2-21-92-F-478

BIOLOGICAL OPINION SUMMARY
Mt. Lemmon Highway (Phases 5 and 6)

Date of opinion: October 19, 1999

Action Agency: Coronado National Forest, Tucson, Arizona

Project: Reconstruction of Mt. Lemmon Highway phases 5 and 6. The Forest Service proposes to widen and repave 10.3 kilometers (6.4 miles) of the existing two lane highway in the Santa Catalina Mountains in the Santa Catalina Ranger District. The purpose of the project is to continue to improve the accessability and safety. The project is located in existing Mexican spotted owl protected habitat, and on the edge of the lesser long-nosed bat habitat.

Location: Pima County, Arizona

Listed Species affected: Mexican spotted owl (Strix occidentalis lucida), a listed threatened species and lesser long-nosed bat (Leptonycteris curasoae yerbabuenae), a listed endangered species.

Biological opinion: Nonjeopardy

Incidental take statement:

Level of take anticipated: Anticipated take of 8 (four pair) of Mexican spotted owls associated with the five affected PACs in the project area for the life of the proposed project. The take anticipated is in the form of disturbance due to construction. Exceeding this level of take would require initiation of formal consultation.

Reasonable and prudent measures: This biological opinion presents four measures to minimize incidental take; (1) minimize all necessary noise disturbance (2) restrict all necessary blasting to daylight hours (3) formally monitor all affected protected activity centers (PACs) during and after reconstruction, and (4) minimize all indirect affects to the Mexican spotted owl.

Terms and conditions: Four terms and conditions are included to implement the reasonable and prudent measures. They include restrictions during the Mexican spotted owl breeding season and require adequate surveys for these species prior to any reconstruction activity.

Conservation measures: Three conservation measures are provided. Implementation of these conservation measures is discretionary.

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U.S. Fish and Wildlife Service
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In Reply Refer To:

AESO/SE
2-21-92-F-478 October 19, 1999

Mr. John McGee, Forest Supervisor
Coronado National Forest
300 West Congress Street
Tucson, Arizona 85701

Dear Mr. McGee:

The U.S. Fish and Wildlife Service (Service) has reviewed the project proposal for the reconstruction of Mt. Lemmon Highway located in the Coronado National Forest, Santa Catalina District, Pima County, Arizona. The Forest Service is the lead federal agency for the project with Federal Highway Administration (FHA) as a cooperating agency. Your initial request was received in our office on March 1, 1999. This document represents the Service's biological opinion on the effects of that action on the Mexican spotted owl (*Strix occidentalis lucida*)(MSO) and the lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 *et seq*.).

The proposed project represents phase 5 and 6 of 8 phases which began in 1983; phases 7 and 8 will be done in 2003. The goal of the project is to improve the safety and structural integrity of the existing road, while minimizing environmental impacts and maintaining compatibility with the exceptional natural and recreational qualities of Mt. Lemmon Highway. This effort will continue during the design and construction of each project phase. Informal consultation on Mt. Lemmon Highway was originally initiated on March 1, 1992.

In the Biological Assessment dated March 15, 1999, the Forest Service made determinations of "may affect but not likely to adversely affect" for the American peregrine falcon and the lesser long-nosed bat, and a "likely to adversely affect" for the MSO. The Service concurs that the proposed project may adversely affect the MSO, and concurs on the finding "may affect, but not likely to adversely affect" the lesser long-nosed bat for reasons outlined in the concurrence that follows this biological opinion.

The American peregrine falcon was removed from the Federal list of Endangered and Threatened Wildlife on August 25, 1999 (64 FR 46542). Federal agencies are no longer required

to consult with the Service under section 7 of the Act in the event activities they authorize, fund, or carry out affect peregrine falcons. However, removal of the protection of the Act will not affect the protection afforded all peregrine falcons under the Migratory Bird Treaty Act. In addition, the Act requires monitoring of the species for at least five years after delisting. This monitoring will consist of, at a minimum, annual occupancy surveys, assessing productivity, determining contaminant concentrations, and monitoring levels of take of peregrine falcons for falconry purposes (63 FR 45446). The Service is currently developing a monitoring plan which will be available in the near future.

CONSULTATION HISTORY

The proposed Mt. Lemmon Highway reconstruction has a long consultation history. Earliest records in the administrative record date back to March 1992, when informal conferencing was initiated with respect to the then proposed threatened MSO. On September 11, 1995, the Forest Service requested initiation of formal consultation and provided the Service with a Biological Assessment (BA) that addressed the lesser long-nosed bat, American peregrine falcon, and the Mexican spotted owl.

On March 18, 1996, the Forest Service provided the Service with an amendment to the BA. The amendment reported that the highway reconstruction project had been shortened from 4.0-3.2 kilometers (2.5 to 2.0 miles) in length and anticipated less impact to MSO habitat than was originally predicted.

On March 7, 1996, FHA personnel reported the damage caused by the winter storms in 1993 had weakened the highway and subsequent repairs had failed to correct the problem. It was reported that additional rainfall could cause the road to fail. On March 29, 1996, the Forest Service requested initiation of emergency consultation to cover the needed highway repairs for the entire 3.2 kilometers (2.0 miles).

On March 29, 1996, the Service responded to the emergency request, agreed that the consultation should be handled under the emergency consultations provisions of the regulations, and outlined five actions that could be taken to minimize incidental take of the owl, falcon, and bat.

On May 7, 1997, Richard Hanna, of the Service, contacted Bill Lewis of the Forest Service and discussed the status of the emergency reconstruction activities on Mt. Lemmon Highway. Mr. Lewis indicated that the emergency reconstruction activities were nearly completed and that the Forest Service would be contacting the Service soon concerning the project.

On May 8, 1997, Service staff, and Deborah Bieber of the Forest Service, discussed the requirements needed for the Forest Service to complete consultation on this emergency action. That telephone conversation was followed up with a letter to John M. McGee, Forest Supervisor of the Coronado National Forest.

On May 15, 1997, the Forest Service requested the initiation of formal consultation under the emergency provisions of 50 CFR 402.05 and provided the Service with a description of the nature of the emergency, justification for the expedited consultation, and an evaluation of the response to and impacts of the emergency actions on listed species and their habitats including those measures provided by the Service in an effort to avoid and minimize impacts to the MSO, American peregrine falcon, and the lesser long-nosed bat.

On May 29, 1998, a walk through tour was given for the latest reconstruction phase (6) by the Forest Service and FHA for Mt. Lemmon Highway.

