

BIOLOGICAL OPINION SUMMARY
Manaco Analysis Area

Date of opinion: April 24, 1997

Action agency: U.S. Forest Service, Tonto National Forest, Payson Ranger District

Project: Timber sale, prescribed burning, sanitation cutting

Location: Gila County, Arizona

Listed species affected: Mexican spotted owl (*Strix occidentalis lucida*), threatened.

Biological opinion: The Service concludes that the proposed project will not jeopardize the continued existence of the Mexican spotted owl. The Service additionally concurs with the Forest Service's determination of no effect to critical habitat.

Incidental take statement:

Anticipated take: Four owls. Exceeding this level may require reinitiation of formal consultation. The Service anticipates that no take will result from the project following the implementation of reasonable and prudent measures.

Reasonable and prudent measures: Two reasonable and prudent measures were identified, as follows: 1) Increase the certainty that no owls are present in the proposed action area prior to project implementation; and 2) Decrease the adverse impacts of the project on habitat at or approaching threshold criteria as identified in the Recovery Plan. Implementation of these measures through the terms and conditions is mandatory. Reasonable and prudent measures are provided on pages 11 and 12 of the biological opinion.

Terms and conditions: Terms and conditions for implementation of reasonable and prudent measure one include completing one year of owl inventories consisting of six visits according to the Forest Service's Interim Directive #2 prior to project implementation. Additionally, terms and conditions for implementing reasonable and prudent measure one would require designating additional PACs and restricting activities outside the breeding season, if additional owls should be located. Terms and conditions for implementing reasonable and prudent measure two include excluding threshold habitat from all treatment, and designating a minimum of 214 acres of the habitat to be set aside as habitat placed on a trajectory to threshold. Terms and conditions implement reasonable and prudent measures and are mandatory requirements, and are found on page 12 of the biological opinion.

Conservation recommendations: Implementation of conservation recommendations is discretionary. Three conservation recommendations are provided, and are found on page 12 of this opinion.



United States Department of the Interior
Fish and Wildlife Service



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In Reply Refer To:

AESO
2-21-93-I-019

April 24, 1997

Mr. Charles R. Bazan
Forest Supervisor
Tonto National Forest
2324 E. McDowell Road
Phoenix, Arizona 85006

Dear Mr. Bazan:

The U.S. Fish and Wildlife Service (Service) has reviewed the Biological Assessment and Evaluation (BAE) and Environmental Assessment (EA) for the Manaco Analysis Area located in northern Gila County, Arizona. The project is located 12 miles northeast of the Town of Payson, in the following Township/Range/Section coordinates:

Township 11 North, Range 10 East, section 1
Township 11 North, Range 12 East, sections 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15,
16, 17, 18, 19, 20, 21, 23, 24, 29, 30, and 31
Township 11.5 North, Range 10 East, sections 25 and 36
Township 11.5 North, Range 11 East, sections 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33,
34, 35, and 36

Your August 20, 1996, request for formal consultation was received on August 22, 1996. This document represents the Service's biological opinion on the effects of that action on the Mexican spotted owl (MSO) in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.).

This biological opinion is based on information provided in the August 20, 1996, BAE; an August 1993, BAE, the August 1993 EA, telephone conversations and meetings, as detailed below; field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, or on timber sales, sanitation cuts, and prescribed burning and their effects on the MSO, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file in this office.

The Service has determined that the action as proposed is not likely to jeopardize the continued existence of the Mexican spotted owl (*Strix occidentalis lucida*). The Service has not provided concurrence with the Forest Service's determination of no affect to critical habitat. Since critical

habitat for the Mexican spotted owl has been enjoined by New Mexico District Court (Coalition of Arizona-New Mexico Counties for Stable Economic Growth versus USFWS, No. 95-1285-M Civil (D.N.M., filed March 4, 1997), no conferencing or consultation is required for critical habitat for this species. As requested by the Forest Service, this biological opinion discusses the proposed project in terms of its effects to the spotted owl, as other species were covered in earlier consultations.

CONSULTATION HISTORY

As noted in the BAE, an Environmental Assessment for the Manaco Analysis Area was signed on August 24, 1993, and a contract was awarded for the timber harvest activities associated with this project. The purchaser began operations in the project area, but operations were halted on August 25, 1995, in response to the timber sale injunction associated with Silver v. Thomas. That injunction remained in place until December 4, 1996.

The original BAE for this project was received by the Service on October 2, 1995, and was developed under the Forest Service Interim Directive #2 (ID#2). Under guidance in this directive, the Forest Service determined that "suitable nesting/roosting habitat is very limited and no owls have been located in, or near, the analysis area." Following this determination, and prior to full project implementation, the final Mexican Spotted Owl Recovery Plan (USDI 1995b) was issued. The Forest Service provided the August 26, 1996, BAE in order to analyze the proposed project under the Recovery Plan guidelines.

Several conversations have been held regarding the proposed project. Service records indicates these conversations took place on October 2, 3, and 11, 1995, and December 11, 1995. During a conference call on October 11, 1995, the Service notified the Forest Service that, due to the project occurring in restricted habitat as defined in the draft Recovery Plan, with removal of large trees, we could not concur with a no effect determination. Following publication of the Recovery Plan, a meeting and site visit were held in Payson to discuss the project on April 18, 1996. One telephone conversation on May 28, 1996, occurred between Josh Taiz of your office and Mary Richardson of this office, in which Mary informed Josh that the Service did not advise releasing portions of the Manaco timber sale at that time so that logging could begin because the timber sale injunction was still in effect, and because little analysis of the project had been completed by the Service. A subsequent meeting was held on September 12, 1996.

