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In Reply Refer To:
AESO/SE
02-21-04-F-0474

March 18, 2005

Ms. Jeanine Derby, Forest Supervisor
Coronado National Forest
300 West Congress
Tucson, Arizona 85701

Dear Ms. Derby:

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, as amended (16 U.S.C. *et. seq.*, ESA). Your request was dated September 21, 2004, and received by us on September 21, 2004. At issue are impacts that may result to the threatened New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*) from the proposed implementation of the Peloncillo Programmatic Fire Management Plan on the Coronado National Forest (CNF). Critical habitat has been designated for the rattlesnake in the Animas Mountains, to the east of the project area in Hidalgo County, New Mexico. You have also determined that the project may affect, but is not likely to adversely affect, the jaguar (*Panthera onca*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), Mexican long-nosed bat (*Leptonycteris nivalis*), northern aplomado falcon (*Falco femoralis septentrionalis*), Mexican spotted owl (*Strix occidentalis lucida*) (MSO), and Chiricahua leopard frog (*Rana chiricahuensis*). Our concurrences are provided in Appendix A.

This biological opinion was prepared using information from the following sources: the September 9, 2004, biological assessment (BA) prepared by the CNF, supplemental information received on January 3, 2005, from the CNF, the December 15, 2004, Baker prescribed burn analysis and report, information in our files, and coordination among our staffs and other knowledgeable individuals, including field and office meetings. Literature cited in this biological opinion is not a complete bibliography of all literature available on the New Mexico ridge-nosed rattlesnake and the effects of prescribed fire, or other subjects addressed herein. A complete administrative record of this consultation is on file in this office.

CONSULTATION HISTORY

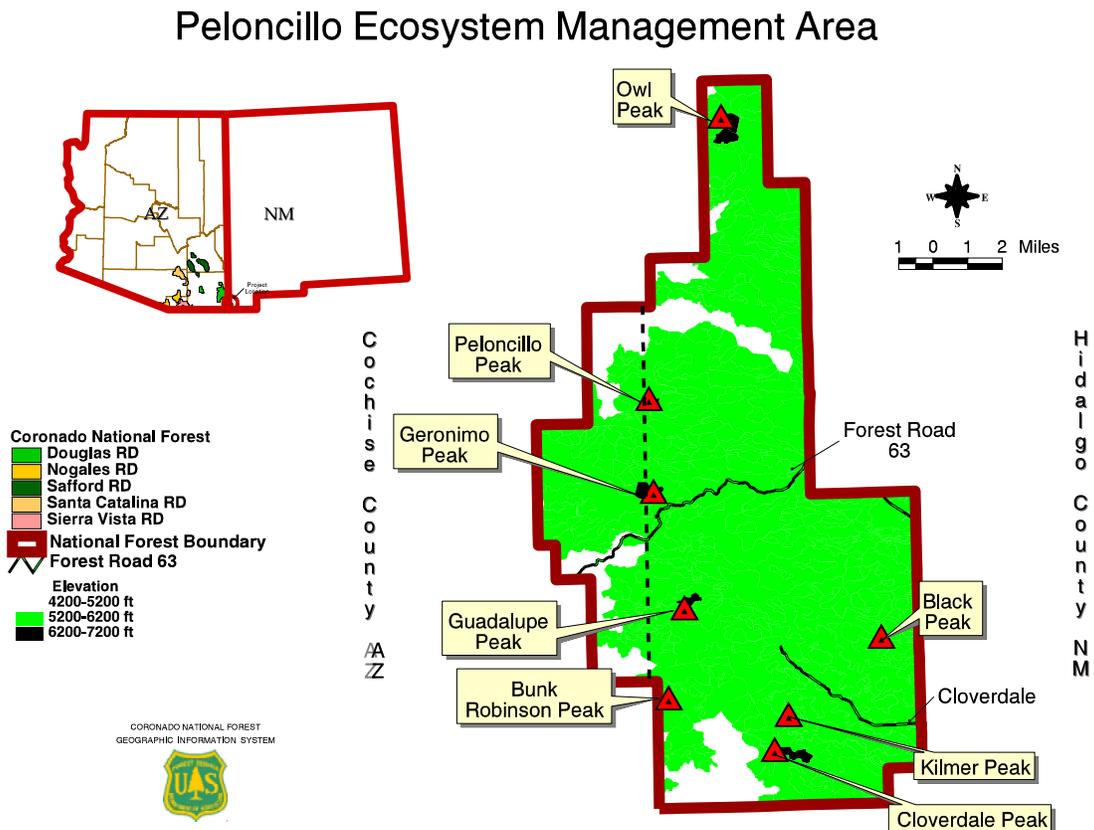
- November 16, 2004: We met with personnel from the CNF to discuss questions on the proposed action. We received a letter with clarifications and answers to our questions on January 6, 2005.

