

United States Department of the Interior

U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 FAX: (602) 242-2513

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August 14, 2001

Mr. Jim Golden
Forest Supervisor
Coconino National Forest
2323 East Greenlaw Lane
Flagstaff, AZ 86004-1810

Dear Mr. Golden:

This letter constitutes the U.S. Fish and Wildlife Service's biological opinion, based on our review of the proposed Arizona Trail - Pinegrove to Railroad Springs Project (Alternative B), Coconino County, Arizona. This biological opinion analyzes the project's effects on the threatened Mexican spotted owl (*Strix occidentalis lucida*) (MSO) and the threatened bald eagle (*Haliaeetus leucocephalus*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The project area does not include any critical habitat for the MSO; therefore, the effects of the action on MSO critical habitat are not addressed in this biological opinion.

We received your April 6, 2001, request for consultation on April 11, 2001. The Forest Service has made a determination that the project, as proposed, "may affect, and is likely to adversely affect" the MSO. In addition, the Forest Service is requesting our concurrence with their determination that the project may affect, but is not likely adversely affect, the bald eagle. As elaborated upon below, we concur with your determination on the bald eagle, and find that the proposed action is not likely to jeopardize the continued existence of the MSO.

This biological opinion is based on information provided in the April 5, 2001, Biological Assessment and Evaluation (BAE), the Environmental Assessment for the project (not dated), a field visit with the Forest Service on November 16, 1998, to the Lockwood and Dairy Springs MSO protected activity centers (PACs), a field visit with the Forest Service on July 13, 1999, to the Dairy Springs PAC, and electronic mail responses to our questions dated July 10 and July 16, 2001.

CONSULTATION HISTORY

Informal consultation on this project began on November 16, 1998, when we conducted a site visit of the proposed trail route located within the Lockwood and Dairy Springs PACs. At that time, the trail route was located near MSO roost sites associated with the Dairy Springs and Lockwood PACs. We recommended that the trail within the Dairy Springs PAC be moved at least 1/4 mile to the east to minimize impacts to MSOs in this PAC. Options to remove potential impacts to MSOs in the Lockwood PAC were more problematic due to limitations created by private land and topography. We expressed our concern with the trail location in this PAC given its proximity to known MSO roosts. On July 13, 1999, we visited the Dairy Springs PAC again with personnel from the Peaks Ranger District. During that site visit, we discussed possible trail locations which would result in the re-routing of the proposed trail out of the Dairy Springs PAC. That meeting resulted in preferred alternative B, in which the proposed trail would not enter the Dairy Springs PAC.

Additional consultation on this segment of the Arizona Trail did not commence again until early 2001, when we met with the Peaks District biologist to review recent information about MSO and the trail location in the Lockwood PAC. On April 11, 2001, we received the Forest Service's April 6, 2001, request for formal consultation on the effects of the proposed project on the MSO. We acknowledged the request in a letter to the Forest Service dated May 14, 2001. We asked several questions of the Forest Service biologist via electronic mail on July 5, 2001. We received responses to those questions on July 10, July 16, and July 27, 2001. We met with the District biologist on August 1, 2001, to discuss specifics related to the Dairy Springs PAC and to discuss potential terms and conditions that could be implemented in order to minimize the effects of incidental taking of MSOs.

Concurrences

Mormon Lake is the largest lake on the Coconino National Forest and it, along with several nearby smaller lakes, is a focal point for wintering eagles. An average of 22 percent of the eagles counted in the January Arizona Winter Bald Eagle survey are on the Coconino National Forest, and more than half of the Forest's sightings come from Mormon Lake (Grubb 1996). Mormon Lake also provides a staging area where eagles congregate prior to migration in the spring. Bald eagle researcher Terry Grubb believes the entire eastern slopes of Mormon Mountain are used opportunistically for roosting by these raptors during periods of fair weather during the winter (BAE). The steeper drainages along the slopes of Mormon Mountain and which feed into Mormon Lake provide better protection to eagles during harsh weather, along with many large trees and snags for roosting. Radio telemetry conducted in 1986 indicated the frequent use of several roost locations in these drainages along Mormon Mountain near the edge of Mormon Lake. These data have led the Forest Service to designate eagle roosts near Mormon Lake.

The proposed Arizona Trail falls within the designated buffer zone for six documented bald eagle roosts. The proposed trail bisects two of these roosts and is within less than 1/4 mile of the

remaining four roosts. The Draft Bald Eagle Conservation Strategy (Arizona Game and Fish Department 1999) recommends that projects and activities causing disturbance to winter roosting bald eagles be avoided from October 15 to April 15. Several studies have shown that raptors flush at the approach of humans; this is particularly well-documented for bald eagles. The flushing responses of wintering bald eagles are variable depending on the individual bird's tolerance level, and the type and frequency of human activity (Knight and Skagen 1988). Flight responses of perched eagles are highest for human disturbances originating from the water and on gravel bars, intermediate for land-based disturbances, and shortest when disturbances were shielded by vegetation (Stalmaster and Newman 1978).

