] Beier and Ingraldi (2012) discussed implications of those findings regarding Forest Plan implementation and goshawk viability.

Allen's lappet browed bat

Allen's lappet browed bat is among the rarest of North American bats and it relies on large ponderosa pine snags with exfoliating bark for maternal roosting habitat (Rabe et al. 1998, Solvesky 2007). The bat occupies the project area. Human disturbance of roost habitat can cause abandonment and negatively impact reproductive success. Use of tree roosts is common, so the bat is vulnerable to effects of logging and prescribed fire. Large snags that supply critical habitat for Allen's bat may be destroyed by mechanical fuel treatments (Hunter et al. 2007). Prescribed fire may create new coarse woody structure by killing live trees, but any gain in new snags as a result of fire treatments is unlikely to offset their loss as existing coarse wood is irretrievably lost (Randall-Parker and Miller 2002). Rabe and others (1998) report the scarcity of snag habitat at a landscape scale in northern Arizona, and caution that snags are not equally suitable for use by bats. The project area is deficient in snag habitat compared to forest plan standards and guidelines. Any destruction of snag habitat in the project is likely to have cumulatively significant impacts on sensitive wildlife, coarse wood recruitment and forest soils, requiring a hard look in the NEPA analysis.

Mexican spotted owl

The project area hosts critical habitat of threatened Mexican spotted owl. Management activities that may affect federally protected species require consultation with the U.S. Fish and Wildlife Service ("FWS") to ensure they will not jeopardize the continued existence of Mexican spotted owl or adversely modify critical habitat, and to secure an exemption for incidental "take," which is otherwise prohibited by the Endangered Species Act ("ESA").[18] The project is reasonably certain to cause incidental take of Mexican spotted owl because it would directly impact nest core areas and Protected Activity Centers ("PACs") out of compliance with existing standards and guidelines in the Coconino and Kaibab Forest Plans (USDA 1996), which are designed to maintain owl viability and avoid jeopardy to the species or adverse modification of critical habitat. The Forest Service should disclose implications of this change of course.

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[17] The February 26, 2008, electronic mail of Cecelia Overby re: "Beier et al. paper" is attached to this letter for convenience ("The authors conclude that the Forest Service should reconsider its decision to apply the guidelines to most of the forested lands in the region. Wow.").

[18] "Take" is defined by the ESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any threatened or endangered species. Harm may include habitat modification that kills or injures a listed species through impairment of essential behavior (*e.g.*, nesting or reproduction). In the 1982 ESA amendments, Congress authorized the FWS to issue permits for the "incidental take" of endangered and threatened species. 16 U.S.C. § 1539(a)(1)(B).

In October 2008, the Forest Service produced an "Annual Report" to the FWS regarding implementation of forest plans in the Southwestern Region, including the Coconino and Kaibab Forest Plans, for the period of June 10, 2005, through June 10, 2007.[19] In it, the Forest Service acknowledged failure to comply with mandatory terms and conditions set forth in the June 10, 2005, FWS biological opinion and incidental take statement that required monitoring of Mexican spotted owl habitat and populations. The Forest Service admitted that it had monitored only 20-to-25 percent of PACs for occupancy, and none for reproduction or juvenile dispersal. In addition, the Forest Service stated that it "likely" exceeded the permitted number of incidental takes of Mexican spotted owl. More, the Forest Service claimed in the Annual Report and in subsequent litigation that incidental take permits for Mexican spotted owl were "difficult" for its personnel to understand and track.

On April 17, 2009, the Forest Service asked the FWS to reinitiate consultation on the continued implementation of forest plans in the Southwestern Region, including the Coconino and Kaibab Forest Plans. That letter stated, "It has now become apparent that the Forest Service will likely soon exceed the amount of take issued for at least one species, the Mexican spotted owl."[20] More, "[I]t has become apparent that the Forest Service is unable to fully implement and comply with the monitoring requirements associated with the Reasonable and Prudent Measures for several species (including MSO) in the [biological opinion]."

On June 22, 2010, the FWS formally reinitiated consultation with the Forest Service on effects of continued implementation of forest plans, including the Coconino and Kaibab Forest Plans, to ESA-listed species.[21] Pursuant to that consultation, on March 30, 2012, the FWS produced a new biological opinions and incidental take statements for Mexican spotted owl that are specific to the Coconino Forest Plan (USDI 2012a) and Kaibab Forest Plan (USDI 2012b), respectively. Those opinions and statements eliminated mandatory terms and conditions that previously required the Forest Service to monitor Mexican spotted owl habitat and populations, and replaced them with a more modest requirement to report incidental take (*i.e.*, PAC disturbance) where it occurs. More, the FWS broke precedent and fragmented its consultation on Mexican spotted owl by issuing a separate biological opinion and incidental take statement for each national forest, including the Coconino and Kaibab National Forests. None of the newer forest-specific biological opinions regarding implementation of forest plans in the Southwestern Region account for range-wide impacts to Mexican spotted owl and critical habitat, and none require monitoring of population or habitat trends, which remain unknown. In our view, Forest Service compliance with terms and conditions of the March 30, 2012 biological opinions and incidental take statements for the Coconino and Kaibab Forest Plans will fail to avoid jeopardy to Mexican spotted owl or adverse modification of critical habitat because the conservation

[19] USDA Forest Service. 2008. *Annual Report Covering the Period June 10, 2005 – June 10, 2007, Programmatic Biological Opinion on the Land and Resource Management Plans for the 11 National Forests in the USDA Forest Service Southwestern Region*. Albuquerque, NM. October. 110 pages. Attached for convenience.

[20] Corbin Newman letter to Benjamin Tuggle, April 17, 2009. 2 pages. Attached for convenience.

[21] U.S. Fish and Wildlife Service letter, to Corbin Newman, Regional Forester, USDA Forest Service re: Cons. # 2-22-03-F-366, June 22, 2010. Region 2: Albuquerque, NM. 3 pages. Attached for convenience.

status of the species and the effect of ongoing forest management throughout its range, including the instant proposed action, is unknown. In addition, compliance with terms and conditions of the March 30, 2012 biological opinions and incidental take statements will not meet the independent obligation of the Forest Service under the National Forest Management Act to monitor changes in owl populations and habitat, as required by the Coconino and Kaibab Forest Plans.

In 2011 and 2012, a number of large wildfires and related fire suppression activities in the Southwestern Region may have adversely affected Mexican spotted owl and its critical habitat. These include the 538,000 acre Wallow fire on the Apache-Sitgreaves National Forests, the 222,954 acre Horseshoe Two fire and the 68,078 acre Murphy Complex fires on the Coronado National Forest, the 156,593 acre Las Conchas fire on the Sante Fe National Forest, the 297,845 acre Whitewater-Baldy Complex fires on the Gila National Forest, and the 44,330 acre Little Bear fire on the Lincoln National Forest. For each of these wildfire events, the Forest Service used fire suppression techniques, including igniting back burns, fireline construction and aerial deployments of chemical fire retardant (*see* Backer et al. 2004). A combination of the large-scale wildfires and the Forest Service's fire fighting tactics may have resulted in adverse impacts and the taking of Mexican spotted owl. The Forest Service and FWS have not consulted, pursuant to Section 7 of the ESA, to assess the potential adverse effects to MSO and its critical habitat resulting from the 2011 and 2012 wildfires and associated impacts.

All of the action alternatives in the DEIS would amend standards and guidelines of the Coconino and Kaibab Forest Plans, respectively, for Mexican spotted owl by: (1) allowing mechanical removal of trees up to 18-inches diameter on 7,353 acres in 18 PACs; (2) allowing management-ignited fire in 56 PAC "core areas" (~5,600 acres); (3) removing limits on PAC treatments to 10 percent increments in each recovery unit; (4) deleting language that requires selection of an equal number of untreated PACs as controls; (5) repealing the requirement to monitor owl populations and habitat; (6) allowing designation of less than 10 percent of Restricted Habitat for management as "target" or "threshold" habitat (i.e., nesting and roosting habitat); and (7) permitting retention of as little as 110 ft^2/acre basal area on 6,321 acres of Restricted Habitat. *See* DEIS at 500-518 (Alternative C – "Amendment 1" to Coconino Forest Plan); 549-561 (Alternative C – "Amendment 3" to Kaibab Forest Plan).

The need for the plan amendments described above is a significant issue for analysis due to the controversial and uncertain efficacy of proposed treatments in promoting the conservation and recovery of Mexican spotted owl (USDI 1995, 2012c). The Forest Service is required by NEPA to fully disclose controversy and uncertainty regarding effects of the project to Mexican spotted owl and its critical habitat. Its analysis must take a hard look at explicit cautions in the revised Recovery Plan for Mexican spotted owl (USDI 2012c) regarding proposed activities and offer a good-faith and reasoned response to them. Furthermore, the Forest Service must disclose in detail the "MSO PAC field reviews, data evaluation, and vegetation simulation modeling" it used to determine that there is a need to mechanically thin trees larger than 9-inches diameter in PACs.

Remarkably, the Forest Service states that these plan amendments are "a specific, one-time variance" for management of Mexican spotted owl habitat, and "the language proposed

does not apply to any other forest project." DEIS at 500. That statement clearly is misleading to public understanding because the agency simultaneously proposes to amend the Coconino Forest Plan in concurrent projects that will cumulatively unravel existing management direction for Mexican spotted owl and the basis of prior FWS biological opinions. For example, the proposed action for the "Mahan-Landmark Project" contains a plan amendment that would allow "timber harvest" in PACs, including removal of trees up to 16-inches diameter, contrary to existing standards and guidelines. In addition, the proposed action for the "Flagstaff Watershed Protection Project" would: (1) repeal the plan's 9-inch diameter limit on mechanical thinning in PACs; (2) delete timing restrictions on forest treatments in PACs; (3) allow logging and burning in nest core areas; (4) remove the 24-inch diameter limit on timber harvest in Restricted Habitat; and (5) excuse itself from the requirement to monitor Mexican spotted owl populations and habitat. The forest plan amendments in all of these projects are similar or identical, yet the Forest Service states – in duplicative language – that each is "specific," and does "not apply to any other forest project." The Forest Service is required to take a hard look at the cumulative effect of these concurrent and controversial plan amendments on threatened species and critical habitat.

