United States Department of the Interior
U.S. Fish and Wildlife Service
Arizona Ecological Services Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 FAX: (602) 242-2513

In Reply Refer To:
AESO/SE
02EAAZ00-2012-FE-0004

November 20, 2013

Mr. Michael R. Williams, Forest Supervisor
Kaibab National Forest
800 South Sixth Street
Williams, Arizona 86046-2899

RE: Biological Opinion for the Eagle Rock Fire Emergency Suppression Action

Dear Mr. Williams:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated September 7, 2011, received by us on September 8, 2011, and confirmed on October 13, 2011. At issue are impacts that may result from the Eagle Rock Fire emergency suppression action in Coconino County, Arizona. The emergency action may have affected the Mexican spotted owl (*Strix occidentalis lucida*) and its critical habitat.

This biological opinion (BO) is based on information provided in a September 2, 2011, biological assessment (BA), telephone conversations, email messages, and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern, emergency fire suppression actions and their effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

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

Date	*Event*
June 16, 2010	The Forest Service contacted us regarding the fire and we initiated emergency consultation on suppression actions.
June 16-July 1, 2010	Informal emergency consultation regarding suppression actions continued by telephone and email.
July 1, 2010	We received an email that indicated Eagle Rock Fire burned area

	emergency response (BAER) activities may be conducted.
July 8, 2010	We exchanged emails and conducted a telephone conversation regarding BAER consultation and activities.
July 8, 2010	We received a final BAER report.
July 12-13, 2010	We discussed the status of consultation on the Eagle Rock Fire and our questions regarding BAER activities by telephone and email.
July 14, 2010	We received a draft Eagle Rock Fire BA.
July 21, 2010	We provided comments on the draft Eagle Rock Fire BA.
August 11, 2010	We exchanged emails regarding BAER activities and consultation. The Forest Service stated they would advise us whether emergency consultation would be necessary for BAER activities.
September 8, 2011	We received a request for formal consultation for, and a biological assessment of, the emergency fire suppression action.
October 21, 2011	We provided a thirty-day letter initiating formal emergency consultation.
February 13, 2012	We provided a draft biological opinion to the Forest Service.
July 24, 2012	The Forest Service indicated they had no comments and that the draft could be finalized. In coordination with the Forest Service, our Final BO was delayed in order to respond to higher priority projects.

BIOLOGICAL OPINION

DESCRIPTION OF THE EMERGENCY ACTION

Most of the information regarding the emergency fire suppression action in this BO is taken directly from the BA (Keckler 2011). The full action description from the BA is incorporated by reference and summarized below.

The Eagle Rock Fire was detected on June 16, 2010, and is believed to have been started by lightning. The wildland fire was contained on June 28, 2010. The final perimeter of the fire contained 3,374 acres. At the peak of fire suppression activity, resources assigned to the Eagle Rock Fire included approximately 625 personnel including 16, 20-person crews, 19 engines, two dozers, one lead airplane, two air tankers, and three helicopters.

Fire line, including 11-feet wide dozer and 3-feet wide hand line, was constructed during the fire. The amount and location of line construction is summarized in Table 2. Suppression activities resulted in effects to one Mexican spotted owl protected activity center (PAC), and forested recovery habitat. A Mexican spotted owl PAC consists of at least 600 acres of owl habitat that is designated around known owl locations, nests sites, and/or roost sites. Mexican spotted owl forested recovery habitat is forested habitat occurring in mixed-conifer and pine-oak forests outside PACs (USDI FWS 2012).

Table 2. Fire line constructed for the Eagle Rock Fire (PAC = Mexican spotted owl Protected Activity Center).

Line	*Total in Fire (miles)*	*In Mexican spotted owl PAC (acres)*	*In Mexican spotted owl Recovery Mixed Conifer Habitat (acres)*	*In Mexican spotted owl Critical Habitat (acres)*
Dozer	4.8	0.67	0	0.67
Hand	3.1	0.18	0.36	0.54

Burn-out operations were conducted within the perimeter of the fire. Burn severity in burn-out areas was low to moderate. The amount and location of fire resulting from burn-out operations is summarized in Table 3.

Table 3. Burn-out operations for the Eagle Rock Fire.

