United States Department of the Interior

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In reply refer to:
AESO/SE
22410-2009-F-0329

September 10, 2013

Mr. Calvin N. Joyner, Regional Forester
Southwestern Region
U.S. Forest Service
333 Broadway Southeast
Albuquerque, New Mexico 87102

RE: Kaibab National Forest Land and Resource Management Plan

Dear Mr. Joyner:

Thank you for your request for formal consultation/conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (ESA). Your request was dated February 1, 2013, and received by us on February 6, 2013. At issue are impacts that may result from the proposed revised Kaibab National Forest Land and Resource Management Plan (LRMP) located in Coconino and Yavapai counties, Arizona. The proposed action may affect the Mexican spotted owl (*Strix occidentalis lucida*) and its critical habitat.

In your letter, you requested our concurrence that the proposed action is not likely to adversely affect the California condor (*Gymnogyps californianus*) (outside of the nonessential experimental population area), Apache trout (*Oncorhynchus gilae apache*), loach minnow (*Tiaroga cobitis*) critical habitat, and spikedace (*Meda fulgida*) and its critical habitat. We concur with your determinations and our rationales for these concurrences are provided in Appendix A. You also requested concurrence for your determination that the proposed action is not likely to adversely affect the proposed Fickeisen plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*) and its proposed critical habitat. Our concurrence with this determination is also provided as technical assistance and is included in Appendix B.

This biological opinion (BO) is based on information provided in the January 23, 2013, biological assessment (BA), telephone conversations, field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, management plans and their effects, or on other subjects considered in this opinion. A complete record of this consultation is on file at this office.

Consultation History

In September of 2006, the Arizona Ecological Services Office, Flagstaff began participating in collaboration with the Forest along with other federal and state agencies as well as non-governmental organizations on the development of the revised forest plan. Informal consultation included numerous meetings, review on a variety of draft documents, telephone conversations, and other communication with the Forest Service on the proposed action. The details of informal and formal consultation are documented within the project record, and key events are summarized in Table 1.

Table 1. Summary of the recent consultation history for the proposed action.

Date	*Event*
July 9, 2010	We provided comments on a March 2010 working draft of the LRMP.
July 17, 2012	We provided comments on an April 2012 Draft Land and Resource Management Plan for the Kaibab National Forest and an April 2012 Draft Environmental Impact Statement for the Kaibab National Forest Land and Resource Management Plan.
September 13, 2012	We met with the Forest Service to discuss the draft LRMP.
September 17, 2012	We received a request for a species list from the Forest Service
October 3, 2012	We provided a species list.
December 11, 2012	We provided comments on a draft BA.
December 18, 2012	We met with the Forest Service to discuss the draft BA.
January 24, 2013	We received a near final draft of the LRMP.
February 6, 2013	We received a request for formal consultation and a January 26, 2013, BA.
March 5, 2013	We issued a letter requesting information that was not included in the BA.
March 22, 2013	We received additional information regarding the BA.
April 9, 2013	We issued a thirty-day letter initiating formal consultation.
July xx, 2013	We submitted a draft biological opinion to the Forest Service for review.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action being analyzed in this BO is the implementation of the proposed revised Land and Resource Management Plan for the Kaibab National Forest (USFS KNF 2013) (Proposed LRMP). Once finalized, the revised LRMP would replace the 1988 Kaibab National Forest LRMP (USFS KNF 1988), and this BO would replace the BO/Conference Opinion issued on March 30, 2012, which addressed effects from implementation of the 1988 LRMP (FWS Region 2 file number 2012-F-0007). The description of the proposed action included in this BO is derived from the Biological Assessment for the Proposed LRMP, Proposed LRMP and the April 2012 Draft Environmental Impact Statement for the Kaibab National Forest LRMP (DEIS) (USFS KNF 2012). The Proposed LRMP provides forest-level direction to meet the Forest Service's mission during management of activities on the Kaibab National Forest (KNF). The

Proposed LRMP does not specifically authorize any projects or activities. Site-specific actions would be subject to future consultations, as required.

The Proposed LRMP includes the following types of decisions:

- Desired conditions (goals) are the aspirational vision of the conditions on the Forest to be achieved in the future. Objectives are time limited expressions of management intent/management actions in order to help the Forest strive toward achievement of desired conditions. Together, desired conditions and objectives form the basis for projects, activities, and uses that would occur under the LRMP. Site-specific projects would be designed to maintain or move towards desired conditions over the long term. The forest-wide desired conditions for the major vegetation types on the KNF are provided in the Proposed LRMP.
- Suitability determinations, standards, and guidelines set sideboards on the achievement of desired conditions and objectives by setting requirements to limit or guide forest uses or activities that are expected to occur under the LRMP. Standards are design constraints that must be followed; guidelines allow for some departure as long as the intent of the guideline is met. Standards and guidelines for each major resource management activity are included in the Proposed LRMP. Suitability determinations identify areas of land as suitable or unsuitable for the specific uses of timber, grazing, recreation, minerals, and energy resource activities.
- Management areas, including specially designated areas, that identify areas with differing desired conditions, uses, standards, and/or guidelines than forest-wide plan direction and include wilderness, research natural areas, botanical areas, and national recreation trails.
- Monitoring and evaluation requirements for forest plan implementation are used to determine the degree to which on-the-ground management is maintaining or making progress towards desired conditions, evaluate plan implementation and effectiveness, and inform adaptive management.

The LRMP does not, however, make site-specific decisions about exactly how, when, and where these activities will be carried out. However, all site-specific activities must conform to the programmatic framework set up in the LRMP (S&Gs) and they must meet site-specific National Environmental Policy Act (NEPA) and ESA requirements. Implementation of ongoing projects and the issuance of incidental take associated with those projects are covered under this programmatic opinion since it supersedes the 2012 LRMP BO/CO.

This consultation on the LRMP does not eliminate the requirement for site-specific project analyses and the need for site-specific informal or formal ESA §7 consultation with the FWS for individual projects implemented under the LRMP. Furthermore, it should be noted that amendments (i.e., deleting/changing S&Gs) within the LRMP for a site-specific project are allowed and occur, although rarely. In this situation, the action would be considered outside of the scope of this consultation and would require reinitiation of §7(a)(2) consultation for the LRMP BO to address the effects of that particular proposed action which is being implemented under a project-specific amendment to the LRMP. Furthermore, wildfire and wildland fire use are not discussed in this BO as they will be covered under separate emergency ESA §7(a)(2) consultation. If the proposed LRMP amendment would not result in effects to listed species as

considered here, then reinitiation of the LRMP BO would not be necessary, only the project-specific §7(a)(2) consultation.

As described above, the LRMP does not make site-specific decisions, but it provides direction to each National Forest regarding how current and future activities will be carried out. Incidental take anticipated in this BO would occur during implementation of site-specific projects. In addition, monitoring to determine overall compliance with the incidental take limits set forth in this BO will be required in all future project level BOs. Project specific monitoring will be designed and implemented to determine if and/or when the incidental take limits set forth in this BO have been exceeded.

The following is a summary of the proposed management on the KNF.

Forest Management

There are approximately 541,000 acres of ponderosa pine on the KNF; pine-oak on the Williams Ranger District comprises about 10 percent of this vegetation type. The KNF has approximately 86,670 acres of mixed conifer forest, which consists of frequent fire mixed conifer and mesic mixed conifer. Under the proposed action, mechanical treatment, prescribed fire, and management of naturally-ignited fire would be used to manage these forested vegetation types (ponderosa pine including pine-oak, frequent fire mixed conifer, mesic mixed conifer) towards desired conditions.

Desired conditions for ponderosa pine and mixed conifer forests, as well as aspen, are described in detail in the Proposed LRMP at three different scales: the fine scale (10 acres or less), the mid-scale (100 to 1,000 acres), and the landscape scale (over 10,000 acres).

Within ponderosa pine, the KNF would mechanically thin between 11,000 and 19,000 acres annually. The KNF would treat an average of 13,000 to 55,000 acres annually using prescribed fire and naturally-ignited wildfire. Over the 15-year plan period, some ponderosa pine (and pine-oak) would not be treated with prescribed fire, and some acreage may be treated more than once. Within frequent fire mixed conifer, the KNF would mechanically thin from 1,200 to 2,100 acres annually and treat 1,000 to 5,000 acres annually using prescribed fire. Mechanical treatments would be used in about half of the frequent fire mixed conifer acres treated to reduce fuel loading prior to implementing prescribed burns. Although acreage burned with prescribed fire could be up to 5,000 acres per year for 15 years, the KNF anticipates that annual acreage treated with prescribed burns would be lower, at least during the first 5 to 10 years of LRMP implementation. Initially, the pre-burn mechanical treatments would be conducted using experimental designs in frequent fire mixed conifer to help determine appropriate treatment in this vegetation type.

The Proposed LRMP would allow burning and mechanical thinning within mesic mixed conifer in order to progress towards desired conditions; however, because this vegetation type is not very departed from the desired conditions, no objectives were established. In general, it would be managed towards desired conditions that include slightly more open forest conditions and fewer shade tolerant trees. Key features such as interlocking crowns, large patch sizes with a mosaic of tree groups and patches, higher basal areas and tree densities compared to the surrounding forest,

and a diversity of size and age classes are also included in the desired conditions. The KNF anticipates a limited capacity and low priority for management activity in these areas.

Aspen stands occur within ponderosa pine, frequent fire mixed conifer, and mesic mixed conifer communities. To protect, enhance, and expand regenerating aspen stands of high ecological and socioeconomic conservation value, 200 acres of aspen would be fenced to exclude ungulates, and conifer encroachment would be reduced on 800 acres of aspen within 10 years of plan approval.

In general, within all forested communities, projects would be managed as follows:

- The maximum size opening that may be created in one harvest operation for the purpose of creating an even-aged stand shall not exceed 40 acres except when it is following a large-scale disturbance event, such as a stand replacing fire, wind storm, or insect or disease outbreak.
- Clear-cutting shall only be used where it is the optimum harvesting method for making progress towards the desired conditions.
- When openings are created with the intent of regeneration, efforts shall be made to ensure that lands can be adequately restocked within 5 years of final harvest.
- Projects in forested communities that change stand structure should generally retain at least historic frequencies of trees by species across broad age and diameter classes at the mid-scale. As such, the largest and oldest trees are usually retained.
- On suitable timberlands, projects should retain somewhat higher frequencies of trees across broad diameter classes to allow for future tree harvest.
- Project design should manage for replacement structural stages to assure continuous representation of old growth over time.
- Project design and treatment prescriptions should generally not remove:
    - Large, old ponderosa pine trees with reddish yellow, wide platy bark, flattened tops, with moderate to full crowns and large drooping or knarled limbs (e.g. Thomson's age class 4, Dunning's tree class 5 and/or Keen's Tree Class 4, A and B7 (DEIS, Appendix K).
    - Mature trees with large dwarf mistletoe-induced witches' brooms suitable for wildlife nesting, caching, and denning, except where retaining such trees would prevent the desired development of uneven-aged conditions over time.
    - Large snags, partial snags, and trees (>18 inches diameter-at-breast-height [dbh]) with broken tops, cavities, sloughing bark, lightning scars >4 inches wide, and large stick nests (>18 inches in diameter).
    - Gambel oak $\geq$ 8 inches diameter-at-root-collar (drc).
    - Known bat roost trees.
- The location and layout of vegetation management activities should effectively disconnect large expanses of continuous predicted active crown fire.
- Vegetation management prescriptions should provide for sufficient canopy breaks to limit crown fire spread between groups, allow for the redevelopment and maintenance of a robust understory, and mimic the spatial arrangement of reference conditions.
- Vegetation management activities in mixed conifer forests should incorporate experimental design features and monitoring to accelerate learning and adaptive management.

- Trees established after 1890 should generally not be retained in areas where biophysical conditions would have supported stable openings over time.
- Vegetation management activities should meet or exceed goals for scenic beauty (scenic integrity objectives) by creating natural patterns among structure and composition of trees, shrubs, grasses, and other plants.
- Vegetation management should favor the development of native understory species in areas where they have the potential to establish and grow.
- Even-aged silvicultural practices may be used as a strategy for achieving the desired conditions over the long term, such as bringing mistletoe infection levels to within a sustainable range, or old tree retention.
- Seed and plants used for revegetation should originate from the same potential natural vegetation type and general ecoregion (i.e., southern Colorado Plateau) as the project area.
- Heavy equipment and log decks should not be staged in montane meadows.

Although the desired conditions are intended to move forest conditions towards greater resilience in the face of disturbances such as large-scale wildfire, insects and disease, and climate-change induced drought, the Proposed LRMP includes guidelines for activities that follow such large-scale disturbances in order to accelerate progress towards desired conditions. These activities include an option for salvage operations following extensive tree fatality where the KNF determines that salvage of timber would facilitate long-term restoration, rehabilitation, and public safety objectives. Salvage operations would retain some snags and woody debris and may include regeneration plantings. In areas with large-scale disturbances that lack adequate seed sources, the KNF projects planting an average of 300-700 acres per year in ponderosa pine and pine-oak.

Soils and Watersheds

Soils would be managed to provide for a diversity of native plant species, suitable levels and distribution of vegetative ground cover that promote nutrient cycling and water infiltration, minimal soil loss, and stable biological soil crusts. Watershed conditions would be managed to minimize surface runoff, erosion, and sedimentation, and to meet downstream water quality standards and normal stream characteristics. Projects would be designed to protect and improve watershed condition, implement erosion control in disturbed areas, and use seeds and plants for revegetation from the same vegetation type and general ecoregion as the project area. Project level implementation would include best management practices and mitigation measures to protect soils and watershed resources. Priority watersheds for restoration are Cataract Creek Headwaters, Coconino Wash Headwaters, Upper Hell Canyon, Upper Spring Valley Wash, Rock Canyon, and Slide Canyon.