The monitoring element of plan amendments affecting Mexican spotted owl is controversial because the Forest Service admitted in its October 2008 Annual Report to FWS that it lacked funding and personnel to conduct required monitoring of owl habitat and populations to ensure that its actions would not jeopardize the continued existence of the species or adversely modify critical habitat.[22] And again, the Forest Service proposes to eliminate the monitoring requirement of the forest plans in other projects. Given its failure to monitor Mexican spotted owl under binding terms and conditions of an incidental take statement, we have specific questions about the monitoring plan for this project that should be addressed in the EIS, namely: (1) criteria for selection of PAC as paired treatment and control sites; (2) criteria for selection of measurable indicators of change; (3) sampling design power analysis and expected observational error rates; (4) sampling procedures including monitoring cycle; (5) confidence levels to be applied in data analysis and reporting; (6) timeframe for evaluation of results; and (7) triggers for management adaptation using new information. The complete monitoring plan, including study design and analysis protocols, should be made available for public review and comment before a decision is made to implement the project.

Furthermore, to comply with NEPA, the Forest Service must study, develop and describe (rather than mention and dismiss) an **action alternative** that gives the decision-maker and the public a meaningful basis for comparison of impacts to Mexican spotted owl and its critical habitat. At a minimum, such an alternative should:

- Implement existing forest plan standards and guidelines without amendment.

[22] USDA Forest Service. 2008. *Annual Report Covering the Period June 10, 2005 – June 10, 2007, Programmatic Biological Opinion on the Land and Resource Management Plans for the 11 National Forests in the USDA Forest Service Southwestern Region*. Southwestern Region: Albuquerque, NM. October. 110 pages.

- Avoid road construction in PACs.

- Incorporate treatment concepts outlined below, including large tree retention, management of surface fuels and sub-canopy forest structure, and spatial orientation.

- Apply spatial modeling of different intensities and configurations of treatments in Mexican spotted owl habitat, as demonstrated by Northern Arizona University Forest Ecosystem Restoration Analysis (Prather et al. 2008).

The work of Prather and others (2008) is particularly relevant to this analysis because it is: (1) specific to the project area; (2) consistent with the purpose and need; (3) representative of the best available science; and (4) offers a meaningful basis for comparison of the intensity of environmental impacts that may result from the project. "[E]ven without application of treatments that would seriously affect MSO habitat, managers could achieve approximately 60% of the fuels reduction that would be achieved if there were no restrictions on treatments. With reasonable tradeoffs considered in planning, such as largely treating in lower suitability owl habitat, this figure would rise to over 80%" (Prather et al. 2008: 148). "When conservation and restoration planning is scaled-up from a stand to landscape scale, many apparent conflicts disappear as management actions are spatially partitioned and prioritized" (Prather et al. 2008: 149).

All of the action alternatives include 6.04 miles of new road construction in 13 PACs. *See* Fletcher and others (2012: 749-55). The revised Recovery Plan for Mexican spotted owl (USDI 2012c) specifically recommends against this activity: "New road or trail construction is not recommended in PACs" (USDI 2012: 274); *also see id*. 261 ("We recommend that no new roads or construction occur in PACs"). The FWS qualifies its recommendation, stating: "New road construction should be avoided whenever possible, and temporary road and skid trail construction should be designed to minimize impacts on soil integrity and natural recovery processes. All new and temporary roads and skid trails should be decommissioned and obliterated after use" (USDI 2012c: 264). However, new road construction may adversely affect primary constituent elements of Mexican spotted owl critical habitat, and this is a significant issue for analysis. The Forest Service must cease its practice of refusing to disclose the location and effects of new road construction and take a hard look at potential site-specific impacts to the environment. New roads may destroy large trees and coarse woody structure, permanently impair soil productivity and alter plant communities, and even if their use is temporary. This may cause incidental take of Mexican spotted owl and/or necessitate removal of old growth trees, but the DEIS fails to address either point.

Decommissioning of proposed temporary roads will decrease overall road density in Mexican spotted owl critical habitat by 2.79 miles at the project scale, but total road mileage will increase by 1.92 miles in four PACs after the project is fully implemented, especially in the Bonita Tank PAC (+1.17 miles). *See* Fletcher and others (2012: 749-55) (Tables 213-215). New road construction will occur in three PACs where existing road mileage is not reported: Coulter Ridge PAC (1.76 miles of new road); Upper West Fork PAC (0.01-mile new road); and Volunteer PAC (0.07-mile new road). *Id*. The existing condition of critical habitat and environmental consequences of the project remain undisclosed there.

The FWS has documented incidences of Mexican spotted owls being hit by motor vehicles on unpaved roads (USDI 2012c: 29, 229). "[R]oads and trails through PACs may fragment habitat continuity, alter natural movement patterns, and increase disturbance to resident owls. Roads in nest/roost, forested, and riparian recovery habitat may also result in loss of habitat components (e.g., large logs, large snags, hardwoods) as people access these areas for fuelwood cutting, and in sensitive riparian areas, roads and trail can inhibit hydrological processes that affect proper functioning ecological conditions" (USDI 2012c: 45). Noise associated with road maintenance in PACs may harass Mexican spotted owls and decrease their reproductive success (USDI 2012c: 234-35).

Road construction

All of the action alternatives include significant new construction of 517 miles of road and reconstruction of 30 miles of existing roads. *See* DEIS at 74 (Table 18). This is a significant difference from the proposed actions for this project on which the Center previously commented. In particular:

- The proposed action would have decommissioned 1,111 miles of existing and unauthorized roads, whereas the DEIS action alternatives would only decommission 904 miles.

- The proposed action included only 183 miles of temporary road construction, but the DEIS action alternatives would construct 517 miles of new road.

The Forest Service previously communicated to the public that "very little" new road construction would be needed to implement proposed treatments. In fact, the Forest Service staked its unilateral modifications to the collaborative Old Growth Protection and Large Tree Retention Strategy, discussed above, on the premise that road construction would not be extensive in this project. Road building is one example cited by the agency when old growth trees may be removed. *See* DEIS at 644.

New road construction may significantly impact soils and water quality, and this is a significant issue for environmental analysis. The Forest Service must cease its standard practice of refusing to disclose the location and effects of new road construction and take a hard look at potential site-specific impacts to the environment, as required by NEPA. New roads and ground-based logging activities may cause significant losses of soil productivity (Gucinski et al. 2001: 21) ("Losses of productivity associated with road-caused, accelerated erosion are site specific and variable in extent, but they are commonly reported for all steep-slope landscapes."). New roads can permanently impair soil productivity even if their use is temporary (Trombulak and Frissell 2000).

Road-related soil erosion is a chronic source of sediment production that can limit water quality (Bowman 2001, Gucinski et al. 2001). The distance that sediment travels is an important factor in determining how much eroded soil is delivered to a water body. Soil loss and erosion occurring closer to a stream have greater potential to deliver sediment and lead to water quality

impairment than erosion triggered farther away from streams. For this reason, road-stream crossings have high potential to adversely impact water quality (Endicott 2008). In addition, road construction and fuel treatments may combine to increase overland water flow and runoff by removing vegetation and altering physical and chemical properties of soil, which can permanently alter watershed function (Elliot 2010, Robichaud et al. 2010). This has implications for the purpose and need to protect municipal water supplies from socially undesirable effects of flooding and erosion.

The extent and location road construction and its effects to soil erosion, runoff channelization and suspended sediment loads merit a hard look in the analysis. To comply with NEPA, the Forest Service must study, develop and describe (rather than mention and dismiss) an **action alternative** that foregoes road building on steep slopes and sensitive soils where it may increase erosion or impair productivity. 40 C.F.R. § 1502.14. Such an alternative would provide the decision-maker and the public with a meaningful basis on which to compare environmental impacts. *See* Steinke (2013: 90) (in all action alternatives, 22 miles of new road construction would occur "on severe erosion hazard soils").

Project design features may fail to mitigate significant cumulative effects (Endicott (2008: 93) ("… [A] lack of science to validate [Best Management Practices] effectiveness has been noted as a shortcoming of many BMPs related to forest roads…"). New roads directly remove and cumulatively fragment wildlife habitat, and they indirectly contribute to biological invasions of noxious weeds (Gucinski et al. 2001). Significant cumulative effects of road construction are foreseeable because similar activity will occur in the FWPP, Hart Prairie, Mahan-Landmark, Marshall, Upper Beaver and Wing Mountain projects.

Water quality

Pursuant to the Clean Water Act, each federal agency must comply with all Federal, state and local requirements concerning the control and abatement of water pollution. 33 U.S.C. § 1323(a). The project area includes several water bodies that have been designated as water quality impaired pursuant to Section 303(d) of the Clean Water Act, particularly for mercury in fish tissue: Upper and Lower Lake Mary, Soldiers, Soldiers Annex, and Lower Long Lakes. According to page 41 of the Water Quality and Riparian Areas Specialist Report, "The [Arizona Dept. Environmental Quality – "ADEQ"] has concluded that watershed loading can potentially be reduced through management of sedimentation and vegetative stability. Recommendations included a review of upland and drainage conditions, so that areas requiring soil stabilization measures and channel improvements may be identified." The report further states on page 70:

> Short-term, localized adverse effects to surface water quality are possible in ephemeral drainages within or adjacent to high intensity treatment areas, Subwatersheds [sic] with greater treatment acreages, such as Walnut Creek-Upper Lake Mary (8,334 treatment acres), Upper Spring Valley Wash (7,369 treatment acres, and Volunteer Canyon (6,249 treatment acres) pose the highest risk of short term, localized adverse effects to water quality. Potential adverse effects include increases in turbidity, total dissolved solids, total suspended solids, and nutrients. Implementation of BMPs and SWCPs as specified in Table 1 would minimize adverse effects to surface water quality and riparian ecosystem function.

The report is forthright on pages 44-45, 69 and 75 about the risks to riparian and aquatic systems from road construction and use in the project. Roads, skid trails and landings present a clear risk to riparian and aquatic habitats for increasing sedimentation, erosion, and turbidity, and they may cause the Forest Service to violate Total Maximum Daily Load ("TMDL") restrictions on water pollution. Therefore, the report admits on page 9, "Cumulative effects to water quality and riparian areas, when combined with past, present, and reasonably foreseeable future actions could be significant."

