United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 346-2525 Fax: (505) 346-2542

March 10, 2004

Cons. # 2-22-03-F-0552

Jose M. Martinez, Forest Supervisor
Lincoln National Forest
Federal Building
1101 New York Avenue
Alamogordo, New Mexico 88310-6992

Dear Mr. Martinez:

This document transmits the U. S. Fish and Wildlife Service's (Service) formal biological opinion (BO) based on our review of the U.S. Forest Service (Forest Service) fire suppression and immediate rehabilitation efforts and their effects on the Mexican spotted owl (*Strix occidentalis lucida*) (owl). Your letter requesting formal consultation in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.), was received on May 30, 2003.

The "Biological Assessment for the Walker Wildfire Suppression Actions and Rehabilitation Efforts, Lincoln National Forest, Sacramento Ranger District, Otero County, New Mexico" (BA), dated June/July, 2003, evaluates anticipated effects on federally listed endangered and threatened species and their habitats resulting from the fire suppression and rehabilitation actions. The suppression and rehabilitation actions took place over approximately 3,034 acres (ac) (1,227.8 hectares [ha]) administered by the Forest Service. Fire suppression was also conducted on 280 ac (113.3 ha) of private land and 120 ac (48.5 ha) of Mescalero Tribal lands.

The Forest Service has determined that the completed action "may affect, likely to adversely affect" the owl.

**Consultation History**

Informal consultation began on May 10, 2003, when the Forest Service contacted the Service to initiate emergency consultation on the Walker Wildfire. We provided an emergency consultation number and comments on May 10, 2003. The Forest Service submitted their BA on July 9, 2003, requesting formal consultation with the Service. The request for formal consultation was acknowledged by the Service in a letter dated July 18, 2003.

This BO is based on information provided in the BA; email and telephone conversations between our staffs; data in our files; data presented in the Recovery Plan for the Mexican spotted owl (*Strix occidentalis lucida*) (Recovery Plan) (U.S. Fish and Wildlife Service 1995); Forest Service regional owl data; literature review; and other sources of information including the final rules to list the owl as threatened (U.S. Fish and Wildlife Service 1993) and final rule to designate critical habitat (U.S. Fish and Wildlife Service 2001). References cited in this BO are not a complete bibliography of all literature available on the owl. A complete administrative record of this consultation is on file at this office.

## BIOLOGICAL OPINION

### I. Description of the emergency action

The suppression activities are a result of the Walker Wildfire, which started on May 9, and was contained on May 14, 2003. The Forest Service constructed dozer and hand lines within 2 owl protected activity centers (PACs), the 16 Springs PAC and the Crooked PAC, located within the Sacramento Ranger District, Lincoln National Forest.

16 Springs PAC

Of the 632 ac (255.8 ha) in the 16 Springs PAC, 45 ac (18.2 ha) (19 ac [7.7 ha]) of mixed-conifer and 26 ac [10.5 ha] of ponderosa pine) were affected by the Walker Fire. Of the 45-ac (18.2-ha) within the PAC boundary, 19 ac (7.7 ha) burned under low intensity, and 26 ac (10.5 ha) burned hot enough that all trees were killed. Nine of the 45-ac (18.2-ha) were within the 100-ac (40.5-ha) nest area. Additionally, a 3-ac (1.2-ha) personnel safety zone was constructed within the 16 Springs PAC, outside the fire boundary in ponderosa pine habitat. The primary suppression action objective was to keep the fire within the 16 Springs Canyon and prevent it from burning further into the 16 Springs PAC. A dozer line was constructed in the 16 Springs PAC. A portion of that dozer line was within the nest area. However, it limited the loss of habitat within the PAC to 45 ac (18.2 ha) and burned only 9 ac (3.6 ha) in the nest stand.

Crooked PAC

Of the 605 ac (244.8 ha) in the Crooked PAC, 283 ac (114.5 ha) (34 ac [13.8 ha] of mixed-conifer, 139 ac [56.3 ha] of ponderosa pine, and 110 ac [44.5 ha] of pinyon/juniper) were within the Walker Fire footprint. Of the 283 ac (114.5 ha) within the fire boundary, 14 ac (5.7 ha) burned under low intensity. The fire intensity killed all trees in a 269-ac (108.9-ha) area. All usable and suitable mixed-conifer and ponderosa pine habitats for nesting or roosting by owls within the PAC were burned. The 322 ac (130.3 ha) that did not burn in the Crooked PAC has no mixed-conifer (14 ac [5.7 ha] ponderosa pine and rest pinyon/juniper). Additionally, a three-acre (1.2-ha) personnel safety zone was constructed within the Crooked PAC, outside the fire boundary in pinyon/juniper habitat. The Walker Fire did not burn the entire Crooked PAC and was prevented from entering the adjacent Wet Burnt PAC.

Immediate emergency rehabilitation efforts included contour felling of dead trees less than 24 inches (in) (61 centimeters [cm]) diameter at breast height (dbh) and installation of jersey barriers on private lands. Additional rehabilitation efforts included placement of straw mulch near and adjacent to private lands, installation of sediment traps on private and forest lands to minimize erosion and trap sediment, and aerial seeding of high intensity burn areas.

