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In Reply Refer To:
AESO/SE
22410-2007-F-0352

December 18, 2007

Memorandum

To: Regional Director, Navajo Region, Bureau of Indian Affairs, Gallup, New Mexico
(Attn: Omar Bradley)

From: Field Supervisor

Subject: Biological Opinion for Maverick Airstar Landing Site in the Little Colorado River Gorge

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 (Act). Your request was dated May 31, 2007 and received by us on June 11, 2007. At issue are impacts that may result from the proposed Maverick Airstar Landing Site in the Little Colorado River (LCR) Gorge located in Coconino County, Arizona. The proposed action may affect the threatened Mexican spotted owl (*Strix occidentalis lucida*) (MSO).

The final MSO critical habitat rule designated about 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (USFWS 2004). Critical habitat was not designated on the Navajo Nation, including the LCR Gorge, and will not be discussed in this opinion.

This biological opinion is based on information provided in the June 10, 2006 biological assessment, the December 2004 environmental assessment, telephone conversations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the MSO, the effects of helicopter sound on the MSO, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

June 16, 2005	We received a letter describing the proposed action for the Maverick Airstar Landing Site.
June 2005 to May 2006	We discussed the aspects of the proposed action, surveys, and effects analysis with your consultant, BIOME Ecological and Wildlife Research.
June 11, 2007	We received a request for initiation of formal consultation.
July 12, 2007	We issued a 30-day letter initiating formal consultation.
October 2, 2007	We requested a 45-day extension of the consultation period to October 25, 2007 with a final biological opinion by December 10, 2007.
October 29, 2007	We issued the draft biological opinion.
October 30, 2007 and November 28, 2007	We received comments informally from the Navajo Nation Department of Fish and Wildlife (NNDFWL) and BIOME.
December 10, 2007	We informed the BIA of the automatic 10-day extension for the biological opinion when comments are not received 10 days before the due date (50 CFR 402.14(g)(5)).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Bureau of Indian Affairs (BIA) proposes granting a business site lease to Maverick Helicopters (Maverick) and the Cameron Chapter of the Navajo Nation for tourism helicopter landings in the LCR Gorge about 10 miles upstream from its confluence with the Colorado River and about 1.4 air-miles downstream of Blue Spring. The landing site will be one acre and development will consist of placement of a picnic table; site development does not include a landing pad or clearing the site. Flights to the site will be a spur off an approved flight route through the Grand Canyon that originates at Tusayan airport and will exit and enter the Grand Canyon just south of Cape Solitude. Flights will enter and exit the LCR Gorge about one mile northwest of the landing site, stop at the landing site for 30 to 45 minutes, then depart along the same flight path (Figure 1). Flight time through the gorge will be about 6 minutes one-way. Maverick will schedule 6 flights per day on approximately 345 days of the year, weather permitting, for an indefinite number of years, based on the Navajo Nation Parks and Recreation Department's (NNDPR) tour service regulations.

