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In Reply Refer To:  
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June 20, 2005

E-Mail Transmission  
Memorandum

To: Superintendent, Flagstaff Area National Monuments, Flagstaff, Arizona  
(Attn: Palma Wilson)

From: Field Supervisor, Arizona Ecological Services Office, U.S. Fish and Wildlife Service

Subject: Walnut Canyon General Management Plan Biological Opinion (FLAG-L7615)

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 June 4, 2004, and received by us on June 9, 2004. This consultation concerns the possible effects of the National Park Service (NPS) implementing the General Management Plan (GMP) for Walnut Canyon National Monument located in Coconino County, Arizona, on the Mexican spotted owl (*Strix occidentalis lucida*) (MSO) and its 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. Your initial request included a request for a conference opinion on the effects of the GMP on proposed MSO critical habitat. The final rule designating critical habitat became effective on September 30, 2004 (USDI 2004), which includes the project area under consultation. Therefore, we will analyze potential effects from the proposed action to designated critical habitat within the monument in this consultation.

In your memorandum you also requested our concurrence that the proposed action may affect, but is not likely to adversely affect, the bald eagle (*Haliaeetus leucocephalus*). We concur with your determination. The basis for our concurrence is found in Appendix A.

This biological opinion is based on information provided in the original June 4, 2004, Biological Assessment and Evaluation (BAE), 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 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>
Late 1998, 1999	We received a letter requesting our participation in the preparation of the Flagstaff Area National Monuments General Management Plans. We attended meetings and exchanged electronic mail correspondence with park staff.
October 9, 2001	We received a letter requesting comments on the September 2001 Draft Environmental Impact Statements (DEIS)/General Management Plans (GMPs) for Walnut Canyon, Sunset Crater, and Wupatki National Monuments.
November 29, 2001	We provided our comments on the DEIS/GMPs for the Flagstaff Area National Monuments.
August 21, 2003	We received a biological assessment (BA) for the Walnut Canyon DEIS/GMP.
August 26, 2003	The Park Service withdrew the BA.
September-October, 2003	The Fish and Wildlife Service and Park Service discussed via electronic mail the DEIS/GMP and potential effects to listed species.
November 13, 2003	The Fish and Wildlife Service and Park Service met and discussed the GMP, draft BA, and the section 7 consultation process.
November-December 2003	The Fish and Wildlife Service and Park Service continued to discuss the consultation process and work through questions and concerns.
June 9, 2004	We received your request for formal consultation on the effects of the Walnut Canyon GMP on the MSO and its critical habitat. The BA made a determination of “may affect, likely to adversely affect the MSO” and “adverse modification” for critical habitat. We determined with your staff that the critical habitat determination should be “likely to adversely affect.”
September 30, 2004	We met with your staff to discuss MSO surveys and monitoring in relation to the GMP.
October 8, 2004	We met with you and your staff to discuss the draft biological opinion and other issues.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE ACTION

Walnut Canyon National Monument encompasses approximately 3,580 acres and is located five miles east of Flagstaff, Arizona. In accordance with the National Park Service (NPS) mission and policies, the monument is managed to protect these unique cultural resources in perpetuity and to provide for public enjoyment of these resources. Legislation passed in 1996 administratively transferred approximately 1,330 acres from the Coconino National Forest to the NPS.

The intent of the preferred alternative described in the DEIS/GMP is to emphasize the preservation and protection of listed species and the maintenance of the long-term integrity of natural systems and processes within the monument. The GMP will establish management zones and provide broad direction for the next ten to 15 years for appropriate public access, recreation, NPS operations, facility development, and resource management within the monument. Visitation will be managed with the goal of providing a quality learning experience in a quiet, historic setting. The ratio of visitors to educators will be kept low to ensure a personal experience, and compared with existing conditions, more ranger-guided tours will be offered to archeological sites.

The following management zones will be established to guide management in different areas of the monument. Each of these “zones” is described in greater detail and displayed on a map in the BAE.

