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In Reply Refer To:
AESO/SE
2-21-00-F-353

March 22, 2002

Mr. Karl P. Siderits
Forest Supervisor
Tonto National Forest
HC02 Box 4800
Roosevelt, Arizona 85545

Dear Mr. Siderits:

This biological opinion responds to your request for consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation was dated November 2, 2001, and received by us on November 6, 2001. At issue are impacts to the threatened Mexican spotted owl (*Strix occidentalis lucida*) that may have resulted from the wildfire suppression actions associated with the Peak Fire located in the Pinal Mountains on Tonto National Forest (Forest), Gila County, Arizona.

This biological opinion is based on information provided in the December 7, 2001, biological assessment (BA), telephone conversations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the Mexican spotted owl, wildfire suppression and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

Informal consultation on the Peak Wildfire began on July 31, 2000, when the Forest notified us of the incident and requested emergency consultation. Craig Woods of the Forest attempted to contact Thetis Gamberg and Darrin Thome of this office on July 31, 2000; however, Craig was not able to speak to them directly. Ms. Gamberg responded in a message to Mr. Woods with a consultation number, but did not recommend any specific minimization measures. Although the Service and the Forest did not talk directly about ways to minimize effects of suppression activities on listed species, the two agencies have coordinated on other similar wildfires and, based on these prior experiences, Mr. Woods identified what the key issues were and appropriate minimization measures.

On December 7, 2000, the Forest requested the Service's concurrence that wildfire suppression activities may have affected, but were not likely to have adversely affected, the Mexican spotted owl. The Service informed the Forest that it did not concur with this determination in a letter dated April 6, 2001. After several conversations between Craig Woods, and Jim Rorabaugh and Suzie Hatten of this office, the Forest requested that formal consultation be initiated on November 2, 2001.

BIOLOGICAL OPINION

DESCRIPTION OF THE EMERGENCY ACTION

The Peak Fire was ignited on July 30, 2000, in an area of steep, northwest facing slopes on the southern end of the Pinal Mountains, within the Mill Creek Mexican spotted owl Protected Activity Center (PAC). Suppression took place in three general areas, including: 1) Mill Creek PAC, 2) along the main ridge separating the northerly and southerly slopes of the Pinal Mountains - suppression here was conducted to protect electronic sites, cabins, a lookout, and other facilities between Signal and Pinal peaks, and 3) Pioneer Basin, located east of the Mill Creek PAC. Most of the latter stages of suppression occurred in Pioneer Basin after the fire ran over the top of Bobtail Ridge and into this basin, which was vegetated with highly flammable tall and dense chaparral.

The initial suppression objectives as stated in the shift plans were to give the highest priority to firefighter, aviation, and public safety. Other objectives included providing maximum protection to electronic sites, summer homes, Signal Peak Lookout and cabin, and, where possible, protecting habitats of threatened and endangered species. Protection of the structures between Signal and Pinal peaks had a secondary effect of protecting Mexican spotted owl habitat in the adjacent Pioneer Pass, Icehouse, and Ferndell/Sixshooter PACs. Forces employed in fire suppression included the following:

Crews: Approximately 155 personnel (four hot shot crews and four type 2 crews, total of 136 crew days)

Engines: Maximum of eight engines, 121-engine days

Aircraft: Maximum of three helicopters, up to four retardant aircraft (52 missions), and one fixed-wing air attack airplane

Equipment: Maximum of six water tenders, two bulldozers, and one backhoe

Total personnel: Approximately 257

Early suppression actions were focused on dropping water from helicopters and fire retardant from air tankers, while fire crews worked their way through the dense chaparral. The exact number of bucket and retardant missions flown into the Mill Creek PAC is unknown; however, the Forest estimates that 10-20 retardant missions were flown between July 31 and August 5, and 50-100 helicopter bucket drops occurred between July 31 and August 15. Retardant drops were

made primarily along Bobtail Ridge and at the upper portions of the Mill Creek drainage near the Pinal Recreation Area. Helicopter bucket drops occurred throughout the Mill Creek PAC.