The 4FRI project will be implemented simultaneously with the construction of the Kelly Motorized Trails Project. The Kelly project will bring increased usage to lands south of Lake Mary, and are likely to bring increased motorized traffic to the roads surrounding the Kelly trails. During and after 4FRI implementation, national forest lands will be opened to recreational motorized traffic with a significant but undisclosed mileage of newly constructed roads and reopened roads around Lake Mary. How will the Forest Service limit the cumulative effects of these two projects? How will it prevent trespass from the Kelly project onto roads used for the 4FRI project? How will it pay for increased enforcement and the need to completely obscure closed and re-closed roads after 4FRI project implementation? The Forest Service must describe cumulative impacts of the Kelly project and 4FRI project and offer a plan for controlling motorized vehicle traffic onto the roads to be constructed and used in the action alternatives. The plan should account for the costs of thoroughly obliterating and completely obscuring roads around the Kelly project area. The Forest Service should also offer a contingency plan should TMDL levels in Lake Mary increase as a result of the two projects.

In sum, the DEIS fails to demonstrate how the 4FRI project, along with all other connected, cumulative and similar actions, will meet all Federal, state and local requirements, including state water quality standards, as required by the Clean Water Act. 33 U.S.C. § 1323(a).

Fire management

The intensity of wildland fire behavior and the severity of its physical and biological effects to vegetation, soil, water quality and wildlife habitat depend, in part, on fuel properties and spatial arrangement. Fuel bed structure is a key determinant of fire ignition and spread potential and a central consideration in developing an effective management strategy (Graham et al. 2004). The bulk density (weight within a given volume) of ground fuels (*e.g.*, grasses, shrubs, litter, duff, and down woody material) influences frontal surface fire behavior (heat output and spread rate) more than fuel loading (weight per unit area) (Agee 1996, Sandberg et al. 2001). In turn, surface fireline intensity dictates the likelihood of tree crown ignition and torching behavior (Scott and Reinhardt 2001).

The density, composition and structure of intermediate fuel strata consisting of tall shrubs and small trees also affect crown fire ignition potential because they can support surface fireline intensity and serve as "ladders" that facilitate vertical fire spread from the ground surface into overstory tree canopies. The size of the spatial gap in between ground fuel beds and tree canopies strongly influences the crown ignition potential of a surface fire (Graham et al. 2004). Van Wagner (1977) quantified crown fire ignition rates when surface fires exceed critical fireline

intensity relative to the height of the base of aerial fuels in tree crowns. Torching crowns (*i.e.*, "passive crown fire") can develop into running canopy fires (*i.e.*, "active crown fire" that spreads independent of surface fire behavior) if the spread rate surpasses a crown fuel density threshold that varies with slope angle and wind speed. Reducing the likelihood of active crown fire behavior on steep slopes or in extreme weather may require heavy thinning of dominant trees, depending on pre-treatment forest structure and degree of acceptable risk, and this is an element of the proposed action. *See* DEIS at 24 ("Approximately 61 percent of the ponderosa pine in the project area has a canopy bulk density rating greater than 0.050 kilogram per cubic meter (kg/m^3). The desired condition in ponderosa pine to reduce the potential for crown fire is to have canopy bulk density below 0.050 kg/m^3."); 160 (Table 59 – canopy characteristics for ponderosa pine forest by alternative). Predictions about the relationship of forest structure to crown fire hazard depend, in part, on the validity of crown bulk density calculations and estimates (Perry et al. 2004). The environmental analysis should ensure professional and scientific integrity with site-specific information based on field observations (Weatherspoon and Skinner 1995).

Active management of the arrangement and volume of surface fuels and "ladder fuels" is effective at minimizing potential fire intensity in most circumstances (Graham et al. 2004, Graham et al. 1999). Some advocates contend that removing large or dominant trees can reduce crown bulk density and lessen fire resistance-to-control in extreme weather (Abella et al. 2006). Others question the premise of that contention on the basis that fire weather can overwhelm any effect of fuel treatments on fire behavior (*e.g.*, Perry et al. 2004, Pollett and Omi 2002). To accurately assess fuel treatment effects on the likelihood of crown fire initiation and spread, it is necessary to consider: (1) surface fuel density and arrangement; (2) canopy base height; (3) local topography; and (4) weather patterns (Graham et al. 2004, Hunter et al. 2007). The former two factors can be actively managed in ponderosa pine and dry mixed conifer forest to significantly decrease the likelihood of crown fire initiation and spread without resort to large tree removal in most cases (Fielder and Keegan 2002, Keyes and O'Hara 2002, Omi and Martinson 2002, Perry et al. 2004, Pollett and Omi 2002).

Perry and others (2004) investigated the relationship of forest structure to severe fire effects in ponderosa pine forests of the eastern Cascade Range. Even in areas far departed from historical conditions, "[T]here may be a great deal of landscape heterogeneity in the degree of risk and the treatments required to lower risk …" (Perry et al. 2004: 923). Fuel treatments that reduced surface fuel volume by fifty percent (50%) without any tree thinning prevented torching behavior in 13 of 14 experimental plots with modeled wind speeds exceeding 90th percentile conditions for the study area. A "light thinning" of trees smaller than 12-inches diameter coupled with surface fuel reduction prevented torching in the last plot (Perry et al. 2004: 924). Those results agree with Forest Service observations from the 2002 Hayman fire in Colorado, where active crown fires dropped to the ground upon encountering areas that had been treated with prescribed fire to reduce surface fuels and kill small trees (Graham 2003).

Omi and Martinson (2002) measured the effect of fuel treatments on fire severity in highly stratified forest sites in the western United States and reported a strong correlation of crown base height with "stand damage" by fire. Importantly, crown bulk density did <u>not</u> strongly correlate with observed fire effects:

> [H]eight to live crown, the variable that determines crown fire initiation rather than propagation, had the strongest correlation to fire severity in the areas we sampled... [W]e also found the more common stand descriptors of stand density and basal area to be important factors. But especially crucial are variables that determine tree resistance to fire damage, such as diameter and height. Thus, "fuel treatments" that reduce basal area or density from above (i.e., removal of the largest stems) will be ineffective within the context of wildfire management.

Omi and Martinson (2002: 22). That research was retroactive and the scale of observed fire events confounds replication. However, it noted that results can be extrapolated to sites other than those studied, and its observation that large trees promote fire resistance is supported by Forest Service research (*e.g.*, Arno 2000). A key implication is the importance of treating fuels "from below" in order to prevent widespread occurrence of stand-replacing fires (Omi and Martinson 2002). Keyes and O'Hara (2002: 107) agreed that raising canopy base height is an important factor in reducing fire hazard and noted, "[P]runing lower dead and live branches [of large trees] yields the most direct and effective impact." They also noted the incompatibility of open forest conditions created by "heavy" thinning treatments designed to maximize horizontal discontinuity of forest canopies with management objectives to conserve threatened wildlife populations and prevent rapid understory initiation and ladder fuel development. Understory growth following treatments that create open forest conditions may undermine their long-term effectiveness without commitments to maintenance treatments (*e.g.*, prescribed fire).

Alternative C proposes mechanical treatments on up to 45,000 acres annually, but it proposes management-ignited prescribed fire on only up to 40,000 acres each year. *See* DEIS at 80-81; *also see* Fletcher and others (2012: 244) ("Mechanical thinning and prescribed burning would take place at different times in different locations"). Alternative D would implement mechanical logging treatments on more than double the acreage where it proposes to ignite prescribed fires. *Id*. 88 (mechanical thinning on 388,489 acres; prescribed fire on 178,790 acres). Mechanical logging in lieu of prescribed fire does not reduce the pre-existing surface fuel load. *Id*. 24 ("Mechanical treatments generally do not remove surface fuels from a treatment area, so they remain a potential source of heat (fire effects) and emissions."). Where mechanical treatments would occur in the absence of prescribed fire, the Forest Service proposes to manage activity-created fuels (*i.e.*, "slash") with machine piling, lop-and-scattering and pile burning. *Id*. 263 ("A 30 percent reduction of prescribed fire would leave a significant amount of post-thinning debris and slash on the forests. Without prescribed fire, actions identified in the alternative such as chipping, shredding, mastication, and offsite removal of material would be required."). Those actions are <u>not</u> likely to reduce the elevated fire hazard that results from creation of activity fuels because mechanical logging generates large quantities of slash fuels by relocating tree stems, branches and needles from the overstory canopy to the ground surface (Graham et al. 2004, Stephens 1998, van Wagtendonk 1996, Weatherspoon and Skinner 1995). Logging slash produces higher flame lengths and more intense surface fires that can increase the probability of crown fire initiation compared to fuels that pre-exist logging operations (Dodge 1972, Naficy et al. 2010, Stephens and Moghaddas 2005). According to the Congressional Research Service,

> Timber harvesting removes the relatively large diameter wood that can be converted into wood products, but leaves behind the small material, especially twigs and needles. The

> concentration of these "fine fuels" on the forest floor increases the rate of spread of wildfires. Thus, one might expect acres burned to be positively correlated with timber harvest volume.[23]

Mechanical treatments in all action alternatives will immediately increase the density and volume of fine fuels on the ground surface up to 15 or more tons per acre, depending on pre-treatment forest structure, which will increase fire resistance-to-control and make wildfires more dangerous and severe where activity fuels are not effectively managed. Van Wagtendonk (1996) modeled the effectiveness of low thinning combined with a pile-and-burn slash treatment on flat ground, which yielded nearly identical post-treatment fire behavior as thinning without any slash treatment because pre-existing surface fuels were not significantly reduced. Lop-and-scattering of logging slash "significantly increased subsequent fire behavior" (van Wagtendonk 1996: 1160). Activity fuels may persist for decades:

> In both even aged and un-even aged treatments, it is often assumed that harvest related slash will decompose over time thereby reducing fire hazards. In reality, logging slash may persist for long periods, and therefore, will influence fire hazards for extended periods. Rates of woody fuel decay are highly variable (Lahio and Prescott, 2004). The rates of decomposition of understory fuels are primarily dependant upon several factors including temperature, soil moisture, insect activity, and material size (Lahio and Prescott, 2004). Decaying conifer activity fuels have been reported to persist for 30 years in xeric forest environments (Stephens, 2004).

Stephens and Moghaddas (2005: 377). Prescribed burning is the only treatment that effectively reduces activity fuels and fire hazard below pre-logging conditions (Stephens 1998, van Wagtendonk 1996). "Periodic underburns and programs for restoring natural fire are critical to maintain these post-harvest stands" (Pollett and Omi 2002: 9). Burning is uniquely effective because fire consumes the finest and most ignitable activity fuels that pose the greatest hazard (Deeming 1990).