The Service was contacted by the Forest Service on March 16, 1997, regarding the proposed project. The Forest Service informed the Service that the contractor, Precision Pine, currently had no alternative sources of lumber, and that their mill would be closed. The Forest Service asked if any of the stands could be released for harvest at that time. At that point, the Service had completed their analysis of the project and written a draft biological opinion. The Service informed the Forest Service that Precision Pine could begin cutting in the following compartments and stands:

Compartment 13.3, Stands 6, 7, 8, 17, and 19
Compartment 14.1, All Stands except 32 and 33
Compartment 14.6, Stands 42, 43, 44
Compartment 14.7, Stand 1

The Service indicated that cutting could begin in these compartments as they were located greater than 0.25 miles from any restricted or protected habitat. The Service noted that no roads could be placed through restricted or protected habitat in order to facilitate logging in these areas.

The Forest Service provided a facsimile transmission to the Service on March 18, 1997, notifying the Service that additional cutting units had been omitted from the BAE. The Forest Service noted that the overall acreage of the project, as provided in the BAE, was correct, but that individual units had been omitted from the map provided with the August 1996 BAE. These included cutting units in portions of stands 13, 15, 18, 19, and 20 of Compartment 13.2; portions of stands 2 and 3 in Compartment 4.1; portions of stands 23, 24, and 26, and the majority of stand 25 in Compartment 14.1; and portions of stand 6 in Compartment 14.2. Additionally, the Forest Service noted that portions of stands 19, 20, 22, and 29 in Compartment 14.2 and stand 12 in Compartment 14.4 were inadvertently included as cutting units, but would not be harvested. The Service made modifications to the map provided with the BAE to reflect these changes.

Service personnel conducted an additional visit to the site on March 19, 1997, to review on-the-ground conditions and to see the newly designated Protected Activity Center along Roberts Draw. Additional information was recorded in field notes, as appropriate.

A telephone conversation took place between the two agencies on March 20, 1997. The Service notified the Forest Service that the additional stands identified in the fax could also be released for harvest immediately as they were not within 0.25 miles of any restricted or protected habitat provided that no roads were placed through restricted or protected habitat in order to access the new cutting units. The Forest Service notified the Service that Precision Pine was contemplating requesting applicant status for the consultation. Subsequent to this telephone conversation, an additional map was provided to the Service by the Forest Service on March 20, 1997.

Following delivery of a draft biological opinion to the Forest Service on March 26, 1997, Forest Service and Service personnel met on April 9, 1997, and again on April 18, 1997, to discuss the opinion. Suggested corrections to the draft opinion were provided by the Forest Service at the April 9 meeting, and the draft opinion was amended where appropriate. The primary focus of these meetings was to discuss the appropriateness of the reasonable and prudent measures. The Forest Service indicated that the habitat in the proposed project area was not suitable for occupation by the MSO. Additional information relative to this concern was presented by the Forest Service at the April 18, 1997, meeting. The Forest Service was also concerned that implementation of the draft reasonable and prudent measures would result in high costs to the Forest Service if the contractor were to enter the claims process. Specifically, the Forest

Service indicated that the draft reasonable and prudent measure requiring two years of MSO inventory would delay implementation of the project until after the breeding season in 1998 for portions of the analysis area. A letter regarding these concerns was submitted to the Service on April 22, 1997. The Service subsequently determined that, based on the unusual history of this specific project and the impact of additional delay for two-year inventory of unsurveyed areas, as outlined by the Forest Service, the draft reasonable and prudent measures should be revised pursuant to 50 CFR 402.14(i)(2).

This biological opinion has been modified from the draft opinion to reflect these changes. Specifically, the inventory requirement for unsurveyed areas was reduced from two years with four visits each to one year with six visits in order to meet the Forest Service's concern with respect to the minor change rule. It was discussed at the April 18, 1997, meeting that this project and the resulting reasonable and prudent measures are unique and an exception to the two-year inventory requirement and in no way represent a change of policy regarding inventories. The Forest Service acknowledged this and indicated a commitment to completion of two years of inventories in future project planning for those projects that may adversely affect the MSO.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The Manaco Analysis Area is located in the Upper Sonoran and Transition life zones below the Mogollon Rim. Habitat in this area is classified as ponderosa pine, pinyon-juniper woodland, riparian, and chaparral. Included in the midstory and understory vegetation are juniper, manzanita, and oak species. While most stands are single-storied, some are multi-storied. The BAE indicates that age class diversity is limited, and that pine stands are infected with dwarf mistletoe, overstocked, understocked, or in poor vigor. Some of the stands seen on the site visit met this description. Elevations in the project area range from 5,000 to 6,200 feet, and slopes vary from 0 to 40 percent. All aspects are represented.

The northern half of the analysis area is dominated by a Rocky Mountain Montane Conifer Forest biotic community, while the southern half is dominated by Great Basin Conifer Woodland and Interior Chaparral communities. Within the montane conifer forest community, ponderosa pine (*Pinus ponderosa*) is the primary species, but Gambel oak (*Quercus gambelii*) is also common in northern aspect drainages. Chaparral species are found primarily on ridges between drainages and include manzanita (*Arctostaphylos pungens*) and shrub live oak (*Q. turbinella*). The BAE notes that most stands also contain a moderate-to-high density of alligator juniper (*Juniperus deppeana*) and Madrean oak species such as Emory oak (*Q. emoryii*) and Arizona white oak (*Q. arizonica*). Within juniper stands, common understory species include Wright's silktassel (*Garrya wrightii*), shrub live oak, and manzanita.

Great Basin Conifer Woodland and Interior Chaparral communities are found on the drier sites, including most south-facing slopes. Dominant overstory species in these areas include alligator

juniper, Emory oak, and Arizona white oak, with scattered ponderosa pine. Shrubs present include manzanita, shrub live oak, squaw bush (*Rhus trilobeta*) and ceanothus (*Ceanothus* spp.). Grass species present in juniper and oak woodland areas include blue grama (*Bouteloua gracilis*), hairy grama (*B. hirsuta*), sideoats grama (*B. curtipendula*), wolftail (*Lycurus phleoides*), and plains love grass (*Eragrostis intermedia*).

