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In Reply Refer To:
AESO/SE
02-21-04-M-0287

November 3, 2005

Ms. Jeanine Derby
Forest Supervisor
Coronado National Forest
300 West Congress, 6th Floor
Tucson, Arizona 85701

Dear Ms. Derby:

This letter constitutes our biological opinion, based on our review of the wildfire suppression actions associated with the Sunnyside Fire located on the Coronado National Forest, Cochise County, Arizona. This biological opinion analyzes the project's effect on the Mexican spotted owl (*Strix occidentalis lucida*, MSO) and its associated critical habitat in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). We received your February 23, 2005, request for formal consultation on February 28, 2005. In that request, you determined that suppression activities associated with the Sunnyside Fire likely adversely affected MSO and associated critical habitat. You also requested our concurrence that suppression activities may have affected, but did not likely adversely affect, the lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*, LLNB) and Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*, HWU). Our concurrences are provided in Appendix A.

This biological opinion (BO) is based on information provided in the January 31, 2005, biological assessment (BA), discussions with your staff, and information in our files. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, wildfire suppression and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office. This consultation is being conducted in accordance with emergency consultation procedures (50 CFR 402.05).

CONSULTATION HISTORY

- June 17, 2004: We received a Forest Service phone call requesting initiation of emergency consultation.
- July 1, 2004: We visited Bear Canyon and the Sunnyside Fire area to review effects to MSO and its critical habitat.
- February 28, 2005: We received the January 31, 2005 BA.

-September 22, 2005: Date of draft biological opinion.

-November 2, 2005: We received comments on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE EMERGENCY ACTION

The fire started on the afternoon of June 15, 2004, in Bear Canyon in the Huachuca Mountains. Initial attack on the fire occurred that same afternoon and consisted of two retardant drops from MAFFS C-130 air tankers (tankers) and from five or six single engine air tankers (SEATs). Several water bucket drops from helicopters were also used.

At its peak, between 50 and 60 personnel were assigned to the fire. Two helibases were established during suppression efforts. The fire was considered 100 percent contained the next afternoon on June 16, 2004, and personnel and equipment were released that afternoon.

Vegetation within the burn included Madrean oak woodland, ponderosa pine forest, and mixed coniferous forest. Elevations ranged from 7,600 to 7,750 feet. All aspects were involved, and slopes ranged from 20 to 100 percent.

No emergency rehabilitation plan was developed based on the small size of the fire (less than five acres) and limited fire intensity. No acreage is available for fire intensity by affected vegetation type; however, it was estimated that 75 percent of the fire burned with low severity and 25 percent burned at moderate severity. A map of the fire location, along with other details, can be found with the January 2005 Forest Service BA.

Actions

The fire line was worked with retardant, water buckets, and hand crews. The fire line was less than one mile in length and consisted of a 2-foot wide line that was scraped to mineral soil. Vegetation that could fall over the line or encourage fire escape was cut using power saws and hand tools. Trenches were also constructed to catch rolling hot materials and keep them within the fire perimeter. Fire-retardant drops during initial attack included approximately 2,500 gallons per drop from the tankers (two drops), approximately 250 gallons of retardant per drop from the SEATs (five to six drops), and approximately 200 gallons of water per drop from the water-bucket drops.

Water used for suppression was taken from Parker Canyon Lake or off-site wells. No drafting from stock ponds or streams in the area occurred. Two helispots were constructed, one along the dividing ridge between Bear and Ida canyons and the other along Forest Road 61 over two miles from the fire. The helispot along Forest Road 61 was established for loading and off-loading crews and equipment. A 1,000 to 2,000 gallon portable water tank was set up in the immediate area of the helispot and vehicles were also parked at this site. Trees and shrubs in a 150-foot

diameter were cut to facilitate use by helicopters at the dip site and helibase. Due to the short time of suppression actions and quick containment of the fire, no formal fire camp was established. The helispot established within the Miller Peak Wilderness, between Bear and Ida canyons, was approximately one-quarter of a mile southeast of the fire to facilitate firefighter movement to and from the fire. In general, vegetation above ground level at this site was cleared in an approximately 100-foot diameter area. At least three alligator juniper trees approximately 12 inches in diameter at breast height (dbh) as well as smaller trees were cut to make the helispot.

No emergency rehabilitation plan was developed based on the small size and limited fire intensity and resulting burn severity. Rehabilitation efforts included constructing water bars along steep portions of the fire lines to reduce soil loss, and mulching and scattering cut materials at the helibase along Forest Road 61 on-site to help reduce erosion potential.