Studies indicate that disturbance of wintering bald eagles resulted in both increased energy expenditures due to avoidance flights and decreased energy intake due to interference with feeding activities (Stalmaster 1983). Reduced energy levels in wintering eagles could result in higher mortality and lower productivity (Stalmaster 1998). Non-threatening activities, such as those occurring on recreational trails, may be compatible with a nest or perch location in close proximity if that activity is visually or audially buffered by vegetation or topography (Knight and Temple 1995.) Spatial restrictions, or buffer zones, are perhaps the most common management technique used to control recreational disturbance. Buffer zones are generally used for safeguarding important habitat features such as nests, feeding areas, and communal roosts (Knight and Skagen 1988).

The primary season of trail use will be mid-May through mid-October. Wintering eagles usually arrive in the project area during late October or early November, and leave in early to mid-April. Trail use will primarily take place during the daytime; eagle roosting will occur primarily at night, or during the daytime in inclement weather. The Forest Service indicates that standard Federal regulations prohibit camping within one mile of developed campgrounds. This regulation will be posted along the Arizona Trail for Dairy and Double Springs Campgrounds, protecting four critical bald eagle roost buffer zones from direct or indirect affect associated with overnight camping. An additional camping closure for the Mexican spotted owl near Lockwood Springs will provide protection for another night-time eagle roost. There will be no camping restriction near the sixth eagle roost located south of Wallace Springs. However, the proposed trail does not bisect this roost site, and is located approximately 1/10 of a mile from the roost. During periods of inclement weather when eagles may be using these roosts during the day, the Forest Service indicates that recreational trail use will be less likely to occur. Trail use is not expected to affect foraging activities of bald eagles since primary foraging areas are located away from the proposed trail route.

Some cross-country ski activities already occur in the general area of Mormon Lake due to the existence of a commercial ski operator nearby and numerous roads in the area. This trail will not be designated as a cross-country ski trail, and will be very difficult, if not impossible, to locate under winter snow pack since no intervisible signing will exist and the trail width is relatively small at 24 inches. It is possible that an infrequent hiker, snowshoer, or cross-country skier would travel the Arizona trail through or near a bald eagle roost when one or more eagles are in the roost.

The removal of the small trees along a narrow width associated with trail construction will not affect current or future bald eagle roosting or perching habitat. In addition, the Forest Service indicates that trail construction within and adjacent to (within 1/4 mile) of the six winter roosts will take place outside of the bald eagle wintering period (late October - mid-April) (Connie Moen, Peaks Ranger District, pers. comm.).

The Fish and Wildlife Service concurs with the determination that the Arizona Trail, Pinegrove to Railroad Springs segment may affect, but will not likely adversely affect, the bald eagle. Consultation is therefore concluded on the effects of the action on the bald eagle. We base our concurrence on the following:

1) Trail construction within and adjacent to the six winter roosts will take place outside of the bald eagle winter season (late October - mid-April); 2) Hiking/biking use will occur primarily during the summer months when wintering eagles are not present; 3) Eagles in this area use the identified roosts at night or during the day in inclement weather when recreational use of the trail will be minimal; and 4) The disturbance caused by recreational use of the trail in the daytime when eagles may be in the area is expected to be both insignificant and discountable.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Forest Service proposed the Pinegrove to Railroad Springs segment of the Arizona Trail because there are currently only a few miles of existing designated Forest Service trail in the area. As the popularity of Mormon Lake Village and Mormon Lake as recreation destinations grows, there will likely be more unplanned trails and areas of resource impact. The Forest Service indicates that constructing a trail in this area will meet the needs of long-distance Arizona Trail users as well as daytime local users.

Under Alternative B, this segment of the Arizona Trail will connect with two existing approved locations for the Arizona Trail ending at Pinegrove Trailhead near Lake Mary to the north and at Railroad Springs to the south. Three other alternatives were considered for the location of this proposed trail segment. Under Alternative A the trail would pass through both the Dairy Springs and Lockwood MSO PACs. The EA indicates that Alternative A was not selected as the preferred alternative due to concerns for human disturbance to two pairs of MSO. Alternative B1 re-routes the trail out of the Lockwood PAC and requires two crossings of the paved Mormon Lake Road (FH3). Alternative B1 was not selected because of the reduced quality of recreational experience related to two crossings of FH3. Alternative C is located east of Mormon Lake on Anderson Mesa. This alternative was not selected due to the comparatively lower quality recreation experience present on Anderson Mesa.

The proposed Arizona Trail, Pinegrove to Railroad Springs, is 9.8 miles in length. The width of the trail is expected to be approximately 24 inches. Some trees will be cut in order to facilitate trail construction; however, the Forest Service indicates that no pine or fir trees larger than 9 inches diameter at breast height (dbh) and no oak larger than 5 inches diameter at root collar (drc) will be removed during trail construction. The Forest Service will not remove any snags during trail construction. Large downed logs will be left intact as much as possible along the trail route.