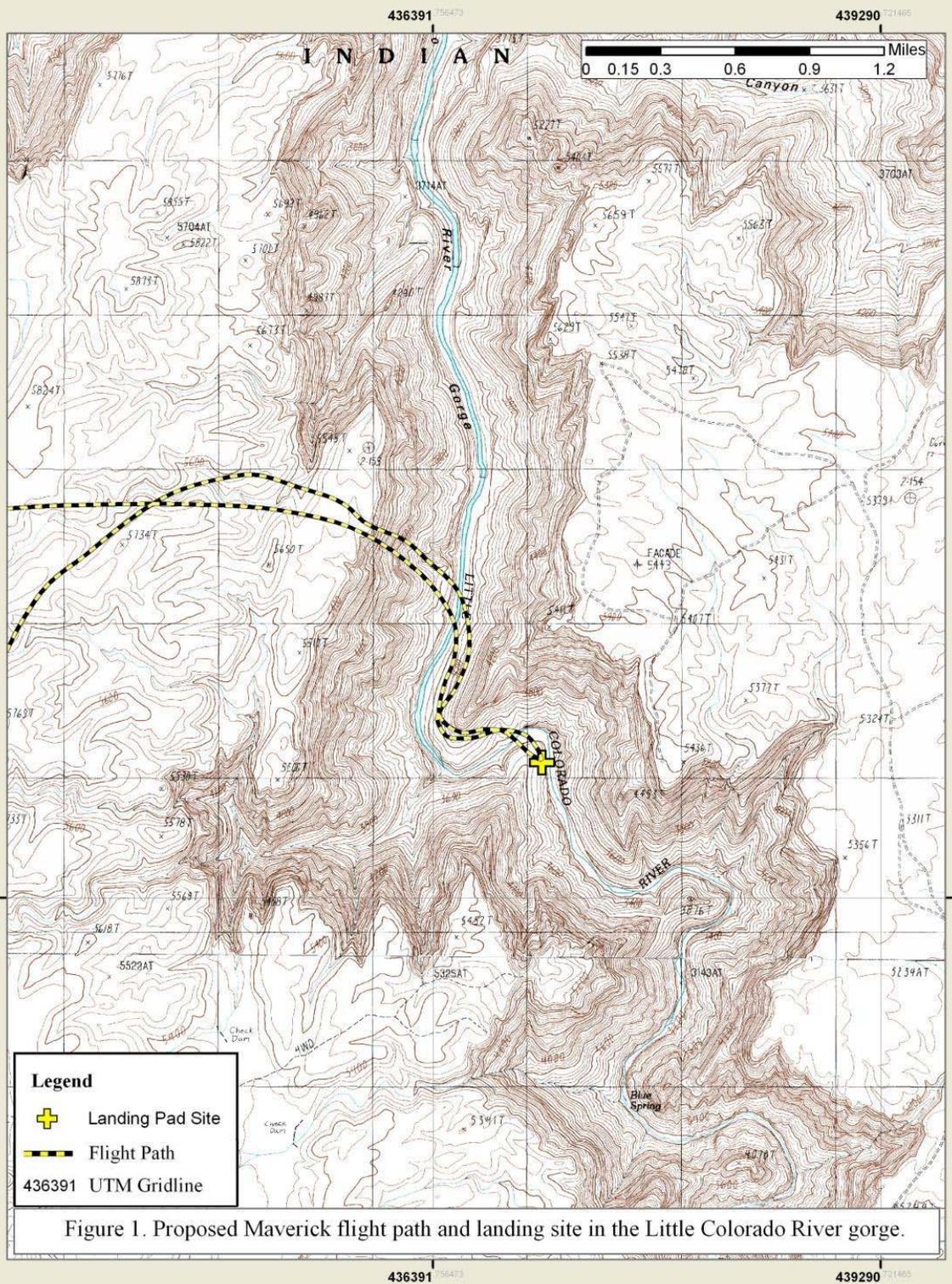
Passengers who are visiting the site will be informed of the nature of the area and a “leave no trace” rule will be enforced. Passengers will not be allowed to leave the immediate area of the landing site so there should be no impacts to the riparian habitat 350 feet below. Passengers will not be allowed to explore cliff areas adjacent to the landing site to ensure passenger safety and to minimize pedestrian impacts.

In addition to the commercial flights, the proposed action includes flights to survey for various species of concern. Eight flights will be scheduled between late March and early June to safely transport biologists to the landing to conduct surveys for MSO. Hiking routes in this region of the LCR pose safety risks to surveyors because of steep terrain and lack of water near the landing site. Surveyor transport flights will follow the same flight path as commercial flights. Surveyors will be picked up the following day. Initial surveys will be conducted for two years, then once every three years. Surveys for peregrine falcon (*Falco peregrinus*), golden eagle (*Aquila chrysaetos*) and bighorn sheep (*Ovis canadensis*) will involve rim-level flights once or twice a year.

