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U.S. Fish and Wildlife Service  
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AESO/SE  
02-21-04-M-0383

July 26, 2005

Mr. Gene Blankenbaker  
Forest Supervisor, Tonto National Forest  
2324 East McDowell Road  
Phoenix, Arizona 85006

Dear Mr. Blankenbaker:

Thank you for your request for formal emergency 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 for emergency consultation was dated September 1, 2004, and received by us on September 9, 2004. At issue are impacts associated with suppression and rehabilitation activities on the Webber Fire in Gila and Coconino counties, Arizona, on the Mexican spotted owl (*Strix occidentalis lucida*) (MSO). Your biological assessment and evaluation (BAE) concluded that the suppression and emergency rehabilitation actions likely adversely affected the Mexican spotted owl. You also concluded "no effect" to the Chiricahua leopard frog (*Rana chiricahuensis*). This species will not be addressed further.

This biological opinion is based on information provided in the August 2004 BAE, December 8, 2004, BAE Addendum (Additional Information Regarding Helicopter Water Drops), and telephone conversations between Ryan Gordon of my staff and Don Pollock of the Payson Ranger District on September 30, 2004, and October 6, 2004.

Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

#### Consultation History

The Webber Fire started on March 29, 2004, and was detected the same day from a Forest Service lookout tower when a considerable volume of smoke was observed.

- April 1, 2004: We received a telephone call from the Forest initiating emergency consultation.
- September 9, 2004: We received a September 1, 2004, letter requesting initiation of formal section 7 consultation and a final BAE.
- October 5, 2004: We acknowledged the receipt of the September 1, 2004, letter.
- May 11, 2005: Draft BO submitted to the Forest.
- July 14, 2005: We received a request from the Forest to finalize the BO.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE EMERGENCY ACTION**

#### Background and Action Area

The action area includes the area where the human-caused fire started, in the vicinity of Forest Trail #289 and Webber Creek, approximately one mile north of the Camp Geronimo Boy Scouts' Camp on the Payson Ranger District, Tonto National Forest and Mogollon Rim Ranger District, Coconino National Forest, Gila and Coconino counties, Arizona. The final size of the fire was determined to be 4,312 acres. Of that, 459 acres burned at moderate-severity and 240 acres burned at high-severity. The remaining 3,613 acres of the fire burned at low-severity or not at all. On April 2, 2004, the fire was successfully contained within the selected perimeter.

Refer to BAE and maps for locations of topographic features, suppression actions, and burn severity locations.

#### Suppression Activity and Timeline

March 29, 2004. The fire itself had burned approximately 600 acres after an easterly wind pushed the fire from the ignition source up a southeast-facing slope of the Mogollon Rim (Rim). That same day, suppression actions on the Tonto portion of the fire centered on line construction on the southern and eastern edges of the fire, in an attempt to protect Camp Geronimo, and to keep the fire west of Webber Creek.

Suppression actions on the Coconino portion of the fire largely consisted of burning out<sup>1</sup> along Forest Road (FR) 218 in advance of the fire, with the objective of keeping the fire out of Pine Canyon to the west. Burning conditions on the top of the Rim were much less severe than on the face, and the burn out tactic worked well. This tactic was successfully employed on top of the Rim throughout the duration of the incident. As the fire moved eastward, the burn out on top of

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<sup>1</sup> Burn out: setting fire inside a control line to consume fuel between the edge of the fire and the control line (NWCG 1996).

the Rim moved ahead of it, following FR 218 to FR 300 to FR 6107 to the edge of the Rim (Map 1).

March 30, 2004. The winds returned to a more typical southwest direction, moving the fire in an easterly direction along the face of the Rim. A decision was made to stop the fire at the Bray Fire Scar, which was the result of a hot crown fire that burned in 1990, approximately two miles east of Webber Creek. The Bray Fire area would be a control point on the east, with existing roads and trails providing control lines on most of the rest of the fire.

March 31, 2004. Control lines surrounding the fire were in place and a decision to implement the burn out strategy was prepared. In an attempt to minimize crowning and habitat loss on the face of the Rim, a helicopter utilized a strip firing<sup>2</sup> method. Strip firing was administered by first lighting a strip high on the face of the Rim and then laying subsequent strips of fire, each a little lower on the face. After steeper portions of the face of the Rim were so treated, hand crews finished the burn out operation by lighting from the control lines<sup>3</sup> at the bottom of the slope.

Aerial retardant application including water drops occurred on the fire. The vast majority of this was plain water dipped from two locations. During the initial attack phase of the fire, a light helicopter dipped water from Potato Lake for use in suppression of the fire. Approximately one dozen dips (about one minute each) occurred at this location. At the second location, a heavy helicopter dipped water from General Springs Surge Tank located approximately eight miles east northeast of the Webber Fire on top of the Mogollon Rim above General Springs Canyon (see Map 2). The heavy helicopter was capable of carrying up to 2,000 gallons (16,000 pounds) of water per trip. Water drops were done as needed for three days (March 31 – April 2) during the afternoon hours. Most of this water was dropped near the fire lines in support of burn out operations. The number of water drops made on the fire is not known; however, approximately 20 drops per day were completed.

On the evening of April 2, 2004, a strong rainstorm saturated the fire, extinguishing burning material within the existing fire containment boundary.