Wildlife and Threatened, Endangered, and Sensitive Species

The LRMP's desired condition is to have native wildlife species distributed throughout their potential natural range while desirable nonnative wildlife are present and in balance with healthy, functioning ecosystems. Wildlife habitat would be managed to provide for specific habitat needs (e.g., snags, logs, large trees, interlocking canopies, cavities), provide interconnectedness

between habitat areas (e.g., seasonal habitats; movement between areas used for foraging or nesting), and to minimize human-wildlife conflicts. The KNF would continue to collaborate with other Federal and State biologists and researchers to address a variety of wildlife issues.

The LRMP provides direction for threatened, endangered, and sensitive species by incorporating by reference as guidelines the habitat management objectives and species protection measures from recovery plans. It also provides the framework for implementing recommendations from laws (such as the ESA), policies, and agreements. Emphasis would be placed on the protection and replacement of key habitats that contain threatened, endangered, and/or sensitive species of plants and animals. The KNF would continue to collaborate with FWS and other partners on the management and recovery of threatened and endangered species, migratory birds, and bald and golden eagles, and to prevent listing of species under the ESA.

Approximately 386,483 acres occurs within CHUs UGM-15, UGM-17, and CP-10 on the North Kaibab and Williams Ranger Districts (USDI FWS 2004). Of this area, approximately 127,630 acres is considered to be pine-oak or mixed conifer and therefore, meets the definition of designated critical habitat. The KNF has committed to integrating habitat management objectives and species protection measures in accordance with the Mexican Spotted Owl Recovery Plan, First Revision (USDI FWS 2012).

Guidelines for management of wildlife and threatened, endangered, and sensitive species include:

- Project activities and special uses should be designed and implemented to maintain refugia and critical life cycle needs of wildlife, particularly for raptors.
- Potentially disturbing project-related activities should be restricted within 300 yards of active raptor nest sites between April 1 and August 15.
- Project activities and special uses should integrate habitat management objectives and species protection measures from approved recovery plans.

Recreation and Scenery

Recreation opportunities on the North Kaibab Ranger District emphasize dispersed recreation, and non-motorized trail and wilderness opportunities. On the Williams and Tusayan districts, the recreation emphasis is on day-use areas, developed recreation opportunities, and facilities such as campgrounds.

Recreation would be managed to provide a range of recreation opportunities, concentrate use at specific sites or locations instead of dispersing use within the area to other areas, and minimize the extent to which forest management actions disperse use from high to low use areas. Recreation use levels would be managed to be compatible with other resource values and to provide both front-country and back-country opportunities. Back-country recreational areas are used primarily by overnight visitors and visitor use is moderate and dispersed. Construction of back-country facilities would be minimized and would provide for natural resource protection.

Guidelines for management of recreation activities include:

- Any new motorized trailheads should be located in front-country areas, incorporate or convert existing roads, protect open space, and protect natural and cultural resources.
- Group uses should be concentrated in front-country areas.
- Resource impacts should be reduced in front and back-country areas by directing camping to existing dispersed and designated campsites. New campsites would be designated only when necessary to further reduce resource damage.

The pressure for more trails will likely increase. Any new trail development would need to strike a balance between opportunities for different types of recreation and other resource concerns.

Rangeland Management

The KNF authorizes livestock grazing on 38 allotments covering 1,414,000 acres (92 percent) of the forest. Areas where grazing is not currently permitted include Bill Williams Mountain/City of Williams, Kanab Creek, Garland Prairie MA, high use recreational areas, and various exclosures that are mainly around wetland vegetation. Desired conditions for livestock grazing include providing adequate grass and forb forage for permitted livestock and managing livestock use consistent with other desired conditions.

Guidelines for management of livestock grazing include:

- Livestock management should favor the development of native cool season grasses and forbs.
- As grazing permits are waived back to the forest, they should be evaluated for conversion to forage reserves to improve flexibility for restoring fire-adapted ecosystems and in response to other range management needs.
- Annual operating instructions for livestock grazing permittees should ensure livestock numbers are balanced with capacity and address any relevant resource concerns (e.g., forage production, weeds, soils, etc.).
- Post-fire grazing should not be authorized until Forest Service range staff confirms range readiness.
- Livestock use in aspen areas should be authorized at levels that are consistent with the desired conditions for aspen regeneration and establishment.
- Livestock use in and around wetlands should be evaluated on an allotment-specific basis. Mitigation measures such as deferment and fencing (full or partial) should be implemented as needed to minimize potential livestock effects.
- The concentrated use of montane meadows for livestock grazing should be minimized when soils are saturated to reduce grassland impacts. When no other options are available, use should be rotated annually.

Livestock grazing would be managed by using monitoring to adjust management to maintain and improve rangeland resources, and keeping grazing at conservative use levels (30 to 40 percent). Annual operating instructions are the means by which adjustments of livestock numbers, change

of season of use, and pasture rest periods are made in response to monitoring information (frequency plots, canopy cover, pace frequency transects, and allotment inspections, grazing intensity, weather patterns, likelihood of plant regrowth, and previous utilization levels). Projects may include new or modified fences, corrals, salt stations, and artificial water sources. Deferred-rotation grazing with a special emphasis on deferment during the spring may be necessary to manage toward desired conditions.

Forestry and Forest Products

No specific timber volume output objectives are identified for the forest, but some level of regulated forest production would occur as a tool to maintain desired conditions. The average amount of wood (allowable sale quantity) estimated to be available for sale from the suitable land within the plan area for the first decade of plan implementation is 107,815 hundred cubic feet (CCF). The amount of wood (long-term sustained yield) that can be obtained from lands being managed for timber production under specified management intensity consistent with multiple-use objectives is estimated to be 74,737 CCF.

Wood products (e.g., wood pellets for home and industrial heating, oriented strand board, animal bedding, wood molding, pallets, structural lumber, firewood, post, poles, biomass for electricity) and other products (e.g., Christmas trees, boughs, wildflowers, mushrooms, grasses, seeds, nuts, cones, etc.) would be produced in a manner that is consistent with other desired conditions on a sustainable basis. Wood products would be available to local tribes for traditional uses.

Guidelines for management of forestry and forest products include:

- Timber harvest activities should be carried out in a manner consistent with maintaining or making progress toward the desired conditions in this plan.
- Harvesting systems should be selected based on their ability to meet desired conditions and not on their ability to provide the greatest dollar return.
- On lands classified as not suited for timber production, timber harvesting should only be used for making progress toward desired conditions or for salvage, sanitation, public health, or safety.

For personal use firewood gathering, the following would be permitted:

- Dead and downed ponderosa pine, Douglas-fir, white fir, spruce, juniper, pinyon pine, Gambel oak, and aspen.
- Standing dead:
  - ponderosa pine, Douglas-fir or spruce less than 12 inches dbh or less than 15 feet in total height.
  - juniper without green foliage.
  - pinyon pine less than 12 inches drc or less than 12 feet in height.
  - Gambel oak less than 8 inches drc
  - aspen less than 12 inches dbh
- Live trees specifically designated by the Forest Service.

For project prescriptions, post-treatment conditions may need to be on the more open end of the desired range to accommodate the growth that is anticipated in the interval between treatments. Within a given project boundary, some areas may be left untreated if they are already approaching desired conditions, or leaving them untreated to meet specific denser habitat needs would not affect desirable fire behavior at mid-scale desired conditions. Under the proposed action, approximately 11,000 to 19,000 acres of ponderosa pine and 1,200 to 2,100 acres of frequent fire mixed conifer would be mechanically thinned each year.

Restoration work in ponderosa pine and frequent fire mixed conifer communities would be implemented with a variety of prescriptions including free thinning all sizes to a target basal area, group selection cuts with matrix thinning to a target basal area, individual tree selection, and thin from below.

Wildland Fire Management

The 2009 "Guidance for the Implementation of Federal Wildland Fire Management Policy" provides much of the current direction for managing wildland fire on Federal lands. Wildland fire is any non-structure fire that occurs in the wildland. Wildfires are unplanned ignitions including human and naturally caused fires, and include prescribed fires that have been declared escaped wildfires. Prescribed fires are planned ignitions.

Wildland fire would be managed to: maintain and enhance resources and allow fire to function in its natural ecological role; protect ecological values at risk from high-severity disturbance effects; burn within the range of intensity and frequency of the historic fire regime of the vegetation community when feasible; make uncharacteristic high-severity fires rare and not at the landscape scale, be understood as a necessary natural disturbance process; and detect wildfires early.

Forest Service policy is to consult with the FWS on effects to listed species from management actions to wildfires through the ESA's Section 7 emergency consultation process. The analysis of effects from prescribed fires that escape prescription would also be considered through a site-specific emergency consultation. Therefore, under the wildland fire management program for this consultation, we would only consider effects of prescribed fires and their management on federally-listed and proposed species and their critical habitat.

Guidelines for prescribed burning include:

- If current or anticipated fire behavior and fire effects exceed the desired fire behavior and effects, a more conservative prescription window should be produced for prescribed burns.

Objectives for wildland fires may be developed based on fuel conditions, current and expected weather, current and expected fire behavior, topography, resource availability, and values at risk. Site-specific analyses would be conducted for prescribed fires. Prescribed fires may be managed to burn with the intensity and frequency of the reference fire regime when fire weather conditions are appropriate and resources are available to successfully meet objectives.

Objectives allowing for higher fire intensities and higher levels of tree fatality may be needed in areas to achieve the structural change that would not occur through other means, and to move fire behavior toward desired conditions. In forested vegetation types, multiple small areas of high tree fatality are preferred rather than a single large, high-severity event.

In areas that are in the vicinity of high ecological values or high social or economic values, the decision process would include a systematic relative risk assessment. The risk assessment includes identification of values at risk, departure from reference conditions, current and expected fire behavior, seasonal fire danger level, and how much of the fire season remains.

Management of wildland fire would be coordinated across jurisdictional boundaries whenever there is potential for managing a wildfire or a prescribed fire on more than one jurisdiction.

Transportation and Forest Access

The KNF road system provides access to areas on the forest including private land, facilities under special use permits, recreational opportunities, research sites, and facilities that support forest and resource management. Motor vehicle use off the designated system of roads, trails, and areas is prohibited except as identified on the motor vehicle use map (MVUM) and as authorized by law, permits, and orders in connection with resource management and public safety.

Desired conditions for transportation and forest access include: roads, bridges, and trails providing access for recreation opportunities and resource management; resource impacts from roads and trails are balanced with the benefits of having the road or trail available for use; all designated routes open to motorized vehicles are shown on a MVUM readily available to the public; inventoried roadless areas are free from activities that would alter their roadless character; roads and culverts do not contribute to headcuts or downcuts in ephemeral drainages; roads allow for wildlife movement in areas of human development; and vehicular collisions with animals are rare.

Guidelines for transportation management include:

- Motorized uses in semi-primitive, non-motorized areas should be restricted, except for necessary minimal administrative activities, permitted activities, and emergency access needs.
- Construction of permanent roads or temporary roads in semi-primitive, non-motorized areas should be avoided unless required by a valid permitted activity. If authorized, roads should be constructed and maintained at the lowest maintenance level needed for the intended use.
- Roads should not be located in meadows when they can be located in other areas.
- Roads should be decommissioned when no longer needed.

The KNF provides management of the transportation system including conducting inventories, surveys and analyses, formulating plans, and executing reconstruction, maintenance, and obliteration operations. Under the proposed action, the KNF would grade roads and clean

culverts on 100 miles of open National Forest System (NFS) roads annually, and obliterate or naturalize 20 miles of non-system roads within 10 years.

Lands

The KNF lands program includes identification and maintenance of land line locations between Forest Service lands and lands of other ownership, and land adjustments. Land adjustments involve real estate transactions including sales, purchases, exchanges, conveyances, and rights-of-way within the forest boundary.

Under the proposed action, Forest Service lands would consist of large contiguous areas that provide efficient and effective resource management and wildlife connectivity within and across the lands. Public access for all permanent roads and trails within the KNF would be obtained within 10 years of plan approval. Land adjustments would be made where feasible and advantageous to the KNF.

Lands program special uses include communication sites, utility corridors, roads to access private property, and other non-recreational uses.

Special Uses

Recreation Special Uses

Recreation special uses include permitted activities related to resorts, ski areas, outfitter/guides, and recreation events. Competitive OHV and motorized events would not be permitted.

Communication and Electronic Sites

There are more than 10 communication and electronic sites on the KNF, and it is likely that the Forest Service would receive additional requests for special use permits for communication and electronic sites. Communication and electronics sites would be managed such that wildland fires do not interrupt the operation of communication and electronic facilities. The number of these sites should be the minimum that is consistent with public service needs, and environmental disturbance should be minimized by co-locating communication and electronic sites.

Energy Transmission and Development

Most previous requests for special use permits for energy transmission and development have been for energy transmission corridors, wind farms, and solar energy development. An increase in requests for special use permits for alternative power sources, such as solar and wind, is likely.

Energy transmission and development would be managed so that: adverse impacts are minimized; development does not detract from meeting other desired conditions applicable to the area; joint use of rights-of-way are provided to concentrate uses to the extent possible; energy transmission lines are not visible (usually placed underground) across the landscape; vegetative conditions and land uses within energy rights-of-way facilitate the operation and maintenance of

the associated facilities and infrastructure; and wildland fires do not interrupt the delivery of energy resources within the rights-of-way.