The Forest Service is required to disclose potentially significant effects of the project on public health and safety, including wildland fire control efforts. It should take a hard look at post-logging fuel profiles and fire hazard at a unit-scale, particularly on steep slopes where prescribed fire may not be used, rather than generalizing them across the project area. Site-specific field data collection and reporting is a fundamental professional standard for fuel management in this project:

> Mapping should utilize the best sampling strategies combining remote sensing imagery (perhaps at several scales) and ground truthing. The reliability of existing vegetation maps should be verified before they are incorporated into the database. Fire-relevant attributes of vegetation (including understory composition and structure, and vertical and horizontal continuity) need to be characterized adequately. Similarly, surface fuels should be described, utilizing field-verified vegetation/fuels correlations to the extent feasible.

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[23] Gorte, R.W. 2000. *Memorandum on Timber Harvesting and Forest Fires*. Congressional Research Service, Library of Congress: Washington, D.C. August 22. Available at: http://cnie.org/NLE/CRSreports/Forests/for-30.cfm (accessed May 20, 2013).

Weatherspoon and Skinner (1996: 1488). The analysis should disclose how much slash would remain on the ground after logging is completed and take a hard look at the effectiveness of different activity fuel treatments at the sites to be treated.

The direction of fire spread (backing, flanking, heading) is an important consideration because fire interacts with weather, topography and vegetation to "back" and "flank" around certain conditions, or "head" through others as it spreads (Graham et al. 2004). Steep slopes can facilitate wind-driven convection currents that drive radiant heat upward and bring flames nearer to adjacent, unburned vegetation, thus pre-heating fuels and amplifying fire intensity as it spreads upslope (Whelan 1995). As a result, severe fire effects often are observed to concentrate at upper slope positions and on ridges, whereas such effects are relatively rare on the lee side of slopes that do not directly receive frontal wind (Finney 2001). Therefore, fuel treatments should be oriented in concert with prevailing spatial patterns of fire spread in the project area. Overlapping fuel treatments that reduce fuel continuity can fragment extreme fire effects into smaller patches if they disrupt heading fire behavior and increase the area burned by flanking and backing fires (Finney 2001). Slope aspects facing away from frontal or diurnal winds are a lesser treatment priority because backing fires are the most likely to exhibit mild intensity and effects. The Forest Service should analyze these factors and demonstrate that proposed treatment locations and intensities will meet the purpose and need. The analysis will be most helpful to the decision-maker and the public if it includes detailed study of **action alternatives** that propose different treatment locations and intensities to compare project effects on potential fire behavior and the environment.

An additional approach to the strategic location of fuel treatments is to identify landscape features that are currently resistant to severe fire effects and use them as anchor points for a compartmentalized landscape fire management strategy. Such features may include natural openings, meadows, relatively open ridges, moist riparian areas, mature forest patches with shaded and cool microclimates and little or no history of past logging (*e.g.*, Countryman 1955, Naficy et al. 2010), and areas where fuel treatments already have been completed. *See* DEIS at 677-82 (past actions in project area). Those features can support the strategic fire use for resource benefits, application of confinement and containment strategies as alternatives to full control of unplanned fires, and provide safe areas for workers to ignite prescribed fires for hazard reduction and ecological process restoration. The analysis should consider such factors.

Finally, in our view, the Forest Service should prioritize fuel treatments at locations where relatively little resource investment may create fire resistant conditions in the shortest amount of time. Targeting initial work in this way will maximize the area treated with available funds and personnel, and provide the greatest opportunity to quickly reduce fuels and restore ecosystem function at larger spatial scales. It is not clear that the Forest Service has given its own research on this point requisite consideration in the DEIS.

Cumulative effects

Significant cumulative effects to the environment may result from the proposed action in combination with past, ongoing and foreseeable management activities (*e.g.*, Elliot et al. 2010).

The Forest Service is required to take a hard look at such impacts rather than merely list potential causes or mention that some risk may result from a catalogue of activities. *See e.g.*, *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379-80 (9th Cir. 1998) ("To 'consider' cumulative effects, some quantified or detailed information is required […] General statements about 'possible' effects and 'some risk' to not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided"). Appendix F in the DEIS contains little information describing cumulative effects on various resources. The DEIS itself is not consistent across resources, and in many cases, it renders conclusions as opinion without supporting information.

As noted above, the Forest Service advances an untenable rationale for excluding contracted 4FRI projects on other national forests from its analysis of significant cumulative effects. *See* DEIS at 697. It offers a similarly specious reason for excluding the Flagstaff Watershed Protection Project ("FWPP") from its cumulative effects statement:

> Flagstaff Watershed Protection Project: There are about 3,670 acres in the vicinity of Dry Lake Hills and Mormon Mountain that are likely to receive restoration actions in the foreseeable future (2013). The project is a partnership between the city of Flagstaff and Coconino NF. No purpose and need for action has been developed for the project; therefore, no specific activities have been proposed. At this time, this project has been eliminated from the cumulative effects reasonably foreseeable category.

Id. In fact, the Forest Service developed a detailed purpose and need and proposed action for the FWPP, and released them for public scoping just one week after it published the notice of availability for this DEIS in the *Federal Registe*r.[24] According to the FWPP proposed action on page 2, "Overlap between the Four Forests Restoration Initiative (4FRI) and the FWPP area is present; some areas that are already being analyzed by 4FRI are being included in this planning effort to address additional treatment options (such as treatments on steep slopes), while other 4FRI areas will not be reanalyzed." On page 7, it proposes mechanical logging and prescribed fire on 8,810 acres, including within Mexican spotted owl PAC and nest core areas, and construction of 15.5 miles of new road, including within PAC. More, as described above, the FWPP proposed action includes forest plan amendments that are similar or identical to those proposed for the action alternatives in this DEIS.

Livestock grazing may cause significant cumulative effects for several reasons. Grazing directly contributes to fire hazard by impairing soil productivity and altering plant composition, which indirectly contributes to delayed fire rotations, increased forest density, and reduced forage for herbivorous species (Arnold 1950, Belsky and Blumenthal 1997, Cooper 1960, Madany and West 1983, Mitchell and Freeman 1993, Rummell 1951). In addition, livestock grazing combined with proposed mechanical thinning, prescribed fire treatments, and foreseeable off-road motorized vehicle use (*e.g.*, Kelley Motorized Trails Project) may spread exotic plants and reduce the competitive and reproductive capacities of native species. Once established, exotic species may displace natives, in part, because natives are not adapted to ungulate grazing in combination with fire (Mack and Thompson 1982, Melgoza et al. 1990, Belsky and Gelbard

[24] The April 5, 2013, scoping letter and proposed action for the Flagstaff Watershed Protection Project is attached to this letter for convenience.

2000). The DEIS lists many grazing allotments in the project area, but it fails to take a hard look at significant cumulative impacts that may result from the project together with continued grazing and other activities.

Exotic plant spread is a potentially significant forest-wide cumulative impact of the proposed action. Treatments similar to the proposed action in northern Arizona left forest sites overrun with cheatgrass (*Bromus tectorum*) (McGlone et al. 2009). Although it is not extensive in the project area today, exotic grass invasion is foreseeable and has important long-term implications for native plant communities in fire-adapted ecosystems and wildlife. Melgoza and others (1990) studied cheatgrass soil resource acquisition after fire and noted its competitive success owing to its ability suppress the water uptake and productivity of native species for extended periods of time. They further showed that cheatgrass dominance is enhanced by its high tolerance to grazing. Its annual life-form coupled with the abilities to germinate readily over a wide range of moisture and temperature conditions, to quickly establish an extensive root system, and to grow early in the spring contribute to its successful colonization. In addition, Melgoza and others (1990) showed that cheatgrass successfully competes with the native species that survive fire, despite these plants being well-established adult individuals able to reach deeper levels in the soil. This competitive ability of cheatgrass contributes to its dominance when lands experience synergistic disturbances from grazing, mechanical treatments, and fire.

Plan amendments

All of the action alternatives would amend standards and guidelines of the forest plans. The Center commented in scoping that the amendments are "significant," within the meaning of the NFMA, and therefore require observance of appropriate and more extensive NFMA procedures. The DEIS fails to support a finding that the plan amendments are "nonsignificant" because the public cannot use the information contained in it to determine the acres affected or their relationship to other anticipated uses under the plans. For example, the Forest Service does not disclose the method or analysis it used to determine that the amendment regarding canopy cover in ponderosa pine forest would affect only 18 percent of goshawk habitat in the Coconino National Forest and 20 percent of habitat in the Kaibab National Forest. The scope of proposed treatments in goshawk habitat under the proposed amendments are far more extensive than disclosed in the DEIS.

The proposed amendments are "significant" because they may bring about "Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area." FSM 1926.52 (Jan. 31, 2006). This is particularly evident in light of facts, discussed above, that the Forest Service is concurrently advancing identical plan amendments in every pending action on the Coconino National Forest with a similar purpose and need. The Forest Service should account for cumulative effects of its efforts to unravel current management direction and follow the procedures required for developing and approving forest plans.

In conclusion, the Center views the project as potentially beneficial if it observes the science-based recommendations provided above, but we have significant questions regarding many aspects of the analysis, including its segmentation of the overall 4FRI program, its failure to disclose cumulative effects, its lack of a reasonable range of alternatives, and its amendment of forest plans, which may undermine species viability.

Please timely notify me of all developments with the project. I wish to be involved at every opportunity.

Sincerely,

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Att.

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POTENTIAL IMPLICATIONS OF 4FRI LARGE/MATURE TREE RETENTION ON CORRIDORS FOR GRASSLAND WILDLIFE

Prepared by S. Rosenstock and J. Gist, Arizona Game and Fish Dept., Region II Habitat Program, 12/15/14

Background

Rapid population growth and associated development have impacted many native wildlife species in Arizona. One landscape-scale consequence of those changes is reduction in habitat connectivity for ungulates and other highly mobile terrestrial species. This loss of connectivity can prevent access to important habitat resources, limit gene flow, and ultimately effect population viability and persistence. The American Pronghorn (*Antilocapra americana*) is a species for which connectivity is of primary importance and whose habitats in northern Arizona have been adversely impacted by a variety of factors, including encroachment of woody vegetation into mid-elevation grasslands and meadows/openings within the ponderosa pine cover type.