### Rehabilitation

Suppression rehabilitation (the repair of damaged resources resulting from wildfire suppression actions) efforts began even before the fire was controlled, but continued in earnest when the rains came. Water bars were constructed on all hand lines. Shortly after containment, all dozer lines also had water bars constructed and were seeded with a native grass mix. Suppression rehabilitation also included the placement of over 100 sediment logs (18"x10' rolls of aspen shavings) on the severely burned slope adjacent to the Camp Geronimo.

A Burned Area Emergency Response (BAER) team completed additional rehabilitation efforts on May 14, 2004, immediately after the fire. Under the BAER plan, aerial seeding occurred on approximately 600 acres at a rate of 10 lbs. per acre. The seeding was concentrated on the high-

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<sup>2</sup> Strip firing: setting fire to more than one strip of fuel and providing for the strips to burn together (NWCG 1996).

<sup>3</sup> Control line: an inclusive term for all constructed or natural barriers and treated fire edges used to control a fire (NWCG 1996).

and moderate-severity burn areas. Aerial mulching occurred on 30-40 acres near the Camp Geronimo water tower with 60 tons of certified weed-free straw. In addition, crews removed floatable debris from 1.5 miles of stream channel above the scout camp on Webber Creek and an unnamed tributary issuing from the high-severity burn area.

Equipment and resources assigned to the Webber Fire for suppression and rehabilitation actions included: one single engine air tanker (SEAT), one fixed wing aircraft (air attack), one heavy helicopter, two light helicopters, two dozers, 14 engines, four water tenders, one Type I hand crew, and 10 Type II hand crews. The base camp was established just north of Payson at the Houston Mesa Campground. A spike camp was maintained at Camp Geronimo, where most of the hand crews rested. No night shift operations were conducted due to safety concerns.

## **STATUS OF THE SPECIES**

The Fish and Wildlife Service listed the MSO as a threatened species in 1993 (USDI 1993), and designated critical habitat on August 31, 2004. The Webber Fire occurred before critical habitat became effective; therefore, a discussion of effects to MSO critical habitat is not included in this BO. The primary threats to the species were cited as even-aged timber harvest and catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The Fish and Wildlife Service appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USDI 1995).

The Final Rule listing the MSO as a threatened species (USDI 1993) and the Recovery Plan (USDI 1995) include detailed accounts of the taxonomy and biology of the MSO. The information provided in those documents is included herein by reference. The reproductive biology of MSO in Arizona begins with courtship in March, with eggs laid in late March, or, more typically, early April. The incubation period is performed entirely by the female and typically lasts for 30 days. The male performs all foraging during this period; the female will only leave the nest to defecate, regurgitate pellets, or receive prey from the male. After the eggs hatch, the female broods the young for the first couple of weeks. The female will then begin leaving the nest at night to hunt, leaving the owlets unattended for up to several hours. About four to five weeks after hatching, owlets will fledge. The above reproductive chronology is found in the Recovery Plan (USDI 1995); additional reproductive information is also found in the Final Rule (USDI 1993).

Although the MSO's entire range covers a broad area of the southwestern United States and Mexico, the MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed 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 U.S. range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The primary administrator of lands supporting the MSO in the United States is the Forest Service. Most owls have been found within Forest Service Region 3 (including 11

National Forests in Arizona and New Mexico). Forest Service Regions 2 and 4 (including two National Forests in Colorado and three in Utah) support fewer owls. According to the Recovery Plan, 91 percent of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the Forest Service.

The proposed action is within the Upper Gila Mountains RU. The Upper Gila Mountains RU is a relatively narrow band bounded on the north by the Colorado Plateau RU and to the south by the Basin and Range-West RU. The southern boundary of this RU includes the drainages below the Mogollon Rim in central and eastern Arizona. The eastern boundary extends to the Black, Mimbres, San Mateo, and Magdalena mountain ranges of New Mexico. The northern and western boundaries extend to the San Francisco Peaks and Bill Williams Mountain north and west of Flagstaff, Arizona. This is a topographically complex area consisting of steep foothills and high plateaus dissected by deep, forested drainages. This RU can be considered a "transition zone" because it is an interface between two major biotic regions: the Colorado Plateau and Basin and Range Provinces (Wilson 1969). The Kaibab, Coconino, Apache-Sitgreaves, Tonto, Cibola, and Gila National Forests administer most habitat within this RU. The north half of the Fort Apache and northeastern corner of the San Carlos Indian reservations are located in the center of this RU and also support MSO.

The Upper Gila Mountains RU consists of pinyon/juniper woodland, ponderosa pine/mixed conifer forest, some spruce/fir forest, and deciduous riparian forest in mid- and lower-elevation canyon habitat. Climate is characterized by cold winters and over half the precipitation falls during the growing season. Much of the mature stand component on the gentle slopes surrounding the canyons had been partially or completely harvested prior to the species' listing as threatened in 1993; however, MSO nesting habitat remains in steeper areas. MSO are widely distributed and use a variety of habitats within this RU. Owls most commonly nest and roost in mixed-conifer forests dominated by Douglas fir and/or white fir, and canyons with varying degrees of forest cover (Ganey and Balda 1989, USDI 1995). Owls also nest and roost in ponderosa pine-Gambel oak forest, where they are typically found in stands containing well-developed understories of Gambel oak (USDI 1995).