Mineral and Mining Activities

Minerals of economic interest are classified as leasable, salable, or locatable. Locatable minerals are subject to the General Mining Law of May 10, 1872, as amended, and for the most part are outside the scope of the plan. All of the Tusayan and North Kaibab Ranger Districts and Kendrick Wilderness on the Williams Ranger District are withdrawn from locatable mineral entry. Existing mining claims in those areas outside of designated wilderness may be developed where these claims can prove valid existing rights. The locatable mineral deposits on the Williams Ranger District are associated entirely with strata-bound deposits, which are small and currently not commercially viable.

Currently, there are no active mineral leases and no known coal, oil, or gas reserves on the forest. The geological formations of the area do not favor such leasable mineral deposits, and the potential for oil, gas, or geothermal energy is low across the entire KNF.

Salable minerals on the forest consist of sand and gravel deposits, building materials, and volcanic deposits such as cinders. Sand and gravel deposits are relatively isolated within the North Kaibab and Tusayan Ranger Districts, and are mostly associated with the Moenkopi Formation and alluvial deposits. On the Williams Ranger District, gravel deposits occur at the bottom of the southwestern slope of the Mogollon Rim. Building materials (primarily flagstone) are widespread along that same section of the rim and are associated with the Coconino Sandstone formation. Cinders, basalt, and other volcanic deposits occur on the Williams Ranger District. The commercial demand for saleable materials (e.g., flagstone, cinders, etc.) has decreased in recent years, but is expected to increase over the life of this plan.

The desired condition for management of mineral and mining activities is to meet legal mandates to facilitate the development of minerals on the Forest in a manner that minimizes adverse impacts to surface and groundwater resources and does not detract from meeting other desired conditions applicable to the area.

Mineral and mining activities would be managed to minimize adverse surface impacts; incorporate restoration and reclamation actions; restrict or prohibit surface use in areas with habitat for threatened, endangered, and sensitive plant and animal species; and restrict yearlong use and occupancy in areas supporting populations of threatened, endangered, and sensitive plant species.

Management Areas

Wilderness

Wilderness on the KNF is managed consistent with the 1964 Wilderness Act. The KNF manages or co-manages four wilderness areas: Kanab Creek, Saddle Mountain, Kendrick Mountain, and Sycamore Canyon. These areas would be managed for: opportunities for contiguous wildlife

habitat; an essentially unmodified environment; natural processes are maintained; fires function in their natural ecological role; and there are minimal to no nonnative/invasive species.

Within wilderness areas, competitive events are not permitted, and establishment of geocaches is not permitted. Management objectives include inspecting and maintaining at least 10 percent of wilderness trails and signs annually and monitoring 10 percent of wilderness campsites each year. Guidelines for wilderness areas include limiting group size to 12 people, suppressing wildfires in the desert communities of the Kanab Creek Wilderness, and treating nonnative, invasive species in order to allow natural processes to predominate.

National Scenic and Recreation Trails

National scenic and recreation trails would be managed to limit special use authorizations for trail segments that receive high public use. A comprehensive plan would be developed for the Arizona National Scenic Trail.

Recommended Wilderness Areas

The Proposed LRMP recommends adding areas to the Kanab Creek Wilderness (4,710 acres) and Saddle Mountain Wilderness (1,296 acres), and 232 acres in Grassy and Quaking Aspen canyons adjacent to proposed wilderness in Grand Canyon National Park.

Wildland Urban Interface

For the purposes of the Proposed LRMP, the wildland urban interface (WUI) area is a buffer surrounding resident populations and other human developments of special significance and includes the following lands:

- One-half-mile buffer around all private lands.
- One-half-mile buffer around administrative sites, fee use cabins, fire lookouts, developed campgrounds, day use picnic areas, and facilities managed under special use permits.
- One-half-mile buffer around at-risk communication sites.

Desired conditions for WUI areas include:

- Wildland fires in the WUI do not result in the loss of life, property, or characteristic ecosystem function.
- Wildland fires in the WUI are low intensity surface fires. Firefighters are able to safely and efficiently suppress wildfires in the WUI using direct attack.
- When WUI intersects vegetation types with a mixed or high-severity fire regime, characteristic ecosystem function is modified to promote low intensity surface fires.
- The desired tree basal area in the WUI is on the lower end of the range given in the vegetation community desired conditions.
- Ladder fuels are nearly absent.
- Logs and snags are present in the WUI but at the lower end of the range given in the vegetation community desired conditions.

- Dead and down fuel load is between 1 and 5 tons per acre.
- Openings between tree groups are of sufficient size to discourage isolated group torching from spreading as a crown fire to other groups.
- Openings with grass/forb/shrub vegetation occupy the mid to upper end of the percentage range in the desired conditions. Trees within groups may be more widely spaced with less interlocking of the crowns than desirable in adjacent forest lands.

WUI treatments would be guided by the same forest-wide desired conditions for forest resources as outside these zones, but lands within WUI areas would be managed to achieve the more open end of the desired conditions for that vegetation community. During project-specific planning, the area where more intensive treatments are needed may be adjusted to within or beyond a half-mile radius.

All private lands adjacent to or within the KNF would be treated as a WUI area. Projects that include lands in the WUI should allow flexibility in the order of treatment implementation. This approach allows for the option to conduct prescribed burns before mechanical treatments. Maintenance burning would be included in project design.

West-side Energy Corridor

Under the proposed action, major utility corridor development would be confined to the West-wide Energy Corridor. The West-wide Energy Corridor provides for energy transmission needs. Two corridors across the KNF were identified in the "West-wide Energy Corridor Record of Decision" (ROD). One corridor occurs on the southern portion of the Tusayan Ranger District and follows the Four Corners line. The other corridor occurs from the southwest to the northeast of the Williams Ranger District and follows the Navajo Project Line. The corridors are 3,500-feet wide with the centerline being the existing transmission line. The corridors are open to both pipeline and transmission line development. The environmental consequences of any future projects within the corridor would be evaluated in site-specific project-level planning and environmental compliance.

Developed Recreation Sites

The KNF contains 15 major public and private sector developed recreation sites and other smaller sites (trailheads, interpretive sites, etc.). Guidelines for developed recreation sites include:

- Reconstruction and improvements of private sector developed sites should be within site capacity allocations.
- Developed recreation site vegetation management plans should guide tree removal and burning activities in the campgrounds.

Garland Prairie Management Area

Garland Prairie Management Area would be managed as follows:

- Lightning fires would burn naturally within the area.
- The boundary fence would be inspected annually and maintained as needed.
- The area should be protected from activities that directly or indirectly modify ecologic processes.

Bill Williams Mountain Management Area

The Bill Williams Mountain Management Area contains a Mexican spotted owl protected activity center. The mountain contains a ski area, a fire lookout tower, a telecommunication site, a municipal watershed, the Arizona Bugbane Botanical Area and historic trails; it is also eligible as a traditional cultural property. This area would be managed as follows:

- Bill Williams Mountain would provide quality habitat for Mexican spotted owls.
- The existing term permit for the Elk Ridge Ski Area on Bill Williams Mountain should be restricted to the existing established permit area.
- High-use roads within the municipal watershed should be maintained to prevent erosion and sedimentation.
- Artificial snow making within the Bill Williams Management Area would not be permitted.

The Bill Williams Mountain Management Area contains communication towers that serve the Arizona Department of Public Safety, U.S. Customs and Border Protection, and Federal Aviation Administration. A significant risk to this communication site is from high-intensity wildfire, which would be mitigated through fuels reduction treatments. The highest priority for these treatments is the north and east slopes. Steep slopes and concerns about erosion and sedimentation may call for treatments to either treat fuels in place, or use cable or aerial harvest systems.

Other Management Direction

The Proposed LRMP provides additional management direction for natural and constructed waters; rare and narrow endemic species; nonnative invasive species; air quality; caves, karst, and mines; cliffs and rocky features; cultural resources and traditional cultural properties; potable water; and traditional cultural uses.

Monitoring

The Proposed LRMP includes a monitoring plan to measure how well the KNF is moving towards and achieving desired conditions and objectives within resource areas. Monitoring would be conducted to measure both short and long-term changes, would be adaptive in nature, and would be scientifically-based. Monitoring actions that are driven by the Mexican spotted owl Recovery Plan (USDI FWS 2012) are identified in Table 5 of the plan. Within ponderosa

pine and frequent fire mixed conifer, rapid plot data would be collected to measure whether conditions are moving towards desired conditions for snags, coarse woody debris, downed logs, and large old trees at the mid-scale (100 to 1,000 acres). Remote sensing would be used to measure acres in uneven aged open state at the mid-scale. Intensive protocol monitoring would be conducted to determine Mexican spotted owl presence in protected activity centers (PACs). PACs are ≥600 acre areas established around owl nest and/or roost sites for the purposes of protecting that area.

Conservation Measures

Conservation measures are steps taken to minimize potential negative effects due to implementation of the proposed action. The BA includes recovery activities that are being implemented for federally-listed and proposed species on the KNF. Conservation guidance is provided in the "Wildlife and Threatened, Endangered, and Sensitive Species" section above. In addition, many of the standards and guidelines for various programs listed above would also serve to minimize negative effects to these species during management of other activities.

Specific conservation actions being implemented for the Mexican spotted owl by the KNF and Southwestern Region include:

- The KNF will continue to work with the FWS to establish PACs for Mexican spotted owls using criteria set forth in the Recovery Plan. In addition, the KNF will continue to monitor PACs and provide FWS with monitoring and project survey results annually.

- The KNF will conduct fuels reduction projects which may benefit the Mexican spotted owl in the future. These projects focus on reducing the potential for stand-replacing, uncharacteristic wildfires that are a threat to the species while still maintaining or enhancing structural habitat features (e.g. large trees, snags and down woody materials).

- The Forest Service Regional Office has committed funding and staff to assist the FWS and other partners in initiating rangewide population monitoring for the Mexican spotted owl.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR §402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment. The action area for this BO is defined as all Forest Service-administered lands within the KNFs three ranger districts, North Kaibab, Tusayan, and Williams. The action area also includes adjacent lands that the proposed action may directly or indirectly affect, including adjacent portions of the Coconino and Prescott National Forests, Grand Canyon National Park, the BLM Arizona Strip District, the Navajo and Havasupai Indian reservations, and state and private lands.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

In accordance with policy and regulation, the jeopardy analysis in this BO relies on four components: (1) the *Status of the Species*, which evaluates the Mexican spotted owl range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the Mexican spotted owl in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the Mexican spotted owl; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the Mexican spotted owl; and, (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the Mexican spotted owl.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the Mexican spotted owl current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this BO places an emphasis on consideration of the range-wide survival and recovery needs of the Mexican spotted owl and the role of the action area in the survival and recovery of the owl as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Adverse Modification Determination

This BO does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this Biological Opinion relies on four components: 1) the *Status of Critical Habitat*, which evaluates the range-wide condition of designated critical habitat for the Mexican spotted owl in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; 2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; 3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and how that will influence the recovery role of affected critical habitat units; and, 4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on Mexican spotted owl critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the Mexican spotted owl.

The analysis in this BO places an emphasis on using the intended range-wide recovery function of Mexican spotted owl critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

STATUS OF THE SPECIES AND CRITICAL HABITAT

In 1993, the FWS listed the Mexican spotted owl (hereafter, referred to as Mexican spotted owl, spotted owl, and owl) as threatened under the ESA. The FWS appointed the Mexican spotted owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican spotted owl in 1995 (USDI FWS 1995). The FWS released the final Mexican spotted owl Recovery Plan, First Revision (Recovery Plan) in December 2012 (USDI FWS 2012). Critical habitat was designated for the spotted owl in 2004 (USDI FWS 2004).

A detailed account of the taxonomy, biology, and reproductive characteristics of the Mexican spotted owl is found in the Final Rule listing the owl as a threatened species (USDI FWS 1993), the original Recovery Plan (USDI FWS 1995), and in the revised Recovery Plan (USDI FWS 2012). The information provided in those documents is included herein by reference.

The spotted owl occurs in forested mountains and canyonlands throughout the southwestern United States and Mexico (Gutiérrez et al. 1995). It ranges from Utah, Colorado, Arizona, New Mexico, and the western portions of Texas south into several States of Mexico. Although the owl's entire range covers a broad area of the southwestern United States and Mexico, it does not occur uniformly throughout its range. Instead, the Mexican spotted owl occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Known owl locations indicate that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

In addition to this natural variability in habitat influencing owl distribution, human activities also vary across the owl's range. The combination of natural habitat variability, human influences on owls, international boundaries, and logistics of implementation of the Recovery Plan necessitates subdivision of the owl's range into smaller management areas. The 1995 Recovery Plan subdivided the owl's range into 11 "Recovery Units" (RUs): six in the United States and five in Mexico. In the revision of the Recovery Plan, we renamed RUs as "Ecological Management Units" (EMUs) to be in accord with current FWS guidelines (USDC NMFS and USDI FWS 2010). We divide the Mexican spotted owl's range within the United States into five EMUs:

Colorado Plateau (CP), Southern Rocky Mountains (SRM), Upper Gila Mountains (UGM), Basin and Range-West (BRW), and Basin and Range-East (BRE) (Figure 1). Within Mexico, the Revised Recovery Plan delineated five EMUs: Sierra Madre Occidental Norte, Sierra Madre Occidental Sur, Sierra Madre Oriental Norte, Sierra Madre Oriental Sur, and Eje Neovolcanico.