Ground crew activities included constructing a Carson handline and Helispot H-1. Extensive fire-crew, vehicle, and heavy equipment suppression activities occurred intermediately along the main ridge of the Pinals for the duration of the fire. Moderate ground-based suppression activities occurred east of Bobtail Ridge in Pioneer Basin. Bulldozers were used to construct a small amount of cat line (approximately 1.3 acres) in selected areas along the main ridge of the Pinals. Several segments of cat line were constructed in restricted, but non-threshold, spotted owl habitat. Chainsaws were used to rehabilitate Bobtail Ridge Trail following the fire.

The fire was declared completely controlled on August 30, 2000, and out on September 15, 2000. A total area of 2,310 acres burned, including pine-oak woodland, chaparral, and a small amount of mixed conifer vegetation.

Regulations at 50 CFR 402.05 allow for consultation pursuant to section 7 of the Act to be conducted in an expedited manner for acts of God, disasters, casualties, national defense, or security issues. Service policy in regard to emergency consultation is described in Service's 1998 Section 7 Handbook. Initial stages of emergency consultation are usually done by telephone or fax, during which the Service is notified of the emergency action and the Service offers recommendations to minimize the effects of the emergency response on listed species and their critical habitats. Once the emergency is controlled, the action agency initiates consultation with the Service after the fact.

STATUS OF THE SPECIES

Species and critical habitat description

The Mexican spotted owl was listed as threatened on March 16, 1993 (USFWS 1993). The Service designated critical habitat for the Mexican spotted owl on February 1, 2001 (USFWS 2001). The Mexican Spotted Owl Recovery Plan (Recovery Plan) was issued in 1995 (USFWS 1995).

The Mexican spotted owl is a medium-sized owl, measuring approximately 17 inches in length with a 3.3 foot wingspan. It is mottled in appearance with irregular white and brown spots on its abdomen, back, and head. 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 plumage and geographic distribution. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a lighter appearance.

In Arizona, a total of 11 critical habitat units totaling 830,803 acres were designated as critical habitat. The Service elected to exclude from critical habitat designation those lands where

adequate special management considerations or protection are provided by a legally operative plan or agreement that addresses the maintenance and improvement of the primary constituent elements important to the species, and manages for the long-term conservation of the species. The Service determined that the Southwest Region of the Forest Service amended their Forest Plans in Arizona and New Mexico in 1996 to incorporate the Recovery Plan guidelines as management direction, and, as a result, is providing adequate special management for the Mexican spotted owl. Based on this conclusion, the Service excluded National Forest lands in Arizona and New Mexico from final critical habitat designation.

Life history

A detailed account of the taxonomy, biology, and reproductive characteristics of the Mexican spotted owl is found in the Final Rule listing the Mexican spotted owl as a threatened species (USFWS 1993) and the Recovery Plan (USFWS 1995).

Mexican spotted owls breed sporadically and do not nest every year. Mexican spotted owls' 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. 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 of the Mexican spotted owl. It varies both spatially and temporally (White *et al.* 1995), but the subspecies demonstrates an average annual rate of one young per pair. There are inadequate data at this time to estimate population trend. Little confidence in initial estimates has been expressed due to its reliance on juvenile survival rates, which are believed to be biased low, and 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 0.8-0.9. Juvenile survival is considerably lower at 0.06-0.29, 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 Mexican spotted owl, but starvation, accidents or collisions, and predation by great horned owls, northern goshawks, red-tailed hawks, and golden eagles 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 that contain mature or old-growth stands that 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 (*Pseudotsuga* spp.) (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). Owls use a wider variety of forest conditions for foraging than for nesting or roosting. In northern Arizona, owls generally foraged slightly more than expected in logged 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 (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).

Prey availability is determined by the distribution, abundance, and diversity of prey and by the owl's ability to capture it. Diet studies conducted on Mexican spotted owls have indicated that prey species include woodrats (*Neotoma* spp.), white-footed mice (*Peromyscus* spp.), voles (*Microtus* and *Clethrionomys* spp.), rabbits and hares (*Sylvilagus* and *Lepus* spp.), pocket gophers (*Thomomys* spp.), and other animals including a variety of bats, birds, insects, and reptiles. Ward and Block (1995) reported that rangewide, 90% of an "average" Mexican spotted owl diet would contain 30% woodrats, 28% peromyscid mice, 13% arthropods, 9% microtine voles, 5% birds, and 4% medium-sized rodents, mostly diurnal sciurids.