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 National Forest 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 owls in heavily used recreation areas are much more erratic in their movement patterns and behavior (Shaula Hedwall, U.S. Fish and Wildlife Service, Arizona, pers. comm., 2004). Fuels-reduction treatments, though critical to reducing the risk of catastrophic wildfire, can have short-term adverse effects to MSO through habitat modification and disturbance. As the human population grows, especially in Arizona, small communities within and adjacent to National Forest System lands are being developed. This trend may have detrimental effects to MSO 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 owls may be highly vulnerable to this disease. Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded individual birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. MSO habitat in the southwestern United States has been shaped over thousands of years by fire. Since MSO occupy a variety of habitats, the influence and role of fire has most likely varied throughout the owl's range. In 1994, at least 40,000 acres of nesting and roosting habitat were impacted to some degree by catastrophic fire in the Southwestern Region (Sheppard and Farnsworth 1995). Between 1991 and 1996, the Forest Service estimated that approximately 50,000 acres of owl habitat had undergone stand-replacing wildfires (G. Sheppard, Forest Service, Kaibab National Forest, Arizona, pers. comm.). However, since 1996, fire has become catastrophic on a landscape scale and has resulted in hundreds of thousands of acres of habitat lost to stand-replacing fires. This is thought to be a result of unnatural fuel loadings, past grazing and timber practices, and a century of fire suppression efforts. The 2002 Rodeo-Chediski fire, at 462,384 acres, burned through approximately 55 PACs on the Tonto and Apache-Sitgreaves National Forests and the White Mountain Apache Reservation. Of the 11,986 acres of PAC habitat that burned on National Forest lands, approximately 55% burned at moderate- to high-severity. Based on the fire severity maps for the fire perimeter, tribal and private lands likely burned in a similar fashion. We define moderate-severity burn as high scorch (trees burned may still have some needles) and high-severity burn as completely scorching all trees (trees completely dead).

Currently, catastrophic wildfire is probably the greatest threat to MSO within the Upper Gila Mountains RU. As throughout the West, fire intensity and size have been increasing within this geographic area. Table 1 shows several high-intensity fires that have had a large influence on MSO habitat in this RU in the last decade. The information in Table 1 is not a comprehensive analysis of fires in the Upper Gila Mountains RU or the effects to MSO. However, the information does illustrate the influence that stand-replacing fire has on MSO habitat in this RU. This list of fires alone estimates that approximately 11% of the PAC habitat within the RU suffered high-to moderate-intensity, stand-replacing fire in the last seven years.

**Table 1.** Some recent influential fires within the Upper Gila Mountains Recovery Unit, approximate acres burned, number of PACs affected, and PAC acres burned.

<b>Fire Name</b>	<b>Year</b>	<b>Total Acres Burned</b>	<b># PACs Affected</b>	<b># PAC Acres Burned</b>
Rhett Prescribed Natural Fire	1995	20,938	7	3,698
Pot	1996	5,834	4	1,225
Hochderffer	1996	16,580	1	190
BS Canyon	1998	7,000	13	4,046
Pumpkin	2000	13,158	4	1,486

Rodeo-Chediski	2002	462,384	55	~33,000
TOTAL		525,894	84	~43,645

A reliable estimate of the numbers of owls throughout its entire range is not currently available (USDI 1995) and the quality and quantity of information regarding numbers of MSO vary by source. USDI (1991) reported a total of 2,160 owls throughout the United States. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico. However, Ganey *et al.* (2000) estimates approximately  $2,950 \pm 1,067$  (SE) MSOs in the Upper Gila Mountains RU alone. The Forest Service Region 3 most recently reported a total of approximately 980 protected activity centers (PACs) established on National Forest lands in Arizona and New Mexico (USDA Forest Service, Southwestern Region, December 19, 2002). Based on this number of MSO sites, total numbers in the United States may range from 980 individuals, assuming each known site was occupied by a single MSO, to 1,960 individuals, assuming each known site was occupied by a pair of MSOs. The Forest Service Region 3 data are the most current compiled information available to us; however, survey efforts in areas other than National Forest System lands have likely resulted in additional sites being located in all Recovery Units. Currently, we estimate that there are likely 12 PACs in Colorado (not all currently designated) and 105 PACs in Utah.

Researchers studied MSO population dynamics on one study site in Arizona ( $n = 63$  territories) and one study site in New Mexico ( $n = 47$  territories) from 1991 through 2002. The initial publication of the findings reported that both study populations were declining at 10% a year and that owl survival rates in Arizona may be declining over time (Seamans *et al.* 1999). The authors noted that two possible reasons for the population decline were declines in habitat quality and regional trends in climate. The Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations," (*in press*) found that reproduction varied greatly over time, while survival varied little. The estimates of the population rate of change ( $\Lambda = \text{Lamda}$ ) indicated that the Arizona population was stable (mean  $\Lambda$  from 1993 to 2000 = 0.995; 95% Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6% (mean  $\Lambda$  from 1993 to 2000 = 0.937; 95% Confidence Interval = 0.895, 0.979). The study concludes that MSO populations could experience great (>20%) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to the high annual variation in recruitment, the MSO is likely very vulnerable to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

Since the owl was listed, we have completed or have in draft form a total of 152 formal consultations for the MSO and/or critical habitat. These formal consultations have identified incidences of anticipated incidental take of MSO in 337 PACs. The form of this incidental take is almost entirely harm or harassment. These consultations have primarily dealt with actions proposed by the Forest Service, Region 3. However, in addition to actions proposed by the Forest Service, Region 3, we have also reviewed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, National Park Service, and Federal Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including

prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military and sightseeing overflights, and other activities. Only two of these projects (release of site-specific owl location information and then-existing forest plans) have resulted in biological opinions that the proposed action would likely jeopardize the continued existence of the MSO.