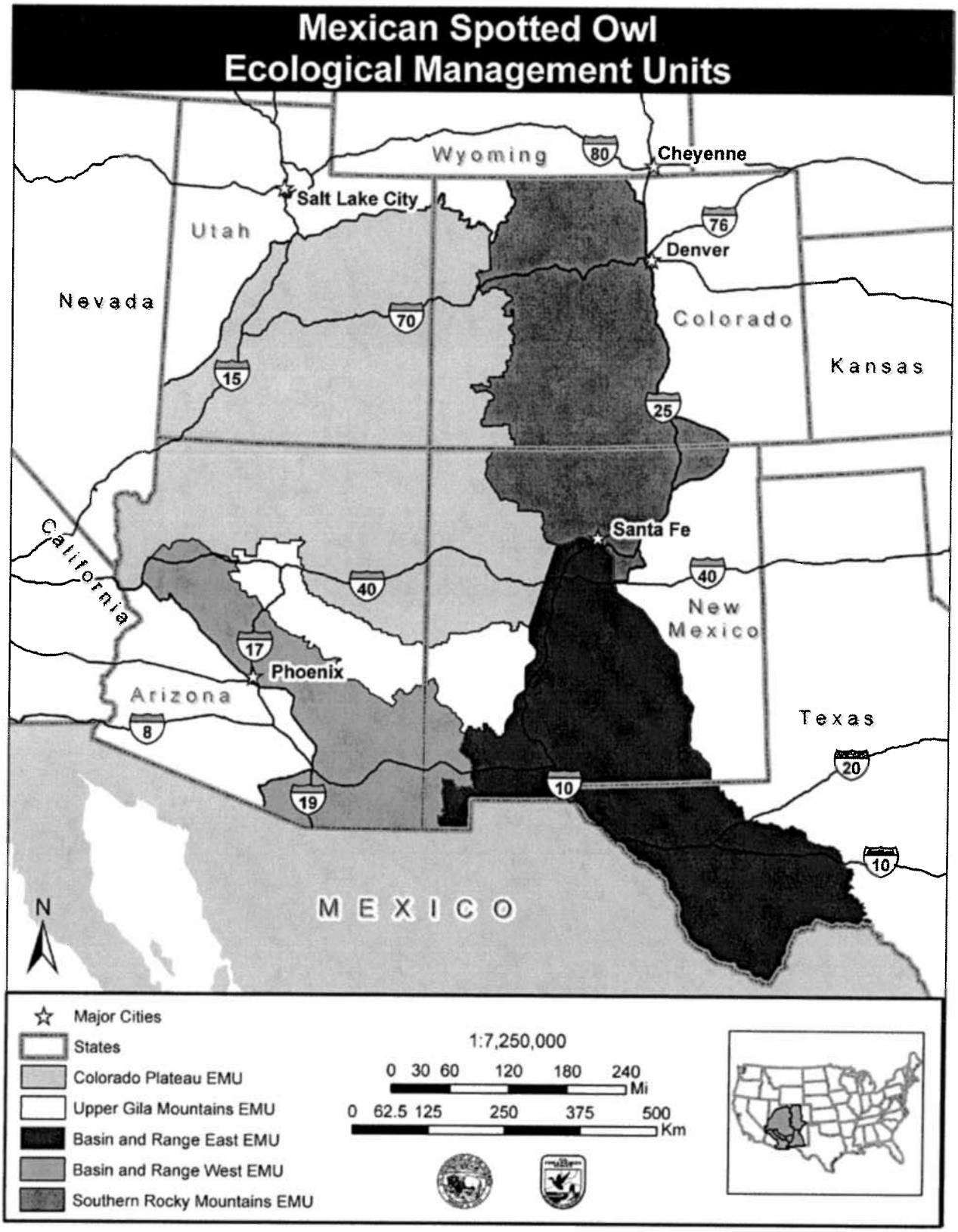

Figure 1. Ecological Management Units for the Mexican spotted owl in the southwestern United States.

Mexican spotted owl surveys since the 1995 Recovery Plan have increased our knowledge of owl distribution, but not necessarily of owl abundance. Population estimates, based upon owl surveys, recorded 758 owl sites from 1990 to 1993, and 1,222 owl sites from 1990 to 2004 in the United States. The Recovery Plan (USDI FWS 2012) lists 1,324 known owl sites in the United States. An owl site is an area used by a single or a pair of adult or subadult owls for nesting, roosting, or foraging. The increase in number of known owl sites is mainly a product of new owl surveys being completed within previously unsurveyed areas (e.g., several National Parks within southern Utah, Grand Canyon National Park in Arizona, Guadalupe National Park in West Texas, Guadalupe Mountains in southeastern New Mexico and West Texas, Dinosaur National Monument in Colorado, Cibola National Forest in New Mexico, and Gila National Forest in New Mexico). Thus, an increase in abundance in the species range-wide cannot be inferred from these data (USDI FWS 2012). However, we do assume that an increase in the number of areas considered to be occupied is a positive indicator regarding owl abundance.

Two primary reasons were cited for the original listing of the Mexican spotted owl in 1993: 1) the historical alteration of its habitat as the result of timber-management practices; and, 2) the threat of these practices continuing. The danger of stand-replacing fire was also cited as a looming threat at that time. Since publication of the original Recovery Plan (USDI FWS 1995), we have acquired new information on the biology, threats, and habitat needs of the Mexican spotted owl. Threats to its population in the U.S. (but likely not in Mexico) have transitioned from commercial-based timber harvest to the risk of stand-replacing wildland fire. Recent forest management has moved away from a commodity focus and now emphasizes sustainable ecological function and a return toward pre-settlement fire regimes, both of which have potential to benefit the spotted owl. Southwestern forests have experienced larger and more severe wildland fires from 1995 to the present, than prior to 1995. Climate variability combined with unhealthy forest conditions may also synergistically result in increased negative effects to habitat from fire. The intensification of natural drought cycles and the ensuing stress placed upon overstocked forested habitats could result in even larger and more severe fires in owl habitat. Several fatality factors have been identified as particularly detrimental to the Mexican spotted owl, including predation, starvation, accidents, disease, and parasites.

Historical and current anthropogenic uses of Mexican spotted owl habitat include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of owl nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing is prevalent throughout the range of the owl and is thought to have a negative effect on the availability of grass cover for prey species. Recreation impacts are increasing throughout the Southwest, especially in meadow and riparian areas. There is anecdotal information and research that indicates that owls in heavily used recreation areas are much more erratic in their movement patterns and behavior. Fuels reduction treatments, though critical to reducing the risk of severe wildland fire, can have short-term adverse effects to owls through habitat modification and disturbance. As the human population grows in the southwestern United States, small communities within and adjacent to wildlands are being developed. This trend may have detrimental effects to spotted owls by further fragmenting habitat and increasing disturbance during the breeding season.

Several fatality factors have been identified as particularly detrimental to the Mexican spotted owl, including predation, starvation, accidents, disease, and parasites. For example, West Nile Virus also has the potential to adversely impact the Mexican spotted owl. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney et al. 2004). Unfortunately, due to the secretive nature of spotted owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to the owl range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic, high-severity, stand-replacing wildland fire is probably the greatest threat to the Mexican spotted owl within the action area. As throughout the West, fire severity and size have been increasing within this geographic area. Landscape level wildland fires, such as the Rodeo-Chediski Fire (2002), the Wallow Fire (2011), and the Whitewater-Baldy Complex (2012) have resulted in the loss of tens of thousands of acres of occupied and potential nest/roost habitat across significant portions of the Mexican spotted owl's range.

Finally, global climate variability may also be a threat to the owl. Changing climate conditions may interact with fire, management actions, and other factors discussed above, to increase impacts to owl habitat. Studies have shown that since 1950, the snowmelt season in some watersheds of the western U.S. has advanced by about 10 days (Dettinger and Cayan 1995, Dettinger and Diaz 2000, Stewart et al. 2004). Such changes in the timing and amount of snowmelt are thought to be signals of climate-related change in high elevations (Smith et al. 2000, Reiners et al. 2003). The impact of climate change is the intensification of natural drought cycles and the ensuing stress placed upon high-elevation montane habitats (IPCC 2007, Cook et al. 2004, Breshears et al. 2005, Mueller et al. 2005). The increased stress put on these habitats is likely to result in long-term changes to vegetation, and to invertebrate and vertebrate populations within coniferous forests and canyon habitats that affect ecosystem function and processes.

Critical Habitat

The FWS designated critical habitat for the Mexican spotted owl in 2004 on approximately 8.6 million acres (3.5 million hectares) of Federal lands in Arizona, Colorado, New Mexico, and Utah (USDI FWS 2004). Within the designated boundaries, critical habitat includes only those areas defined as protected habitats (defined as PACs and unoccupied slopes >40 percent in the mixed conifer and pine-oak forest types that have not had timber harvest in the last 20 years) and restricted (now called "recovery") habitats (unoccupied owl foraging, dispersal, and future nest/roost habitat) as defined in the 1995 Recovery Plan (USDI FWS 1995). The PCEs for Mexican spotted owl critical habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (USDI FWS 1995). Since owl habitat can include both canyon and forested areas, PCEs were identified in both areas. The PCEs identified for the owl within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the owl's habitat needs for nesting, roosting, foraging, and dispersing are:

- A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 to 45 percent of which are large trees with dbh (4.5 feet above ground) of 12 inches or more;
- A shade canopy created by the tree branches covering 40 percent or more of the ground;
- Large, dead trees (snags) with a dbh of at least 12 inches.
- High volumes of fallen trees and other woody debris;
- A wide range of tree and plant species, including hardwoods; and,
- Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

The PCEs listed above usually are present with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest-type productivity, and plant succession. These PCEs may also be observed in younger stands, especially when the stands contain remnant large trees or patches of large trees. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist.

Steep-walled rocky canyonlands occur typically within the Colorado Plateau EMU, but also occur in other EMUs. Canyon habitat is used by owls for nesting, roosting, and foraging, and includes landscapes dominated by vertical-walled rocky cliffs within complex watersheds, including many tributary side canyons. These areas typically include parallel-walled canyons up to 1.2 miles (2 kilometers) in width (from rim to rim), with canyon reaches often 1.2 miles (2 kilometers) or greater, and with cool north-facing aspects. The PCEs related to canyon habitat include one or more of the following:

- Presence of water (often providing cooler and often higher humidity than the surrounding areas);
- Clumps or stringers of mixed-conifer, pine-oak, pinyon-juniper, and/or riparian vegetation;
- Canyon walls containing crevices, ledges, or caves; and,
- High percent of ground litter and woody debris.

Summary of Rangewide Status of the Mexican spotted owl and critical habitat

Overall, the status of the owl and its designated critical habitat has not changed significantly range-wide in the U.S. (which includes Utah, Colorado, Arizona, New Mexico, and extreme southwestern Texas), based upon the information we have, since issuance of the 2012 LRMP BO/CO for KNF (USFWS 2012). What we mean by this is that the distribution of owls continues to cover the same area and critical habitat is continuing to provide for the life history needs of the Mexican spotted owl throughout all of the EMUs located in the U.S. We do not have detailed information regarding the status of the Mexican spotted owl in Mexico, so we cannot make inferences regarding its overall status.

However, this is not to say that significant changes have not occurred within the owl's U.S. range. Wildland fire has resulted in the greatest loss of PACs and critical habitat relative to other actions (e.g., such as forest management, livestock grazing, recreation, etc.) throughout the U.S.

range of the Mexican spotted owl. These wildland fire impacts have mainly impacted Mexican spotted owls within the UGM EMU (e.g., Rodeo-Chediski and Wallow Fires on the Apache-Sitgreaves NF and Whitewater-Baldy Complex on the Gila NF) and BRW EMU (e.g., Horseshoe 2 Fire on the Coronado NF); but other EMUs have been impacted as well (SRM EMU, the Santa Fe NF by the Las Conchas Fire, CP EMU by the Warm Fire). However, we do not know the extent of the effects of these wildland fires on actual owl numbers.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Status of the species and critical habitat within the action area

The KNF lies within the UGM and CP EMUs. The KNF is located on the western end of the UGM EMU and the southern edge of the CP EMU. Based upon analyses conducted for the LRMP, the Forest Service estimates that there are approximately 5,130 acres of habitat within PACs and approximately 135,795 acres of recovery habitat (formerly referred to as restricted habitat) on the KNF. In the BA provided for the 2012 LRMP consultation, the Forest Service reported 342,721 acres of recovery habitat (16,761 acres of protected steep-slope habitat outside of PACs and 325,960 acres of restricted habitat). We assume that the numbers reported in the 2013 LRMP BA (which this BO is based upon) have been refined based upon an updated analysis.

Recovery habitat consists of areas outside of PACs managed as nest/roost, foraging, dispersal, and wintering habitat. Recovery habitat includes pine-oak, mixed-conifer, and riparian forest as well as rocky canyons (USDI FWS 2012). Table 2 below describes the acres of owl protected habitat within the seven PACs and recovery habitat on the KNF, by Ranger District. Future surveys the Forest Service may do as part of their regular management, within currently unoccupied owl habitat on the KNF, may detect additional Mexican spotted owls. Based on information provided by the Forest Service, we understand that there is no Mexican spotted owl habitat (i.e., mixed conifer recovery habitat) on the Tusayan Ranger District.