Historically, pronghorn maintained genetic connectivity from the South Rim of the Grand Canyon to the Prescott Valley. Today, a combination of roads, impermeable fences, encroached meadows and forests, and other barriers impede their seasonal migrations and daily movements. The Arizona Game and Fish Department (Department) has aggressively pursued partnership efforts to reconnect pronghorn populations across Northern Arizona. These include cooperative studies with the Arizona Department of Transportation and Federal Highways Administration to identify animal movements, and use these data to facilitate safe crossing of transportation corridors while protecting human safety. The Department is also working with private landowners and public lands managers to retrofit fences for passage by pronghorn and other wildlife. As a cooperating agency for the 4FRI EIS, the Department worked closely with the ID Team to identify places where treatments could be strategically placed to benefit pronghorn and other grassland species. These included savannah/grassland restoration areas and movement corridors located within forested areas. The latter were identified through a multi-stakeholder, collaborative connectivity assessment for Coconino County (Arizona Game and Fish Department. 2011. The Coconino County Wildlife Connectivity Assessment: Report on Stakeholder Input).

Treatment elements intended to benefit grassland species were vetted through the 4FRI stakeholder group and included in the initial treatment design (DEIS). Unfortunately, the selected Alternative C did not carry these forward in full. Approximately 9,800 acres of stands targeted for retention of mature/old-growth and large, young trees (VSS 4-6) and higher levels of canopy cover fall within grassland species movement corridors identified in the 2011 connectivity assessment (Figure 1). Within those stands, the Department has identified approximately 2,500 acres that represent potential high-priority areas for creation or enhancement of connectivity for pronghorn and other open-canopy species. Examples of such areas are given in Figures 2-3.

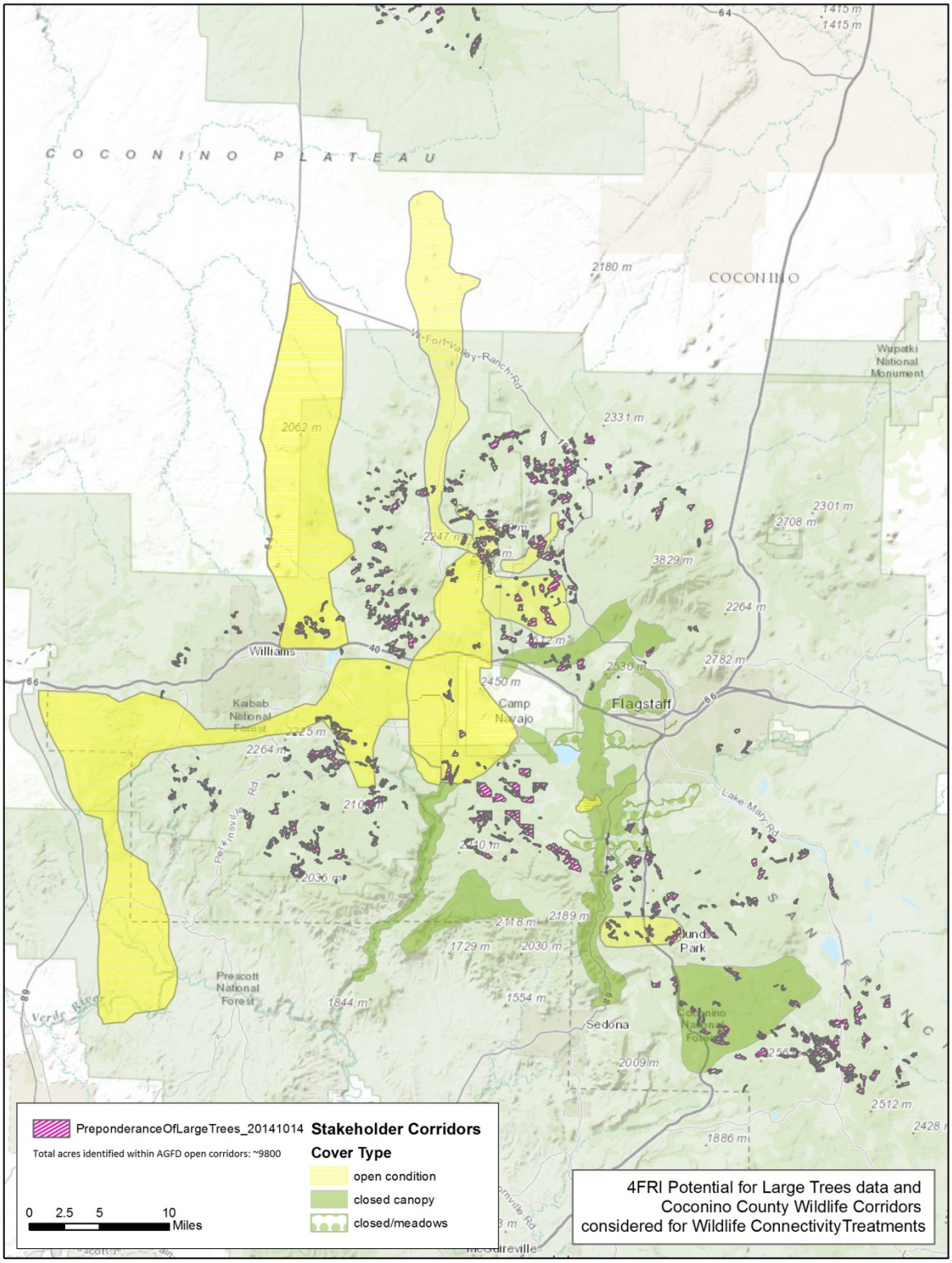

Figure 1. Locations of wildlife movement corridors and VSS 4,5,6 retention stands located therein.

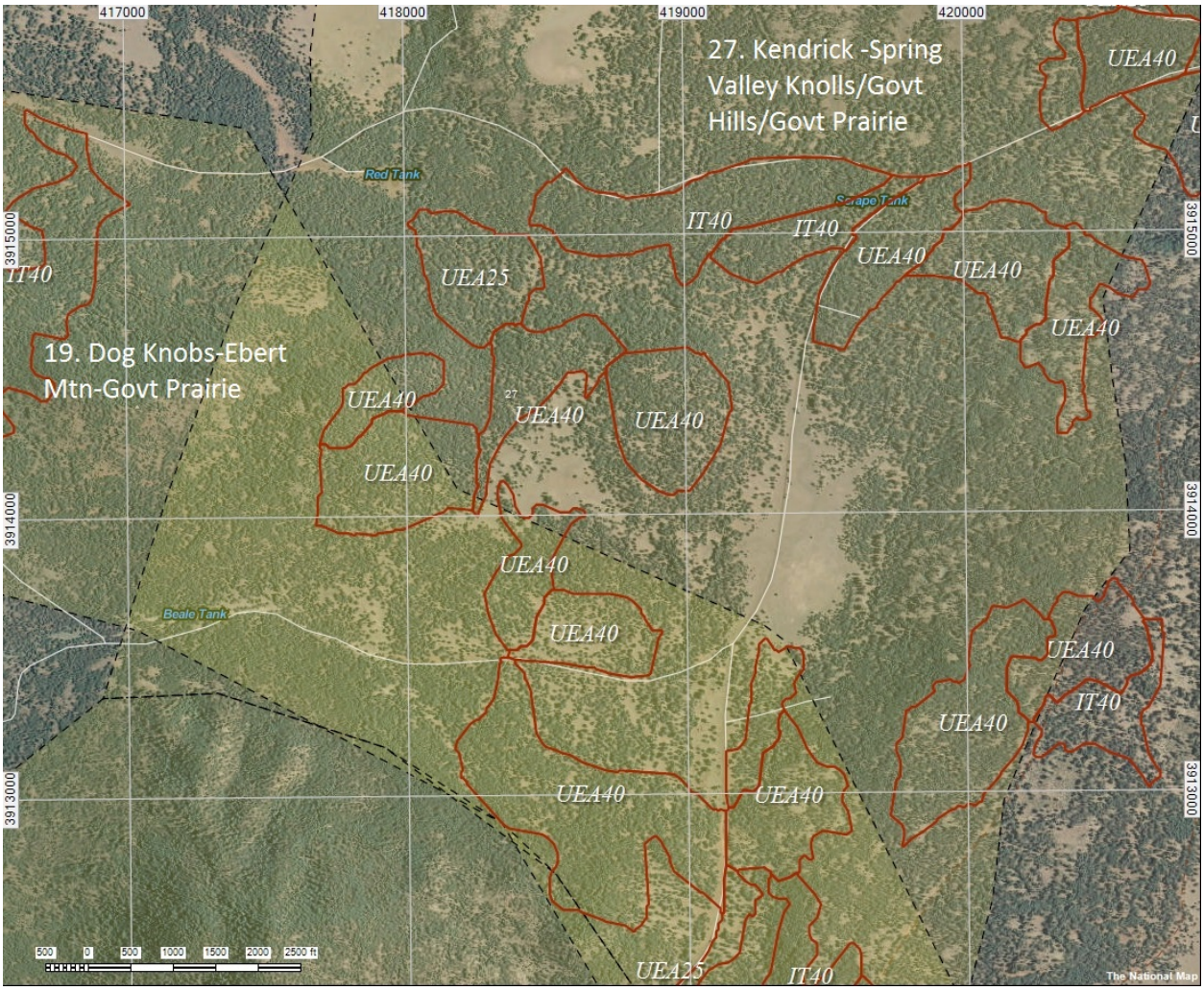

Figure 2. Current satellite imagery showing example grassland wildlife corridors (within dashed lines) that are blocked by large/mature tree retention stands (orange polygons, labeled by treatment type).

