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In Reply Refer To:  
AESO/SE  
22410-2005-F-0569

June 15, 2009

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

RE: Upper Beaver Creek Watershed Fuel Reduction Project

Dear Ms. Rasure:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated February 6, 2009, and received by us on February 9, 2009. This consultation concerns the possible effects of fuels reduction activities in the Upper Beaver Creek Watershed, in the Red Rock and Mogollon Rim Ranger Districts in Yavapai and Coconino Counties, Arizona. The Forest Service has determined that the proposed action may affect the threatened Mexican spotted owl (*Strix occidentalis lucida*) (MSO) and its critical habitat.

You also requested our concurrence that the proposed project may affect, but is not likely to adversely affect, the threatened Sonoran Desert population of the bald eagle (*Haliaeetus leucocephalus*), threatened Chiricahua leopard frog, and the endangered Gila chub (*Gila intermedia*). We concur with your determinations. The basis for our concurrences is found in Appendix A.

You also determined that the proposed action would result in “no effect” to the endangered Southwestern willow flycatcher (*Empidonax traillii extimus*), the endangered razorback sucker (*Xyrauchen texanus*) and its critical habitat, the Verde River experimental, nonessential population of Colorado pikeminnow (*Ptychocheilus lucius*), and Gila chub critical habitat. “No effect” determinations do not require review from the FWS, and are not addressed further.

This biological opinion is based on information provided in the October 10, 2008, Environmental Assessment (EA), the February 6, 2009, Biological Assessment (BA) and its appendices, the maps received on February 13, 2008, conversations and electronic correspondence 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 species addressed 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

Date	Event
June 16, 2005 – April 13, 2006	We began discussions with your staff regarding early planning for the Upper Beaver Watershed Fuels Reduction Project (UBWFR) and effects to wildlife.
April 26, 2006	We received the April 25, 2006, public scoping document for the project.
May 4, 2006	We participated in a field trip with the Forest Service and the Arizona Game and Fish Department to discuss the proposed action and potential project modifications to benefit wildlife.
May 23, 2006	We provided our comments on the proposed action.
June 5, 2007	The Forest Service sent us a draft BA to review. Shortly after this we discussed the draft BA with the Forest Service and suggested several edits to the document.
July 16, 2007	We received your initial request for consultation on the project. The Forest Service determined that the proposed action was not likely to adversely affect the MSO, but may result in adverse effects to designated critical habitat.
August – October 2007	We discussed the request for consultation and BA with Forest Service staff at length. At issue were conflicting determinations for MSO protected and restricted habitat and MSO critical habitat. Additional questions regarding the BA were also discussed with the Forest Biologist and the biologist that prepared the BA.
November 14, 2007	We received a letter dated November 13, 2007, from the Forest Supervisor stating that the proposed action for the UBWFR Project would be modified and that the Forest was withdrawing its request for consultation.
December 13, 2007	We received the December 13, 2007, public scoping document for the project.
January – July 2008	We corresponded by electronic mail and met with your staff to discuss the UBWFR Project.
October 17, 2008	We received the EA for the UBWFR Project.
November 26, 2008	We received a draft BA to review. We discussed the project and clarifications to the BA in telephone conversations with staff in December and January 2009.

December 1, 2008	We received a call from the District Ranger indicating that <sup>3</sup> review of the UBWFR draft BA was the highest priority for the Coconino National Forest.
February 9, 2009	The Forest Service requested formal consultation for potential adverse affects to the MSO resulting from implementation of the UBWFR Project.
March 9, 2009	We acknowledged your request for formal consultation with a 30-day letter.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE PROPOSED ACTION**

The Coconino National Forest is proposing to conduct the UBWFR Project, which is designed to restore fire-adapted ecosystems and reduce the potential for stand-replacing wildfire. The project area encompasses approximately 48,179 acres of Forest Service lands within the Upper Beaver Creek Watershed. The project area is located about 12 miles northwest of Clint's Well, and about 30 miles south of Flagstaff, on the Mogollon Rim and Red Rock Ranger Districts in Coconino and Yavapai Counties, Arizona. The project will be implemented over approximately the next 15 to 20 years, depending upon funding and the ability to implement burning prescriptions successfully.