Total in Fire (acres)	*In Mexican spotted owl PAC (acres)*	*In Mexican spotted owl Recovery Mixed Conifer Habitat (acres)*	*In Mexican spotted owl Critical Habitat (acres)*
129	4.5	13	17.5

From June 16 to June 18, 2010, air tankers dropped ten loads of slurry. Six of the loads were from heavy air tankers at approximately 2,500 gallons per load. Four of the loads were from lighter air tankers at approximately 2,000 gallons per load. The air tankers flew approximately 150 to 300 feet above tree level.

From June 16 to June 20, 2010, a type 1 helicopter dropped approximately 138 loads of water at approximately 1,000 gallons per load. From June 16 to June 22, a type 2 helicopter dropped 71 loads of water at approximately 250 gallons per load. From June 16 to June 22, a type 3 helicopter dropped four loads of water at approximately 80 gallons per load, made 12 reconnaissance flights, and made 13 cargo flights. The type 3 helicopter made a final reconnaissance flight on June 27. Helicopter flights for water drops and cargo flights were approximately 75 to 150 feet above tree level. Reconnaissance helicopter flights were approximately greater than 200 feet above tree level.

STATUS OF THE SPECIES AND CRITICAL HABITAT

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

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

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

In addition to this natural variability in habitat influencing owl distribution, human activities also vary across the owl's range. The combination of natural habitat variability, human influences on owls, international boundaries, and logistics of implementation of the Recovery Plan necessitates subdivision of the owl's range into smaller management areas. The 1995 Recovery Plan subdivided the owl's range into 11 "Recovery Units" (RUs): six in the United States and five in Mexico. In the revision of the Recovery Plan, we renamed RUs as "Ecological Management Units" (EMUs) to be in accord with current FWS guidelines (USDC NMFS and USDI FWS 2010). We divide the Mexican spotted owl's range within the United States into five EMUs: Colorado Plateau (CP), Southern Rocky Mountains (SRM), Upper Gila Mountains (UGM), Basin and Range-West (BRW), and Basin and Range-East (BRE) (Figure 1). Within Mexico, the Revised Recovery Plan delineated five EMUs: Sierra Madre Occidental Norte, Sierra Madre Occidental Sur, Sierra Madre Oriental Norte, Sierra Madre Oriental Sur, and Eje Neovolcanico.

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

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

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

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

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

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

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

Critical Habitat

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

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

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

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

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

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

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

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

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

ENVIRONMENTAL BASELINE

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

Description of the Action Area

The Eagle Rock Fire occurred on the Williams Ranger District (District) on and northeast of Sitgreaves Mountain and in the Spring Valley area. The fire occurred in mixed-conifer and ponderosa pine cover types. The source of air and ground support for suppression actions was not identified in the BA. The action area includes the 3,374 acres within the fire perimeter, air and ground access routes to the fire, and camps and staging areas.

A. STATUS OF THE SPECIES WITHIN THE ACTION AREA

Mexican Spotted Owl

The action area is within the UGM EMU, which contains the largest contiguous ponderosa pine forest in North America, an unbroken band of forest 40-64 kilometers (25 to 40 miles) wide and approximately 483 kilometers (300 miles) long extending from north-central Arizona to west-central New Mexico (Cooper 1960). The Eagle Rock Fire occurred in the western end of this EMU and included the northern-most approximate one-quarter of the Sitgreaves Mexican spotted owl PAC. The fire perimeter also contains Mexican spotted owl recovery habitat on Sitgreaves Mountain adjacent to but outside of the Sitgreaves PAC. The BA did not clearly provide information on the acres of Mexican spotted owl habitat within the Sitgreaves PAC and recovery habitat that are within the fire perimeter. Based on information provided in the BA and other materials provided by the District, we estimate that 164 acres within the fire perimeter are within the PAC and 47 acres are outside of the PAC.

The Sitgreaves PAC is known to have been regularly occupied in recent years. At least one adult Mexican spotted owl was detected in the PAC in 1988, 1995, 1996, 1998, 2007, 2008, and 2009. A pair of Mexican spotted owls was detected in the PAC in 1985, 1990, 1991, 1992, 1993, 1994, and 2001. The Mexican spotted owl pair produced two young in 1991, 1993, and 2001. Most of the known Mexican spotted owl detections are from the southern half of the PAC. Previous Mexican spotted owl nesting activity occurred along the south-central portion of the PAC,

approximately 0.3 mile south of the fire perimeter. A 100-acre core area has not been designated for the PAC.