On March 1, 1999, the Forest Service submitted a BA for Mt. Lemmon Highway reconstruction project (phase 6) to the Service. Listed species of concern for this phase of the project were the MSO and the American peregrine falcon.

On April 15, 1999, the Forest Service submitted maps of the MSO protected activity centers (PACs) and nest locations for the American peregrine falcon, and formal consultation was initiated.

On April 29, 1999, Ann Watson met with the Coronado National Forest's wildlife biologists and the FHA personnel to discuss the overall design of the highway and new changes from the original plans. It was revealed at this meeting that an additional 3.2 kilometers (2.0 miles) segment would be added to the project. The Forest Service informed the Service they were going to submit an additional BA for this new segment. After further discussions and a visit to the proposed project site, it was agreed that the Service would do one BO for the entire project rather than two formal BOs on the same project. On May 21, 1999, the Service received the second BA for the added highway segment.

On June 17, 1999, the Service sent a letter to the Forest Service informing them that the second BA would be combined with the first BA and one final BO would be written for the entire project. The Service also informed the Forest Service that the timeframe for completing the BO would be adjusted accordingly.

On July 19, 1999, the Service entered into emergency consultation with the Forest Service as a result of two sections of highway being washed out. The Service informed the Forest Service that a BA would need to be submitted for the emergency actions and that it would be added as an amendment to the already existing formal consultation package in progress for the Mt. Lemmon Highway reconstruction project.

On August 10, 1999, the Service received an emergency BA from the Forest Service that addressed the effects on the MSO, American peregrine falcon, and lesser long-nosed bat from the emergency actions.

On September 15, 1999, the Service met with the Forest Service and the FHA personnel to discuss the draft biological opinion. The Federal Highway Administration informed the Service

that they could not agree to a full-length breeding season restriction. The Forest Service also requested that a portion of the 1/4 mile buffer zone around the affected PACs adjacent to the highway be lifted during part of the breeding season.

On October 1, 1999, a conference call occurred between the Service and the Forest Service to discuss the 1/4 mile buffer around the five affected PACs. After reviewing the maps, location of the PACs, and reviewing the 1999 owl survey results, it was decided that the 1/4 mile buffer be lifted, to avoid a significant change in the proposed project.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Mt. Lemmon Highway, otherwise known as the General Hitchcock Highway, is on the Santa Catalina Ranger District of the Coronado National Forest, Pima County, Arizona. The proposed project (Phase 5 and Phase 6) is to reconstruct 7.8 kilometers (6.8 miles) of Mt. Lemmon Highway which occurs between elevations of 212-249 meters (6,970-8,160 feet), and traverses several different vegetation communities. Primary habitat affected by the proposed project includes exposed rock, riparian areas, ponderosa pine/mixed oak, chapparal and mixed conifer forest. The project areas lies entirely within the boundaries of the Coronado National Forest. Private lands are in the vicinity of the southern and northern ends of the project. No additional right-of-way in private or Federal lands will be needed for this project since this highway currently has a 30 meter (100-foot) right-of-way on each side of the existing centerline. Phase 6 will widen and realign Mt. Lemmon Highway from Lizard Rock to Whitetail Campground turnoff. Phase 5 will widen and realign Mt. Lemmon Highway from General Hitchcock Campground down to where Mt. Lemmon Highway crosses Bear Canyon.

Reconstruction requires improving drainage, and paving up to a 18 meter (60 foot) wide corridor. The corridor includes two 3.6 meters (12 feet) wide travel lanes, two 0.6 meters (2 feet) wide paved shoulders, two 1.2 meters (4 feet) wide foreslopes (for road base/shoulder stability and guardrail anchoring), and a 1.2 meters (4 feet) wide ditch on the upslope. Several substandard curves will be improved and sight distance will be improved along the entire route. The design speed of the highway will remain at 48.3 kph (30 mph). The average road width increase of 3.6 meters (12 feet) will result in additional cuts/fills or enlargement of existing cuts/fills. Activities undertaken as part of the project include: plant salvage, clearing and tree removal; excavation, blasting and ripping; placement of retaining walls; removal of obstructions, old culverts, and replacement of new culverts; crushing and hauling of rock; pouring of curb, sidewalk and headwalls; rock masonry construction, placement of asphalt, installation of guardrails; and seeding and planting. Construction material will be taken and stored at the Palisades lagoon site and Cypress Picnic Ground, where a rock crusher will process the base material. Asphalt will be trucked from Tucson and mixed on site. Existing asphalt will be crushed and incorporated into road base material. The entire project will affect approximately 10.5 hectares (26.0 acres).

Construction is planned to begin in January 2000 and continue until December 2001 and will include both daytime and nighttime construction activities. The previous emergency actions occurred within the existing proposed reconstruction project sites and the total project length and number of acres was not affected.

According to the Environmental Assessment (EA) for this project, the following conservation measures have been developed and incorporated into the project to date. The project designers and engineer, in coordination with a Forest Service liaison, will consult with other Forest staff and advise the project engineer who will be responsible for implementation and monitoring these commitments to ensure the objectives are met.

1. All construction operations will be carried out within the defined construction limits shown on the plans. The contractor will be required to restore disturbed areas beyond these limits unless such work is approved by the project engineer.

2. Disturbed soil areas will be revegetated with commercially available/collected native plant species similar to those existing in the corridor. Short abandoned road sections will be obliterated and revegetated. Seed mixes will be developed by the erosion control/revegetation/landscape advisory team. More intensive revegetation and landscaping will be implemented in particularly sensitive and visible areas.

3. New roadside cut and fill slopes will be steepened to the extent practicable to minimize earthwork and disturbance of existing vegetation. Rounding and clearing beyond the tops of cut slopes and bottoms of fill slopes will be minimized to reduce disturbance. Retaining walls will be frequently used to reduce and contain fill or cuts.

4. To facilitate wildlife crossing, the right-of-way will not be fenced.

5. Dust from construction activities will be controlled by application of water or another acceptable dust palliative. All construction vehicles will be properly noise-muffled.

6. Special blasting techniques will be used, especially in the Bear Canyon area. Short blasting test sections will be used to confirm rock blasting techniques and duration of blasts should not exceed 2-3 minutes per blast. New rock cuts will be selectively roughened and artificially aged (stained) if necessary to reduce visual impacts.

7. The Forest Service will eliminate the existing trailhead at San Pedro Overlook peregrine falcon eyrie and move the overlook away from the promontory and nest site. The elimination of some parking areas will help reduce impacts.