- *Resource Preservation Zone:* This zone provides for maximum preservation of fragile and/or unique resources, listed species, sacred sites, etc. Management actions will emphasize resource protection and access will be restricted. There will be no facilities or developments for visitors, but off-site interpretation will be extensive to promote visitor education about the value of resource protection.
- *Extended Learning Zone:* Within this zone, visitors will be educated about the cultural resources and natural history of Walnut Canyon through self-guided and ranger-led activities. The environment will remain predominantly natural, but trails, signs, overlooks, exhibits, and other interpretive media will be installed. Support facilities, such as restrooms and picnic areas, may also be present. Predominant activities will include hiking, viewing resources, interpretive walks, and talks.
- *Guided Adventure Zone:* Within this zone, visitor access will be restricted to NPS-guided groups. The probability of encountering groups will be low and there will be some opportunities for solitude. Permanent facilities will not be constructed within this zone, unless primitive trails are deemed necessary to

protect resources. Hiking and camping with a guide will be the predominant activity in this zone.

- *Motorized Sight-seeing Zone:* Motor vehicle access to meet NPS operational needs will be allowed within this zone. Substantial infrastructure will be maintained or built, including paved roads, pullouts, overlooks, short trails, picnic areas, parking areas, and other visitor support facilities.
- *Overview Zone:* Within this zone the natural environment will be modified to provide primary visitor orientation and interpretation. Infrastructure and facilities, such as paved parking, visitor centers, kiosks, wayside exhibits, interpretive media, utility corridors, or other appropriate facilities will be maintained or built. Visitors will get an overview of cultural and natural resource themes and their significance in a short timeframe with a minimum of physical exertion. Sightseeing, learning about the monument, short walks, and attending interpretive programs would be common activities in this zone.
- *Administrative Zone:* This zone will be modified to support NPS operations at the monument. Infrastructure and facilities necessary for monument operations or surrounding land uses, such as paved roads and parking, employee offices, maintenance shops, equipment storage yards, employee residences, and utility corridors will be maintained and built. Facilities will not be sited close to sensitive natural or cultural resources. This zone is not intended for visitor use.
- *Natural Area Recreation Zone:* Within this zone, the natural environment will be modified to accommodate public recreation along a designated trail route in a natural setting. Overnight camping and motorized access would be prohibited. The trail will be designed and built of natural materials. Associated facilities will be primitive and will be built only to prevent resource impacts or to provide for safety. Visitors will be directed to stay on designated trails.

On pages 12-13 of the BAE, fourteen “implementation actions” are listed. These actions are common to all alternatives described in the DEIS/GMP and are included herein by reference.

#### *Conservation Measures*

1. The NPS will consult with the Fish and Wildlife Service under Section 7 of the ESA for any actions not covered under this programmatic consultation.
2. The NPS will continue to acquire data on the distribution, abundance, status, trend, and habitat conditions for protected and sensitive species.
3. The NPS will cooperate with the Fish and Wildlife Service to implement the Recovery Plan for the Mexican Spotted Owl (USDI 1995).

4. The monument will remain closed at night to minimize visitor-use and NPS operation effects on nocturnal wildlife activity.
5. The NPS will modify all range fences in proximity to pronghorn (*Antilocapra americana*) habitat to allow for their movement.
6. The NPS will conduct site-specific surveys for protected and sensitive plant species prior to any ground, vegetation, or wetland disturbance. If any protected or sensitive plants are located the NPS will work with the Fish and Wildlife Service to protect the plants.
7. The NPS will attempt to limit surface disturbance to areas already impacted by prior land use or development.
8. The NPS will design new facilities and upgrade exhibits to improve citizen stewardship of unique resources within the monument and the surrounding Coconino National Forest.
9. The NPS will eventually move the primary visitor center away from the rim of Walnut Canyon. In addition, the timing and number of visits to the rim will be managed to reduce visitor impacts in proximity of the canyon rim.
10. The NPS will place approximately 3,330 acres (93%) of the total monument area in the Resource Preservation Zone. They will effectively prohibit development of new facilities, prohibit general access, and exclude most human activity and land use from within the most ecologically and culturally sensitive habitats.
11. The NPS will renew negotiations to purchase the 291-acre private in-holding around Santa Fe Dam.