## II. **Status of the species (range-wide)**

### a. Species/critical habitat description

The owl was listed as threatened on March 16, 1993 (U.S. Fish and Wildlife Service 1993). Critical habitat was designated on February 1, 2001 (U.S. Fish and Wildlife Service 2001). The Service was ordered to re-propose critical habitat by 13 April 2004 and publish a final rule on critical habitat by 20 August 2004. There are approximately 4.6 million ac (1.9 million ha) of critical habitat designated in Arizona, Colorado, New Mexico, and Utah on Federal lands. Critical habitat is limited to areas that meet the definition of protected and restricted habitat as described in the Recovery Plan (U.S. Fish and Wildlife Service 1995). Protected habitat is defined as 600 ac (242.8 ha) around known owl sites and mixed-conifer or pine-oak forests with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years. Restricted habitat includes mixed-conifer forest, pine-oak forest, and riparian areas outside of protected areas. Owl background and status information are found in the above referenced listing rules, previous BOs issued by the Service, the Recovery Plan (U.S. Fish and Wildlife Service 1995), and published and unpublished reports. This information is summarized below.

The American Ornithologist's Union (1931) recognizes three spotted owl subspecies: California spotted owl (*S. o. occidentalis*), Mexican spotted owl (*S. o. lucida*), and northern spotted owl (*S. o. caurina*). The Mexican spotted owl is distinguished from the California and northern subspecies by plumage, genetic makeup, and geographic distribution. This owl is mottled in appearance with irregular white and brown spots on its abdomen, back, and head. Its white spots are larger and more numerous than in other subspecies giving it a lighter appearance. Several thin white bands mark its brown tail. Unlike most other owls, all spotted owls have dark eyes.

*S. o. lucida* has the largest geographic range of the three subspecies. Its range extends from Aguascalientes, Mexico, through the mountains of Arizona, New Mexico, and western Texas, the canyons of southern Utah and southwestern Colorado, and the Front Range of central Colorado. The owl's distribution is fragmented throughout its range, corresponding to forested mountains and rocky canyon lands (U.S. Fish and Wildlife Service 1995, Tarango et al. 1997, Young et al. 1997, Sureda and Morrison 1998, Gutierrez et al. 1995, Peery et al. 1999, Sorrentino and Ward 2003).

The primary constituent elements essential to the conservation of the owl include those physical and biological features that support nesting, roosting, and foraging activities. Primary constituent elements in PACs include all vegetation and other organic matter contained therein. Primary constituent elements on all other areas are provided in canyons and mixed-conifer, pine-

oak, and riparian habitat types that typically support nesting and/or roosting. These elements were determined from studies of owl behavior and habitat use throughout the range of the owl. Primary constituent elements include: High basal area of large-diameter trees; moderate to high canopy closure; wide range of tree sizes suggestive of uneven-age stands; multi-layered canopy with large overstory trees of various species; high snag basal area; high volumes of fallen trees and other woody debris; high plant species richness, including hardwoods; and adequate level of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of owl prey species (U.S. Fish and Wildlife Service 2001). Although the vegetative communities and structural attributes used by the owl vary across its range, they consist primarily of warm-temperate and cold-temperate forests, and to a lesser extent, woodlands and riparian deciduous forests. The mixed-conifer community appears to be the most frequently used habitat throughout most portions of the owl's range (U.S. Fish and Wildlife Service 1995).

**b. Life history**

Owls breed sporadically and do not nest every year (Gutierrez et al. 1995). Reproductive chronology varies across its range. Owls call mainly from March through November and are usually silent from December through February (Gutierrez et al. 1995). Calling activity increases from March through May (although nesting females are largely silent during April and early May), and then declines from June through November (Gutierrez et al. 1995). In Arizona, courtship apparently begins in March with pairs roosting together during the day and calling to each other at dusk (Gutierrez et al. 1995). Eggs are laid in late March or early April. The incubation begins shortly after the first egg is laid and is done entirely by the female (Gutierrez et al. 1995). The incubation period for owls is assumed to be 30 days (Gutierrez et al. 1995, Forsman et al. 1984). During incubation and the first half of the brooding period, females leave the nest only to defecate, regurgitate pellets, or receive prey from their mate (Forsman et al. 1984, Gutierrez et al. 1995). Foraging is done entirely by males during incubation and the first half of the brooding period.

Clutch sizes of 1 to 3 eggs have been reported, but little information on clutch size exists because of general inaccessibility of nests (Gutierrez et al. 1995). Geo-Marine (2003) reported that during the 2001 field season in their study, 12 pairs established nests, 8 hatched young, and 6 fledged at least 1 young (9 owlets fledged in total).

