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In Reply Refer To:
AESO/SE
02-21-01-F-0414

April 28, 2006

Memorandum

To: Superintendent, Grand Canyon National Park, Grand Canyon, Arizona

From: Field Supervisor

Subject: Biological Opinion for the Swamp Ridge Complex Fire

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (ESA). Your request for formal consultation regarding effects of the Swamp Ridge Complex Fire on the Mexican spotted owl (MSO) (*Strix occidentalis lucida*) and its critical habitat was dated September 7, 2001, and received by us on September 17, 2001. At issue are impacts that may have resulted from the Swamp Ridge Complex Fire in Grand Canyon National Park (GRCA) in Coconino County, Arizona. This consultation is conducted under the emergency consultation provisions in 50 CFR 402.05.

We received a biological evaluation (BE) of the Swamp Ridge Complex Fire on November 9, 2005. Your November 2 letter included a request for concurrence with a determination that the action was not likely to have adversely affected the California condor (*Gymnogyps californianus*). Our concurrence with that determination is included in Appendix A.

This biological opinion is based on information provided in the BE and supplements, meetings, telephone conversations, email messages, 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, the type of actions and their effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

Table 1 is a summary of the consultation history for the proposed action. All tables are included at the end of this document.

BIOLOGICAL OPINION

DESCRIPTION OF THE ACTION

The Swamp Ridge Complex Fire included the Swamp Ridge Fire and the Tower Fire, which were started by lightning and managed as wildland fire use (WFU) fires (Sipe 2005).

Swamp Ridge Fire

The Swamp Ridge Fire was first detected on August 17, 2001. GRCA decided to manage the fire as a WFU fire. The fire exhibited little movement until it began to spread slowly on August 23. The fire was spreading steadily in ponderosa pine litter primarily to the north and south. As the fire reached mixed-conifer and oak leaf litter fuels in Castle Canyon, it slowed movement and began to spread laterally to the east and west along the Swamp Ridge Road (W4 Road). Fire size was 22 acres on August 25.

The fire continued to spread east and west in ponderosa pine litter with moderate activity. The fire had grown to 50 acres by August 27. The fire slowed and crept in pine needle litter with flame lengths of 3-6 inches. Crews began to prepare the FS 268 Road (the GRCA/Kaibab National Forest boundary road) for a possible burn-out if the fire should move northward. Crews completed 3.4 miles of preparation work along FS 268 by September 1. Fire size was then 197 acres.

Beginning September 2, fire activity increased and began to exhibit flanking and backing fires with movement of about 1 chain (66 feet) per hour with flame lengths of 8-10 inches. Smoke levels on the morning of September 2 were higher than in previous days and smoke monitoring efforts were increased. Six miles of preparation work along FS 268 was accomplished by September 4. The fire had grown to 293 acres.

Beginning September 5, the fire exhibited flanking and backing at up to one chain per hour with flame lengths of 8-10 inches. Winds on the afternoon of September 5 increased fire activity. The fire was most active in areas with pine needle cast, including some areas south of Swamp Ridge Road and east of Swamp Lake. The fire had grown to 385 acres by September 6.

Beginning September 8, the fire exhibited flanking and backing of 0.5 chain per hour with flame lengths of 3-12 inches and a head fire of four chains per hour. Torching of individual trees and small groups of trees was observed. Fire size was 1,015 acres by September 11.

Light rain on September 12 slowed fire spread. The fire exhibited movements of less than one chain per hour with 3-12 inch flame lengths. The fire received 0.5 inch of rain on September 15 which further decreased fire behavior to smoldering in large down wood and creeping surface fire in pine needles. Fire personnel continued to monitor fire behavior. The fire grew to 1,163 acres by September 21.

Beginning September 22, the fire exhibited smoldering and creeping surface fire in pine needles and oak leaves with occasional torching in heavy fuel concentrations. Fire activity and smoke

production increased as fuels dried out. The fire was estimated to be 1,341 acres in size by September 25.

After September 25, the fire made a major run to the north, and a burn-out operation was initiated along the FS 268 and FS 223 roads on the northern perimeter of the Maximum Manageable Area (MMA). Bucket drops of an approximate total of 8,000 gallons of water were conducted. The rate of fire spread reached 3-4 chains per hour with 1-2 feet flame lengths and some crowning and torching. Fire size was 2,382 acres by September 28.