Portions of the analysis area are classified as Montane Riparian Forest and Interior Southwestern Riparian Deciduous woodland. Riparian habitat is limited to perennial and intermitted streams like the East Verde River, Tonto Creek, and Ellison Creek. Tonto Creek is considered a perennial stream, and is located on the east side of the analysis area. Vegetation along the creek includes narrow-leaf cottonwood (*Populus augustifolia*), box elder (*Acer negundo*), alder (*Alnus oblongifolia*), and willows (*Salix* spp.). Ellison Creek is intermittent, with a lesser riparian vegetation component. Species along Ellison Creek include Arizona sycamore (*Platanus wrightii*) and Fremont cottonwood (*P. fremontii*). Tree regeneration is low.

The Forest Service has determined that the analysis area provides suitable nesting habitat for the spotted owl on a few north-facing slopes and drainages associated with Tonto Creek on the eastern portions of the analysis area. The Dude Fire in 1990 burned habitat north of the Manaco Analysis Area so that it is no longer suitable for spotted owls.

According to the EA, fuel loading in the analysis area was measured at 3 to 25 tons per acre in the winter of 1993, with an average of 12 tons per acre. Minimum fuel loads were located along the Control Road in the vicinity of summer homes. The EA indicates that fuel loads of 10 to 20 tons per acre are considered moderate.

The EA further notes that total acreages within each management size class of ponderosa pine trees for the analysis area are as follows: 1) seedlings - saplings = 120 acres; 2) saplings - small poles = 1,091 acres; 3) poles - saplings = 161 acres; 4) poles - small sawtimber = 1,619 acres; 5) immature sawtimber - poles = 3,391 acres; and 6) mature sawtimber = 126 acres.

The map in Appendix I indicates which stands within the analysis area meet the definition of restricted pine-oak habitat in the Recovery Plan. The BAE indicates that there are no Protected Activity Centers (PACs) within the Manaco Analysis Area, and no legally or administratively reserved lands. While portions of the analysis area do support slopes greater than 40 percent, these slopes do not support pine-oak habitat. In addition, no harvest activities are planned in areas with a slope greater than or equal to 40 percent. There are no mixed-conifer sites within the Manaco Analysis Area.

Restricted habitat, as defined in the Recovery Plan, does exist in the Manaco Analysis Area. Because the potential exists for owls to use habitat outside established PAC boundaries, and because the replacement of nesting/roosting habitat over time is essential to the recovery of the MSO, the Recovery Plan provides additional guidelines to maintain and develop potential nesting and roosting habitat now and for future spotted owl habitat. Restricted habitat is defined based on vegetation communities. Within the Upper Gila Mountain Recovery Unit, restricted habitat

can include mixed-conifer and pine-Gambel oak. Timber stand exam data indicates that pine-oak habitat is present. The BAE indicates that approximately 2,140 acres of this restricted habitat type occur within the Manaco Analysis Area. This represents approximately 11.9 percent of the total analysis area. Stand 10 in Compartment 14.2, and Stands 18 and 21 in Compartment 14.4, totalling 140 acres, currently meet threshold criteria as defined in the Recovery Plan for trees in various size classes, and overall basal area.

As described in the BAE, the objectives of the proposed project are to use vegetative manipulation to manage fuels, sustain a healthy forested condition, provide habitat diversity for a variety of wildlife, improve soil productivity, maintain water quality, enhance or maintain riparian vegetation, sustain the fishery and aquatic organisms, and maintain or enhance the visual quality. The BAE notes that the objectives comply with the management emphasis for these areas, as discussed in the Tonto Land Management Plan.

The Manaco Analysis Area incorporates 18,000 acres. The proposed project would include 521 acres of intermediate thinnings, 1,021 acres of dwarf mistletoe sanitation cuts, 71 acres of preparation cuts, 11.2 miles of shaded fuel breaks, 2,471 acres of pre-commercial thinning, fuelwood harvest cuts on 856 acres, controlled burning of approximately 6,500 acres, construction of 0.5 miles of new road, closure of 29 miles of roads, development of 25 guzzlers or tanks and 80 wildlife foraging areas, and seeding of 1,488 acres. Some of these treatments would be over-lapping, so that the figures provided above are not additive.

Of the 2,020 acres within the analysis area identified for timber harvest, 251, or 12.4 percent, meet restricted habitat criteria. Because 2,140 acres of restricted habitat occur within the Manaco Analysis Area, 214 acres should be identified that either meet threshold conditions, or can be placed on a trajectory to become threshold. Because only 140 acres currently meet threshold conditions, there is a shortfall of 74 acres of threshold habitat from the 214 acres that need to be identified. The BAE indicates that, in addition, 20 acres of the 140 acres are scheduled for harvest. The decision to include the 20 acres in harvest activities was made prior to finalization of the Recovery Plan. The Forest Service indicates within the BAE that treatment of these 20 acres in Stand 10 of Compartment 14.2 and Stand 21 of Compartment 14.4 will involve a sanitation cut due to heavy mistletoe infestation. It is the opinion of the Forest Service that, left untreated, these stands will move away from threshold criteria through plant stress and mortality.

Burning will also occur within restricted habitat, as will fuelwood harvesting. The EA indicates that, due to current fuel loading, history of fire occurrences, and high visitor use, fuel breaks will be placed on strategic ridges, around private land, and summer home areas to provide a place for firefighters to suppress future wildfires. The fuel breaks will be made through a combination of fire line construction, prescribed burning, pile burning, and thinning. As noted previously, fuel load in the analysis area ranges from 3 to 25 tons per acre, with an average of 12 tons per acre. Twelve tons per acre is considered a moderate fuel loading. The objective of treatment is to reduce fuel loads by 35 to 75 percent. The Forest Service anticipates that a low-intensity burn will help achieve greater health and diversity, and will assist in fuels

reduction, seed preparation, suppression of shrubs, removal of litter, increased herbage yields, increased availability of forage, and increased wildlife habitat diversity.