Conservation Measures

- Maverick will use a Eurocopter EC 130 B4. This helicopter utilizes a quiet technology method to reduce rotor noise levels and has an operating noise level of 84.3 decibels at 105 meters (m) (345 feet).
- Maverick will follow a flight path and altitude to maximize distance between the helicopter and canyon walls during the MSO breeding season (March 1 through August 31). Flights will be at least 400 m (1320 feet) above the rim when the rim of the gorge is passed, descend to rim elevation after 200 m (660 feet), follow the center of the canyon, then start descent 250 m (820 feet) before landing.
- The flight path was changed to avoid a side canyon to the west that has a north-facing canyon wall that contains suitable habitat for the MSO.

The proposed flight path is the safest route to the proposed landing site (Brian Brusa, Maverick Helicopters, 10/10/2007, pers. comm.). The action area includes the flight path and landing site.



STATUS OF THE SPECIES

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 stand-replacing wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The Fish and Wildlife Service 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 MSO occurs in several areas of canyon country that do not have the typical canyon-associated vegetative components of broadleaved deciduous trees and/or topographic features of narrow vertical-walled cliffs (Schelz et al. 2004, Willey and Ward 2003). These areas include Canyonlands National Park and Grand Canyon National Park. MSOs in these areas occur in areas that are sheltered from direct sunlight by steep, often narrow canyons with little or no vegetative component. Roosting and nesting locations include crevices or caves and foraging is typically riparian or pinyon-juniper/desertscrub benches, either above or below roosting/nesting habitat.

The U.S. range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The primary administrator of lands supporting the MSO in the United States is the Forest Service. Most owls have been found within Forest Service Region 3 (including 11 National Forests in Arizona and New Mexico). Forest Service Regions 2 and 4 (including two National Forests in Colorado and three in Utah) support fewer owls. According to the Recovery Plan, 91 percent of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the Forest Service.

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. Livestock and wild ungulate grazing is prevalent throughout Region 3 National Forest lands and is thought to have a negative effect on the availability of grass cover for prey species. Recreation impacts are increasing on all forests, especially in meadow and riparian areas. There is anecdotal information and research that indicates that owls in heavily used recreation areas are much more erratic in their movement patterns and behavior. Fuels reduction treatments, though critical to reducing the risk of severe wildfire, can have short-term adverse effects to MSO through habitat

modification and disturbance. As the population grows, especially in Arizona, small communities within and adjacent to National Forest System lands are being developed. This trend may have detrimental effects to MSO by further fragmenting habitat and increasing disturbance during the breeding season. West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney et al. 2004). Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic, severe, stand-replacing wildfire is probably the greatest threat to MSO within the action area. As throughout the West, fire severity and size have been increasing within this geographic area.

A reliable estimate of the numbers of owls throughout its entire range is not currently available (USFWS 1995) and the quality and quantity of information regarding numbers of MSO vary by source. USFWS (1991) reported a total of 2,160 owls throughout the United States. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico. However, Ganey et al. (2000) estimates approximately $2,950 \pm 1,067$ (SE) MSOs in the Upper Gila Mountains RU alone. The FS Region 3 most recently reported a total of approximately 1,025 PACs established on NFS lands in Arizona and New Mexico (B. Barrera, pers. comm. June 18, 2007). The FS Region 3 data are the most current compiled information available to us; however, survey efforts in areas other than NFS lands have resulted in additional sites being located in all Recovery Units.

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 reproduction varied greatly over time, while survival varied little. The estimates of the population rate of change ($\Lambda = \text{Lamda}$) indicated that the Arizona population was stable (mean Λ from 1993 to 2000 = 0.995; 95 percent Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6 percent (mean Λ from 1993 to 2000 = 0.937; 95 percent Confidence Interval = 0.895, 0.979). The study concludes that spotted owl populations could experience great (>20 percent) 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 187 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 380 PACs. The form of this incidental take is almost entirely harm or harassment, rather than direct mortality. These consultations have primarily dealt with actions proposed by FS Region 3. However, in addition to actions proposed by FS Region 3, 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. Only two of these projects (release of site-specific owl location information and existing forest plans) have resulted in biological opinions that the proposed action would likely jeopardize the continued existence of the MSO. The jeopardy opinion issued for existing Forest Plans on November 25, 1997 was rendered moot as a non-jeopardy/no adverse modification BO was issued the same day.

