

**United States Department of the Interior**

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AESO/SE  
02-21-03-F-0134-R1

September 22, 2004

Ms. Nora B. Rasure  
Forest Supervisor  
Coconino National Forest  
1824 South Thompson Street  
Flagstaff, Arizona 86001-2529

Dear Ms. Rasure:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation was dated September 15, 2004, and received by us on September 15, 2004. This consultation concerns the possible effects of the Pack Rat Salvage Sale located in Coconino County, Arizona, on Mexican spotted owl (*Strix occidentalis lucida*) (MSO) designated critical habitat. On November 18, 2003, based on the October 10, 2003 decision in *Center for Biological Diversity v. Norton*, Civ. 01-409 TUC DCB (D. Ariz.), the Fish and Wildlife Service re-proposed critical habitat for the MSO. On August 31, 2004, we published the final rule designating critical habitat (USDI 2004). The Pack Rat Salvage Sale has previously undergone formal section 7 consultation for effects to the MSO and its habitat.

This biological opinion is based on information provided in the original July 3, 2003 Biological Assessment and Evaluation (BAE), the revised BAEs dated August 12, 2004 and September 15, 2004, conversations with your staff, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the MSO, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

**Consultation History**

Details of the consultation history are summarized in Table 1.

**Table 1.** Summary of Consultation History

<i>Date</i>	<i>Event</i>
October 20, 2003	We issued a non-jeopardy biological opinion on the effects of the Pack Rat Salvage Sale on the Immigrant MSO protected activity center (PAC) (#040414) and adjacent MSO habitat.
February 5, 2004	Following an appeal, the Forest Service modified the proposed action. Trees greater than 24 inches diameter-at-breast height (dbh) would not be harvested in MSO restricted habitat.
April 9, 2004	The Forest Service issued a categorical exclusion for the harvest of hazardous trees along Forest Roads 300, 300K, 300J, 320, 320A, 141H, 501, 659, 9266A, 9366T, and 9366P. These trees were originally included in the Pack Rat Salvage Sale decision.
August 16, 2004	We received your request for informal consultation on the effects of the Pack Rat Salvage Sale and ten other projects on MSO proposed critical habitat.
August 31, 2004	We designated MSO critical habitat on 8.6 million acres throughout the range of the MSO, which includes the Pack Rat Salvage Sale boundaries.
August 23 – September 14, 2004	Our staffs discussed the Forest Service determination of “may affect, not likely to adversely affect” for the Pack Rat Salvage Sale and why this may not be the appropriate determination.
September 14, 2004	The Forest Service withdrew the Pack Rat Salvage Sale from the batch consultation.
September 15, 2004	The Forest Service initiated formal consultation on the effects of the Pack Rat Salvage Sale on designated MSO critical habitat.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

The Pack Rat Salvage Project is located approximately 70 miles southeast of Flagstaff, Arizona on the Mogollon Ranger District, Coconino National Forest (Township 12 North, Range 10 East, Sections 2, 3, 5, 9, 10, 11, 16, and 17). In August 2002, the Pack Rat Fire burned approximately 1,074 acres of mixed conifer on the Mogollon Rim Ranger District, Coconino National Forest and approximately 2,020 acres on the Payson Ranger District, Tonto National Forest (see Consultation #02-21-03-F-0175). The proposed action is to salvage dead trees, 12 to 24 inches diameter-at-breast height (dbh), on approximately 550 acres of the area burned by the Pack Rat Fire. Approximately 230 acres are designated critical habitat, which is comprised entirely of mixed conifer restricted habitat. The sale boundary includes the area immediately west of Kehl Point up to Forest Road 300 and follows the PAC boundary, with some deviation, eastward to Forest Road 320. The project area will exclude the Immigrant MSO PAC (#040414) and the Mogollon Rim Botanical Area. A dead tree will be defined as any tree with no green needles. This will include trees killed by the Pack Rat fire and trees killed by bark beetles. Dead trees 12 inches dbh and greater are considered snags. A ground-based logging system will be used, although details were not included in the BAE.

The Forest Service proposes to:

1. Salvage dead trees 12 inches dbh up to but not including 24-inch dbh trees (Appeal Decision 2/5/2004). Prior to the appeal of the project, there was no diameter limit for dead trees to be harvested.
2. Fell hazard trees less than 12 inches dbh along a 130-foot corridor adjacent to Forest Roads 300, 320, 141H, and 501 where safety is a concern. Only trees that are tall enough to fall on the road will be removed to avoid creating a 130-foot "swath" devoid of trees.
3. Lop and scatter small diameter slash (3 to 12 inches dbh) created by felling activities in high-intensity burn areas.
4. Open Forest Roads 9360L and 9266 for use during salvage activities and close them after completion of the project (approximately 1.7 miles of road).
5. Keep 1.0 miles of Forest Road 659 open and close 0.2 mile at an alternate entrance to protect the General Crook Trail.
6. Keep 0.1 mile of Forest Road 9266A open and close the last 0.2 mile to restrict access to MSO habitat and the Mogollon Rim Botanical Area.