CONSERVATION MEASURES

Discussions with the Forest Service biologist after the fire indicated the following conservation measures were initiated during fire suppression activities:

1. A Resource Advisor was assigned to the fire on the first day.
2. Guidelines developed for stock pond management in Sonora tiger salamander habitat during fire emergencies (Attachment 2 of the Salamander Recovery Plan) were followed.
3. Fire crews used established trails to hike out of the fire area to avoid hiking through HWU critical habitat or occupied HWU sites and to minimize effects to MSO and associated critical habitat.

STATUS OF THE SPECIES

MEXICAN SPOTTED OWL

The Mexican spotted owl was listed as a threatened species in 1993 (U.S. Department of the Interior 1993). The primary threats to the species were cited as even-aged timber harvest and the threat of catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. We appointed the MSO Recovery Team in 1993, which produced the MSO Recovery Plan in 1995 (U.S. Department of the Interior 1995). A revision of the Recovery Plan is currently in preparation.

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (U.S. Department of the Interior 1993) and in the Recovery Plan (U.S. Department of the Interior 1995). The information provided in those documents is included herein by reference. The MSO 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, well-

structured 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. A reliable estimate of the numbers of owls throughout its entire range is not currently available (U.S. Department of the Interior 1995) and the quality and quantity of information regarding numbers of MSO vary by source. U.S. Department of the Interior (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) estimated approximately 2,950 ($\approx 1,067$ (SE)) MSOs in the Upper Gila Mountains RU alone. The Forest Service Region 3 most recently reported a total of approximately 989 protected activity centers (PACs) established on National Forest lands in Arizona and New Mexico (U.S. Department of the Interior, Fish and Wildlife Service 2005). 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 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 estimates of the population rate of change ($\Lambda = \text{Lamda}$) indicated that the Arizona population was nearly stable (mean Λ from 1993 to 2000 = 0.995; 95 percent Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6 percent (mean Λ from 1993 to 2000 = 0.937; 95 percent Confidence Interval = 0.895, 0.979). The study concludes that MSO populations could experience great (>20 percent) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to that variation, the MSO is then likely very vulnerable to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

The current condition of MSO habitat within Arizona and New Mexico is a result of historical and recent human use, as well as climate change, vegetation species conversion, and wildfires. 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. Recreational impacts are increasing on all forests, especially in meadow and riparian areas. 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 human populations grow, 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 vegetation types, 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 underwent 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 (within the Upper Gila Recovery Unit). Of the 11,986 acres of PAC habitat that burned on National Forest lands, approximately 55 percent 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.

The Basin and Range West RU, which includes the action area, encompasses a small portion of New Mexico and the majority of southern Arizona and is the second largest RU in the United States. The northern border of this RU is defined by the base of the Mogollon Rim. The western boundary defines the western extent of the MSO's range. Land ownership within this RU is a mosaic of public and private lands, with the MSO primarily occupying Forest Service lands. The Forest Service has designated 154 PACs on the Coronado, Tonto, Prescott, and Apache-Sitgreaves National Forests.

The RU is characterized by numerous mountain ranges which rise abruptly from the broad, plain-like valleys and basins. In southern Arizona, these mountain ranges are often referred to as Sky Islands. Vegetation ranges from desert scrubland and semi-desert grassland in the valleys upwards to montane forests (chaparral and pine-oak woodlands at low and middle elevations and ponderosa pine, mixed-conifer, and spruce-fir forests at higher elevations). Within the Sky Islands, MSO habitat is characterized by woodland habitat and territories in both heavily forested terrain and in areas with hardwood and conifer stringers dominated by Madrean evergreen woodland. In general, however, much of the MSO habitat occurs in forested, steep-slope canyons and drainages. Outside of the Sky Islands of southeastern Arizona and Southwestern New Mexico, the mature trees throughout much of the forest outside of these canyons and drainages have been partially or completely harvested.