STATUS OF THE SPECIES

Species Description- Mexican Spotted Owl

The Mexican spotted owl was listed as threatened on March 16, 1993 (58 FR 14248). Critical habitat was designated for the species on June 6, 1995 (60 FR 29914), but was withdrawn in a recent Federal Register notice (63 FR 14378). The Mexican spotted owl was originally described from a specimen collected at Mount Tancitaro, Michoacan, Mexico, and named *Syrnium occidentale lucidum*. The spotted owl was later assigned to the genus *Strix*. Specific and subspecific names were changed to conform to taxonomic standards and the subspecies became *S. o. lucida*. The American Ornithologists' Union currently recognizes three spotted owl subspecies, including the California, *S. o. occidentalis*; Mexican, *S. o. lucida*; and Northern, *S. o. caurina*. The Mexican spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back, and head. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies giving it a lighter appearance. Several thin white bands mark an otherwise brown tail. Unlike most owls, spotted owls have dark eyes.

The Mexican spotted owl is distinguished from the California and northern subspecies chiefly by geographic distribution and plumage. The Mexican spotted owl has the largest geographic range of the three subspecies. The range extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah southward through Arizona and New Mexico and, discontinuously through the Sierra Madre Occidental and Oriental to the mountains at the southern end of the Mexican Plateau. There are no estimates of the owl's historic population size. Its historic range and present distribution are thought to be similar.

Using starch-gel electrophoresis to examine genetic variability among the three subspecies of spotted owls, Barrowclough and Gutierrez (1990) found the Mexican spotted owl to be distinguishable from the other two subspecies by a significant variation, which suggests prolonged geographic isolation of the Mexican subspecies and indicates that the Mexican spotted owl may represent a species distinct from the California and Northern spotted owls.

The current known range of the Mexican spotted owl extends north from Aguascalientes, Mexico through the mountains of Arizona, New Mexico, and western Texas, to the canyons of southern Utah and southwestern Colorado, and the Front Range of central Colorado. Although this range covers a broad area of the southwestern United States and Mexico, much remains unknown about the species' distribution within this range. This is especially true in Mexico where much of the owl's range has not been surveyed. Information gaps also appear for the species' distribution within the United States. It is apparent that the owl occupies a fragmented distribution throughout its United States range corresponding to the availability of forested mountains and canyons, and in some cases, rocky canyon lands.

The primary administrator of lands supporting owls in the United States is the Forest Service. According to the Mexican Spotted Owl Recovery Plan (USDI 1995), 91 percent of owls known

to exist in the United States between 1990 and 1993 occur on land administered by the Forest Service. The majority of known owls have been found within Region 3 of the Forest Service, which includes 11 National Forests in New Mexico and Arizona. Forest Service Regions 2 and 4, including two national forests in Colorado and three in Utah, support fewer owls.

A reliable estimate of the numbers of owls throughout its entire range is not currently available due to limited information. Owl surveys conducted from 1990 through 1993 indicate that the species persists in most locations reported prior to 1989, with the exception of riparian habitats in the lowlands of Arizona and New Mexico, and all previously occupied areas in the southern states of Mexico. Increased survey efforts have resulted in additional sightings for all recovery units. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico in 1990 using information gathered by Region 3 of the Forest Service. Fletcher's calculations were modified by the Service (USDI 1991), who estimated that there were a total of 2,160 owls in the United States. While the number of owls throughout its range is currently not available, the Recovery Plan reports an estimate of owl sites based on 1990 - 1993 data. 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." Surveys from 1990 through 1993 indicate one or more owls have been observed at a minimum of 758 sites in the United States and 19 sites in Mexico. Total numbers in the United States range from 777 individuals, assuming each known site was occupied by a single owl, to 1,554 individuals, assuming each known site was occupied by a pair of owls.

Past, current, and future timber-harvest practices in Region 3 of the Forest Service, in addition to catastrophic wildfire, were cited as the primary factors leading to listing of the spotted owl as a threatened species. Fletcher (1990) estimates that 419.6 hectares (1,037,000 acres) of habitat were converted from suitable (providing all requirements of the owl, e.g., nesting, roosting, and foraging) to capable (once suitable, but no longer so). Of this, about 78.7 percent, or 330 hectares (816,000 acres), was a result of human management activities, whereas the remainder was converted more or less naturally, primarily by wildfire. Other factors which have or may lead to the decline of this species include a lack of adequate regulatory mechanisms.

Mexican spotted owls breed sporadically and do not nest every year. Mexican spotted owl reproductive chronology varies somewhat across the range of the owl. In Arizona, courtship apparently begins in March with pairs roosting together during the day and calling to each other at dusk (Ganey 1988). Eggs are laid in late March or, more typically, early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female (Ganey 1988). The incubation period for the Mexican spotted owl is assumed to be 30 days (Ganey 1988). During incubation and the first half of the brooding period, the female leaves the nest only to defecate, regurgitate pellets, or to receive prey from the male, who does all or most of the foraging (Forsman *et al.* 1984, Ganey 1988). Eggs usually hatch in early May, with nestling owls fledging four to five weeks later, and then dispersing in mid September to early October (Ganey 1988).

Little is known about the reproductive output for the spotted owl. It varies both spatially and temporally (White *et al.* 1995), but the subspecies demonstrates an average annual rate of 1.001 young per pair. There is inadequate data at this time to estimate population trend. Little confidence in initial estimates has been expressed, and is due to its reliance on juvenile survival rates which are believed to be biased low, and due to the insufficient time period over which studies have been conducted.

Based on short-term population and radio-tracking studies, and longer-term monitoring studies, the probability of an adult Mexican spotted owl surviving from one year to the next is 0.8 to 0.9. Juvenile survival is considerably lower at 0.06 to 0.29, although it is believed these estimates may be artificially low due to the high likelihood of permanent dispersal from the study area and the lag of several years before marked juveniles reappear as territory holders and are detected as survivors through recapture efforts (White *et al.* 1995). Little research has been conducted on the causes of mortality of the spotted owl, but predation by great horned owls, northern goshawks, red-tailed hawks, and golden eagles; starvation; and accidents or collisions may all be contributing factors.