Vegetation treatments are proposed on about 16,000 acres and prescribed burning actions on about 44,000 acres within the project area. Specific treatments included in the proposed action may be put in one of eight categories: meadow maintenance (930 acres), MSO protected activity centers (159 acres), savannah maintenance (2,294 acres), thin from below (4,900), transition maintenance (2,680 acres), timber stand improvement (37 acres), uneven-aged management (1,215 acres), and uneven-aged goshawk (3,609 acres) treatments. In addition, the project will conduct initial broadcast burning (19,450 acres), maintenance burning (8,635 acres), pile burning (50 acres), and long-term maintenance burns (43,906 acres). The full project treatment is described in the February 2009 BA and the October EA and is included herein by reference.

Minimization and conservation measures for the MSO are listed in the BA on page 19 and in Appendix B.

### **STATUS OF THE SPECIES**

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 stand-replacing 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). Critical habitat was designated for the MSO in 2004 (USDI 2004).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) 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.

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 severe wildfire, can have short-term adverse effects to MSO through habitat modification and disturbance. As the human population grows, especially in Arizona, small communities within and adjacent to National Forest System lands are being developed. This trend may have detrimental effects to MSO by further fragmenting habitat and increasing disturbance during the breeding season. West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney *et al.* 2004). Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic, severe, stand-replacing wildfire is probably the greatest threat to MSO within the action area. As throughout the West, fire severity and size have been increasing within this geographic area.

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 1,025 PACs established on National Forest System (NFS) lands in Arizona and New Mexico (B. Barrera,

pers. comm. June 18, 2007). The FS Region 3 data are the most current compiled information available to us; however, survey efforts in areas other than NFS lands have resulted in additional sites being located in all Recovery Units.

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 Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations" (Gutierrez et al. 2003), found that reproduction varied greatly over time, while survival varied little. The estimates of the population rate of change ( $\Lambda$ =Lambda) indicated that the Arizona population was stable (mean  $\Lambda$  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  $\Lambda$  from 1993 to 2000 = 0.937; 95 percent Confidence Interval = 0.895, 0.979). The study concludes that spotted owl populations could experience great (>20 percent) 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 209 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 413 PACs. The form of this incidental take is almost entirely harm or harassment, rather than direct mortality. These consultations have primarily dealt with actions proposed by Forest Service Region 3. However, in addition to actions proposed by 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. The jeopardy opinion issued for existing Forest Plans on November 25, 1997 was rendered moot as a non-jeopardy/no adverse modification BO was issued the same day.

In 1996, we issued a biological opinion on FS Region 3 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. 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 anticipated incidental take in the form of harm and/or harassment of owls associated with 243 PACs on Region 3 NFS lands. FS Region 3 reinitiated consultation on the LRMPs on April 8, 2004. On June 10, 2005, the FWS issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, take is reasonably certain to

occur to an additional 10 percent of the known PACs on NFS lands. We expect that continued operation under the plans will result in harm to 49 PACs and harassment to another 49 PACs. To date, consultation on individual actions under the amended Forest Plans, as accounted for under the June 10, 2005, biological opinion has resulted in the incidental take of owls associated with 40 PACs. Incidental take associated with Forest Service fire suppression actions, which was not included in the LRMP proposed action, has resulted in the incidental take of owls associated with 15 PACs.

*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, 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 percent to 45 percent 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 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 13 critical habitat units located in the Upper Gila Mountains RU that contain 3.1 million acres of designated critical habitat.

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to 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 within the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

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

The UBWFR Project analysis area is within the Upper Gila Mountain RU and MSO critical habitat unit Upper Gila Mountains 11 (UGM-11). There are approximately 144,790 total acres within UGM-11. The unit contains forested habitats and steep, forested canyon habitats. MSO nesting habitat is mostly restricted to steeper terrain and steep canyons within this critical habitat unit. There are approximately 34,988 acres of protected and restricted habitat within the analysis area. These acres are also designated critical habitat (USDI 2004). Of the 3,745 acres of protected habitat in the analysis area, 3,394 acres are currently designated as PACs. The remaining protected habitat (351 acres) is on slopes greater than 40%, outside of PACs. There are approximately 31,243 acres of restricted pine-oak habitat within the analysis area. Approximately 4,528 acres of restricted habitat have been identified as target-threshold habitat, per the Recovery Plan (USDI 1995).