## **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 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). 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, in which Walnut Canyon is located, 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 habitats 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.

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.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic wildfire is probably the greatest threat to MSO within the Upper Gila Mountains. 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.

Fire Name	Year	Total Acres Burned	# PACs Burned	# PAC Acres Burned
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 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," (*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 150 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 340 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.

### 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.

Primary constituent elements related to canyon habitat include one or more of the following:

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

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 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 earliest NPS record of MSO activity in Walnut Canyon dates to 1980, when a roost site was reported near the mouth of Cherry Canyon. A pair of MSO was observed by NPS staff near this location again in 1986. The Arizona Game and Fish Department (AGFD) informally surveyed

the monument from 1987-1989 and the Forest Service conducted surveys from 1991-1994. Additional surveys were conducted by NPS staff in the late 1990s. Based upon all of the surveys conducted, four protected activity centers (PACs) were established within and adjacent to the monument boundary (Cherry #040502, Breezy #040548, Lucida #040546, and Walnut 33 #040510). These PACs essentially encompass the entire monument, except for the 1996 expansion area. The NPS has established nest buffers for all four PACs, based on nest and roost locations, as nest sites are not known for two of the PACs. The two PACs for which pair occupancy was not confirmed by nesting status are the Breezy and Lucida PACs. These PACs were designated in 1999 and 1998 respectively.

Since 2000, the NPS, Fish and Wildlife Service, Forest Service, and U.S. Geological Survey personnel have sporadically surveyed for MSO in and around the monument; no MSO were observed during these efforts. However, surveys were not to protocol and did not adequately cover the habitat. In 2003, NPS cultural resources staff encountered and photographed an MSO in a tributary canyon on the south side of Walnut Canyon, approximately 0.3 mile from the Walnut 33 nest area. In addition, in 2004 an MSO was seen and heard in the expansion area during a night survey and in 2005 an MSO was detected in the Cherry Canyon PAC. Based on these detections and sightings, it is apparent that MSO do occupy areas within the monument; however, regular, protocol surveys are encouraged to better determine owl use in the canyon.

Walnut Canyon National Monument is within MSO critical habitat unit Upper Gila Mountains 12 (UGM-12). There are approximately 17,359 acres within the UGM-12 critical habitat unit; almost all of the 3,580 acres within Walnut Canyon National Monument falls within this unit. The monument is dominated by coniferous forest and woodland vegetation. There is a relatively compressed environmental/vegetation gradient along the canyon rim terraces, which are dominated by ponderosa pine on the west side of the monument and grade into pinyon-juniper woodland and grassland to the east. The north-facing canyon slopes and tributary canyons are more shaded and moist and are dominated by Douglas fir-Gambel oak forest. The south-facing slopes are more arid and dominated by scattered pinyon and juniper trees with a sparse, but diverse, understory of shrubs, herbaceous species, and succulents. The narrow riparian corridor along the canyon bottom is dominated by broadleaf deciduous trees, shrubs, and vines. The canyon habitat contains a mix of the forested and canyon primary constituent elements listed in the critical habitat rule (USDI 2004).

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

Factors affecting the species' and its critical habitat within the action area include, but are not limited to, wildfire and fire suppression, noxious weeds and control, forest insects and control, facility management, and recreation. The NPS is working on producing a fire management plan; currently, fire-related actions are not addressed or considered under the GMP. Within the monument general public access is restricted to established trails, roadways, and developed facilities. The remainder of the monument has long been closed to unguided entry to protect archaeological features. NPS operations and visitor activities have most likely affected MSO habitat utilization in the monument since at least 1987. This has probably resulted in disturbance to within 0.25 to 0.5 mile of the Island Trail due to heavy visitation and operations in this area.