The Forest Service has not determined whether fuelwood harvest will occur through personal use or commercial sales. The BAE notes that personal-use dead and down fuelwood harvest policies prohibit the cutting of any standing oak. There is no discussion as to whether or not commercial sales of fuelwood have this same prohibition.

One-half mile of new roads are anticipated, while closure of 29 miles of roads will occur. The 0.50 miles of new road will be north of Ellison Creek, and will have two crossings on that Creek. The EA notes that incidental amounts of temporary roads will be constructed, but will be obliterated and seeded following use.

The proposed project area does not occur within any critical habitat units for the MSO.

The BAE indicates that project implementation will include mitigation measures described in the EA. Specifically, the following mitigation measures will be implemented:

1. Best management practices will be used to minimize nonpoint source pollution from sale activities and to ensure compliance with the Federal Water Pollution Control Act.
2. K-V funds will be collected when possible to perform sale area improvements in the area following harvest activities. Treatments using K-V funds could include shaded fuelbreaks, seeding, water development, precommercial thinning/weeding, prescribed burning, and creation of snags and large down material.
3. Harvest activity slash will be disposed of using lop, scatter, burn, machine pile, or hand pile methods.
4. Wildlife cover areas will be excluded from burning.
5. Detailed burn plans will be developed by the District Fire Management office and reviewed by the ID team.
6. Wildlife waters will be developed where possible to improve wildlife distribution.
7. Harvest units will be completely treated according to the silvicultural prescription in the shortest time frame that is reasonable. Complete treatment includes, sawtimber, pulpwood, fuelwood, and small products harvest, road closures, fuel treatment, timber stand improvement, seeding, and waterbarring as needed.
8. "Incidental amounts of temporary roads" required for project implementation will be obliterated and reseeded following use.
9. The number of skid trails or temporary roads intersecting with the Control Road will be minimized. Skid trails, landings, and temporary roads will be seeded with grass and forb species suitable for wildlife and consistent with the surrounding landscape.
10. Buffers will be established around known caves and sinkholes in harvest units, with input from wildlife biologists and others.
11. Special wildlife habitat requirements, including protection and retention of snags and raptor nest sites, will be identified and preserved.
12. Wildlife travel corridors have been identified, and modifications will be made so that shaded

fuelbreaks or harvest treatments protect these corridors.

13. Cover in the form of large, down, woody material and brush piles will be left.

Additionally, the BAE indicates that no harvesting operations will occur in the seven harvest units adjacent to the newly designated PAC during the breeding season (March 1 through August 31).

STATUS OF THE SPECIES - Recovery Unit

The proposed project occurs within the Upper Gila Mountain Recovery Unit (RU). As designated in the Recovery Plan, this RU is based on the Upper Gila Mountains Forest Province, as described by Bailey (1980). The RU is bisected by the Mogollon Rim, and is composed of steep mountains and deep entranced river drainages dissecting high plateaus. Within this RU, spotted owls are most common in mixed-conifer forests dominated by Douglas-fir and/or white fir and canyons with varying degrees of forest cover. Owls are also known to occur in ponderosa pine-Gambel oak forests, where they are found in stands containing well-developed understories of Gambel oak. The greatest concentration of spotted owls in the United States occur within this RU. Most known owl locations are on Forest Service and Tribal lands. Owls also occur in wilderness areas within this RU, and the Gila Wilderness supports the largest known wilderness population of MSO within the United States.

The major land use within this RU is timber harvest. Additional activities include fuelwood harvest, livestock grazing, and recreation. All of the National Forests, as well as the Fort Apache and San Carlos Indian Reservations, have active timber management programs. Livestock grazing is widespread over the National Forests, and the Fort Apache and San Carlos Indian Reservations.

For the proposed project area, inventories were completed in 1993 and 1994 east of the project area in what was considered suitable habitat under ID#2. The 1996 BAE indicates that surveys were completed in 1996 for stands meeting threshold criteria as restricted habitat, and the surrounding areas. The 1996 inventory methods used did not meet the protocol requirement for two years of pre-activity surveys, as indicated in the BAE, but other inventory protocols were followed. No owls were found within the Manaco Analysis Area as a result of this inventory effort. However, one adult male spotted owl was observed on multiple visits just north of the analysis area in the vicinity of Jim Roberts Draw. In response to calling, the bird was observed flying as far south as the Control Road (Forest Road 64). As a result of this new observation, a PAC was established.

The BAE notes that habitats within the area used by the owl are more typical of northern goshawk than of Mexican spotted owl (MSO) habitat. The draw itself, along with associated drainages are relatively open ponderosa pine stringers with an understory of Arizona white oak, alligator juniper, and Gambel oak. There are 2.5 trees per acre larger than 23 inches diameter at breast height (dbh). The stands do not meet parameters for threshold habitat, as provided by the Recovery Plan.

No critical habitat units will be affected by the proposed action.

ENVIRONMENTAL BASELINE

Under section 7(a)(2) of the Act, when considering the effects of the action on Federally listed species, the Service must 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 Tonto National Forest, past and present Federal, State, private, and other human activities that have affected MSO habitat within this RU include widening of State Route 260, and private home development on in-holdings within the Prescott National Forest. Additional impacts to this area include the Dude Fire, Dude Bray Fire, and Four Peaks Fire, Dude Fire Restoration, the Meads Timber Sale, the Bull Owl Timber Sale, and grazing on the Green Valley and Cross V allotment.

The Forest Service has formally consulted on approximately 165 timber sales and other projects in Arizona and New Mexico since August 1993. These projects have resulted in the anticipated incidental take of 40 MSO. The Bureau of Indian Affairs has consulted on one timber sale on the Navajo Reservation which resulted in an anticipated take of four MSO. The Federal Highway Administration has consulted on one highway project that resulted in an undetermined amount of incidental take until further consultation.