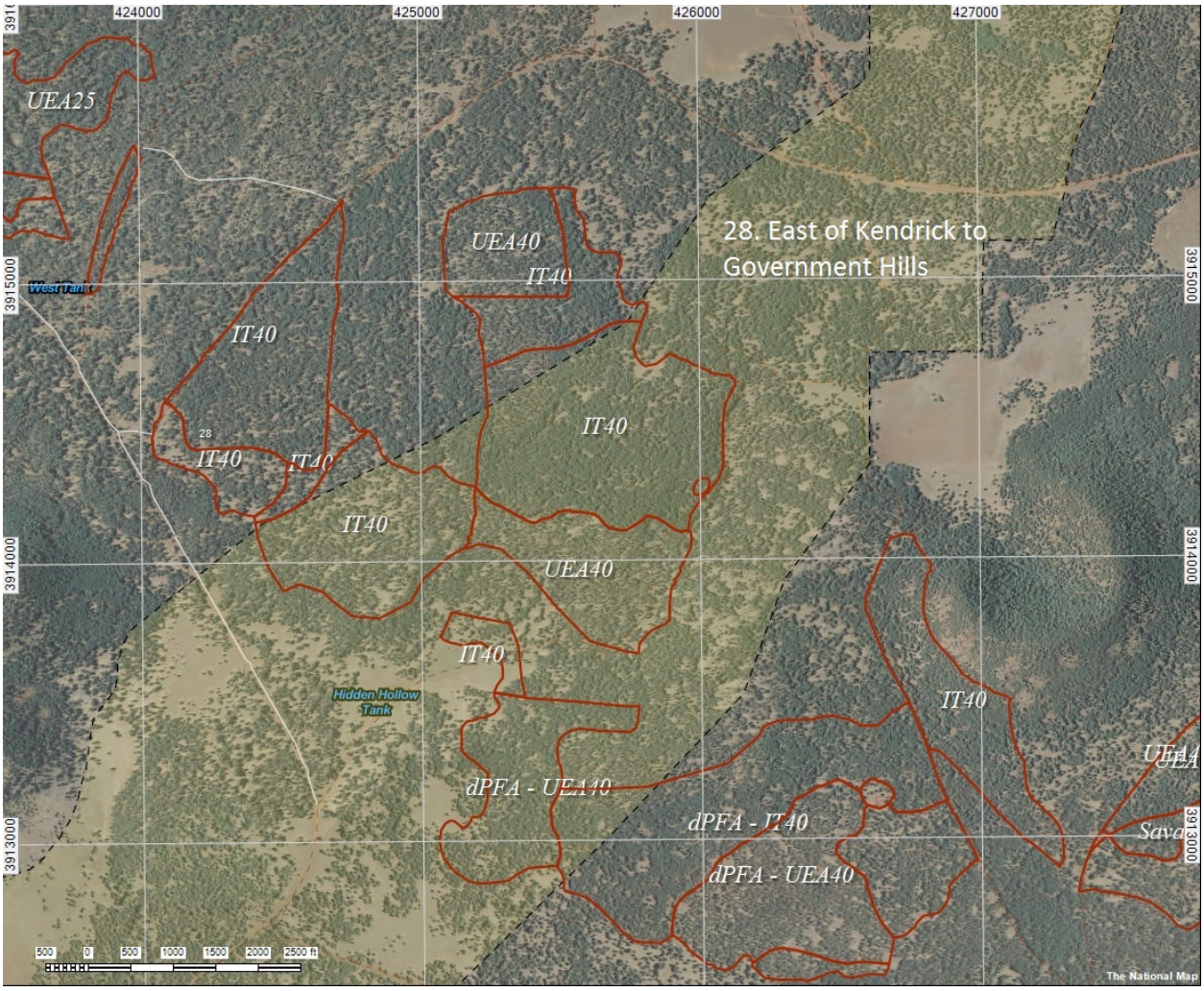

Figure 3. Current satellite imagery showing example grassland wildlife corridors (within dashed lines) that are blocked by large/mature tree retention stands (orange polygons, labeled by treatment type).

We are concerned that strict implementation of the Alternative C treatment design will compromise our ability to meet important conservation objectives for grassland wildlife and miss opportunities to leverage work being done under 4FRI. Where large tree retention objectives overlap with identified grassland-species movement corridors, we recommend adding language to the ROD and Implementation Plan that provide flexibility for more intense mechanical treatment under limited and clearly defined circumstances. This would allow removal of conifers from encroached meadows, restoration and connection of forest openings, and creation of travel corridors through stands with high tree densities. Our expectation is that few, if any of these modifications would impact stands composed of mature or old-growth trees, instead falling into those with a preponderance of large, young trees. It's important to note that delineation of retention stands was based on USFS stand exam data, which are relatively coarse with respect to the scale at which mechanical treatment would be used to create/modify movement corridors.

Actual conditions on the ground may differ, thus the actual number of acres affected could be lower. During implementation, corridor treatments will be informed by existing and future data on pronghorn movements, including that obtained from pronghorn recently capture and collared by the Department.

Suggested Modifications

We suggest the following potential additions (in red) to support restoration and enhancement of grassland wildlife corridors through mechanical treatments implemented during 4FRI.

(DROD, pp. 21-22)

In addition, the implementation plan (FEIS, appendix D) now emphasizes that when outside of the wildland-urban interface, restoration treatments in goshawk habitat (approximately 38,260 acres) will focus on the removal of small-diameter trees and will emphasize retaining large trees where applicable to move toward deficit stand structure. This will be accomplished by placing an emphasis on creating regeneration openings and interspace in areas where smaller VSS 3 and VSS 4 trees dominate. The placement of tree groups to be retained will focus on areas where the largest trees are already aggregated. These groups will generally range between 0.25 and 1 acre in size. This will result in stands being composed of groups of larger trees intermixed with relatively small openings. In stands with a preponderance of large young trees the treatment intensity will be managed to the lower end of the available spectrum. Management in these stands still recognizes the need to create regeneration openings to be able to promote uneven-aged stand conditions.

The selected alternative also recognizes that, within the savanna treatment acres, there are some stands that contain a preponderance of large, young trees. On the 3,300 acres where this occurs, we have decided to use the treatments proposed in alternative E that will retain large trees and not implement savanna treatments on these acres.

Within the above areas, there would be limited exceptions for more intensive mechanical treatment in areas previously identified as corridors for grassland wildlife (AGFD 2011), that would not exceed approximately 2,500 acres. Old growth trees would not be cut under this exception.

(FEIS Appendix D – Alternatives B through E Implementation Plan)

Landscapes Outside of Goshawk Post-fledging Areas, WUI55, UEA40, UEA25 and UEA10 Mechanical Thin and Burn Treatments Design

On approximately 23,500 acres (about 12,200 acres on the Coconino and 11,300 acres on the Kaibab NF, respectively) of uneven-aged (UEA) 40 and UEA 25 non- wildland-urban interface stands with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural

range of variability for ponderosa pine in the non- wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed forest plan guidance for canopy cover, and is intended to achieve 40 percent canopy cover at the stand scale (alternative C and E only). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Landscapes Outside of Goshawk Post-fledging Areas Intermediate Thin (IT) 40, 25, and 10 Mechanical Thin and Burn Treatments Design

On approximately 11,600 acres (about 8,900 acres on the Coconino and 2,700 acres on the Kaibab NF, respectively) of IT 40 and IT 25 non-wildland-urban interface stands with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural range of variability for ponderosa pine in the non- wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed forest plan guidance for canopy cover, and is intended to achieve 40 percent canopy cover at the stand scale (alternative C and E only).). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Savanna/Grassland Restoration Mechanical and Burn Treatments Design

In alternatives B-D only, restore pre-settlement tree density and pattern using pre-settlement evidence as guidance. Manage for an open reference condition with 10 to 30 percent of the area under ponderosa pine and deciduous tree crowns (see forest plan consistency evaluation in silviculture report). Manage for the sustainability of identified wildlife corridors for grassland species (see AGFD 2012) by treating these areas to the higher end of percent in interspaces or to a lower ratio of leave tree to evidence ratio.

Dispersal Post-fledging Family Areas / Post-fledging Family Areas in Uneven-aged Treatment (UEA) Types 40, 25, and 10 Mechanical Thin and Burn Treatments Design

On approximately 2,000 acres (about 700 acres on the Coconino and 1,300 acres on the Kaibab) of dispersal post-fledging family area UEA 25, dispersal post-fledging family area UEA 40, post-fledging family area UEA 25 and post-fledging family area UEA 40 non- wildland-urban interface stands with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural range of variability for ponderosa pine in the non-wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed forest plan guidance for canopy cover, and is intended to achieve for mid-aged forest (VSS 4) on average 1/3 60+ percent and 2/3 50+ percent and for mature (VSS 5) and old forest (VSS 6) should average 50+ percent canopy cover at the stand scale (alternative C and E only). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Dispersal Post-fledging Family Areas / Post-fledging Family Areas Intermediate Thin (IT)40, 25 and 10 Mechanical Thin and Burn Treatments Design

On approximately 1,100 acres (about 900 acres on the Coconino and 200 acres on the Kaibab) of dispersal post-fledging family areas IT 25, dispersal post-fledging family areas IT 40, post-fledging family areas IT 25 and post-fledging family areas IT 40 stands that are not wildland-urban interface with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural range of variability for ponderosa pine in the non- wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed forest plan guidance for canopy cover, and is intended to achieve for mid-aged forest (VSS 4) on average 1/3 60+ percent and 2/3 50+ percent and for mature (VSS 5) and old forest (VSS 6) should average 50+ percent canopy cover at the stand scale (alternative C and E only). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Dispersal Post-fledging Family Areas / Post-fledging Family Areas Stand Improvement (SI)40, 25, and 10 Mechanical Thin and Burn Treatments Design

On approximately 37 acres (about 37 acres on the Coconino) of post-fledging family area SI 25 non- wildland-urban interface stands with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural range of variability for ponderosa pine in the non-wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed forest plan guidance for canopy cover, and is intended to achieve for mid-aged forest (VSS 4) on average 1/3 60+ percent and 2/3 50+ percent and for mature (VSS 5) and old forest (VSS 6) should average 50+ percent canopy cover at the stand scale (alternative C and E only). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Dispersal Post-fledging Family Areas / Post-fledging Family Areas Pine Sage Mechanical and Burn Treatment Design

On approximately 87 acres (about 87 acres on the Kaibab NF) of post-fledging family areas pine sage non- wildland-urban interface stands with a preponderance of large trees (at a minimum all VSS 5 and 6 stands and VSS 4 stands with a mean basal area greater than 70 of the VSS4 size class and a mean trees per acre less than 100 of the VSS 4 size class) would be managed for greater residual canopy cover and density of large trees. Residual stand structure would be managed at the upper end of natural range of variability for ponderosa pine in the non-wildland-urban interface stands that meet these conditions. This would be accomplished by focusing treatments towards the lower end of the identified intensity range, managing for larger group sizes (see below), and/or retaining additional large trees. Post treatment canopy cover in these stands would meet or exceed 40 percent, measured at the stand scale (alternative C and E only). Limited exceptions could occur on areas identified as potential movement corridors for pronghorn and other grassland wildlife species (see AGFD 2011). In those areas, more intensive mechanical thinning of non-mature/old-growth trees and lower levels of residual canopy cover would be allowed. These would be of limited spatial extent and intended to restore natural openings, increase connectivity between natural openings, and facilitate animal movement through treed areas.