The primary threats to MSO within this RU are catastrophic wildfire, recreation, and livestock grazing (U.S. Department of the Interior 1995). As in the Upper Gila Mountain RU, this area has experienced multiple wildfires that have influenced MSO habitat. The Clark Peak, Gibson Canyon, Miller, Noon, Rattlesnake, Shovel, Bullock, and Oversight fires burned at varying

intensities throughout MSO PACs on the Coronado National Forest. The Four Peaks/Lone Fire was a catastrophic, high-intensity wildfire on the Tonto National Forest that burned through two MSO PACs. In 2003, there were two fires that burned at high-intensity across significant acreage that included MSO habitat. The Aspen Fire on the Coronado National Forest burned approximately 85,000 acres and partially burned nine MSO PACs and the Helen's 2 Fire burned approximately 3,500 acres and impacted three MSO PACs within Saguaro National Monument. The 2004 Nuttall Complex Fire in the Pinaleno Mountains burned approximately 29,725 acres and impacted 20 PACs. However, a majority of the acreage in MSO habitat burned at low to moderate fire severity and the long-term effects to MSO habitat are not known. The Coronado, Tonto, and Prescott National Forests are used heavily for recreation, mainly due to their proximity to the large urban areas of Tucson and Phoenix. Riparian areas may provide important dispersal habitat between mountain ranges in this RU, so grazing in these areas is of concern due to potential negative impacts.

There are a total of 38 wildland urban interface projects in this RU. Nineteen of the proposed projects contain MSO PACs; 28 PACS within this project area will receive fuels reduction treatments. The Prescott National Forest is expecting to treat seven of the 15 known PACs on the forest. The WUI programmatic biological opinion states that only four of the PACs are expected to receive intensive treatments. Approximately 8,927 acres of protected habitat and 55,000 acres of restricted habitat occur within the proposed project area. No more than 2,000 acres of protected habitat are expected to be intensively treated, with the remainder of protected habitat treated per the recommendations in the Recovery Plan. The restricted habitat is all located within 0.5 mile of private land and will most likely receive fairly intensive treatments.

Since the owl was listed, we have completed or have in draft form a total of 155 formal consultations for the MSO. These formal consultations have anticipated incidental take of MSO in 357 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 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 to Region 3 of the Forest Service on their 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 MSO in 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, we issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, incidental take is reasonably certain to occur in 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 MSO in 49 PACs and harassment in 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 with harassment, 1 PAC with harm, and 1 PAC with harm and harassment), with 5 of those in the Upper Gila Mountains RU and none in the Basin and Range West RU.

MSO Critical Habitat

The final MSO critical habitat rule (U.S. Department of the Interior 2004) designated approximately 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands. Within this larger area, critical habitat is limited to areas that meet the definition of protected and restricted habitat, as described in the Recovery Plan. Protected habitat includes all known owl sites and all areas within mixed conifer or pine-oak habitat with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years. Restricted habitat includes mixed conifer forest, pine-oak forest, and riparian areas outside of protected habitat.

The primary constituent elements for proposed MSO critical habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (U.S. Department of the Interior 1995). Since owl habitat can include both canyon and forested areas, primary constituent elements were identified in both areas. The primary constituent elements within mixed-conifer, pine-oak, and riparian forest types that provide one or more of the MSO's habitat needs for nesting, roosting, foraging, and dispersing are in areas defined by the following features for forest structure and prey species habitat:

Primary constituent elements related to forest structure include:

- 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 of 12 inches or more;
- A shade canopy created by the tree branches covering 40 percent or more of the ground; and,
- Large, dead trees (snags) with a dbh of at least 12 inches.

Primary constituent elements related to the maintenance of adequate prey species include:

- 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 forest habitat attributes 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 characteristics 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. There are 16 critical habitat units located in the Basin and Range West RU that contain approximately 1.2 million acres of designated critical habitat.

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 that 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.

A. Status of MSO within the action area.

The action area comprises all areas that burned within the fire perimeter (less than five acres), approximately $\frac{3}{4}$ -mile downstream of the fire line, the helispot constructed between the two PACs, and the helibase and water tank established along Forest Road 61 located more than two miles south of the fire.

Within the action area, Bear and Ida canyons each contain MSO PACs (Upper Bear Creek PAC 0503011 and Ida Canyon PAC 0503013, respectively) that have been previously documented as occupied; however, these two PACs have not been monitored over the last six years due to safety concerns. Suppression actions occurred within the 100-acre core area, known to contain the best nesting habitat of the Upper Bear Creek PAC. During our site visit on July 1, 2004, we found recently molted MSO feathers around Bear Spring in the Upper Bear Creek PAC, suggesting the PAC was occupied by at least one MSO. Breeding status of the MSO in the Upper Bear Creek PAC could not be determined based on this visit, and no other formal monitoring was conducted during the 2004 breeding season. No MSO or sign of MSO were observed in the Ida Canyon PAC during our site visit, and no other current occupancy or breeding information is available regarding this PAC. Recent nests have not been located in these PACs. Table 1 summarizes the past survey data for these two PACs.

Table 1: MSO PAC Occupancy Record for Upper Bear Creek and Ida Canyon PACs.