Mexican spotted owls nest, roost, forage, and disperse in a diverse array of biotic communities. Nesting habitat is typically in areas with complex forest structure or rocky canyons, and contain mature or old-growth stands which are uneven-aged, multi-storied, and have high canopy closure (Ganey and Balda 1989, USFWS 1991). In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons. Elsewhere, the majority of nests appear to be in Douglas-fir trees (Fletcher and Hollis 1994, Seamans and Gutierrez 1995). A wider variety of tree species is used for roosting; however, Douglas-fir is the most commonly used species (Ganey 1988, Fletcher and Hollis 1994). Foraging owls use a wider variety of forest conditions than for nesting or roosting. In northern Arizona, owls generally foraged slightly more than expected in unlogged forests, and less so in selectively logged forests (Ganey and Balda 1994). However, patterns of habitat use varied among study areas and individual birds, making generalizations difficult.

Seasonal movement patterns of Mexican spotted owls are variable. Some individuals are year-round residents within an area, some remain in the same general area but show shifts in habitat-use patterns, and some migrate considerable distances 20-50 kilometers (12-31 miles) during the winter, generally migrating to more open habitats at lower elevations (Ganey and Balda 1989, Willey 1993, Ganey *et al.* 1998). Home-range size of Mexican spotted owls appears to vary considerably among habitats and/or geographic areas (USDI 1995), ranging in size from 261 to 1,487 hectares (644 to 3,674.4 acres) for individual birds, and 381 to 1,551 hectares (941 to 3,832.5 acres) for pairs (Ganey and Balda 1989). Little is known about habitat use by juveniles during natal dispersal. Ganey *et al.* (1998) found dispersing juveniles in a variety of habitats ranging from high-elevation forests to pinyon-juniper woodlands and riparian areas surrounded by desert grasslands. Some juveniles remained in forests similar to typical owl breeding habitat.

Mexican spotted owls consume a variety of prey throughout their range but commonly eat small

and medium sized rodents such as woodrats (*Neotoma* spp.), peromyscid mice, and microtine voles. They may also consume bats, birds, reptiles, and arthropods (Ward and Block 1995). Habitat correlates of the owl's common prey emphasize that each prey species uses a unique microhabitat. Deer mice (*Peromyscus maniculatus*) are ubiquitous in distribution in comparison to brush mice (*Peromyscus boylei)* which are restricted to drier, rockier substrates, with sparse tree cover. Mexican woodrats (*N. mexicana*) are typically found in areas with considerable shrub or understory tree cover and high log volumes or rocky outcrops. Mexican voles (*Micotus mexicanus*) are associated with high herbaceous cover, primarily grasses; whereas, long-tailed voles (*M. longicaudus*) are found in dense herbaceous cover, primarily forbs, with many shrubs, and limited tree cover. A diverse prey base is dependent on the availability and quality of diverse habitats.

The Mexican Spotted Owl Recovery Plan (USDI 1995) provides for three levels of habitat management: protected areas, restricted areas, and other forest and woodland types. "Protected habitat" includes all known owl sites, and all areas in mixed conifer or pine-oak forests with slopes >40 percent where timber harvest has not occurred in the past 20 years, and all reserved lands. "Protected Activity Centers" (PACs) are delineated around known Mexican spotted owl sites. A PAC includes a minimum of 243 hectares (600 acres) designed to include the best nesting and roosting habitat in the area. The recommended size for a PAC includes, on average from available data, 75 percent of the foraging area of an owl. "Restricted habitat" includes mixed conifer forest, pine-oak forest, and riparian areas; the recovery plan provides less specific management guidelines for these areas. The Recovery Plan provides no owl specific guidelines for "other habitat."

The range of the Mexican spotted owl in the United States has been divided into six recovery units (RUs) as identified in the Recovery Plan (U.S.D.I. 1995, part II.B.). An additional five recovery units were designated in Mexico. The recovery plan identifies recovery criteria by recovery unit. The Upper Gila Mountain Recovery Unit has the greatest known concentration of owl sites in the United States. This unit is considered a critical nucleus for the owl because of its central location within the owl's range, and presence of over 50 percent of the known owls. The other recovery units in the United States, listed in decreasing order of known number of owls, are: Basin and Range-East, Basin and Range-West, Colorado Plateau, Southern Rocky Mountain-New Mexico, and Southern Rocky Mountain-Colorado.

From 1991 through 1997, Gutierrez *et al.* (1997, 1998) studied the demographic characteristics of two Mexican spotted owl populations in the Upper Gila Mountains Recovery Unit. The owl populations studied were located on the Coconino and Gila National Forests. Results of this several-year study have shown a decline in the population trend of Mexican spotted owls within these areas. The reason for the reported decline is unknown. According to Gutierrez *et al.* (1997), such a trend could be a result of: 1) density dependent responses to an increase over carrying capacities; 2) a response to some environmental factor; or 3) senescence. The latter (i.e. senescence) seems unlikely because there was also a negative linear trend in survival estimates for owls less than three years of age. Regarding carrying capacities, responses to density

dependence are difficult to prove in the absence of removal or addition experiments. Environmental factors undoubtedly play a role in owl survival, either through weather events causing direct mortality or indirectly through reduced habitat or prey (Gutierrez *et al.* 1997). This study found that the ability of adult birds to survive successive years of poor environmental conditions may be low (Gutierrez *et al.* 1998).

At the end of the 1995 field season, the Forest Service reported a total of 866 management territories (MTs) established in locations where at least a single MSO had been identified (U.S. Forest Service, *in litt.* November 9, 1995). The information provided at that time also included a summary of territories and acres of suitable habitat in each RU. Subsequently, a summary of all territory and monitoring data for the 1995 field season on Forest Service lands was provided to the Service on January 22, 1996. There were minor discrepancies in the number of MTs reported in the November and January data. For the purposes of this analysis we are using the more recent information. Table 1 displays the number of MTs and percentage of the total number of each Forest (U.S. Forest Service, *in litt.*, January 22, 1996).

The Forest Service has converted some MTs into PACs following the recommendations of the Draft MSO Recovery Plan released in March 1995. The completion of these conversions has typically been driven by project-level consultations with the Service and varies by National Forest.

The proposed project occurs within the Basin and Range-West Recovery Unit. This RU ranks as the second largest RU in the United States, the known population ranks third highest in the United States despite limited survey efforts in many areas. This RU is dominated by Madrean elements, and includes numerous mountain ranges; the Chiricahua, Huachuca, Pinaleno, Bradshaw, Pinal, Santa Cantalina, Santa Rita, Patagonia, Santa Teresa, Atascosa, Mule, Dragoon, Peloncillo, Mazatzal, and Rincon Mountains. Vegetation within the RU ranges from desert scrub to semi-desert grassland in the valleys, and upwards in elevation to montane forests. Within the Basin and Range-West RU, the majority of the owls occur in the isolated mountain ranges in encinal oak woodlands, mixed-conifer and pine-oak forests, and rocky canyons.