EFFECTS OF THE ACTION

It is possible that the closure of 29 miles of road will be beneficial to the MSO, and to wildlife in general. The Forest Service notes that any temporary roads would be seeded and drained. No estimation was provided on the amount of temporary roads that would be developed, other than to state that they would be "incidental". One-half mile of new road is also anticipated. This 0.5 mile road will be north of Ellison Creek, will not affect restricted or threshold habitat, and will be approximately 2.5 miles from the PAC, according to the map provided to the Service on March 20, 1997.

Fuelwood harvest would also be included as part of the proposed action. The Forest Service has not determined whether fuelwood harvest will occur through personal use or commercial sales. The BAE notes that personal-use and commercial fuelwood harvest policies typically prohibit harvesting of oaks. The BAE further notes that personal use dead and down fuelwood harvest policies prohibit the cutting of any standing oak. In additional information provided to the Service by the Forest Service at the April 9, 1997, meeting it was indicated that the Forest Service has good control over cutting by commercial operators and that compliance is usually high because operators must put up a bond. Fuelwood harvest will occur over 856 acres.

No burn plan was provided within the BAE. Burning and fire prevention treatments would include treatments to 6,500 acres over 10 years, and development of 11.2 miles of shaded fuel breaks. Fuel breaks are made by a combination of fire line construction, prescribed burning, pile burning, and thinning, and are maintained by prescribed burning at scheduled intervals. Construction of fuel breaks can also include precommercial thinning, pruning, timber sales, and treatment of activity slash. As previously noted, fuel load in the analysis area is classified as moderate and ranged from 3 to 20 tons per acre, with an average of 12 tons per acre. The objective of the treatment is to reduce the fuel load by 35 to 75 percent.

According to the EA, fuel breaks would be established adjacent to private property, including 64 acres adjacent to Thompson Draw No. 2 Summer Home area, 109 acres adjacent to Diamond Point Summer Home area, 96 acres adjacent to Ellison Creek Summer Home area, and 90 acres adjacent to Cold Spring Ranch. The Thompson Draw No. 2 area is located approximately 1.5 miles from the Roberts Draw PAC boundary, and within approximately two miles from restricted habitat in Compartment 14.2, stand 8. The Diamond Point Summer Home area is located approximately 0.5 miles from the Roberts Draw PAC's western boundary at its closest point, and is surrounded by restricted habitat in Compartment 14.6, stands 3, 6, and 7. The Ellison Creek Summer Home area is located 1.25 miles west of the Roberts Draw PAC at its nearest point, and approximately three-quarters of a mile from restricted habitat in Compartment 14.6, stand 24, and stand 7. The Cold Spring Ranch is located 5.0 miles from the Roberts Draw PAC at its nearest point, and immediately adjacent to restricted habitat in Compartment 14.8, stand 4. The EA indicates that burning would be conducted in either the spring or fall. However, in subsequent conversations on March 20, 1997, the Forest Service indicated that burning could likely be restricted outside of the breeding season for the MSO, as understory burning is usually conducted in the fall, and pile burning is usually conducted in the winter. It should be noted that mitigation measures identified in the EA indicated the potential for K-V funds to be used to developed fuel breaks. Any fuel breaks beyond those clearly identified in this paragraph will require further consultation.

As noted in the BAE submitted by the Forest Service, the 1996 inventory method applied to the proposed project deviates from guidelines in the Forest Service ID#2 Formal Inventory Protocol and the Recovery Plan. Although surveys were conducted according to protocol under ID#2 in 1993 and 1994 east of those stands proposed for timber harvest, only one inventory was completed for the re-analysis of this project under the Recovery Plan. Requirements as to what type of habitat warranted inventory changed when the Recovery Plan was adopted, and habitat not previously considered suitable under ID#2 may meet the definition of restricted habitat under the Recovery Plan, as was the case within the Manaco Analysis Area. Under the Forest Service's ID#2, two years of survey are required to determine that owls are absent from an area before a project can begin. Restricted habitat within the analysis area was not surveyed prior to 1996 as it did not meet the definition of suitable habitat under ID#2. As discussed previously, one PAC was designated following the 1996 inventory because a single male owl was detected on three separate occasions. The PAC adjoins the northern boundary of the analysis area and is located immediately outside of the proposed project area.

The two-year inventory requirement is particularly important for protection of owls when a project will modify habitat, as will the proposed action. According to Service policy, as published on July 1, 1996, actions for which inadequate survey work has been completed may affect the owl. Where adequate surveys have not been completed, the Service may assume occupancy if potentially suitable habitat is present. While the habitat in the proposed project area meets the definition of restricted (and in some cases threshold) habitat, rather than protected habitat, the Service believes that the information presented in the timber stand data, as well as the close proximity of a spotted owl in similar habitat, indicate the need for an additional year of survey work in this area prior to allowing habitat altering projects to proceed.

The Recovery Plan notes that the potential exists for owls to use other, unoccupied habitat outside of designated PACs. The Recovery Plan acknowledges that our knowledge of spotted owl habitat is incomplete, but notes that nesting/roosting stands exhibit certain identifiable features, including high tree basal area, large trees, multi-storied canopy, high canopy cover, and decadence in the form of downed logs and snags. The development of nesting and roosting target/threshold conditions was based on these factors. Threshold criteria for pine-oak include a basal area of 150, an oak basal area of 20, 20 large trees per acre, and 15 percent stand density index in each of the three size classes of 12 - 18 inches dbh, 18 - 24 inches dbh, and 24+ inches dbh. In addition to the 3 stands that met threshold criteria, 19 stands met 4 out of 5 criteria, and 6 met 5 out of 6 criteria. No information was provided for one stand, so that it is possible an additional stand either met threshold or was close to meeting threshold. This information is summarized in Table 1 below.

Table 1. Stand Comparison for Those Stands Meeting Threshold in Four or More Categories.