The entire analysis area was surveyed for MSO from 2006 to 2008, and there are nine MSO PACs designated wholly, partially, or within 0.5 mile of the UBWFR analysis area (Table 2). The most current monitoring results for each PAC are discussed in the BA, but for purposes of our analysis all nine PACs are considered to be occupied.

**Table 2.** MSO PACs in (or adjacent to) the UBWFR Project Area.

<b>PAC Name</b>	<b>PAC Number</b>	<b>Last Detection</b>	<b>Location relative to Project Area</b>	<b>Treatment in PAC (Y/N)</b>
Fain Mountain	040410	2001	Partially in	No
Roundup	040545	1998	Partially in	No
Weir	040104	1998	Partially in	No
Rattlesnake	040102	2006	Partially in	No
Gash Mountain	040521	2006	Adjacent to	No
Jacks Canyon	040402	2006	Completely within	No
Jones Mountain	040429	1996	Completely within	Yes (96 acres)
Lake Mountain	040411	2006	Completely within	Yes (177 acres)
Rocky Gulch	040433	1993	Completely within	No

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

In the late 1980s and early 1990s there were four timber sales within the analysis area. The Blind Lake Timber Sale (1986) was 10,400 acres, the Banfield Timber Sale (1987) was 14,135 acres, the Back Timber Sale (1992) was 1,860 acres, and the Lake Timber Sale (1993) was 2,500 acres. These were all commercial timber sales and most likely impacted some amount of MSO habitat within the analysis area. However, there is no information regarding how much MSO habitat may have been modified in these timber sales or how these sales may have modified how MSO currently use the area. Planned actions that will or are occurring within the analysis area include livestock grazing and management within the Apache Maid, Beaver Creek, and Walker Basin Range Allotments. In addition, to these activities, other actions that may have also impacted MSO or MSO habitat include fire management and suppression, ungulate use of the area, land exchanges, utility powerline maintenance, construction and management of the Discovery Channel Telescope, motorized travel, and other recreation activities.

### **EFFECTS OF THE ACTION**

Effects of the action means 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. The direct and indirect effects of the proposed action include impacts from forest health and fuel treatments (thinning and burning) that will aid in restoring understory and overstory vegetative health and diversity and reduce the risk of stand-replacing wildfire.

Project activities are planned to reduce the risk of severe, stand-replacing wildfire to MSO PACs, protected steep-slope, and restricted habitat as recommended in the Recovery Plan (USDI 1995). However, even projects with projected long-term benefits may reduce habitat quality for wildlife in the short-term. The project will be implemented over the next 15 to 20 years, and then it will take some period of time for longer-term project benefits to be realized. In the short-term, direct and indirect effects to the MSO and its habitat may include disturbance, the loss of key habitat



components, and reduced severe wildfire risk. Direct and indirect effects to critical habitat may include the loss or modification of the primary constituent elements and reduced severe wildfire risk. This section will describe the potential effects of the fuels reduction projects to MSO and how actions implemented under the UBWFR Project may result in short-term adverse effects to the species and its habitat; however, we also expect that the proposed action will reduce the potential for severe wildfire and provide increased protection to existing and future MSO habitat.

As stated above, the UBWFR Project analysis area encompasses 48,179 acres within the Upper Beaver Creek watershed. Within this analysis area, there are approximately 34,988 acres of MSO habitat (PACs, protected steep-slope, restricted, critical habitat). Of the 34,988 acres of MSO habitat, approximately 30,692 acres will be treated. Table 3 summarizes the proposed actions that will occur in MSO protected, restricted, and critical habitat.

**Table 3.** Mexican spotted owl habitat within project treatment areas (acres). All acres to be treated are designated critical habitat.