In 1996, we issued a biological opinion on Region 3 of the Forest Service adoption of the Recovery Plan recommendations through an amendment to their Land and Resource Management Plans (LRMPs). In this non-jeopardy biological opinion, we anticipated that approximately 151 PACs would be affected by activities that would result in incidental take of MSOs, with approximately 91 of those PACs located in the Upper Gila Mountains RU. In addition, on January 17, 2003, we completed a reinitiation of the 1996 Forest Plan Amendments biological opinion, which anticipated the additional incidental take of five MSO PACs in Region 3 due to the rate of implementation of the grazing standards and guidelines, for a total of 156 PACs. Consultation on individual actions under these biological opinions resulted in the harm and harassment of approximately 243 PACs on Region 3 National Forest System Lands. Region 3 of the Forest Service reinitiated consultation on the LRMPs on April 8, 2004. On June 10, 2005, the FWS issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, take is reasonably certain to occur to an additional 10 percent of the known PACs on Forest Service lands. We expect that continued operation under the plans will result in harm to 49 PACs and harassment to another 49 PACs. To date, consultation on individual actions under the amended Forest Plans, as accounted for under the June 10, 2005, biological opinion has resulted in 5 PACs adversely affected (3 PACs harassed, 1 PAC harmed, and 1 PAC harmed and harassed ), with 5 of those in the Upper Gila Mountains RU.

## **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 within 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.

The Webber Fire was fueled by bug- and disease-killed conifers prevalent in the vicinity of the fire that contributed to the ability of this fire to burn rapidly. Pockets of dead trees most likely contributed to crowning in portions of the fire. As mentioned before, the fire burned approximately 600 acres on the first day (March 29) with most of the high-severity burns occurring at this time (approximately 240 acres), the additional acres burned at moderate-severity. The combination of low-severity and no-severity burn areas was estimated to be 3,613 acres. These acres were not separated by wildfire and suppression-burn acres because it is difficult to ground truth and distinguish between the two. Suppression actions contributed to the total 4,312 acres burned.

### **Status of the species within the action area**

At present, 12 PACs occur within the action area. Of those, six incurred impacts from suppression actions that likely affected MSO (Table 2). The entire boundaries of three MSO PACs (Poison Spring, Lee Johnson Spring, and Turkey Spring) and portions of three MSO PACs (Potato Lake, West Webber, and Aqueduct) exist in the action area and are described in detail below (Map 2). Six additional PACs [Immigrant (#040714), Miller Canyon (#040416), Kehl Ridge (#040424), East Chase Creek (#120412), Shadow Rim (#120408), and East Bray Creek (#120414)] between General Springs Surge Tank and the Webber Fire are located within the flight path flown by the heavy helicopter during suppression actions. These PACs were not likely affected by the action since they received only minimal disturbance from aircraft operations.

The establishment of PACs through the recommended guidelines in the Recovery Plan is retained through the life of the Plan even if MSO are not documented there in subsequent years (USDI 1995). Inconclusive monitoring surveys within PACs that are not conducted to protocol do not infer absence. Formal monitoring surveys may provide us with data that may prove otherwise; however, without those data or other significant changes on the landscape, we assume the habitat remains occupied.

The 603-acre Poison Spring PAC (#120420) was established in 1994, based on audio/visual confirmation of a pair at night. The PAC has been informally monitored every year since 1994 except for 1997 and 2000. A pair was confirmed in 1995 and singles confirmed in 1998 and 1999. Informal monitoring in 2001 and 2002 resulted in no response. No roost or nest was ever confirmed until 2003, when an active roost was located during monitoring surveys. Nesting was assumed based on owl behavior, but never confirmed. Approximately 200 acres of this PAC were within the December Wildfire (02-21-01-I-0083) in 2000. Because that fire occurred in December, disruption to owls was likely less severe than it would have been during the peak of the fire season, when juvenile owls may have been present. Nonetheless, stands of saplings and poles torched during the fire, and in many places ground fuels were completely consumed. Overstory trees were generally left intact, but much of the forest floor was burned clean. A visit to the PAC the following summer found that falling fire-killed trees and needles were already replenishing the dead/down component. Fuel loading was significantly reduced in the 200 acres of the December Fire. A total of 210 acres burned (moderate severity) in this PAC during the Webber Fire, including 105 acres burned as a result of the fire and 105 acres burned from suppression actions.

The 608-acre Lee Johnson Spring PAC (#120421) was established in 1995, based on audio/visual confirmation of a pair at night. This PAC is located on the northeast side of the fire. The PAC was informally monitored in 1996 and again in 2002, both with no responses. No roost or nest information has ever been confirmed, but surveys are inconclusive. Impacts from the fire included 63 acres of moderate-severity burn and an undetermined number of low-severity burn acres.

The 745-acre Turkey Spring PAC (#120424) was established in 2001, based on the discovery of a roosting pair during inventory surveys. The PAC was informally monitored in 2002 with no

response, but surveys are inconclusive. Burn areas within this PAC included a total of 31 acres burned at moderate-severity including 26 acres burned as a result of the fire itself and 5 acres burned from suppression actions.

The 689-acre Potato Lake PAC (#040413) on the Coconino National Forest was established in 1991, based on owl location information only. No roost or nest location was found. The PAC was last monitored in 1994 with negative results. No fire or burn out operations occurred in this PAC.