The primary season of trail use will be mid-May through mid-October. Trail use is expected to be higher in the summer than winter, and higher on weekends than on weekdays. Night-time use is expected to be light with only a small number of overnight backpacking campsites. The trail will not be designated as a cross-country ski trail. Generally, outfitter/guide activities on the trail are anticipated to consist of small groups that make repetitive trips such as mountain biking or horseback riding outfitter/guiding. Recreation events such as triathalons or 10K races could occur for short, specified durations of time.

STATUS OF THE SPECIES

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 for the Mexican Spotted Owl (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, much remains unknown about the species' distribution and ecology. This is especially true in Mexico where much of the MSO's range has not been surveyed. The MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to forested isolated mountain systems, canyons, and in some cases steep, rocky canyon lands. 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 2 National Forests in Colorado and 3 in Utah) support fewer owls. According to the Recovery Plan, 91% of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the Forest Service.

Surveys have revealed that the species has an affinity for older, well-structured forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico. The range of the MSO has been divided into six Recovery Units (RUs), as discussed in the Recovery Plan. The Recovery Plan reports an estimate of owl sites. An owl "site" is defined as a visual sighting of at least one adult owl or a minimum of two auditory detections in the same vicinity in the same year. This information was reported for 1990-1993. The greatest known concentration of known owl sites in the United States occurs in the Upper Gila Mountains RU (55.9%), in which this project is located.

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.

The Forest Service reported a total of approximately 935 PACs established on National Forest lands in the Southwestern Region (USDA Forest Service, Southwestern Region, February 28, 2001). The information provided from the Forest Service also included a summary of acres of protected habitat, acres of restricted habitat, and PACs in the Region by MSO Recovery Unit.

The Upper Gila Mountains RU is a relatively narrow band bounded on the north by the Colorado Plateau RU and to the south by the Basin and Range West RU. The southern boundary of this RU includes the drainages below the Mogollon Rim in central and eastern Arizona. The eastern boundary extends to the Black, Mimbres, San Mateo, and Magdalena mountain ranges of New Mexico. The northern and western boundaries extend to the San Francisco Peaks and Bill Williams Mountain north and east 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). Most habitat within this RU is administered by the Kaibab, Coconino, Apache-Sitgreaves, Tonto, Cibola, and Gila National Forests. The north half of the Fort Apache and northeast corner of the San Carlos Indian Reservations are located in the center of this RU and also support MSOs.

The Upper Gila Mountains RU consists of deep forested drainages on the Mogollon Plateau. Vegetation generally consists of pinyon/juniper woodland, ponderosa pine/mixed conifer forest, some spruce/fir forest, and deciduous riparian forest in mid- and lower-elevation canyon habitat. Climate is characterized by cold winters and over half the precipitation falls during the growing season. Much of the mature stand component on the gentle slopes surrounding the canyons had been partially or completely harvested prior to the species' listing as threatened in 1993. Most of the forest habitat on steeper ground is suitable for MSO nesting. MSO are widely distributed and use a variety of habitats within this RU. Owls most commonly nest and roost in mixed-conifer forests dominated by Douglas fir and/or white fir and canyons with varying degrees of forest cover (Ganey and Balda 1989; USDI 1995). Owls also nest and roost in ponderosa pine-Gambel oak forest, where they are typically found in stands containing well-developed understories of Gambel oak (USDI 1995). The Forest Service reports a total of 542 PACs within the Upper Gila RU (USDA Forest Service, Southwestern Region, February 28, 2001).

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental

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

Status of the Mexican Spotted Owl and its Habitat in the Project Area

Most of the proposed Railroad Springs to Pinegrove segment of the Arizona Trail is included within the area of a demography research study conducted by Humboldt State University and now conducted by the University of Minnesota. This study provides the most intensive population trend information available for the MSO on the Coconino National Forest. Annual research has been conducted since 1992. The most recent report of this study (Gutierrez *et al.* 2001), which reports results obtained over a period of 10 years, indicates a stable or increasing population on the Coconino area of the study over that period.

The Lockwood PAC (040541) is located at the base of Mormon Mountain along the northern portion of the proposed trail. MSO were first located in the Lockwood PAC in 1995. Three young were produced in 1998 and again in 2000. No nesting occurred in 1995, 1996 or 1997, and the nesting status was unknown in 1999. Information as of July 23, 2001, indicates that the historical pair is present in this PAC but did not nest this year (Chris May, University of Minnesota, pers.comm.).