<b>MSO Habitat</b>	<b>Broadcast and Maintenance Burns</b>	<b>Thinning and Burning</b>	<b>Total MSO Acres Treated</b>	<b>No Treatment</b>	<b>Total MSO Acres (Treated + Untreated)</b>
Protected: PACs and Steep-slopes	525	159	684	3,061	3,745
Restricted Pine-Oak	14,710	11,428	26,138	1,139	27,277
Target Threshold	3,717	153	3,870	96	3,966
<b>Total Acres</b>	18,952	11,740	30,692	4,296	34,988

#### Protected Habitat (PACs)

There are nine MSO PACs that occur within the analysis and project area. Thinning and burning are planned for 273 acres in two PACs (see Table 2), with the majority of this occurring in the Lake Mountain PAC (#040411) where approximately 63 acres would be thinned and pile burned, and 114 acres broadcast burned. In addition, approximately 96 acres would be thinned and pile burned within the Jones Mountain PAC. Direct and indirect effects from the thinning actions within the PACs would be minimal. The PAC would be thinned per recommendations in the Recovery Plan, which would result in retention of all trees greater than nine inches. Core nest areas (“nest buffers”) have been established for both PACs, and no treatments would occur within these core areas. Conservation measures that would specifically minimize effects to the PACs from these treatments include:

- When implementing sale and prescribed burning preparation activities, noise disturbance will be minimized.
- Within PACs, thinning slash will be located in openings away from down logs greater than 12 inches dbh where possible.

- Prior to burning in PACs, down logs (>12 inches dbh), snags (>18 inches dbh), Gambel oak trees (>10 inches diameter-at-root collar [drc]), and yellow pines will be lined to prevent loss of these key habitat components.

Though this prescription will maintain larger trees through the thinning process, it is possible that removing only these smaller trees (< 9 inches dbh) may create a more even-aged area within these PACs, reduce the number of canopy layers, and not significantly reduce mortality of remaining trees following prescribed burning. However, we assume that not all small trees will be removed within the PAC thinning units and that this action would not significantly change the habitats within these two PACs.

Four of the PACs (Jacks Canyon, Jones Mountain, Lake Mountain, and Rocky Gulch) would have prescribed burning and thinning conducted immediately adjacent to them during the breeding season. Core nest areas have not been delineated in the Roundup, Weir, Rattlesnake and Gash Mountain PACs, so the BA states that treatments would not occur within 0.5 mile of these PACs during the breeding season until data is available to delineate core areas (see Appendix B, MSO Design Features). However, since core areas within these four PACs could be delineated during the course of this project (15 to 20 years), we should expect that all eight of these PACs may be subject to noise disturbance from adjacent thinning operations during the breeding season (March 1 through August 31).

There are a growing number of studies attempting to describe and quantify the impacts of non-lethal disturbance on the behavior and reproduction of wildlife, and MSO in particular. Delaney *et al.* (1997) reviewed literature on the response of owls and other birds to noise and concluded the following: 1) raptors are more susceptible to disturbance-caused nest abandonment early in the nesting season; 2) birds generally flush in response to disturbance when distances to the source are less than approximately 200 feet and when sound levels are in excess of 95 dBA; and 3) the tendency to flush from a nest declines with experience or habituation to the noise, although the startle response cannot be completely eliminated by habituation. Delaney *et al.* (1999) found that ground-based disturbances elicited a greater flush response than aerial disturbances. Our guidance is to limit potentially disturbing activities to areas  $\geq 0.25$  mile from MSO nest sites during the breeding season (March 1 through August 31). This corresponds well with the Delaney *et al.*'s (1999) 0.25 mile threshold for alert responses to helicopter flights. In addition, Delaney *et al.* (1999) found that MSO did not flee from helicopters when caring for young at the nest, but fled readily during the post-fledgling period. This may be a result of optimal fleeing decisions that balance the cost-benefit of fleeing. Frid and Dill (2002) hypothesize that this may be explained using predator risk-disturbance theory and perhaps the cost of an adult MSO fleeing during the nestling period may be higher than during the post-fledgling period.

Our analysis of the thinning unit maps and PAC location information indicates that though there are thinning units adjacent to occupied MSO habitat, the PACs most likely to be impacted by noise are Lake Mountain, Jones Mountain, and Jacks Canyon. Noise generated during thinning activities is likely to disturb breeding MSO, interfering with nesting and foraging activities pre- and post-fledging. The other PACs have topographic screening from proposed thinning units that lead us to believe noise impacts will be reduced.