Nestlings fledge in 4 to 5 weeks and disperse in September and October (Gutierrez et al. 1995, Arsenault et al. 1997, Willey and van Riper 2000). Eighty-five percent of juveniles disperse in September and 15 percent in October (Willey and van Riper 2000). Owls banded as juveniles were not observed settling in natal territories (Gutierrez et al. 1996, Arsenault et al. 1997, Willey and van Riper 2000). Arsenault et al. (1997) reported that three sub-adult females paired temporarily with adult males in their first summer, but left in the fall, suggesting that dispersal can continue through an owl's second year. More data are needed on patterns of juvenile dispersal to help form the basis for structuring individual and metapopulation models.
Little research has been conducted on causes of owl mortality. Great horned owls and northern goshawks are the primary causes of mortality for fledged young and dispersing juveniles and

rarely for adults (Gutierrez et al. 1995, Skaggs and Raitt 1988). Other known mortality factors are starvation and accidents.

Previous studies suggest that owls are highly selective for roosting and nesting habitat, but forage in a wider array of habitats (U.S. Fish and Wildlife 1995). The Recovery Plan assumed that availability of roosting/nesting habitat was a key factor limiting the distribution of the owl. Owls prefer the coolest parts of the forest in order to dissipate their body heat, and therefore, usually choose nest sites on northern and northeastern facing slopes (Peery et al. 1999). These communities are structurally diverse and are characterized by uneven-aged, multistoried forests with high canopy closure (U.S. Fish and Wildlife Service 1995).

Nesting habitat is typically in complex forest structure or rocky canyons and contains mature or old-growth stands with uneven-aged, multistoried, high canopy closure (Ganey and Balda 1989a, Peery et al. 1999). Nest sites have been reported at elevations of 7,000 to 9,350 feet (ft) (2,133.6 to 2,849.9 meters [m]) (Seamans and Gutierrez 1995, Geo-Marine 2003). Aspect at the nest site ranged from northwest to northeast with slopes ranging from 5 percent to 62 percent (Seamans and Gutierrez 1995, Geo-Marine 2003). In southern Utah and Colorado, most nests are in caves or on cliff ledges in steep-walled canyons. Gutierrez and Rinkevich (unpublished 1991) reported that all owls in Zion National Park, Utah were found in deep, steep-walled canyons. In the Gila National Forest, nests were always found in some type of mixed-conifer forest (Douglas-fir, white fir, Engelmann or blue spruce forest) (Geo-Marine 2003). Seamans and Gutierrez (1995) reported that nests in the Tularosa Mountains, New Mexico, were on limbs deformed by dwarf mistletoe infection in Douglas-fir. Nest trees were the oldest and largest within the nest stand (Seamans and Gutierrez 1995). In north-central Arizona, owls nested in areas with 70 percent or higher proportions of a closed canopy (Grubb et al. 1997). This is also consistent with owl habitat descriptions in other areas of Arizona and in New Mexico (Ganey and Balda 1989b, Seamans and Gutierrez 1995, Ganey et al. 1999).

A wider variety of tree species are used for roosting, but Douglas-fir is still used most frequently (Gutierrez et al. 1995, Fletcher and Hollis 1994, Zwank et al. 1994, Seamans and Gutierrez 1995, Young et al. 1998, Peery et al. 1999, Ganey et al. 2000, Geo-Marine 2003). Roost sites tend to have steeper slopes, more canopy layers, higher canopy height, greater canopy closure, and greater live tree and snag basal area than random sites. Roost sites are closely associated with well-shaded areas, low on canyon slopes or in canyon bottoms in cool areas and riparian habitats (Ganey and Balda 1989a, Zwank et al. 1994, Ganey et al. 1998, Young et al. 1998). Gutierrez and Rinkevich (1991) reported finding owls in steep canyons characterized with high humidity, multiple vegetation strata and high percentage of ground litter in narrow canyons. Mean slope aspect was northwest to northeast (Seamans and Gutierrez 1995, Geo-Marine 2003). The position of most roost sites (94 percent) on the slope was within the lower two-thirds (Zwank et al. 1994, Seamans and Gutierrez 1995, Ganey et al. 2000, Geo-Marine 2003). Seamans and Gutierrez (1995) suggested that mixed-conifer forests provide stable and favorable year-round conditions, whereas owls residing in pine-oak forests are forced to adjust roost-site use. Roost sites have been reported at elevations of 6,200 to 9,200 ft (1,889.8 to 2,804.6 m)( Zwank et al. 1994, Seamans and Gutierrez 1995, Tarango et al. 1997, Young et al. 1998, Geo-

Marine 2003). Slope angles range from 0 to 67 degrees (Tarango et al. 1997, Geo-Marine 2003). In pine-oak stands where mixed-conifer is not available, owls roost in the middle to upper third of the slope (Young et al. 1998, Ganey et al. 2000). Canopy closure at roost sites range from 48 to 85 percent (Tarango et al. 1997, Seamans and Gutierrez 1995, Young et al. 1998, Geo-Marine 2003). Roost trees range from 30 to 100 ft (9.1 to 30.5 m) in height and 10 to 24 in (25.4 to 61 cm) dbh (Tarango et al. 1997, Geo-Marine 2003). Ganey and Balda (1994) reported both roosting and foraging sites in northern Arizona had greater canopy closure, more big logs, greater densities and basal areas of both trees and snags than random sites. Ganey and Balda (1994) also concluded that mature forests are important to owls in northern Arizona, and different forest types may be used for different activities. In Chihuahua, Mexico, Young et al. (1998) reported 16 percent of owls roosted in caves. All roosts had a high timber component surrounding the caves.