- February 17, 2005: We sent a draft BO to the Coronado National Forest.
- March 9, 2005: We received comments from Coronado Forest, and they requested that we finalize the BO.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The CNF is proposing to allow for the re-introduction of fire as a functioning component of the Peloncillo Ecosystem Management Area. This will be accomplished by effectively managing fire ignitions that may occur within the planning area over the next ten years. The Plan’s burning prescriptions will be reviewed on an annual basis and may be revised based on monitoring results. The Fire Management Plan describes how and where wildland fire use (WFO) and prescribed fire (PF), in conjunction with prescription guidelines, will occur in the Peloncillo Mountains. The project area encompasses the portion of the Peloncillo Mountains administered by the CNF in Hidalgo County, New Mexico and Cochise County, Arizona. (See Figure 1 below)



Fire-management strategies will range from aggressive suppression (the use of aerial retardant drops and construction of fire breaks) to no suppression (monitoring of natural wildfires). Specific response actions will depend on time of year, location of fire, direction of spread, current and expected fire intensity, the fire management areas (FMAs) affected, and the associated fire prescriptions.

For all wildland fires, a Wildland Fire Implementation Plan (WFIP) will be completed. There are three stages associated with the WFIP; only the most complex fires require the completion of all three stages.

Other areas to be managed under this plan include public lands adjacent to the Peloncillo Mountains administered by the Safford and Las Cruces Bureau of Land Management (BLM) offices. It will also cover all private land inholdings within the federally administered lands.

The goals of this fire management plan are to: 1) restore historical biodiversity through reduction of woody species density, 2) apply the principles of ecology-based multiple-use management, 3) restore historical habitat characteristics, 4) improve wildlife diversity, with emphasis on threatened, endangered, and sensitive species, 5) improve watershed stability and hydrologic function through improving herbaceous plant cover, and 6) create a mosaic of vegetation and fuels, allowing fire to resume a more natural role in ecosystem function with a fire return interval of a least 10-15 years.

The timing of ignitions is categorized by season. Cool-season ignitions will occur from October 1 to April 15; summer-season ignitions will occur from April 16 to July 14; and monsoon ignitions will occur from July 15 to September 30.

Table 1 displays the range of measurable conditions and predicted fire severity by vegetation type and ignition timing. This range of parameters and predicted fire effects will be used to trigger the “suppression/no suppression” decision process for the WFIP and the “go/no go” decision process for prescribed fire.

Table 1. Fire Management Prescription Ignition Season per Vegetative-Type Guidelines.

| <u>Ignition Season/Vegetation Type</u> | <u>Relative Humidity</u> | <u>Wind Speed</u> | <u>Ambient Temperature</u> | <u>Fire Effects Severity</u> |
|---|---------------------------------|--------------------------|-----------------------------------|-------------------------------------|
| <u>Cool Season Ignitions</u> | | | | |
| Pine/oak canyon bottoms | 18-50 | 5-15 | 40-65 | low |
| Riparian | 25-60 | 5-20 | 40-60 | low |
| Woodland | 15-40 | 3-30 | 45-70 | low |
| Grassland | 15-40 | 3-30 | 45-75 | moderate |
| <u>Summer Season Ignitions</u> | | | | |
| Pine/oak canyon bottoms | 25-50 | 5-15 | 60-85 | moderate |
| Riparian | 25-60 | 5-20 | 60-80 | moderate |
| Woodland | 15-40 | 3- 30 | 65-90 | moderate |
| Grassland | 10-40 | 3-30 | 65-95 | high |

Monsoon Season Ignitions

| | | | | |
|-------------------------|-------|------|-------|----------|
| Pine/oak canyon bottoms | 20-50 | 5-15 | 50-75 | low |
| Riparian | 30-60 | 5-20 | 50-70 | low |
| Woodland | 15-40 | 3-30 | 55-80 | low |
| Grassland | 15-40 | 3-30 | 55-85 | moderate |

The Peloncillo mountain range administered by the Coronado NF has been broken into eight Fire Management Areas (FMAs) based on vegetation, fuel loading, and threatened, endangered, and sensitive species’ wildlife habitat considerations. Table 2 displays the expected/predicted maximum fire effects thresholds by FMA. The thresholds in Table 2 are not projected goals, but are predictions of what each FMA can tolerate. Table 2 also quantifies the maximum acreage thresholds to be permitted relative to the prescription guidelines. For instance, in FMA VIII, a maximum of 75 percent of the area could burn at low intensity (ground fires), a maximum of 50 percent of the area could burn at moderate intensity (fire may reach into the canopy, but will not kill all trees in the area), and a maximum of 10 percent of the area could burn at high intensity (stand-replacing fires).

Table 2. Fire Management Area Maximum Fire Effects Thresholds

| Fire Management Area | Low (% Area) | Moderate (% Area) | High (% Area) |
|-----------------------------|---------------------|--------------------------|----------------------|
| I | 90 | 60 | 20 |
| II | 65 | 50 | 10 |
| III | 75 | 55 | 15 |
| IV | 60 | 40 | 5 |
| V | 70 | 50 | 10 |
| VI | 90 | 60 | 20 |
| VII | 75 | 50 | 10 |
| VIII | 75 | 50 | 10 |

Using the information in Tables 1 and 2, natural fire spread will continue as long as resource objectives are being met and the parameters in Tables 1 and 2 are not exceeded. There will be no annual upper limit or accumulated acreage target for the Plan. Areas burned in any given year could be the result of one or more ignitions and more than one FMA may be affected in any given year.