Table 2. Mexican spotted owl protected and recovery habitat acres on the KNF.

Habitat Designation	Williams Ranger District	North Kaibab Ranger District	Total Acres
Recovery Habitat	64,947	70,848	135,795
Protected Habitat	5,130	0	5,130
Totals	70,077	70,848	140,925

As of summer 2013, the KNF has identified seven owl PACs on the forest, all located on the Williams Ranger District within the UGM EMU. Habitat within these PACs consists of frequent fire and mesic mixed-conifer forests and forested canyons. In addition to PAC (occupied) habitat, recovery (or unoccupied, potential nest/roost, and/or foraging) habitat consists of ponderosa pine-Gambel oak and mixed conifer forest throughout this area. There is a limited amount of mixed-conifer habitat on the Williams Ranger District and most of that habitat is included as protected habitat (i.e., is located within PACs), is found on slopes >40%, or is located within wilderness boundaries.

Within the CP EMU, Mexican spotted owl habitat on the North Kaibab Ranger District contains no currently known occupied habitat. However, the area does contain recovery habitat.

Table 3. Mexican spotted owl protected and recovery habitat by vegetation type on the KNF.

Owl Habitat Type	Pine-Gambel Oak (Williams Ranger District)	Mixed Conifer (Williams Ranger District)	Mixed Conifer (North Kaibab Ranger District)	Totals
Recovery Habitat	53,560	11,387	70,848	135,795
Protected Habitat	695	4,435	0	5,130
Totals	54,255	15,822	70,848	140,925

Since our issuance of the 2012 LRMP BO/CO for the KNF (USFWS 2012), very little has changed on the KNF in regards to the status of the Mexican spotted owl. Of the seven PACs on the KNF, three are located completely within the Sycamore Canyon and Kendrick Wilderness boundaries and approximately two-thirds of a fourth PAC is within the Kendrick Wilderness (200 acres are located outside the wilderness boundary).

In recent history, the status of the Mexican spotted owl and its habitat within the action area has likely been most impacted by the 2006 Warm Fire on the North Kaibab Ranger District (see discussion below). There are no known owl nest/roost sites within this area, but high-severity fire affected approximately 4,776 acres of owl foraging and dispersal habitat.

Critical Habitat

Part or all of four critical habitat units (CHUs) (CP-10, UGM-13, UGM-15, UGM-17) occur within the boundaries of the KNF. As stated earlier, only areas identified as protected and restricted habitat pursuant to the 1995 Recovery Plan (USDI FWS 1995) within these CHUs are considered to be critical habitat. We refer to the 1995 Recovery Plan here because the 2004 critical habitat rule relied upon this plan to define designated critical habitat. Information from the Forest Service indicates that these CHUs contain roughly 127,630 acres of habitat on the KNF (Table 4). In the 2012 LRMP BO/CO, the KNF estimated that there were ~247,802 acres of critical habitat on the KNF. The acreages provided in Table 4 are a more accurate depiction of the acres of critical habitat on the KNF.

Table 4. Mexican spotted owl CHUs on the KNF and critical habitat by vegetation type.

CHU	Ranger District	Total CH acres	Mixed Conifer Acres	Pine-Oak Acres
CP-10	North Kaibab	70,350	70,350	0
UGM-13	Williams	52,060	10,670	41,390
UGM-15	Williams	2,390	2,222	168
UGM-17	Williams	2,830	2,830	0
	Total Acres	127,630	86,072	41,558

Since our issuance of the 2012 LRMP BO/CO (USFWS 2012), which covered implementation of the prior KNF LRMP and it amendments, very little has changed regarding the status of critical habitat on the KNF. In recent history, the status of critical habitat on the KNF has likely been most impacted by the 2006 Warm Fire on the North Kaibab Ranger District (see discussion below). Mexican spotted owl habitat within and outside of CHU CP-10 was affected by the fire. Though this acreage is a very small amount of the total critical habitat in CHU CP-10 (which consists predominately of canyon habitat), it is a large proportion of the available mixed-conifer forest habitat in the CHU. Approximately 5,319 acres of mixed conifer critical habitat on the KNF was burned by the Warm Fire (Hamann et al. 2008). Of this acreage, approximately 4,776 acres of the mixed conifer habitat burned resulted in mixed-high to high-severity fire effects. The critical habitat within the fire perimeter now consists of significantly reduced PCEs related to forest structure (a range of tree species composed of different sizes and a shade canopy created by tree branches covering 40 percent or more of the ground). The fire did create numerous beneficial snags (dead trees) through fire kill, but many of these fire-killed trees as well as any other snags likely fell within a few years of the fire (Chambers and Mast 2005) or were removed through salvage activities within the fire perimeter. As remaining snags fall, the PCE of high volumes of fallen trees and other woody debris (related to prey abundance) will continue to increase, which may improve owl foraging habitat.

Factors affecting the species environment and critical habitat within the action area

The factors affecting the Mexican spotted owl and its designated critical habitat within the action area, the Williams and North Kaibab Ranger Districts on the KNF, are discussed in this section. Since we issued the 2012 LRMP BO/CO (USFWS 2012), we have not conducted any formal consultations on the KNF for the owl (see USFWS 2012, Table 1, for a summary of formal consultations since 2005). By definition, formal consultations and the resulting BOs mean that the Mexican spotted owl and/or its critical habitat were adversely affected (through disturbance and/or habitat modification) to some extent by specific projects. BOs with incidental take statements mean that individual owls within PACs were adversely affected in a way that constituted incidental take of the species. Specific information regarding such effects can be found within project-specific BOs.

Projects for which informal consultations were previously conducted in the project area or vicinity include an amendment to the ski area special use permit, several livestock grazing permits, and travel management. By definition, projects for which consultation can be concluded informally will result in no adverse effects to the species or its critical habitat.

Between 2005 and 2012, seven site-specific BOs were issued to the KNF addressing adverse effects to Mexican spotted owls from projects implemented under the forest's LRMP (USFWS 2012), but only one of those BOs resulted in issuance of incidental take. These projects included three fuels reduction and forest restoration projects, one salvage project, two utility line hazard tree removal actions, and one lands project (authorization of additional activities at a ski area). These projects involved the Fire Management, Forestry and Forest Health, and Lands and Minerals programs. These programs were all analyzed in the 2012 BO/CO (USFWS 2012). Within the seven project-specific BOs, Mexican spotted owls associated with one PAC were determined to have some form of incidental take associated with one of the projects. The KNF provided conservation measures that would minimize the impacts to Mexican spotted owls in all formal consultations. All BOs for projects conducted on the KNF were determined to be non-jeopardy for the species and non-adverse modification for critical habitat. We also issued a draft BO for wildfire suppression activities. Incidental take of spotted owls associated with wildland fire suppression activities is not part of the action under consultation in this BO, but is part of the environmental baseline for this consultation.

Critical Habitat

Since issuance of the 2012 LRMP BO/CO (USFWS 2012), there have been no significant changes to factors affecting critical habitat on the KNF. However, as described in the 2012 LRMP BO/CO, the most significant factor on the KNF has been wildland fire. Critical habitat unit CP-10 (North Kaibab Ranger District) on the KNF was impacted by the 2006 Warm Fire. The Warm Fire began as a lightning strike on June 8, 2006, on the North Kaibab Ranger District approximately three miles south of Jacob Lake, Coconino County, Arizona. The fire began in the ponderosa pine cover type. The fire was initially managed for resource objectives until approximately June 25 when it was declared a wildland fire and actively suppressed. The wildland fire entered owl recovery habitat (mixed conifer cover type) and critical habitat on approximately June 25. The fire was contained on July 4, 2006, at a size of approximately 59,000 acres. Most of the fire that occurred in owl habitat was of high severity; essentially all key habitat components and PCEs were lost. The BA for the Warm Fire Recovery Project (Hamann et al. 2008) states that 4,776 acres of unoccupied restricted/recovery habitat and critical habitat burned with mixed-high to high-severity fire effects. Pursuant to the PCEs associated with critical habitat, described in the Status of the Species section above, the most significant impact to critical habitat was the loss of canopy cover, large trees, woody debris, and a range of age classes of trees that provide horizontal and vertical canopy diversity. The loss of these elements may preclude spotted owls from nesting or roosting in the area due to a lack of suitable habitat. However, because prey species such as deer mice tend to increase following fire, it is likely the area will provide resources for foraging owls. Downed wood will increase across the fire area as trees fall.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent

actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The Forest Service's mission, briefly, is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people. The proposed KNF LRMP is the plan the Forest Service will use to guide this mission. Although the LMRP is not a project-specific document, it does provide the direction and guidance for designing and planning specific projects. Mexican spotted owls occur on the Williams Ranger District, and Mexican spotted owl habitat and critical habitat occur on the Williams and North Kaibab Ranger Districts within mixed conifer and pine-oak forests. We understand that the KNF will integrate habitat management objectives and species protection measures in the Recovery Plan (USDI FWS 2012) in order to conserve and manage for the Mexican spotted owl and its critical habitat. However, multiple-use management can result in conflicting resource objectives in order to meet the diverse needs of people. In addition, active spotted owl habitat management and forest restoration implemented under the forest plan may result in short-term adverse effects to individuals. Because of this, we expect that there will likely be adverse effects to Mexican spotted owls, their habitat, and/or designated critical habitat over the life of this consultation.

These adverse effects may occur as a result of actions implemented under the following programs: Vegetation Management, Forestry and Forest Products, Fire Management, Engineering, Lands (including Special Uses), Management Area direction (e.g., Wildland Urban Interface), Rangeland Management, Recreation, and Transportation and Forest Access. Because the Vegetation Management and Forestry and Forest Products programs are so similar in terms of effects to the owl, we have combined these programs into "Forest, Forest Health, and Fuel Programs" for the effects discussion below. The Fire Management Program combines elements of fire prevention, prescribed fire, wildland fire, and fire suppression. However, responses to wildland fire, including fire suppression and management to meet resource objectives, are not included in the proposed action. As needed, consultation on these actions will continue to be handled under emergency section 7 consultation procedures. Therefore, we only discuss the potential effects of prescribed fire on the Mexican spotted owl, its habitat, and critical habitat.

Effects of the Action on the Mexican spotted owl

Forestry, Forest Health and Fuels Program, and Fire Management

Forestry, forest health, and fuels activities planned under the proposed LRMP emphasize the restoration of forests and the reduction of active crown fire in ponderosa pine and mixed conifer forests. In general, the KNF expects that for most forest, forest health, and fuels projects implemented under the proposed LRMP in PACs and recovery habitat, the KNF will follow the Recovery Plan (USDI FWS 2012). Over the long-term, implementing Recovery Plan guidance should result in positive impacts to the owl and its habitat for most project-specific actions associated with this program. The Forest Service typically implements measures to minimize effects to key habitat components (such as retaining large trees, large snags, etc.) and the owl (such as conducting forestry operations outside the owl breeding season when in or near PACs).

However, in the short-term, direct and indirect effects to the Mexican spotted owl and its habitat may include disturbance (from noise or activities near PACs, and smoke), the loss of key habitat components, and reduced severe wildfire risk. This section describes the potential effects of the fuels reduction projects to Mexican spotted owls and how actions implemented under the LRMP may result in short-term adverse effects to the species and its habitat; however, we also expect that implementation of the proposed LRMP would reduce the potential for severe wildfire and provide increased protection to existing and future Mexican spotted owl habitat.

For ponderosa pine, the proposed LRMP emphasizes restoration as these areas are thought to be highly departed from the desired conditions. Projects in ponderosa pine, which includes Mexican spotted owl pine-oak habitat, are aimed at restoring forest structure and processes, such as low-intensity fire. The LRMP direction is to promote Gambel oak, aspen, openings, and understory production as a part of these treatments. There are approximately 54,145 acres of pine-oak habitat on the Williams Ranger District. Most of this habitat is recovery habitat, but 50 acres are located in PACs (see Table 3). Over the next 15 years (the life of the proposed LRMP and this BO), the KNF could mechanically thin up to 28,500 acres of pine-oak (~60% of the total acres) and could prescribe burn almost all pine-oak acres, up to two times. No mechanical thinning or prescribed burning would occur within owl habitat located in designated wilderness.

When treatments occur within pine-oak habitat there is potential for Mexican spotted owl habitat components to be removed, modified, or re-distributed. There is the potential for loss of snags, logs, and large trees and reduced canopy closure within owl habitat due to conflict with restoration needs and/or habitat enhancement goals. Mechanical treatments adequate to meet fuels and restoration management objectives in recovery habitats may result in the short-term loss of some habitat components (USDI FWS 2012). Due to the small amount of pine-oak outside of wilderness in PACs (~10 acres), effects to protected habitat from mechanical thinning would be limited.

There is also the potential for adverse effects to recovery habitat as a result of proposed guidelines (in Vegetation Management) to use even-aged silvicultural practices as a strategy for achieving the desired conditions (e.g., such as bringing dwarf mistletoe infection levels to within a sustainable range). These treatments would not occur within habitat identified as recovery nest/roost replacement habitat. However, within the rest of the recovery habitat acres (across ~48,685 acres), the use of even-aged silvicultural practices could result in effects to owl habitat such as the loss of multi-story canopy, decreased canopy cover, removal of large trees, and/or reduced tree diversity.