7. Keep 0.1 mile of Forest Road 300J open and close the last 0.1-mile to restrict access to MSO habitat and the Mogollon Rim Botanical Area.
8. Construct 0.4 mile of temporary road for salvage activities and obliterate it following use.
9. Mechanically pile slash and burn where total fuel loads (activity slash plus existing slash) are greater than 15 tons per acre.
10. Lop and scatter slash to a two-foot height where total fuel loads (activity slash plus existing slash) are equal to or less than 15 tons per acre.

The proposed action provides for some snag retention by requiring that an average of at least two large (>20 inches dbh) snags per acre be left on the project area. The goal is to leave four to six snags per acre. Snags will be selected based on dbh and physical characteristics (e.g., broken top, lightning scar, state of decay, etc.), and will be distributed in a clumped fashion, rather than uniformly distributed across the project area.

Project implementation was scheduled for fall 2003. However, the project began on Friday, September 10, 2004. Previously the Forest Service had agreed to conduct MSO surveys within the project area, plus an additional 0.5-mile area around the project boundary if the project continued into the spring of 2004. However, it is unclear if the Forest Service will conduct surveys during the spring of 2005 if project implementation continues into the 2005 breeding season.

## **STATUS OF THE SPECIES**

### Mexican spotted owl

The MSO was listed as a threatened species in 1993 (USDI 1993). 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).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) and in the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. 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 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. 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 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 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 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 has 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 2 shows several high-intensity fires that have had a large influence on MSO habitat in this RU in the last decade. Obviously the information in Table 2 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 current and future 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 2.** 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 Burned</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
<b>TOTAL</b>		<b>525,894</b>	<b>84</b>	<b>~43,645</b>

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  $\geq 10\%$  a year and that owl survival rates in Arizona may be declining over time (Seamans *et al.* 1999). The authors noted 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 spotted owl 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 then 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 136 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 327 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 on Forest Service Region 3's adoption of the Recovery Plan recommendations through an amendment of their Forest Plans. 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. To date, consultation on individual actions under the amended Forest Plans has resulted in 233 PACs adversely affected, with 126 of those in the Upper Gila Mountains RU. Region 3 of the Forest Service reinitiated consultation on the Forest Plans on April 8, 2004.

#### Mexican spotted owl Critical Habitat

The final MSO critical habitat rule (USDI 2004) designated approximately 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (USDI 2004). Within this larger area, proposed 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 (USDI 1995). Since owl habitat can include both canyon and forested areas, primary constituent elements were identified in both areas. The primary constituent elements which occur for the MSO within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the MSO's habitat needs for nesting, roosting, foraging, and dispersing are 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% of which are large trees with dbh of 12 inches or more;
- A shade canopy created by the tree branches covering 40% 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 13 critical habitat units located in the Upper Gila Mountains RU that contain 3.1 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 which are contemporaneous with the consultation process. The environmental

baseline defines the current status of the species and its habitat to provide a platform from which to assess the effects of the action now under consultation.

### **A. Status of the species and critical habitat within the action area**

The area surrounding the proposed project area has been surveyed at least twice for MSO between 1990 and 2001, and includes MSO protected, threshold, restricted, and foraging habitat (as defined by the Recovery Plan). Past surveys for MSO in and near the project area are shown in Table 3. Additionally, the proposed project area, plus areas within 0.5 mile of the area, were surveyed in May-June 2003, and no MSO were detected. The Tonto National Forest also conducted MSO surveys below the Mogollon Rim in the area burned by the Pack Rat Fire. In 2003, MSO associated with the East Chase Creek PAC (#120412) successfully fledged two young approximately 0.5 mile from the project boundary, below the Mogollon Rim.