Federal lands encompass 36 percent of this RU, and are mostly administered by the Bureau of Land Management and the Forest Service, with a small portion managed by the National Park Service. The dominant land use activity is recreation, and includes hiking, birdwatching, camping, off-road driving, skiing, and hunting. Livestock grazing also occur in low and mid-elevations.

A total of 214 projects have been formally consulted on in Arizona and New Mexico since 1993, and of those 204, were consulted on by the Forest Service for timber sales and other projects These projects have resulted in the anticipated incidental take of 155+ owls mainly in the form of harm or harassment. In addition, the Bureau of Indian Affairs has consulted on one timber sale on the Navajo Reservation which resulted in an anticipated take of four Mexican spotted owls, and a highway reconstruction which resulted in the anticipated incidental take of two Mexican

spotted owls. The FHA has consulted on one highway project that resulted in an undetermined amount of incidental take.

The Department of the Navy consulted on an observatory project with an anticipated take of one MSO. Consultation with Langley Air Force Base (#2-22-96-F-334) for overflights in both New Mexico and Arizona concerning German Air Force operations at Holloman Air Force Base in New Mexico [for flights over the southern half of New Mexico, southwest Texas, and 103.6 square kilometers (40 square miles) in eastern Arizona], determined that incidental take of MSO would occur due to harassment. The precise level of the take was impossible to predict due to lack of adequate data. However, incidental take is considered to be exceeded if 5 percent of monitored PACs are believed to have become nonfunctional through harassment from the overflight. Bandelier National Monument (2-22-95-F-532) consulted on a prescribed fire project with an anticipated direct mortality of one MSO and no more than one PAC buffer area burned.

Table 1. Number of management territories (MTs) as reported by the Forest Service (U.S. Forest Service, *in litt.*, January 22, 1996), percent of MTs as a proportion of the MTs in Forest Service Region 3, and the percent of suitable habitat surveyed in each Forest by National Forest (Fletcher and Hollis 1994).

National Forest	Number of MTs	Percent of MTs	Percent Suitable Habitat Surveyed
Apache-Sitgreaves	122	14.0	99
Carson	3	0.3	62
Cibola	43	5.0	41
Coconino	155	17.8	87
Coronado	108	12.4	49
Gila	197	22.7	50
Kaibab	6	0.7	96
Lincoln	126	14.5	90
Prescott	10	1.2	42
Santa Fe	33	3.8	44
Tonto	66	7.6	55
TOTAL	869	100	

Based on the above analysis for the MSO it may be adversely affected by the proposed project. The proposed project occurs within MSO existing habitat, including riparian areas, canyon and cliff areas, and mixed-conifer forest. Both MSO and MSO nest sites have been documented in the project area within the last two years of monitoring. Five MSO PACs occur within and adjacent to the proposed project area.

ENVIRONMENTAL BASELINE

Under section 7 (a)(2) of the Endangered Species Act (ESA), when considering the effects of the action on federally-listed species, the Service is required to take into consideration the environmental baseline. Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects which have undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultation in progress. On the Coronado National Forest, past and present Federal, State, private, and other human activities that affect the RU include past timber sales, fuelwood gathering, cattle grazing, development of recreation sites, and road construction and maintenance activities.

Mexican Spotted Owl (in the action area)

There are five Mexican Spotted Owl PACs within or near the proposed project, all of which have been monitored the last ten years. The 1999 survey results were as follows:

1. Barnum PAC (0505002)- Pair occupancy confirmed, with 1 young
2. Sycamore Canyon(Sollers) (0505003)- Absent
3. Palisades Canyon (0505004)- Absent, nesting undetermined
4. Bear Canyon (0505001)-Absent
5. Novio Springs (0505005)-Pair occupancy confirmed, nesting undetermined

Barnum, Sollers, Novio Springs, and Palisades PACs are in the upper portion (phase 6) of the project and the boundaries of these PACs are in direct contact with Mt. Lemmon Highway. Barnum, Novio Springs, and Upper Edgar PACs are all on the east side of the highway within the project area. Novio Springs and Upper Edgar PACs are buffered by a ridgeline on the western edge of each PAC where they border the highway.

Barnum PAC is partially buffered from the highway by a ridgeline; however, locations of the historic nest sites are located far from the affected portion of the PAC. One young was located in Barnum PAC this year; however, the nest site was not located. In 1991 and 1992 MSO were cliff nesters and, regardless of nesting status, they have always been located roosting in the same general area year after year (pers. com. Duncan 1999). According to surveyors, calling from the highway, they received a response from an owl but were not sure which PAC on the east side of

the highway it came from (pers. com. Duncan 1999). Determination of which PAC an owl is associated with is often difficult unless the owl is banded.

Palisades PAC is on the west side of the highway in the upper portion of the project. The topography for this PAC is relatively open near the Forest Service Palisades Ranger Station located at the east end of the PAC next to the highway. Owls were first detected in the Palisades Canyon PAC in 1989 and again in 1991. Surveyors did not locate a daytime roost site for these detections. Then a pair was detected during 1993 in nearby Spencer Canyon about 500 meters outside of the PAC (1,640 feet) south of the Pusch Ridge Wilderness boundary downstream of the lower picnic area; approximately 3/4 mile distance from the highway. In 1995 a single male was detected at this site again, outside of the PAC. Russell Duncan has recommended that Palisades PAC be redelineated to another area based on updated data. In addition, surveyors detected a pair just to the northwest of this PAC at Spencer Canyon Campground, where they believe there is more suitable habitat and greater MSO activity. The surveys failed to locate a daytime roost site for these owls. The surveys also searched the roost grove where owls were located in 1993 and 1995 and no sign was found (e.g., no white wash, pellets, or any other indication of MSOs). Any PAC redelineated will require further information as well as consultation with the Service.

Sollers PAC did not show any signs of nesting owls in 1999. No other data was furnished for this PAC by the Forest Service.