After September 28, fire activity decreased again to smoldering and creeping at 0.25 chain per hour with 3-5 inch flame lengths. Some torching and spotting occurred on the southeast corner of Swamp Ridge. Water drops totaling about 10,000 gallons were conducted on the west and east sides of the fire on September 29 and 30. Approximately 380 chains of fire line were constructed along the east side of Swamp Ridge by September 30. The fire was held within the MMA at a total size of 3,282 acres.

Some interior pockets continued to burn in the fire. Crews rehabilitated and monitored fire line. Ninety-five percent of the fire was contained by October 8. Crews continued to patrol and monitor fire activity for the remainder of the season. Final fire size was 3,282 acres.

Tower Fire

The Tower Fire was first detected on August 29. GRCA decided to manage the fire as a WFU fire. The Swamp Ridge complex containing the Swamp Ridge and Tower fires was created on August 29. The Tower fire quickly established in ponderosa pine needles and had spread to nine acres by August 30. The fire exhibited movements up to 5-10 chains per hour with single and group tree torching. Fire-effects monitors monitored and mapped the fire. Fire size was 54 acres by September 1.

Beginning September 2, the fire exhibited flanking and backing with flame lengths of 1-3 feet and movements of 0.5-1 chain per hour. Torching of individual and groups of trees associated with concentrations of down fuel were observed. Due to an inversion in the area, smoke from the Swamp Ridge complex reduced visibility on the South Rim, and air quality monitoring efforts increased. The fire grew to 195 acres by September 3.

Beginning September 4, the fire exhibited flanking and backing of 0.25-1 chain per hour with flame lengths of 3-12 inches. Torching of individual and groups of trees was observed with occasional head fire moving at up to four chains per hour. The fire expanded along the eastern, northeastern, and northern perimeters. In at least one area, the fire had encroached to approximately 50 feet below the canyon rim and was observed to be burning in oak leaf litter. The fire crossed Kanabownits Canyon on September 11 and had grown to 864 acres by September 14.

After September 14, the fire area received rain, and fire behavior decreased to smoldering with some creeping surface fire in pine needles and oak leaves. The remaining fire staff continued to monitor fire behavior. Fire growth slowed and the total size was 881 acres by September 21.

Beginning September 22, as the weather and fuels dried out again, the fire activity increased. The fire spread on September 23 and 24 but exhibited little activity September 25-27. Fire activity remained low with surface spread of 1-2 chains per hour. The fire was monitored from the air and fire size was 2,149 acres by October 1.

Beginning October 3, the fire exhibited surface fire on the ridges with flanking at up to five chains per hour. Engine crews patrolled Kanabownits Road and held the fire west of the road. An anchor point was established on the northwest flank at the rim. Helicopter bucket work was conducted along the rim on the west flank of the fire to suppress hot spots. Fire size was 2,558 acres on October 5.

Beginning October 6, the fire exhibited surface fire on the northern flank and near the Point Sublime Road on the southeast flank. Containment action was implemented along the north flank of the fire. Engine crews held the fire west of Kanabownits Road. The western flank was contained by the canyon rim. The fire received rain on October 6 and 7 which slowed fire activity.

Engine crews continued to hold the fire west of the Point Sublime Road. Containment actions were continued on October 8 as fire backed down the road. Crews rehabilitated lines, and monitored the fire October 9-12. The final size of the fire was mapped at 4,055 acres.

Support Sites and Helicopter Use

Two portable water containers (pumpkins) were placed along the FS 268 Road for the Swamp Fire. No pumpkins were used for the Tower Fire. Two helispots were created for the Tower Fire. Swamp Point was rehabilitated to be used as a helispot.

Helicopter flights occurred throughout the duration of the fires to perform management and monitoring activities. Approximately 54 flights were conducted from August 28 to September 15 for passenger transport, bucket work, monitoring, mapping the fire perimeter, and aerial reconnaissance. Flights decreased to an average of one per day from September 16 to October 10. Bucket work was conducted on the Tower Fire on October 5.

Conservation Measures

During the course of the action, GRCA informed us in a September 7, 2001, letter that the following measure would be implemented.

- GRCA will manage the fire in such a manner as to reduce impacts to the primary constituent elements of potential MSO habitat, as defined in the Recovery Plan for this species by monitoring and, if possible, reducing smoke impacts to occupied and potential MSO habitat.

