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In reply refer to:

R2/ES-TE
Cons. #2012-F-0007

March 30, 2012

Mr. Corbin L. Newman, Jr., Regional Forester
U.S. Forest Service, Southwestern Region
333 Broadway SE
Albuquerque, New Mexico 87102

Mr. Mike Williams, Forest Supervisor
800 South 6th Street
Williams, Arizona 86046

Dear Mr. Newman:

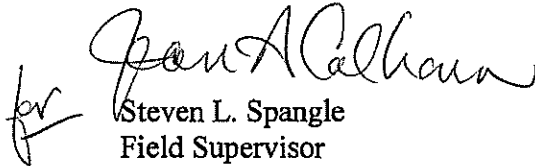
The enclosed biological opinion (BO) responds to your request for reinitiation of formal consultation under section 7(a) of the Endangered Species Act of 1973 (Act), as amended. We received your letter requesting reinitiation along with the Biological Assessment (BA) titled *Biological Assessment for the Reinitiation of Consultation on the Forest Service's Continued Implementation of the Land and Resource Management Plans (LRMPs) for the 11 Southwestern Region National Forests and National Grasslands* on April 9, 2011.

The BA describes the programmatic nature of the LRMPs and analyzes the effects of LRMP implementation within each National Forest (NF) and one National Grassland (NG) in the Forest Service's Southwestern Region. Each NF has a separate chapter within the BA that specifically evaluates the potential effects to threatened and endangered species and their critical habitats resulting from the implementation of the Standards and Guidelines for that particular NF's, LRMP. In response to your BA and request for reinitiation, we have prepared an individual BO for each of the eleven NFs. The enclosed BO addresses the Forest Service's continued implementation of the LRMP for the Kaibab NF of the Southwestern Region. This BO will be in place until the Kaibab NF revises its LRMP and subsequently completes section 7 consultation.

Mr. Corbin L. Newman, Jr., Regional Forester
Mr. Mike Williams, Forest Supervisor

Throughout this process, we have been working closely with your staff. We appreciate your willingness to cooperate and assist the Service during the completion of this consultation. If you have questions or comments, please contact me at the Arizona Ecological Services Office (AESO), at (602) 242-0210, (x244).

Sincerely,


for Steven L. Spangle
Field Supervisor

Enclosure

cc: Regional Consultation Coordinator, Fish and Wildlife Service, Albuquerque, NM
Chief, Threatened and Endangered Species, Fish and Wildlife Service, Albuquerque, NM
Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff, AZ

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BIOLOGICAL AND CONFERENCE OPINION

The Continued Implementation of the Land and Resource Management Plan
for
The Kaibab National Forest
of the
Southwestern Region

Regional Office, Region 2
U.S. Fish and Wildlife Service

Cons. #2012-F-0007

March 30, 2012

Executive Summary

The accompanying document transmits the biological (BO) and conference opinion (CO) of the U.S. Fish and Wildlife Service (FWS) in response to the U.S. Forest Service's (USFS) request for re-initiation of consultation in accordance with the Endangered Species Act of 1973 (Act or ESA), as amended. This BO/CO addresses the USFS's continued implementation of the Land and Resource Management Plan (LRMP) for the Kaibab National Forest (NF) of the Southwestern Region (proposed action), and its effects to six federally listed and candidate species and three designated critical habitats (CH). The consultation approach used to complete this consultation was the same as that used in the 2004/2005 consultation (Please refer to the executive summary in the 2005 BO/CO). We are hereby incorporating the 2004/2005 Biological Assessment (BA) and BO/CO by reference into this document.

This approach provided the information necessary to determine whether or not a jeopardy determination could be concluded. For those species with designated or proposed CH, our effects' analysis approach identified how the primary constituent elements (PCEs) or biological features essential to the conservation of the species were likely to be affected; thus, how the proposed action affected the function and conservation value of the associated critical habitat units (CHUs).

A consultation agreement (CA) between the FWS and the USFS was signed on December 7, 2010. The CA addressed issues such as timeframes and staffing, and included a dispute resolution process. In addition, as part of the CA, the agencies have agreed to organize the BA and BO/CO differently than the 2005 consultation. This consultation is considered to be a programmatic batched consultation that will be organized by NF. Therefore, while the BA describes the programmatic nature of the LRMPs, it specifically analyzes the effects of LRMP implementation to species and their CHs within the action area of each NF. As a result, each NF has a separate chapter within the BA which discusses the effects to the species that occur on that particular NF that are predicted to result from the implementation of the Standards and Guidelines (S&Gs) of that individual NFs LRMP. The resulting BO/COs issued by the FWS will assign incidental take, reasonable and prudent measures, and terms and conditions for each individual NF LRMP. The BO/COs will then be in place until each of the NFs revises its individual LRMP.

Using the approach described above, along with careful consideration of the species' status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects; we found that the proposed action would not jeopardize the continued existence of the six species identified within the action area of the Kaibab NF. Similarly, we determined that the proposed action was not likely to destroy or adversely modify CH for the species with designated CH.

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INTRODUCTION

This biological and conference opinion (BO/CO) responds to the U.S. Forest Service's (USFS) request for reinitiation of consultation with the U.S. Fish and Wildlife Service (FWS) in accordance with the requirements of the Endangered Species Act of 1973 (ESA or Act), as amended (16 U.S.C. 1531 *et seq.*). We, the FWS, prepared this opinion which addresses the USFS's continued implementation of the Land and Resource Management Plan (LRMP) for the Kaibab NF of the Southwestern Region, and its effects to six federally-listed or candidate species and three Critical Habitats (CHs) (see below). On April 17, 2009, the USFS requested re-initiation of the 2005 LRMP BO/CO due to the belief that incidental take for the Mexican spotted owl (MSO) could soon be approached and/or exceeded and due to issues related to term and condition 3.1 in the 2005 LRMP BO/CO for several species. Again, on May 18, 2010, the USFS requested re-initiation for all species addressed in the 2005 LRMP BO/CO, and also requested consultation for the ocelot, a species now considered present in small numbers in Arizona. The FWS acknowledged the requests for re-initiation for the MSO on June 22, 2010, and followed up with a clarification letter acknowledging the USFS request to reinitiate consultation for all other species, including the ocelot, on August 9, 2010. On October 18, 2010 the USFS submitted a species list for this reinitiation effort to the FWS for concurrence. On December 7, 2010 a consultation agreement was signed by the two agencies. On January 18, 2011 the USFS received a species list concurrence letter from the FWS. A final Biological Assessment (BA) from the USFS was received by the FWS on April 6, 2011.

The 2005 BO/CO was considered a plan-level or programmatic consultation, using a tiered approach. The tiered approach is a two-stage consultation process: the first stage is a programmatic BO/CO, which evaluates the program level effects of the continued implementation of the USFS's LRMPs that guide how site-specific projects are designed and managed. The second stage consists of the future consultations on site-specific projects proposed by the USFS. USFS site-specific activities affecting listed species have tiered from the 2005 programmatic BO/CO.

A distinct change from the 2004/2005 consultation is that this consultation will be a programmatic batched consultation that will be organized by NF. Therefore, while the USFS's BA describes the programmatic nature of the LRMPs, it specifically analyzes the effects of LRMP implementation to species and their CH within the action area of each NF. As a result, each NF has a separate chapter within the BA discussing the effects to the species that occur on that particular NF predicted to result from the implementation of the S&Gs of that individual NFs LRMP. Therefore, the FWS's resulting BO/COs will issue an incidental take statement, reasonable and prudent measures, and terms and conditions for each individual NF LRMP. This BO/CO will then be in place until each of the NFs revises its LRMP.

Kaibab National Forest

This programmatic consultation examines the effects on six species and three designated CHs from the direction and guidance provided within the Kaibab NF LRMP. The following species are included within this BO/CO for which the USFS and FWS agreed would be affected by the proposed action.

Birds

California condor (*Gymnogyps californianus*) 10(j) population; Endangered
Mexican spotted owl (*Strix occidentalis lucida*) Threatened with designated critical habitat

Fish

Apache trout (*Oncorhynchus apache*) Threatened
Loach minnow (*Tiaroga cobitis*) Endangered with designated critical habitat
Spikedace (*Meda fulgida*) Endangered with designated critical habitat

Plants

Fickeisen plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*) Candidate

This BO/CO is based on information provided in the USFS's April 6, 2011 BA, subsequent information provided by the USFS to the FWS throughout the consultation, the 11 NF LRMPs, 1996 Regional Amendment and the 2004/2005 BA and BO/CO which are hereby incorporated by reference. In order to obtain current information concerning the above species, we reviewed final listing rules, candidate assessment forms, recovery plans, published literature, unpublished reports and data, species and CH location maps, and other sources of information. In addition, we consulted species experts (e.g., research scientists conducting field surveys, monitoring, or research studies on any of the above species) from state conservation agencies, USFS research stations, and FWS biologists. A complete administrative record of this consultation is on file at the FWS Regional Office, Albuquerque, New Mexico.

CONSULTATION HISTORY

The history of this consultation is complex. A chronology of past consultations associated with the proposed action, agreed-upon time extensions, and important meetings associated with this biological and conference opinion is provided below.

- From 1985 to 1988, each of the 11 NFs in the Southwestern Region developed and approved LRMPs pursuant to the National Forest Management Act (NFMA). The FWS issued a non-jeopardy/no adverse CH modification opinion on each of the USFS LRMPs for all federally listed species.
- On April 15, 1993, the Mexican spotted owl (MSO) was listed as threatened. On September 6, 1995, the USFS requested initiation of formal consultation on the 11 NF Plans for effects on the MSO.
- On May 14, 1996, the FWS issued a BO on the 11 LRMPs, which concluded jeopardy to the MSO and adverse modification for its designated CH (U.S. Fish and Wildlife Service 1996a). The FWS's Reasonable and Prudent Alternative to the existing LRMPs advised the USFS to implement the 1995 Recovery Plan for the Mexican Spotted Owl. This opinion was litigated in US District Court because it did not quantify incidental take for the MSO. On November 25, 1996, the FWS issued

another final jeopardy BO that included incidental take for the MSO pursuant to a September 17, 1996 Court Order. Also on November 25, 1996, the FWS issued a BO on the USFS's June 1996 Regional Amendment to the LRMPs for the MSO. The 1996 Regional Amendment directs the implementation of the 1995 Recovery Plan, as well as guidelines for the Northern Goshawk and old-growth management. The FWS concluded non-jeopardy for the MSO and no adverse modification of its designated CH (U.S. Fish and Wildlife Service 1996b).