The Dairy Springs PAC (040507) is located southwest and immediately adjacent to the Lockwood PAC. MSOs were first located in this area in 1988, when a pair was found, but nesting status was unknown. This pair of MSOs has nested in 1991, 1992, 1993, and 1997, producing two young in each of those years. In addition, the pair attempted to nest in 1999, but the nest failed. Information from July 23, 2001, indicates that the pair from last year is present in this PAC but did not nest this year (Chris May, University of Minnesota, pers. comm.)

The Forest Service indicates that the only unoccupied, potential nesting MSO habitat within one-half mile of the proposed trail route is approximately 300 acres of restricted (as defined by the Recovery Plan) pine-oak habitat on Pine Grove Hill. The area was surveyed in 1992, 1993, and 1999, with no responses.

A total of 518 projects have undergone formal consultation for the owl in Arizona and New Mexico. Of that aggregate, 255 projects resulted in a total anticipated incidental take of 465 owls plus an additional unquantifiable number of owls. In 1996, the Fish and Wildlife Service issued a biological opinion on Forest Service Region 3's adoption of the Recovery Plan recommendations through an amendment of their Forest Plans. In this non-jeopardy biological opinion, we anticipated that approximately 150 PACs would be affected by activities that would result in incidental take of MSOs, with 92 of those PACs located in the Upper Gila Mountains RU. To date, consultation on individual actions under the amended Forest Plans have resulted in 82 PACs adversely affected, with 43 of those in the Upper Gila Mountains RU.

Past consultations have primarily dealt with actions proposed by the Forest Service, Region 3,

but have also addressed 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 construction activities. Only one of these projects (release of site-specific owl location information) has resulted in a biological opinion that the proposed action would likely jeopardize the continued existence of the MSO.

EFFECTS OF THE ACTION

Recreational activities including camping, hiking, off-road vehicles (ORV), and rock-climbing may affect the MSO depending on location, intensity, frequency, and duration (USDI 1995). Direct effects may occur when these activities impact nests, roosts, and foraging sites. The Recovery Plan indicates that indirect effects may occur when recreational activities degrade habitat either through vegetation trampling, vegetation removal, accidental burning, and soil compaction.

The Recovery Plan provides several recommendations for recreational activities within PACs: no new construction or expansion of new facilities or structures should occur within a PAC during the breeding season, the presence and intensity of allowable recreational activities within PACs should be assessed, and seasonal closures of specifically designated recreational activities should be considered where appropriate. The Recovery Plan indicates that the determining factor of a recreational activity's impact on spotted owls is a combination of its location, intensity, frequency, and duration. These four factors as they relate to the Lockwood and Dairy Springs PACs are discussed below.

Approximately one mile of trail would pass through the Lockwood PAC (040541). The proposed segment of the Arizona Trail would be located within the PAC near the private land boundary adjacent to Lockwood Park at the foot of Mormon Mountain. The proposed trail would run through the eastern portion of the PAC and pass through the 100-acre activity center. The activity center for this PAC encompasses an area of multiple daytime roosts and vocalization locations as well as the nest site. Information provided by the Forest Service indicates that the trail would pass within 1/4 mile of a roost location of pair with young, as well as within 1/4 mile of four daytime roost locations and several female "locations" (it is unclear whether these refer to visual locations or vocalizations). Several daytime roost locations lie within a few hundred feet of the proposed trail. The one known nest location and another suspected nest are located up-slope, just over a 1/4 mile from the proposed trail. The Forest Service indicates that the proposed trail would be within mixed conifer potential nesting/roosting habitat for a distance of 1/2 mile, as well as quality pine/oak foraging habitat within the Lockwood PAC.

Within the Lockwood PAC, the proposed trail would be located along a two-track road that will be designated as a non-motorized trail. The Forest Service indicates that no tree removal will

occur within this PAC. Conversion of the existing road to a trail will be done with hand tools; rock and brush will be put on part of the road to narrow it to a trail (Connie Moen, U.S. Forest Service, pers. comm.). All work within the PAC will be conducted outside of the MSO breeding season (March 1- August 31).

The proposed segment of the Arizona Trail was moved completely out of the Dairy Springs PAC, but the trail is located immediately adjacent to the edge of the PAC near Forest Road 240. The trail runs adjacent to the PAC for a distance of less than 1/4 mile on a south facing slope. The Forest Service indicates that no roosting habitat exists in this area, and that the trail is not located within MSO nesting/roosting habitat, is not within the 100-acre activity center, and is not within 1/4 mile of the roost/nest for this PAC.

The Forest Service indicates that any adverse effects to the MSO associated with the Dairy Springs PAC are expected to result from the use of the existing Mormon Mountain Trail. The Mormon Mountain Trail extends from the proposed Arizona Trail into the Dairy Springs PAC for a distance of about 1.5 miles. The Forest Service indicates that, due to the intersection of the proposed Arizona Trail with the Mormon Mountain Trail, an increase in use of the Mormon Mountain Trail will likely result. The Mormon Mountain Trail has been in use for the last 30 years, and because it was in place prior to the listing of the MSO, use of this trail has never undergone section 7 consultation.