MSO PAC	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Upper Bear Creek	O, 2Y	ND	O, NN	O, NN	NI	O, NN	O, 1Y	ND	ND	NI	NI	NI	O, NU
Ida Canyon	O, NU	O, NU	O, NN	A, NN	A	IM-NR	IM-NR	ND	ND	NI	NI	NI	NI

O= Occupied, ND= No Data, NN= Non-nesting, NI= Not Inventoried, NU= Nesting Undetermined, A= Absent, IM=Informal Monitoring, NR=No Report, 1Y/2Y= Number of Young Fledged

Prior to the Sunnyside Fire, both Upper Bear Creek and Ida Canyon PACs were affected by suppression actions associated with the Oversight Fire of 2002, as well as the fire itself. A firefighter safety-zone was established within the Ida Canyon PAC for the Oversight Fire. Burnout operations also occurred in Ida Canyon PAC. Limited handline construction occurred in the Ida Canyon PAC; however, existing roads and trails were used to a great extent. Very little new clearing for handlines occurred in the Ida Canyon PAC. More extensive handlines were constructed in the Upper Bear Springs PAC. Trees greater than nine inches dbh and large snags were removed as a result of suppression actions in addition to being consumed by the Oversight Fire. Upper Bear Springs PAC still had significant standing dead trees and little vegetation regrowth in the area around Bear Saddle and the upper portion of the PAC. The habitat around Bear Spring and the area of the Sunnyside Fire showed minimal, if any, signs of the Oversight Fire and associated suppression actions.

B. Factors affecting MSO in the action area.

Ida and Bear canyons have supported significant recreational use by hikers, birders, and wildlife and plant collectors, and hunters. Ida and Bear canyons have also been used extensively for illegal activities such as routes for undocumented immigrant (UDI) and drug trafficking. Law enforcement activities associated with these illegal activities have also occurred and continue to occur within these two canyons.

C. Status of Critical Habitat within the action area.

The entire action area is designated critical habitat for the MSO. The Oversight Fire and associated suppression actions likely altered MSO critical habitat. At the time of the Oversight Fire (March 2002), critical habitat was neither designated nor proposed. Since no critical habitat was designated or proposed, no effects to critical habitat were addressed in the Biological Opinion for the Oversight Fire (U.S. Fish and Wildlife Service 2004). Nonetheless, the fire impacted MSO habitat that was eventually designated as critical habitat on August 31, 2004. Trees greater than nine inches dbh and large snags were consumed by the 1,200 acre Oversight fire. As previously mentioned, patches of MSO critical habitat were consumed in the Upper Bear Creek PAC as well.

D. Factors affecting Critical Habitat in the action area.

The same factors that affect the species in the action area, also affect critical habitat (see above).

EFFECTS OF THE ACTION

The potential effects from fire suppression and rehabilitation efforts on MSO and associated critical habitat include increased noise, application of fire retardant, water bucket drops, and habitat alteration during the breeding season.

Impacts resulting from suppression actions in the Upper Bear Creek PAC include noise, equipment, and personnel in potentially close proximity to the MSO nest stand. As previously mentioned, fire suppression actions occurred within the 100-acre core area of the PAC, which contains the best nesting habitat within the PAC. Although the current location of the nest (if present) is not known, the fire and associated suppression actions occurred in the vicinity of the last known nesting location. Noise disturbance ranged from low flying (less than 1,000 feet) retardant planes (tankers and SEATs) and helicopters (both dropping off crews and carrying water buckets) to crews using chainsaws and hand tools. In order to minimize the disturbance within the PAC, established hiking trails were used extensively for moving personnel.

Mechanical noise and human presence may be disruptive to MSO, particularly during the breeding season. Owls have more sensitive hearing than other birds (Bowles 1995). If noise arouses an animal, it has the potential to affect its metabolic rate by making it more active. Increased activity can, in turn, deplete energy reserves (Bowles 1995). Noisy human activity can cause raptors to expand their home ranges, but often birds return to normal use patterns when the humans are not present (Bowles 1995). Such expansion in home ranges could affect the fitness of the birds, and thus affect their ability to successfully reproduce and raise young. Species that are sensitive to the presence of people may be displaced permanently, which may be more detrimental to wildlife than recreation-induced habitat changes (Hammit and Cole 1987, Gutzwiller 1995, Knight and Cole 1995). If animals are denied access to areas that are essential for reproduction and survival, that population will most likely decline. Likewise, if animals are disturbed while performing behaviors such as foraging or breeding, that population will also likely decline (Knight and Cole 1995).