Many more details of the Plan are found in the September 2004 BA and appendices and are incorporated here by reference.

PROPOSED CONSERVATION MEASURES

You propose the following conservation measures to minimize the effects to listed species and their habitats. The following measures are documented in your September 2004 BA.

1. In FMAs II, IV, and V, the use of ground-disturbing fire suppression tactics will be weighed against the effects of allowing fire to burn through an area; the action that will result in reduced overall negative effects to habitat will be the method chosen.
2. In FMAs II, IV, V, and VII, backing-type fires will be used in riparian areas and some pine/oak stringers during periods with moderate to high fire intensity. Head or running fires in these sensitive habitats are not desirable and will be mitigated by firing plans and ignition patterns.
3. In FMAs II, IV, V, and VII, natural ignitions in riparian/pine-oak canyons that occur outside the cool season ignition period (October 1 to April 15) may be considered for suppression to reduce the likelihood of stand-replacing fire.
4. New Mexico ridge-nosed rattlesnake habitat may require specialized pre-treatment to avoid canopy loss before suppression actions (e.g., back burning) and wildfire are applied.
5. In FMAs II, IV, V (Upper Cloverdale Watershed), and VII, areas mapped as high-quality New Mexico ridge-nosed rattlesnake habitat will be treated with low-intensity fire that minimizes oak and/or pine canopy removal.
6. For all FMAs and adjoining BLM acreage, no prescribed fire ignitions will be allowed from July 15 through October 31 in delineated, high-quality (levels 3 and 4)* New Mexico ridge-nosed rattlesnake habitat. * (based on the 2001 Holycross and Smith New Mexico ridge-nosed rattlesnake habitat map)
7. In high-quality New Mexico ridge-nosed rattlesnakes habitat and riparian areas, night-time or cool season burning to reduce fire intensity may be necessary under the following conditions: 1) fires that burn in the months following a dry winter with less than 3 inches of rainfall, and 2) with live fuel moistures in the oak types less than 75 percent.
8. All personnel participating in fire suppression or prescribed fire will be briefed regarding New Mexico ridge-nosed rattlesnakes, their habitat requirements, these conservation measures, and the reasonable and prudent measures to minimize incidental take.
9. Fire intensities will be maintained at such a level that not more than ten percent of delineated New Mexico ridge-nosed rattlesnake habitat (level 3 and 4 habitat in FMAs IV and V (Upper Cloverdale Creek Watershed) is affected by high-intensity (stand-replacing) fire. A high-intensity fire is defined as one where 90-100 percent of the wooded canopy is burned off within any area greater than 5 acres (the minimum mapping unit).
10. Fire intensities will be maintained at such a level that no more than 20 percent of delineated New Mexico ridge-nosed rattlesnake habitat (level 3 and 4 habitat in all areas

outside of FMAs IV and V (Upper Cloverdale Creek Watershed)) is affected by high-intensity fire.

11. The ten- and twenty-percent thresholds of high-quality New Mexico ridge-nosed rattlesnake habitat that can be modified by high-intensity burns are applicable for the 10-year life of this Plan.
12. Annual fire effects monitoring in New Mexico ridge-nosed rattlesnake habitat will be conducted by you and members of the New Mexico ridge-nosed rattlesnake advisory team. The monitoring will consist of mapping the fire perimeter and delineating areas affected by low, moderate, and high intensity fire. Refer to the September 2004 BA for the definitions of medium and low intensity fire effects. Reports will be submitted to us for review. If monitoring indicates that the ten or twenty percent thresholds have been exceeded, you will reinstate section 7 consultation on this Plan.
13. In FMAs II, IV, VII, and VIII, field surveys for MSO will be conducted in potential or restricted habitat as defined by the MSO Recovery Plan.
14. For all FMAs, the integrity of riparian areas and canyon bottoms will be maintained via cool-season burns or low-intensity fire.
15. Ignitions which result in large-scale fires in the desert grassland type (FMAs 1 and VI) will be allowed to burn per the parameters established in the Stage 2 Analysis of the WFIP.
16. In all FMAs, within broadleaf woodland communities, fire intensities will be maintained at such a level that agave mortality will not exceed 20% for any given fire.
17. In FMAs VI and VIII, ignition patterns will avoid excessive smoke or human activities adjacent to occupied lesser long-nosed and Mexican long-nosed bat roosts.
18. In FMAs II, IV, V, and VI, prescribed fire ignitions will not be permitted within 0.25 mile of known perennial wetland habitats.