The lower highway section of Mt. Lemmon Highway borders the Bear Canyon PAC for approximately 0.5 mile and also cuts through the PAC in both the northeastern and southwestern portions. This PAC lies in a northeastern direction along Bear Canyon. Bear Canyon Creek runs the entire length of this PAC and most likely provides MSO with substantial nesting, roosting, and foraging habitat. One of the oldest known Arizona cypress trees is located within this PAC. In addition there are numerous cliffs and ledges on the west side of the PAC that could be potential MSO roosting/nesting sites. MSO were first recorded in Bear Canyon in 1949 (Duncan and Taiz, 1991). J. L. Ganey observed a young owl in the canyon in 1985 (Ganey 1988). In 1987, R. Duncan observed two fledgling owls. Mature owls were found in 1988 and 1989. No eggs or young were found in either year. In 1990, owls were inventoried using USDA Region 3 protocol and one owl was "inferred" as being in the canyon. The same protocol was used in 1991, 1992, and 1993, but no owls were found. The site was informally monitored in 1994 (two visits) and 1995 (three visits), but no owls were found. In addition, Mr. Russell Duncan (Southwestern Field Biologists) and Steve Speich (Danes and Moore, Inc.) intermittently made nighttime visits throughout the season in both 1994 and 1995 without finding any owls. In 1996, six monitoring sessions were conducted using standardized MSO survey protocol. In 1997, two surveys had been conducted and no owls were found in either year. In 1998, no owls were observed. In the summer of 1999, a survey was completed by Russell Duncan and no owls were observed in the proposed project area. This area has been a productive PAC, it is still suitable habitat, and has been intermittently occupied since at least 1949 (pers.com. Duncan 1999).

Monitoring of these 5 PACs has been conducted for the last ten years; the 1999 field season is the most recent. There are several years for which monitoring data has not been provided or is unavailable. The Service considers all PACs occupied, even if MSO cannot be located in any given year. MSO are known to be a very mobile species. This past field season birds responded during surveys from the highway; therefore it can be assumed that MSO are likely to exist very close to the highway and use the available habitat near the highway. After reviewing the latest survey results from this past breeding season, it appears that most of the owl detections were outside of the proposed project area and to the north and northwest of Mt. Lemmon Highway.

EFFECTS OF THE ACTION

Direct effects to the MSO are the disturbances from construction noise (e.g., drilling, blasting, and heavy equipment use) that will occur in the immediate vicinity of the nesting territories and designated PACs. These owls could potentially be displaced for a relative short period or they could be displaced for a long period, and possibly forced to relocate permanently to other suitable habitat as a result of such action. Indirect effects are the increase of recreational activities within the project area such as rock climbers, hikers, wildlife viewing, and camping and the associated increased risk of wildland fire.

Direct effects - Mexican Spotted Owl

The proposed action may directly affect the following PACs: Novio Spring, Palisades, Sollers, Barnum, and Bear Canyon. The reconstruction of Mt. Lemmon Highway, which borders or is within the boundaries of these PACs, does not follow the recommendations of the MSO Recovery Plan because construction will occur during the breeding season and trees over 22.4 centimeters (9 inches) dbh will be removed.

According to the Biological Assessment a total of 3.76 hectares (9.30 acres) of MSO habitat will be affected. A total of 337 trees with a dbh greater than 22.4 centimeters (9 inches) will be removed from the Barnum PAC and a total of 355 trees of various size class will be removed in the Sollers PAC. The Bear Canyon PAC will require removal of 89 trees of various size classes within the affected areas of the PAC. Removal of habitat within these PACs is along the existing right-of-way and considered minimal. However, even minor changes in habitat structure may affect the existing microclimate of the site, and may increase the visibility of the road from any nesting/roosting sites, thus effecting the integrity of the PACs.

The Service believes that disturbance activities of the magnitude associated with the Mt. Lemmon Highway reconstruction project may adversely affect the MSO. These effects may be particularly adverse if such actions are conducted early in the breeding season during territory establishment, pair formation, and prelaying through incubation. Proposed activities also include nighttime construction which may influence MSO behavior patterns. Raptors become less sensitive to human disturbance as their nesting cycle progresses (Newton 1979). Studies have suggested that human activities within breeding and nesting territories could affect raptors by

changing home range movements (Anderson *et al.* 1990) and causing nest abandonment (Postovit and Postovit 1987, Porter *et al.* 1973). It has been found that other raptors have been known to nest successfully within a few hundred meters (656 feet) of areas such as airports, blasting, construction, quarrying, and mining sites (Pruett-Jones *et al.* 1980, Haugh 1982, White and Thurow 1985, White *et al.* 1988). MSO are primarily nocturnal but will hunt by day (probably crepuscular) when the opportunity presents itself. Nightime work by floodlights may have some impact to the owls, depending on the work site and its proximity to any nest/roost site. However, working at night might also be advantageous to nearby owls by helping to keep them away from the highway and reducing the probability of getting hit by vehicles. Cade and Bird (1990) discussed the possible effects of high levels of human activity on peregrines including noise and machinery such as compressors, blowing fans, and bright night lighting.

Activities that disturb or remove the key habitat components within designated PACs may adversely affect the MSO. These activities include actions that remove trees over 22.4 centimeters (9 inches) dbh, reduce the canopy closure, modify the multi-layered structure of a stand, reduce the availability of nesting structures and sites, reduce the regeneration or modify the structure of riparian habitat, and /or reduce the suitability of habitats for prey species. The habitat that will be required to be removed for reconstruction is quite small, only the existing right-of-way, and due to the landscape in the project area, sufficient owl habitat will remain for owls to nest, roost, forage, and disperse in the PACs.

Noise from various construction procedures such as blasting, truck traffic, heavy equipment use, and the use of nighttime floodlights may directly affect the MSO and its habitat. The scheduled nighttime work is from January 2000 to December 21, 2000 and possibly into 2001 if necessary. Owls have more sensitive hearing than other birds (Bowles 1996). Blasting is included as part of the proposed action and will be conducted as needed based on topography features. If a loud sound 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 1996). Loud 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 1996). Such expansions in home ranges could affect the fitness of the birds, and thus their ability to successfully reproduce and raise young. The species that are sensitive to the presence of people may be displaced permanently; this 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). 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).

A ridgeline parallels the highway and provides a topographic screen from disturbing activities to the Novio Springs and Upper Edgar PACs. This same ridge provides a partial buffer from the Barnum PAC; however, this PAC also borders the highway. Limited MSO information is

available for the Barnum PAC, though a non-nesting male was detected about l mile from the highway in 1999. Potential nesting habitat occurs near the highway and construction activity may result in disturbance of unlocated nesting birds. Trees > 22.4 centimeters (9 inches) dbh will also be removed within the Barnum PAC.

The portion of the Palisades PAC which provides better quality MSO habitat is located away from the highway. In addition, surveys over the last few years have located owls outside the designated PAC. Questions remain regarding the delineation of an additional PAC associated with Spencer Canyon. Based on this data, we do not expect that MSO would be using habitat in close proximity to the highway.