- On May 15, 1996, the USFS requested formal consultation on the effects to federally-listed species on NFs as a result of the continued implementation of the 11 NF LRMPs.
- On December 19, 1997, the FWS issued a BO/CO on the USFS's 1996 Regional Amendment to the LRMPs for all federally listed species other than the MSO (U.S. Fish and Wildlife Service 1997). This BO/CO concluded non-jeopardy for all federally listed or proposed species, and no adverse modification for designated or proposed CHs. This opinion contained conservation measures for seven listed species including the Southwestern willow flycatcher, cactus ferruginous Pygmy-owl, Sonora chub, Little Colorado Spinedace, loach minnow, spikedace, and Pima pineapple cactus. The conservation measures were a product of a collaborative effort by FWS and USFS and became known as the "seven species direction." The conservation measures implemented by the USFS are discussed in the effects of the action sections for these species.
- On December 24, 2002, Forest Guardians and several other environmental groups sent the USFS a 60-day Notice of Intent to sue for failing to reinstate formal consultation on the 11 NF LRMPs for all federally listed species.
- On January 13, 2003, the FWS finalized a BO on the proposed rate of implementation of the grazing standards and guidelines in the 1996 Regional Amendment and its effect on the MSO. This opinion concluded no jeopardy for the MSO.
- In February 2003, the USFS and FWS began discussions on the relevance of the 1996 and 1997 LRMP and 1996 Regional Amendment consultations. In early April 2003, the agencies agreed that the USFS would reinstate consultation with the FWS on the USFS's 11 LRMPs and the 1996 Regional Amendment. On June 2, 2003, the USFS and FWS signed a CA that outlined timelines, responsibilities, and a dispute resolution process for the 11 NF LRMP consultation.
- In November 2003, the USFS provided the FWS with a draft BA for the consultation.
- On April 5, 2004, the USFS requested reinstitution of formal consultation under section 7 of the ESA on the 1996 MSO opinion and the 1997 opinion for all other federally listed species on the 11 NFs. The USFS provided the FWS with the final BA for the Continued Implementation of the LRMPs for the Eleven NFs and National Grasslands (NGs) of the Southwestern Region (U.S. Forest Service 2004).

- On May 26, 2004, the FWS responded to the USFS, acknowledging formal consultation had been initiated.
- On September 14, 2004, the FWS requested a 90-day extension. The USFS responded on November 10, 2004, and extended the timeline further for a draft to be available for USFS review on January 15, 2005.
- On February 2, 2005, the USFS provided the FWS with supplemental information to their April 8, 2004BA. The supplemental information included the following four documents: (1) conservation measures for the spikedace, Little Colorado Spinedace, Chiricahua leopard frog, and Sacramento prickly poppy; (2) replacement of pages 54-66 of the BA regarding the Rangeland Management Program; (3) clarification of grazing management level definitions; and (4) the proposed amendment for noxious or invasive plant management for the Coconino, Kaibab, and Prescott, and Coconino NFs, November 2004 Forest Plan Amendment #20. Post-BA submissions were also provided to the FWS informally throughout the consultation and are part of the administrative record.
- On April 22, 2005, the FWS provided the USFS with a draft programmatic BO/CO.
- On June 10, 2005 the FWS provided the USFS with a final programmatic BO/CO.
- On April 17, 2009, the USFS requested reinitiation of the 2005 LRMP BO/CO because the threshold set for incidental take for the MSO could soon be approached and/or exceeded, and issues related to term and condition 3.1 in the 2005 LRMP BO/CO for several species. Again, on May 18, 2010, the USFS requested reinitiation for all species addressed in the 2005 LRMP BO/CO, including the ocelot, a species now considered present in small numbers in Arizona.
- On June 22, 2010 FWS acknowledged USFS request for reinitiation on the MSO and followed up with a clarification letter acknowledging USFS request to reinitiate consultation for all other species, including the ocelot on August 9, 2010.
- A CA between the FWS and USFS was signed on December 7, 2010, that addressed timeframes, staffing, and a dispute resolution process. As part of the CA, the agencies agreed to organize the BA and BO/CO differently than the 2004 BA and 2005 BO/CO. This consultation is considered to be a programmatic batched consultation that will be organized by NF. Therefore, while the BA describes the programmatic nature of the LRMPs, it specifically analyzes the effects of LRMP implementation to species and their CHs within the action area of each NF. The resulting BO/COs will issue an incidental take statement, reasonable and prudent measures, and terms and conditions for each NF LRMP.

DESCRIPTION OF THE PROPOSED ACTION

The proposed action being analyzed in this BO is the implementation of the Kaibab NF LRMP in the USFS Southwestern Region (including the 1996 Region-wide Amendment). Also included in this BA is an analysis of those S&Gs that have been added through any amendments to the individual NF LRMPs since the 2004 LRMP BA (See Appendix 4 for a complete list of S&Gs analyzed in the 2011 BA).

The LRMPs direct how current and future activities will be carried out in the following Programs: Engineering; Fire Management; Forestry/Forest Health; Lands and Minerals; Rangeland Management; Recreation, Heritage and Wilderness; Watershed Management; and Wildlife, Fish, and Rare Plants (WFRP). The S&Gs related to these Programs are discussed by NF, in the **Effects of the Action** section of this BO/CO.

The LRMPs and the 1996 Regional LRMP Amendment described long-range management strategies for the NFs and National Grasslands (NG) in the USFS Southwestern Region. They provide a programmatic framework for future activities and emphasize the application of certain S&Gs in the undertaking of those activities on the land. The LRMPs do 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 LRMPs (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 is covered under this programmatic opinion since it supersedes the 2005 LRMP BO/CO.

This consultation on the LRMPs does not eliminate the requirement for site-specific BAs and the need for site-specific informal or formal ESA § 7 consultation with the FWS for individual projects implemented under the LRMPs. Furthermore, it should be noted that amendment (i.e., deleting/changing S&Gs) of a particular NF LRMP for a site specific project is allowed and can and does occur, although rarely. In this situation, the action would be considered outside of the scope of this consultation and would require its own site specific ESA § 7(a)(2) consultation to address the effects of that particular proposed action which is being implemented under a project specific amendment to the NF 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.

As described above, the LRMP does not make site specific decisions, but it provides direction to each NF 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/CO 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/CO have been exceeded.

DESCRIPTION OF THE ACTION AREA

The Action Area for this BO/CO is defined as all lands that the Kaibab NF encompass in the Southwestern Region of the USFS, plus adjacent lands that the proposed action may directly or indirectly affect. The Kaibab NF is located on the Colorado Plateau in northern Arizona and is composed of approximately 910,000 acres. Elevation ranges from 3,000 to 10,418 ft.

Vegetation is composed of grasslands and sagebrush in the lower elevations and steps up through forests of pinyon juniper and ponderosa pine to fir, spruce, and aspen. There are four designated wilderness areas: Kanab Creek, Saddle Mountain, Kendrick Mountain, and Sycamore Canyon. The Forest is divided into two zones comprised of three ranger districts: Williams/Tusayan in the south and North Kaibab in the north.

Climate Change

According to the Intergovernmental Panel on Climate Change (IPCC 2007) “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.” Average Northern Hemisphere temperatures during the second half of the 20th century were very likely higher than during any other 50-year period in the last 500 years and likely the highest in at least the past 1300 years (IPCC 2007). It is very likely that over the past 50 years cold days, cold nights and frosts have become less frequent over most land areas, and hot days and hot nights have become more frequent (IPCC 2007). Data suggest that heat waves are occurring more often over most land areas, and the frequency of heavy precipitation events has increased over most areas (IPCC 2007).

The IPCC (2007) predicts that changes in the global climate system during the 21st century are very likely be larger than those observed during the 20th century. For the next two decades a warming of about 0.2°C (0.4°F) per decade is projected (IPCC 2007). Afterwards, temperature projections increasingly depend on specific emission scenarios (IPCC 2007). Various emissions scenarios suggest that by the end of the 21st century, average global temperatures are expected to increase 0.6°C to 4.0°C (1.1°F to 7.2°F) with the greatest warming expected over land (IPCC 2007).

Localized projections suggest the southwest may experience the greatest temperature increase of any area in the lower 48 States (IPCC 2007), with warming in southwestern states greatest in the summer (IPCC 2007b). The IPCC also predicts hot extremes, heat waves, and heavy precipitation will increase in frequency (IPCC 2007). There is also high confidence that many semi-arid areas like the western United States will suffer a decrease in water resources due to climate change (IPCC 2007), as a result of less annual mean precipitation and reduced length of snow season and snow depth (IPCC 2007b). Milly et al. (2005) project a 10–30 percent decrease in precipitation in mid-latitude western North America by the year 2050 based on an ensemble of 12 climate models.

The increase in global temperature is already putting pressure on ecosystems and the plants and animals that co-exist in those systems. Warmer temperatures during the second half of the 20th century have begun to shift the growing season in many parts of North America by increasing it as much as two weeks (Regonda et al. 2005). In addition, Spring is coming earlier. This change in the growing season affects the broader ecosystem. Migrating animals have to start seeking food sources earlier. The shift in seasons may already be causing the lifecycles of pollinators,

like bees, to be out of synch with flowering plants and trees. This mismatch can limit the ability of both pollinators and plants to survive and reproduce, which would reduce food availability throughout the food chain.

An extended growing season also means that plants need more water to keep growing throughout the season or they will dry out, increasing the risk of wildfire. Once the growing season ends, the shorter, milder winters fail to kill dormant insects, increasing the risk of large-scale insect infestations in subsequent seasons (Seager et al. 2007).

In some ecosystems, maximum daily temperatures might climb beyond the tolerance of indigenous plant or animal. To survive the extreme temperatures, both marine and land-based plants and animals have started to migrate towards the poles. Those species, and in some cases, entire ecosystems, that cannot quickly migrate or adapt, may ultimately face extinction.