An adequate prey base may positively influence Mexican spotted owl survival, reproduction, or numbers and thereby increase the likelihood of persistence of spotted owl populations (USFWS 1995). Male owls must provide enough food to their female mates during incubation and brooding to prevent abandonment of nests or young; accordingly, ecologists suspect that spotted owls select habitats partially because of the availability of prey (Ward and Block 1995). In two studies in Arizona and New Mexico, Ward and Block (1995) found that prey are most abundant during the summer months when young are being raised. Decreases in prey biomass, typical of small mammal populations, occur from late fall through the winter. Ward and Block (1995) state that conditions that increase winter food resources will likely improve conditions for the owl because this will increase the likelihood of egg laying and decrease the rate of nest abandonment. Thus, food availability in the winter, as well as in the summer is important for owl reproduction.

Status and distribution

The Mexican spotted owl has the largest geographic range of the three subspecies. 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 (USFWS 1995). 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 in the species' distribution within the United States, however, 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.

According to the Recovery Plan (USFWS 1995), 91% of owls known to exist in the United States between 1990 and 1993 occurred 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 Arizona and New Mexico. Forest Service Regions 2 and 4, which include two National Forests in Colorado and three National Forests in Utah, support fewer owls.

A reliable estimate of the numbers of owls throughout its entire range is not currently available. Owl surveys conducted from 1990 through 1993 indicate that the species persists in most of the 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. While the number of owls throughout its range is not currently available, the Recovery Plan (USFWS 1995) reports an estimate of owl sites based on the 1990-1993 data. The surveys indicated that one or more owls were observed at a minimum of 758 sites in the United States and 19 sites in Mexico. Therefore, total numbers in the United States range from 777 individuals (assuming one owl per site) to 1,554 individuals (assuming one pair of owls per site).

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 Mexican spotted owl as a threatened species. Fletcher (1990) estimates that 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%, or 816,000 acres, was a result of human management activities, whereas the remainder was converted more or less naturally, primarily by wildfire. As a result, suppression of wildfires in and near PACs that could be catastrophic and stand-replacing absent suppression (such as with the Peak Fire), is essential to maintaining Mexican spotted owl habitat. However, the suppression activities themselves, and decisions made during suppression, may have some adverse effects, even in cases where the net effect is beneficial.

The Recovery Plan (USFWS 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 greater than 40% where timber harvest has not occurred in the past 20 years, and all reserved lands. PACs are delineated

around known Mexican spotted owl sites. A PAC includes a minimum of 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% of the foraging area of an owl. The management guidelines for protected areas from the Recovery Plan are to take precedence for activities within protected areas. 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 (USFWS 1995, Part II.B.). An additional five RUs were designated in Mexico. The Recovery Plan identifies recovery criteria by RU. The upper Gila Mountain RU has the greatest known concentration of owl sites in the United States. This RU is considered a critical nucleus for the owl because of its central location within the owl’s range, and the presence of over 50% of the known owls. The other RUs 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.

At the end of the 1995 field season, the Forest Service reported a total of 866 management territories (MTs) established in locations in Arizona and New Mexico where at least a single Mexican spotted owl 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. The Forest Service has converted some MTs into PACs following the recommendations of the Recovery Plan. The completion of these conversions has typically been driven by project-level consultations with the Service and varies by National Forest.

A total of 526 projects have undergone formal consultation for the owl. Of that aggregate, 259 projects resulted in a total anticipated take of 494 spotted owls, plus an additional unquantifiable number of owls. These consultations have primarily dealt with actions proposed by the Forest Service, Region 3, but have also addressed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, National Park Service, and Federal Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military and sightseeing overflights, and other construction activities.

ENVIRONMENTAL BASELINE

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

private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat to provide a platform from which to assess the effects of the action now under consultation.

Description of the Action Area

The Pinal Mountains are located approximately eight miles south of Globe-Miami, Arizona. Vegetation on the Pinals consists of Ponderosa pine (*Pinus ponderosa*)-oak, mixed conifer, interior chaparral, and pockets of remnant aspen (*Populus* spp.) stands. Most of the timber is on the north side of the range, which is very steep, densely stocked, with deep needle-cast on the forest floor and a sparse herbaceous understory. Approximately 30% of the range is in the 0-40% slope class, and 70% is in the 41-80% class. Timber stands are either interspersed with stringers of chaparral or have a chaparral understory on the more westerly aspects. The Peak Fire burned primarily on the southern slopes of the range, which consists of timbered stringers and dense, dry chaparral; however, the entire range has the potential for rapidly spreading wildfires.