Sipe (2005) reported the following measures were implemented as part of the fire management for MSO critical habitat.

- GRCA wildlife biologists were consulted early in the decision-making process and served as resource advisors throughout the fire.
- To minimize negative effects on the primary constituent elements of critical habitat, the fires were managed for low-intensity fire.
- When constructing fire line, cutting of trees and snags larger than 18 inches in diameter at breast height (dbh) was minimized.
- Fire line was rehabilitated after use by pulling soil, duff, litter, woody debris, and rocks back onto the line to bring it up to grade and to make it blend in with the surrounding area.

STATUS OF THE SPECIES

Mexican Spotted Owl

The MSO was listed as a threatened species in 1993 (USDI 1993). The primary threats to the species were cited as even-aged timber harvest and catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The FWS appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USDI 1995). A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) and in the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. Although the MSO's entire range covers a broad area of the southwestern United States and Mexico, the MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

The U.S. range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The Swamp Ridge Complex Fire occurred in the Colorado Plateau Recovery Unit which includes most of southern and south-central Utah, plus portions of northern Arizona, northwestern New Mexico, and southwestern Colorado. MSO habitat appears to be naturally fragmented in this RU, with most owls found in disjunct canyon systems or isolated mountain ranges. In northern Arizona, MSO have been reported in both canyon and montane situations. Recent records of MSO exist for the Grand Canyon and Kaibab Plateau, as well as for the Chuska Mountains, Black Mesa, Fort Defiance Plateau, and the Rainbow/Skeleton Plateau on the Navajo Nation. Federal lands account for 44 percent of this RU. Tribal lands collectively total 30 percent, with the largest single entity being the Navajo Nation. Threats in this RU, according to the MSO Recovery Plan, include timber harvest; overgrazing; catastrophic fire; oil, gas, and mining development; and recreation.

Approximately 200 MSO PACs have been designated in the Colorado Plateau Recovery Unit (Shaula Hedwall, FWS, pers. comm. 2006). Eighteen (approximately 9 percent) of those PACS have been involved in actions where incidental take has been anticipated.

Historical and current anthropogenic uses of MSO habitat include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season.

Researchers studied MSO population dynamics on one study site in Arizona (n = 63 territories) and one study site in New Mexico (n = 47 territories) from 1991 through 2002. The Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations," (*in press*) found that the Arizona population was stable (mean Λ from 1993 to 2000 = 0.995; 95% Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6% (mean Λ from 1993 to 2000 = 0.937; 95% Confidence Interval = 0.895, 0.979). The study concludes that spotted owl populations could experience great (>20%) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to the high annual variation in recruitment, the MSO is then likely very vulnerable to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

Since the owl was listed, we have completed or have in draft form a total of 165 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 361 PACs. The form of this incidental take is almost entirely in the form of harm or harassment. These consultations have primarily dealt with actions proposed by the Forest Service, Region 3. However, in addition to actions proposed by the Forest Service, we have also reviewed 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 activities.

Mexican Spotted Owl Critical Habitat

At the time (August-October 2001) of the action, MSO critical habitat was designated under the February 1, 2001, final rule (66 FR 8530). The February 1, 2001, final rule states that the primary constituent elements (PCEs) that occur in the mixed conifer forest type, as described in the Recovery Plan, which currently contains or may attain the habitat attributes believed capable of supporting nesting and roosting owls include: high basal area of large-diameter trees; moderate to high canopy closure; wide range of tree sizes suggestive of uneven-aged 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 levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of MSO prey species.

For canyon habitat, the PCEs include: cooler and often higher humidity than the surrounding area; clumps or stringers of ponderosa pine, Douglas-fir, white fir, and/or pinyon-juniper trees and or canyon wall containing crevices, ledges, or caves; high percent of ground litter and woody debris; and riparian or woody vegetation (although not at all sites).

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 in the action area to provide a platform to assess the effects of the action now under consultation.

A. STATUS OF THE SPECIES WITHIN THE ACTION AREA

Mexican Spotted Owl

Mexican spotted owls have been reported in GRCA since the 1920s (Sipe 2005). The presence of MSO within GRCA was confirmed through surveys of approximately 6,000 acres of suitable habitat on the North and South rims. The few detections were from within the canyon rather than the plateau areas. In 1994 and 1995, the most suitable South Rim plateau habitat was surveyed with negative results.