CONSULTATION APPROACH

The purpose of this section is to articulate the FWS's approach to this consultation in order to clearly present the chain-of-logic supporting our determinations. During the initial consultation in 2005, the FWS came up with an analytical approach to completing the consultation. At that time, there was a large number of species to be considered, an extensive number of USFS S&Gs analyzed, as well as eight complex Forest programs. The approach is described in the 2005 BO/CO and is hereby incorporated by reference. It included deconstructing of the proposed action, diagnosing the species' status, establishing the species' condition within the action area, analyzing the effects, and finally, putting it back together to make our conclusions .

In this consultation, both agencies relied on the extensive analysis conducted in the 2005 BO/CO and incorporated all of the information that has remained unchanged since then. We also considered the species status and any changes that have occurred since 2005. Our analysis focuses on the changes in forest management and species status since the 2005 BO/CO. This approach is consistent with the 1998 Consultation Handbook and the implementing regulations at 50 CFR § 402.

As reflected in the 2005 BO/CO, in order to make determinations of effects to listed species, proposed, or candidate species, and proposed or designated CHs, the USFS made two primary assumptions about the implementation of the 11 LRMPs. These assumptions are as follows:

1. The NFs will implement site-specific management actions to move toward land management goals and desired future conditions for various resources, with the caveat that available funding and other LRMP direction will control the actual extent and intensity of these site-specific management actions;
2. The S&Gs in the LRMPs will be followed when selecting, planning, and executing site-specific management actions. In addition, should a site-specific action not follow the S&Gs, the action must be modified or the LRMP must be amended before the action can be allowed. In the situation where a site specific action requires LRMP amendment, the action would be considered outside of the scope of this consultation

and would require separate site specific ESA § 7 (a)(2) consultation to address the effects of that particular proposed action.

The FWS concurred with the two assumptions stated above. However, based on the large amount of uncertainty surrounding how the S&Gs are implemented and exactly which ones are used during project development, it was necessary for the FWS to make additional assumptions regarding this consultation. Our assumptions are as follows:

3. Site-specific projects will conform to the S&Gs, as well as the programmatic framework established in the LRMPs. If not, the action would be considered outside of the scope of this consultation and would require separate site specific ESA § 7 (a)(2) consultation to address the effects of that particular proposed action
4. Land managers use and/or implement the S&Gs at every level of planning (e.g., forest-wide, management areas, and project level).
5. Due to their broad scope, the S&Gs may be interpreted and applied differently depending upon the Forest planner and interdisciplinary teams.
6. Implementation of the S&Gs will have varying degrees of effects on the species analyzed.

Please refer to the exposure/response analysis in the 2005 BO/CO (pages 38-41) for an explanation of how the S&Gs were considered in the consultation.

For listed species with proposed or designated CH, the FWS analyzed the direct and indirect effects of the proposed action, and those actions interrelated and interdependent of the proposed action on proposed or designated CH. The CH analysis identified how the PCEs or biological features essential to the conservation of the species are likely to be affected, and in turn, how that will impact the function and conservation value of the associated CHUs.

The following contains the jeopardy analysis for the MSO. The status of the species, environmental baseline, effects of the action (which includes cumulative effects), conclusion, and an incidental take statement is provided. In the effects of the action section, we evaluated all eight of the USFS programs within the Kaibab NF LRMP for each species. The discussions within the effects of the action section address the pertinent S&Gs that had effects (both adverse and beneficial) to species as well as which S&Gs could cause take of listed species. Finally, standard language for the disposition of dead, injured, or sick federally listed species as well as a re-initiation statement and literature cited section, are included at the end of this BO/CO.

The following section describes the effects to species of the continued implementation of the Kaibab NF LRMP. The USFS made “no effect” calls for black-footed ferret and the southwestern willow flycatcher. The FWS does not review “no effect” determinations; therefore, these species will not be addressed below. The FWS has concurred with the USFS on “may affect, but is not likely to adversely affect” determinations for the Apache trout, loach minnow and designated CH, spikedace and designated CH, and Fickeisen plains cactus and “no jeopardy”

and “may affect, but is not likely to adversely affect” determinations for the California condor. This concurrence can be found in appendix A of this document.

MEXICAN SPOTTED OWL

STATUS OF THE SPECIES

In 1993, the FWS listed the MSO (*Strix occidentalis lucida*) as threatened under the ESA. The FWS appointed the MSO Recovery Team in 1993, which produced the Recovery Plan for the MSO (Recovery Plan) in 1995 (USDI Fish and Wildlife Service 1995). The FWS released a Draft Revised Recovery Plan for public review during the summer of 2011 (U.S. Fish and Wildlife Service 2011) and intends to finalize the revised recovery plan in 2012. In addition to referencing the 1995 Recovery Plan, we are also using additional information from the Draft Revised Recovery Plan (U.S. Fish and Wildlife Service 2011) in this BO. Additional information included from the Draft Revised Recovery Plan in this BO includes updated science about the biology of the MSO, updated threats information, and updated management recommendations (such as a revised population modeling framework). Critical habitat was designated for the MSO in 2004 (USDI Fish and Wildlife Service 2004).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993), in the Recovery Plan (USDI Fish and Wildlife Service 1995), and in the Draft Revised Recovery Plan (U.S. Fish and Wildlife Service 2011). The information provided in those documents is included herein by reference. The MSO 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 MSO's entire range covers a broad area of the southwestern United States and Mexico, it does not occur uniformly throughout its range. Instead, the MSO occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Known MSO 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.

The MSO occupies many habitat types scattered across a diverse landscape. In addition to this natural variability in habitat influencing MSO distribution, human activities also vary across the MSO's range. The combination of natural variability, human influences on owls, international boundaries, and logistics of implementation of the Recovery Plan necessitates subdivision of the MSO range into smaller management areas. The 1995 Recovery Plan subdivided the MSO's range into 11 "Recovery Units" (RUs): six in the United States and five in Mexico. In this 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 MSO 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).

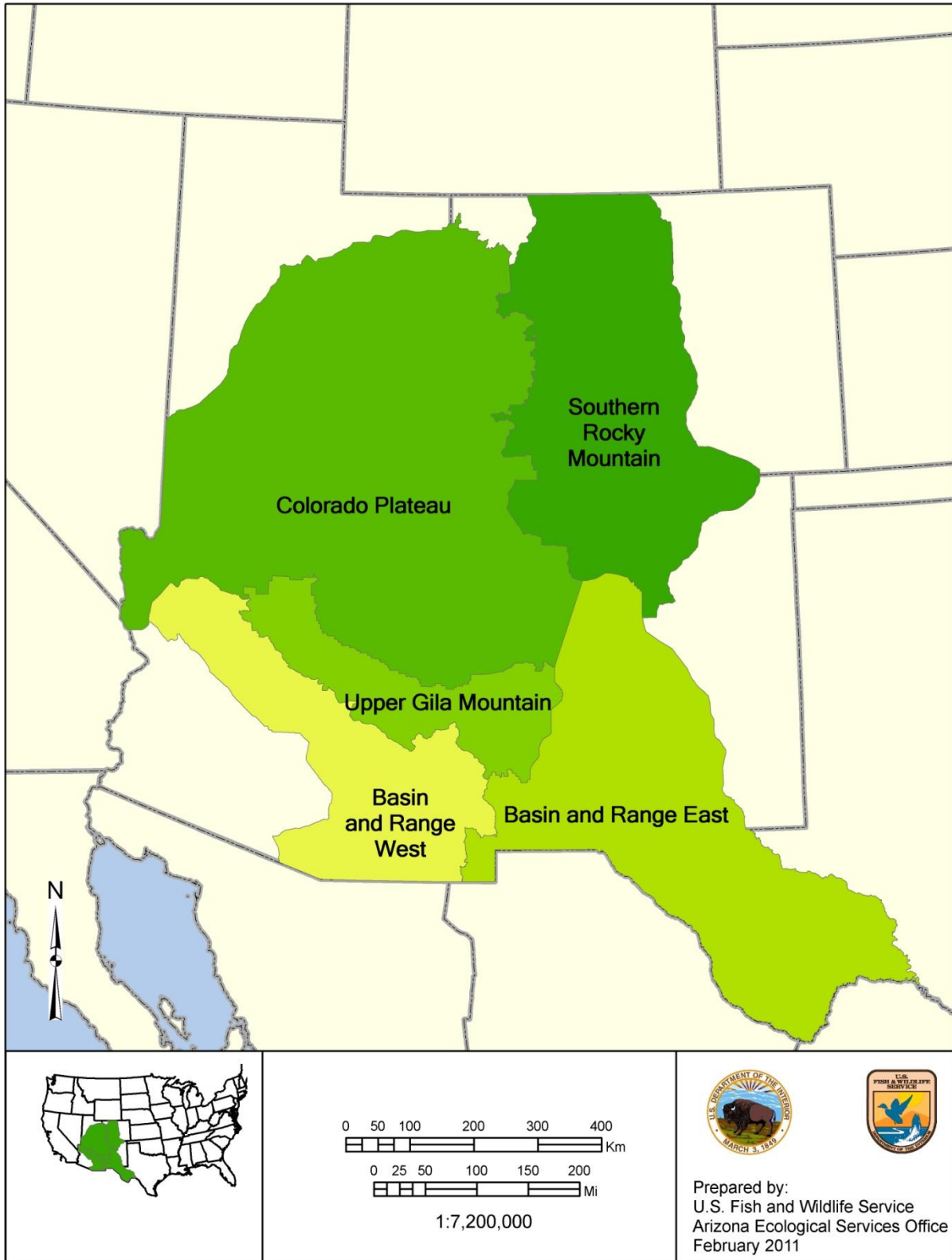


Figure 1. Ecological Management Units for the Mexican spotted owl in the United States

There are two types of monitoring that can be conducted for the MSO. The first type of monitoring is a site-specific inventory of MSO habitat conducted using the MSO survey protocol. This method can provide information regarding the presence or absence of owls in a specific area (and is used to establish PACs, etc.), but does not provide population level indicators of the species general population trend. We will refer to this type of monitoring as “MSO surveys.” The second type of monitoring is population monitoring. Population monitoring is conducted a large enough scale (typically range-wide) to provide information regarding population trend (i.e., is the species increasing, decreasing, or stable). Methodologies to conduct this type of monitoring include demographic studies or range-wide occupancy monitoring as described in the 1995 Recovery Plan and the 2011 Draft Revised Recovery Plan (USDI Fish and Wildlife Service 1995, U.S. Fish and Wildlife Service 2011).