There are approximately 4,435 acres of protected mixed conifer habitat (all on the Williams Ranger District) and 82,235 acres of mixed conifer recovery habitat on the KNF (see Table 3 for the acres by District). The proposed LRMP refers to "frequent-fire" and "mesic" mixed conifer. However, although these two vegetation types would be managed differently under the proposed LRMP, the KNF was unable at this time to estimate the acreages of frequent-fire and mesic mixed conifer. Most mesic mixed conifer occurs on the North Kaibab Ranger District. Based on historical North Kaibab reconnaissance data, it is estimated that 16% (approximately 11,335 acres) of the mixed conifer on the district is mesic.

For frequent-fire mixed conifer habitat, the proposed LRMP objective is to reduce the potential for active crown fire and restore frequent-fire mixed conifer communities toward desired conditions. Prescribed burning may occur on approximately 75,000 acres of mixed conifer (some acres may be burned more than one time over the life of the LMRP). In addition, the KNF proposes to mechanically thin 1,200 to 2,100 acres of frequent-fire mixed conifer annually (for a total of ~31,500 acres). There are no objectives in the proposed LRMP for mesic mixed conifer. This does not mean that mechanical thinning or burning would not occur in mesic mixed conifer, but the proposed LRMP states that treatments in this vegetation type would be limited.

Just as with mechanical thinning and burning in ponderosa pine, there is the potential for mechanical and burning treatments to adversely affect Mexican spotted owls and/or important habitat components. Mechanical treatments designed to meet fuels reduction objectives in the Bill Williams and Sitgreaves PACs could result in reduced canopy cover, removal of large trees, loss of multi-layered canopy structure, and potentially significant reductions in snags and coarse woody debris. The Bill Williams PAC is already being analyzed for mechanical and burn treatments as part of the Bill Williams Mountain Restoration Project. It is unclear whether the planning for that project would be conducted under the existing or proposed LRMP. Regardless of which LRMP it is conducted under, the short-term effects of the action are expected to result in adverse effects to owls and their habitat for the reasons noted above, as the KNF attempts to manage the area for long-term sustainability.

The guidelines for personal firewood collection would allow for collection of conifer dead and down logs, standing dead conifers < 12 inches dbh or 15 feet tall, and standing dead oak less than 8 inches dbh. The preferred tree species for fuelwood collection are juniper, Gambel oak, and aspen, all of which provide habitat either for owls or their prey. The proposed LRMP guidelines would allow for some removal of habitat components important to the Mexican spotted owl. However the removal of fuelwood is usually limited to areas near roads and near private land; therefore, adverse effects to owl habitat would be limited to these areas.

In summary, forest and forest health activities implemented under this program are planned to reduce the risk of severe, stand-replacing wildland fire across the landscape. These activities would be conducted in PACs and recovery habitat outside of wilderness. However, even projects with projected long-term benefits may reduce habitat quality for Mexican spotted owls in the short-term. In the short-term, direct and indirect effects to the spotted owl and its habitat may include disturbance (from noise and/or smoke for early entry burns) and the loss of key habitat components (e.g., reduced canopy cover, loss of large trees, loss of large snags, etc.), along with reduced wildland fire risk. Therefore, over the life of this consultation, we expect that implementation of the Forestry, Forest Health, and Fuels Program would result in short-term adverse effects to Mexicans spotted owls and their habitat.

Lands and Minerals Program, Special Uses

The lands and minerals program manages the identification and maintenance of land line locations on KNF lands, rights-of-way, utility corridors, mineral extraction, roads to access private property, and other non-recreational uses. The objective of the program is to allow for appropriate uses of NFS lands; these uses may not always be compatible with Mexican spotted

owl management. Mineral extraction, powerlines, and communication sites may result in the removal of owl habitat and/or disturbance to the Mexican spotted owl during the breeding season. For example, management of utility corridors on the KNF has resulted in the removal of many large trees and snags, both of which are key habitat components of owl habitat. The proposed desired conditions and guidelines for these activities would assist in reducing or eliminating these impacts by restricting or prohibiting some surface use in spotted owl habitat. In addition, efforts to concentrate uses to the extent possible would limit the amount of habitat that would be affected by development of these facilities. The desired conditions and guidelines for mineral and mining activities would only apply to new, not existing, leases.

At this time, we cannot predict what might occur in the Lands and Special Use programs that may impact Mexican spotted owls or their habitat. However, we know from past consultations (e.g., utility line corridor maintenance) that there would be some impacts to owls and/or their habitat from this program on the KNF.

Management Area Direction (Wilderness; National Scenic and Recreation Trails; Recommended Wilderness Areas, Wildland Urban Areas, Westside Energy Corridor, Developed Recreation Sites, Garland Prairie Management Area, Bill Williams Management Area)

Part of the Management Area Direction is to manage the WUI, areas one-half mile from private lands and infrastructure (see proposed action for complete description), for low fire risk. In order to significantly reduce the risk of high-intensity fire in these areas, forest thinning tends to be heavier (i.e., significantly reduced tree density and basal area) than in other forested areas. Mexican spotted owl recovery habitat in the WUI has the highest likelihood of being negatively affected on the Williams Ranger District. Based on GIS analysis, there are approximately 9,200 acres of recovery habitat within WUI areas on the district (which is approximately 15% of the recovery habitat on the district). The WUI areas on the Williams Ranger District have already been analyzed under NEPA for treatments or have already been treated to reduce fire risk. The KNF would continue to follow the site-specific project decisions and consultations conducted for those areas. It is likely that recovery habitat in WUI areas would not be managed to become owl nest or roost habitat in the future under the proposed LRMP. If future treatments are done in WUI areas that have not undergone NEPA analysis, the KNF would strive to use the guidelines for following the intent of the Recovery Plan (USDI FWS 2012) to protect any habitat that currently provides nesting/roosting replacement habitat, but would treat areas outside of this habitat to attempt to reduce the risk of high-severity wildfire. The KNF would also try to increase the amount of nesting/roosting replacement habitat in areas outside of WUI areas.

Mixed conifer habitat with the highest likelihood of being negatively affected by forest treatments also occurs within the WUI. There are approximately 970 acres of mixed conifer owl habitat within the WUI on the North Kaibab Ranger District and 500 acres within the WUI on the Williams Ranger District. As discussed above, in pine-oak owl habitat all of the WUI areas have either already been treated or the planning and NEPA analyses have been completed to conduct these forest treatments. It is not likely that mixed conifer recovery habitat in the WUI would be developed to meet nesting or roosting needs of the owl; however, areas that currently meet owl needs would be retained during future treatments over the next 15 years.

Rangeland Management Program

Grazing allotment plans, as developed under the proposed LRMP, provide guidance for managing and monitoring public lands range use by livestock on the KNF. Grazing can adversely affect the Mexican spotted owl primarily through four indirect effects: 1) diminished prey availability and abundance; 2) increased susceptibility of habitat to destructive fires, 3) degradation of riparian and meadow plant communities; and, 4) impaired ability of plant communities to recover or develop into more suitable Mexican spotted owl habitat (USDI FWS 2012). Although the Forest Service strives to manage livestock allotments to maintain habitat for the owl and its prey, multiple factors (such as yearly precipitation) may determine the specific influences of livestock on Mexican spotted owl habitat. Poorly managed livestock grazing has the potential for removing habitat for Mexican spotted owl prey species. However, the desired conditions for livestock grazing in the proposed LRMP should promote understory vegetation production in forested and grassland habitat. The objectives identified in the proposed LRMP should aid in improving habitat conditions for prey species across the KNF. The desired conditions and guidelines for livestock grazing in montane meadows would help maintain habitat for prey species in these areas. Ponderosa pine and frequent fire mixed conifer forest would be managed such that there are grasses and needle cast to provide the fine flashy fuels needed to maintain the natural fire regime.

Livestock grazing may result in minimal effects to PACs on the KNF because of the steep, forested areas where they occur. We also expect that the proposed LRMP desired conditions and guidelines would result in insignificant effects to prey availability in recovery habitat in ponderosa pine-oak.

Recreation Program

Recreation activities may affect Mexican spotted owls directly through disturbances caused by human activity (e.g., hiking, shooting, and OHV use at nesting, roosting, or foraging sites) or indirectly through alteration of habitats such as damage to vegetation, soil compaction, illegal trail creation, and increased risk of wildland fire. Development of new recreational facilities (e.g., trailheads, mountain bike trails, etc.) and expansion of existing facilities (e.g., campgrounds and hiking trails) may alter owl habitat. The nature of the recreation program can come into conflict with Mexican spotted owl management across the forest and does result in disturbance to owls. Typically, this is a result of recreationists wanting to conduct activities (such as OHV group rides) in or adjacent to PACs during the breeding season. Other recreation activities in the region that have resulted in potential adverse effects to the Mexican spotted owl include building trails and developing recreational facilities within PACs.

The proposed LRMP includes special use standards (such as the transportations and forest access standards, and Bill Williams Mountain Area plan components) that would reduce the impacts to Mexican spotted owls from recreation activities through the prohibition of cross country OHV travel, no competitive motorized events, and no expansion of the ski area. However, there is also direction in the LRMP to increase recreational opportunities. Over the life of the LRMP, this could result in impacts to Mexican spotted owls and their habitat.

Transportation and Forest Access

Construction of roads and trails can indirectly affect Mexican spotted owls through loss and fragmentation of habitat. In general, habitat loss to road construction is minor at a rangewide scale when compared to more significant threats (e.g., wildland fire); however, on a local scale, roads and trails through PACs may fragment habitat continuity, alter natural movement patterns, and increase disturbance to resident owls. Roads in nest/roost replacement and other recovery habitats may also result in a loss of habitat components (e.g., large logs, snags, and hardwoods) as people access these areas for fuelwood cutting.

The Forest Service typically implements measures to minimize effects to the owl and habitat components from the construction of roads and trails (such as avoiding road maintenance activities near PACs during the breeding season, avoiding construction of new roads in PAC habitat, etc.). Under this program, the Forest Service may also seasonally or permanently close existing roads in certain circumstances. Seasonally or permanently closing roads within areas where spotted owls are known to occur would reduce the amount of disturbance, particularly during the breeding season (March 1 – August 31). The actual effects to the Mexican spotted owl and/or owl recovery habitat would be dependent on methods, location, and timing of such activities.

There is a transportation system objective in the proposed LRMP to grade surfaces and clean culverts and ditches on 100 miles of open NFS roads each year. There is potential for these activities to result in disturbance to Mexican spotted owls in PACs during the breeding season. The engineering program would also obliterate 15% of non-system roads (e.g., unauthorized, decommissioned); this could reduce the potential for noise disturbance to occupied habitat over the life of the LRMP (at this time we do not know the site-specific locations of roads to be obliterated). However, short-term disturbance to Mexican spotted owls could occur from activities associated with obliteration (e.g., use of heavy machinery, etc.).

The guidelines to follow the transportation and KNF access plan components should help avoid and minimize the effects of new roads at the project level. The proposed LRMP would attempt to avoid the construction of new or temporary roads in PACs; however, it is likely that temporary roads would be proposed within the Bill Williams PAC as part of the Bill Williams Mountain Restoration Project. We would expect that over the life of the project, there could be additional new and temporary road construction to help support forest restoration activities which may result in short-term adverse effects to Mexican spotted owls and their habitat.

Summary

In summary, since 2012, there have been no new formal consultations beyond what was reported in our 2012 LRMP BO/CO (USFWS 2012). Since 2005 (the prior LRMP consultation), we completed seven formal consultations for the KNF that were implemented under the 1988 LRMP, as amended. These actions included a combination of short- and long-term harm and harassment that resulted in the anticipated take of owls associated with one PAC. The proposed LRMP would strive to implement the Recovery Plan (USDI FWS 2012) and guidelines that would minimize impacts to the Mexican spotted owl and its habitat. However, due to the Forest

Service's multiple use mission, restoration of forested habitats, and active management of spotted owl habitat, we anticipate that over the life of this consultation (15 years) there will be activities implemented under this plan that could result in adverse effects to the owl and its habitat. Project activities associated with forest management (e.g., fuels reduction projects, forest restoration, salvage logging, fire management) would likely be the predominant activities occurring within and adjacent to Mexican spotted owls and their habitat. These activities can result in disturbance during the breeding season (such as mechanized logging, hauling routes, smoke), habitat modification (short-term reductions in large logs, snags, and other key habitat components), and habitat degradation (such as long-term loss of old-growth, pre-settlement trees to create openings for regeneration). Other actions, such as those conducted under the Lands or Special Uses Program (based upon recent site-specific consultations), Recreation, or other programs identified above, could also result in adverse effects to Mexican spotted owls from modification of prey species habitat due to disturbance related to construction of infrastructure near occupied areas.

Effects of the Action on Mexican spotted owl Critical Habitat

In our analysis of the effects of the action on critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the PCEs that were the basis for determining the habitat to be critical. To determine if an action results in adverse modification of critical habitat, we must also evaluate the current condition of all designated CHUs, and the PCEs of those units, to determine the overall ability of all designated critical habitat to support recovery. Further, the functional role of each of the CHUs in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

Below, we describe the PCEs related to forest structure and maintenance of adequate prey species and the effects from implementation of the LRMP. The PCEs for steep-walled rocky canyonlands are not analyzed in this BO because this habitat does not occur within the action area.

Primary Constituent Elements related to forest structure:

PCE: A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with dbh of 12 inches or more.