Birds may respond to disturbance during the breeding season by abandoning their nests or young; by altering their behavior such that they are less attentive to the young, which increases the risk of young being preyed upon; by disrupting feeding patterns; or by exposing young to adverse environmental stress (Knight and Cole 1995). There is also evidence that disturbance during years of diminished prey base can result in increased foraging time which, in turn, may cause some raptors to leave an area or to not breed at all (Knight and Cole 1995). At National Parks in Utah, Swarthout and Steidl (2003) examined behavioral responses of nesting MSO to individual hikers that passed within 36 to 210 feet of active nests every 15 minutes. Among various behavioral changes observed during treatments, female and male MSO increased the frequency of contact vocalizations by 58 and 534 percent, respectively. Female owls decreased the amount of time they handled prey by 57 percent and decreased the amount of time they performed daytime maintenance by 30 percent. Swarthout and Steidl (2003) examined flush

response of MSOs in canyon situations to recreationists, and found that if hikers are excluded from a 79-foot radius around roost sites, 95 percent of owl flush responses would be eliminated. Because the Upper Bear Creek PAC has not been monitored for the last six years, the exact location of the nest or roost site is not known. Furthermore, the fire and associated suppression actions occurred within the 100-acre core area, and it is possible that fire crews were working within that 79-foot radius. These impacts occurred over a period of less than 24 hours. Data gathered after the nearby Oversight Fire indicate that MSO were still using some of the most heavily impacted PACs (U.S. Forest Service 2005). Although they are not yet capable of flight by mid-June, MSO young are typically capable of short hopping movements away from the nest by this time, thus the adults and young are not as closely tied to the nest as they would be in May or early June.

Handline construction may modify MSO habitat by significantly changing the key habitat components for the species, depending on the amount, type, location, and number of large trees and mid-story vegetation cut. Removal of large trees during handline construction may result in loss of nest and/or roost trees, active or inactive. The number of trees >9 inches dbh cut during handline construction is unknown; however, that number was probably low based on the small nature of the fire and associated handline, our conversations with the Resource Advisor, and observations during our site visit. Other effects can include increased nest vulnerability and discovery by MSO predators, microhabitat alteration, and increased edge effects, such as tree blowdown, along handlines. Because the fire was less than five acres, the handline associated with containing the fire was small (less than one mile). Additionally, the handline was only two feet wide, and fire crews placed waterbars along the steep portions of the handline to minimize and reduce the potential for erosion.

During suppression and rehabilitation efforts, the Ida Canyon PAC may have been impacted by aircraft noise as tankers, SEATs, and helicopters flew low (less than 1,000 feet) over the PAC and, likely, the 100-acre core area of the PAC. Because these flights were out of Bear Canyon, over the ridge separating the two PACs (Upper Bear Creek and Ida Canyon), they would have been between 500 and 1000 feet above ground level (AGL), significantly above the PAC and 100-acre core area of the Ida Canyon PAC. Overflights of the Upper Bear Creek PAC also included tankers, SEATs, and helicopters flying less than 1,000 feet AGL over the PAC and core area of the PAC. The low level flights by all aircraft were likely close to, if not less than 300 feet AGL. One helicopter set down within the Upper Bear Creek PAC 100-acre core area to off-load crews. In order to place water from bucket drops, helicopters were at or below 300 feet AGL. Furthermore, in order to place retardant precisely where it was needed, tankers and SEATs flew at or below 300 feet AGL within the 100-acre core area of the PAC and in close proximity to the last known nest site of the Upper Bear Creek PAC. Air operation noise, especially from low-and-slow flying aircraft and helicopters, either during overflights, moving to and from sling loads and crew drops, or while dropping water or retardant, can disturb MSO. Low-level flights have the greatest potential to disturb owls because the planes are closer and slower, expanding the time and increasing the decibel levels to which MSO are exposed (Delaney *et al.* 1997 and 1999). Delaney *et al.* (1997 and 1999) found that helicopter flights above 345 feet AGL did not significantly affect breeding success of MSO on the Lincoln National Forest, New Mexico. Although MSO responded behaviorally to the aircraft, no flushing was noted when recorded noise levels from helicopters were less than 92 decibels.

MSO returned to pre-disturbance behavior within 15 minutes. All adult MSO flushes occurred after juveniles had left the nest, probably reflecting adult fidelity to the nest during portions of the breeding cycle.