Walnut Canyon National Monument is bordered on all sides by the Coconino National Forest, so actions that occur on the Forest can result in impacts to the monument as well. As stated earlier, legislation passed in 1996 administratively transferred approximately 1,330 acres from the Coconino National Forest to the NPS. The NPS recently surveyed and began fencing the new area. Until a decision notice is issued on the Final EIS/GMP, the expansion area will remain open to public use in accordance with the Coconino National Forest Land and Resource Management Plan, as amended. Predominant uses on the forest include livestock grazing on the Youngs Canyon, Cosnino, and Walnut Grazing Allotments; hunting and target shooting; off-road vehicle use; and camping. Most of these activities occur along the terraces adjacent to the Walnut Canyon rim and activity within the canyon is limited. After the NPS closes the boundary expansion area, use in this area will decrease.

The Arizona Trail route was originally established through the Coconino National Forest, but as a result of the 1996 boundary expansion, two short trail segments are now within the monument. A 0.25 mile segment traverses the entrance road corridor approximately 0.5 mile north of the visitor center area, and another 0.25 mile segment traverses the northwest corner of the monument. This section of the trail traverses a steeply-sloped tributary canyon with a Douglas fir-Gambel oak stringer and is routed approximately 300 feet inside the perimeter of the Walnut 33 PAC, about 0.6 mile from the nearest known nest sites within the PAC. It is reasonable to expect that the presence of the Arizona Trail system within the monument may aid in increasing visitation to the monument in the future. In the 10-year period between 1982 and 1992, day hiking alone in the United States has increased almost two-fold, from 26 million to 50 million people (Flather and Cordell 1995). Already, books and maps are available that advertise the Arizona Trail (e.g., *Biking the Arizona Trail* by Andrea Lankford). In addition, the peak recreational use period of the Arizona Trail overlaps the entire MSO breeding season (March 1 through August 31).

## **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.

The proposed action may result in disturbance to MSO from NPS operations and recreation. Though some construction may occur within the monument boundary, this construction is not planned for any areas that include owl habitat. In fact, based upon the project description, we expect modification and/or loss of habitat to be minimal or non-existent. This section will describe the potential effects of noise and disturbance to MSO and how actions implemented under the GMP may result in adverse effects to the species.

### Summary of Recreation Effects on MSO

Recreational activities, including hiking, camping, equestrian use, and mountain biking, may affect the MSO depending on location, intensity, frequency, and duration (USDI 1995). Direct

effects may occur when these activities impact individual birds at nests, roosts, and foraging sites. Indirect effects may occur when recreational activities degrade habitat through vegetation modification (trampling, removal, accidental burning, and soil compaction) or when human-caused disturbance stimuli act as a form of predation risk (Frid and Dill 2002).

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. 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.

Swarthout and Steidl (2001) found that MSO modified their behavior (e.g., increased perch height) and/or flushed in response to recreationists (hikers). Based on their results, they recommended placing buffer zones (conservative buffer = 180 ft; less conservative buffer = 40 ft.) around known roosting sites to minimize impacts. In a study to assess the effects of hikers on the behavior of nesting MSO, Swarthout and Steidl (2003) noted that female MSOs decreased the amount of time they handled prey by 57% and decreased the amount of time they performed daytime maintenance activities by 30% while hikers were present. In addition, hikers caused both female and male owls to increase the frequency of contact vocalizations. Birds may respond to disturbance during the breeding season by abandoning their nests or young; by altering their behavior such that they are less attentive to the young, which increases the risk of the young being preyed upon or disrupting feeding patterns; or by exposing young to adverse environmental stress (Knight and Cole 1995). There is also evidence that disturbance during years of a diminished prey base can result in lost foraging time which, in turn, may cause some raptors to leave an area or not to breed at all (Knight and Cole 1995). Topographic screening between the area of disturbance and the bird's location creates a noise buffer, and may assist in the reduction of noise disturbance (Knight and Cole 1995).