We requested a copy of the PAC map showing past nest and roost locations and the location of the Mormon Mountain Trail. A review of that map indicated that the Mormon Mountain Trail passes immediately adjacent to one nest location and within 1/10 of a mile of two others. Nearly all owl nests, roosts, and other recorded sites are within 1/4 mile of this trail. The Forest Service indicates that the 100-acre activity center has not been drawn for this PAC, but review with the Forest Service biologist indicates that at least 1/2 mile of the Mormon Mountain trail would be located within the activity center, while the remainder of the trail would constitute the activity center boundary. There is a no camping zone in the vicinity of the Dairy and Double Springs Campgrounds, which will assist in minimizing impacts to MSOs associated with the Dairy Springs PAC.

Delaney *et al.* (1997) reviewed literature on the response of owls and other birds to noise and drew the following conclusions: 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.

Our policy has been to limit disturbing activities within 1,320 feet (1/4 mile) of MSO nest sites during the breeding season (March 1-August 31). This approximates Delaney *et al.*'s (1997) 1,330-foot threshold for alert responses to helicopter flights. The trail will be located within less

than 1,320 feet of potential nesting habitat within the Lockwood PAC and primary use of this trail will occur during the MSO breeding season. Delaney *et al.* (1997) found that ground-based disturbances elicited a greater flush response than aerial disturbances.

The Arizona trail segment within the Lockwood PAC is expected to have approximately 20-30 users/day on weekends, and approximately 2-7 users/day on the weekdays after completion. The BAE states that while the use of the trail may be low in the first few years after trail construction, future use is anticipated to be greater than the above estimates. The BAE anticipates that recreational use could reach a level at, or approaching, steady hiking/biking traffic based upon 1) the popularity of the Mormon Mountain area with the rapidly growing Phoenix population, 2) increasing popularity of hiking and mountain biking, and 3) the Arizona Trail may become a "premier" trail similar to the Appalachian and Cascade Trails that receive high levels of traffic. The Forest Service indicates that a one-mile radius "no camping" zone will be posted along the trail route in the vicinity of Lockwood Spring, thereby ensuring that no overnight camping occurs within the Lockwood PAC. This will assist in the reduction of disturbance to MSOs at night.

The Forest Service indicates that the portion of the proposed Arizona Trail that will intersect with the Mormon Mountain Trail is expected to have immediate use by 30-35 users/day on the weekends, and 5-10 users/day on weekdays due to its location near campgrounds, residences at Mormon Village, and the trailhead to the Arizona Trail. It is likely that some of the users of the Arizona Trail will use the Mormon Mountain Trail as well. Monitoring information provided by the Forest Service indicate that the current use of the Mormon Mountain Trail is 18 people per weekend and 4 people per day during the week. Most group sizes averaged 2-4 hikers. The 1999 trail register recorded occasional groups as large as 30.

Hikers visiting the area for the Arizona Trail experience may incorporate hiking of the Mormon Mountain Trail into their trip to the area. The Forest Service believes that increased use of the Mormon Mountain Trail, facilitated by the construction of the proposed segment of the Arizona Trail, may cause adverse effects to the MSOs associated with the Dairy Springs PAC.

The BAE indicates that 300 acres of restricted pine/oak habitat outside of designated PACs is present on Pine Grove Hill. Surveys for MSOs were conducted in 1992 and 1993, and again in 1999, with no responses. We believe that, because more than one breeding season has elapsed since the last survey, there is insufficient information to allow inference that the area is not occupied by MSOs.

Owls have more sensitive hearing than other birds (Bowles 1995). If a noisy sound source arouses an animal, it has the potential to affect its metabolic rate by making it more active. Increased activity can, in turn, deplete energetic reserves (Bowles 1995). Noisy human activity can cause raptors to expand their home ranges, but often the birds return to normal use patterns when the humans are not present (Bowles 1995). Such expansions in home ranges could affect the fitness of the birds, and thus their ability to successfully reproduce and raise young. Species that are sensitive to the presence of people may be displaced permanently, which may be more

detrimental to wildlife than recreation-induced habitat changes (Hammitt and Cole 1987; Gutzwiller 1995; Knight and Cole 1995). If animals are denied access to areas that are essential for reproduction and survival, then that population will decline. Likewise, if animals are disturbed while performing essential behaviors such as foraging or breeding, that population will also likely decline (Knight and Cole 1995).

Birds may respond to disturbance during the breeding season by abandoning their nests or young; by altering their behavior such that they are less attentive to the young, which increases the risk of 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). However, the physical characteristics of the Lockwood and Dairy Springs PACs will not provide topographic screening from the trail.

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).