The same study (Delaney *et al.* 1997 and 1999) revealed that MSO exhibited alert responses when helicopters were an average of 1,322 feet (\pm 486 feet) away and no response when helicopters were more than 2,165 feet away. A seasonal change in MSO response was also noted. The time elapsed between initiation of a disturbance and an associated alert behavior decreased as the nesting season progressed. The distance from the disturbance that elicited an alert behavior also decreased during the breeding season. Additionally, there was indication of habituation to flights by the species; however, sample sizes were too small to establish trends. In their study, Delaney *et al.* (1997 and 1999) conducted helicopter flights from August 1 through August 22 in the first year and between April 30 and July 25 in the second year. The helicopter used in this study was similar in size to light helicopters flown on the Sunnyside Fire.

Due to the small nature of the fire and the short duration of suppression actions, no formal base camp was established. A helibase was established along Forest Road 61 for loading and off-loading crews and equipment. A portable water tank was set in the immediate area of the helibase and vehicles were parked near this site, as well. Some clearing of vegetation occurred at the helibase, within the boundaries of designated critical habitat; however, this helibase was more than one mile from the closest MSO PAC, and the area did not contain constituent elements of MSO critical habitat.

We visited the site on July 1, 2004, in order to better assess the impacts of the fire suppression activities on MSO and associated critical habitat. The area where the helispot was established within the Miller Peak Wilderness (at the edge of the 100-acre core area of the Upper Bear Creek PAC) was on a rocky knoll between the two PACs. Although three juniper trees greater than nine inches dbh were cut to establish the helispot, the area did not otherwise appear to contain suitable MSO habitat. Despite the area being within the 100-acre core area of the PAC, the knoll appeared to be open (very little canopy cover) and exposed to high sun and winds before the helispot was established. These areas are not favored by MSO for roosting, nesting, or foraging. Areas where fire retardant was dropped were visible in the tops of trees; however, those are anticipated to wash out as the monsoon rains come into the area. Furthermore, no significant impacts from the construction of the handline were observed. While at Bear Springs (within the core area and less than one-half mile from the fire), we observed fresh MSO feathers around the spring. This indicated that the PAC was occupied and that MSO were actively moving after the fire and related suppression actions.

It is possible that retardant and water bucket drops adversely affected MSO or an MSO nest within the Upper Bear Creek PAC. At least 5,000 gallons of retardant was dropped from both the two tankers and the SEATs and likely over 1000 gallons of water was dropped from helicopters with buckets. We did not observe any dead or injured MSO during our site visit on July 1, 2004; however, the odds of finding a dead or injured MSO are unlikely. If adult birds and young were present in the nest core during the overflights and water drops, they were likely killed, injured, harmed and/or harassed by the suppression actions. Harm, injury, or death was reasonably certain to have resulted as water/retardant drops were made in the vicinity of the last

known nest location, causing branches to break and snags/trees to fall, which could result in death, injury, or harm to an owl, especially to a recently fledged bird that is not adept at flying. Broken branches and snags/trees knocked over by water and retardant drops were observed during our site visit. Harassment was reasonably certain to have resulted due to noise that likely caused adults to leave young unattended or if young, clumsy fledglings were scared into flight and were injured and/or predated upon as they attempted to escape the noise and water/retardant drops. If adult MSO were present, but not nesting the noise from the aircraft was reasonably certain to have caused the MSO to leave the area during suppression actions and, thus, avoid the effects of retardant and water drops. However, sudden, abrupt flights can increase an adult owl's chances of predation. As previously mentioned, on our site visit, we found recently molted MSO feathers within the 100-acre core area and less than one-half mile from the fire, indicating that at least one MSO was present post-fire. However, the number of birds present and whether they nested is unknown. Furthermore, as previously mentioned, the fire and associated suppression actions occurred near the last known nest location in the Upper Bear Creek PAC.

As noted in Table 1, above, the Upper Bear Creek had a consistent history of occupancy and intermittent reproduction from 1992 through 1998. Successful reproduction was recorded in two of those seven years (1992 and 1998). Safety concerns in that part of the mountains have precluded monitoring efforts since 1999; however, our site visit indicated that at least one MSO occupied the PAC in 2004, during the time of the fire and associated suppression efforts. Past monitoring efforts and our observations after the fire suggest that the PAC was likely occupied during the five years without monitoring.

Although the fire suppression and rehabilitation activities had potentially negative short-term effects to MSO, they also had long-term positive effects on the action area. The suppression activities minimized damage caused by the fire. The rehabilitation activities were designed to help minimize the effects of fire suppression activities and benefit the action area over time. The water bars placed in fire lines helped reduce soil erosion.