In 1996, we issued a biological opinion on FS Region 3 adoption of the Recovery Plan recommendations through an amendment to their Land and Resource Management Plans (LRMPs). In this non-jeopardy biological opinion, we anticipated that approximately 151 PACs would be affected by activities that would result in incidental take of MSOs, with approximately 91 of those PACs located in the Upper Gila Mountains RU. In addition, on January 17, 2003, we completed a reinitiation of the 1996 Forest Plan Amendments biological opinion, which anticipated the additional incidental take of five MSO PACs in Region 3 due to the rate of implementation of the grazing standards and guidelines, for a total of 156 PACs. Consultation on individual actions under these biological opinions resulted in the harm and harassment of approximately 243 PACs on Region 3 NFS lands. FS Region 3 reinitiated consultation on the LRMPs on April 8, 2004. On June 10, 2005, the FWS issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, take is reasonably certain to occur to an additional 10 percent of the known PACs on NFS lands. We expect that continued operation under the plans will result in harm to 49 PACs and harassment to another 49 PACs. To date, consultation on individual actions under the amended Forest Plans, as accounted for under the June 10, 2005, biological opinion has resulted in the incidental take of owls associated with 19 PACs. Incidental take associated with Forest Service fire suppression actions, which was not included in the LRMP proposed action, has resulted in the incidental take of owls associated with 11 PACs.

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

The proposed landing site is located on a bench at an elevation of 3,520 feet within the LCR Gorge, which is a large canyon about 2,150 feet deep and almost a mile wide near the landing site. Vegetation is representative of the Mohave Desertscrub biotic community and includes Utah century plant (*Agave utahensis*), black brush (*Coleogyne ramosissima*), prickly pear (*Opuntia* spp.), barrel cactus (*Ferrocactus* sp.), galleta (*Hilaria rigida*), and hedgehog cactus

(*Echinocereus* sp.). The LCR, about 350 feet below the proposed landing site, is perennial and supports riparian and aquatic vegetation.

The action area has not been surveyed to protocol for the MSO, nor has any part of the LCR. The topography and vegetation of the LCR is similar to other occupied canyon habitat, and the LCR is contiguous with the Grand Canyon, where the MSO occurs. Key habitat components of MSO in canyon habitat include: vertical-walled rocky cliffs within complex watersheds that include tributary side canyons; rock walls with caves, ledges, and other areas that provide protected nest and roost sites, small isolated patches of riparian vegetation, and some type of water source. All of these components are well represented generally in the LCR Gorge and specifically in the action area (S. Hedwall, FWS, 8/26/05, pers. comm.). A model developed by Willey and Spotsky (2000) uses topographic relief, solar radiance, canyon morphology, and geological substrate to identify potentially suitable habitat. The Willey-Spotsky model indicated suitable habitat occurs throughout the gorge, including the action area and the area along the flight path immediately north of the landing site. Dave Willey, a member of the Mexican Spotted Owl Recovery Team, is a leading expert on MSO canyon habitat. The National Park Service (NPS) has used the Willey-Spotsky for identifying MSO habitat in the Grand Canyon with a high degree of success. The NPS has had positive survey results for MSO at over 90% of the areas the model predicted contains MSO habitat (C. Sipe, NPS, 12/10/07, pers. comm.). Based on the presence of all key components of suitable canyon habitat throughout the LCR gorge, which includes the action area, and the continuity of suitable habitat in the action area to occupied habitat in the Grand Canyon, we are reasonably certain that MSO occur in the action area.

B. FACTORS AFFECTING SPECIES ENVIRONMENT WITHIN THE ACTION AREA

Past and present activities that may affect the MSO in the action area are limited to occasional recreational hiking along the LCR and Federal research activities that also occur in and along the LCR about 350 feet below the landing site. These activities are minimal. Research activities in the vicinity of the landing site typically occur over a total of eight days and involve four personnel. Logistical support for research involves up to four helicopter flights per year to a site about 0.5 mile downriver of the proposed landing site. Some of these flights occur during the middle to late MSO breeding season and occur at intervals of weeks to a month. The total number of hikers over the course of a year is about 50 (D. Stone, FWS, 9/10/07, pers. comm.).