Research on all subspecies of the spotted owl indicate that it exhibits docile behavior when approached by researchers, and there is no clear evidence of significant impact by research activity except for a negative effect on reproduction from back-pack radio transmitters (Gutierrez *et al.* 1995). However, researchers usually minimize disturbance to the extent possible, which may not be the case for recreational trail users. In the long-term, some species may become less responsive to human disturbance if they are not deliberately harassed; others may become very

stress-prone towards humans (Bowles 1995, Hammitt and Cole 1987). Excessive interaction with humans may cause a lowering of call response rates or habituation; the effects of habituation on spotted owls are unknown (Gutierrez *et al.* 1995). Habituation, though it may occur to some extent, often is partial or negligible (Frid and Dill 2002). However, it would be logical to assume that wildlife rarely have perfect information and we would expect them to maximize fitness by overestimating rather than underestimating predator risk. It may be that MSO which appear to be “habituated” to recreationists, in reality may have no suitable alternative habitats and remain within areas because other suitable habitat is not available.

### Discussion of GMP Effects

Walnut Canyon National Monument is open to the public during the day and closed at night. Between 1992 and 2002, annual public use ranged from 102,839 to 157,987 visitors. Monthly visitation typically remains below 5,000 during December, January, and February when daytime temperatures remain cold. March through October monthly visitation exceeds 10,000 and typically exceeds 15,000 May through August. Peak visitation occurs in June and July. Except for NPS-guided tours to Ranger Cabin and Ranger Ledge, most of the pre-1996 monument area has been closed to general public access for at least 30 years.

Visitors travel to Walnut Canyon via a 3-mile paved road from Interstate 40, east of Flagstaff, Arizona. The access road ends at a parking lot next to the visitor center and a sizeable picnic area. Maintenance shops, employee housing, the water supply system, and the wastewater treatment and disposal systems are all located nearby. Visitor orientation and resource education are provided at the visitor center and the self-guided Island and Rim Trails. The 0.9 mile Island Trail descends 185 feet into the canyon and is the best means to view the cliff dwellings. The fairly level 0.7 mile Rim Trail passes pit-houses and surface pueblo sites, and provides scenic views of the canyon. Various interpretive programs are offered as NPS staffing permits, including guided small group tours to the Ranger Cabin and the “Ranger Ledge” cliff dwellings immediately west of the visitor center area.

The four MSO PACs encompass almost all protected and restricted habitat within and adjacent to the monument. High levels of human activity and noise disturbance can occur within and around the MSO habitat within the Extended Learning, Guided Adventure, Motorized Sight-seeing, Overview, Administrative, and Natural Area Recreation Zones. However, the majority of MSO protected and restricted habitat is within the Resource Preservation Zone. Within this zone there will be no facilities or developments for visitors and access to the area will be restricted.

The primary effects of continued public visitation at the monument are high levels of human activity and associated noise during daylight hours, especially around the visitor center-Island Trail area. More than 65% of annual visitation typically occurs during the MSO breeding season (March 1 through August 31) and the NPS estimates that at least 65% of visitors walk the Island and/or Rim Trails. The NPS has no baseline information on noise generated by visitors or NPS operations in the visitor center-Island Trail area.

The primary visitor-use facilities include the visitor center, adjacent picnic sites, Island Trail, and Rim Trail. All are constructed on the north rim and north slope of Walnut Canyon, adjacent to the Breezy and Lucida PACs. The vegetation on the north (south-facing) slope is dominated by open pinyon-juniper habitat, with a mixed shrub understory. The opposite slope (north-facing) of the canyon is dominated by Douglas fir-Gambel oak forest and is suitable MSO habitat. There are at least three MSO activity records within 0.5 mile of the Island Trail, and the trail is located 0.75 mile from the known Breezy PAC roost site. The Ranger Ledge cliff dwellings are on the south-facing slopes of the canyon adjacent to the Breezy PAC boundary. The Ranger Cabin and proposed trail route are on relatively level terrain, but the cabin is near a smaller tributary canyon on the north side of Walnut Canyon.