Smoke tends to settle into low-lying areas during the nighttime and could potentially affect owls associated with all nine PACs located in and adjacent to the project area during the breeding season when spring burns are conducted. Smoke effects would be short-term (3 to 5 days), but initial burns may generate significant smoke due to current fuel loads. In order to reduce this effect, the Forest Service states that if prescribed burns are planned to occur within 0.5 mile of a PAC during the breeding season, ignition days should have good or better ventilation to limit heavy concentrations of smoke for extended periods of time. Maintenance burns should result in less smoke (and less impact) as there would be less fuel to burn on second and third entry burns.

#### Protected Habitat (Steep Slopes)

Approximately 351 acres of protected steep slope habitat are proposed to be broadcast burned as part of the proposed action. Low-intensity spring burns are expected to minimize the loss of logs, snags, and large trees due to smaller flame lengths and higher fuel moistures (compared to fall). However, some loss of logs and snags within this habitat is likely.

#### Restricted Habitat (Including Target/Threshold Habitat)

There are 31,243 acres of restricted habitat; within this acreage the Forest Service identified approximately 4,528 acres of target/threshold habitat. Of the restricted habitat, approximately 14,710 acres (47%) is proposed to be burned, and approximately 11,428 acres (37%) is proposed to be thinned and burned. Approximately 3,717 acres (82%) of the target/threshold habitat is proposed to be burned, and 153 acres (3%) is proposed to be thinned and burned.

All proposed burning within restricted habitat would follow a modified prescription with mitigation measures designed to limit effects to key habitat components (e.g., protection of logs, snags, and large trees). While efforts would be made to avoid loss of large snags and logs, there would be some measurable loss of these key habitat components. Spring burns are expected to reduce the amount of loss due to likely higher fuel moistures in the spring (than in the fall). The reduction in snags and logs could affect prey availability at the burn unit scale and potential nest trees (snags). However, burns are likely going to create a mosaic of burned and unburned areas, thin the understory, create small ( $\leq 0.25$  acre) openings, but not change the overall structure of MSO habitat within the project area.

The majority of trees to be thinned within restricted habitat are 5 to 12 inches dbh. In all restricted habitat, yellow pines and trees greater than 18 inches dbh would be retained. Thinning the dense stands is expected to reduce fuel loading, break-up canopy connectivity, remove ladder fuels, and increase the average crown-to-base height, thereby reducing the potential for active canopy fires. Thinning should also increase understory vegetation, which in the long-term would improve MSO prey species habitat.

### Critical Habitat

As stated above, approximately 30,692 acres of forested pine-oak MSO critical habitat would be treated under the proposed action (Table 3). Canyon habitat, as defined in the critical habitat rule (USDI 2004), would not be impacted by the proposed action. Therefore, we will not analyze the effect of this project on the primary constituent elements of canyon habitat.

The Recovery Plan (USDI 1995) encourages land management agencies to conduct fuels reduction projects within MSO habitat and provides guidelines for these actions that will aid in reducing fuels, but still maintain habitat and minimize effects to MSO. These guidelines were designed to protect MSO habitat over the long-term by reducing the likelihood of severe crown fire; however, short-term effects from fuels reduction treatments can adversely affect the primary constituent elements of MSO critical habitat directly or indirectly by altering their habitat and/or prey. Broadcast burning and mechanical thinning may affect designated critical habitat by reducing snags, downed logs, woody debris, multi-storied canopies, and dense canopy cover. In addition, the proposed activities may change the structure of MSO prey species' habitat, affecting the abundance and composition of prey species. Although these activities may have adverse effects to MSO prey species and habitat in the short-term, the proposed treatments would increase the diversity of vegetative conditions and reduce the risk of severe, stand-replacing wildfire in the long-term.

The conservation measures identified in this document and the BAE would be fully implemented by the Forest Service as part of their proposed action. These conservation measures will help minimize or avoid adverse impacts to the function and conservation role of MSO critical habitat. Without these conservation measures, the negative effects to the function and conservation role of MSO critical habitat would likely be greater.