The 620-acre West Webber PAC (#120415) was established in 1994, based on the discovery of an adult pair and one fledgling during inventory surveys. The PAC was informally monitored since its discovery through 2002. Young were confirmed in 1995 (one MSO) and 1996 (two MSO), and a single male was confirmed in 1998. A nest tree has not been identified and but there is a confirmed roost site in the lower reach of a side drainage about a mile west of Camp Geronimo. No fire or burn out operations occurred in this PAC.

The Aqueduct PAC (#040734) on the Coconino National Forest was established in 1999, based on two daytime observations. The PAC was informally monitored in 2000, 2002, 2003, and 2004 (after the Webber Fire) with no responses. No fire or burn out operations occurred in this PAC.

The presence of adult MSO is assumed at the time of the fire in Poison Spring PAC, Lee Johnson Spring PAC, Turkey Spring PAC, West Webber PAC, Potato Lake PAC, and the Aqueduct PAC. Our assumptions are based on general stability in the area, the potential of adult survival to reach 16 years or more, high site fidelity of MSO once territories and home ranges have been established, and the potential recruitment of floaters into a territorial population (USDI 2004, 1995). As indicated in the Recovery Plan, the reproductive chronology of MSO varies somewhat across the range of the owl with courtship in Arizona beginning in March and with eggs laid in late March or, more typically, early April (USDI 1995).

## **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.

In addition to the direct loss of MSO nesting and roosting habitat caused by the wildfire, fire suppression actions may have also resulted in some habitat loss. In most cases it is difficult to differentiate the effects caused by wildfire and those caused by suppression actions. However, since the author of the BAE served as Resource Advisor to the Incident Management Team, many of the suppression actions were easily identified and separated from the wildfire itself (see Map 1). The fire and suppression activities occurred between March 29<sup>th</sup> and April 2<sup>nd</sup> during the critical nesting/incubation period (March/April). Suppression actions below the Rim likely created hazardous conditions to nesting females and foraging males and may have reduced or eliminated prey delivery to the nesting females, possibly resulting in abandonment of the nests and eggs. Without the actions implemented to suppress the fire, additional resources may have

been lost including PACs, Camp Geronimo Boy Scout Camp, and private property. It is probable that the suppression activities prevented significant MSO habitat modifications, some of which would have been detrimental. Table 2 below summarizes the direct and indirect effects that likely resulted from the emergency suppression actions within each PAC.

#### Ground Suppression/Rehabilitation Operations

- Burn out and backfire operations conducted in Poison Spring and Turkey Spring PAC resulted in the loss of key habitat components through the application of fire, and may have contributed to general disturbance and smoke inhalation (see Table 2). See Map 1 for the location and directional arrows of burn out and backfire operations from control lines within Poison Spring and Turkey Spring PAC.

Despite efforts to minimize fire intensity through burn out operations in Poison Spring PAC (120420), moderate-severity burning occurred in the drainage west of Poison Canyon, including the location of the known roost. Within this area, the burn out was hot enough to torch some stands of trees but still retain a significant canopy. Map 1 shows 105 acres of moderate-severity burn in the Poison Spring PAC that occurred from a combination of ground (burn out/backfire) and aerial (aerial strip firing) operations. The combination of these actions within Poison Spring PAC may have injured or prevented adult MSO from abandoning the area safely.

Burn out and backfire operations in Turkey Spring PAC (120424) occurred on a north-facing slope. The fire-intensity and burn-severity initiated from the control line (see directional arrows in Map 1) was relatively low and decreased in intensity and severity as the fire moved farther north from the control line. The known roost area and most of the West Webber Creek drainage sustained low-severity burning or did not burn at all. During the burnout and backfire operations approximately 5 acres of moderate-severity burn occurred north and adjacent to the control line from those operations. Depending on the proximity of these actions to actual nest or roost locations, it is possible that adult MSO within Turkey Spring PAC may have abandoned the area during burn out and backfire operations.

The burn out operations from control lines above and below the rim served as a containment<sup>4</sup> boundary for the Webber Fire. The containment boundary surrounded the northern and western boundaries of Turkey Spring PAC, the northern and eastern boundaries of Poison Spring PAC, and all of Lee Johnson Spring PAC; in addition to all of the roost locations and audio/visual locations within each PAC (see Map 1). These actions were performed for the duration of the incident. The combination of fire from burn out operations moving toward the interior of the containment boundary (from all directions) and smoke inundation in the air may have prevented adult MSO from abandoning the area safely.

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<sup>4</sup> Containment: Completion of a control line around a fire and any associated spot fires which can reasonably be expected to stop the fire's spread (NWCG 1996).

- Hand lines were conducted in Lee Johnson Spring PAC (~1/2 mile) and Turkey Spring PAC (~3/4 mile), and both hand lines and dozer operations were conducted in Poison Spring PAC (~1 mile hand line and ~1/4 mile dozer line). Hand lines and dozer lines are the initial step required for the preparation of burn out and backfire operations. These operations resulted in the removal of all vegetation within the footprint of the impact area, including a wide range of live trees, and dead and down woody debris. The acres of estimated impacts are not available, but miles were estimated from Map 1. These operations contributed to noise and general disturbance from equipment and personnel operations.
- Suppression rehabilitation efforts started before the fire was controlled. These operations were conducted in Poison Spring and Turkey Spring PACs and contributed to noise and general disturbance from equipment and personnel operations. Water bars were constructed on all hand lines. All dozer lines also had water bars constructed and were seeded with a native grass mix. Acres of estimated impacts are not available.