Owls have been known to begin calling during the breeding season in response to the sound of human voices (Michele James, Fish and Wildlife Service, personal observation). Such behavior is likely characteristic of a certain percentage of individuals, and this response to humans may create a situation where these owls are discovered by humans, thereby becoming exposed to potential direct impacts. We believe that there is a risk that MSOs associated with the Lockwood and Dairy Springs PACs will be affected as described above.

Recreational use of the proposed segment of the Arizona Trail is predicted by the Forest Service to be fairly minimal at approximately 30 users per day in the near-term, although longer-term use levels cannot be reliably predicted. It is reasonable to expect, however, that the designation of the trail as a segment of the Arizona Trail system will make it a popular destination for recreation. 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). In addition, the peak recreational use period will overlap the entire MSO breeding season of March 1 through August 31.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions are subject to the consultation requirements established under section 7 and, therefore, are not considered cumulative to the proposed action. Future actions within the project area that are reasonably certain to occur include urban development, trail creation, grazing, and other associated actions. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, cause disturbance to breeding MSOs, and therefore contribute as cumulative effects to the proposed action. However, because of the predominant occurrence of MSOs on Federal lands in this area, and because of the role of the respective Federal agencies in administering the habitat of the MSO, actions to be implemented in the future by non-Federal entities on non-Federal lands are considered to be of minor impact.

CONCLUSION

After reviewing the current status of the Mexican spotted owl, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the Arizona Trail, Pinegrove to Railroad Springs segment, as proposed, is not likely to jeopardize the continued existence of the MSO. This conclusion is based on the following:

- The incidental take anticipated in this opinion falls within the incidental take level anticipated in the non-jeopardy 1996 biological opinion for the MSO and the Forest Service Region 3 Forest Plan Amendments;
- The potential loss of reproduction associated with the two PACs discussed in this biological opinion will occur for a period of only five years. Monitoring data will be gathered during this five-year period, and the effects of the action will be assessed at that time.
- The trail construction itself will not remove any key spotted owl habitat components such as large trees, snags, or large down logs.

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 under section 3 of the Act 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 by regulation (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 under 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 under 50 CFR 402.02 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) of the Act, 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.

The measures described below are non-discretionary, and must be undertaken by the Forest Service so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest Service must report to us the progress of the action and its impact on the species as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Our current section 7 consultation policy for actions affecting the MSO states that incidental take may result if the action compromises the integrity of a PAC. Actions outside PACs will generally not be expected to result in incidental take, except in cases when areas that may support owls have not been adequately surveyed.

Using the information reviewed in this document, we have identified conditions of probable take for the MSOs associated with the Lockwood and Dairy Springs PACs as well as the recently unsurveyed restricted habitat. Based on the best available information furnished by the Forest Service, take is anticipated for the MSO as a result of the following:

- a) Immediate and long-term recreational use of the Arizona Trail located within the Lockwood PAC nest buffer;
- b) Increased immediate and long-term recreational use of the Mormon Mountain Trail located within the Dairy Springs PAC due to its association with recreational use of the Arizona Trail;
- c) Trail construction within ½ mile of the 300 acres of recently unsurveyed MSO habitat located on Pine Grove Hill.

AMOUNT OR EXTENT OF TAKE

We anticipate that incidental take of MSO will be difficult to detect because owl nests can often be difficult to locate. Any incident of harm or harassment is likely to be of limited extent and intensity, and therefore difficult to distinguish from normal behavior and difficult to document.

Because of the difficulty in quantifying anticipated incidental take, we based our estimate on the following: 1) Mexican spotted owls are sporadic breeders, perhaps influenced by weather or other variables. Thus, we base this incidental take statement on the assumption that, on average, the MSOs in the Lockwood and Dairy Springs PACs may breed successfully once every two years; 2) Based on the monitoring required under the reasonable and prudent measure number 2, the effective period of this incidental take statement is through February 28, 2007. Prior to that date the Forest Service will review the monitoring data and provide us with their assessment of incidental take.

This biological opinion anticipates the following forms and amount of take in regard to the proposed action:

One pair of MSOs and/or associated young in the form of harassment associated with the Lockwood PAC starting in 2003, and every other breeding season through February 28, 2007;

One pair of MSOs and/or associated young in the form of harassment associated with the Dairy Springs PAC starting in 2003, and every other breeding season through February 28, 2007;

One pair of MSOs and/or associated young in the form of harm and harassment associated with the potential occupancy of the 300 acres of habitat on Pine Grove Hill.

If, during project activities, the amount or extent of take is exceeded, the Forest Service must reinitiate consultation immediately to avoid violation of section 9. Operations must be stopped in the interim period between the reinitiation and completion of consultation. An explanation of the causes of the taking will be provided.

EFFECT OF THE TAKE

For the reasons described previously in this biological opinion we determine that this level of anticipated take is not likely to jeopardize the continued existence of the MSO.