In 2010, the District conducted surveys at three calling points on three occasions in the Sitgreaves PAC. Two of the calling points were close to the known nest area and one point was near the 2009 detections. This effort did not detect any Mexican spotted owls. Only one monitoring survey was conducted in 2010 prior to the fire with no Mexican spotted owls detected, and the PAC is considered to have been occupied by Mexican spotted owls during the emergency fire suppression activities (Keckler 2011). Mexican spotted owls have high site-fidelity (i.e., loyalty) to their territories; and expected occupancy is based upon the known habits of the spotted owl. No Mexican spotted owls were detected during attempts to locate them after the fire. Although the District did not provide specific information regarding timing of these surveys or whether they were conducted according to protocol, since they were conducted post-fire, they were late in or after the breeding season, and absence of Mexican spotted owls cannot be inferred.

Mexican Spotted Owl Critical Habitat

The Eagle Rock Fire occurred in Mexican spotted owl critical habitat in the Upper Gila Mountains Critical Habitat Unit 17 (UGM-17). The entire unit contains approximately 10,914 acres. Only areas identified as protected and recovery habitat pursuant to the Recovery Plan (USDI FWS 2012) within the critical habitat unit are considered to be critical habitat. The fire perimeter contains 2,216 acres of the critical habitat unit, and 211 acres of Mexican spotted owl critical habitat.

B. FACTORS AFFECTING SPECIES' ENVIRONMENT WITHIN THE ACTION AREA

Formal consultation was conducted for two projects that include the Eagle Rock Fire emergency action area. A BO was issued on April 29, 1999 (Arizona Ecological Services [AESO] file number 02-21-98-F-0246) for the Kaibab National Forest Natural Fire Plan. The BO concluded that the proposed action was not likely to jeopardize the continued existence of the Mexican spotted owl, but it did include an incidental take statement for one pair of Mexican spotted owls. After critical habitat was designated for the Mexican spotted owl in 2004, a BO was issued on February 1, 2005, (AESO 02-21-04-F-0430) for Previously Approved Vegetative Treatment Projects, Ongoing Personal-use Firewood Cutting, and Wildland Fire Use. The BO concluded that the proposed action was not likely to jeopardize the continued existence of the Mexican spotted owl, and no additional incidental take was anticipated.

Recreation such as camping, hiking, and hunting occurs in the action area. Use and development of private land also occurs within the vicinity of the area. Aside from travel management and the reinitiated consultation on the Kaibab National Forest Land and Resource Management Plan, no previous consultations regarding these and other activities in the action area or vicinity have been conducted. Unless there is some Federal connection to such activities, section 7 consultation is not necessary (please see the Cumulative Effects section below).

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action 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.

Effects to the Mexican Spotted Owl

Mexican spotted owls were affected by fire suppression activities in the emergency action area. Because suppression actions occurred during the breeding season and within a PAC, ground-based activities and fire aircraft activity likely resulted in disturbance of the normal breeding, feeding, and sheltering of the Mexican spotted owl. Mexican spotted owls may have been injured by chemical fire retardant dropped from air tankers and/or water dropped from helicopters.

The Sitgreaves PAC is known to have been regularly occupied by Mexican spotted owls from 1985 through 2009, and based upon Mexican spotted owl's high site-fidelity, there is no reason to expect that the PAC was not occupied in 2010. Although only one monitoring survey was conducted in 2010 prior to the fire with no Mexican spotted owls detected, absence cannot be inferred from non-protocol surveys, particularly following a significant disturbance event. Previous Mexican spotted owl nesting activity occurred along the south-central portion of the PAC, approximately 0.3 mile south of the fire perimeter. Mexican spotted owls typically fledge young in early- to mid-June in northern Arizona. If Mexican spotted owls in the Sitgreaves PAC nested successfully in 2010, then there would have been recently fledged young in the area at the time of the fire.

Mexican spotted owls were likely disturbed by ground activities of firefighters (e.g., construction of hand lines, chainsaw use, burnout operations, patrolling of control lines), heavy equipment use (dozer line construction, engine and other fire vehicle activity), and overflights by air tankers and helicopters.