**Table 3.** Mexican spotted owl survey blocks for the Pack Rat Salvage Area

Project Name	Activity	Acres Surveyed	Year(s) Surveyed
Immigrant	Timber Sale	10,060	1990
Miller	Timber Sale	2,138	1989
Baker	Timber Sale	6,035	1989, 1990
Crackerbox	Timber Sale	5,132	1990-1992,1997,1999

The Immigrant MSO territory on the Coconino National Forest was established in 1990 and converted to a PAC (#040414) following finalization of the Recovery Plan. The PAC is based on an audio response, followed by a visual confirmation of a single roosting male near Immigrant Springs, above the Mogollon Rim. Nesting status was not determined during follow-up visits. Informal monitoring occurred in 1992 and 1994, but no responses were detected in either year. The 2002 Pack Rat fire burned approximately 200 acres of the Immigrant PAC, and suppression activities within the PAC were intense. Extensive hand line and about 1.0 mile of dozer line were constructed within the PAC. Additionally, a three-acre area on the edge of the PAC was cleared of all trees and scraped to mineral soil with a bulldozer, to serve as a safety zone for firefighters. The one confirmed roost site located in this PAC was not burned; however, the dozer line was constructed in the PAC approximately 650 feet from the roost location. Burned area rehabilitation efforts in the PAC included the construction of water bars on dozer and hand lines, seeding and pulling slash back onto dozer/hand lines, and seeding and pulling slash onto the safety zone. We analyzed the effects of the suppression and rehabilitation activities on the Immigrant PAC in a biological opinion (#02-21-03-F-0175) issued on September 19, 2003. In that opinion, we anticipated the take of one pair of MSO and/or associated juveniles in the form of harm/harassment associated with the Immigrant PAC during the 2002 breeding season.

The majority of the Pack Rat Fire was a moderate-severity burn. Moderate-severity burns are typical of a mix of low-severity and stand-replacement fires. Most, if not all of the surface fuels are consumed and the overwhelming majority of the trees are 100% scorched. The duff layers and some of the organic material in the soil were consumed, but not entirely removed. Scattered pockets of high-severity burn exist within the fire boundary.

A small portion of the Maple Draw Restoration Project (Consultation #02-21-03-I-0060) is currently ongoing within the Immigrant MSO PAC. Three, one-acre exclosures (225 feet by 400 feet) were constructed in the PAC during the fall of 2003, using eight-foot high elk-proof fence. Fence construction within the PAC occurred outside the breeding season to minimize disturbance. In addition to the fence, the Forest Service thinned out trees less than nine inches dbh within the exclosures and six trees greater than nine inches dbh to protect exclosure fences. Based on the minimization measures implemented by the Forest Service, we concurred with their determination that the project would not likely adversely affect the MSO.

The Pack Rat Salvage Sale is located in Upper Gila Mountain RU critical habitat unit 10. This unit is located north, northwest, east, and southeast of Payson, Arizona. The western boundary of this unit runs parallel to the Yavapai County-Coconino County line, south to the Mogollon Rim. The southwest boundary runs along the Mogollon Rim. To the north the unit encompasses the Coconino County portion of West Clear Creek and runs east along Jacks Canyon on the Coconino National Forest. The unit includes portions of West Chevelon, Chevelon, and Wildcat Canyons on the Apache-Sitgreaves National Forest and extends from Heber, Arizona, through the Apache-Sitgreaves National Forest, south along the Tonto National Forest boundary to Gentry Mountain. State and private lands are not designated as critical habitat. The unit falls within Coconino, Gila, and Yavapai Counties and contains approximately 562,988 acres.

## **B. Factors affecting the species' critical habitat within the action area**

Other activities occurring within and adjacent to the Immigrant PAC include recreation, firewood cutting and gathering, Forest Road 300 improvements, and the Maple Draw Restoration Project (Consultation #02-21-03-I-0060). The action area runs along the Mogollon Rim, a large fault cutting across central Arizona for some 200 miles in a southeast to northwest direction. The level of recreational use during the summer within the project area has grown dramatically and includes dispersed camping, hiking, horseback riding, bicycling, hunting, and Off-Highway Vehicle (OHV) use. The primary forest roads, including the Rim Road, all receive heavy use during the summer months. A large number of side roads (including a jeep trail which runs through the PAC), originally constructed for timber harvest, are used for dispersed camping, recreational activities, and fuel wood collection. In addition, the Mogollon Rim Botanical Area, which shares the same boundary as the Immigrant PAC, is a local attraction. Approximately 99% of the Pack Rat Salvage Sale is located within the Hackberry/Pivot Rock Range Allotment and 1% of the area is in the Buck Springs Range Allotment.

A hazard-tree removal project will occur simultaneously during harvest of the snags on the Pack Rat Salvage Sale. The Pack Rat Fire Hazardous Tree Removal Project includes the removal of

snags originally analyzed under the Pack Rat Salvage BAE and biological opinion. Included in this project are an estimated 38% of the originally marked snags that are 24 inches dbh and greater within the 132-foot hazard zone along each side of several roads and adjacent recreation sites.