The Sellers and Bear Canyon PACs border the highway. Removal of trees > 22.4 centimeters (9 inches) dbh, and all related construction activity, results in potential disturbance to MSO in the PACs. Little information is available on MSO for the Sellers PAC. It is unclear why there has not been recent nesting in the Bear Canyon PAC.

Indirect, Interdependent, and Interrelated Effects - Mexican Spotted Owl

The Service must consider the indirect, interdependent, and interrelated effects to the MSO from the reconstruction of Mt. Lemmon Highway. Indirect effects are those caused by, or resulting from, the proposed action, and are later in time, but reasonably certain to occur. Interdependent actions are actions that have no independent utility apart from the action under consideration. Interrelated actions are actions that are part of a larger action, and are dependent on the larger action for their justification. The Service is concerned with the following indirect effects.

Current recreation use in the Coronado National Forest is high. The majority of that use comes from the metropolitan area of Tucson. Many areas within the project area offer rock climbing, hiking, and camping. All of these activities can indirectly affect the MSO and its habitat. Reconstructing the Mt. Lemmon Highway and improving road conditions may eventually lead to increased traffic use which may result in increased vehicle mortality of owls. Owls are known to use the roadside for foraging and the probability of vehicle mortality is a major concern. In the vicinity of Barnum and Bear Canyon PACs are popular rock climbing areas, with improvements to the highway may also increase this activity.

A ski resort and the town of Summerhaven is located on Mt. Lemmon and access to both of these locations is by way of the Mt. Lemmon highway. The increased recreation and traffic use allows increases the opportunity for, and risk, from wildland fires.

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 that are unrelated to the proposed action are not considered in this section because they require

separate consultation pursuant to section 7 of the ESA.

In past biological opinions, it has been stated that, "Because of the predominant occurrence of the owls on Federal lands, and because of the role of the respective Federal agencies in administering the habitat of the owl, actions to be implemented in the future by non-Federal entities on non-Federal lands are considered of minor impact." However, there has been a recent influx of harvest activities on non-Federal lands. Many of the non-Federal lands being harvested are adjacent to or within National Forests (i.e., private inholdings). These activities reduce the quality and quantity of owl nesting, roosting, and foraging habitats and could cause disturbance to breeding owls. All forests throughout the State and southwestern U.S. could be impacted, which could result in adverse cumulative effects in the future.

CONCLUSION

After reviewing the current status of the MSO, the environmental baseline for the action area, the effects of the proposed reconstruction, and the cumulative effects, it is the Service's biological opinion that the reconstruction of Mt. Lemmon Highway as proposed in the biological assessment is not likely to jeopardize the continued existence of the MSO. Adverse effects will be caused from highway reconstruction actions occurring during the MSO breeding season within and adjacent to the five PACs and any additional potential habitat within the project area. In addition, these PACs will be adversely affected by removal of trees with > 22.4 centimeters (inches) dbh. However, the proposed action will not likely reduce, in the long-term, the ability of the PACs to perform the functions for which they were designed.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the ACT, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as 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 any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing responsibility to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to

require the 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, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

For the purpose of consideration of incidental take of MSO by the proposed project now under consultation, incidental take can be broadly defined as either the direct mortality of individual birds, or the alteration of habitat that affects the behavior (e. g., breeding or foraging) of birds to such a degree that the birds are considered lost as viable members of the population and thus "taken". They may fail to breed, fail to successfully rear young, raise less fit young, or desert the area because of disturbance or when habitat no longer meets the owl's needs.

In past biological opinions, the management territory was used to quantify incidental take thresholds. The current section 7 consultation policy states that incidental take can only be assessed if an activity compromises the integrity of a PAC. Actions outside PACs will generally not be considered incidental take, except in cases when areas that may support owls have not been adequately surveyed.

Using the available information as presented within this document the Service has identified conditions of take for the MSO located in the Novio Spring, Palisades, Sollers, Barnum, and Bear Canyon PACs within the project area. Based on the best available information concerning the MSO, its habitat needs, the project description, and information furnished by the Coronado National Forest , incidental take is anticipated for the MSO as a result of the following:

1) Removal of trees over 22.4 centimeters (9 inches) dbh within the Barnum, Sollers, and Bear Canyon PACs.

2) Disturbance to MSO during the breeding season due to non-blasting construction related activities within Bear Canyon, Barnum, Palisades, Novo Springs, and Sellers PACs.

3) Disturbance to MSO due to blasting activity during the MSO breeding season within all PACs.

4) MSO collisions with vehicles caused by the improvement and long-term use of Mt. Lemmon Highway in and adjacent to the 5 affected PACs.

5) Recreation use within the proposed project area, and the indirect effects from this which include potential disturbance to MSO during the breeding season, and removal of important habitat components, namely down woody material for fuelwood.

AMOUNT OR EXTENT OF TAKE

The Service anticipates the incidental take of 4 pair (8 birds) of MSO and their young associated

with Barnum, Bear Canyon, Sollers, and Palisades PACs, the young of 2 pair for the 2000 and 2001 breeding seasons associated with Upper Edgar and Novo Springs PACs, and mortality of 2 MSO as a result of vehicle collisions. This take would be in the form of harassment resulting in disruption of normal reproduction behavior, harm resulting from alteration of habitat components, and mortality due to collisions with vehicles. The Service anticipates that incidental take of MSO will be difficult to detect because changes in behavior or activity patterns of individual birds due to harassment or harm would require intensive (e.g., radio telemetry) research and any dead bird occurring along the highway would likely not be found because of scavenger activity.

EFFECT OF TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the MSO.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take.

1. The Forest Service shall minimize to the extent possible, noise disturbance associated with highway reconstruction activity in and near Novio Springs, Palisades, Sollers, Barnum, and Bear Canyon PACs during the MSO breeding season.

2. The Forest Service shall minimize to the extent possible blasting in or within .80 kilometers (½ mile) of any PAC.

3. The Forest Service shall continue to survey the project area and formally monitor all affected PACs during and after completion of the highway reconstruction project.

4. The Forest Service shall minimize to the extent possible indirect effects to MSO as a result of increased recreation use.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, 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 nondiscretionary.

The following terms and conditions implement reasonable and prudent measure number 1:

A. The following reconstruction activities will be allowed during the MSO breeding season (March 1 through August 31) as necessary anywhere within the project area: initial staking, marking trees for removal, seeding and replanting for both phases of the proposed project.