Primary constituent elements were identified by the FWS in the final rule designating critical habitat (USDI 2004). The importance of each of these components to MSO habitat is described in the final rule (USDI 2004) and the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. The expected effects on the primary constituent elements of MSO critical habitat as a result of the UBWFR Project are summarized below by forest structure and prey species habitat.

#### Forest Structure

*Range of trees species, tree size:* In forested critical habitat, a range of tree species, 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, is desired. Diversity in tree-size distributions is typical of MSO habitat and provides the vertical structure that is thought to be important to owls (Seamans and Gutierrez 1995). The Forest Service will strive to retain 80% of conifers >18 inches dbh and Gambel oaks >14 inches drc, 80% of snags, 70% of downed logs, and 70% of small oaks (5 to 14 inches drc) in MSO protected and restricted habitat. Reductions in this constituent element may occur following prescribed burning and could result in impacts to the size and species structure of MSO critical habitat, particularly during initial entry burns when fuel loads are heavier. This impact to tree species diversity and loss of certain sized trees will result in a short-

term adverse effect to this primary constituent element. Large, live trees are an important element of MSO habitat, and owl use is often correlated with a medium-to-large tree component (USDI 1995). Large trees and snags take many years to develop and are very difficult to replace, even over the long-term. However, the Forest Service does propose to conduct “test burns” outside of MSO habitat in order to test conditions prior to burning MSO habitat. This effort, and past experience the Forest has gained implementing other actions, should aid in reducing effects to large trees.

*A shade canopy created by the tree branches covering 40% or more of the ground:* The Forest Service expects that shade canopy will be reduced following thinning and burning treatments. However, they do not expect canopy closure to fall below 40%. Ganey et al. (2003) found that 32 out of 34 MSO roosting stands had canopy cover >40%, and 75% of stands used for roosting had canopy cover >60%. Following implementation of the project, MSO restricted habitat, including some acres of target-threshold, will be at the lower end of habitat used by MSO for nesting or roosting. However, over time, we would expect canopy cover to increase in areas, particularly in those stands managed as target-threshold habitat. We do not expect reduction of canopy cover in protected habitat to be significantly different from what the Forest Service predicted. We would expect that some small reduction (5 to 10%) may actually aid in increasing the understory herbaceous and forb production, which will benefit MSO prey species.

*Large, dead trees (snags) with a dbh of at least 12 inches:* Large snags would most likely be reduced following proposed prescribed burning. Currently, large snags are rare across the action area, and any loss of this habitat component may be significant in terms of maintaining MSO and prey habitat. The Forest Service would attempt to minimize this loss through the proposed conservation measures (i.e., by lining snags >18 inches dbh). However, it is likely that following burning treatments, upwards of 30% of this currently rare habitat component may be lost within treated MSO habitat, resulting in short-term adverse effects to this primary constituent element.

#### *Maintenance of adequate prey species*

*High volumes of fallen trees and other woody debris:* Fallen trees and woody debris would likely be reduced by the proposed burning treatments (broadcast, piling, and maintenance burning). Logs are expected to be reduced by approximately 30% within protected and restricted habitat. This loss of large logs would result in short-term adverse effects to this primary constituent element. Prior to burning in PACs, large logs (>12 inches dbh) would be lined to prevent their loss.

*A wide range of tree and plant species, including hardwoods:* We do not expect that this primary constituent element will be adversely affected by the proposed action. Plant species richness would likely increase following thinning and/or burning treatments that result in small, localized canopy gaps. Retention goals for oaks in MSO habitat are 80% for large oaks (>14 inches drc) and 70% for smaller oak trees. Proposed conservation measures and burning techniques should aid in maintaining oaks, but some level of short-term loss is expected.

*Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration:* Short-term decrease in plant cover will result from fire-related activities and

possibly mechanical thinning. We expect long-term increases in residual plant cover because treatments would provide conditions suitable for increased herbaceous plant growth by removing a thick layer of dead plant debris within treated areas. The mosaic effect created by burned and unburned areas and by opening up small patches of forest within protected and restricted habitat is also expected to increase herbaceous plant species diversity and, in turn, assist in the production and maintenance of the MSO prey base. The function and conservation role of this primary constituent element would not be compromised by the proposed action.