Reasonable and prudent measures

We believe the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of MSOs:

1. The Forest Service shall minimize direct and indirect effects of visitor use to the spotted owl and its habitat in the Lockwood and Dairy Springs PACs.
2. The Forest Service shall gather information on recreational use and MSOs within the Lockwood and Dairy Springs PACs to assist in reducing impacts to the owl.

3. The Forest Service shall minimize direct and indirect effects of trail construction and use within the 300 acres of pine/oak restricted habitat located at Pine Grove Hill.

Terms and conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions are necessary to implement reasonable and prudent measure # 1, based on the Forest Service's discretion in the issuance of special use permits to commercial guides/outfitters:

- 1.1 No special use permits will be issued for groups larger than 12 persons, which is the limit recommended in the Recovery Plan, during the MSO breeding season (March 1- August 31) for use of the segment of the Arizona Trail which is within the Lockwood PAC.
- 1.2 No special use permits will be issued for groups larger than 12 persons during the MSO breeding season (March 1- August 31) for use of the segment of the Mormon Mountain Trail which is within the Dairy Springs PAC.

The following terms and conditions are necessary to implement reasonable and prudent measure # 2.

- 2.1 The Forest Service shall use an electronic trail counter to monitor human day use on the Arizona Trail, Pinegrove to Railroad Springs segment, during the MSO breeding season. This monitoring program will gather information including seasons of use, number of visitors, and party sizes within the Lockwood PAC. Monitoring shall begin during the first MSO breeding season that the trail segment within the PAC is open, so that information on human use can be tracked over time beginning with the first season of use. Monitoring shall continue through the 2006 breeding season.
- 2.2 The Forest Service shall use an electronic trail counter to monitor human day use on the Mormon Mountain Trail within the Dairy Springs PAC during the MSO breeding season. This monitoring program will gather information including seasons of use, number of visitors, and party sizes. Monitoring shall begin in this PAC in 2002 before the connecting Arizona Trail opens so that baseline information is gathered. Monitoring shall continue through the 2006 breeding season.
- 2.3 Prior to the beginning of the MSO breeding season (March) of 2007, the Forest Service will meet with us to review the results of the monitoring under term and conditions 2.1 and 2.2 and determine if monitoring should continue. The Forest Service shall provide this office with results of said monitoring by December 1 of each year in which monitoring occurs.

2.4 The Forest Service shall monitor the status and location of MSO in the Lockwood PAC beginning the breeding season the trail is open and each of the following 4 years. Monitoring of the Dairy Springs PAC shall begin in 2002 and continue for a period of 5 years (through 2006). If the demography study continues to monitor these PACs no additional monitoring will be necessary. The Forest Service shall provide this office with results of owl monitoring by December 1 of each year.

2.5 If monitoring of the PACs is to be conducted independently from the demography study, the Forest Service will develop a MSO monitoring protocol for the Lockwood and Dairy Springs PACs that is similar to the Forest Service Region 3 formal monitoring protocol. This monitoring protocol must be agreed to by the Fish and Wildlife Service by the end of calendar year 2001.

The following term and condition implements reasonable and prudent measure # 3:

3.1 In the year prior to or the year of trail construction, the Forest Service shall conduct one year of follow-up MSO surveys, consisting of four visits to Forest Service Region 3 protocol, in the restricted habitat located at Pine Grove Hill, as well as all areas within ½ mile of that habitat. All four visits must be completed, with negative results, prior to the commencement of construction in this area. If MSO are detected, the Forest Service should determine whether reinitiation of consultation would be appropriate.

The Service believes that no more than one pair of MSO and/or associated young in the Lockwood PAC and Dairy Springs PAC will be incidentally taken every other breeding season beginning in 2003 and continuing through 2007. 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, this level of incidental take is exceeded, such incidental take would represent new information requiring reinitiation of consultation and 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 us the need for possible modification of the reasonable and prudent measures.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. Sections 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. Sections 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

DISPOSITION OF DEAD, INJURED, OR SICK SPOTTED OWLS

Upon locating a dead, injured, or sick spotted owl, initial notification must be made to the Service's Law Enforcement Office, Federal Building, Room 8, 26 North McDonald, Mesa,

Arizona (telephone: 480/835-8289) 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 Service 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 purposes of 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. Plan future recreational trail projects in such a way as to avoid MSO PACs to the maximum extent possible.
2. Develop an outline of the annual report required for implementation of the terms and conditions of this biological opinion.
3. Develop a tracking system for monitoring and reporting of implementation of terms and conditions related to biological opinions regarding effects to the MSO.

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

REINITIATION - CLOSING STATEMENT

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

We appreciate your consideration of the threatened Mexican spotted owl. For further information, please contact Michele James (928) 226-0007 or Steve Spangle (928) 226-0250 of our Flagstaff Suboffice. Please refer to the consultation number 2-21-01-F-285 in future correspondence concerning this project.