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, which 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.

The proposed action could directly affect the MSO through helicopter rotor noise. Owls are dependent on their sense of hearing to detect prey and have greater auditory sensitivity than other birds in general (Delaney et al. 1997). Low-level flights have the greatest potential to disturb MSO because they move slowly and are relatively noisy (Delaney et al. 1997). Maverick chose a model of helicopter that uses a quiet technology method to reduce rotor noise levels and made a number of modifications to the proposed flight path to minimize effects on the MSO associated with sound. These conservation measures are described in the Description of the Proposed Action section of this document.

There are a growing number of studies attempting to describe and quantify the impacts of non-lethal disturbance on the behavior and reproduction of wildlife, and MSO in particular. Delaney et al. (1997) reviewed literature on the response of owls and other birds to noise and concluded the following: 1) raptors are more susceptible to disturbance-caused nest abandonment early in the nesting season; 2) birds generally flush in response to disturbance when distances to the source are less than approximately 200 feet and when sound levels are in excess of 95 dBA; and 3) the tendency to flush from a nest declines with experience or habituation to the noise, although the startle response cannot be completely eliminated by habituation. Delaney et al. (1999) found that ground-based disturbances elicited a greater flush response than aerial disturbances. Our guidance is to limit potentially disturbing activities to areas greater than 0.25-mile from MSO nest sites during the breeding season (March 1 through August 31). This corresponds well with the Delaney et al. (1999) 0.25-mile threshold for alert responses to helicopter flights. In addition, Delaney et al. (1999) found that MSO did not flee from helicopters when caring for young at the nest, but fled readily during the post-fledgling period. This may be a result of optimal fleeing decisions that balance the cost-benefit of fleeing. Frid and Dill (2002) hypothesize that this may be explained using predator risk-disturbance theory and perhaps the cost of an adult MSO fleeing during the nestling period may be higher than during the post-fledgling period.

Owls have more sensitive hearing than other birds (Bowles 1995). If a noisy sound source arouses an animal, it has the potential to affect its metabolic rate by making it more active. Increased activity can, in turn, deplete energetic reserves (Bowles 1995). Noisy human activity can cause raptors to expand their home ranges, but often the birds return to normal use patterns when the humans are not present (Bowles 1995). Such expansions in home ranges could affect the fitness of the birds, and thus their ability to successfully reproduce and raise young. Species that are sensitive to the presence of people may be displaced permanently, which may be more detrimental to wildlife than recreation-induced habitat changes (Hammit and Cole 1987; Gutzwiller 1995; Knight and Cole 1995). If animals are denied access to areas that are essential for reproduction and survival, then that population will decline. Likewise, if animals are disturbed while performing essential behaviors such as foraging or breeding, that population will also likely decline (Knight and Cole 1995).

Swarthout and Steidl (2001) found that MSO modified their behavior (e.g., increased perch height) and/or flushed in response to recreationists (hikers). Based on their results, they recommended placing buffer zones (conservative buffer = 180 ft; less conservative buffer = 40 ft.) around known roosting sites to minimize impacts. In a study to assess the effects of hikers on the behavior of nesting MSO, Swarthout and Steidl (2003) noted that female MSO decreased the

amount of time they handled prey by 57% and decreased the amount of time they performed daytime maintenance activities by 30% while hikers were present. In addition, hikers caused both female and male owls to increase the frequency of contact vocalizations. Birds may respond to disturbance during the breeding season by abandoning their nests or young; by altering their behavior such that they are less attentive to the young, which increases the risk of the young being preyed upon or disrupting feeding patterns; or by exposing young to adverse environmental stress (Knight and Cole 1995). There is also evidence that disturbance during years of a diminished prey base can result in lost foraging time which, in turn, may cause some raptors to leave an area or not to breed at all (Knight and Cole 1995). Topographic screening between the area of disturbance and the bird's location creates a noise buffer and may assist in the reduction of noise disturbance (Knight and Cole 1995).