The 1991 Bray and Dude fires burned several thousand acres along the Mogollon Rim, immediately adjacent to the west and east sides of the Pack Rat Salvage project area. Following these fires, large-scale salvage operations removed most of the snags created by these fires and reduced the availability of snags near the Pack Rat Salvage analysis area. Many of the snags retained for wildlife in these areas have since fallen, further reducing snag availability. Furthermore, the areas burned by the Bray and Dude fires are now open habitat with virtually no trees.

## **EFFECTS OF THE ACTION**

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The direct and indirect effects of the proposed action include ground-based logging and soil disruption in areas of moderate to severe burns; road and landing construction; the removal of large snags; and continued livestock grazing. In this section we will summarize the potential effects of the proposed action and evaluate the impacts to MSO forested critical habitat.

### Summary of Potential Effects of Salvage Logging and Associated Actions

Fire and associated suppression actions, depending upon their severity, can modify soil condition. According to Beschta et al. (2004), postfire treatments, such as salvage logging, can further alter succession and delay restoration of sites by removing elements of recovery, and can exacerbate the damage that may have resulted to soils from the fire. Fire intensities and patterns of fuel consumption vary throughout the burn area and are dependent upon weather and local, micro-site conditions. We know that there are patches of low-, moderate-, and high-severity fire throughout the Pack Rat fire boundary. Moderate and high-severity fires tend to consume the organic matter (litter and duff) above the first soil layer and the soil surface is exposed to very high temperatures. Running ground-based logging equipment over these areas or even dragging logs across burned ground can result in longer-term soil disturbance and compaction than resulted from the fire. These actions may ultimately delay vegetative recovery of the site many years.

In addition to the ground-based logging, the associated road and landing/log deck construction can further exacerbate soil disturbance and compaction following wildfire. These actions can compact soil resulting in decreased infiltration, increased overland flow, accelerated sedimentation, and erosion. The Forest Service predicts that project activities will enhance soil stabilization and reduce erosion and sedimentation through spreading logging slash and felling small-diameter trees in high-intensity burn areas. In addition, no ground-disturbing activities will take place in snowmelt drainages. The project area is greater than 1.0 mile from perennial streams, so the Forest Service believes that the existing vegetation will retain most sedimentation before it reaches perennial waters. They also predict that soil stabilization will help mitigate the negative effects down drainage of increased erosion from the Pack Rat Fire. Though the majority of roads used for this project are existing roads or existing roads that will be re-opened for the project, approximately 0.4 mile of temporary road for salvage activities will be constructed. Since only dead trees that were killed by the fire (and/or the resulting bark beetle infestation) are to be harvested, this road is likely to be located where the fire severity was moderate to high. The Forest Service intends to obliterate this temporary road and close portions of other roads. However, the benefits of road obliteration occur over long periods of time, while new road construction and use can have immediate negative impacts (Beschta et al. 2004).

The overall project goal is to salvage for commercial sale trees that were killed directly or indirectly by the Pack Rat Fire. Trees cut for safety reasons were removed under the Pack Rat Fire Hazardous Tree Removal Project. Though the Forest Service is removing trees 12 to 24 inches dbh, it is recommended that trees greater than 20 inches dbh or greater than 150 years old be retained (Henjum et al. 1994). In addition, Beschta et al. (1995) recommend that salvage logging should leave 50% of the standing dead trees in each diameter class to preserve important ecological functions, such as providing wildlife habitat and contributing to the important biological and physical processes that naturally occur following ecological disturbance such as fire.

Grazing on postfire areas may delay the recovery of burned areas as livestock can contribute to inhibited soil recovery and plant succession (Beschta et al. 2004). Though the project area is within the Hackberry/Pivot Rock Range Allotment, no grazing has occurred in the pastures impacted by the Pack Rat Fire since the fire, and grazing will not occur until the vegetation has sufficiently recovered. However, the EA for the Pack Rat Salvage Sale indicates that the Forest Service expects that the proposed action will result in positive effects to range condition (availability of grasses) and range improvements (fences) as there will be increased forage and removed dead trees cannot fall on fences. This may or may not ultimately impact habitat within the area.