Seasonal movement patterns of owls are variable. Some owls are year-round residents others remain in the same general area, but shift in habitat use patterns. Some owls migrate 12 to 31 miles (mi) (19.3-49.9 kilometers [km]) in winter, generally migrating to more open habitats at lower elevations (Skaggs and Raitt 1988, Ganey and Balda 1989b, Willey 1993, Ganey et al. 1998). Owl home-range size appears to vary considerably between habitats and geographic areas (U.S. Fish and Wildlife Service 1995). It ranges in size from 647 to 3,688 ac (261.8 to1492.5 ha) for individual birds, and from 945 to 3,846 ac (382.4 to 1556.4 ha) for pairs (Ganey and Balda 1989b, Ganey et al. 1999).

Owls disperse into diverse biotic communities. Little information exists about habitat use by juveniles during natal dispersal. Arsenault et al. (1997) reported dispersing juveniles were found to roost in habitat unlike that normally used by adults, including open ponderosa pine and pinyon/juniper habitat. Ganey et al. (1998) found dispersing juveniles in a variety of habitats ranging from high-elevation forests to pinyon/juniper woodlands and riparian areas surrounded by desert grasslands. The onset of juvenile dispersal is sudden and in various directions (Arsenault et al. 1997, Willey and van Riper 2000). Juvenile dispersal takes place in September and October, with 85 percent leaving in September (Gutierrez et al. 1995, Arsenault et al. 1997, Willey and van Riper 2000).

Riparian forests function as important components of ecosystems supporting owls. These communities, particularly mature, multilayered forests, can be important linkages between otherwise isolated subpopulations of owls. They may serve as direct avenues of movement between mountain ranges or as stopover sites and connect large expanses of landscape that otherwise would be inhospitable to dispersing owls. Historical evidence shows that owls once nested in riparian habitats (U.S. Fish and Wildlife Service 1995).

Geo-Marine (2003) reported that winter and early spring rainfall emerged as significant predictors of owl presence. Their preliminary results showed that owls preferred areas with greater rainfall. Closed and unused roads were also significant predictors of owl pair occupancy (Geo-Marine 2003). Geo-Marine did not report why these associations were present.

Ward (2001) provided strong evidence that spotted owls select habitats according to the distribution of their prey. Owls generally use a wider variety of forest conditions (mixed-conifers, pine-oak, ponderosa pine, pinyon-juniper) for foraging than they use for nesting/roosting. In northern Arizona, Ganey and Balda (1994) reported that owls foraged more frequently in unlogged forests containing uneven-aged stands of Douglas-fir and white fir, often with a strong component of ponderosa pine, than in managed forests.

The primary owl prey species are woodrats (*Neotoma* spp.), peromyscid mice (*Peromyscus* spp.), and microtine voles (*Microtus* spp.) (U.S. Fish and Wildlife Service 1995, Young et al. 1997, Seamans and Gutierrez 1999). Owls also consume bats, birds, reptiles, and arthropods (U.S. Fish and Wildlife Service 1995). Habitat correlates show that each common owl prey species uses unique habitats. A diverse prey base is dependant on availability and quality of diverse habitats. Owl foraging habitats include canyon bottoms, cliff faces, tops of canyon rims, and riparian areas (Willey 1993, Gutierrez and Rinkevich 1991). Previous studies have found variation in owl's prey according to geographic region (U.S. Fish and Wildlife Service 1995, Young et al. 1997). Patterns in the consumption of some prey, like woodrats, vary as a latitudinal-longitudinal cline, with more woodrat biomass consumed in northwestern portions of the owl's range and the least taken in southern portions (Sorrentino and Ward 2003). Consumption of other species, like voles, is clearly limited to areas where owls hunt near or within montane meadows (Sorrentino and Ward 2003).

Mexican woodrats (*N. mexicana*) are typically found in areas with considerable shrub or understory tree cover and high log volumes, or rocky outcrops associated with pinyon-juniper woodlands (Ward 2001). Willey (1993) found that owls in canyons were foraging primarily in pinyon-juniper. This corresponds to woodrat distribution and abundance (Sureda and Morrison 1998). Ward (2001) reported moderate amounts of tree cover and snags corresponded to higher woodrat abundance. Mexican woodrat abundance increased with the volume of large, undecomposed and highly decomposed logs (Ward 2001). The diet of Mexican woodrats was 70 percent forbs and 7 percent shrubs (Ward et al. 2003). These proportions were similar to that found in the woodrats' local environment.

Sorrentino and Ward (2003) considered woodrats an important food source for the owl occurring in the Guadalupe Mountains, New Mexico. Seamans and Gutierrez (1999) found that woodrats were the most important prey based on relative biomass, followed by white-footed mice. Delaney et al. (1999) and Young et al. (1997) reported that woodrats represented the highest percentage of prey biomass in owls' diets in the Sacramento Mountains and in Aguascalientes, Mexico, respectively.