Mexican spotted owl surveys since the 1995 Recovery Plan and issuance of the 2005 LRMP BO/CO have increased our knowledge of MSO distribution, but not necessarily of MSO abundance. Population estimates, based upon MSO surveys, recorded 758 MSO sites from 1990 to 1993, and 1,222 MSO sites from 1990 to 2004 in the United States. An MSO 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 MSO sites is mainly a product of new MSO 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 NF in New Mexico, and Gila NF in New Mexico). Thus, an increase in abundance in the species range-wide cannot be inferred from these data (U.S. Fish and Wildlife Service 2011). However, we do assume that an increase in the number of areas considered to be occupied to be a positive indicator regarding MSO numbers.

Two primary reasons were cited for the original listing of the MSO in 1993: (1) historical alteration of its habitat as the result of timber-management practices; and, (2) the threat of these practices continuing as evidenced in existing LRMPs. The danger of stand-replacing fire was also cited as a looming threat at that time. Since publication of the Recovery Plan (USDI Fish and Wildlife Service 1995), we have acquired new information on the biology, threats, and habitat needs of the MSO. 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 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 MSO. 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 MSO habitat. Several fatality factors have been identified as particularly detrimental to the MSO, including predation, starvation, accidents, disease, and parasites.

Historical and current anthropogenic uses of MSO 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 MSO nesting,

roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing is prevalent throughout Region 3 NF lands and is thought to have a negative effect on the availability of grass cover for prey species. Recreation impacts are increasing on all Forests, especially in meadow and riparian areas. There is anecdotal information and research that indicates that MSOs 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 MSOs through habitat modification and disturbance. As the human population grows in the southwestern United States, small communities within and adjacent to NFS lands are being developed. This trend may have detrimental effects to MSOs by further fragmenting habitat and increasing disturbance during the breeding season. West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that MSOs may be highly vulnerable to this disease (Courtney et al. 2004). Unfortunately, due to the secretive nature of MSOs and the lack of intensive monitoring of banded birds, we will most likely not know when MSOs contract the disease or the extent of its impact to the MSO 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 MSO 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) and the Wallow Fire (2011), have resulted in the loss of tens of thousands of acres of occupied and potential MSO habitat across significant portions of its range.

Global climate variability may also be a threat to the MSO and synergistically result in increased effects to habitat from fire, and management actions across the MSO's range that result in adverse impacts, and other factors discussed above. 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, invertebrate, and vertebrate populations within coniferous forests and canyon habitats that affect ecosystem function and processes.

Critical Habitat

The FWS designated CH for the MSO in 2004, on approximately 8.6 million acres (3.5 million hectares) of Federal lands in Arizona, Colorado, New Mexico, and Utah (U.S. Fish and Wildlife Service 2004). Within the designated boundaries, CH 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 habitats (defined as unoccupied MSO foraging, dispersal, and future nest/roost habitat) as defined in the

1995 Recovery Plan (USDI Fish and Wildlife Service 1995). The PCEs for MSO CH were determined from studies of their habitat requirements and information provided in the Recovery Plan (USDI Fish and Wildlife Service 1995). Since MSO habitat can include both canyon and forested areas, PCEs were identified in both areas. The PCEs identified for the MSO within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the MSO'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 diameter at breast height ((dbh) 4.5 ft above ground)) of 12 inches or more;
- A shade canopy created by the tree branches covering 40 percent or more of the ground and;
- 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.

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

Overall, the status of the MSO and its designated CH has not changed significantly range-wide in the U.S. (which includes Utah, Colorado, Arizona, New Mexico, and extreme southwestern Texas), based upon on the information we have, since issuance of the 2005 LRMP BO/CO. What we mean by this is that the distribution of MSOs continues to cover the same area and CH is continuing to provide for the life history needs of the MSO throughout all of the EMUs located in the U.S. We do not have detailed information regarding the status of the MSO 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 action area described below. Wildland fire has resulted in the greatest loss of PACs and CH relative to other actions (e.g., such as forest management, livestock grazing, recreation, etc.) throughout the U.S. range of the MSO. These wildland fire impacts have most impacted MSOs within the Upper

Gila Mountains EMU (e.g., Rodeo-Chediski and Wallow Fires on the Apache-Sitgreaves NF) and Basin and Range West EMU (e.g., Horseshoe 2 Fire on the Coronado NF); but other EMUs have been impacted as well (Southern Rocky Mountains 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 MSO numbers.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all federal, state, or private actions within the action area. All proposed federal actions within the action area that have undergone formal or early section 7 consultation are included in the environmental baseline discussion. The environmental baseline discussion defines the current status of the MSO, its habitat, and designated CH within the Kaibab NF.

Status of the Mexican Spotted Owl and Critical Habitat within the Action Area

The Kaibab NF lies within the UGM and CP EMUs. The Kaibab NF is located on the western end of UGM EMU and the southern edge of the CP EMU and contains less than one percent of the known MSO PACs within Arizona and New Mexico NFs. The USFS estimates that there are 16,761 acres of protected steep-slope habitat outside of PACs and 325,960 acres of restricted habitat on the Kaibab NF. Future surveys the USFS may do as part of their regular management, within this currently unoccupied MSO habitat on the Kaibab NF, may detect additional MSOs.

As of 2011, the Kaibab NF has identified six MSO PACs on the NF, all located on the Williams Ranger District within the UGM EMU. Habitat within MSO PACs on the Kaibab NF consists of mixed-conifer forests and forested canyons. In addition to protected (occupied) habitat, restricted (or unoccupied, foraging habitat) habitat consists of ponderosa pine-Gambel oak and mixed conifer forest throughout this area.

Within the CP EMU, MSO habitat on the North Kaibab Ranger District contains no currently known occupied habitat. However, the area does contain restricted habitat. Most of the MSO habitat in the CP EMU on the Kaibab NF consists of high-elevation, mixed conifer forest.

Since our issuance of the 2005 LRMP BO/CO, the status of the MSO within the action area has likely been most impacted by the 2006 Warm Fire (see discussion below). There are no known MSOs occupying habitat within this area, but it did result in effects to approximately 4,776 acres of MSO foraging and dispersal habitat due to high-severity fire. Mexican spotted owl habitat within and outside of CHU CP-10 was affected by the fire.

Critical Habitat

Part or all of four CHUs (CP-10, UGM-13, UGM-15, UGM-17) occur within the boundaries of the Kaibab NF. As stated earlier, only areas identified as protected and restricted habitat pursuant to the Recovery Plan (USDI Fish and Wildlife Service 1995) within these CHUs are considered to be CH. We refer to the 1995 Recovery Plan here because the 2004 CH rule relied upon this plan to define designated CH. Information from the USFS indicates that these CHUs

contain roughly 15,072 acres of protected habitat and 232,730 acres of restricted habitat on the Kaibab NF.

Since our issuance of the 2005 LRMP BO/CO, the status of CH on the Kaibab NF has likely been most impacted by the 2006 Warm Fire (see discussion below). Though this acreage is a very small amount of the total CH in CHU CP-10 that 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 CH on the Kaibab NF 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 CH within the fire perimeter now consists of significantly reduced PCEs related to forest structure, including 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) and an additional amount of acreage is currently being salvaged from 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 make for good foraging habitat.

Factors Affecting the Mexican Spotted Owl and its Critical Habitat within the Action Area

The factors affecting the MSO and its designated CH within the action area, the Kaibab NF, are discussed in this section. Formal consultations that have occurred from (the year of the original LRMP BO/CO) to the present are summarized in Table 1.

Table 1. Completed formal consultations on the Kaibab NF from 2005 to 2011.*					
Consultation #	Date of Final BO	Project	Approximate # of Owls	# of PACs	Form of Take
2-21-03-F-0144/0145	7/14/2005	City and Twin Fuels Reduction Projects	1-2	1	Harm
22410-2007-F-0028/0077	6/27/2007	Warm Fire Hazard Tree Removal Project	Critical Habitat Only	0	n/a
22410-2006-F-0364	7/5/2007	Arizona Forests Utility Hazard Tree Removal Project	0	0	n/a
22410-2006-F-0365	7/17/2008	Arizona Forests Utility Corridor Mgmt Project	0	0	n/a
22410-2009-F-0053	12/1/2008	Authorization of Additional Activities at Elk Ridge Ski Area	0	0	n/a
22410-2009-F-0261	10/5/2009	Bill Williams CAP Fuels Reduction Project	0	0	n/a
22410-2008-F-0531	9/13/2011	McCracken Vegetation	0	0	n/a

		Management Project			
<i>22410-2008-F-0149-R001</i>	<i>12/6/2011</i>	<i>Effects to Listed Species from U.S. Forest Service Aerial Application of Fire Retardants on NFS Lands</i>	<i>Incidental take will be tracked as it occurs per the BO</i>	<i>Incidental take will be tracked as it occurs per the BO</i>	<i>Harm & Harass</i>
<i>02EAAZ00-2012-FE-0004</i>	<i>Draft out</i>	<i>Eagle Rock Fire Emergency Suppression Action</i>	<i>1-2 adults (plus any juveniles)</i>	<i>1</i>	<i>Harass</i>
TOTAL			1-2	1	Harm

*Projects in italics are fire suppression activities that are not included in the proposed action for this consultation.