In 1998 and 1999, a large-scale survey was undertaken on the North Rim. Those surveys covered all MSO habitat on the North Rim plateau area including the Walhalla Plateau. No responses were elicited from MSO during the surveys.

Surveys were conducted in 1999 in side canyon habitat along the Colorado River corridor and MSO were detected at six locations. In 2001, a large-scale river-based inventory was undertaken and approximately 30 additional side-canyon MSO were detected. Surveys from the rim were also conducted along a 30-mile stretch of the South Rim and in the Cape Royal and Point Imperial areas. Several new territories were located. The Walhalla and Outlet plateaus were also surveyed in 2001 but with negative results.

The nearest MSO PAC to the Swamp Ridge Complex Fire is the Dragon PAC which is over 2.5 miles from the Tower Fire.

The 3,282-acre MMA of the Swamp Ridge Fire contained 47 acres of MSO restricted forest habitat (mixed conifer) and 396 acres of steep slope canyon habitat. The 4,055-acre MMA of the Tower Fire contained 1,048 acres of MSO forest habitat (mixed conifer).

Mexican Spotted Owl Critical Habitat

The Swamp Ridge Complex Fire action area was within MSO critical habitat unit CP-10. The 3,282-acre MMA of the Swamp Ridge Fire contained 47 acres of MSO critical habitat in the

form of mixed conifer and 396 acres of MSO critical habitat in the form of steep slope canyon habitat. The 4,055-acre MMA of the Tower Fire contained 1,048 acres of MSO critical habitat in the form of mixed conifer.

B. FACTORS AFFECTING SPECIES' ENVIRONMENT WITHIN THE ACTION AREA

Mexican Spotted Owl

MSO may be affected by the special flight rules (overflights) that may overlap a portion of the Swamp Ridge Complex Fire area. In the biological opinion (02-21-97-F-0085) developed for the special flight rules, we anticipated that the incidental take is unquantifiable, but is expected to be in the form of harassment. The biological opinion cited the presence of owls as well as a significant amount of unsurveyed potential habitat present under the overflight routes.

The Outlet Fire in GRCA occurred from April 25 to June 15, 2000. The wildfire burned in 837 acres of protected, and 5,370 acres of restricted, MSO habitat. Although information regarding fire severity in MSO habitat was not available, 23 percent of the fire burned at high severity and 34 percent burned at moderate severity. In the biological opinion (02-21-01-F-267) on the emergency suppression actions taken on the fire, we did not anticipate any incidental take of MSO.

The Vista Fire in GRCA occurred from July 15 to September 25, 2001. The fire consisted of a wildland fire use portion and a wildfire portion. The entire action resulted in 662 acres of MSO habitat burned at high or moderate-to-high severity which resulted in the loss of key habitat components. A pending biological opinion (02-21-01-F-0411) will also address the effects of suppression action and smoke on nearby PACs.

Mexican Spotted Owl Critical Habitat

The MSO habitat that was affected by the Vista Fire as described above was also MSO critical habitat. The PCEs that could be affected by fire were lost in the areas that sustained moderate-to-high and high-severity fire.

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 Owl

The Swamp Ridge Complex Fire burned in 1,491 acres of protected and restricted MSO habitat within a period of 57 days (Sipe 2005). During that time, the possible sources of effects to MSO included noise and human activity, smoke, and fire.

Noise and Disturbance

Disturbance of MSO by noise and activity in the Swamp Ridge Complex Fire action area was likely minimal. The area affected had been previously surveyed with no MSO detected. No PACs were adjacent to the Swamp Ridge Fire and the Dragon PAC is 2.5 miles from the Tower Fire.

Activities associated with managing this WFU fire included the presence of personnel and the use of vehicles, chainsaws, and helicopters. Much of the management of the fire was minimal and consisted of the presence of fire monitors and daily reconnaissance and GPS flights over the fire. Helicopter flights were limited as much as possible and helicopters did not fly within 1,000 feet of known PACs.

Noise and activity can disturb the normal breeding, feeding, and sheltering behavior of MSO. Disturbance can result in reduced time at nests and caring for young, which could lead to lowered reproductive success. Disturbance can result in individuals feeding less efficiently in foraging areas, which could reduce survival. Disturbance can also result in individuals avoiding areas that would otherwise provide an appropriate microclimate and protection from predators.