Critical Habitat

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

The effects to critical habitat are similar to those effects to habitat described above. The potential impacts from fire suppression and rehabilitation efforts include downstream increase of sediment from control lines and possible habitat degradation due to fire retardants, crew movements, and vegetation clearing activities within critical habitat. Without fire suppression activities, it is possible that critical habitat would have been more severely damaged by the fire. Furthermore, the previously mentioned conservation measures initiated during suppression activities and rehabilitation activities that followed the suppression activities minimized effects to critical habitat and surrounding vegetation after the fire.

As previously mentioned, no formal base camp was established due to the small nature of the fire and rapid containment through initial attack. A helibase was established along Forest Road 61

for loading and off-loading crews and equipment. In addition to parking vehicles at this site, a dip site utilizing a portable water tank was also established near the helibase. Small trees (less than nine inches dbh) and shrubs were cleared in a 150-foot diameter to facilitate use by helicopters at the dip site and helibase along Forest Road 61. Although the helibase and dip site were in the mapped boundaries of designated critical habitat for the MSO, the area is best described as oak woodland tending toward an oak/juniper savanna (U.S. Forest Service 2005). No primary constituent elements of MSO critical habitat existed in the area of the helibase, thus activities at the helibase and dip site did not affect critical habitat. Cut material was mulched and spread throughout the area of the helibase and dip site to help minimize the potential for erosion. As previously mentioned, the second helibase that was established up in the Miller Peak Wilderness was on a rocky knoll between the two PACs. Three juniper trees greater than nine inches dbh were cut to establish the helispot. Observations during our July 1, 2004, site visit indicated that these three trees were the only constituent elements of critical habitat that were affected by establishing the helibase. The rocky knoll where the helibase was established did not contain habitat that would be utilized by MSO on a regular basis. It was generally open and exposed with scattered vegetation. The loss of three large trees in this area is not anticipated to affect MSO in the area.

Fire crew movement and vegetation clearing within the 100-acre core area of Upper Bear Creek PAC likely adversely affected some critical habitat. However, because the fire was less than five acres, suppression activities within critical habitat are anticipated to be less than one acre. The handline was two feet wide and less than a mile long, or less than one-quarter of an acre. Although the exact number of trees greater than nine inches dbh cut during suppression actions is not known, the number is anticipated to have been low, based on the small nature of the fire and associated handline, conversations with the Resource Advisor, and observations during our site visit. Loss of long-term viability of the PAC is not anticipated as a result of the fire or fire suppression and rehabilitation efforts. Both PACs should continue to support MSO occupancy and reproduction. Without the suppression actions, the fire likely would have consumed and, potentially, adversely affected more critical habitat than if no suppression actions had occurred.

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.

Bear, Oversight, and Ida canyons are heavily used by illegal drug and immigrant traffic. Individuals involved in these activities start fires and may disturb MSO. The fact that these areas are used in this manner has resulted in a lack of MSO surveys due to safety concerns for employees. Though this is perfectly justified, it results in our having to make assumptions regarding the current status of the PACs and whether the birds nested or not in 2004.

CONCLUSION

After reviewing the current status of the MSO and its associated critical habitat, the environmental baseline for the action area, the effects of the actions taken to suppress and rehabilitate the Sunnyside Fire, and the cumulative effects, it is our biological opinion that the action, as described, neither jeopardized the continued existence of MSO, nor resulted in destruction or adverse modification of MSO critical habitat. Our findings are based on the following:

- The fire and associated suppression activities did not permanently reduce the suitability of the area for future MSO occupancy.
- Critical habitat was minimally impacted by the establishment of one helibase and one helispot. Construction of the helibase at the edge of the 100-acre core area of Upper Bear Creek PAC only required the cutting of three trees greater than nine inches dbh. Crews used designated hiking trails to exit the canyons and associated PACs, thus further minimizing impacts to MSO and associated critical habitat.
- Fire suppression and rehabilitation activities prevented the fire from doing more damage to MSO and critical habitat. Conservation measures and rehabilitation efforts further minimized effects of suppression activities.
- Fire suppression actions affected only two of the PACs in the entire Basin and Range West Recovery Unit. Observations during our site visit indicate that neither PAC lost its long-term viability. Both PACs should continue to support MSO occupancy and reproduction.

INCIDENTAL TAKE STATEMENT

Sections 9 of the Act and Federal Regulation 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 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.

For the purpose of evaluating incidental take of MSO from the action under consultation, incidental take can be anticipated as either the direct mortality of individual birds, or the alteration of habitat that affects behavior (i.e. breeding or foraging) of birds to such a degree that

the birds are considered lost as viable members of the population and thus “taken.” 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 the owl’s needs.