Since 2005, seven site-specific BOs have been issued to the Kaibab NF addressing adverse effects to MSOs from projects implemented under the forest's LRMP, 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) (see Table 1). These projects involved the Fire Management, Forestry and Forest Health, and Lands and Minerals programs. These programs were all analyzed in the 2005 BO/CO. Within the seven project-specific BOs, MSOs associated with one PAC were determined to have some form of incidental take associated with one of the projects. The Kaibab NF provided conservation measures that would minimize the impacts to MSOs in all formal consultations. All BOs for projects conducted on the Kaibab NF were determined to be non-jeopardy for the species and non-adverse modification for CH. Incidental take of MSOs 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 2005 LRMP BO/CO, changes to CH have occurred due to wildland fire. Critical habitat unit CP-10, on the Kaibab NF, 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 of approximately three miles south of Jacob Lake, Coconino County, Arizona. The fire began in the ponderosa pine cover type. The fire was initially managed as a wildland fire use fire until approximately June 25, when it was declared a wildland fire and actively suppressed. The fire was contained on July 4, 2006, at a size of approximately 59,000 acres. The wildland fire entered MSO restricted habitat (mixed conifer cover type) and CH on approximately June 25, 2006. Most of the fire that occurred in MSO 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 habitat and CH burned with mixed-high to high-severity fire effects. Pursuant to the PCEs, associated with MSO CH, described in the Status of the Species section above, the most significant impact to MSO CH was the loss of canopy cover, large trees, woody debris, and a range of age classes which provide horizontal diversity. The loss of these elements may preclude MSOs from nesting or roosting in the area

due to a lack of habitat. However, because prey species such as deer mice tend to increase following fire, it is likely the area will provide resources for foraging MSOs. 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 CH, together with the effects of other activities that are interrelated and interdependent with that action that 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.

Background Information regarding the Proposed Action

The proposed action being analyzed in this BO is implementation of the Kaibab NF LRMP and its amendments. The most important amendment in regards to MSO management is the June 5, 1996, Amendment of Forest Plans in Arizona and New Mexico, for the Management of the MSO and northern goshawk. This amendment was developed in collaboration with the FWS and incorporated many of the management recommendations from the Recovery Plan (USDI Fish and Wildlife Service 1995) into all eleven NF LRMPs.

An LRMP provides guidance and direction in the context of a broad management framework. These LRMPs define the direction for managing the NFs. Direction in the LRMP is provided in the form of the S&Gs. Because it was unclear what the operational difference is between a “standard” and “guideline,” neither the USFS nor FWS differentiated between the two for the analyses in the BA or the BO. The FWS recognizes that some differences in interpretation may exist on the part of forest managers at the project level in the implementation of LRMPs through the S&Gs. These differences in interpretation also add to the complexity of this consultation.

The S&Gs are written to apply Forest-wide or to a specific management area. The Kaibab NF has designated “management areas” based on such criteria as vegetation type, principal land use, and special management designations such as wilderness areas. The LRMP contains some S&Gs that apply Forest-wide and some that apply only to specific management areas. During the development of a project, each management program reviews Forest-wide and management area-specific S&Gs that either give direction to, or place constraints on, management activities (e.g., logging, grazing, recreation, mining, etc.). The S&Gs that provide direction state what will be accomplished to achieve specific resource goals. In many cases, the S&Gs were developed to target management of a specific species (e.g., the 1996 Forest-wide amendment to include S&Gs for the threatened MSO).

This BO/CO is now covering the projects that were covered by prior opinions but have yet to be implemented. These projects include the City and Twin Fuels Reduction projects, Warm Fire Hazard Tree Removal, Arizona Forests Utility Corridor Management Phase II, Elk Ridge Ski

Area additional activities project, Bill Williams CAP Fuels Reduction, and McCracken Vegetation Management project.

The LRMPs direct how current and future activities will be carried out in the following management programs: (1) Engineering, (2) Fire Management, (3) Forestry and Forest Health, (4) Lands and Minerals, (5) Rangeland Management, (6) Recreation, Heritage and Wilderness, (7) Watershed Management, and (8) Wildlife, Fish, and Rare Plants. Each of the USFS's eight resource programs were discussed in depth within the April 8, 2004, BA, the June 10, 2005, LRMP BO/CO, and the April 6, 2011, BA.

Effects to the MSO were evaluated in the 2005 BO/CO, and are included herein by reference (see U.S. Fish and Wildlife Service 2005). The majority of the S&Gs, which continue to be implemented as the proposed action within the Kaibab NF LRMP, were considered positive in the sense that they would maintain habitat for the MSO or provide for recovery. We found no S&Gs within the Kaibab NF's LRMP that would cause a lethal response to the MSO; however, we ranked five S&Gs as having sub-lethal effects to MSOs.

Potential adverse effects were found in the following programs: Engineering (e.g., disturbances from road construction); Fire Management Program, Forestry and Forest Health; Lands and Minerals Program; and, the Rangeland Management Program. The Fire Management Program combines elements of fire prevention, prescribed fire, wildland fire, and fire suppression. However, wildland fire, including fire suppression and wildland fire use, are covered not included in the proposed action and consultation on these actions will continue to be handled under emergency section 7 consultation procedures. We did not identify any S&Gs in the Recreation or Watershed Management Programs that affected the MSO. However, based upon review of site-specific consultations (Table 1), we have consulted on the potential adverse effects to MSOs as a result of activities managed under the Recreation Program (e.g., management of the Elk Ridge Ski Area). Therefore, we will include this program in our analysis of effects below.

Effects of the Action on the Mexican spotted owl

Engineering Program: Facets of this program, such as road construction and road use, have the potential to cause disturbance to MSOs. High road densities can increase human presence into areas and increased human presence and/or activities can result in MSOs flushing or leaving their roost (Swarthout and Steidl 2001, 2003; Delaney et al. 1999). Standard and Guideline 972 requires the USFS to identify and obliterate un-needed system roads.

This program permits the USFS to seasonally or permanently close existing roads in certain circumstances. Seasonally or permanently closing roads within areas where MSOs are known to occur would reduce the amount of disturbance, particularly during the MSO breeding season (March 1 – August 31). However, short-term disturbance to MSOs could occur from activities associated with obliteration (e.g., use of heavy machinery, etc.). The actual effects to the MSO would be dependent on methods, location, and timing of such activities.

Road construction can also result in the loss of key habitat components as trees are cut and the ground cleared for either new roads or existing road maintenance. The USFS typically

implements measures to minimize effects to the MSO and these key habitat components (such as avoiding road maintenance activities near PACs during the breeding season, avoiding construction of new roads in MSO habitat, etc.).

Fire Management Program: Implementation of a fire program is good management and will be overall positive for MSO habitat. Fuels reduction and light burning are recommended in the 1995 Recovery Plan for the Mexican Spotted Owl to reduce the threat of large-scale, stand-replacing fires (U.S. Fish and Wildlife Service 1995). The 1996 Regional Amendment guides NFs in S&G 1455 to use combinations of thinning trees less than 9 inches in diameter, mechanical fuel removal, and prescribed fire, in order to reduce the threat of stand-replacing fires. Also within the 1996 Regional Amendment, S&G 1446 guides that NFs should select for treatment 10 percent of the PACs where nest sites are known in each recovery unit having high fire risk conditions and to select another 10 percent to serve as control areas. This is expected to be beneficial for the MSO in the long-term, but short-term behavioral responses such as flushing or nest/roost abandonment could occur. With regards to CH, prescribed fire has the potential to affect all PCEs. Although short term data on MSO response to fire is inconclusive, it is suspected that appropriate fuels reduction will benefit areas designated as CH.

Forestry and Forest Health Program: This program had the majority of negative S&Gs ranked for the MSO. Though the program goal is to manage forest habitats for sustainability and resiliency, there is the potential for many different types of short-term adverse effects to the MSO from conducting forest management activities (such as thinning PAC habitat, etc.). However, as stated above, the 1996 Regional Amendment offers protection to the MSO by recommending that important MSO habitat components be retained in MSO PACs and restricted (unoccupied) MSO habitat. So, though we expect that implementation of the Forestry and Forest Health Program to result in some short-term adverse effects (and possibly incidental take), the inclusion of the 1996 amendment should result in actions associated with this program resulting in positive impacts to the MSO and its habitat. The USFS typically implements measures to minimize effects to key habitat components (such as retaining large trees, large snags, etc.) and the MSO (such as conducting forestry operations outside the MSO breeding season when in or near PACs).

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 (which includes PACs, protected steep-slope, and restricted habitat as recommended in the Draft Revised Recovery Plan). However, even projects with projected long-term benefits may reduce habitat quality for MSOs in the short-term. In the short-term, direct and indirect effects to the MSO and its habitat may include disturbance and the loss of key habitat components, along with reduced wildland fire risk.

Lands and Minerals Program: This program had several S&Gs that were ranked as positive for the MSO. Minimizing the amount of land allocated to electronic and utility corridors consistent with appropriate accommodation for public services as stated in S&G 974 will minimize habitat alteration which could benefit the MSO depending upon location on the NF. Utility corridors can impact MSO habitat by removing trees; however, these corridors may also create openings and edge that could improve prey availability to MSOs. Standard and Guideline 1012 and 1013

state to restrict use during the breeding season for MSOs, which should reduce potential disturbance to adults caring for young.

Though this program has several positive S&Gs, the very nature of the program is to allow for appropriate uses of NFS lands that may not always be compatible with MSO management. For example, management of utility corridors on the Kaibab NF has resulted in the removal of many large trees and snags, both of which are key habitat components of MSO habitat.

Rangeland Management Program: Grazing allotment plans, as developed under the LRMP, provide guidance for managing and monitoring public-lands range use by livestock on the Kaibab NF. Grazing can adversely affect the MSO primarily through four indirect effects: (1) diminished prey availability and abundance (Ward 2004, Willey 2007, Willey and Willey 2010), (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 spotted MSO habitat. Though the USFS strives to manage livestock allotments to maintain habitat for the MSO and its prey, multiple factors (such as yearly precipitation) may determine the specific influences of livestock on MSO habitat.

LRMP S&G 969 states that the USFS shall provide for extensive management of livestock use of the range resource. This guideline goes on to state that long-term grazing use and capacity is kept in balance through the removal or addition of permitted livestock use. Livestock grazing may not affect designated PACs on the Kaibab because of the steep, forested areas where they occur, but it may result in reduced prey habitat in unoccupied foraging habitat in ponderosa pine-Gambel oak habitat. In addition, S&G 1001 states that the USFS is to manage grazing allotments at the range management level determined on a level basis and to bring permitted grazing in line with grazing capacity on all grazing allotments. We ranked this S&G as overall positive (i.e., maintaining MSO habitat); however, this would be wholly dependent upon livestock numbers and timing.