Status of the Species Within the Action Area

The Pinals are within the Basin and Range-West RU (USFWS 1995). Four Mexican spotted owl PACs occur in the project area, including the Mill Creek, Icehouse, Ferndell/Sixshooter, and Pioneer PACs. Monitoring during 2000 resulted in detection of single owls in the Mill Creek, Icehouse, and Ferndell/Sixshooter PACs; no owls were detected in the Pioneer Pass PAC. Owls were detected both before and after the fire in the Icehouse and Ferndell/Sixshooter PACs. The Mill Creek PAC was monitored during the fire (August 15, 2000). A single bird was found near the previous nest site (1992) in the Mill Creek PAC.

Factors Affecting the Species Within the Action Area

The 16,000-acre Pinal range is managed as a recreation area emphasizing dispersed and developed recreation opportunities, sustained yield of livestock forage, and maintenance or improvement of watershed to a satisfactory or better condition (USFS 1985). Past and ongoing factors affecting Mexican spotted owl in the action area include recreation, grazing, timber-harvest practices, and wildfire.

Campgrounds, picnic areas, summer cabins, and several hiking trails occur in the Pinals, and moderate levels of dispersed camping occur during the fall hunting season. Recreational impacts to owls include the disturbance of owls due to human presence, and the increased risk of wildfire. Two lightly used trails occur within and along the edges of the Mill Creek PAC, and the Mill Creek Trail bisects the PAC. The owl activity center is located near the intersection of the Mill Creek Trail and Mill Creek. The Forest did not rehabilitate this trail following the fire, and according to the BA, is currently considering whether to rehabilitate, relocate, or abandon this trail due to its proximity to the activity center within the Mill Creek PAC.

Grazing in Mexican spotted owl habitats can impact habitat structure and composition, as well as Mexican spotted owl prey species diversity, distribution, and availability. The north and south slopes of the Pinalos are grazed year-round by cattle. The BA notes that Mill Creek, which forms the lower boundary of the Mill Creek PAC, is severely degraded with impacts resulting from grazing, small-scale mining, and historical timber practices. Four grazing allotments occur on the Pinalos, including the Jones, Coolridge/Parker, Ranger Station, and Lyons Fork allotments. The Jones Allotment, together with 19 other allotments on the Forest, was recently the subject of formal section 7 consultation (#2-21-99-F-300). The Service concurred that grazing activities on this allotment may effect, but are not likely to adversely affect the Mexican spotted owl.

Timber-harvest practices, such as even-aged management, in Region 3 of the Forest Service were a primary factor leading to the listing of the Mexican spotted owl as threatened. The occurrence of catastrophic wildfires has also significantly contributed to the owl's current status. Habitat conditions (densely stocked forests, over-mature chaparral) in the action area contributed to the likelihood of the occurrence of a stand-replacing fire. The Recovery Plan indicates the need for the increased use of fire and other tools to reduce the amount of forest at high risk from stand-replacing fires, and encourages proactive fire management programs, which assume active roles in fuels reduction.

Wildfires within owl habitat during the breeding season may result in the direct death of adult and young Mexican spotted owls. Death of Mexican spotted owls may also occur due to loss of nest/roost trees caused by crown fires. If a wildfire occurs in such habitat during the breeding season, the fire may result in the loss of owl nests, as well as young owls that may not be able to fly to safety. In addition, the effects of smoke on adult and young owls is largely unknown and may directly affect the health of owls or the ability of owls to forage successfully, and therefore may affect the ability of adults to survive and/or successfully fledge young. The result of a stand-replacement wildfire in large areas of nest/roost habitat may result in the loss of the use of that habitat by Mexican spotted owls for many years.