Smoke

Simultaneous burning of other fires (Vista Fire) complicated monitoring of smoke from the Swamp Ridge Complex Fire. Monitoring instruments detected air quality not meeting Arizona Department of Environmental Quality visibility standards for a total of 166 hours between August 4 and October 7. Three of the hours occurred during the MSO breeding season and 163 hours occurred after the MSO breeding season.

Prevailing winds were from the southwest and smoke impacts were likely minimal. The Dragon PAC was the closest PAC to the Swamp Ridge or Tower fires and was the PAC most likely to be affected by smoke from the fires.

Smoke inundation can disturb the normal breeding, feeding, and sheltering behavior of MSO. Since most of the smoke impacts occurred after the breeding season, adults or juveniles in the area would likely have moved away to avoid these impacts. However, this disturbance would have resulted in additional stress and disruption of normal feeding and sheltering. Smoke can make an otherwise appropriate microclimate that is also secure from predators uninhabitable, thus exposing individuals to a higher predation risk.

Fire

Key components of MSO habitat that could be adversely affected by fire include: trees greater than 24 inches dbh, other large trees, snags, large down logs, and hardwoods.

During our consultation with GRCA on their WFU program (#02-21-02-F-0118), GRCA provided a description of the effects to vegetation structure for the various fire-severity classes. GRCA believes that MSO restricted habitat in its portion of the Kaibab Plateau meets the threshold conditions of Table III.B.1 of the MSO Recovery Plan, and that those conditions are maintained with low-severity fire. Following low-severity fire, vegetation structure remains unchanged and overstory vegetation is unburned. Unburned patches remain in the burn area.

Following low-to-moderate-severity fire, foliage is partially scorched, but most overstory vegetation remains and there is limited overstory tree mortality. MSO habitat components are altered, at least for the short term. Snags and downed logs are partially burned, and most ground cover is burned. There may be some loss of trees, particularly in the smaller size classes, and reduced canopy closure. Species diversity may also be reduced, at least on a temporary basis. Low-to-moderate-severity fire changes the vegetation structure and composition of the understory, and consequently prey availability, for one or more years following the fire. Moderate-to-high and high-severity fire removes most, if not all, of the characteristics (key habitat components) of MSO restricted habitat.

Following moderate-to-high and high-severity fire, there is a greater total loss of understory and overstory vegetation. MSO habitat components lost include downed logs; most trees in all size classes, including the largest trees; overstory and understory canopies; plant species richness; and residual vegetation. Because mineral soil is also altered with these fires, these changes are much longer term.

The Swamp Ridge Fire burned 443 acres of MSO habitat within a period of 53 days from August 17 to October 8, 2001 (Table 2). The key habitat components of MSO habitat in the Swamp Ridge Fire were likely maintained where the fire burned at low severity. The key habitat components in the 142 acres of MSO habitat that burned at low-to-moderate severity were adversely affected to some degree, at least temporarily. The key habitat components of the 97 acres of MSO critical habitat that burned at moderate-to-high and high severity were likely completely lost.

The Tower Fire burned 1,048 acres of MSO habitat in a period of 45 days from August 29 to October 12, 2001 (Table 3). The key habitat components of MSO habitat in the Tower Fire were likely maintained where the fire burned at low severity. The key habitat components of the 20 acres of MSO habitat that burned at moderate-to-high and high severity were likely completely lost. The key habitat components in the 57 acres of MSO habitat that burned at low-to-moderate severity were adversely affected to a lesser degree.

Major or complete loss of key habitat components of MSO habitat can affect MSO by reducing the quality of the habitat. Important functions of habitat for MSO include providing a suitable

microclimate, foraging opportunities, protection from predators, and protected nesting opportunities. Major losses of key habitat components can reduce those functions to the point that the habitat can no longer support MSO and their reproduction efforts.

Mexican Spotted Owl Critical Habitat

The PCEs of MSO forest critical habitat (as designated at the time of the action) that may have been adversely affected by fire include: high basal area of large-diameter trees; moderate to high canopy closure; wide range of tree sizes suggestive of uneven-aged 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 levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of MSO prey species.