Aircraft overflight activity and retardant/water drops occurred within the Mexican spotted owl PAC and surrounding area. Air tankers dropped ten loads of slurry. The first drop occurred on June 16 and was outside of the Mexican spotted owl PAC on the south side of RS Hill which is approximately two miles from known Mexican spotted owl nest sites in the PAC. On June 17, eight loads of slurry were dropped along the southwest perimeter of the fire outside of the Mexican spotted owl critical habitat unit and all Mexican spotted owl habitats. On June 18, one slurry drop occurred within the Mexican spotted owl PAC near Eagle Rock. The June 18 slurry drop may have overlapped the area where Mexican spotted owls have previously nested.

Between June 16 and June 22, approximately 250 low-altitude helicopter flights were conducted, as described above (see "Description of the Emergency Action"). A total of 213 loads of water

and approximately 156,100 gallons of water were dropped on the fire during this period. Through June 22, there were 12 reconnaissance helicopter flights and 13 cargo flights, with one additional reconnaissance flight on June 27. Many of the helicopter flights included flight paths over the Mexican spotted owl PAC. Specific locations of the helicopter water drops were not included in the BA.

Most of the disturbance would have occurred during a seven-day period between June 16 and June 22. Disturbance to spotted owls by ground and aerial fire suppression activities would have resulted in reduced foraging time for adults, reduced feeding rate of fledglings by adults, increased energy expenditure for adults and fledglings as a result of increased frequency of flushing, and possibly injury or even mortality if owls were directly impacted by water drops.

Ground-based suppression actions also affected Mexican spotted owl habitat. Ground- based suppression activities occurred both within the Sitgreaves PAC and in Mexican spotted owl habitat outside of the PAC. Within the PAC, 4.5 acres of burnout, 0.67 acres (along 0.5 mile) of dozer line construction, and 0.18 acres (along 0.5 mile) of hand line construction, were conducted. Burn severity in burnout areas was low to moderate. A total of 5.35 acres of the Mexican spotted owl PAC were affected by suppression actions. In Mexican spotted owl recovery habitat outside the PAC, 13 acres of burnout and 0.36 acres (along 1.0 mile) of hand line construction were conducted with13.36 acres of Mexican spotted owl recovery habitat affected by suppression actions. A total of 18.71 acres of Mexican spotted owl habitat were affected by suppression actions.

Suppression activities that affected habitat included cutting of trees and snags along control lines (hand lines, dozer lines, and along roads used as control lines) with chainsaws, and burnout operations along control lines using drip torches. The BA stated that fire suppression activities resulted in decreased Mexican spotted owl habitat quality. Effects of suppression activities include reduced numbers of snags and logs available to Mexican spotted owl prey species, reduced understory vegetation available as forage and cover for Mexican spotted owls and their prey species, and reduced canopy cover along the linear control lines created through the PAC and restricted habitat.

Effects to Mexican Spotted Owl Critical Habitat

Ground- based suppression activities occurred within the Mexican spotted owl critical habitat within Mexican spotted owl critical habitat unit UGM-17. Within Mexican spotted owl critical habitat, 17.5 acres of burnout, 0.67 acre of dozer line construction, and 0.54 acre of hand line construction were conducted. A total of 18.71 acres of Mexican spotted owl critical habitat were affected by suppression actions.

The BA stated that suppression activities that affected critical habitat included cutting of trees and snags along control lines (hand lines, dozer lines, and along roads used as control lines) with chainsaws and burnout operations along control lines using drip torches. The BA stated that suppression activities resulted in reductions in each of the Mexican spotted owl critical habitat primary constituent elements (PCE); however, a specific analysis of effects to each of the primary constituent elements of Mexican spotted owl critical habitat was not included. Based on

the information that was provided, we expect the PCEs were affected by suppression activities associated with the Eagle Rock fire in the following ways.

PCE 1: 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: Fire suppression actions resulted in local and limited reduction of the range of tree species and percentage of large trees, primarily associated with burn-out operations.

PCE 2: A shade canopy created by the tree branches covering 40 percent or more of the ground.

Effect: Fire suppression actions resulted in local and limited reduction of the shade canopy, concentrated along linear corridors through the critical habitat created with fire line construction and burn-out operations.

PCE 3: Large, dead trees (snags) with a dbh of at least 12 inches.

Effect: Fire suppression actions resulted in some reduction of snags. Reductions occurred as a result of fire line construction and burn-out operations.

PCE 4: High volumes of fallen trees and other woody debris.