Region II Commission Briefing July 27, 2007

U.S. Forest Service

TMR

The Coconino National Forest has scheduled a third round of public meetings on the Travel Management Rule July 31 to August 4. In this round of public meetings the Forest will be presenting a proposed action including maps and will be taking Public Comment. The Department will be represented at all four meetings. The Kaibab has not scheduled any more public meetings or made any decisions at this point.

Forest Plan Revision

The Kaibab has said they hope to resume collaborative efforts on the Plan Revisions in September. The following are excerpts from the letter we received:

> *"Nationally, the Forest Service has filed a notice to prepare an environmental impact statement to address the flaws identified by the court in the 2005 Rule process. The Arizona Forests have all continued to work on several tasks associated with Plan revision in a manner consistent with the National Forest Management Act and neutral with respect to the various planning rules that might apply. The Kaibab NF will continue to work on those over the next several months to identify needs for change to the Plan. We intend to do much of this with those of you who would like to help us.*

The work many of you helped us with previous to the court ruling is not lost. Nearly all of it will continue to be used in identifying the needs for change. Specifically:

- *Public participatory processes will resume. Although the 2005 Rule was the only one that required collaboration, none of the others prohibited it, and we think it's a good idea.*
- *We will continue to aim for a more strategic, less prescriptive Plan as an end product, with a primary focus upon desired conditions and objectives to make progress toward the desired conditions.*
- *Sustainability analyses are continuing in order to ensure compliance with the requirements of NFMA. We are preparing a rough draft of the ecological sustainability report, incorporating information and public input for the two primary parts of this analysis – ecosystem diversity and species diversity. While we are not sure how species will eventually be addressed in the Plan, the information developed with your help is captured in a database that will serve as an invaluable reference, regardless of which process we use. We have finished a rough draft of our social and economic sustainability report, incorporating information and public input. Once these sustainability analyses have been reviewed internally, we will share them and engage in dialogue with our publics to identify the social and economic needs for change.*

Beginning in late September, we hope to resume public processes to continue this work, aiming toward completion of a comprehensive assessment of the needs to change the Plan this winter. As we move through the summer, we will be sending you specifics about meeting topics, times and places"

Plan revision efforts have been extremely quite and the Region has not been involved on any of the Forests.

Goshawk Guidelines

The Department has concern about a shift in how the Forest Service implements their own Northern Goshawk Guidelines within the current Forest Plan. One of the primary concerns the Department has with the new interpretation is that forest thinning treatments have the potential to reduce overall tree canopy cover to levels that may not meet the habitat needs for wildlife within those treated areas. The Department has vetted these concerns at several meetings and has been unable to resolve these concerns with the Forest Service. All previous Forest Service planning projects have planned canopy cover reduction levels at the stand level. Under the new interpretation of the goshawk guidelines, the Forest Service is proposing target canopy cover ranges at the group level as opposed to the stand level (where a group is defined as an aggregation of one or more clumps of trees of varying age and size interspersed with openings).

The Management Recommendations for the Northern Goshawk in the Southwestern United States (GTR-RM-217) defines northern goshawk habitat through the structural habitat attributes of 14 of the hawk's prey species. The canopy cover data described for these prey species, and for the northern goshawk, were measured at the stand level – not the tree group level. By changing the canopy cover targets from the stand level to the group level, the Department is concerned that the Forest Service may not be meeting the habitat requirements for those 14 wildlife species, and also may not be meeting the habitat requirements for the northern goshawk per the 1996 Forest Plan Amendment.

Related to the new Forest Service guidance for implementing the northern goshawk guidelines, the Department is also concerned that Forest Service proposed treatment might trend toward even-aged group selection over time. For example, the Forest Service proposed to regenerate groups of VSS1 and 2 while reducing canopy cover for tree groups of other VSS classes. Managing tree groups by VSS class comes across as even-aged tree group management. However, scientific literature describing the historic range of variability in southwestern ponderosa pine does not find that tree groups were even aged. Rather, the literature suggests that tree groups were often comprised of multi-aged trees intermingled intimately in the same area (Long and Smith 2000, Mast et al. 1999, White 1985). Uneven aged tree composition within groups is important for vertical structure and provides forage and breeding habitat for songbirds as well as thermal cover for raptors as well as deer and elk.

Department personnel from Regions I and II, Research Branch, Nongame Branch and Habitat Branch attended a workshop on the new interpretation in Flagstaff including a field trip to stands marked under the new interpretation. All the Department personnel who attended the workshop were concerned that the degree of openness permitted under the new interpretation because of its potential to negatively impact forest wildlife including goshawk squirrel, bear, turkey, and dense forest songbirds.

The Forests have decided that they do not need to do any NEPA on these changes because they believe it is simply clarification of existing guidance. The Department is of the opinion that the Forests should have gone through the NEPA process, or at minimum consulted with the state and federal fish and wildlife agencies. Consultation, or a forum for discussion, is necessary between the Forests and the Department to resolve these concerns.

Regional Wood Supply Analysis

The Department is participating in the Wood Supply Working Group, which just recently held its second (of 7) meetings. The WSWG is comprised of natural resource agencies and wood utilization private industries; the group is facilitated through a Forest ERA (NAU – Tom Sisk's Lab) grant; and the grant is funded by the Forest Service. The group is tasked with estimating the amount of small-diameter ponderosa pine wood that would be available from forest restoration projects, for the purpose of establishing a small-diameter wood industry. As per the Governor's Forest Health Strategy, and other regional economic assessments, landscape-scale restoration of fire-adapted ecosystems is unaffordable under current contracting processes. The only way to see landscape scale treatments be implemented would be to allow small diameter wood industries to pay for the restoration treatments. Wood industries, however, are only willing to pay for these treatments if they know the wood supply will be adequate to cover the costs and generate profit.

The Department supports this effort, as long as the analysis is driven by goals of forest restoration, wildlife habitat, and restoration of fire-adapted ecosystems (as opposed to designing treatments that maximize industry gain and encourage long-term extraction of trees beyond the goals of forest restoration). The analysis uses a GIS approach, and the Department has worked successfully to ensure that threatened and endangered species habitat, riparian habitat, and wildlife movement corridors are considered during the analysis. A product from this WSWG is expected in fall 2007.

Kaibab National Forest

Westside Habitat Improvement/Slide Fire:

On July 5, 2007 at 2:30 pm lightning ignited a fire within the Westside project area. This fire burned about 6,000 acres and burned sections of the treatment area defined as pinyon/juniper push areas, pinyon juniper woodlands, upland areas, and valley bottoms. The fire burned in a mosaic pattern and a majority of the fire was low to moderate intensity. A significant portion of the fire burned over the acreage burned in the 1996

Bridger fire. A Burned Area Emergency Response (BAER) team was formed and several rehabilitation treatments for the areas that burned at a moderate to high intensity are planned for implementation. As stated in the draft BAER report, the goal for the treatments is for the control of cheatgrass not for erosion control.

During the time of the fire, it was recognized by the media radio and press releases that this area is in quality mule deer habitat. Region II had the opportunity to comment on the initial report and suggested to the team that they incorporate shrub seed into the treatments to aid in the return of winter browse species; and that they consider increasing the amount of early successional native grasses as opposed to planting sterile rye. There is evidence in the literature that if successfully germinated, sterile rye grasses can impede the establishment of native vegetation.

At the present time, the fire has not slowed plans for implementation on the Westside. There may be slight modifications in timing of seeding and herbicide treatments however; the Department still plans on seeding 500 acres of desirable browse species in the fall of 2007. The Region has been working with Truax Drills, Inc. who has been developing an interseeding tool that will seed shrubs into existing vegetation. Jim will be coming out to do a site visit on the 30th of July to the Westside treatment area to hone in on specifications for the tool as well as look at current conditions within the fire footprint and beyond.

Currently, pinyon and juniper habitat treatments are expected to resume on the Westside next week. Forest closures due to dry conditions as well as the wildfire halted implementation for several weeks. The contractor continues to do an excellent job removing juniper from historic push treatments. This type of treatment will continue throughout the summer.

Coconino National Forest

Senate Bill 1441 Progress on Anderson Mesa Grassland Restoration

Both the grassland restoration and the lake fencing are on going since the last commission briefing. Approximately an additional 1500 acres of grassland restoration and 200 acres of seeding have been completed. This brings us up to approximately 2600 total acres of grassland restoration and 530 acres of seeding. Diablo trust is currently talking with additional contractors and considering hiring more crews to speed up the work.

GFFP

The Department continues to participate in the Greater Flagstaff Forests Partnership (GFFP) on two primary projects: 1. Completion of the Jack Smith/Schultz Fuels Reduction Project NEPA planning, and 2. Ensuring that the Forest's and GFFP's commitment to assisting with Research Branch's wildlife research in the wildland-urban interface of GFFP projects is honored. While the scope and future activities of GFFP are still uncertain at this time, the Department will continue to follow GFFP activities and gauge the benefit of our continued participation.

BLM Arizona Strip District:

Upper Lang's Run Integrated Vegetation Management:

The Department commented on a draft EA for a 9,000-acre watershed vegetation project near Mount Trumbull. The Strip District is beginning to look at planning at a watershed level, which will increase acreages associated with treatments. While the Department is in full support of this type of planning, it has become increasingly important to be involved with all stages of the project. We have been working well with the District on this project; however, we have some concerns that not all the appropriate tools are being addressed as possibilities to meet vegetation objectives. For example, many of the conditions in the project area are that of an overstory of pinyon and juniper with little to no understory. At this point the BLM plans to thin some of the overstory, but has not fully explored methods to do so, as well as how to incorporate appropriate seeding techniques. The Department has plans for several field trips to this project area and is confident at this point that our issues will be heard and at lease partially incorporated into project planning.

OTHER

Colorado Plateau Native Plant Initiative (CPNPI) and the Northern Arizona Native Seed Association (NANSA)

During the week of June 11th, Regional staff attended the Colorado Plateau Native Plant Initiative Meeting in Moab, Utah.