Recreation, Heritage and Wilderness Program: Recreational activities may affect MSOs directly through disturbances caused by human activity (e.g., hiking, shooting, and off-highway vehicle [OHV]) use at nesting, roosting, or foraging sites. Though specific S&Gs resulting in adverse effects to the MSO were not identified, the nature of the recreational program does come into conflict with MSO management across the forest and does result in disturbance to MSOs. Typically, this is a result of recreationists wanting to conduct activities (such as OHV group rides) in or adjacent to MSO PACs during the breeding season. Other recreation activities in the region that have resulted in potential adverse effects to the MSO include building trails within PACs, development of recreational facilities (such as campgrounds) within PACs.

Watershed Management Program: Within this program, the only S&G that was found to pertain to the MSO, related to enhancing watershed conditions by closing and/or obliterating roads that are causing resource damage. Implementation of this S&G would indirectly benefit MSO habitat by restoring damaged watersheds. However, there could be some short-term disturbance to MSOs from activities involving road obliteration adjacent to or within PACs.

Wildlife, Fish, and Rare Plants Program: The majority of S&Gs within this program were ranked as providing beneficial affects to the MSO when implemented. For example, there are S&Gs that give direction to implement recovery actions for threatened and endangered species. Other S&Gs stated that habitat management for federally listed species will take precedence over unlisted species. Implementing tasks within the MSO's recovery plan and working towards delisting the MSO is obviously beneficial for the species.

In summary, over the last seven years, we have completed seven formal consultations for the Kaibab NF that were implemented under the LRMP. These actions included a combination of short- and long-term harm and harassment that resulted in the anticipated take of MSOs associated with one PAC. We anticipate that over the life of this consultation, activities associated with forest management (e.g., fuels reduction, forest restoration, salvage logging) will likely be the predominant activity occurring within and adjacent to MSOs and MSO 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 Recreation, Heritage, and Wilderness Programs, based upon recent site-specific consultations, could also result in adverse effects to MSOs 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 CH, we consider whether or not a proposed action will result in the destruction or adverse modification of CH. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of CH 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 CH, 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 CH to support recovery. Further, the functional role of each of the CH units in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

Since 2005, very little CH has been adversely affected by the proposed action. Project impacts documented in BOs since 2005 to the PCEs related to forest structure and maintenance of adequate prey species are summarized below. However, as stated above, the 2006 Warm Fire resulted in moderate-high to high-severity fire impacts on approximately 4,776 acres of CH within CHU CP-10 on the Kaibab NF. Below the PCEs related to forest structure and maintenance of adequate prey species and the effects from implementation of the LRMP are described.

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 diameter-at-breast height (dbh) of 12 inches or more.

Effect: Actions implemented under the LRMP are expected to retain the range of tree species (i.e., conifers and hardwoods associated with MSO habitat) and will not reduce the range of tree sizes needed to create the diverse forest and multi-layered forest canopy preferred by MSOs. Some loss of trees, of all types and dbh size classes, will occur from actions such as hazard tree removal, prescribed fire, and forest thinning (as implemented under the Fire Management and Forest and Forest Health Programs). However, actions implemented under the LRMP are expected to maintain a range of tree species and sizes needed to maintain this PCE in PACs and restricted habitat across the NF because the USFS is implementing the Recovery Plan guidelines that strive to retain large trees, canopy cover appropriate for MSO 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 trees species may also occur as part of the Recreation (development of recreation sites) and Engineering Programs (creation, maintenance of roads); but these effects should be small in extent and intensity. 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. Previous treatments were not expected to reduce the shaded canopy below 40 percent.

Effect: We expect that tree shade canopy will be reduced following hazard tree removal, thinning, and burning treatments implemented under the LRMP in the Fire Management and Forest and Forest Health Programs. However, we do not expect reduction of canopy cover in MSO forested habitat to be reduced below 40 percent because the USFS has adopted the Recovery Plan recommendations which include managing for higher basal area and denser canopy cover in MSO habitat versus pure ponderosa pine or other forest and woodland habitats. 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 will benefit MSO 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 Forest and Forest Health Programs. Currently, large snags are rare across the action area, and any loss of this habitat component may be significant in terms of maintaining MSO and prey habitat. Some snags will be created through prescribed burning, which could benefit the MSO. However, snags currently used by MSOs for nesting are typically very old, large dbh, highly decayed snags with cavities. These snags are rare and are not typically created through by fire disturbance, but by decay fungi and insects. In individual burning projects, the USFS would attempt to minimize loss of these large snags through conservation measures (such as lining or using lighting techniques to avoid snags). However, it is likely that following burning treatments, upwards of 30 percent of these existing snags may be lost within treated (i.e., burned) MSO habitat, resulting in short-term adverse effects to this PCE (Randall Parker and Miller 2000). This is why conservation measures that the USFS implements to protect the largest and oldest snags (particularly those with nest cavities) are so important. 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 restricted MSO 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. However, across the Kaibab NF, it is likely that hazard tree removal and prescribed burning will 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. The function and conservation role of this PCE would not be compromised by the proposed action.

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

Effect: This PCE will likely be positively affected by the actions taken under the Fire Management and Forest and Forest Health Programs. Plant species richness would likely increase following thinning and/or burning treatments that result in small, localized canopy gaps. Individual projects conducted under the LRMP typically propose 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 decrease in plant cover will result from prescribed burning conducted under the Fire Management Program. We expect long-term increases in residual plant cover because 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 and, in turn, assist in the production and maintenance of the MSO prey base. The function and conservation role of this PCE would not be compromised by the proposed action. The combination of low-intensity prescribed burns during restoration projects most likely resulted in short-term adverse effects to the MSO with regard to modifying prey habitat within treatment areas. There is the potential for the Rangeland Program to have adverse effects on the production of plant cover post-burning. However, typically the USFS includes measures in its allotment (livestock) management plans to maintain healthy levels of forage and the Fire Program recommends removing livestock temporarily following prescribed and wildland fire.

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

Adverse effects and associated incidental take from the projects since 2005 (see Table 1 above) are not expected to negatively affect MSO recovery and/or further diminish the conservation contribution of CH to the recovery of the MSO. These projects include the City and Twin Fuels Reduction projects, Warm Fire Hazard Tree Removal, Arizona Forests Utility Corridor Management Phase II, Elk Ridge Ski Area additional activities project, Bill Williams CAP Fuels Reduction, and McCracken Vegetation Management project.

The proposed action includes actions that are recommended in the 1995 Recovery Plan and the Draft Revised MSO Recovery Plan. These actions were identified by the Recovery Team as being necessary to recover the MSO and the Kaibab NF is implementing these actions in designated CH. Designated CH includes all protected (PACs and protected steep-slope habitat) and restricted habitat (unoccupied MSO habitat) within CHUs. These actions include the following:

- The Kaibab NF has and continues to designate 600 acres surrounding known MSO nesting and roosting sites. PACs are established around MSO sites and are intended to protect and maintain occupied MSO nest/roost habitat. Nesting and roosting habitat is rare across the range of the MSO and by identifying these areas for increased protection, the USFS is aiding in recovery.
- The Kaibab NF has identified and is managing pine-oak and mixed-conifer forests that have potential for becoming replacement MSO nest-roost habitat, or is currently providing habitat for MSO foraging, dispersal, or wintering habitats. As stated above, nesting and roosting habitat is a limiting factor for the MSO throughout its range. By managing CH for future nest/roost habitat, the USFS is aiding in recovery.
- The population monitoring scheme within the 1995 Recovery Plan was proven to be not feasible due to logistics and expense. A new population monitoring protocol was developed within the Draft Revised Recovery Plan based on MSO occupancy. The USFS has agreed to meet with the FWS to discuss their future participation in population monitoring with us and other land management agencies.
- The Kaibab NF's intent is to implement the Four Forest Restoration Initiative. The USFS'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 MSO PACs from high-severity wildland fire and conduct actions to improve forest sustainability (e.g., thinning and prescribed burning) in order to ensure MSO habitat continues to exist on the forest.

These actions should increase the sustainability and resiliency of MSO habitat (particularly through fuels management and forest restoration actions). Therefore, continued implementation of the Kaibab NF's LRMP is not expected to further diminish the conservation contribution of CH to the recovery of the MSO.

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/CO. Essentially, this section is very similar to the section provided in the 2005 LRMP BO/CO except that is specific to areas surrounding the Kaibab NF. 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 USFS, most

activities that could potentially affect listed species are Federal activities and subject to additional section 7 consultations.

CONCLUSION

This BO/CO does not rely on the regulatory definition of “destruction or adverse modification” of CH in 50 CFR 402.02 because of various court cases surrounding the FWS’s jeopardy and adverse modification analyses. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to CH. 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 CH and jeopardy pursuant to the following: “Adverse effects on individuals of a species or constituent elements or segments of CH 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 CH to satisfy essential requirements of the species” (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998:4-34).

After reviewing the current status of the MSO and its designated CH, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, we conclude that continued implementation of the LRMP for the Kaibab NF will not jeopardize the continued existence of the MSO and will not destroy or adversely modify designated CH. Effects analyses and conclusions in BOs from 2005 through 2010 for the Kaibab NF also determined that projects implemented under the current LRMP were not likely to jeopardize the continued existence of the MSO or destroy/adversely modify designated CH. Further, summary of our reasoning for determining that the continued implementation of the LRMP for the Kaibab NF will not jeopardize the MSO and will not adversely modify designated CH for the species is based on the following:

- In 1996, the USFS amended the Kaibab NF’s LRMP to incorporate recommendations from the 1995 Recovery Plan (USDI Fish and Wildlife Service 1995) through an EIS pursuant to NEPA. Since then, the USFS has incorporated 1995 Recovery Plan recommendations into individual projects consulted on under the 2005 LRMP BO/CO and provided project implementation monitoring information to the FWS indicating that these projects were implemented as proposed.
- Standards and Guidelines within the Kaibab NF’s LRMP have not changed since 2005, the majority of which were found to be beneficial to the MSO. There is currently an ongoing forest restoration effort (the Four Forest Restoration Initiative) that should reduce the risk of another Warm Fire occurring on the Kaibab NF. Prior to the Four Forest Restoration Initiative, the USFS planned small fuels reduction projects to protect

communities, but did not focus on reducing fuels and restoring fire to the wildlands, where most MSO habitat is located. This project has a goal of conducting thinning and burning actions that will allow for restoration of fire-adapted ecosystems at the landscape level (which is the level at which these very destructive fires are occurring).