Deer mice (*P. maniculatus*) are ubiquitous in distribution in comparison to brush mice (*P. boylei*), which are restricted to drier, rockier substrates, with sparse tree cover (Ward 2001). Although deer mice were common in all vegetation types sampled, Ward (2001) found them to be more abundant in the mid-seral stage (60 to 100 years in age) of mixed-conifer forests.

Sureda and Morrison (1998) reported deer mice distribution in all vegetation types they surveyed. They attributed its ubiquitous distribution to the heterogeneous distribution of vegetation types in their study area.

Mexican voles (*M. mexicanus*) are associated with montane meadows and high herbaceous cover, primarily grasses; whereas, long-tailed voles (*M. longicaudus*) are found in mesic forest habitats with dense herbaceous cover, primarily forbs, many shrubs, and limited tree cover (Ward 2001). Ward (2001) reported that when plant biomass in montane meadows dropped below one kilogram per hectare, no Mexican voles were found in either mesic or xeric forests in the Sacramento Mountains. Production of grasses and forbs had a strong positive association with summer abundance of Mexican voles (Ward 2001). In his study, Ward (2001) reported 2.6 in (6.6 cm) of mean maximum height of summer grasses or forbs, was a threshold above which Mexican vole abundance increased during summer months.

**c. Population dynamics**

Historic owl population size estimates and range distribution is not known; however, present population size and distribution are thought to be similar (U.S. Fish and Wildlife Service 1995). Ninety-one percent of known owls existing in the United States between 1990 and 1993 occurred on land administered by the Forest Service; therefore, it is the primary administrator of lands supporting owls (U.S. Fish and Wildlife Service 1995). Most owls have been found within 11 National Forests of Arizona and New Mexico. It is unknown why forests in Colorado and Utah support fewer owls. The Recovery Plan divides the owl's range into 11 Recovery Units (RU), 5 in Mexico and 6 in the United States. The six RUs in the United States are: (1) The Southern Rocky Mountains - Colorado, (2) Southern Rocky Mountains - New Mexico, (3) Basin and Range - East, (4) Basin and Range - West, (5) Upper Gila Mountains, and (6) Colorado Plateau. The Recovery Plan identifies locations, descriptions, recovery criteria, and provides distribution, abundance, and density estimates for each RU.

In 2002, the Forest Service identified 987 PACs in 5 RUs in Arizona and New Mexico (U.S. Department of Agriculture Forest Service, Southwestern Region 2002). A PAC is defined as the nest site, a roost grove commonly used during the breeding season in absence of a verified nest site, or the best nesting/roosting habitat if both nesting and roosting information are lacking (U.S. Fish and Wildlife Service 1995). The Recovery Plan 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 percent where timber harvest has not occurred in 20 years, and all legally and administratively reserved lands. Owl PACs are delineated around known owl sites. PACs include a minimum of 600 ac (242.8 ha) designed to include the best nesting and roosting habitat in the area. Recommended PAC sizes also include 75 percent of the foraging areas used by owls. "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 does not provide owl-specific guidelines for "other forest habitat." The Upper Gila Mountain RU has the greatest known concentration of owl PACs (63 percent), followed by the Basin and

Range-West (16 percent), Basin and Range-East (14 percent), Southern Rocky Mountain-New Mexico (5 percent), and Colorado Plateau (2 percent) (U.S. Department of Agriculture Forest Service, Southwestern Region 2002). Reports of PAC occupancy range from 68 to 79 percent in the Lincoln and Gila National Forests, respectively (Geo-Marine 2003, Sorrentino and Ward 2003, Ward et al. 2003).

Seamans et al. (1999) reported strong evidence of 10 percent or greater population declines in central Arizona and west-central New Mexico. Both populations experienced lower survival rates at the end of the study period (late 1990s). Trends in annual fecundity and juvenile survival were similar between study areas; owls experienced higher fecundity and juvenile survival in the earlier years of the study. Seamans et al. (1999) stated that the large influx of subadult birds into the territorial populations in early years and the rapid decline of the populations thereafter suggests that no floater (nonterritorial, nonbreeding individuals) population existed on either study area or that the floater population was not large enough to compensate for mortality among territorial individuals. In addition, density on the two study areas appeared to be closely related to reproductive output from the previous two years. This suggested that the floater population was nonexistent or declining and that population densities were sustained only after relatively "good" years of reproduction. Because the trends in reproduction were strongly correlated between the two study areas, the authors suggested that a regional phenomenon, possibly in combination with other factors, may have influenced population dynamics. It was unclear whether these trends were a naturally occurring phenomenon from which the population will rebound (e.g., due to variation in climate) or whether they were a consequence of deterministic declines in habitat quality (e.g., habitat loss and fragmentation) that were detrimental to the owl's long-term persistence. Seamans et al. (1999) recommended protecting conifer forests because 90 percent of owl territories occur within these habitats.