STATUS OF THE SPECIES

New Mexico ridge-nosed Rattlesnake

The New Mexico ridge-nosed rattlesnake is a small [maximum of 66 cm (2.19 ft) total length] montane species known only from the Animas Mountains, Hidalgo County, New Mexico; Peloncillo Mountains, Hidalgo County, and Cochise County, Arizona; and the Sierra San Luis, Sonora and Chihuahua, Mexico (Campbell et al. 1989, Painter 1995, Degenhardt *et al.* 1996, Keegan *et al.* 1999). *Crotalus willardi obscurus* is one of five subspecies of the ridge-nosed rattlesnake found from montane areas of southeastern Arizona and southwestern New Mexico,

south through the Sierra Madre to Zacatecas, Mexico. The first specimen of *C. w. obscurus* was collected by ornithologist Joe Marshall in the Sierra San Luis in 1952 (Greene 1997, Marshall 1957). The first collection from the Animas Mountains was in 1957 (Bogert and Degenhardt 1961). *C. w. obscurus* was first discovered in the Peloncillo Mountains in the form of an apparent hybrid *Crotalus willardi X lepidus* collected in 1987 (Campbell *et al.* 1989). The subspecies was first documented in the Arizona portion of the Peloncillo Mountains on October 24, 1996. *C. w. obscurus* may also occur in the Sierra Pulpita in Chihuahua (Barker 1991). Early collections were referred to as *C. w. silus*. Harris (1974) first used the name *C. w. obscurus* for specimens collected from the Animas Mountains. *C. w. obscurus* is closely related to *C. w. silus*, but the two can be distinguished based on a variety of scalation and coloration traits; the two are also distinct biochemically (Harris and Simmons 1976, Barker 1992).

Crotalus willardi obscurus is an inhabitant of insular woodlands that were more widespread and continuous during Pleistocene glaciation events (Maldonado-Koerdell 1964, Barker 1992, Van Devender 1995). A Pleistocene fossil *Crotalus willardi* from the San Pedro River Valley (Mead 1975) suggests ridge-nosed rattlesnakes tracked the distribution of the woodlands. When climates warmed and became drier, the ranges of this and other montane woodland reptiles, such as *Elgaria kingii*, *Eumeces callicephalus*, and *Phrynosoma douglasii*, presumably contracted with the woodland communities and are now isolated on mountain tops in the Madrean region. Isolation and subsequent evolution have contributed to subspecific differences within *Crotalus willardi* (Barker 1992).

Crotalus willardi obscurus has been found in steep, rocky canyons with intermittent streams or on talus slopes at elevations ranging from approximately 5,200-8,500 ft (Campbell *et al.* 1989, Barker 1991, Painter 1995, Degenhardt *et al.* 1996, A. Holycross, Arizona State University, pers. comm., 1997), and likely occurs as low as 5,000 ft in the Peloncillo Mountains (Holycross 1999a). The subspecies is found primarily in areas of Madrean evergreen woodland and Petran montane coniferous forest (Brown 1982, Pase and Brown 1982). Dominant vegetation characterizing the habitat of this subspecies includes several species of oak (*Quercus* spp.), Douglas-fir (*Pseudotsuga menziesii*), Apache pine (*Pinus engelmannii*), Chihuahua pine (*P. leiophylla* var. *chihuahuana*), Arizona madrone (*Arbutus arizonica*), manzanita (*Arctostaphylos pungens*), and grasses (Degenhardt 1972, Barker 1991, Degenhardt *et al.* 1996, Holycross 1999a). Access to rock shelters with moderate interstitial spaces is probably a key habitat component (Barker 1991); however, the subspecies also uses perennial bunch grasses for cover (Painter 1995). New Mexico ridge-nosed rattlesnakes apparently move less frequently, move relatively short distances, and show high fidelity to specific rock shelter sites as compared to other rattlesnake species (Barker 1991, Holycross 1995a and 1995b).

In the recovery plan for the species (U.S. Fish and Wildlife Service 1985), 250-500 adult snakes were estimated to inhabit the Animas Mountains. However, based on eight years of mark and recapture data in West Fork Canyon, Animas Mountains, Holycross (1999a) suggests that this is an underestimate. Encounter rates by experienced herpetologists suggest the densest populations may occur in the portions of the Sierra San Luis, with comparatively moderate and low densities in the Animas and Peloncillo mountains, respectively (Holycross 1998). However, densities

probably vary greatly within mountain ranges, and encounter rates may not be indicative of population densities.

Young snakes are live-born probably in late July through August (Holycross and Goldberg 2001). Mean litter size for 12 broods was 5.5 (Holycross and Goldberg 2001, Applegarth 1980). Samples of fecal remains and stomach contents from 246 New Mexico ridge-nosed rattlesnakes and a single literature record identified 95 identifiable prey. Juvenile snakes fed primarily on spiny lizards (*Sceloporus* sp.) and centipedes (*Scolopendra* spp.); adults preyed mostly on small mammals, spiny lizards, and passerine birds (Holycross *et al.* 2002). Based on more limited samples, other workers have come to similar conclusions regarding the diet of *C. w. obscurus* (Applegarth 1980, Barker 1991).