Compartment/ Stand	Basal Area (150)	Oak Basal Area (20)	Large Trees/ Acre	15% SDI 12-18" dbh	15% SDI 18-24" dbh	15% SDI 24" + dbh
4.1/23	exceeds	not met	exceeds	exceeds	exceeds	exceeds
4.1/27	no data	no data	no data	no data	no data	no data
14.1/32	exceeds	exceeds	not met	exceeds	exceeds	exceeds
14.1/33	exceeds	exceeds	meets (19.4)	exceeds	exceeds	exceeds
14.2/12	exceeds	meets (21)	not met	exceeds	exceeds	exceeds
14.2/19	exceeds	not met	not met	exceeds	exceeds	meets (15.46)
14.3/11	exceeds	not met	not met	exceeds	exceeds	exceeds
14.3/24	exceeds	not met	not met	exceeds	exceeds	exceeds
14.4/7	exceeds	not met	not met	exceeds	exceeds	exceeds
14.4/12	exceeds	not met	not met (18.8)	exceeds	exceeds	exceeds
14.4/22	exceeds	not met	not met (18.9)	exceeds	exceeds	exceeds
14.4/25	exceeds	exceeds	not met	exceeds	exceeds	exceeds
14.5/1	exceeds	met	not met	exceeds	exceeds	exceeds
14.5/11	exceeds	exceeds	not met	exceeds	exceeds	exceeds
14.5/16	exceeds	exceeds	not met	not met	exceeds	exceeds
14.5/20	exceeds	exceeds	exceeds	not met	not met	exceeds
14.5/24	exceeds	exceeds	meets	not met	not met	exceeds
14.5/33	exceeds	exceeds	not met	exceeds	exceeds	not met
14.5/37	exceeds	exceeds	not met	not met	exceeds	exceeds
14.6/3	exceeds	exceeds	exceeds	not met	not met	exceeds

14.6/19	exceeds	not met	exceeds	exceeds	exceeds	exceeds
14.6/24	exceeds	meets (20)	not met	exceeds	exceeds	exceeds
14.7/29	exceeds	exceeds	not met	not met	exceeds	exceeds
14.8/5	exceeds	exceeds	not met	not met (14.08)	exceeds	exceeds
14.8/11	exceeds	exceeds	not met	not met	exceeds	exceeds

While the Service recognizes that management of forests to meet threshold criteria can not be simplified into a "meets/doesn't meet" context, the above chart illustrates that numerous stands within the Manaco Analysis Area are close to threshold criteria in many categories. Habitat that meets threshold criteria is suitable for nesting/roosting according to the Recovery Plan.

Additionally, the Recovery Plan notes that trees greater than 24 inches dbh should be retained. The BAE notes that eighty-two trees greater than 26 inches dbh were counted in the analysis area, 45 of which may be in restricted habitat. These 45 trees are within cutting units that at least partially include restricted habitat, but the exact location of the trees within the cutting unit is not known. In addition, the BAE indicates that, because trees were marked under ID#2 guidance which did not manage for 24 inches dbh trees, trees in this size class were not completely inventoried, and the total of 121 trees between 24 and 25.9 inches dbh provided in the BAE is therefore an estimate. Added to the 45 trees exceeding 26 inches dbh, there are 166 trees greater than 24 inches dbh in the analysis area that will be cut, with an unknown number of them occurring in restricted habitat. The BAE indicates that the 121 trees between 24 inches and 25.9 inches dbh are probably infected with dwarf mistletoe.

The purpose of designating restricted habitat for development to threshold criteria is to maintain and develop potential nesting and roosting habitat now and into the future for the MSO. Large trees are an essential component of nesting and roosting habitat for the MSO. The removal of trees therefore decreases the suitability of restricted habitat areas for use by the spotted owl. The average density of "large trees" noted in Appendix I of the BAE is 14.26 per acre in restricted habitat. This is, even without the proposed treatment, below the Recovery Plan target criteria of 20 trees per acre.

In addition, the proposed project would treat restricted habitat that currently meets threshold conditions, even though there is a deficit of threshold habitat. The Recovery Plan indicates that the criteria in Table III.B.1. of the Recovery Plan represent minimum levels that must be maintained. The Recovery Plan clearly states that "If a deficit occurs within the planning area, additional stands should be identified that (1) have the site potential to reach target conditions and (2) have current conditions most closely approaching those conditions." The Recovery Plan further indicates that treatment of these stands meeting threshold is not precluded "...as long as stand-level conditions remain at or above the threshold values given in Table III.B.1." The BAE

indicates that it is possible that the proposed treatments would not lower the overall stands below threshold parameters, but that the only way to determine post-harvest conditions would be to re-analyze timber stand exams in the field while ignoring trees that are marked for removal. The Forest Service indicates in the BAE that this re-analysis "...is not a worthwhile expenditure of effort at this juncture."

The purpose in designating threshold stands is clearly provided in the Recovery Plan. In order to maintain and develop potential nesting and roosting habitat, it is necessary to set stands aside to meet those criteria established in Table III.B.1. Because nesting habitat is believed to be the primary limiting factor for MSO, this type of habitat must be managed for in order to facilitate recovery of the species. If replacement owl habitat is to be developed for the future maintenance and recovery of the spotted owl, it is crucial to set aside those stands most closely meeting specific criteria. The Final Biological Opinion for the Mexican Spotted Owl and Critical Habitat and Forest Plan Amendments (USDI 1996) re-emphasizes the importance of uneven-aged management and the retention of large trees.

The BAE indicated that there are 140 acres within the analysis area that currently meet the criteria for threshold habitat. The proposed action would treat approximately 2,140 acres of restricted habitat, so that 214 acres need to be set aside to meet threshold criteria. Assuming no treatment of the 140 acres, an additional 74 acres need to be identified. Table 2 presents a comparison of stand measurements for those stands that would be set aside as threshold and those stands that currently meet threshold. Table 2 illustrates that those stands set aside as trajectory are inferior to those currently meeting threshold in all but one category (Percent Stand Density of trees 18-24 inches dbh), and that even for that category, the stand conditions are similar.