The PCEs of MSO canyon critical habitat (as designated at the time of the action) that could be adversely affected by fire include: cooler and often higher humidity than the surrounding area; clumps or stringers of ponderosa pine, Douglas-fir, white fir, and/or pinyon and juniper trees; high percent of ground litter and woody debris; and riparian or woody vegetation.

The PCEs of MSO critical habitat in the Swamp Ridge Fire were likely maintained where the fire burned at low intensity (Table 2). The PCEs in the 142 acres of MSO critical habitat that burned at low-to-moderate intensity were adversely affected to an unknown degree. The PCEs of the 97 acres of MSO critical habitat that burned at moderate-to-high and high severity were likely completely lost.

The PCEs of MSO critical habitat in the Tower Fire were likely maintained where the fire burned at low intensity (Table 3). The PCEs in the 57 acres of MSO critical habitat that burned at low-to-moderate intensity were adversely affected to an unknown degree. The PCEs of the 20 acres of MSO critical habitat that burned at moderate-to-high and high severity were likely completely lost.

As for the key habitat components of MSO habitat, major or complete loss of the PCEs of MSO critical habitat can affect MSO by reducing the quality of the habitat. Important functions of MSO critical habitat include providing a suitable microclimate, foraging opportunities, protection from predators, and protected nesting opportunities. Major losses of PCEs can reduce those functions to the point that the critical habitat can no longer support MSO and their efforts at reproduction.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The project area is completely within GRCA. There is limited human recreation away from developed trails and sites in the GRCA. A few primitive roads provide access to the fire, and there may be some use of the area by recreationists. The effect of the activity on MSO in the area is unknown, but it is anticipated to be minimal.

CONCLUSION

The conclusions of this biological opinion are based on the project as described in the “Description of the Proposed Action” section of this document. After reviewing the current status of the Mexican spotted owl, the environmental baseline for the action area, the effects of the proposed actions and the cumulative effects, it is the FWS’s biological opinion that the Vista Fire did not likely jeopardize the continued existence of the species, and did not likely destroy or adversely modify designated MSO critical habitat. We note that this biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

We present these conclusions for the following reasons:

Mexican Spotted Owl

Disturbance of MSO due to suppression actions is estimated to have been minimal. Smoke may have adversely affected up to one MSO PAC, but these effects were mainly after the breeding season. Other than effects from smoke, no other effects to PACs occurred. The key habitat components of relatively small amounts of MSO habitat were adversely affected due to low-to-moderate severity fire in the Swamp Ridge (133 acres) and Tower (57 acres) portions of the Swamp Ridge Complex Fire. The key habitat components of relatively small amounts of MSO habitat were lost due to moderate-to-high and high severity fire in the Swamp Ridge (97 acres) and Tower (20 acres) portions of the Swamp Ridge Complex Fire.

Mexican Spotted Owl Critical Habitat

The PCEs of relatively small amounts of MSO critical habitat in critical habitat unit CP-10 were adversely affected due to low-to-moderate severity fire in the Swamp Ridge (133 acres) and Tower (57 acres) portions of the Swamp Ridge Complex Fire. The PCEs of relatively small amounts of MSO critical habitat in critical habitat unit CP-10 were adversely affected due to moderate-to-high and high severity fire in the Swamp Ridge (97 acres) and Tower (20 acres) portions of the Swamp Ridge Complex Fire.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is defined (50 CFR 17.3) to include significant habitat

modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

Mexican Spotted Owl

We do not anticipate that the proposed action resulted in incidental take of MSO. Although restricted forest and canyon MSO habitat was adversely affected by the fire, smoke inundation was the only direct effect to known MSO PACs. Although up to one PAC up to 2.5 miles from the fire may have been adversely affected by smoke, most of the high levels of smoke occurred after the MSO breeding season.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS’s Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- 1) We recommend that planned or necessary long-term analyses of fire effects (particularly fire severity results) be completed as scheduled and provided to us as they are completed.

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

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. 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.

We appreciate Grand Canyon National Park's efforts to identify and minimize effects to listed species from the proposed action. For further information please contact Bill Austin (x102) or Brenda Smith (x101) at (928) 226-0614.