The New Mexico ridge-nosed rattlesnake was listed as a threatened species on August 4, 1978 (43 FR 34479). Critical habitat was also designated in Bear, Spring, and Indian canyons of the Animas Mountains from 6,048-8,320 ft. elevation. At the time of listing the subspecies was not known to occur in the Peloncillo Mountains. The subspecies occurs in three (or more) small, disjunct populations. As a result, its viability is sensitive to habitat destruction or modification, and collection. After publication of the Animas locality in 1961 (Bogert and Degenhardt 1961), the area was reportedly heavily collected. Harris and Simmons (1976) reported encountering 15 collectors from six states during August 1974 in the Animas Mountains. The U.S. Fish and Wildlife Service (1985) estimated that as many as 130 New Mexico ridge-nosed rattlesnakes may have been collected in the Animas Mountains between 1961 and 1974. Collection during this period may have significantly affected the Animas population (Harris and Simmons 1976, US Fish and Wildlife Service 1985).

The Animas Mountains are privately owned, access to habitat areas is now strictly controlled, and the *C. w. obscurus* population there is now protected from collection. However, most of the habitat of the ridge-nosed rattlesnake in the Peloncillo Mountains is managed by the Coronado National Forest and the Bureau of Land Management, and is open to public use; thus providing more of an opportunity for illegal collecting.

Fire can be a serious threat to the subspecies and its woodland habitat (Smith *et al.* 2001, Barker 1991). Catastrophic, stand-replacing fire occurred in the snake's habitat in the Animas Mountains in 1989 (Swetnam and Baisan 1996) and in the Sierra San Luis in 1989 (Barker 1991) and before 1952 (Marshall 1957). The 1997 Maverick prescribed fire in the Peloncillo Mountains destroyed woodlands at two of the 12 areas where *C. w. obscurus* had been observed in that mountain range. Overgrazing can adversely affect the subspecies (U.S. Fish and Wildlife Service 1985), and mining, development, and logging are potential threats (U.S. Fish and Wildlife Service 1985). Jim Jarchow (pers. comm. in Johnson [1983]) found that *C. w. willardi* suffers from a variety of diseases and pathogenic organisms; however, there is no evidence that ridge-nosed rattlesnake populations are threatened by disease (U.S. Fish and Wildlife Service 1985).

Further information on the taxonomy, range, distribution, biology, and threats to the New Mexico ridge-nosed rattlesnake can be found in Applegarth (1980), Barker (1992, 1991), Campbell *et al.* (1989), Degenhardt (1972), Degenhardt *et al.* (1996), Johnson (1983), Painter

(1995), Holycross (2000, 1999a, 1998, 1996, 1995a & b), Holycross and Douglas (1997), and Smith *et al.* 2001.

ENVIRONMENTAL BASELINE

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

Within the action area, the New Mexico ridge-nosed rattlesnake occurs at elevations above 5,000 feet primarily in canyons and mature woodlands in the Peloncillo Mountains in extreme southeastern Cochise County and southwestern Hidalgo County (Holycross 1999a). Holycross believes (pers. comm.) that at lower elevations the species probably occurs primarily in the bottoms of steep, heavily-wooded canyons. At higher elevations the species is found in woodlands, open woodlands, and chaparral on exposed slopes and plateaus. However, mature woodlands are apparently the essential core habitats for *C. w. obscurus* (Holycross 1999a). Holycross and Smith (2001) prepared a report and mapped *C. w. obscurus* habitat in the Peloncillo Mountains. Habitats probably or likely supporting a deme of *C. w. obscurus* are ranked as 3 and 4 (we equate this to reasonably certain species are present) and habitats very unlikely to support a deme of *C. w. obscurus* are ranked as 1 and 2. Potential habitats that burned destructively in the Maverick prescribed fire and no longer contain habitat characteristics were also delineated. A total of 275 habitat patches are identified; 232 are ranked as 3 and 4 habitat (approximately 5,000 acres), 13 polygons are ranked as 1 or 2 habitat (approximately 324 acres), and 30 polygons are identified that burned in the Maverick prescribed fire (approximately 560 acres). Habitats 3 and 4 are found in canyons and woodland patches from Skeleton Canyon on the north to the headwaters of Baker Canyon, near Little Bunk Robinson Spring, on the south. Few habitats rated as 1 and 2 are noted; these are limited to four patches between Geronimo Trail and Skeleton Canyon. The mapping effort provided a map of potential core habitat, based upon a comparison of the known occupied locations and the potential available habitat within the Peloncillo Mountains. The map does not cover all habitats used by *C. w. obscurus*, but only the canyon woodlands that are typically used during the active season.

The Peloncillo Mountains are relatively dry and low compared to the Chiricahua Mountains to the west and the Animas Mountains to the east. Hilly and mountainous terrain that is dissected by a few drainages characterizes the area. The vegetation of the lower slopes is represented by shrubs and grasses, with velvet mesquite (*Prosopis velutina*), juniper (*Juniperus* spp.), whitethorn acacia (*Acacia constricta*), and various perennial grasses. In the higher elevations, pinyon pine (*Pinus edulis*), Apache pine, Chihuahua pine, and oaks are more abundant. Riparian vegetation is found in Sycamore Canyon, Cottonwood Canyon, Cloverdale Creek, and at several other sites, and includes Arizona ash (*Fraxinus velutina*), Arizona sycamore (*Platanus racemosa* var. *wrightii*), cottonwood (*Populus fremontii*), mesquite, and netleaf hackberry (*Celtis reticulata*).