Based on the 987 PACs, total owl numbers in the United States range from 987 to 1,974, depending on whether one bird or a pair occupies the PAC. Geo-Marine (2003) reported that 306 out of 662 (46 percent) owl detections were made in known Forest Service PACs. The remaining 356 of 662 (54 percent) detections were in previously unidentified areas. This indicates that additional surveys are needed on National Forest lands. Survey efforts in areas other than Forest Service lands are also likely to result in additional owl detections throughout the different RUs. The Service believes that 12 PACs are in Colorado and 105 PACs are in Utah on Forest Service lands. Therefore, a total of 1,104 PACs has been identified on Forest Service lands. Tribal, State, private lands, and Mexican PACs are not included in this calculation.

The Lincoln National Forest is within the Basin and Range - East RU. This RU contains the third largest number (138) of owl PACs in the United States (U.S. Department of Agriculture Forest Service, Southwestern Region 2002). Because of the high concentration of owls, this RU is an important source population for other areas (U.S. Fish and Wildlife Service 1995). Owls here occur in isolated mountain ranges scattered across the region, the largest portion occurring in the Sacramento Mountains. Owls have been reported on Forest Service lands in the Sandia, Manzano, Sacramento, and in Guadalupe Mountains, and Guadalupe National Park, Carlsbad Caverns National Park, and the Mescalero Apache Reservation. They are most common in

mixed-conifer forest, but have been found occasionally in ponderosa pine forest and pinyon/juniper woodland (Skaggs and Raitt 1988, U.S. Fish and Wildlife Service 1995).

**d. Status and distribution**

Two primary reasons were cited for listing the owl as threatened in 1993: (1) Historical alteration of its habitat as the result of timber management practices, specifically the use of even-aged silviculture, and the threat of these practices continuing; and (2) the danger of catastrophic wildfire. Forest Service, Region 3, timber harvest practices and catastrophic wildfires, were cited as primary factors leading to listing the owl as a federally threatened species. Another factor that contributed to declines included the lack of adequate existing regulatory mechanisms. The Recovery Plan also notes that forest management has created habitats favored by great horned owls, increasing the likelihood of predation. Other threats include the potential for increasing malicious and accidental anthropogenic harm (e.g., shooting and collisions with vehicles ), and for the barred owl to expand its range, resulting in competition or hybridization with the owl.

Bond *et al.* (2002) reported on short-term effects of wildfires on spotted owls throughout the species range. The authors reported that relatively large wildfires that burned nest and roost areas appeared to have little short-term effect on survival, site fidelity, mate fidelity, and reproductive success of spotted owls, as rates were similar to estimates independent of fire. Bond *et al.* (2002) hypothesized that spotted owls may withstand the immediate, short-term (1-year) effects of fire occurring at primarily low to moderate severities within their territory. The Forest Service (U.S. Department of Agriculture Forest Service, Southwestern Region 2003) reported similar results following the 2002 Lakes Fire in the Jemez Mountains of north-central New Mexico. Danney Salas (Forest Service, pers. comm., 2003) reported that of the ten PACs that are currently being monitored within the footprint of the Scott Able Fire, nine sites has owls detected. He also reported that the same number of owl pairs before and after the Bridge Fire have been detected and have reproduced within the fire footprint. He also indicated that there were two owl nest areas found in areas where fire retardant (slurry) was used during suppression activities. Since the fire, these areas have not been used as nest sites, in spite of the trees not having burned at the nest sites; however, owls have been detected in the general area (D. Salas, pers. comm., 2003). Given historical fire regimes within its range, the owl may be adapted to survive wildfires of various sizes and severities.

Geo-Marine (2003) results suggest that owls avoid areas with aircraft noise and were found in areas with low aircraft noise. Johnson and Reynolds (2002) and Geo-Marine (2003) reported that owls did not flush from their roost or nest as a response to aircraft noise. Delaney et al. (1999) found that owls did not flush when noise stimuli from helicopters and chainsaws were greater than 115 yards (yd) (105.2 m) away. Chainsaws were more disturbing to owls than helicopter flights at comparable distances (Delaney et al. 1999). Delaney et al. (1999) recommended a 115-yd (105.2 m) buffer for helicopter overflights to minimize owl flushing responses and any potential effects on nesting activity. Other recommendations were diurnal flights and separating overflights along the same path by 7 days (Delaney et al. 1999).

## III. **Environmental baseline**

In Forest Service Region 3, 125 formal consultations have either been completed or are in draft. These formal consultations identify anticipated take of owls in 384 PACs. Consultations have dealt with actions proposed by the Forest Service, Bureau of Indian Affairs, Department of Energy, Department of Defense (including the Air Force, Army, and Navy) and Federal Highway Administration. These proposals include timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military, other construction activities, and wildlife research. One hundred-thirty-eight (138) PACs have been identified on the Lincoln National Forest. Of these, 109 PACs are on the Sacrament Ranger District, where the action area is found. The 109 PACs have many uses occurring in them, including grazing, powerlines and year-round recreation. The total number of PACs with anticipated incidental take is 26 for the Basin and Range East RU (U.S. Fish and Wildlife Service 2004).

The action area contains suitable nesting, roosting, and foraging owl habitat. The Forest Service conducted owl surveys on the Wet Burnt PAC adjacent to the action area in 1992, and one owl was detected in the action area. An informal survey was done again in 1997 and no owls were found (D. Salas, pers. comm., 2004).