Effect: Fire suppression actions resulted in some reduction of high volumes of fallen trees and other woody debris. Although fallen trees and other woody debris were reduced by construction of fire line, most reduction probably occurred in burn-out areas.

PCE 5: A wide range of tree and plant species, including hardwoods.

Effect: Although numbers of trees and plants were reduced by fire line construction and burn-out operations, it is unlikely that the range of tree and plant species within the affected critical habitat was reduced.

PCE 6: Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

Effect: Fire suppression actions resulted in a local and short-term reduction of plant cover, particularly in burn-out areas.

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

In our analysis of the effects of the action on critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the PCEs that were the basis for

determining the habitat to be critical. To determine if an action results in adverse modification of critical habitat, we must also evaluate the current condition of all designated critical habitat units, and the PCEs of those units, to determine the overall ability of all designated critical habitat to support recovery. Further, the functional role of each of the critical habitat units in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

Within this BO, we considered the effects to Mexican spotted owl critical habitat from the District's fire suppression actions in terms of the effects of these actions on recovery of the owl. Although Mexican spotted owl critical habitat in the emergency action area was adversely affected by reduction of the PCEs due to burnout operations and dozer and hand line construction, these actions also likely reduced the overall size and intensity of the fire within the critical habitat. The scope of the emergency action was limited to burnout operations of 17.5 acres and line construction of 1.21 acres in Mexican spotted owl critical habitat in the UGM-13 critical habitat unit. The effects of the emergency action to this relatively small amount of critical habitat within the much larger critical habitat unit and within the context of all critical habitat are not anticipated to hinder the function of the critical habitat for the recovery of the Mexican spotted owl.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. 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 Act.

The land within the project boundary is primarily of Federal ownership. Unmanaged/dispersed recreation is the primary non-Federal activity that occurs in the project area. Recreation may result in disturbance effects to Mexican spotted owls. The extent of such disturbance is unknown, but is expected to be relatively minor.

The fire perimeter contains private land which is used for home sites, livestock grazing, and recreational use. Some of the areas have been cleared of trees for home sites and other buildings. Some of the acreage is in open grasslands. The extent of potential effects to the Mexican spotted owl or its critical habitat is unknown, but is expected to be relatively minor.

CONCLUSION

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat in 50 CFR 402.02 because of various court cases surrounding the Service'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 critical habitat. Critical habitat is defined in section 3 of the Act "as the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical and biological features essential to the conservation of the species and that may require special management considerations or protection; and specific areas outside the

geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." We have also relied upon the Consultation Handbook, which provides guidance on determining adverse modification of critical habitat and jeopardy pursuant to the following: "Adverse effects on individuals of a species or constituent elements or segments of critical habitat generally do not result in jeopardy or adverse modification determinations unless that loss, when added to the environmental baseline, is likely to result in significant adverse effects throughout the species' range, or appreciably diminish the capability of the critical habitat to satisfy essential requirements of the species" (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998:4-34).

After reviewing the current status of the Mexican spotted owl and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, we conclude that the Eagle Rock Fire emergency action did not jeopardize the continued existence of the Mexican spotted owl, and did not destroy or adversely modify designated critical habitat for the Mexican spotted owl.

We present this conclusion for the following reasons:

Mexican Spotted Owl

- Mexican spotted owl recovery habitat in the emergency action area was adversely affected by reduction of key habitat components due to burnout operations and dozer and hand line construction. The scope of effects to Mexican spotted owl habitat from the emergency action was limited to a total of 5.35 acres of the Mexican spotted owl PAC and 13.36 acres of Mexican spotted owl recovery habitat.

- Aircraft overflight activity and retardant/water drops occurred within one Mexican spotted owl PAC and surrounding Mexican spotted owl habitat. Therefore, the normal breeding, feeding, and sheltering behavior of no more than one Mexican spotted owl pair and young within the UGM EU were affected by the emergency action.

- The emergency actions taken are not expected to impede the survival or recovery of the Mexican spotted owl in the UGM EMU, and likely reduced the overall size and intensity of the fire within the critical habitat affected.

Mexican Spotted Owl Critical Habitat

- Mexican spotted owl critical habitat in the emergency action area may have been adversely affected by reduction of the PCEs due to burnout operations and dozer and hand line construction. The scope of the emergency action was limited to burnout operations of 17.5 acres, and line construction of 1.21 acres in Mexican spotted owl critical habitat in the UGM-13 critical habitat unit.