#### Aerial Suppression/Rehabilitation Operations

- Aerial strip firing operations conducted in Poison Spring PAC (see Map 1 for location) resulted in the removal of key habitat components through the application of fire and potentially contributed to smoke inhalation and noise disturbance from helicopters.
- Aerial suppression operations conducted in Poison Spring and Turkey Spring PACs contributed to noise disturbance from aircraft and may have impacted MSO through injury by water or retardant drops if nest or roosts received direct hits. The number of water drops in Poison Spring and Turkey Spring PAC is unknown; however, most of the estimated 72 water drops were completed near control lines (hand and dozer) in support of burn out operations. The number of aerial retardant applications are unknown within these two PACs.
- Aerial water drafting operations from Potato Lake (~12 trips) located in Potato Lake PAC resulted in noise disturbance in the center of the PAC, approximately 1/4 mile from the known activity center, and potentially flushed nesting MSO. Aerial water drafting operations conducted at General Springs Surge Tank (~60 trips) outside the Aqueduct PAC boundary (Map 2) contributed to noise disturbance and could have flushed nesting MSO. The helicopter approach and departure routes were located along the edge of the western boundary of Aqueduct PAC, approximately 1/4 mile from the known activity center. The number of trips and time spent drafting water out of General Springs Surge Tank also resulted in noise disturbance within Aqueduct PAC. All other PACs (Immigrant, Miller Canyon, Kehl Ridge, East Chase Creek, Shadow Rim, and East Bray Creek) between the Webber Fire and the General Spring Surge Tank dip site were not likely affected by noise disturbance due to the higher altitude flown above the PACs (approximately 660 feet to well over 1,000 foot above ground level). Research conducted by Delaney *et al.* (1999) found that helicopter flights greater than 344 feet from nesting MSO (after young owls fledged) did not flush the birds from the nest site. Management recommendations from Delaney *et al.* (1999) indicate a 344-foot radius,

hemispherical, management/protection zone would minimize, and possibly eliminate, MSO flush response to helicopter overflights.

- Aerial seeding operations (performed under the BAER plan) conducted in Poison Spring, Lee Johnson Spring, and Turkey Spring PACs started immediately after the fire was controlled and continued through May 14, 2004. Aerial seeding occurred on approximately 600 acres. The seeding was concentrated on the high- and moderate-burn severity areas (see Map 1 for locations). Only moderate-severity burns were documented within the Poison Spring, Lee Johnson Spring, and Turkey Spring PACs. Moderate-severity burning within these areas consumed litter, duff, foliage, and twigs and may have torched some stands within these PACs; however, a significant amount of canopy still remains. It is possible that the owls left the area during the fire, given the intensity. If adult MSO stayed through the duration of the fire and/or returned after the fire was controlled, seeding operation may have contributed to noise disturbance from helicopters, and may have impacted MSO through seed drops if nest or roosts received direct hits.

#### Summary of Effects from Ground and Aerial Suppression/Rehabilitation Actions

Twelve PACs are identified within the action area; six of those PACs (Poison Spring, Lee Johnson Spring, Turkey Spring, West Webber, Potato Lake, and Aqueduct) are identified to have adverse effects as a result of ground and aerial suppression/rehabilitation actions.

- Direct impacts from aerial operations may have affected MSO in Poison Spring, Lee Johnson Spring, and Turkey Spring PACs through injury by water or retardant drops and through harassment by seed if nests or roosts received direct hits. These impacts may have included failed reproductive efforts, abandonment of the nest, or may have been limited to temporary disturbance. Areas most likely affected by these operations are control/hand/bulldozer lines and locations of moderate- and high-severity fire within the PACs shown in Map 1.
- Intentional Habitat Removal from hand and dozer lines (including removal of large trees), and burn out/backfire and aerial strip firing operations may have lead to the loss of these large trees as nest and/or roost sites, and may have included microhabitat alteration and increased edge effects along fire lines in Poison Spring and Turkey Spring PACs. The total acres of habitat removed are not available.
- Smoke likely impacted MSO in Poison Spring, Lee Johnson Spring, and Turkey Spring PACs and may have impacted MSO in Potato Lake PAC and West Webber PAC (identified in Table 2) as a result of indirect effects from burn out, backfire, and aerial strip firing located throughout the Webber Fire containment boundary. Burn out operations conducted from FR 218 in advance of the fire accompanied an easterly wind on March 29, and likely moved smoke in the direction of the Potato Lake PAC. The wind direction changed course after the first day, likely moving the smoke southwest toward West Webber PAC. Information on the duration or intensity of smoke within each PAC is not available.

- Fire associated with burn out, backfire, and aerial strip firing may have injured or killed MSO nesting or roosting in the area of application or within the directional path of the applied fire in Poison Spring PAC. Approximately 105 acres of this PAC were burned at moderate-severity through the middle of the PAC. Fire associated with burn out, backfire, and aerial strip firing operations may have injured or killed MSO nesting or roosting in the area of application or within the directional path of the applied fire in Turkey Spring PAC. Although only 5 acres were moderately burned from burn out operations the location of the burn out occurred in the middle of the PAC and was directed toward the known roost location. Death of or injury to MSO as a result of these actions within Poison Spring PAC and/or Turkey Spring PAC is reasonably certain to have occurred due to the moderate-severity nature of suppression actions, the timing of suppression actions associated with the MSO breeding season, and the recorded roost locations within the direct path of the applied fire (Map 1).
- Noise likely impacted MSO from hand crews, chainsaws, and dozers on the ground and helicopters and other aircraft conducting operations within Poison Spring, Lee Johnson Spring, Turkey Spring, and Potato Lake PACs. Although less certain noise may have impacted MSO in West Webber PAC from aircraft flights within the vicinity of the PAC and may have impacted MSO in Aqueduct PAC from helicopter approach and departure routes (within and outside of the PAC) and water drafting from General Springs Surge Tank (adjacent to the PAC).