Table 2. Stand Analysis Comparison of Threshold Versus Trajectory Habitat.

Compartment/ Stand	Total Basal Area (150)	Oak Basal Area (20)	Large Trees Per Acre	% Stand Density (12-18")	% Stand Density (18-24")	% Stand Density (>24")
14.4/22	183.2	14.6	18.9	16.19	18.09	50.27
14.4/23	224.2	10	15	27.5	17.8	7
14.4/25	217.5	35	15	38.09	23.5	13.25
14.2/10	183.2	20	21.3	35.35	28.26	27.46
14.4/18	200.8	42	25.2	16.71	18.09	50.27
14.4/21	243.5	32.1	33.5	26.39	28.49	29.93

Additionally, the Service believes that other stands would be more suitable for designation as stands placed on a trajectory to meet threshold criteria due to their stand data and to their proximity to known locations of birds in this area. While these stands have stand data that is slightly below that for the stands identified by the Forest Service, the Service believes their proximity to occupied habitat and percent stand density index for trees greater than 24" dbh will indicate a higher quality for MSO. A comparison of these stands versus the stands the Forest Service has designated for trajectory is provided in Table 3.

Table 3. Comparison of stands identified by the Forest Service for placement on a trajectory to threshold conditions versus additional stands in closer proximity to the existing PAC.

Compartment/ Stand	Total Basal Area (150)	Oak Basal Area (20)	Large Trees Per Acre	% Stand Density (12-18")	% Stand Density (18-24")	% Stand Density (>24")
14.4/22	183.2	14.6	18.9	16.19	18.09	50.27
14.4/23	224.2	10	15	27.5	17.8	7
14.4/25	217.5	35	15	38.09	23.5	13.25
Averages:	208.3	20	16	27.3	19.8	24
14.2/8	183.3	50	11.1	10.87	14.49	66.92
14.2/10	183.2	20	21.3	35.35	28.26	27.46
14.2/12	185	21	12.1	25.39	23.95	44.9
Averages:	184	30	14.8	23.87		

While the Service recognizes that the initial review of this project was completed under ID#2, and that 20 acres of what is now called "threshold habitat" were included in cutting plans before the Recovery Plan was finalized, the fact remains that the proposed project for which consultation has been requested is not in compliance with the Recovery Plan. Page 94 of the Recovery Plan notes, under item #7, that "No stand that meets threshold conditions can be treated in such a way as to lower that stand below those conditions until ecosystem assessments can document that a surplus of these stands exist at larger landscape levels (e.g., no less than the size of a Forest Service District). The Forest Service has indicated that treatment of these stands may not bring them below threshold, but has not completed the necessary analysis to confirm this.

While the Service recognizes that the Forest Service is concerned with levels of mistletoe in restricted habitat that currently meet threshold criteria, we believe that the level of information provided is insufficient to justify consideration of project alternatives that do not meet the guidelines provided in the Recovery Plan. Additionally, the Service notes that this area supports habitat that does not meet restricted habitat in some areas, and that does not meet protected habitat. However, we believe it is important to note that an owl has been detected in similar habitat nearby. In fact, the Forest Service notes in the BAE that habitat in the PAC falls "...far short of meeting the parameters for threshold conditions as described in the Plan." Specifically, the BAE notes that trees larger than 23 inches dbh average only 2.5 per acre, that total basal area is 145 square feet per acre (as opposed to the 150 square feet per acre set as a target criteria in the Recovery Plan), and that 85 square feet of this total basal area figure is in ponderosa pine. However, the presence of this owl was confirmed on "multiple visits" according to the BAE. The occupancy of adjacent areas, without further surveys, is therefore unclear.

As noted in the Consultation History section, the Service has attempted to accommodate the proposed activity to the degree possible prior to finalization of this biological opinion by releasing specific stands for timber harvest. The Service believes it may be possible to release additional stands for timber harvest following completion of one year of inventory for those areas that have already received one year of inventory. Release of additional stands would necessarily be dependent on the results of the inventory. As an example, one year of inventory has been completed in and around stand 10 in Compartment 14.2. Should an additional year of inventory indicate that there are no MSO in stands 8, 10, and 12 in Compartment 14.2, timber harvest could proceed in stands 11, 13, 14, and 24. Release of additional stands can be discussed when inventories have been completed.

CUMULATIVE EFFECTS

Regulations at 50 CFR 402.14(g)(4) require the Service to consider cumulative effects along with the effects of the proposed action in determining whether a proposed action is likely to jeopardize the continued existence of a listed species or destroy or adversely modify a listed species' critical habitat. "Cumulative effects" is defined at 50 CFR 402.02 as "...those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action and that are subject to consultation."

The Service's most recent assignment of spotted owls and owl habitat on non-Federal lands is found in the final rule designating critical habitat for the MSO (60 FR 29916-29917). According to the final rule, approximately three percent of known MSO habitat in the United States is found on State and private land in Arizona and New Mexico. Neither Arizona nor New Mexico has laws specifically protecting spotted owl habitat on State or private lands (USDI 1995a). The Service has no data on the extent of harvest of owl habitat on State and private lands, but assumes that such lands are not sufficiently timbered for commercially viable harvests; are inaccessible for the purpose of timber harvest; are logistically unavailable; or are otherwise not subject to habitat-degrading activities.

Because Tribal lands are held in "trust" by the Federal Government, they are not considered public lands or part of the public domain. Tribes are sovereign governments with management authority over wildlife and other Tribal land resources. For purposes of section 7, Tribal management of Mexican spotted owl habitat that does not involve Federal agency actions is considered non-Federal and therefore is considered under this cumulative effects analysis. The final rule designating critical habitat for the MSO states that approximately 15 percent of MSO habitat in the United States occurs on Tribal lands (USDI 1995a). No Tribal actions are known at this time that would affect habitat within the proposed project area.