Sincerely,

/s/ David L. Harlow
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Field Supervisor, Fish and Wildlife Service, New Mexico Field Office, Albuquerque, NM
Forest Biologist, Coconino National Forest, Flagstaff, AZ (attn: Cecilia Overby)
District Ranger, Peaks Ranger District, Flagstaff, AZ (attn: Connie Moen)

John Kennedy, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

LITERATURE CITED

- Arizona Game and Fish Department. 1999. Draft conservation assessment and strategy for the bald eagle in Arizona. Nongame and Endangered Wildlife Program. September 1999. Arizona Game and Fish Department, Phoenix, Arizona. 67 pp.
- Bowles, A. E. 1995. Responses of wildlife to noise. *In Wildlife and Recreationists: Coexistence Through Management and Research*. Knight, Richard L. and Kevin J. Gutzwiller, editors. Island Press, Washington, D.C. 372 pp.
- Delaney, D. K., T.G. Grubb, and L. L. Pater. 1997. Effects of helicopter noise on nesting Mexican spotted owls. A report to U.S. Air Force 49 CES/CEV, Holloman Air Force Base. Project order No. CE P.O. 95-4. 49 pp.
- Flather, Curtis H. and H. K. Cordell. 1996. Outdoor recreation: historical and anticipated trends. *In Wildlife and Recreationists: Coexistence Through Management and Research*. Knight, Richard L. and Kevin J. Gutzwiller, editors. Island Press, Washington, D.C. 372 pp.
- Fletcher, K. 1990. Habitat used, abundance, and distribution of the Mexican spotted owl, *Strix occidentalis lucida*, on National Forest System Lands. U.S. Forest Service, Southwestern Region, Albuquerque, New Mexico. 78 pp.
- Ganey, J.L. and R.P. Balda. 1989. Distribution of habitat use of Mexican spotted owls in Arizona. *Condor* 91: 355-361.
- Grubb, T.G. 1996. Wintering bald eagle sightings on the Coconino National Forest, 1975-1996. Report. USFS Forest Service., Rocky Mountain Forest and Range Experiment Station, Flagstaff, Arizona.
- Gutierrez, R.J., A.B. Franklin, and W.S. Lahaye. 1995. Spotted owl (*Strix occidentalis*). *In The Birds of North America*, No. 179 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.
- Gutierrez, R.J., C.A. May, and M. Petersburg. 2001. Demography of two Mexican spotted owl (*Strix occidentalis lucida*) populations in Arizona and New Mexico: 2000 Annual Report (Contract No. 43-82FT-9-0152). Unpubl. Rpt. Univ. of Minnesota. 33 pp.
- Gutzwiller, K. J. 1995. Recreational disturbance and wildlife communities. *In Wildlife and Recreationists: Coexistence Through Management and Research*. Knight, Richard L. and Kevin J. Gutzwiller, editors. Island Press, Washington, D.C. 372 pp.
- Hammitt, W. E. and D.N. Cole. 1987. Wildland recreation: ecology and management. John Wiley and Sons, New York. 341 pp.

- Knight, R.L., and S.K. Skagen. 1988. Effects of recreational disturbance on birds of prey: a review. Pages 355-359 in Proc. Southwest raptor management symposium and workshop. Inst. Wildl. Res., Natl. Wildl. Fed. Sci. Tech. Ser. No. 11.
- Knight, R.L., and S.A. Temple. 1995. Wildlife and recreationists: coexistence through management. Pages 327-333 in R.L. Knight and K.J. Gutzwiller, eds. Wildlife and recreationists: coexistence through research and management. Island Press, Covelo, Calif. 372 pp.
- Knight, Richard L., and D.N. Cole. 1995. Factors that influence wildlife responses to recreationists. In Wildlife and Recreationists: Coexistence Through Management and Research. Knight, Richard L. and Kevin J. Gutzwiller, editors. Island Press, Washington, D.C. 372 pp.
- Stalmaster, M.V., and J.R. Newman. 1978. Behavioral responses of wintering bald eagles to human activity. J. Wildl. Manage. 42:506-513.
- Stalmaster, M.V. 1983. An energetics simulation model for managing wintering bald eagles. J. Wildl. Manage. 47:349-359.
- Stalmaster, M.V. and J.L. Kaiser. 1998. Effects of recreational activity on wintering bald eagles. Wildlife Monograph. 137: 1-46.
- U.S. Department of Agriculture, Forest Service, Southwestern Region. 2001. Biological Assessment and Evaluation, Urban Interface Fuel Treatment, February 28, 2001. 271 pp.
- U.S. Department of the Interior, Fish and Wildlife Service. 1991. Mexican spotted owl status review. Endangered species report 20. Albuquerque, New Mexico.
- U.S. Department of the Interior, Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants; final rule to list the Mexican spotted owl as threatened. Federal Register. 58:14248-14271.
- U.S. Department of the Interior, Fish and Wildlife Service. 1995. Mexican Spotted Owl Recovery Plan. Albuquerque, New Mexico.