B. Reconstruction activities which include: tree removal, earthwork, and all night time work will not occur within the MSO breeding season (March 1-August 31) of Sollers, Barnum, and Bear Canyon PACs unless either of the following is completely met:

1. If nesting is confirmed, all disturbing construction activities within .40 kilometers (1/4 mile) of the nest site reconstruction activity is restricted for the duration of the breeding season. Conversely, construction activity within the PAC but greater than .40 kilometers (1/4 mile) of the confirmed nest site is not restricted.

-OR-

2. Non-nesting status is determined beyond a reasonable doubt. Non-occupancy status of the PAC can be determined through repeated site visits (minimum of 6 visits) between March 1 through May 31 where no owls are detected. Also, non-nesting status can be inferred when owls are present but the following conditions must be met:

Non-nesting status is defined according to Forest Service protocol as: confirmation of the presence of a pair of MSO with no young found. This can be inferred only if the following are met: (1) a continually used day use site has been found (as evidenced by whitewash and/or pellets); (2) the male and female owls are repeatedly located (more than once) at that site; and (3) repeated monitoring during the month of May indicates non-nesting behavior such as the taking of multiple mice without delivery to young or flight to a possible nest. If the above behavior is evidenced after May 31, non-nesting is considered confirmed.

The following terms and conditions will implement reasonable and prudent measure number 2.

A. Blasting will only occur during daylight hours.

B. Blasting will not occur within the .80 kilometer (½ mile) of an occupied nest/roost site from March 1 through May 31, and within .40 kilometers (1/4 mile) of an occupied site from March 1 through August 31. Refer to Terms and Conditions number 1- B2 for factors relevant to established occupancy. All areas of a PAC are considered occupied unless shown beyond reasonable doubt to be unoccupied.

The following terms and conditions will implement reasonable and prudent measure number 3.

A. The Forest Service shall formally monitor Barnum, Sollers, Bear Canyon, Novio Springs and Palisades PACs each year reconstruction activity is scheduled to occur within these affected PACs and for a minimum of 5 years following completion of the reconstruction project.

B. Surveys of the project area will be completed according to Forest Service protocol for the year 2000 and 2001 concurrent with reconstruction activities.

C. A PAC will be drawn for any additional MSO located as specified in the MSO Recovery Plan. Evaluate MSO locations reported for Spencer and Rose Canyons for possible PAC delineation.

D. Report annually (by December 31 of each year) to the Service the results of all survey and
monitoring activity and new PAC delineations.

The following terms and conditions will implement reasonable and prudent measure number 4.

A. The Forest Service shall continue to inform and educate the general public about the effects they can have on the MSO and its habitat by either using interpretive signs or educational materials such as brochures or videos.

B. Evaluate the existing rock climbing activity as they relate to MSO conservation.

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 review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

The Fish and Wildlife 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. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

DISPOSITION OF DEAD OR INJURED LISTED ANIMALS

Upon locating a dead or injured threatened or endangered MSO, initial notification must be made

to the Service's Division of Law Enforcement, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona (480) 261-6443) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact MSO(s) shall be provided to this office. If the remains of the MSO(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 MSO(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 the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Forest Service attempt to minimize any future projects in proximity to the affected PACs within the project area that would allow future access to the area by means of increased roads, construction of new campgrounds, and construction of new trails within these PACs.

2. We recommend that reclamation of all roadsides along Mt. Lemmon Highway use only native seed and tree species and placed in the most natural mosaic patterns as before disturbance.

3. Increasing development in the metropolitan area of Tucson also brings more recreation use in the Santa Catalina District. We recommend that the Forest Service attempt to inform and educate the general public about the impacts they can have on threatened and endangered species and their habitats.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action(s) outlined in the biological assessments including the emergency action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental

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

Thank you for consideration of threatened and endangered species. For further information please contact Ann Watson (x228) at this office or Sherry Barrett at (520) 740-2764. Please refer to the consultation number 2-21-92-F-478, in future correspondence concerning this project.

/s/ David L. Harlow
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (GARD AZ/NM)
Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
District Ranger, Santa Catalina Ranger District, Tucson, AZ

Federal Highway Administration, Denver, CO
John Kennedy, Arizona Game and Fish Department, Phoenix, AZ

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CONCURRENCE

Species Description - Lesser Long- Nosed Bat (*Leptonycteris curasoae yerbabuenae*)

The lesser long-nosed bat has been found in southern Arizona from the Picacho Mountains southwest to the Agua Dulce Mountains and southeast to the Chiricahua Mountains, in far southwestern New Mexico in the Animas and Peloncillo Mountains, and south from Arizona and New Mexico throughout the drier parts of Mexico, including Baja California. Occasionally, individuals have been reported outside of this range. It is a seasonal resident in Arizona, usually arriving in early April and departing in mid-to-late September. It apparently resides in New Mexico only from mid-July to early September (Hoyt et al. 1994).

The proposed project is located at the outermost edge of the lesser long-nosed bat's habitat range (in elevation) on the fringes of desert scrub. The lesser long-nosed bat is associated with dry habitats, it pollinates flowers of species of columnar cacti and paniculate agaves and disperses seeds of columnar cacti species throughout its range. Two resources are important for the lesser long-nosed bat, suitable day roosts and suitable concentrations of food plants. Caves and mines are used as day roosts. Columnar cactus flowers and fruits and agave flowers represent this bat's core diet (Fleming 1986). Its consumption of nectar and pollen produced by paniculate Agave flowers is well-known (Howell 1974, 1976, 1979).

Paniculate agaves in the project area are low to moderate and there are no saguaros present. There no caves or mines are located in the project area. (*Agave schottii*) occurs in large scattered patches in the Coronado National Forest, and is not a large paniculate agave and is a limited food source. Surveys were conducted for the paniculate agaves and only seven were found in the upper section (phase 6) and 564 were counted within the lower section (phase 5).

Effects of the action

Disturbance already exist to some extent with current highway traffic. Reconstruction of Mt. Lemmon Highway will not increase this existing disturbance significantly. Disturbance to any existing bats in the project areas will be short term and all areas with existing agaves will be protected and reclaimed as written in the contract.

Conclusion

The Service concurs with your finding that the proposed action is not likely to adversely affect the lesser long-nosed bat based on the following:

1. The proposed action is on the fringe (in elevation) of suitable habitat used by the lesser long-nosed bat.
2. There are no known existing caves or mines in the project area that provide roost sites.
3. The abundance of plants for food foraging is moderate to very low.