### a. Status of the species within the action area

Owls occurring in the Sacramento Mountains have been exposed to various disturbances for centuries, including forest fires, insect and disease, human disturbances, such as timber and fuelwood harvest, grazing, land development, and recreation. Coniferous forests, especially the mixed-conifer, were extensively logged during the railroad logging era from 1890 to 1945 (Glover 1984, U.S. Fish and Wildlife Service 1995). After the railroad logging era, trees grew rapidly on favorable sites and attained merchantable sizes in about 40 to 50 years. Consequently, the Sacramento Mountains is largely comprised of regrowth forest that has attained a high density of moderately sized trees, poles, and saplings, forming multiple layers. According to the Recovery Plan, the greatest threats to the owl in the Basin and Range East RU, in order of potential effects, are catastrophic fire, timber harvest, fuelwood harvest, grazing, human developments, and forest insects and disease. Other activities considered potential threats include certain military operations, other habitat alterations (such as powerlines and roads), mining, and recreation. Owl recovery in this unit will require management and maintenance of existing and future populations by managing and conserving occupied and unoccupied sites (U.S. Fish and Wildlife Service 1995).

On the Lincoln National Forest, past and present Federal, State, private, and other human activities that may affect the owl and its habitat are as follows: The Hay and Scott Able timber sales, Bridge salvage sale, Walker fire salvage sale, other vegetation manipulations, livestock grazing, recreational activities, recreation and scenic vista developments, road construction, maintenance activities, land exchanges, rights-of-way issuance, off-road motorcycle events, powerline construction, wildlife research projects, Forest Service management activities (timber

sales, etc.) on adjacent Tribal and private lands, urban development, and catastrophic wildfires. Fires such as the Burgett, Bridge, and Scott Able have modified thousands of acres of habitat and impacted multiple owl territories.

The Scott Able fire burned 16,034 ac (4,488.7 ha), of which 14,551 ac (5,888.6 ha) are administered by the Lincoln National Forest and 1,483 ac (600.1 ha) were on private land. Approximately 12,291 ac (4,974 ha) that burned were considered suitable owl habitat. The fire affected all or portions of 6 PACs and 2 PACs are adjacent to the burned area. The Burgett fire affected all or portions of 3 PACs.

There are two PACs that were affected by the Walker Wildfire. These PACs include 16 Springs and Crooked. As stated in the BA, the current status of each PAC is briefly described below.

16 Springs PAC #019

Owls were first located in the 16 Springs PAC in 1988. The site was informally monitored from 1988 to 1997, and 2002. Pair occupancy was confirmed in 1988 and 1989, 1991 through 1995, and in 1997. Single owls were located in 1990 and 2002, and owls were present but not confirmed in 1996. This PAC was surveyed in 2003 following the fire and suppression activities associated with the Walker Wildfire, and a single owl was found.

Crooked PAC #072

Owls were first located in the Crooked PAC in 1988. The site was informally monitored from 1988 to 1990, 1992, 1993, and 1995-1997. Pair occupancy was confirmed in 1989 and 1993. A single owl was located in 1992 and owls were present but not confirmed in 1988 and 1996. This PAC was surveyed in 2003 after the Walker Wildfire and associated suppression activities, but no owls were found. In 2003, owl occupancy and reproductive status in both PACs were unknown prior to the wildfire. If owls were present and reproductively active, they could have had nestlings near the time of the Walker Wildfire.

Approximately 500 ac (202.3 ha)of mixed-conifer habitat was lost due to the Walker Wildfire. It burned 328 ac (132.7 ha), 45 ac (18.2 ha) in 16 Springs PAC and 283 ac (114.5 ha) in the

Crooked PAC. The 172-ac (69.6-ha)of mixed-conifer habitat burned outside of these PACs was considered restricted habitat.

## IV. **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. Indirect effect are those that are

caused by the proposed action and are later in time, but are still reasonably certain to occur. However, we only address and evaluate the effects of suppression and immediate rehabilitation activities that were conducted, not what may have happened in the absence of the actions.

Human activities in owl habitat may also cause disturbance to owls. Disturbance may be caused by personnel digging fire lines and monitoring fire conditions from the ground or air. Human disturbance of owls during the breeding season may result in the abandonment of a nest and/or starvation of young. Alternatively, many of these impacts may be short-term (e.g., see Bond et al. 2002).

Bulldozer and hand-line construction can result in modification of owl habitat. Use of bulldozers, chainsaws, and other equipment to remove fuels can also result in significant losses of key habitat components (Delaney et al. 1999). Trees removed as a result of fire line construction may have served as nest or roost trees. Additionally, noise from air operations (e.g., helicopters), especially low-flying aircraft dropping water or retardant, can contribute to the disturbance of owls (D. Salas, pers. comm., 2004).

Direct Effects

Within the 16 Springs PAC, a main drop point was placed at the junction of 16 Springs Road and Carr Gap Road. A dozer and hand line were also constructed within the 100-ac (40.5-ha) nest stand in the PAC. Construction of a fire personnel safety zone removed 3 ac (1.2 ha) of owl habitat within the PAC. Trees and snags were cut.