#### *Summary of effects to Critical Habitat*

In summary, several MSO critical habitat primary constituent elements may be adversely affected by the proposed action. Snags, large coarse woody debris, and large trees would be lost during project implementation of forest health and fuels treatments. However, we find that the effects to the function and conservation role of critical habitat relative to the Recovery Unit and the entire designation are not significant because the impacts would be temporary and occur in a very small area relative to the Recovery Unit and the overall critical habitat designation. Therefore, we conclude that the primary constituent elements of MSO critical habitat would continue to serve the intended conservation role for the species with the implementation of the UBWFR Project.

#### **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. Since the land within the action area is almost exclusively managed by the Forest Service, most activities that could potentially affect listed species are Federal activities and subject to additional section 7 consultations.

Future non-Federal actions within the project area that may be reasonably certain to occur include the potential development and/or modification of private property in-holdings within the Upper Beaver Creek watershed and unregulated recreation. These activities may result in localized disturbance to MSO and/or impacts to MSO habitat, but would not impact the long-term recovery and/or conservation of MSOs and their habitat within the project area, Recovery Unit or critical habitat unit.

#### **CONCLUSION**

After reviewing the current status of the MSO, the environmental baseline for the action area, the effects of the proposed fuels reduction project, and the potential for cumulative effects, it is our biological opinion that implementation of the UBWFR Project, as proposed, is not likely to jeopardize the continued existence of the MSO, or result in the destruction or adverse modification of critical habitat.

We present this conclusion for the MSO for the following reasons:

1. Though treatments in critical habitat may result in the loss of some primary constituent elements and treatments in protected and restricted habitat may reduce key habitat components, the proposed action will increase the long-term viability of MSO habitat by reducing the threat of severe, stand-replacing wildfire.
2. The implementation of the proposed action is not expected to impede the survival or recovery of MSO within the Upper Gila Mountains Recovery Unit.

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 further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 a PAC. Actions outside PACs will generally not be considered 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 conditions of possible incidental take for the MSO associated with implementation of the UBWFR Project within the Lake Mountain, Jones Mountain, and Jacks Canyon PACs. Based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished by the Forest Service, take is anticipated for the MSO as a result of predicted high levels of noise from thinning operations immediate adjacent to these occupied areas over the next 10 years (assuming the thinning actions will take place in the first decade of the project, rather than the second). Though we believe that the Forest Service has proposed conservation measures that will minimize adverse effects to MSO within these PACs, the proposed action is not consistent with the Recovery Plan or the 1996 Forest Plan Amendments to avoid noise disturbance immediately adjacent to PACs during the breeding season.

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

We anticipate that the proposed action is reasonably certain to result in incidental take of MSO over the life of the project. We anticipate that the take of MSO will be difficult to detect because finding a dead or impaired specimen is unlikely. However the level of incidental take can be anticipated by chronic disturbance that will affect the reproductive success and survival of MSO within the project area. We anticipate harm and harassment to MSO resulting in chronic disturbance from the cumulative effects of long-term thinning operations adjacent to these PACs. This will result in continued disturbance, which may result in disrupted MSO reproduction and the ability of these PACs to contribute to recovery of the species.

We anticipate the take of one pair of MSOs and/or associated eggs/juveniles in the form of harm and harassment associated with the Lake Mountain (#040411), the Jones Mountain PAC (#040429), and the Jacks Canyon PAC (#040402) due to long-term thinning operations planned during multiple breeding seasons immediately adjacent to the PACs. This anticipated take is in the form of chronic (greater than eight breeding seasons) disturbance (non-habitat altering action that disrupts or is likely to disrupt owl behavior within the PAC). Though there will be long-term benefits to MSO habitat from reducing the fuels adjacent to PACs and improving habitat, the noise generated by these actions during the breeding season is likely to interrupt, impede, or disrupt normal behavior patterns to the point that breeding and feeding activities are impacted.

### **Effect of the Take**

In this biological opinion we determine that this level of anticipated take is not likely to result in jeopardy to the species considered herein.