Table 2. Suppression/Rehabilitation actions and associated effects within each PAC in the action area.

	Suppression Rehabilitation Action	Poison Spring	Lee Johnson Spring	Turkey Spring	Potato Lake	West Webber	Aqueduct	Immigrant	Miller Canyon	Kehl Ridge	East Chase Creek	Shadow Rim	East Bray Creek
Ground Suppression Rehabilitation Operations	Burn out/ Backfire	105 acres		5 acres									
	Hand Line	~1-mile	~1/2-mile	~3/4-mile									
	Dozer	~1/4 mile											
	Rehabilitation	Water bars and seeding		Water bars									
Aerial Suppression Rehabilitation Operations	Aerial Strip Firing	105 acres											
	Aerial Suppression	Water and retardant		Water and retardant									
	Aerial Water Drafting				~12 water dips in the center of PAC		~60 water dips outside of PAC						
	Aerial Seeding	105-acre burn area	63 acre wildfire burn area	5 acres suppression 26 acres wildfire									
Effects From Ground/Aerial Suppression Rehabilitation Actions	Direct Impact from Aerial Operation	Water, retardant, and Seed	Seed	Water, retardant, and Seed									
	Habitat Removal	105-acres burned, hand line and dozer line	Hand line	5 acres burned and hand line									
	Smoke	All Fire Operations	All Fire Operations	All Fire Operations	Possible Impacts – All Fire Operations	Possible Impacts – All Fire Operations							
	Fire	Air and Ground operations.		Ground Operations									
	Noise	Likely - Air and Ground Operations	Likely - Air and Ground Operations	Likely - Air and Ground Operations	Likely - Air and Ground Operations	May Have Impacts - Aircraft	May Have Impacts - Aircraft	Minimal Disturbance – From Aircraft Operations					

Table 3 displays the moderate- and high-severity burn acreage in each PAC affected by fire and also shows how much of the moderate-severity burn in each PAC was the result of burn out and backfire operations. Low-severity burn acreage is not available due to the inability to differentiate and accurately ground truth the low- and moderate-severity burn areas. Potato Lake PAC, Aqueduct PAC, and West Webber PAC were not included in this table because the wildfire, a burn out, backfire, and aerial strip firing operations did not occur within these PACs.

Table 3. Burn Severity in PACs on the Webber Fire.

<b>PAC</b>	<b>Total Acres Within Fire Boundary</b>	<b>Total Acres of Moderate Severity Burn</b>	<b>Acres of Moderate Severity Burn from Burn out Operations</b>
Poison Spring	320	105	105
Lee Johnson Spring	608	63	0
Turkey Spring	463	26	5

## **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. Unregulated grazing by elk will continue in the action area and could impede vegetation recovery and soil stability to some extent. Since the action occurred on Forest Service land, most actions that would occur in the action area would require additional section 7 consultation.

## **CONCLUSION**

After reviewing the current status of Mexican spotted owl, the environmental baseline for the action area, the effects of the emergency action and the cumulative effects, it is the FWS's biological opinion that the emergency action did not likely jeopardize the continued existence of the Mexican spotted owl. We present these conclusions for the following reasons:

1. As reported in the BAE and information from conversations with your staff, a total of 12 PACs are located within the action area. Of those 12 PACs, suppression/rehabilitation actions and associated effects likely resulted in short-term disturbance in four PACs, and two PACs likely received minimal noise and smoke disturbances.

The viability of the sites for MSO is likely to remain intact. The long-term benefits from these suppression actions likely prevented further habitat destruction from continuing along the Mogollon Rim.

2. Suppression actions likely caused short-term disturbance to Lee Johnson PAC and likely impacted long-term recovery through habitat removal by hand line construction (~1/2 mile-long) including the complete removal of vegetation through the center of the PAC.

Absence of these actions would likely have resulted in more severe impacts to the species.

3. Suppression actions likely caused short-term disturbance to Poison Spring PAC and likely impacted long-term habitat recovery through habitat removal by hand line (~1 mile-long) and bulldozer line (~1/4 mile-long) construction, including the complete removal of vegetation; and partial vegetation destruction from applied fire operations (aerial strip lighting and burn out operations that moderately burned 105 acres) throughout portions of the PAC. Absence of these actions would likely have resulted in more severe impacts to the species.
4. Suppression actions likely caused short-term disturbance to Turkey Spring PAC and likely impacted long-term habitat recovery through habitat removal by hand line construction (~3/4 mile-long) including the complete removal of vegetation and partial vegetation destruction from applied fire operations (burn out operations that moderately burned five acres) throughout portions of this PAC. Absence of these actions would likely have resulted in more severe impacts to the species.
5. Suppression actions likely caused short-term disturbance from aerial water drafting in the center of Potato Lake PAC. Absence of these actions would likely have resulted in more severe impacts to the species. Additional indirect effects likely included smoke from aerial suppression/rehabilitation operations outside of the boundary of Potato Lake PAC. The impacts from smoke are believed to be minimal.
6. Adverse effects to West Webber PAC and Aqueduct PAC included aerial water drafting operations and indirect effects (noise and smoke) from aerial suppression/rehabilitation operations outside the boundary of West Webber PAC and Aqueduct PAC. These effects are believed to have been minimal and did not result in incidental take.
7. The other six PACs (Immigrant, Miller Canyon, Kehl Ridge, East Chase Creek, Shadow Rim, and East Bray Creek) may have received minimal disturbance through noise from aerial flight operations but were not directly affected by suppression activities.