- Projects implemented under the Kaibab NF's LRMP have not lead to a jeopardy determination or adverse modification of MSO CH since 2005. Implementation of fuels reduction and forest restoration projects that follow 1995 Recovery Plan recommendations will have long-term beneficial effects to MSO's survival and ultimately recovery (U.S. Fish and Wildlife Service 2011).

Across the range of the MSO, 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 Draft Revised Recovery Plan (USFWS 2011) which aims at assessing MSO population trends. Although population trend monitoring has not occurred for the MSO, our records indicate no decline in the MSO population based upon an increase in known PAC numbers since the MSO was listed (see the Status of the Species section). However, some level of range-wide MSO population monitoring is needed in order for us to assess the status of the MSO. In the 2005 LRMP BO, we included a reasonable and prudent measure for occupancy monitoring that was not feasible, but our revised incidental take statement 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.

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" is further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "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 MSOs 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 MSOs deserting the area because of chronic disturbance or because habitat no longer meets the MSO's needs.

We anticipate that the proposed action is reasonably certain to result in incidental take of MSOs. However, it is difficult to quantify the number of individual MSOs 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 MSOs 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 Memorandum, February 3, 1997). Actions outside PACs will generally not result in incidental take because we are not reasonably certain the MSOs are nesting and roosting in areas outside of PACs. We may modify this determination in cases when areas that may support MSOs have not been adequately surveyed and we are reasonably certain MSOs may be present.

The reasonable and prudent measures described below are non-discretionary, and must be undertaken by the USFS 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 USFS has a continuing duty to regulate the activity covered by this incidental take statement. If the USFS (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 USFS, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the USFS 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 USFS projects within previous BOs, we anticipate the majority of incidental take for future projects implemented under the Kaibab NF LRMP will be in form of short-term harassment. Owls experiencing short-term harassment may fail to successfully rear young in one or more breeding seasons, but 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 MSOs) than take from harassment. Harm would be defined as either the direct mortality 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 would be considered lost as viable members of the population.

There are six known MSO PACs on the Kaibab NF. 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 as identified in the "Background Information regarding the Proposed Action" section above:

- Harassment of owls associated with no more than one PAC per year due to a single or short-term disturbance. Owls associated with an individual PAC may not be 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. We expect that actions that could result in this type of harm or harassment would be very rare under the existing LRMP due to the protective standards and guidelines and other conservation measures included in the forest plan for the MSO.

This amount of incidental take is different from that anticipated in the 2005 LRMP BO/CO as it is based upon site-specific information from the Kaibab NF and not a compilation of all Region 3 NFs in the UGM and CP EMUs.

Effect of the Take

In this BO/CO, the FWS determines that this level of anticipated take is not likely to result in jeopardy to MSO. We base the numbers of MSO PACs with anticipated take on the potential for a future projects implemented under the current LRMP that could have short-term adverse effects, but long-term benefits to the MSO (such as, but not limited to a fuels reductions project).

REASONABLE AND PRUDENT MEASURES

The FWS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of MSOs.

1. Eliminate or minimize take of MSOs on the Kaibab NF.
2. Eliminate or minimize adverse effects to MSO habitat on the Kaibab NF.
3. Monitor the impacts of site-specific projects implemented on the MSO.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Kaibab NF must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

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

- 1.1 Where feasible, the Kaibab NF shall avoid activities within 0.25 mile of PACs during the MSO breeding season (March 1 to August 31) that could result in disturbance to owls.
- 1.2 On site-specific project, the FS 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 Where feasible, vegetation management treatments (which could include activities such as fuels reduction, utility line maintenance, etc.) will maintain adequate amounts of important habitat features for owls (such as large trees, large snags, and large logs).
- 2.2 On site-specific project, the FS 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 Kaibab NF shall monitor incidental take resulting from the proposed action and report their findings to the FWS. Incidental take (implementation) monitoring shall include information such as when or if the project was implemented, whether the project was implemented as analyzed in the site-specific BO (including conservation measures, and best management practices), breeding season(s) over which the project occurred, relevant MSO survey information, and any other pertinent information about the project's effects on the species.
- 3.2 Annual reports, which will include this species, shall be sent to the appropriate local FWS Ecological Services field office by March 1st of each year.

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 CH, to help implement recovery plans, or to develop information.

1. We recommend that the USFS work with the FWS to conduct MSO surveys over the next several years to attempt to determine how owls modify their territories in response to wildland fires. This information will aid us in understanding the short- and long-term impacts of fire on the MSO, and its subsequent effect on the status of the species in the UGM EMU.
2. We recommend that the USFS work with the FWS to design forest restoration treatments across the Kaibab NF that protects existing nest/roost habitat from high-severity, stand-replacing fire and enhances existing or potential habitat to aid in sustaining MSO 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 habitat.

3. Implement actions to protect PACs from high-severity fire and improve the resiliency of fire-adapted forested habitats. Yearly 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 (target/threshold restricted 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 Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900, 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.

REINITIATION NOTICE

As provided in 50 CFR §402.16, reinitiation of formal consultation is required where 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 CH 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 CH not considered in this opinion; or (4) a new species is listed or CH 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.

LITERATURE CITED

Description of the Proposed Action and Consultation Approach

- U.S. Department of Agriculture/U.S. Department of the Interior. 2003. Interagency strategy for the implementation of Federal Wildland Fire Management Policy. Washington, D.C. 62pp.
- U.S. Fish and Wildlife Service. 1996a. Biological opinion to the Forest Service, Southwestern Region: Mexican spotted owl and critical habitat and Existing Forest Plans. July 12, 1996.
- _____. 1996b. Biological opinion to the Forest Service, Southwestern Region: Mexican spotted owl and critical habitat and Forest Plan Amendments. May 14, 1996.
- _____. 1996c. Biological opinion to the Forest Service, Southwestern Region: Mexican spotted owl and critical habitat and Forest Plans Amendments. November 25, 1996.
- _____. 1997. Biological opinion and conference opinion on Land Resource Management Plans, as Amended, for Eleven National Forest and National Grasslands in the Southwestern Region. December 19, 1997.
- _____. 2005. Programmatic Biological and Conference Opinion on the Continued Implementation of the Land and Resource Management Plans for the Eleven National Forests and National Grasslands of the Southwestern Region. June 10, 2005.
- U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Consultation handbook: procedures for conducting consultation and conference activities under section 7 of the Endangered Species Act.
- U.S. Forest Service. 2004. Proposed rule and request for comments for travel management; designated routes and areas for motor vehicle use. Federal Register vol. 69, no. 135:42381.
- _____. 2004. Biological Assessment for the Continued Implementation of the Land and Resource Management Plans for the Eleven National Forest and National Grasslands in the Southwestern Region. Final, April 8, 2004.

Mexican Spotted Owl

- Bond, M.L., R.J. Gutierrez, A.B. Franklin, W.S. LaHaye, C.A. Hay, and M.E. Seamans. 2002. Short-term effects of wildlife on spotted owl survival, site fidelity, mate fidelity, and reproductive success. Wildlife Society Bulletin 30(4):1022-1028.
- Breshears, D.D., N.S. Cobb, P.M. Rich, K.P. Price, C.D. Allen, R.G. Balice, W.H. Romme, J.H. Kastens, M.L. Floyd, J. Belnap, J.J. Anderson, O.B. Myers, and C.W. Meyers. 2005. Regional vegetation die-off in response to global-change-type drought. Proceedings of the National Academy of Sciences, USA (PNAS) 102(42): 15144-48.

- Cook, E.R., C.A. Woodhouse, C.M. Eakin, D.M. Meko, and D.W. Stahle. 2004. Long-term aridity changes in the western United States. *Science* 306: 1015-1018.
- Cooper, C.F. 1960. Changes in vegetation, structure, and growth of southwestern pine forests since white settlement. *Ecological Monographs* 30:129-164.
- Courtney, S.J., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Guitierrez, J.M. Marzluff, and L. Sztukowski. 2004. Scientific Evaluation of the Status of the Northern Spotted Owl. Sustainable Ecosystems Institute, Portland, Oregon. 508 pp.
- Delaney, D. K., T. G. Grubb, and P. Beier. 1999. Activity patterns of nesting Mexican spotted owls. *Condor* 101:42-49.
- Dettinger, M.D. and D.R. Cayan. 1995. Large scale atmospheric forcing of recent trends toward early snowmelt runoff in California. *Journal of Climate* 8: 606-623.
- Dettinger, M.D. and H.F. Diaz. 2000. Global characteristics of streamflow seasonality and variability. *Journal of Hydrometeorology* 1: 289-310.
- Ganey, J.L., and J.A. Dick. 1995. Chapter 4: Habitat relationships of Mexican spotted owls: current knowledge. Pp. 1-42 *in* Recovery plan for the Mexican spotted owl (*Strix occidentalis lucida*), Volume II. USDI Fish and Wildlife Service, Albuquerque, New Mexico, USA. Available from: <http://mso.fws.gov/recovery-plan.htm>.
- Gutiérrez, R. J., A. B. Franklin, and W. S. LaHaye. 1995. Spotted Owl (*Strix occidentalis*). *The birds of North America*. The Academy of Natural Sciences Philadelphia, and The American Ornithologists Union, Washington, D.C.. No. 179:28 pp.
- Intergovernmental Panel on Climate Change (IPCC). 2007. Summary for policy makers. In: *Climate Change 2007: The physical science basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Quin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available at <http://www.ipcc.ch/>.
- Lee, B.V., R. Smith, and J. Bate. 2006. Chapter 7: Ecological & Biological Diversity of the Apache-Sitgreaves National Forests *in* Ecological and Biological Diversity of National Forests in Region 3. The Nature Conservancy, Washington, D.C., USA.
- Mueller, R.C., C.M. Scudder, M.E. Porter, R.T. Trotter III, C.A. Gehring and T.G. Whitham. 2005. Differential tree mortality in response to severe drought: Evidence for long-term vegetation shifts. *Journal of Ecology* 93(6): 1085-1093.