### **Reasonable and Prudent Measures with Terms and Conditions**

The following reasonable and prudent measure is necessary and appropriate to minimize take of MSO:

1. The Forest shall take steps necessary to minimize take from the proposed action.

The following terms and conditions implement reasonable and prudent measure number one:



- 1.1 The Forest Service shall schedule vegetation management actions around these three PACs in such a way as to minimize the number of breeding seasons that each PAC is impacted by thinning operations.
- 1.2 The Forest Service shall provide to the FWS a description of and a map showing how this will be done prior to the first vegetation management actions occurring adjacent to these PACs.

Review requirement: The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. The Forest Service must immediately provide an explanation of the causes of the taking and review with the AESO the need for possible modification of the reasonable and prudent measures.

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

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: (480) 967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and in handling dead specimens to preserve the biological material in the best possible state.

If possible, the remains of intact species shall be provided to this office. If the remains of the species are not intact or are not collected, the information noted above shall be obtained and the carcass left in place. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should the treated species survive, contact our office regarding the final disposition of the animal.

### **CONSERVATION RECOMENDATIONS**

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 the Forest Service work with us to continue to improve prescribed burning techniques and determine means by which more key habitat components/primary constituent elements of MSO habitat may be retained following fuels reduction treatments.

**REINITIATION NOTICE**

This concludes formal consultation on the action outlined in this biological opinion. As provided in 50 CFR Section 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your continued coordination. In all future correspondence on this project, please refer to the consultation number 22410-2005-F-0569. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

Should you require further assistance or if you have any questions, please contact Shaula Hedwall at (928) 226-0614 (x103) or Brenda Smith (x101) of our Flagstaff Suboffice.

Sincerely,

/s/Brenda Smith for

Steven L. Spangle  
Field Supervisor

cc:

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Field Supervisor, Arizona Game and Fish Department, Region 2, Flagstaff, AZ  
District Ranger, Mogollon Rim Ranger District, Happy Jack, AZ  
Forest Biologist, Coconino National Forest, Supervisor's Office, Flagstaff, AZ  
District Biologist, Mogollon Rim Ranger District, Happy Jack, AZ (Attn: Barbara Garcia)

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## APPENDIX A - CONCURRENCES

This appendix contains our concurrences with your “may affect, not likely to adversely affect” determinations for the threatened Sonoran Desert population of the bald eagle, the threatened Chiricahua leopard frog, and the endangered Gila chub.

### Bald eagle

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened bald eagle. We base this concurrence on the following:

- There are no nesting locations within the proposed action area; therefore, there will be no direct impacts to nesting eagles.
- Implementation and conservation measures will maintain a majority of the large snags and trees throughout the project area during treatments. In addition, the reduced potential for high-severity fire following treatments will protect roosting habitat and foraging perches across the project area.

### Chiricahua leopard frog

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened Chiricahua leopard frog. We base this concurrence on the following:

- Though the analysis area contains perennial and intermittent streams as well as stock tanks that may be potential habitat for this species, no Chiricahua leopard frogs have been detected during rapid frog surveys.
- Best management practices will be followed to limit the input of ash and sediment into creeks and stock tanks following thinning and burning treatments. This will aid in maintaining the integrity of these aquatic habitats and should result in insignificant and discountable effects to these habitats.
- To protect potential breeding sites, a seasonal restriction (April 15 through September 15) for all proposed activities will be implemented at important water sources. To protect frog dispersal habitat, a 200-foot protection zone (no thinning, no burning) will be designated around identified stream courses.
- If thinning or prescribed burning is planned to occur within 10 feet of an ephemeral stream or stock tank that is flowing water at the time of treatment, all vehicles and personnel will implement decontamination measures to prevent the spread of amphibian chytrid fungus.

Gila chub

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the endangered Gila chub. We base this concurrence on the following:

- There is some potential for increased sedimentation in Red Tank Draw and Wet Beaver Creek from the proposed action. However, the expected increase in sedimentation is so insignificant, according to the BAE, that any effects to downstream occupied and potential should be insignificant and discountable. However, Best Management Practices will be implemented to protect soils and reduce the potential for soil compaction and ground disturbance that could result in increased sedimentation within the watershed.
- All riparian and non-riparian stream courses (which includes drainages that may connect to Red Tank Draw and Wet Beaver Creek) will be buffered by at least 33 feet (66 feet on riparian streams) to minimize effects from the proposed action.