For several years, state, federal, and non-profit groups in Utah have been engaged with the development of native plant materials on the northern part of the Colorado Plateau. Region II has worked with members of these groups over the last 2 years in gaining skills in how to use these native plant materials on the landscape, specifically related to the Westside Project on the North Kaibab Ranger District. With increasing habitat degradation due to fire, drought, and excessive grazing, important AZ wildlife habitat continues to be at risk. To date, the limiting factor for habitat restoration is adequate native plant materials.

Until recently, the scale of Utah's native plant program did not include the southern part of the Colorado Plateau or any of AZ to speak of. This status is changing and the main reason for this meeting was to work toward joining the existing groups into one Colorado Plateau Native Plant Initiative, and the expansion of efforts Colorado Plateau wide. At this time, AZ groups and agencies are welcomed, invited, and encouraged to participate. The group is not asking for money at this time but more importantly ideas and needs for the program. Because this group is just starting, there is an opportunity to be in an active, leadership role from the states perspective. The UTDWR has had a successful habitat

restoration program for years, and should the Dept. head in this direction, the Region recommends that we utilize their experience.

Notes from the 1st Colorado Plateau Native Plant Initiative are available upon request. Opportunities to learn and participate more in the program will become available in September at a Restoration Workshop in Grand Junction, CO and in early November at The Ninth Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ.

At a more local level, the Northern Arizona Native Plant Association (NANSA) had an additional meeting in July. This group continues to work as a sub-group of the CPNPI. This group hopes to raise awareness within the local area for the need for native seed, work on developing a market for local seed, and continue to work on small native seeding projects. Although this group has only recently formed, there is now the potential for a coordinator, which will expedite the ability to gather interest and apply for grant money.

Coconino County

We are actively engaged in the Coconino County Parks and Recreation effort to sell a conservation easement on Pumphouse Greenway to NRCS through the Farm Bill's Wetland Reserve Program. The Department is currently working with Coconino County and NRCS to develop a conservation plan for the easement that will restore and enhance the wetlands of Pumphouse Greenway, reduce wildlife disturbances and control human/domestic dog access within the wetland, and provide substantially more Watchable Wildlife developments for the area. Planning is almost complete, and the easement purchase is scheduled to occur in November 2007. The Department recently participated in a public meeting on the Pumphouse WRP, where we presented information on wildlife habitat in the wetlands as well as Watchable Wildlife opportunities.

Naval Observatory INRMP

We attended a meeting and reviewed a draft plan for the management of natural resources on the Naval Observatory.

THE STATE OF ARIZONA
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Gene Waldrip
District Ranger, Peaks Ranger District
5075 N. Highway 89
Flagstaff, AZ 86004

RE: Comments on the Jack Smith/Schultz Fuel Reduction and Forest Health Project Proposed Action

5 June 2007

Dear Mr. Waldrip,

The Arizona Game and Fish Department (Department) has reviewed the Jack Smith/Schultz Project: Proposed Action (PA) by the Coconino National Forest Peaks Rangers District (FS). The Department appreciates the extensive opportunities for collaborative participation with the FS Inter-disciplinary Team (IDT) and the Greater Flagstaff Forest Partnership (GFFP) during development of the Proposed Action.

The Department would like to take this opportunity to acknowledge the progress the FS has made over the last several GFFP-collaborative fuels reduction project in their approach toward forest restoration and wildlife habitat. We have seen a positive evolution in FS-GFFP proposed actions that will result in more heterogeneous forest stand structure that provides higher quality wildlife habitat for multiple species. In particular, the Department would like to thank the IDT for their willingness to craft language within the PA that explicitly defines the terms they used to describe spatial heterogeneity (e.g., tree groups and stand openings). Clumpy/groupy stand structure tends to offer better vertical diversity, thermal and hiding cover, as well as better foraging opportunity for wildlife than does a more evenly-aged, evenly-spaced forested stand. The stand structure described in the PA will provide wildlife habitat that more closely resembles the historic range of variability than would a homogeneous stand structure, and the Department acknowledges the IDT's efforts to achieve these conditions within the PA.

Moreover, the Department appreciates the IDT's efforts to ensure that there is a diversity of group sizes within the stands of the project area, and that the amount of forested area in canopy cover is well-represented within the range of canopy covers proposed. For example, in the Schultz Pass WUI West Zone, the FS proposed a minimum of 25% of groups will retain canopy cover greater than 50%, 50% of groups will be retained with canopy cover between 40 and 50%, and no more than 25% of groups will reain canopy cover between 30 and 40%. This type of planning helps to ensure that some groups will be large in size with higher canopy cover, which is an important forest characteristic upon which many wildlife species depend, particularly passerines, turkeys, raptors, mule deer, and black bear.

However, the Department reserves some concern about the proposed shift in how the FS plans to reduce overall tree canopy cover within treated areas. The Department has vetted these concerns during several IDT and GFFP meetings and has been unable to resolve these concerns with the FS. All previous FS-GFFP planning projects have planned canopy cover reduction levels at the stand level. In this PA, the FS is proposing target

canopy cover ranges at the group level as opposed to the stand level (where a group is defined as an aggregation of one or more clumps of trees of varying age and size interspersed with openings). The Department finds that this change has the potential to significantly reduce the amount of forest cover within treated areas. For example, the PA proposes to reduce the forested area in certain zones to between 30-50%. Canopy cover within that forested area will be reduced to 30-60%. Under this proposal, overall canopy cover in this management zone could be reduced to as little as 10% canopy cover if measured across the stand. Without considering the average canopy cover across stands, the Department has some concerns that the FS may not meet the canopy cover requirements for wildlife in the project area.

It is our understanding that the decision to reduce canopy cover at the group level is based on Region 3 guidance, per a new interpretation of the northern goshawk guidelines within the 1996 Forest Plan Amendment (#11). However, the Department has received no formal documentation of the new interpretation.

The Management Recommendations for the Northern Goshawk in the Southwestern United States (GTR-RM-217) defines northern goshawk habitat through the structural habitat attributes of 14 of the hawk's prey species. The canopy cover data described for these prey species, and for the northern goshawk, were measured at the stand level – not the tree group level. By changing the canopy cover targets from the stand level to the group level, the Department is concerned that the FS may not be meeting the habitat requirements for those 14 wildlife species, and also may not be meeting the habitat requirements for the northern goshawk per the 1996 Forest Plan Amendment.

Related to the new FS guidance for implementing the northern goshawk guidelines, the Department is also concerned that FS proposed treatment may trend toward even-aged group selection over time. For example, the FS proposed to regenerate groups of VSS1 and 2 while reducing canopy cover for tree groups of other VSS classes. Managing tree groups by VSS class comes across as even-aged tree group management. However, scientific literature describing the historic range of variability in southwestern ponderosa pine does not find that tree groups were even aged. Rather, the literature suggests that tree groups were often comprised of multi-aged trees intermingled intimately in the same area (Long and Smith 2000, Mast et al. 1999, White 1985). Uneven aged tree composition within groups is important for vertical structure and provides forage and breeding habitat for songbirds as well as thermal cover for raptors as well as deer and elk.

The Department requests the FS consider our concerns regarding overall canopy cover across stands as well as across the treated areas, and recommend the FS carefully evaluate potential impacts this canopy cover reduction might have on wildlife habitat during the Effects Analysis. The Department also requests any formal documentation that may be available describing the new Region 3 guidance for interpreting the northern goshawk guidelines, as well as an opportunity to formally comment on that new interpretation.

Thank you for the opportunity to comment on the Jack Smith/Schultz PA. We acknowledge the IDT efforts to carefully describe resultant forest structure post-treatment, and we look forward to continued cooperation on implementation of this important forest restoration and community protection project. If you have any questions or require additional information, please contact Sarah Lantz, Urban Wildlife Planner at 928-607-0650, slantz@azgfd.gov.

Sincerely,

Sarah Lantz

Mark

Marlin A Johnson/R3/USDAFS
11/21/2006 09:43 AM

To: Mark W Herron/R3/USDAFS@FSNOTES
cc: Jeffrey R Waters/R3/USDAFS@FSNOTES, Stu Lovejoy/R3/USDAFS@FSNOTES, Jerry Simon/R3/USDAFS@FSNOTES, James A Youtz/R3/USDAFS@FSNOTES, Bobbi L Barrera/R3/USDAFS@FSNOTES
bcc:
Subject: Re: goshawk demo

I know there is going to be some worry about the interpretation, but I feel strongly we have a good interpretation and am ready to be a part of explaining it if needed. Let's just make sure we do quality NEPA and other analysis on the first ones.

Marlin Johnson
Assistant Dir. Forest Management
Southwestern Region
(505)842-3242
majohnson02@fs.fed.us

If people concentrated on the really important things in life there would be a shortage of fishing poles.'
Doug Larson
Mark W Herron/R3/USDAFS

Mark W Herron/R3/USDAFS
11/20/2006 03:42 PM

To: Stu Lovejoy/R3/USDAFS@FSNOTES, Marlin A Johnson/R3/USDAFS@FSNOTES
cc: Jeffrey R Waters/R3/USDAFS@FSNOTES
Subject: Re: goshawk demo

As much as we can, we are adapting current prescriptions to take into account interspaces between groups and we have adjusted these prescriptions to consider group size and how we look at groups. Some of these prescriptions are currently being marked for implementation. One problem in making changes in what we are currently implementing on the ground is that the NEPA is already done for these projects. The original analysis and documentation generally looked at how we interpreted the goshawk guidelines in the forest plan in a different manner as we are currently looking at them. Depending on how specific the original environmental documents are, this often limits what we can immediately change without addending or revisiting past environmental documents.

For future projects that are just beginning or are in the analysis stage, we are considering applying many of the concepts and tools that we have recently discussed with Richard Reynolds and that were also discussed during the goshawk workshop. This will lead to a much more open forest over time than previous interpretations of the goshawk recommendations in the forest plans would have. I still worry that some enviromental groups can still challenge us on whether we are correctly interpreting forest plan guidelines as they were originally intended.

Stu Lovejoy/R3/USDAFS

Stu Lovejoy/R3/USDAFS
11/20/2006 02:14 PM

Mark W Herron/R3/USDAFS@FSNOTES, Jeffrey R Waters/R3/USDAFS@FSNOTES, Stephen