- Randall-Parker, T. and R. Miller. 2002. Effects of prescribed fire in ponderosa pine on key wildlife habitat components: preliminary results and a method for monitoring. Pgs. 823-834 *In* USDA Forest Service Gen. Tech. Rep. PSW-GTR-181.
- Reiners, W.A., W.L. Baker, J.S. Baron, D.M. Debinski, S.A. Elias, D.B. Fagre, J.S. Findlay, L.O. Mearns, D.W. Roberts, T.R. Seastedt, T.J. Stohlgren, T.T. Veblen, and F.H. Wagner. 2003. Natural Ecosystems 1: The rocky mountains (pp. 145-184). *In* Wagner, F.H. (Ed.), Preparing for Climate Change: Rocky Mountain/Great Basin Regional Assessment Team for the U.S. Global Change Research Program. Utah State University. 240 pp.
- Smith, S.J, T. Wigley, and J.A. Edmonds. 2000. "A new route toward limiting climate change?" *Science* 290 (5494): 1109-1110.
- Stewart, I.T., D.R. Cayan, and M.D. Dettinger. 2004. Changes in snowmelt runoff timing in western North American under a "business as usual" climate change scenario. *Climate Change* 62: 217-232.
- U.S. Department of Agriculture, Forest Service (USDA Forest Service). 2011. Wallow Wildfire Resource Report – Wildlife, Apache-Sitgreaves National Forest. 45pp.
- U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service). 1993. Endangered and threatened wildlife and plant: final rule to list the Mexican spotted owl as a threatened species. *Federal Register* 58:14248-14271.
- _____. 1995. Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*). U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA.
- _____. 2004. Endangered and threatened wildlife and plants; final designation of critical habitat for the Mexican Spotted Owl: final rule. *Federal Register* 69(168): 53182-53230.
- _____. 2011. Draft Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA.

Appendix A: Not Likely to Adversely Affect Determinations

Appendix A documents our concurrence with your determination of “may affect, is not likely to adversely affect” for the species listed below. In addition, the FWS has provided a brief reasoning for these concurrences.

California condor (*Gymnogyps californianus*) Endangered; Non-essential, Experimental §10(j) Population

The FWS concurs with your determination that the continued implementation of the S&Gs within the Kaibab NF LRMP may affect, but is not likely to adversely affect the endangered California condor and is not likely to jeopardize the non-essential, experimental population of California condors for the following reasons:

1. The USFS contributed funding to the Peregrine Fund to help increase the tracking efforts of the released condors; past efforts have shown that condors frequently scavenge on hunter-killed mule deer carcasses on the North Kaibab Ranger District and elsewhere on the Kaibab Plateau. Ingestion of lead shot is the main threat to the condor, but hunting is managed by the Arizona Game and Fish Department rather than the Kaibab NF.
2. The Kaibab NF LRMP includes S&Gs related to enhancing populations of game animals which is viewed as positive for the condor because this would likely increase populations of wild ungulates and increased food for the condor.
3. Many of the resource activities undertaken by the Kaibab NF in conformance to LRMP guidance are beneficial to the condor (specifically, those S&Gs related to Rangeland Management; Wildlife, Fish, and Rare Plants; and Forestry & Forest Health.
4. Another threat to the California condor is collisions with power lines. Kaibab NF LRMP includes guidance to minimize the number of power line easements, and the trend in utility easements indicates this guidance is being implemented.
5. By definition, a non-essential experimental population is not essential to the continued existence of the species; therefore, no proposed action impacting the experimental, nonessential population so designated under the ESA §10(j) could lead to a jeopardy determination for the entire species.

Apache trout (*Oncorhynchus gilae apache*) Threatened

The FWS concurs with your determination that the continued implementation of the S&Gs within the Kaibab NF LRMP is not likely to adversely affect the Apache trout for the following reasons:

1. The Kaibab NF LRMP directs the Forests to maintain and improve habitat for the Apache trout.
2. The Kaibab NF LRMP does not contain any S&Gs that could cause lethal or sub-lethal effects to the trout.
3. The Kaibab NF partners with AGFD in monitoring of Apache trout in North Canyon Creek on the North Kaibab RD.

4. The Kaibab has completed a project to improve habitat for the species within North Canyon Creek. They worked with AGFD to repair/reconstruct check dams built along North Canyon Creek that are old and failing, resulting in the loss of important pool habitat for the trout population in this stream. The project was completed in 2010.

Loach minnow (*Tiaroga cobitis*) and spikedace (*Meda fulgida*) Endangered with designated critical habitat

When the 2011 BA was issued, loach minnow and spikedace were listed as threatened under the ESA. In addition, CH had been designated for both species but modifications to their CH were proposed. On February 23, 2012, FWS published the final rule for both species (effective on March 26, 2012); the final rule reclassified both fish species as endangered and authorized the designation of their CH. The FWS concurs with your determination that the continued implementation of the S&Gs within the Kaibab NF LRMP is not likely to adversely affect the loach minnow or the spikedace and is not likely to adversely modify both species' CH for the following reasons:

1. There are no occupied streams on the Kaibab NF. Lands managed under the Kaibab NF LRMP are over 12 river miles from the Verde River where spikedace are still presumed to be present and where CH for both species exists. Sufficient filtering of any potential indirect effects exists between the Kaibab NF and the Verde River.
2. Due to the distance between lands managed by the Kaibab NF and designated CH for the species, indirect effects that may occur downstream are likely not measurable or distinguishable from other effects occurring from off-Forest activities.
3. The overall guidance of the LRMP S&Gs is to protect resources while maintaining multiple use activities, and the guidance provided for the Engineering, Fire Management, Forestry and Forest Health, Land and Minerals, Rangeland Management, and Recreation, Heritage, and Wilderness Programs is sufficient, coupled with the distance to occupied habitat, to result in effects that are insignificant and discountable.

Fickeisen plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*) Candidate

The FWS concurs with your determination that the continued implementation of the S&Gs within the Kaibab NF LRMP may affect, but is not likely to adversely affect the Fickeisen plains cactus (if listed), a candidate species, for the following reasons:

1. Standard and Guideline 969 within the Rangeland Management Program was formerly found to result in adverse effects to the plains cactus; however, the habitat type where the Fickeisen plains cactus occurs is not suitable for livestock for a number of reasons. First, the habitat type contains only occasional sagebrush and no understory grasses, making it undesirable for livestock. Furthermore, the nearest potential water source is Buckhorn Tank, in a straight-line path over 2.5 miles away. The pipeline to the tank hasn't worked in 15 years, and the closest current water source is now Slide Tank, 5 miles away. The Slide Pasture itself has not been grazed since 2002. For these reasons, based on personal

communication with B. Phillips (2012), this S&G no longer applies and, therefore, will no longer impact the plains cactus. If USFS determines at a later point that grazing should occur in the area where Fickeisen plains cactus is established, reinitiation will be necessary due to the threat from livestock trampling.

2. Road construction and maintenance pose a threat to the Fickeisen plains cactus, but there is no road in section 8 where the population occurs. Therefore, there is no need to do any road maintenance actions there and S&G 970 no longer applies thereby eliminating any potential for adverse effects to result from this S&G.
3. Standard and Guideline 973 within the Fire Management Program no longer applies to the habitat at Willow Point as this area is not conducive to fire. In addition, there is no need to create openings in the area or conduct on-structural improvements since the habitat is wide open and not grazed. Thus, S&Gs 997 and 998 no longer apply. These 3 S&Gs were originally determined to result in adverse effects to the species, but they no longer apply.
4. Standard and guideline 960 allows for the improvement of threatened, endangered, and sensitive species habitat, with the goal of recovery and delisting of the species. This S&G is expected to benefit the Fickeisen plains cactus.
5. Under S&G 961, the Kaibab NF will identify and protect areas that contain listed or sensitive species. This is expected to benefit the Fickeisen plains cactus.

Appendix B: Abbreviations and Acronyms

AGFD – Arizona Game and Fish Department

BA – Biological Assessment

BLM – Bureau of Land Management

BMPs – Best Management Practices

BO – Biological Opinion

BO/CO – Biological/Conference Opinion

CA – Consultation Agreement

CH - Critical Habitat

CHU – Critical Habitat Unit

CLF – Chiricahua leopard frog

CMs – Conservation Measures

CNOR – Candidate Notice of Review

CP – Colorado Plateau Recovery Unit

EMA – Ecosystem Management Area

EMU – Ecological Management Unit

ESA – Endangered Species Act

FAIR – Fort Apache Indian Reservation

ft. - feet

FWS – U.S. Fish and Wildlife Service

GIS – Geographical Information Systems

km. – kilometers

LAA – May Affect, Likely to Adversely Affect

LRMP – Land and Resource Management Plans (Forest Plans)

MA – Management Area

mi. – miles

MSO – Mexican spotted owl

MU – Management Unit

NA – Not Applicable

NE – No Effect

NF – National Forests

NEPA – National Environmental Policy Act

NFMA – National Forest Management Act of 1976

NFS – National Forest System

NG – National Grasslands

NLAA – May Affect, Not Likely to Adversely Affect

NLDAM – Not Likely to Destroy or Adversely Modify

NLJ – Not Likely to Jeopardize

NM – New Mexico

OHV – Off Road Vehicle

PAC – Protected Activity Center

PBF – Physical Biological Features

PCE – Primary Constituent Element

RD – Ranger District

RU – Recovery Unit

S&Gs – Standards and Guidelines

Sq - square

UGM – Upper Gila Mountains Recovery Unit

U.S. – United States

U.S.D.A. – U.S. Department of Agriculture

USFS – U.S. Forest Service

WFRP – Wildlife, Fish, and Rare Plants Program