Based on the proposed flight path over modeled suitable nesting/roosting habitat immediately off the landing site, helicopters will pass within 200 feet of areas where MSO may be nesting or roosting resulting in a noise level of about 90 decibels (based on the operating noise level of 84.3 decibels at 400 feet), which is approaching the reported flush-response threshold for MSO. Canyon walls provide a mechanism for multiple reflections of sound (reverberations). Reverberations are likely to increase sound levels in some areas and may cause noise to persist. As the helicopter lands, thus becoming a ground-based disturbance, it would likely elicit a greater flush response than aerial disturbances. Additionally, helicopter noise may elicit an alert response up to 0.25-mile from the landing site. Six flights are scheduled per day, which will result in twelve passes over habitat. Flights will occur on a daily basis, weather permitting. Maverick estimates they will fly 345 days of the year (Brian Brusa, pers. comm.). Because MSO are particularly sensitive to disturbance early in the breeding season (March-April) this level of disturbance could result in an aborted nesting attempt or nest abandonment. Later in the breeding season, disturbance may cause disruption of normal behavioral patterns that could result in diminished productivity and/or a decrease in parental fitness.

Eight flights, using the same flight path as the commercial flights, will be scheduled between late March and early June to ferry biologists to the landing to conduct MSO surveys. This will result in an additional 16 helicopter passes over habitat during the breeding season, eight or more of which will occur early in the breeding season. The survey flights will occur for two years and then once every three years for an indefinite period of time. These flights will increase the level of disturbance during the early and middle parts of the breeding season. Helicopters will also be used for aerial surveys of other species of concern, which will consist of one or two rim-level flights per year. These flights may result in an alert or a similar type of response.

The FWS believes the results of the MSO surveys associated with these flights will be of mixed value. Positive results will be useful for re-evaluating alternative safe flight paths to minimize effects and for MSO management by the Navajo Nation. However, negative results will not give us the certainty to infer absence. This is due to the complications of surveying in large canyons. In these situations it is often not possible to establish calling points to achieve complete coverage, and canyon acoustics along with interference from other sound sources (e.g., the river, wind) make detecting MSO responses very difficult.

The portion of the flight path that will be within 0.25 mile of MSO habitat is about 1,000 feet long, which represents a maximum of 30 acres of suitable habitat. We assume this will intersect with no more than one breeding territory. However, we do not know the configuration of MSO territories in the action area or how MSO use the area, so this is a conservative estimate.

The effects of the action will last for an indefinite period, based on the NNPRD's tour service regulation, under which tour permits are issued for one year but are subject to renewal indefinitely. The BIA's business site lease is contingent on the NNPRD's tour permit.

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.

Future non-federal actions reasonably likely to occur are the continuation of recreational hiking along the LCR. Because recreational hiking involves small groups at infrequent intervals that pass no closer than 350 feet below the landing site, we anticipate these activities will result in minor effects.

Since the land within the action area is held in trust by the Federal government for the Navajo Nation, most activities that could potentially affect the MSO may have a Federal nexus and are therefore subject to section 7 consultation. No other tribal or private activities are known to occur.

CONCLUSION

After reviewing the current status of the MSO, the environmental baseline for the action area, the effects of the proposed tourism helicopter landings and the cumulative effects, it is the FWS's biological opinion that tourism helicopter landings, as proposed, are not likely to jeopardize the continued existence of the MSO.

We base this conclusion on the following:

- The proposed action will affect up to 30 acres of MSO habitat, which is a small fraction of MSO habitat in the Colorado Plateau Recovery Unit.
- The implementation of the proposed action is not expected to impede the survival or recovery of MSO in the Colorado Plateau Recovery Unit, and the conservation measures will provide additional protection.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

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 further 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.