Wildfire may also reduce prey abundance through direct mortality and through the loss of prey habitat components such as herbaceous cover, down logs, and snags. The effects of fire on the prey base of the Mexican spotted owl are complex and are likely dependent on the prey species, variations in fire characteristics, and habitat characteristics.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Mexican spotted owls and their habitat may have been affected by several aspects of fire suppression during the Peak Fire, including low-level fixed-wing and helicopter flights, dropping of water and fire retardant from air tankers into the Mill Creek and Pioneer Pass PACs, ground operations as a result of personnel walking the Bobtail Ridge trail (estimated ten trips) and Mill Creek Trail (estimated 1-2 trips) in the Mill Creek PAC, construction of the Carson handline and Helispot H-1 (the former of which is in the Mill Creek PAC, and the latter is just outside the PAC), rehabilitation with chainsaws of the Bobtail Ridge Trail (within the Mill Creek PAC) following the fire, and extensive fire crew, vehicle, and heavy equipment suppression actions along the main ridge of the Pinal Mountains between the Mill Creek, Icehouse, and Ferndell/Sixshooter PACs. In the effects analysis that follows, we will focus on the low-level helicopter overflights and water bucket drops in the PACs, as we believe these activities had the greatest potential for adverse effects.

Studies of the effects of aircraft overflights on raptors have generally noted a slight but non-significant decrease in reproductive success and number of young fledged at sites exposed to overflights versus control sites without overflights (Delaney *et al.* 1997). Low-level helicopter flights have the greatest potential to disturb owls (Delaney *et al.* 1997), because they move slowly and are relatively noisy. Delaney *et al.* (1999) evaluated the effects of the Sikorsky, HH-60G, and Pave Hawk helicopter overflights on Mexican spotted owls in the Lincoln National Forest, New Mexico. Owl territories were randomly presented with one of three helicopter flight profiles, including 50 feet vertical, 100 feet vertical/100 feet lateral, and 200 feet vertical. Territories with overflights did not differ in reproductive success from territories without overflights. As the distance to the helicopter decreased, owl flush response increased. Owls did not flush in response to helicopters beyond 345 feet, and no owls flushed during the incubation and nestling phases. Flush responses occurred at a rate of 14% within 345 feet, 19% within 200 feet, and 50% within 100 feet. Flushing responses also did not occur when noise levels were less than 92 dBA; however, distance to the helicopter was a better predictor of spotted owl response than sound level. Net differences in prey deliveries for the 24-hour periods after and before noise manipulations were highly correlated with stimulus distance. Delaney *et al.* (1999) estimated that the threshold for negative effect on prey deliveries was 315 feet. On average, an alert response (i.e., head movements) was elicited when helicopters approached within 1,330 feet, but no response was noted when helicopters were beyond 2,165 feet from an owl. Short duration, single pass aircraft flights appeared to have little effect on spotted owls; diurnal flights affected owls less than nocturnal flights; and although multiple low-level flights were not recommended, the authors believed spotted owls would habituate with repeated exposures and as the nesting season progressed (Delaney *et al.* 1997, 1999). Although the effects of overflights may vary with locations, specific conditions, and aircraft type, the following management implications emerged from the results of Delaney *et al.* (1997, 1999):

1. A 345-foot hemispherical management/protective zone should minimize, and possibly eliminate, spotted owl flush response and negative effects to prey delivery rates associated with helicopter overflights.

2. Flights over owls should be separated by at least seven days.
3. Overflights should be limited to diurnal flights if possible, and nocturnal flights, particularly within three hours of sunrise or sunset, should be minimized.
4. Helicopter flights near roosts or nests that are single pass and of short duration may be less disturbing than other flight maneuvers such as circling, hovering, landing, etc.

The Recovery Plan does not provide recommendations on overflights; however, Service policy is to limit disturbing activities within 1,320 feet of nest sites during the breeding season (March 1-August 31). This corresponds well with the Delaney *et al.*'s 1,330-foot threshold for alert responses to helicopter flights.

No overflights occurred over the Icehouse and Ferndell/Sixshooter PACs; however, intense air tanker missions and helicopter flights on the main ridge of the Pinals may have caused alert responses, as described by Delaney *et al.* (1997, 1999). The 1991 Ferndell/Sixshooter nest site was within 0.5 mile of flight path used along the ridge of the Pinal Mountains. The Pioneer Pass PAC was directly beneath the flight path used by several helicopters conducting water drops east of Bobtail Ridge in Pioneer Basin. However, pre-fire monitoring showed that no Mexican spotted owls were present in the Pioneer Pass PAC in 2000. The BA also states that "some level of disturbance is likely to have occurred to the single, non-reproductive owl occupying the Mill Creek PAC, because suppression actions were intense and long duration." The Forest estimates 50-100 low-level helicopter flights occurred in the PAC between July 31 and August 15. In the Mill Creek PAC, flights were more frequent than every seven days, no effort was made to keep flights more than 345-feet (or 0.5 mile) from possible owl locations, and overflights were not limited to diurnal flights. The BA reports that bucket drops of water were made throughout the Mill Creek PAC, thus there is some potential that water may have been dropped on or near an owl; although few drops were made in the area where the bird was found. An owl was present in the Mill Creek PAC at the end of the overflight activity (August 15), suggesting at least one bird persisted in the PAC despite disturbances, but we do not know how many birds were present before the fire, the nesting status of birds before the fire, or whether other birds may have abandoned the area.