Effect: Actions implemented under the proposed LRMP are expected to retain the range of tree species (i.e., conifers and hardwoods associated with Mexican spotted owl habitat) and would not reduce the range of tree sizes needed to create the diverse forest and multi-layered forest canopy preferred by owls. Some loss of trees of all types and dbh size classes would occur from actions such as hazard tree removal, prescribed fire, and forest thinning (as implemented under the Fire Management and Forestry Programs). However, actions implemented under the

proposed LRMP are expected to maintain a range of tree species and sizes needed to maintain this PCE in PACs and recovery habitat across the KNF because the Forest Service is implementing the Recovery Plan guidelines that strive to retain large trees, canopy cover appropriate for owl habitat, and a diverse range of tree species (such as Gambel oak in pine-oak forests and several conifer species in mixed conifer forest.) Removal of trees and various tree species may also occur as part of the Recreation (development of recreation sites) and Engineering and Transportation Programs (creation, maintenance of roads); but these effects should be small in extent and intensity. Therefore, the function and conservation role of this PCE would not be compromised by the proposed action.

PCE: A shade canopy created by the tree branches covering 40 percent or more of the ground.

Effect: We expect that tree shade canopy would be reduced following thinning and burning treatments implemented under the proposed LRMP in the Fire Management and Forestry Programs. However, we do not expect reduction of canopy cover in Mexican spotted owl forested habitat to be reduced below 40 percent because the Forest Service has adopted the Recovery Plan recommendations that include managing for higher basal area and increased canopy cover in Mexican spotted owl habitat versus pure ponderosa pine or other forest and woodland habitats. Previous treatments under the previous LRMP were not expected to reduce the shaded canopy below 40 percent. We would expect that some small reduction in existing canopy cover (5 to 10 percent) may actually aid in increasing understory herbaceous vegetation and forb production, which could benefit Mexican spotted owl prey species. The function and conservation role of this PCE would not be compromised by the proposed action.

PCE: Large, dead trees (snags) with a dbh of at least 12 inches.

Effect: Large snags would most likely be reduced following proposed prescribed burning and hazard tree removal actions conducted under the Fire Management and Forestry Programs (and possibly other programs as well). Currently, large snags are rare across the action area, and any loss of this habitat component may be significant in terms of maintaining Mexican spotted owl and prey habitat. Some snags would be created through prescribed burning, which could benefit the Mexican spotted owl. However, snags currently used by Mexican spotted owls for nesting are typically very old, large dbh, highly decayed snags with cavities. Snags with these characteristics tend to be limited in ponderosa pine and mixed conifer forests in northern Arizona (Ganey and Vojta 2004). In individual burning projects, the Forest Service would attempt to minimize loss of these large snags through conservation measures (such as lining or using lighting techniques to avoid snags). Research has indicated that following burning treatments, upwards of 30 percent of these existing snags may be lost within treated (i.e., burned) forests, resulting in short-term adverse effects to this PCE (Randall-Parker and Miller 2000). However, the study design did not include active protective measures for large snags. This is why conservation measures that the Forest Service implements to protect the largest and oldest snags (particularly those with nest cavities) are so important. Therefore, though we anticipate there would be a measurable loss of snags due to implementation of the proposed LRMP, efforts to protect this rare resource would be made as part of any forest or fuels management project. As such, the function and conservation role of this PCE would not be compromised by the proposed action.

Primary Constituent Elements related to maintenance of adequate prey species:

PCE: High volumes of fallen trees and other woody debris.

Effect: Fallen trees and woody debris would likely be reduced by the proposed burning treatments (broadcast, piling, and maintenance burning) as part of the Fire Management Program. Logs are expected to be reduced by approximately 30 percent within protected and recovery Mexican spotted owl habitat (Randall-Parker and Miller 2000). This loss of large logs would result in short-term adverse effects to this primary constituent element and could result in localized impacts to prey species habitat. Furthermore, across the KNF, it is likely that hazard tree removal and prescribed burning would also create fallen trees and woody debris as trees are felled (i.e., cut) and left on the ground or are killed post-burn and fall. However, based upon current data for many of these areas, there is an excess supply of coarse woody debris due to the exclusion of frequent, low-severity fire, which can increase the likelihood of high-severity fire within recovery habitat. Therefore, some removal of woody debris would result in an overall benefit to the function and conservation role of this PCE, though short-term adverse effects would likely occur within some project areas.

PCE: A wide range of tree and plant species, including hardwoods.

Effect: We expect this PCE would be positively affected by the actions taken under the Fire Management and Forestry Programs. Plant species richness would increase following thinning and/or burning treatments that result in small, localized canopy gaps. Individual projects conducted under the proposed LRMP typically would include conservation measures that focus on retaining Gambel oaks and other hardwoods, but some level of short-term loss could occur at the individual project level. However, the function and conservation role of this PCE would not be compromised by the proposed action.

PCE: Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

Effect: Short-term decreases in plant cover would result from prescribed burning conducted under the Fire Management Program, and possibly some limited reductions from livestock managed under the Rangeland Program (see discussion in Recovery Plan, pgs. 42-3). We expect long-term increases in residual plant cover because fire treatments would provide conditions suitable for increased herbaceous plant growth by removing a thick layer of dead plant debris within treated areas. The mosaic effect created by burned and unburned areas and by opening up small patches of forest within protected habitat is also expected to increase herbaceous plant species diversity (Jameson 1967, Moore et al. 1999, Springer et al. 2001) and, in turn, assist in the production and maintenance of the Mexican spotted owl prey base. The combination of low-intensity prescribed burns and thinning during restoration projects would most likely result in only short-term effects to the Mexican spotted owls with regard to modifying prey habitat within treatment areas. In frequent-fire landscapes, herbaceous understory response and plant regeneration tends to be positive following tree removal and prescribed fire (Springer et al. 2001). There is the potential for the Rangeland Program to have adverse effects on the

production of plant cover post-burning if livestock were allowed to graze burned areas too soon following fire. However, the proposed LRMP includes desired conditions and guidelines to maintain healthy levels of forage and managing livestock following prescribed fire. Therefore, the function and conservation role of this PCE across the KNF would not be compromised by the proposed action.

Effects of the Action on the Role of Critical Habitat in Recovery

Adverse effects and associated incidental take from the proposed LRMP are not expected to negatively affect Mexican spotted owl recovery and/or further diminish the conservation contribution of critical habitat to the recovery of the Mexican spotted owl.

The proposed LRMP includes a guideline to integrate habitat management objectives and species protection measures in accordance with the Recovery Plan (USDI FWS 2012). These actions were identified by the Recovery Team as being necessary to recover the Mexican spotted owl and the KNF is implementing these actions in designated critical habitat. Designated critical habitat includes all protected (PACs) and recovery habitat (unoccupied MSO habitat) within CHUs. These actions include the following:

- The KNF has and continues to designate 600 acres surrounding known Mexican spotted owl nesting and roosting sites. PACs are established around owl sites and are intended to protect and maintain occupied nest/roost habitat. Nesting and roosting habitat is rare across the range of the Mexican spotted owl, and by identifying these areas for increased protection, the Forest Service is aiding in recovery.

- The KNF has identified and is managing pine-oak and mixed-conifer forests that have potential for becoming Mexican spotted owl replacement nest-roost habitat, or are currently providing habitat for foraging, dispersal, or wintering habitats. As stated above, nesting and roosting habitat is a limiting factor for the owl throughout its range. By managing critical habitat for future replacement nest/roost habitat, the Forest Service is aiding in recovery.

- The population monitoring scheme within the 1995 Recovery Plan has proven to be not feasible due to logistics and expense. A new population monitoring protocol was developed within the current Recovery Plan based on Mexican spotted owl occupancy (i.e., presence/absence). The Forest Service Regional Office has initiated steps to implement this activity and is currently working with the FWS to implement a pilot study in 2014.

- The KNF's intent is to integrate the best available recovery habitat management objectives where possible into forest restoration and/or fuels reduction projects with the overall goal to protect owl PACs from high-severity wildland fire, and to conduct actions to improve forest sustainability (e.g., thinning and prescribed burning) in order to ensure Mexican spotted owl habitat continues to exist on the forest.

These actions should increase the sustainability and resiliency of Mexican spotted owl habitat (particularly through fuels management and forest restoration actions). Therefore, continued implementation of the KNF's LRMP is not expected to further diminish the conservation contribution of critical habitat to the recovery of the Mexican spotted owl.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this BO. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Since the land within the action area is almost exclusively managed by the Forest Service, most activities that could potentially affect listed species are Federal activities and subject to additional section 7 consultations.

There are private in-holdings within the KNF boundary. Within these private lands, there is the potential for activities that create disturbance or removal of Mexican spotted owl habitat components on private lands, such as roads, grazing, mining, recreation activities, and fuel treatments. Coconino and Yavapai Counties have implemented management plans that provide frameworks for managing land use, the natural environment, and conservation of natural resources, which should minimize and reduce these long-term effects to owl habitat and critical habitat.

CONCLUSION

Critical habitat is defined in section 3 of the Act "as the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical and biological features essential to the conservation of the species and that may require special management considerations or protection; and specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." We have also relied upon the Consultation Handbook which provides guidance on determining adverse modification of critical habitat and jeopardy pursuant to the following: "Adverse effects on individuals of a species or constituent elements or segments of critical habitat generally do not result in jeopardy or adverse modification determinations unless that loss, when added to the environmental baseline, is likely to result in significant adverse effects throughout the species' range, or appreciably diminish the capability of the critical habitat to satisfy essential requirements of the species" (USDC NMFS and USDI FWS 2010:4-34).

After reviewing the current status of the Mexican spotted owl and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, we conclude that implementation of the proposed LRMP for the KNF will not jeopardize the continued existence of the Mexican spotted owl and will not destroy or adversely modify designated critical habitat. Our reasoning for determining that implementation of the proposed LRMP for the KNF will not jeopardize the Mexican spotted owl and will not adversely modify designated critical habitat for the species is based on the following:

- The proposed LRMP will strive to implement the Recovery Plan (USDI FWS 2012) and manage for Mexican spotted owl recovery on the KNF.

- Desired conditions and guidelines in the proposed LMRP recognize the need to reduce the potential for landscape level, stand-replacing fire in ponderosa pine and mixed conifer forests that the Mexican spotted owl occupies. These efforts to improve forest condition and sustainability should reduce the risk of another Warm Fire-like event occurring on the KNF.

- Based on the discussion provided in the Effects to Mexican Spotted Owl Critical Habitat section above, the four critical habitat units (CHUs) (CP-10, UGM-13, UGM-15, UGM-17) affected by the proposed LRMP will continue to serve the function and conservation role of critical habitat for the Mexican spotted owl.

Across the range of the Mexican spotted owl, the population monitoring described within the 1995 Recovery Plan was never implemented because it was not economically or operationally feasible. A revised population monitoring procedure has been outlined in the Recovery Plan (USDI FWS 2012) that aims to assess Mexican spotted owl population trends. Although population trend monitoring has not occurred for the Mexican spotted owl to date, our records indicate no decline in the spotted owl population, based upon an increase in known PAC numbers since the owl was listed (see the Status of the Species section). However, some level of range-wide Mexican spotted owl population monitoring is needed in order for us to assess the status of the species. In past LRMP BOs (i.e., USFWS 2005), we included a "reasonable and prudent measure" for occupancy monitoring that was not feasible, but our incidental take statement herein attempts to provide for a level of project-specific implementation monitoring at the individual BO level in order to assess incidental take associated with the site-specific action.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Per the Act, take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of ''take'' in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering (50 CFR 222.102). "Harass" is defined in regulation as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (50 CFR 17.3). "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (50 CFR 402.02). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as

part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

For the purpose of evaluating incidental take of Mexican spotted owls from the action under consultation, incidental take can be anticipated as either the direct mortality of individual birds or the alteration of habitat that affects behavior (e.g., breeding or foraging) of birds only temporarily, or to such a degree that the birds are considered lost as viable members of the population and thus "taken." Birds experiencing only temporary or short-term effects may fail to breed, fail to successfully rear young, or raise less fit young; longer-term disturbance may result in owls deserting the area because of chronic disturbance or because habitat no longer meets the owl's needs.

We anticipate that the proposed action is reasonably certain to result in incidental take of Mexican spotted owls. However, it is difficult to quantify the number of individual owls potentially taken because: (1) dead or impaired individuals are difficult to find and losses may be masked by seasonal fluctuations in environmental conditions; (2) the status of the species could change over time through immigration, emigration, and loss or creation of habitat; and (3) the species is secretive and we rarely have information regarding the number of owls occupying a PAC and/or their reproductive status. For these reasons, we will attribute incidental take at the PAC level. This fits well with our current section 7 consultation policy which provides for incidental take if an activity compromises the integrity of an occupied PAC to an extent that we are reasonably certain that incidental take occurred (USFWS 1996). Actions outside PACs will generally not result in incidental take because we are not reasonably certain that Mexican spotted owls are nesting and roosting in areas outside of PACs. We may modify this determination in cases when areas that may support spotted owls have not been adequately surveyed and we are reasonably certain spotted owls are present.

The reasonable and prudent measures described below are non-discretionary and must be undertaken by the KNF so that they become binding conditions of any grant or permit issued to the appropriate entity for the exemption in section 7(o)(2) to apply. The KNF has a continuing duty to regulate the activity covered by this incidental take statement. If the KNF (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant/permittee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are included in the permit or grant document issued by the KNF, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the KNF or appropriate entity must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement (see 50 CFR §402.14(i)(3)).

Amount of Take

Based upon analyses of the effects of Forest Service projects within previous BOs, we anticipate the majority of incidental take for future projects implemented under the KNF LRMP will be in the form of short-term harassment. Owls experiencing short-term harassment may fail to successfully rear young in one or more breeding seasons, but will not likely desert the area because of a short-term disturbance (Delaney et al. 1999). Incidental take in the form of harm is also anticipated, albeit at a lesser amount (i.e., the number of owls) than take from harassment.