#### Effects to Primary Constituent Elements

As stated above, the primary constituent elements related to forest structure and the maintenance of adequate prey species 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% of which are large trees with diameter-at-breast height (dbh) of 12 inches or more;
- A shade canopy created by the tree branches covering 40% or more of the ground; and,
- Large, dead trees (snags) with a dbh of at least 12 inches.
- High volumes of fallen trees and other woody debris;
- A wide range of tree and plant species, including hardwoods; and
- Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

A large proportion of the forest in the project area is comprised of trees less than 12 inches dbh. The Forest Service collected additional data over roughly 475 acres of the project area in June 2003, which showed that approximately 80% of the trees (ponderosa pine, Douglas fir, and white fir) in the project area are less than 12 inches dbh. The data also showed that approximately 75% of the conifer trees in the project area were dead, with the majority of the mortality (80%) in trees less than eight inches dbh. During data collection, bark beetle activity was observed in the project area on dead and dying trees (predominately ponderosa pine) of various sizes. Since the proposed action intends to remove trees 12 inches and greater (up to 24 inches dbh), the majority of dead trees will be left in the forest. However, the selective removal of large trees will leave fewer to contribute to important ecological postfire processes. The number of snags retained within cutting units is estimated to be 5.7 snags/acre (of these, at least two snags/acre will have a dbh of 20 inches or greater). Following the Appeal Decision, snags over 24 inches dbh were withdrawn from the sale. However, these trees comprised only 1% of the marked trees, so this will not result in a significant decrease in the number of snags harvested. Per the BAE there will be a dramatic reduction in the number of snags present in the project area. In addition, it does not appear that proposed action will maintain a diversity of size classes of snags in the logged areas.

Post-treatment woody debris is expected to average 15 tons/acre within the project area. Though there will be future additions to the volume of logs and woody debris in the project area due to the likelihood of snags and other trees falling, most of the logs created from fire-killed trees will be less than 12 inches dbh.

There will be short-term loss of vegetation at localized sites where harvesting activities occur due to mechanical disturbance to vegetation. This may result in short-term impacts to prey species due to habitat loss and a decrease in prey abundance. The protection of the soil resource will be key to ensuring that this loss of vegetation is short-term and longer-term damage does not occur. As herbaceous vegetation recovers, prey-species abundance should increase as well.

In summary, due to the potential impacts to the project area from the salvage logging, we conclude that there will be adverse effects to designated critical habitat. The potential for increased soil disturbance, loss of snags, lack of large logs on the ground, and loss of vegetation at harvesting sites all have the potential to impact current and future use of these areas by MSO.

## **CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this 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. Future actions within the project area that are reasonably certain to occur include recreation, fuels reduction treatments and/or commercial logging on the adjacent private land, increased development, and other associated actions. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, cause disturbance to breeding MSOs, and therefore contribute as cumulative effects to the proposed action. However, because of the predominant occurrence of MSOs on Federal lands in this area, and because of the role of the respective Federal agencies in administering the habitat of the MSO, actions to be implemented in the future by non-Federal entities on non-Federal lands are considered to be of minor impact to the owl population, but may have significant impacts on the Immigrant MSO PAC and critical habitat.

## **CONCLUSION**

After reviewing the current status of the MSO and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The proposed project includes approximately 230 acres of critical habitat. This is approximately 0.0004% of the critical habitat in unit UGM-10. Due to the relatively small size of the area in comparison to the entire unit, the impacts to primary constituent elements do not rise to the level of destruction or adverse modification.
2. While large dbh trees will be removed through ground-based logging systems that may result in increased soil disturbance and compaction that may impede recovery of the site, the Forest Service is implementing several measures to reduce the adverse affects that may result from the proposed action. Though this may result in short-term disturbance and loss of primary constituent elements, we do not believe it will destroy the habitat for use by MSO or their prey species.

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

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding or sheltering. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Incidental take of MSO from treatments outlined in the proposed action for the Pack Rat Salvage Sale were addressed in the Pack Rat Salvage Sale Biological Opinion (Consultation #02-21-03-F-0134).

### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to use 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 pre-fire management activities, such as prescribed fire, thinning, obliteration of roads, removal of exotic species, appropriate campfire restrictions, and reduced livestock grazing, be used to modify management of the area and reduce the opportunity for severe wildfire to impact habitat adjacent to the Pack Rat Fire burn area and throughout the Coconino National Forest.

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

### **REINITIATION NOTICE**

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency

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

Thank you for your continued efforts to conserve endangered species. If you have any questions or concerns about this consultation, or the consultation process in general, please contact Shaula Hedwall or Brenda Smith of our Flagstaff Suboffice at (928) 226-0614.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Field Supervisor, Fish and Wildlife Service, Albuquerque, NM  
District Ranger, Mogollon Rim Ranger District, Happy Jack, AZ  
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Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ

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