- The small extent and limited effects of the emergency actions on the PCEs of critical habitat are not expected to reduce the ability of the critical habitat to function in the recovery of the Mexican spotted owl.

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

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. "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 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. 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.

AMOUNT OR EXTENT OF TAKE

We anticipate that the Eagle Rock Fire emergency action resulted in the incidental take of Mexican spotted owls associated with the Sitgreaves PAC during the 2010 breeding season. The incidental take of owls associated with the Sitgreaves PAC was in the form of harassment due to a single disturbance event (a "single disturbance" is defined as a non-habitat altering action [such as noise, etc.] that disrupts or is likely to disrupt normal behavior patterns, including but not limited to, breeding, feeding, or sheltering that occurs within/over the course of one breeding season) resulting from fire suppression activities, and possible injury due to fire retardant drops. The fire occurred prior to the consultation for Effects to Listed Species from U.S. Forest Service Aerial Application of Fire Retardants on National Forest System Lands (AESO 22410-2008-0149-R001), which was completed with issuance of that BO in 2011.

Because we consider the Sitgreaves PAC to be occupied, fire suppression activities in the emergency action area contributed to incidental take of Mexican spotted owls. Disturbance to spotted owls by ground and aerial fire suppression activities (e.g., construction of hand lines, chainsaw use, burnout operations, patrolling of control lines) may have resulted in reduced foraging time for adults, reduced feeding rate of fledglings by adults, and increased energy expenditure for adults and fledglings as a result of increased frequency of flushing. Most of these disturbances occurred during a 7-day period between June 16 and June 22.

A significant amount of low-altitude aircraft overflight activity and number/amount of retardant/water drops occurred within the Mexican spotted owl PAC and surrounding area. Individual Mexican spotted owls, particularly recently fledged juveniles that are not yet adept at

flight, may have been injured by chemical fire retardant dropped from air tankers and/or water dropped from helicopters.

The FWS will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

EFFECT OF THE TAKE

In this biological opinion, we determine that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat for the reasons stated in the Conclusions section.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are necessary for the emergency action addressed in this biological opinion.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 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.

CONSERVATION RECOMMENDATIONS

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

This biological opinion addresses only the suppression actions that were taken for the Eagle Rock Fire. Post-fire rehabilitation (BAER) activities were not considered in this consultation.

1. We recommend that the Forest Service continue to work with us to design forest restoration treatments across the Kaibab National Forest that enhance and protect Mexican spotted owl habitat from high-severity fire.

2. We recommend that you pursue opportunities to research actual effects to and recovery of Mexican spotted owl and nest/roost sites in regard to fire-suppression actions, especially direct drops from aircraft and particularly in relation to future site occupancy by Mexican spotted owls.

3. We recommend that you continue to assist us in the implementation of the Mexican Spotted Owl Recovery Plan, First Revision.

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.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. 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 critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In keeping with our trust responsibility to American Indian Tribes, when an agency consults with us on a proposed action that may affect Indian lands, Tribal trust resources, or Tribal rights, we provide a copy of the final biological opinion to affected and interested Tribes and the Bureau of Indian Affairs. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

The FWS appreciates the Forest Service's efforts to identify and minimize effects to listed species from this project. For further information, please contact Bill Austin (928) 556-2012 or Brenda Smith (928) 556-2157.

Sincerely,

/s/ Brenda Smith for

Steven L. Spangle
Field Supervisor

cc (hard copy):
Director, Aha Makav Cultural Society, Fort Mojave Indian Tribe, Mohave Valley, AZ
Tribal Secretary, Havasupai Tribe, Supai, AZ
Director, Hopi Cultural Preservation Office, Kykotsmovi, AZ
Program Manager, Tribal Historic Preservation Office, Hualapai Tribe, Peach Springs, AZ
Director, Apache Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Yavapai Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Zuni Heritage and Historic Preservation Office, Zuni, NM
Environmental Specialist, Environmental Services, Western Regional Office, Bureau of Indian Affairs, Phoenix, AZ

cc (electronic):
District Ranger, Williams Ranger District, Kaibab National Forest, Williams AZ
Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff AZ (Attn: Shaula Hedwall)
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix AZ
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ

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