/s/ Steven L. Spangle

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Field Supervisor, Fish and Wildlife Service, Albuquerque NM
Director, Science Center, Grand Canyon National Park, Grand Canyon, AZ
Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix AZ

LITERATURE CITED

- Sipe, C. 2005. Biological evaluation for the Swamp Ridge Complex Fire, 2001, in Grand Canyon National Park, Coconino County, Arizona. Grand Canyon National Park. 45 pp. and appendices.
- U.S. Department of the Interior (USDI), Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants; final rule to list the Mexican spotted owl as threatened. Federal Register 58(49):14248-14271. March 16, 1993.
- U.S. Department of the Interior (USDI), Fish and Wildlife Service. 1995. Recovery Plan for the Mexican Spotted Owl. Albuquerque, New Mexico.

TABLES

Table 1. Consultation history for the Vista Fire.

| <i>Date</i> | <i>Event</i> |
|--------------------------|--|
| August 27, 2001 | We received initial notice (by telephone) of the start of the Swamp Ridge Fire and GRCA's intention to manage it as a wildland fire use fire. |
| August 28, 2001 | We recommended (by telephone) that GRCA treat the Swamp Ridge Fire as an emergency action. |
| September 17, 2001 | We received a request for formal consultation on the Swamp Ridge Fire. |
| October 4, 2001 | We issued a thirty-day memorandum in response to the request for formal consultation indicating that the formal consultation could not begin until we received additional information. |
| November 9, 2005 | We received a biological evaluation of the Swamp Ridge Complex Fire. |
| November 17 and 18, 2005 | We exchanged email correspondence with GRCA in order to clarify several points regarding the Swamp Ridge Complex Fire. |
| December 8, 2002 | We conducted a conference call with GRCA to clarify the request for consultation. |
| February 22, 2006 | We issued a draft biological opinion for review. |
| April 5, 2006 | We received an email message from GRCA indicating they had reviewed the draft biological opinion and they had no comments or recommended modifications. |

Table 2. Fire severity in MSO habitat for the Swamp Ridge Fire (Carmen Sipe pers. comm. 2005).

| <i>Severity</i> | <i>Mixed Conifer (acres)</i> | <i>Steep-slope Canyon (acres)</i> | <i>Total (acres)</i> |
|-----------------|------------------------------|-----------------------------------|----------------------|
| High | 0 | 9 | 9 |
| Moderate/High | 0 | 88 | 88 |
| Moderate/Low | 9 | 133 | 142 |
| Low | 35 | 154 | 189 |
| Unburned | 3 | 12 | 15 |
| Total | 47 | 396 | 443 |

Table 3. Fire severity in MSO habitat for the Tower Fire (Carmen Sipe pers. comm. 2005).

| <i>Severity</i> | <i>MSO Restricted Habitat (Mixed Conifer) (acres)</i> |
|-----------------|---|
| High | 6 |
| Moderate/High | 14 |
| Moderate/Low | 57 |
| Low | 886 |
| Unburned | 85 |
| Total | 1,048 |

APPENDIX A – CONCURRENCE

This appendix contains our concurrence with your “may affect, not likely to adversely affect” determination for California condor.

California condor (*Gymnogyps californianus*)

We concur with your determination that the proposed action may have affected, but is not likely to have adversely affected, the California condor. We base this concurrence on the following:

- 1) Condors were hazed from the North Rim helibase water tank. However, the hazing was conducted by permitted personnel and according to the special rules allowing for management of the nonessential experimental population of condors. Non-permitted personnel did not haze condors. Condors stopped returning to the water tank once it was covered.
- 2) Because of the possibility of mid-air condor-helicopter interactions, the North Rim helibase was in contact with the Peregrine Fund and GRCA condor technician to check on the locations of condors. Pilots were instructed to give up air space to condors unless deviation from course would jeopardize human safety. There were no collisions or near-collisions of helicopters and condors.
- 3) No condor nest sites were directly inundated by smoke for an extended period of time.
- 4) Several conservation measures were implemented as part of the action.
 - All helicopter dip tanks were covered when not in use for fire suppression.
 - All personnel assigned to the fire were instructed not to feed or approach condors.
 - A Resource Advisor was assigned to the fire who was permitted to haze condors away from populated areas.
 - All trash was packed out.
 - Helicopter pilots were instructed to be aware of condors in the area and to document and report close encounters or avoidance of close encounters.
 - Flights near rim areas were kept to a minimum.
 - Personnel were requested to report all sightings of condors to the Resource Advisor.
 - GRCA worked to adhere to the air quality standards set by the Arizona Department of Environmental Quality.