A total of 25 ridge-nosed rattlesnakes and the one hybrid snake have been found in the Peloncillo Mountains in 12 general areas from upper Miller Canyon on the south to South Skeleton Canyon on the north (Holycross 1999a). Three of the 25 localities are in Arizona, all from South Skeleton Canyon.

Areas in which ridge-nosed rattlesnakes have been found in the Peloncillo Mountains are characteristically more arid, lower, and less vegetated than typical habitats in the Animas Mountains of New Mexico. The snakes are often found on talus slopes in the Animas Mountains, but talus is apparently absent from the Peloncillo Mountains. The species is also much more difficult to find in the Peloncillo Mountains. An average of 33 person-days is needed to find one ridge-nosed rattlesnake in the Peloncillo Mountains. In the Animas Mountains the encounter rate is about one snake per four person-days of search time (Holycross, pers. comm., 1998.)

Activities that may affect the rattlesnake in the Peloncillo Mountains include prescribed fire, wildfire, poaching, cattle grazing, commercial beargrass (*Nolina microcarpa*) harvesting, and low to moderate levels of recreational activities such as birding, driving on or off roads, backpacking, camping, hunting, and nature study. The Peloncillo Mountains are much more accessible than the Animas or San Luis ranges, which makes illegal collection and other human activities potentially more important threats than elsewhere in the range of the snake. Also, the likely small size and possible disjunct nature of snake populations in the Peloncillo Mountains make these populations especially vulnerable to habitat degradation and collection.

A long history of cattle grazing coupled with active fire suppression, changing climate, and possibly other factors have favored a decline in fire frequency and subsequent conversion of grasslands to shrub lands in much of the Southwest (Bahre 1995, McPherson 1995, Van Devender 1995, Villanueva-Diaz and McPherson 1996, Curtin and Brown undated). Data are lacking to quantify recent patterns of vegetation community change in the Peloncillo Mountains, but anecdotal accounts suggest some areas, such as Cottonwood Basin, once supported more open vegetation communities, and fire, which probably was a regular occurrence in the range, is now a rare event. As a result, woody fuel loads have built up in the woodland habitats of the snake. These fuels, if ignited, could cause a crown fire and loss of woodland habitat. The 1997 Maverick prescribed fire burned 7,000-8,000 ac. from approximately Sycamore Canyon on the south to just north of Geronimo Trail. Eighteen woodland patches thought to be habitat of *C. w. obscurus* were consumed by stand-replacing fire, including two of the twelve general areas in which the species has been found in the Peloncillo Mountains. These two latter sites, Cottonwood and Whitmire canyons, had not burned recently and exhibited fuels buildup. As fire entered these areas, it became intense and stand-replacing. Miller Canyon, a site where several *C. w. obscurus* have been found, has burned at least once (1994) at low intensity in the 10 years prior to the Maverick fire, and during the Maverick fire, low intensity fire swept through the canyon removing ground fuels but not the woodland component. Of the nine snakes that were marked and followed before and after the fire, eight survived the Maverick fire. One snake (not a New Mexico ridge-nosed rattlesnake) died in an area exposed to high-intensity fire. The other snakes were exposed to low-intensity ground fire and survived, including three New Mexico

ridge-nosed rattlesnakes. It can be inferred from this study that since the ridge-nosed rattlesnake is a woodland species, hot fires that destroy woodlands are a serious threat to the species (Smith *et al.* 2001). However, it historically existed in fire-adapted montane community types that experienced frequent low-intensity fire. The species also must have coexisted with infrequent stand-replacing fires, which occurred in the Madrean sky islands on occasion (Swetnam and Baisan 1996). Most fires occurred historically between late April and late June (Danzer *et al.* 1997, Swetnam and Baisan 1996).

The 2003 Baker prescribed burn took place in the southeastern headwater areas of Sycamore Creek, the northwestern and northeastern headwater areas of Guadalupe Canyon, and the northeastern aspects of the Guadalupe Mountains. The CNF estimated that approximately 54 percent of the 47,528-acre project area burned to some degree (CNF 2004). The fire burned in FMAs V, VI, VII, and VIII. You calculated that approximately 105 acres (2 percent) of the approximately 5,000 acres of New Mexico ridge-nosed rattlesnake habitat ranked as 3 and 4 in the Peloncillo Mountains burned at a high intensity.

Although other factors likely played some role in the elimination of frequent ground fires, most authors agree that livestock grazing was probably the most important, at least before effective fire suppression began in the 1930's (Bahre 1991, 1995, Swetnam and Baisan 1996, Danzer *et al.* 1997). Livestock grazing removes herbaceous fine fuels that normally carry fire. Without fire, ladder fuels and woody material build up in woodlands, promoting stand-replacing fire. The effects of livestock grazing on fire spread in the Peloncillo Mountains could be seen after the Maverick prescribed fire. The fire burned through Cottonwood Basin on the Geronimo allotment but stopped at the boundary of the Maverick allotment, because grazing had removed enough of the grasses and other fine fuels to halt the fire. Fire-suppression efforts have been few in the Peloncillo Mountains; thus livestock grazing may be the most important factor in apparent altered fire regimes in this mountain range.