In summary, fire suppression activities during the Peak Fire may have adversely affected the Mexican spotted owl for the following reasons:

1. Low-level helicopter flights over the Mill Creek PAC likely resulted in flushing responses by one or more Mexican spotted owls.
2. Low-level flights over the Mill Creek PAC were not conducted in accordance with recommendations of the Service or Delaney *et al.* (1997, 1999).
3. Water bucket drops were made in the Mill Creek PAC that may have disturbed owls.

4. Monitoring data is insufficient to determine if a Mexican spotted owl may have abandoned the Mill Creek PAC, or whether breeding activities were disrupted.

CUMULATIVE EFFECTS

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

CONCLUSION

After reviewing the current status of the Mexican spotted owl, the environmental baseline for the action area, the effects of the action, and the cumulative effects, it is our biological opinion that the suppression action conducted for the Peak Fire did not likely jeopardize the continued existence of the Mexican spotted owl and did not likely result in destruction or adverse modification of critical habitat. These conclusions are based on the following:

1. Monitoring documented the occurrence of a single owl both before and after the fire in the Icehouse and Ferndell/Sixshooter PACs, and a single owl was located during the fire, but following the completion of air operations, in the Mill Creek PAC.
2. No owls were detected in the Pioneer Pass PAC in 2000, prior to the fire.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of 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 (50 CFR 17.3). 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.

Amount or Extent of Take Anticipated

We cannot conclude with reasonable certainty that fire suppression actions resulted in the take of any Mexican spotted owls. We base this determination on the documented occurrence of owls both before and after the fire in the Icehouse and Ferndell/Sixshooter PACs, and the occurrence of a single owl in Mill Creek PAC after the conclusion of air operations. The possibility remains, however, that more than one owl was present within the Mill Creek PAC prior to the fire and that suppression activities may have resulted in nest abandonment, if a breeding pair was present. Further, monitoring was not sufficient to document whether the single owl observed within the Mill Creek PAC during the fire continued to occupy the area following the fire. Therefore, the lack of information in regards to the status of this PAC both prior to and following the suppression activities precludes our ability to assess with reasonable certainty any loss of occupancy or reduction in nesting success resulting from suppression activities.

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. Each of the Mexican spotted owl PACs potentially affected by the Peak Fire should be monitored annually for at least five years. The results of this monitoring should be provided to us.
2. The Forest Service should continue surveying the unsurveyed restricted and protected Mexican spotted owl habitat on the Tonto National Forest.
3. Monitoring and/or research opportunities to determine actual effects to, and recovery of, Mexican spotted owl habitat from the wildfire, and particularly in relation to future occupancy of spotted owl, should be pursued by the Forest Service.
4. The Forest Service should pursue the completion of a forest-wide consultation on wildland fire use for resource benefit and wildfire suppression activities.

REINITIATION NOTICE

This concludes formal consultation on the Peak Fire suppression activities on the Tonto National Forest, Gila County, Arizona. 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.

To avoid the need for future emergency fire consultations, we would like to work with the Forest on development of a programmatic consultation to address fire suppression. Wildfires are acts of God, and are therefore emergency actions pursuant to 50 CFR 402.05. However, fire suppression as a program is ongoing activity requiring consultation; it also lends itself well to a programmatic approach. We believe we could craft a programmatic consultation that would provide efficient section 7 coverage for your fire suppression program in regard to the Mexican spotted owl and other listed species and critical habitat.

We have assigned log number 2-21-00-F-353 to this consultation. Please refer to that number in future correspondence on this consultation. If we can be of further assistance in this matter, please contact Suzie Hatten (x225) or Jim Rorabaugh (x238).

Sincerely,

/s/ David L. Harlow
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ
Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ

Director, Arizona Game and Fish Department, Phoenix, AZ
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