Harm would be either the direct fatality of individual birds or the alteration of habitat that affects behavior (e.g. breeding or foraging) of birds to such a degree that the birds desert the area and are considered lost as viable members of the population.

There are seven known PACs on the KNF. Based upon the potential for incidental take to occur as part of implementation of the LRMP, we anticipate the following incidental take for the proposed action, which is in addition to previously authorized take resulting from ongoing projects or projects that have yet to be implemented:

- Harassment of owls associated with no more than one PAC per year due to a single or short-term disturbance. Incidental take is exceeded if owls associated with an individual PAC are harassed over the course of more than three breeding seasons.

- Harm and/or harassment of owls associated with one PAC due to long-term or chronic disturbance, or habitat degradation or loss over the life of the project. Incidental take is exceeded if such long-term harm and/or harassment are associated with more than one PAC. We expect that actions that could result in this type of harm or harassment would be very rare under the proposed LRMP due to the protective guidelines and other conservation measures included in the LRMP for the Mexican spotted owl.

This amount of incidental take is the same as that anticipated in the 2012 LRMP BO/CO and is based upon site-specific information from the KNF.

The Fish and Wildlife Service will not refer the incidental take of the Mexican spotted owl for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703-712), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Effect of the Take

In this BO, the FWS determines that this level of anticipated take is not likely to result in jeopardy to the Mexican spotted owl. We have based the number of PACs with anticipated take on the potential future projects to be implemented under the proposed LRMP that could have short-term adverse effects, but long-term benefits to the Mexican spotted owl (such as, but not limited to fuels reduction projects).

REASONABLE AND PRUDENT MEASURES

The FWS believes the following reasonable and prudent measures are necessary and appropriate to minimize the effects of take of Mexican spotted owls.

1. Eliminate or minimize adverse effects to Mexican spotted owls on the KNF.
2. Eliminate or minimize adverse effects to Mexican spotted owl habitat on the KNF.
3. Monitor the impacts of site-specific projects implemented on the Mexican spotted owl.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the KNF must comply with the following terms and conditions, which implement the reasonable and prudent measures listed above and outline reporting/monitoring requirements. These terms and conditions are non-discretionary. The FWS may approve deviation from these terms and conditions through site-specific project consultation. Examples warranting deviation from these terms and conditions may include, but are not limited to instances where site-specific conditions dictate that full compliance with the condition is not necessary to avoid incidental take; the KNF lacks discretionary authority to implement the condition; or, deviation from the condition is needed to meet the purpose and need of a project.

The following terms and conditions will implement reasonable and prudent measure 1:

1.1 The KNF shall avoid activities within 0.25 mile of PACs during the breeding season (March 1 to August 31) that could result in disturbance to nesting owls. If the Forest Service determines through protocol surveys that spotted owls are not nesting the year of the proposed project, then this restriction may not apply.

1.2 On site-specific projects, the KNF will work with FWS staff to identify additional measures, specific to the project, to minimize effects to owls.

The following terms and conditions will implement reasonable and prudent measure 2:

2.1 Forest Service management activities within PACs and recovery habitat will maintain adequate amounts of important habitat features for owls (such as large trees, large snags, and large logs). The KNF will work with the FWS during project-specific consultations to define "adequate" based upon site-specific conditions.

2.2 On site-specific projects, the KNF will work with FWS staff to identify additional measures, specific to the project, to minimize effects to owl habitat.

The following terms and conditions will implement reasonable and prudent measure 3:

3.1 The KNF shall monitor the impacts of incidental take resulting from implementation of the proposed action and report these findings to the FWS. Incidental take monitoring shall include information such as when or if the project was implemented, whether the project was implemented as proposed and analyzed in the site-specific BO (including conservation measures and best management practices), breeding season(s) over which the project occurred, relevant owl survey information, and any other pertinent information about the project's effects on the species.

3.2 Annual reports will describe actions taken under this proposed action and impacts to the owl and its critical habitat. The annual report shall be sent to the Flagstaff FWS Ecological Services field office and the Mexican spotted owl species lead by March 1st of each year.

We also request that the annual report include a description of any effects (including beneficial effects) to the species and critical habitats listed in Appendix A.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the KNF work with the FWS to conduct Mexican spotted owl surveys over the next several years to attempt to determine how owls modify their territories in response to fuels treatments, forest restoration, and wildland fire. This information will aid us in understanding the short- and long-term impacts of these actions on the owl, and their subsequent effect on the status of the species in the UGM EMU.

2. We recommend that the KNF work with the FWS to design forest restoration treatments across the forest that protect existing nest/roost replacement habitat from high-severity, stand-replacing fire and enhance existing or potential habitat to aid in sustaining Mexican spotted owl habitat across the landscape. PACs can be afforded substantial protection from wildland fire by emphasizing fuels reduction and forest restoration in surrounding areas outside of PACs and nest/roost replacement recovery habitat.

3. Implement actions to protect PACs from high-severity fire and improve the resiliency of fire-adapted forested habitats. Annual reports will provide information to assist the FWS in determining whether these long-term activities are occurring in such a way as to reduce fire risk to existing PACs and replacement nest/roost habitat (nest/roost replacement recovery habitat).

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, NM 87113; 505-248-7889) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law

Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve the biological material in the best possible state.

Certain project activities may also affect species that are protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (BGEPA). The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the FWS. BGEPA prohibits anyone, without a permit issued by the FWS, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you believe migratory birds will be affected by the project, we recommend you contact our Migratory Bird Permit Office, P.O. Box709, Albuquerque, NM 87103, (505) 248-7882, or permitsR2mb@fws.gov. For more information regarding the MBTA, please visit the following websites: http://www.fws.gov/migratorybirds and http://www.fws.gov/migratorybirds/mbpermits.html.

For information on protections for bald eagles under the BGEPA, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) that were published in the Federal Register on June 5, 2007. Existing take authorizations for bald eagles issued under the ESA became covered under the BGEPA via a final rule published in the Federal Register on May 20, 2008 (73 FR 29075). Our office is also available to provide technical assistance to help you with compliance.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required when discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In keeping with our trust responsibilities to American Indian Tribes, we encourage you to continue to coordinate with the Bureau of Indian Affairs in the implementation of this consultation and, by copy of this biological opinion, are notifying affected Tribes of its completion. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

We appreciate the Forest Service's efforts to identify and minimize effects to listed species from this project. Please refer to the consultation number 22410-2009-F-0329 in future correspondence concerning this project.

Mr. Calvin N. Joyner, Regional Forester

Should you require further assistance or if you have any questions, please contact Bill Austin (928-556-2012), Shaula Hedwall (928-556-2118), or Brenda Smith (928-556-2157).

Sincerely,

Steven L. Spangle
Field Supervisor

cc (electronic):
Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ
Forest Supervisor, Kaibab National Forest, Williams, AZ

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ

cc (electronic):

Director, Cultural Resource Center, Chemehuevi Tribe, Havasu Lake, CA
Cultural Compliance Technician, Museum, Colorado River Indian Tribes, Parker, AZ
Director, Aha Makav Cultural Society, Fort Mojave Indian Tribe, Mohave Valley, AZ
Tribal Secretary, Havasupai Tribe, Supai,, AZ
Director, Hopi Cultural Preservation Office, Kykotsmovi, AZ
Program Manager, Tribal Historic Preservation Office, Hualapai Tribe, Peach Springs, AZ
Director, Cultural Resources, Kaibab Band of Paiute Indians, Fredonia, AZ
Director, Historic Preservation Department, Navajo Nation, Window Rock, AZ
Director, Apache Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Yavapai Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Cultural Research Program, Yavapai-Prescott Indian Tribe, Prescott, AZ
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APPENDIX A - CONCURRENCES

This appendix contains our concurrence with your "may affect, not likely to adversely affect" determinations for the California condor (outside of the nonessential experimental population area), Apache trout, loach minnow critical habitat, and spikedace and spikedace critical habitat.

We concur with your determinations that the proposed project may affect, but is not likely to adversely affect, the above species and critical habitat. We base our concurrences on the following:

California condor (outside of the nonessential experimental population area)

1. For at least the last five years, we have no documented locations of condors occurring outside of the nonessential experimental population (10[j]) area on the KNF. Although there could be negative impacts to condors from activities associated with development or maintenance of utility corridors, rock climbing, and blasting if condors were to occur in the vicinity of these projects, because any use of the area outside of the nonessential experimental population area by condors is extremely rare, we consider any effects to be discountable.

2. The KNF will continue to work with us and other partners to develop project-specific conservation measures to avoid any adverse human-condor interactions.

Apache trout

1. The KNF will implement national, standardized best management practices (USDA FS 2012) as well as project-specific measures during mechanical treatments and prescribed burning within the watershed of North Canyon Creek to ensure that sediments in the creek do not increase as a result of these treatments.

2. The KNF has rerouted portions of North Canyon trail to stabilize soils and will continue regular maintenance and monitoring along this trail and the East Rim/Arizona Trail to minimize erosion. Recreational use of these trails is low and there has been no discernible sedimentation due to the trails. Any sedimentation due to trail maintenance and recreational use into North Canyon Creek would be insignificant.

3. The KNF will continue to collaborate on water quality monitoring and will assess human impacts to springs and recreational trails in North Canyon Creek and the adjacent area to ensure that habitat quality for Apache trout is maintained.

4. The proposed action includes forest-wide monitoring that will help to further address any potential effects to water quality in North Canyon. Additional monitoring will also be developed at the project level to insure habitat quality is maintained for Apache trout.

Loach minnow critical habitat

1. Because of the distance of the Verde River and Oak Creek (loach minnow designated critical habitat) from the KNF and intervening management (Prescott or Coconino National Forests, state and private lands) in the Verde River watershed and its tributaries and drainages, there would be no discernible effect of any KNF activities on loach minnow critical habitat.

Spikedace and spikedace critical habitat

1. Because of the distance of the Verde River and Oak Creek (spikedace habitat and designated critical habitat) from the KNF and intervening management (Prescott or Coconino National Forests, state and private lands) in the Verde River watershed and its tributaries and drainages, there would be no discernible effect of any KNF activities on spikedace or its critical habitat.

APPENDIX B – FICKEISEN PLAINS CACTUS CONCURRENCE AND TECHNICAL ASSISTANCE

Your March 22, 2013, letter requested a conference report for the Fickeisen plains cactus. Since you determined that the Proposed LRMP "may affect, is not likely to adversely affect" this proposed species and we concur with your determination, a conference report is not necessary. Should the species become listed, no further consultation regarding this proposed action is necessary. However, if the species is listed and critical habitat designated, all future site-specific actions should be reviewed to determine whether they may affect the species or its critical habitat and require site-specific consultation with us.

We concur with your determination that the proposed project may affect, but is not likely to adversely affect, the Fickeisen plains cactus and its critical habitat. We base our concurrence on the following:

Fickeisen plains cactus and Fickeisen plains cactus critical habitat

1. The species occurs within the KNF along South Canyon within the Grand Canyon Game Preserve and Buffalo Ranch Management Area; South Canyon is also a proposed critical habitat unit. There is no authorized livestock grazing within this area, but the population and proposed critical habitat are within the Buffalo Ranch (bison) Management Area. No evidence of bison use of this habitat and critical habitat has been observed during recent surveys. The area is far from any water sources and contains little forage to attract bison. Therefore, any effects to this population and its proposed critical habitat unit from grazing are expected to be insignificant and discountable.

2. Although areas in the vicinity of Snake Gulch previously thought to be occupied by the species were recently found to not contain individuals, potential unsurveyed habitat occurs along the rim of Snake Gulch. Livestock grazing is authorized in a pasture of the Central Winter Allotment where habitat of the species may occur. However, we do not anticipate that livestock will occur in habitat in that pasture because there is a lack of suitable forage within the habitat, the nearest water source for livestock is more than five miles from the habitat, and the terrain around the habitat is steep and rugged. Any effects to the species and its habitat from livestock grazing would be insignificant and discountable.

3. Little to no recreation use occurs in the areas where the species and proposed critical habitat occurs. Off-road travel is not authorized under the proposed action. Any effects to the species or its proposed critical habitat from roads and recreation use would be insignificant.

4. There are no valid mining claims or leasable minerals in occupied areas, potential habitat, or proposed critical habitat for the species. All habitat within the North Kaibab Ranger District is closed to mineral entry. Mineral sales or leases within habitat and proposed critical habitat would be subject to a year-round use and occupancy restriction. Therefore

we anticipate that any effects from mining activity and mineral development would be insignificant.

5. If control of invasive plants is necessary, control measures will be chosen to not affect non-target plants. The KNF will implement recommendations and measures of the "Final Environmental Impact Statement for Integrated Treatment of Noxious or Invasive Weeds on the Coconino, Kaibab, and Prescott National Forests within Coconino, Gila, Mojave, and Yavapai Counties, Arizona" (USDA FS 2005), and of the FWS Region 2 pesticide guidance, that are appropriate for Fickeisen plains cactus to render any effects to the species or its proposed critical habitat insignificant.

Technical Assistance

The KNF has committed to conduct additional surveys in suitable habitat and will continue to monitor the known population for trend to better inform future management and aid in recovery of the species. We recommend working with us and with other agencies/entities that administer lands that contain current or potential habitat for the Fickeisen plains cactus to develop consistent survey and monitoring protocols for populations, trends, and impacts from resource management activities.