Prior to this opinion, we had issued five biological opinions on the New Mexico ridge-nosed rattlesnake. On April 20, 2000, we issued a biological opinion to the CNF for the Baker prescribed burn. On May 3, 1997, we issued a biological opinion to the CNF for the proposed Maverick prescribed fire. On September 26, 1997, we issued a biological opinion to the Bureau of Land Management on the Safford and Tucson Field Offices' grazing program. We issued a biological opinion dated December 19, 1997, to the Southwest Region of the Forest Service on the land and resource management plans for eleven national forests and grasslands. On October 25, 2002, we issued a biological opinion to the CNF on your grazing program, including 12 allotments in the Peloncillo Mountains. We determined in each of these five biological opinions that the proposed action was not likely to jeopardize the continued existence of the rattlesnake or result in destruction or adverse modification of critical habitat.

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 or 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.

Absence of fire in Madrean regions over the last 100 or more years has resulted in an accumulation of woody fuels. Forest structure in many of the Madrean ranges in Arizona now favors the occurrence of infrequent high-intensity, stand-replacing fires, in contrast to the frequent low-intensity ground fires that characterized these communities historically (Grissino-Mayer *et al.* 1994, Danzer *et al.* 1997, Swetnam and Baisan 1996). Reintroduction of fire is an option for restoring natural fire regimes that, in the long term, will enhance ecosystem stability and resilience and protect mature trees from catastrophic fire. However, the benefits of reintroducing fire must be weighed against the chance of prescribed fire escaping or burning out of prescription, and possibly destroying the woodlands that a fire management program aims to protect (Zwolinsky 1996). Kaib *et al.* (1996) recommended that before natural fire conditions can be restored, various fuel management options should be implemented to break the forest homogeneity, reduce catastrophic fire risk, and ultimately to restore montane systems to a more productive and sustainable state.

Although low-intensity surface fires were frequent in the sky islands, occasional high-intensity, sometimes stand-replacing fires occurred, as well. For instance, a large stand-replacing fire occurred in the Pinaleno Mountains in 1685 (Grissino-Mayer *et al.* 1994). The Animas Mountains have experienced a mixed fire history, with more frequent high-intensity fires than most sky island mountain ranges. In the Animas Mountains, surface fires occurred at about a 3- to 15-year interval, and higher intensity fires, including some stand-replacing fires, occurred at about 20- to 50-year intervals. High-intensity fire occurred in the Animas Mountains in 1753, 1805, 1825, 1857, 1879, and 1989. Some of the historical fires appeared to be on the order of about 500-1,230 acres in size. The 1989 fire was large; it burned more than 25,000 acres before suppression activities began (Swetnam and Baisan 1996). Swetnam and Baisan (1996) hypothesize that widespread, high-intensity fire occurred after fuel connectivity between woodland stands built up to threshold levels and that such fires typically occurred during moderate to severe drought periods. The 110-year hiatus in the occurrence of widespread fire from 1879 to 1989 was probably due to the combination of livestock grazing slowing fuels buildup and some (although limited) fire suppression efforts. *C. w. obscurus* has persisted in this mountain range despite the relatively high frequency of high-intensity fire. One of Holycross and Painter's study sites in the Animas Mountains (West Fork) is a relatively open site in which a stand-replacing fire occurred recently (probably in 1989).

Smith *et al.* (2001) reviewed fire effects in regard to reptiles. These effects can be complex, and may be beneficial, detrimental, or benign; they may involve direct mortality of individuals; and they may either improve or degrade habitat. Effects are often dependent on fire frequency and intensity. Direct effects to individual snakes are likely to occur during fire. For instance, Jeff Howland (U.S. Fish and Wildlife Service, Alamo, TX, pers. comm.) found a dead western diamondback rattlesnake that was apparently killed by a wildfire in the McDowell Mountains near Phoenix. Todd Esque (USGS, Biological Resources Division, St. George, Utah, pers.

comm.) reported finding a gopher snake (*Pituophis melanoleucus*) killed in a wildfire on Pusch Ridge, Santa Catalina Mountains, Pima County, and a tiger rattlesnake (*Crotalus tigris*) killed in the Rock Peak fire in the San Tan Mountains, Pinal County, Arizona. Mortality of snakes also occurred during a fire in Arizona chaparral (Simons 1989) and tall grass prairie in Nebraska (Erwin and Stasiak 1979). Barker (1991) observed a *C. w. obscurus* with minor burn marks on its dorsum after the 1989 fire in the Sierra San Luis. *C. w. obscurus* could be similarly killed or injured by burning or overheating during a prescribed fire in the Peloncillo Mountains.

Smith *et al.* (2001) examined direct effects to rattlesnakes during the Maverick prescribed fire in 1997. Three ridge-nosed rattlesnakes, one black-tailed rattlesnake (*Crotalus molossus*), and five rock rattlesnakes (*Crotalus lepidus*) were radio-telemetered and located before and after the fire. Fire passed directly over eight of the snakes and within 10 feet of the ninth. None were injured or killed with the exception of one rock rattlesnake (*Crotalus lepidus*), an apparent victim of the fire. The eight snakes that survived were exposed to low-intensity fire and heat, while the snake that died was in an area that burned very hot. A Sonoran whipsnake (*Masticophis bilineatus*) was also found dead, a possible victim of the fire (Smith *et al.* 2001).