One night a week, between sunset and approximately 2200 hours, small groups of tourists will be offered guided nighttime tours of the Island Trail during the summer. The Island Trail is located between the Breezy and Lucida PACs. In the Guided Adventure Zone, a trail from the visitor center area to Ranger Cabin will be developed along an existing administrative road. The number of NPS-guided, self-guided, and environmental education group activities to the Ranger Cabin and the Ranger Ledge cliff dwellings could increase from a current estimate of 270 visitors to as many as 13,000 per year. This will result in increased daytime human presence on the north canyon slope, immediately above the Breezy PAC.

The GMP includes no actions to expand, significantly alter the operational function, or build new facilities within the existing administrative area. The primary effects of NPS operations are increased human activity and associated noise, primarily during daylight hours when the monument is open to the public. The NPS has no baseline information on ambient noise from traffic and facility maintenance activities in the visitor center area, but at certain times and under certain weather conditions traffic noise may project as far as 0.25 to 0.5 mile up- and down-canyon from this location (June 4, 2004 BAE). Traffic and associated noise levels are not anticipated to sharply increase during the short-term and should decrease when the visitor center is moved to the very north end of the monument. Noise generated by routine maintenance and major renovation operations along the road corridor may occasionally exacerbate noise and vibration levels. Noise “spikes” might also be more frequent and more intense within this area. The monument will remain closed at night, which will maintain the nighttime noise at or near existing levels, regardless of daytime visitation. The eventual gating and closure of the entrance road at night will reduce most nighttime traffic related noise. No facilities, other than minor trail improvements and interpretive signs are proposed to accommodate new visitor activities around Ranger Cabin and Ranger Ledge. However, given the number of visitors and proposed activities, a new restroom may be needed near Ranger Cabin.

Though the Walnut 33 PAC does have a small piece of the Arizona Trail that goes through it, both the Walnut 33 and Cherry PACs are predominately located within the Resource Preservation Zone. In addition, the area around the rim habitat of both of these PACs does not receive the visitation that occurs immediately adjacent to and within the Breezy and Lucida PACs. The amount of traffic within the area that encompasses the Island Trail, Ranger Cabin Trail, and visitor center areas affecting the Breezy and Lucida PACs will only increase in the future.

The NPS noted that potential impacts to critical habitat around Ranger Cabin and the proposed trail route may include: increased daytime disturbance to nocturnal prey species; increase in wildlife species that are typically attracted to areas of human activity; and heavy off-trail use which might result in vegetation trampling. However, all of these impacts should be fairly localized to a maximum area of two acres and should not result in serious impacts to MSO critical habitat in the monument.

In conclusion, elevated ambient daytime noise and periodic noise spikes from continuing and increasing visitor-use and NPS operational activities during the MSO breeding season may continue to result in decreased MSO habitat utilization within an undetermined number of acres of the western portion of the Lucida PAC and the eastern portion of the Breezy PAC. The roosting and nesting habitat within these portions of these PACs may not be used due to extensive daytime noise. In addition, newly proposed visitor activities around Ranger Cabin will increase the total area of human activity and noise disturbance by at least 60 acres within the Breezy and Lucida PACs compared to the current use area.

### **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: increased recreation around the monument due to the increasing Flagstaff population; fuels reduction treatments; increased development; increased ambient noise from the nearby Interstate 40, the Santa Fe Railroad, and Pulliam Airport; and, other associated actions on nearby state and private land. 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. 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. However, non-Federal actions in this area may have significant impacts on the Breezy, Cherry, Lucida, and Walnut 33 PACs.