CONCLUSION

According to 50 CFR 402.02, "jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. "Destruction or adverse modification" means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of the species. Pursuant to 50 CFR 402.14(g), the Service has reviewed all relevant information provided by the Forest Service, and the current status of the MSO and its designated critical habitat. The Service also has reviewed the environmental baseline for the affected area, and the direct and cumulative effects for the Forest Service's proposal.

The Service finds that implementation of the proposed project in the Manaco Analysis Area is not likely to jeopardize the continued existence of the MSO. Further, the Service believes that, until such time as additional inventories are completed, it is likely that the proposed project may result in take of the MSO.

AMOUNT OR EXTENT OF TAKE

Section 4(d) of the ESA, 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 described 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 duty 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 grant or 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.

The Service anticipates that four owls could be taken as a result of this proposed action due to habitat modification in inadequately surveyed habitat. The Service has set the take statement at four owls due to the presence of 2,140 acres of restricted habitat in the proposed action area. The Final Biological Opinion on the Mexican Spotted Owl and Critical Habitat and Forest Plan Amendments (USDI 1996), as well as the Recovery Plan, note that in Arizona, radio telemetry studies have revealed that mean home ranges for owl individuals vary from 808 acres to 2,601 acres, and for owl pairs from 941 acres to 3,831 acres. Based on these average figures, and the fact that restricted habitat is present in individuals stands distributed across the entire analysis area and is somewhat "sub-optimal", the Service believes that any owls present would require habitat beyond the standard 600 acres used in optimal habitat areas. Assuming pair occupancy (due to the lack of current occupancy information), a minimum of 1,882 acres would be occupied.

If, during the course of the action, the amount or extent of the incidental take anticipated is exceeded, the Forest Service must reinitiate consultation with the Service immediately to avoid violation of section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species, as required by 50 CFR 402.14(i). An explanation of the causes of the taking should be provided to the Service.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize take.

1. Increase the certainty that no owls are present in the proposed action area prior to project implementation.
2. Decrease the adverse impacts of the project on habitat at or approaching threshold criteria as identified in the Recovery Plan.

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.

1. To implement Reasonable and Prudent Measure 1 listed above, the Forest Service will do the following:
 - a. Complete one season of inventory according to the formal inventory protocol guidelines described in the Forest Service's Interim Directive #2 for all restricted habitat.
 - b. Include in the inventory effort six visits during the breeding season, rather than the standard four visits.
 - c. In the event any additional owls are located, delineate a PAC and restrict activities associated with the proposed action outside the breeding season.
 - d. Provide survey data sheets and PAC delineation information, if owls are located, to the Service.

2. To implement Reasonable and Prudent Measure 2 listed above, the Forest Service will do the following:
 - a. Exclude threshold habitat from treatment at this time.
 - b. Designate a minimum of 214 acres of the habitat to be set aside as habitat placed on a trajectory to threshold, and include within this area stand 10 in Compartment 14.2, and stands 18 and 21 in Compartment 14.4, as they currently meet threshold. Set aside as the remaining 74 acres stand 12 in Compartment 14.2 and adjoining portions of stand 8 in Compartment 14.2. A minimum of 18 acres from stand 8 must be included.
 - c. Include with the burn plan for prescribed burning in the proposed project area provisions for protecting downed logs greater than 12 inches in diameter at midpoint and snags. (As noted previously, burning would occur in the fall and winter, so that burning season restrictions have already been included by the Forest Service).

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. While two years of inventory will have been completed for portions of the restricted habitat within the proposed action, 29.5 percent of the restricted habitat will have been inventoried for one year only. Completing six site visits to this area will increase the probability of detecting any MSO that may be using this habitat, but will not necessarily eliminate the possibility that the action may adversely affect the MSO. For these reasons, the Service anticipates that, with implementation of these reasonable and prudent measures, an incidental take of two MSO may occur. If, during the course of the action, this minimized 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.

Notice: While the incidental take statement provided in this consultation satisfies the requirements of the Endangered Species Act, as amended, it does not constitute an exemption from the prohibitions of take of listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of ESA directs Federal agencies to utilize their authorities to further the purposes of ESA 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. The Service has identified the following conservation recommendations:

1. Facilitate future section 7 consultations and recovery of the MSO by completing a district-wide analysis of restricted habitat to determine the proportion of habitat that currently meets threshold criteria and the quantity and location of additional restricted habitat that most closely meets threshold criteria.
2. Continue formal inventory of suitable habitat on the Payson Ranger District that potentially supports MSO to alleviate the need for project-specific inventory work that may delay the implementation of a proposed action.
3. Decrease disturbance to owls in the Roberts Draw PAC by placing seasonal barricades on road entrances into campground sites within the PAC. Two informal camping areas were observed in the field; one off the Control Road (FS Road 64) and one off of FS Road 29.
4. Develop a mistletoe treatment for portions of restricted habitat designed to accommodate the MSO and be of as little affect on restricted habitat as possible.

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.

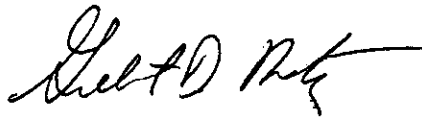
REINITIATION - CLOSING STATEMENT


This concludes formal consultation on the action(s) outlined in the Manaco Timber Sale consultation. 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 maintained (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.

The Service appreciates the Forest Service's efforts in protection of the Mexican spotted owl, and recognizes the effort put forth by the Payson Ranger District in converting management territories to protected activity centers. For further information please contact Mary Richardson, Angie Brooks, or me. Please refer to the consultation number 2-21-93-F-019, in future correspondence concerning this project.

Sincerely,



 Sam F. Spiller
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (GM:AZ)(AES)
Field Supervisor, Fish and Wildlife Service, New Mexico Ecological Services State
Office, Albuquerque, NM (Attn: Sarah Rinkevich)

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