The measures described below are non-discretionary, and must be undertaken by the BIA so that they become binding conditions of any grant or permit issued to Maverick, as appropriate, for the exemption in section 7(o)(2) to apply. The BIA has a continuing duty to regulate the activity covered by this incidental take statement. If the BIA (1) fails to assume and implement the terms and conditions or (2) fails to require the (applicant) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the BIA must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The FWS anticipates two individual MSO will be taken as a result of this proposed action. The incidental take is expected to be in the form of harassment. This level of take is based on the expected regular daily harassment resulting from the proposed action to one nesting pair of MSO.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

EFFECT OF THE TAKE

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

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the BIA must comply with the following reasonable and prudent measure and the implementing terms and conditions that outline required reporting/monitoring requirements. These terms and conditions are necessary and appropriate to minimize take of the MSO, and are non-discretionary.

1. The BIA shall monitor implementation of conservation measures that are part of the proposed action and report to the FWS the findings of that monitoring.
 - A. The BIA shall monitor project activities to ascertain if conservation measures intended to minimize take of individuals of the species through harassment are effective. This monitoring will consist of collecting and maintaining standard flight information as recorded by the permittee. This information shall include the number of flights per day, the flight path (including altitude), and reported flight path deviations with the reason for deviation.
 - B. The BIA shall submit annual monitoring reports to the Arizona Ecological Services Field Office by January 31 beginning in year 2008. These reports shall summarize tasks accomplished under the proposed conservation measures for the previous calendar year, the effectiveness of those conservation measures, and locations of listed species observed, and, if any are found dead, suspected cause of mortality. The report shall make recommendations for modifying or refining the conservation measures to enhance listed species protection or reduce needless hardship on the BIA and its permittees.

Review requirement: The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. The BIA must immediately provide an explanation of the causes of the taking and review with the AESO the need for possible modification of the reasonable and prudent measures.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS' 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 the BIA work with us to limit the number of flights to the proposed landing site during March and April, which are the courtship and nesting periods when MSO are more likely to abandon their nest, and then schedule a gradual increase in flight numbers during May to the scheduled maximum number as proposed.
2. We recommend that the BIA work with the NNDFWL, Maverick, and us to re-examine the proposed flight path based on survey results for the Mexican spotted owl, Tribally listed species and other species of concern to the Navajo Nation and, if appropriate, develop an alternative flight path(s).

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 outlined in your 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.

When the FWS enters formal consultation on a BIA-proposed action, we treat affected American Indian Tribes as license or permit applicants entitled to full participation in the consultation process. This includes, but is not limited to, invitation to meetings between FWS and the BIA, opportunities to provide pertinent scientific data and review the administrative record, and opportunities to review biological assessments and draft biological opinions. In keeping with our trust responsibilities to Tribes we are providing the Navajo Nation and Hopi Tribe with a copy of this biological opinion.

The FWS appreciates the BIA's efforts to identify and minimize effects to listed species from this project. For further information please contact John Nystedt (x104) or Brenda Smith (x101)

at (928) 226-0614 of our Flagstaff Suboffice. Please refer to the consultation number, 22410-2007-F-0352, in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Deputy Director, Office of the Environment and Energy, Federal Aviation Administration, Washington, D.C.
Superintendent, Grand Canyon National Park, Grand Canyon, AZ
Chairman, Hopi Tribe, Kykotsmovi, AZ (Attn: Arnold Taylor, Natural Resources Department)
President, Navajo Nation, Window Rock, AZ (Attn: Gloria Tom, Fish and Wildlife Department; Ray Russell, Parks and Recreation Department)
NEPA Coordinator, Environmental Services, Navajo Regional Office, Bureau of Indian Affairs, Gallup, NM (Attn: Harrilene Yazzie)
Environmental Specialist, Environmental Services, Western Regional Office, Bureau of Indian Affairs, Phoenix, AZ (Attn: Amy Heuslein)
Assistant Field Supervisor, Arizona Ecological Services, Fish and Wildlife Service, Flagstaff, AZ (Attn: Shaula Hedwall)
Tribal Liaison, Southwest Region, Fish and Wildlife Service, Albuquerque, NM (ARD-EA)

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