Dozer and hand lines were constructed within the Crooked PAC. Construction of a fire personnel safety zone removed 3 ac (1.2 ha) of owl habitat within the PAC. Trees and snags were cut. Slurry was dropped within this PAC.

Any of these activities may have resulted in either temporary or permanent displacement of owls residing within the PACs. Displacement may have resulted in nest abandonment and starvation of fledglings.

Indirect Effects

Rehabilitation work that was conducted within the 16 Springs and Crooked PACs included installation of sediment traps and aerial seeding. These activities occurred during the breeding season and may also have resulted in either temporary or permanent displacement of owls residing within the PACs. Displacement due to rehabilitation work may have resulted in nest abandonment and starvation of fledglings.

## V. **Cumulative effects**

Cumulative effects include the effects of future State, tribal, local, or private actions on endangered species that are reasonably certain to occur in the fire supression action area

considered in this BO. Future Federal actions that are unrelated to the actions are not considered because they require separate consultation pursuant to section 7 of the Act.

The area burned by the wildfire is located east of the Village of Cloudcroft, New Mexico, in the area of Forest Service Roads 175 and 607. The area is interspersed by National Forest and non-Federal lands, existing infrastructure (e.g., powerlines), and developed private campgrounds, where activities occur either seasonally or year-round. These activities reduce the quality and quantity of owl nesting, roosting and foraging habitat, and cause disturbance to breeding owls.

**Conclusion**

After reviewing the current status of the owl, the environmental baseline for the action area, the effects of the emergency action, and the cumulative effects, it is the Service's biological opinion that the emergency action did not jeopardize the continued existence of the owl. No critical habitat has been designated within the action area for the species, therefore none was affected. This conclusion was reached because the emergency action was small enough in scope that the owl population in this RU was minimally affected.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit take of endangered and threatened species, respectively, without special exemption. Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm means an act that actually kills or injures listed species. Such acts may include significant impairing essential behavior patterns including breeding, feeding, or sheltering. Harass means an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior that includes, but not limited to, breeding, feeding or sheltering. Incidental take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. In section 7(b)(4)(iv) and section 7(o)(2), of the Act, incidental take not intended as part of agency action is not considered to be prohibited taking if taking meets the terms and conditions of this Incidental Take Statement.

Using available information as presented within this document, we have identified probable take for the owls associated with the 16 Springs and Crooked PACs. This probable take is based on suppression actions that must be addressed in an emergency consultation. Based upon the best available information concerning the owls, habitat needs of the species, the project description, and information furnished by the Forest Service, take is anticipated for the owls as a result of location of retardant drops and the construction of hand and dozer lines.

**Amount or extent of take**

This emergency BO anticipates the following form and amount of take:

1. Harassment by displacement of four owls and associated destruction or death of eggs/young from the suppression activities described in the effects analysis.

**Effect of the take**

In this emergency BO, the Service determined that this level of anticipated take did not jeopardize the continued existence of the owl.

Incidental take statements in emergency biological opinions do not include reasonable and prudent measures or terms and conditions to minimize take unless the agency has ongoing actions related to the emergency (U.S. Fish and Wildlife Service 1998). The Forest Service has not advised us of any ongoing actions related to the emergency.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use 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 an action on listed species, to help implement recovery plans, or to develop information. The recommendations provided here relate only to the action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for these species. We recommend the following conservation recommendations be implemented:

1. We recommend that the Forest Service initiate a Forest-wide programmatic consultation on fire suppression and rehabilitation activities with the New Mexico Ecological Services Field Office.

2. The Forest Service should work with local officials to ensure that the potential for catastrophic wildfire is reduced on the lands within the Sacramento Ranger District.

3. The Forest Service should increase survey efforts for the owl in previously unsurveyed areas on Forest Service Lands.

4. The Forest Service should conduct regular surveys of PACs.

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.

**Disposition of dead or injured listed animals**

Upon finding dead, injured, or sick individual endangered or threatened species, initial notification must be made to the nearest Service Law Enforcement Office. In New Mexico, contact (505-346-7828) or the New Mexico Ecological Services Field Office (505-346-2525). Written notification must be made within five calender days and include date, time, and location, photograph, and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, remains of intact specimens of listed species will be submitted to educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, information noted above will be obtained and the carcass left in place.

Arrangements regarding proper disposition of potential museum specimens will be made with the institution before carrying out of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any listed species survive treatment, we should be contacted regarding final disposition of the animal.

**REINITIATION - CLOSING STATEMENT**

This concludes formal emergency consultation on the Walker Wildfire, Sacramento Ranger District, Lincoln National Forest. In future communications regarding this project, please refer to consultation #2-22-03-F-0552. Please contact Melissa Kreutzian at the letterhead address or at (505) 761-4728 if you have any questions.

Sincerely,

Susan MacMullin
Field Supervisor

cc:
District Ranger, U.S. Forest Service, Lincoln National Forest, Sacramento Ranger District, Cloudcroft, New Mexico
Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, Phoenix, Arizona

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