### **CONCLUSION**

After reviewing the current status of Mexican spotted owl, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that implementation of the Walnut Canyon GMP will not likely jeopardize the continued existence of the Mexican spotted owl or adversely modify its 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.

We present these conclusions for the following reasons:

1. Critical habitat will not be adversely affected or modified by any of the proposed actions included in the GMP. New trail and facility construction will not remove primary constituent elements such as large trees, snags, Gambel oak, or large down logs.
2. The four PACs potentially affected by this action represent a fraction of the 624 known PACs 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 defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as the part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Using available information as summarized within this document, we have identified conditions of possible effects on the MSO associated with implementation of the Walnut Canyon GMP within the Breezy PAC and Lucida PACs. However, based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished by the NPS, we do not believe that the predicted high level of recreation use within these PACs is reasonably certain to effect spotted owls to the point where incidental take occurs. We believe that the NPS has proposed conservation measures that will minimize adverse effects to MSO within the Breezy and Lucida PACs.

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

We do not anticipate that incidental take is reasonably certain to result from the proposed action.

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

Upon locating a dead, injured, or sick spotted owl, initial notification must be made to the Service's Law Enforcement Office, 2450 West Broadway Suite #113, Mesa, Arizona 85202 (telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and should include the date, time, and location of the animal, a photograph, if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling specimens to preserve the biological material in the best possible state. If possible, the remains of intact owl(s) shall be provided to this office. If the remains of the owl(s) are not intact or are not collected, the information noted above shall be obtained and the carcass left in place. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should the treated owl(s) survive, the AESO should be contacted regarding the final disposition of the animal.

### **CONSERVATION RECOMMENDATIONS**

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

1. We recommend that the NPS work with the Fish and Wildlife Service to collect baseline information on ambient noise from traffic, facility maintenance activities, and recreation in areas of high human use in light of the acoustic properties of the inner canyon environment.
2. We recommend that the NPS work with the Fish and Wildlife Service and others to develop studies that determine the effects of recreation on MSO. This research should include monitoring PACs to determine occupancy and reproduction.
3. We recommend that the NPS monitor human use of Walnut Canyon National Monument. This information will assist managers in determining the impacts of recreation on sensitive species and habitats.

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

### **REINITIATION - CLOSING STATEMENT**

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

/s/ Steven L. Spangle

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)  
Bob Broscheid, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ  
Forest Supervisor, Coconino National Forest, Flagstaff, AZ  
Paul Whitefield, Walnut Canyon National Monument, Flagstaff, AZ

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## APPENDIX A - CONCURRENCE

### Bald Eagle

The bald eagle south of the 40th parallel was listed as endangered under the Endangered Species Preservation Act of 1966, on March 11, 1967 (USFWS 1967), and was reclassified to threatened status on July 12, 1995 (USFWS 1995b). No critical habitat has been designated for this species. The bald eagle was proposed for delisting on July 6, 1999 (USFWS 1999). The bald eagle is a large bird of prey that historically ranged and nested throughout North America except extreme northern Alaska and Canada, and central and southern Mexico.

Bald eagles are primarily winter visitors to northern Arizona occupying all habitat types and elevations. Wintering eagles arrive in the fall, usually late October or early November, and leave in early to mid-April. They feed on fish, waterfowl, terrestrial vertebrates, and carrion. Eagles are often seen perched in trees or snags near roadways where they feed on road-killed animals. At night, small groups or individual eagles roost in clumps of large trees in protected locations such as drainages or hillsides. Key habitat components include nighttime roosts and prey availability. Roost trees are usually live or dead large ponderosa pine trees with open canopies on slopes that provide protection from inclement weather. Bald eagles do not breed within the action area and no bald eagle roosts have been identified within the action area.

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

1. Bald eagles do not breed and are not known to roost within or adjacent to the monument.
2. The greatest amount of recreation/visitor use at the monument occurs when bald eagles are not present.
3. Most of the potential roost habitat within the monument occurs within the Resource Preservation Zone, which will have restricted access and no development.