In past Biological Opinions, we used the management territory to quantify incidental take thresholds for the MSO (see Biological Opinions provided to the Forest Service from August 23, 1993 through 1995). The current section 7 consultation policy provides for incidental take if an activity compromises the integrity of an occupied PAC to an extent that we are reasonably certain that incidental take occurred. Actions outside PACs will generally not cause incidental take, except in cases when areas that may support owls have not been adequately surveyed.

Using available information as summarized within this document, we have identified incidental take of MSO associated with suppression activity in the Upper Bear Canyon PAC. Although it is possible that some effects to the PAC may have resulted from the wildfire itself, it is the effects of the suppression actions that must be addressed in this emergency consultation. Based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished by the Forest Service, incidental take of two MSO and associated young is reasonably certain to have occurred as a result of tanker, SEAT, and helicopter water and retardant drops over the 100-acre nest core of the Upper Bear Canyon PAC. These water and retardant drops resulted in broken tree tops, broken limbs, and fallen snags, which can result in disturbance and/or injury or death to juvenile or adult MSO. In addition, low-level flights (300 feet AGL or less) occurred over the 100-acre nest core in close proximity to the last known nest site. Even if the owls were not nesting, these suppression actions likely significantly disrupted normal behavior patterns of these same MSO.

We do not anticipate that incidental take of MSO occurred in the Ida Canyon PAC. Suppression actions associated with the Ida Canyon PAC were limited to aircraft overflights that were between 500 and 1,000 feet AGL. These flights were high enough above the Ida Canyon PAC and at a low enough decibel level to not significantly affect any MSO in the PAC (Delaney *et al.* 1997 and 1999).

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.

CONSERVATION RECOMMENDATIONS

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

1. We recommend that you monitor (at least MSO presence) in the Upper Bear Creek and Ida Canyon PACs for at least five years, as funding and safety allow, and include your results in an annual report to us.
2. We recommend that you pursue opportunities to research actual effects to and recovery of MSO and nest/roost sites in regard to fire suppression actions, especially direct drops from aircraft and particularly in relation to future site occupancy by MSO.
3. We recommend that you continue to assist us in the implementation of the MSO recovery plan.
4. We recommend that you pursue the completion of a forest-wide consultation on wildland fire use for resource benefit and wildfire suppression activities.

In order to keep us informed of actions minimizing or avoiding adverse effects or benefiting 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 § 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 that causes an effect to the 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 a 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 listed species. For further information, please contact Brian Wooldridge of our Tucson Suboffice at (520) 670-6150 (x235), or Jim Rorabaugh at (602) 242-0210 (x238). Please refer to the consultation number 02-21-04-M-0287 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ (Attn: Sherry Barrett)
Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff, AZ (Attn: Brenda Smith)
Arizona MSO Species Lead, Fish and Wildlife Service, Flagstaff, AZ (Attn: Shaula Hedwall)

District Ranger, Sierra Vista Ranger District, Hereford, AZ (Attn: Steve Gunzel)
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ

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Appendix A

CONCURRENCES

This appendix contains our concurrences with your determinations that the Sunnyside Fire may have affected, but did not likely adversely affect, lesser long-nosed bat or Huachuca water umbel. We concur with your findings based on the following:

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*):

- The fire was more than one mile from the nearest known late summer/fall roost.
- Lesser long-nosed bats were not present in the area during the fire (they do not arrive in the action area until July).
- Significant agave mortality, as a result of fire suppression activities, was not observed during our site visit. An estimated loss of less than one percent of agaves in the action area due to suppression activities is not expected to have significantly affected the food resource of the bat.
- The short-term loss of a few agaves is not expected to have significantly altered the foraging potential of this area for lesser long-nosed bats.

Huachuca Water Umbel (*Lilaeopsis schaffneriana* ssp. *recurva*) and associated Critical Habitat:

- No water was drafted from stock ponds or streams containing HWU or critical habitat. Surplus water was dumped away from ponds or taken off site.
- Although fire retardant was used in the area, none was dropped within one mile of any HWU or associated critical habitat. Designated critical is more than two miles downstream of the fire.
- Significant siltation of HWU and associated critical habitat, as a result of fire suppression activities, is not expected based on previously documented observations during our site visit.
- Fire crews accessed the fire and helispot by helicopter or on foot using the Oversight or Ida trails, which do not traverse occupied or critical HWU habitat. Crews were not in Bear Creek where both HWU and associated critical habitat occur.