### **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 the 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 MSO from the action under consultation, incidental take can be anticipated as either the direct mortality or injury of individual birds, or the alteration of habitat that affects behavior (i.e. breeding or foraging) of birds to such a degree that the birds are considered lost as viable members of the population. They may fail to breed, fail to successfully rear young, raise less-fit young, or desert the area because of disturbance or because habitat no longer meets their needs.

Using the best available data as summarized within this document, we have identified conditions which were reasonably certain to have resulted in incidental take of MSOs associated with suppression activity in four of the twelve PACs identified within the action area (Poison Spring PAC, Lee Johnson PAC, Turkey Spring PAC, and Potato Lake PAC). Although it is likely that adverse effects to these PACs resulted from the suppression/rehabilitation actions and the wildfire itself, it is the effects of the suppression/rehabilitation actions which must be addressed in this emergency consultation. Even though take occurred, we recognize the suppression activities as necessary and beneficial as they likely prevented further loss to the species and/or helped to restore key habitat components. Based on the best available information concerning the MSO, habitat needs of the species, and the project description and other information furnished by the Forest Service, take is reasonably certain to have occurred in four of 12 MSO PACs.

### **Amount or Extent of Take Anticipated**

1. The combination of direct impacts from aerial operations dropping water retardant and seed from above; the direct impacts of habitat removal from ground suppression operations (hand line and dozer); the direct effects of fire (burn out, backfire, and aerial strip firing) and indirect effects including smoke; and noise associated with all ground and aerial suppression/rehabilitation operations likely resulted in injury, harassment, or harm in the Poison Spring PAC.
2. The combination of direct impacts from aerial operations dropping seed from above; the direct impacts of habitat removal from ground suppression operations (hand line); the smoke from burn out/backfire and aerial strip firing surrounding the area; and noise associated with all ground and aerial suppression/rehabilitation operations likely resulted in harassment primarily from disturbance in the Lee Johnson Spring PAC.
3. The combination of direct impacts from aerial operations dropping water retardant and seed from above; the direct impacts of habitat removal from ground suppression operations (hand line); the direct effects of fire (burn out/backfire operations) and indirect effects including smoke; and noise associated with all ground and aerial suppression/rehabilitation operations likely resulted in harassment primarily from disturbance in the Turkey Spring PAC.

4. The effect of smoke from fire (burn out/backfire and aerial strip firing) and the direct effect of noise associated with helicopter water dips from Potato Lake and the number of aerial water drafting trips performed (~12 trips) likely resulted in harassment within the Potato Lake PAC.
5. Adverse effects to West Webber PAC and Aqueduct PAC included noise from ground and aerial suppression/rehabilitation operations. These effects are believed to be minimal and it is not reasonably certain that these adverse effects resulted in incidental take.

### **Effect of the Take**

In this biological opinion, we determined that this level of anticipated take did not likely result in jeopardy to the MSO.

Incidental take statements in emergency consultations do not include reasonable and prudent measures or terms and conditions to minimize take unless the agency has an on-going action related to the emergency (U.S. Fish and Wildlife Service 1998). The Forest Service has not advised us of any on-going actions related to the emergency.

The Fish and Wildlife Service 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. Sections 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. Sections 668-668d).

### **DISPOSITION OF DEAD, INJURED, OR SICK MSO**

Upon locating a dead, injured, or sick MSO, initial notification must be made to the Service's Law Enforcement Office, 2450 West Broadway 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 should 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 specimens to preserve the biological material in the best possible state. If possible, the remains of intact owl(s) shall be provided to this office. If the remains of the owl(s) are not intact or are not collected, the information noted above shall be obtained and the carcass left in place. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should the treated owl(s) survive, the AESO should be contacted regarding the final disposition of the animal.

### **CONSERVATION RECOMMENDATIONS**

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

1. We recommend that the Poison Spring PAC, Lee Johnson Spring PAC, and Turkey Spring PAC be monitored annually for at least five years and that the results of the monitoring be provided to us.
2. We recommend that the Forest Service pursue monitoring and research opportunities to determine short- and long-term effects to, and recovery of, MSO habitat from the wildfire, and particularly in relation to future site occupancy.
3. We recommend that the Forest Service continue to involve the expertise of a resource specialist immediately following the initiation of a wildfire to aid in the protection of listed species and their habitat.

In order to keep us informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitat, we request notification of the implementation of any conservation recommendations.

### **REINITIATION - CLOSING STATEMENT**

This concludes formal consultation on the action outlined in this biological opinion. As provided in 50 CFR Section 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 that was 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.

We appreciate your consideration of the threatened Mexican spotted owl. For further information, please contact Ryan Gordon (602) 242-0210 (x225) or Debra Bills (x239). Please refer to the consultation number 02-21-04-M-0383 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)  
District Ranger, Payson Ranger District, Payson, AZ  
District Ranger, Mogollon Rim Ranger District, Coconino National Forest, Happy Jack, AZ

Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ  
Bob Broscheid, Arizona Game and Fish Department, Phoenix, AZ

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