Barker (1991) described an intense, stand-replacing wildfire in June-July 1989 in *C. w. obscurus* habitat in Study Canyon and its tributaries in the Sierra San Luis that incinerated woodlands and was hot enough to break rocks apart. Three *C. w. obscurus* were telemetered before the fire. One individual was not relocated after the fire. A second was found unharmed shortly after the fire (July 25), but was not found on a subsequent visit. The third telemetered snake was in Hibbitts Canyon that burned especially intense. The snake was found after the fire on July 25, but not on a subsequent visit in September. As noted above, another snake found in Hibbitts Canyon after the fire had minor burns on its dorsum. Barker (1991) reported that the fire was extremely hot and intense, possibly of a similar intensity to the escaped Maverick Prescribed Fire in Whitmire Canyon. Almost all vegetation was consumed, rock piles were broken apart or covered with silt deposited from eroding hillsides, and boulders were split open from the intense heat. The encounter rate of ridge-nosed rattlesnakes decreased after the fire, a routinely monitored snake equipped with a transmitter vanished after the fire, and one of six individuals captured after the fire exhibited burns on its dorsum. However, at least two telemetered ridge-nosed rattlesnakes survived the fire, including one in an area that apparently burned especially hot. Barker (1991) suggested that the snakes that survived the fire might have been more subject to predation as a result of reduced cover. In a burned area he observed a zone-tailed hawk (*Buteo albonotatus*) flying with a small snake in its talons that may have been a ridge-nosed rattlesnake.

C. w. obscurus are probably most likely to be directly affected if they are active on the surface or in a shelter of flammable materials during the fire. Retreats in rock piles and talus slopes probably protect snakes to some degree; however, intense fire may still result in mortality, as witnessed with the rock rattlesnake in the Maverick fire, which was found dead in a rock shelter (Smith *et al.* 2001). A woody debris pile in Miller Canyon has yielded three records of *C. w. obscurus* in the Peloncillo Mountains. This debris pile burned in the Maverick fire; any snakes using that debris pile probably perished.

C. w. obscurus will also occasionally use large bunch grasses, such as mountain muhly (*Muhlenbergia montana*), and leaf litter for cover (Holycross 1996). Snakes in these cover types would be susceptible to injury or mortality due to fire. Snakes are less likely to be affected during periods of inactivity, when they are more likely to be in rock shelters protected from intense fire. *C. w. obscurus* is relatively inactive from the end of November to the beginning of the monsoon season in late June or July (Holycross 1996).

C. w. obscurus may also be affected by fire indirectly through habitat degradation. As discussed in the Environmental Baseline, the Maverick fire destroyed woodland habitat where *C. w. obscurus* had been observed in Cottonwood and Whitmire canyons and in 16 other woodland patches thought to be habitat of the snake (Smith *et al.* 2001). In contrast, fire was of low intensity in Miller Canyon, a *C. w. obscurus* locality that had burned in the recent past. After the 1989 Sierra San Luis fire, Barker (1991) observed severe erosion that included incisement of canyon bottoms and covering with sediment of rock outcrops used by snakes. Two specimens of *C. w. obscurus* captured in July 1998, in Hibbitts Canyon, retreated to tunnels at the base of boulders after release. In September 1989, these boulders were buried in three feet of sand, mud, and rock that had eroded from nearby slopes exposed from the catastrophic fire in July 1998. The prey base of the rattlesnake would also likely be affected by fire. Small mammal densities and diversities are typically depressed for 1 to 3 years after a fire (Wright and Bailey 1982).

Marshall (1957) collected a *C. w. obscurus* in "Turkey" or Diablo Canyon of the Sierra San Luis (Barker 1991) in 1952, and described the canyon at that time as dominated by brush that had apparently colonized the canyon after a stand-replacing wildfire. When Barker visited the site in 1986, he described Diablo Canyon as "a large deep drainage with a broad flat bottom densely forested with mixed-coniferous forest dominated by large Arizona cypress, typical of riparian upper encinal." Despite more than 80 person days of effort, Barker and his colleagues were unable to locate any *C. w. obscurus* in Diablo Canyon. The vegetation community apparently had recovered between 1952 and 1986; however, based on Barker's collection effort, *C. w. obscurus* was likely scarce, if not absent. Due to this inability to find *C. w. obscurus* in Diablo Canyon, Barker moved his research location to nearby Study Canyon where *C. w. obscurus* encounter rates were much greater. Barker (1991) found that snakes were generally absent from rock piles in which interstitial spaces were filled with sediment. He noted that all potential rock piles examined in Diablo Canyon contained sediment. Whether or not a canyon has rock piles capable of supporting *C. w. obscurus* may depend, in part, on the length of time since the last fire and the erosion that took place at that time Barker (1991). This anecdotal construct of events by no means constitutes firm evidence that stand-replacing fire causes long-term changes in *C. w. obscurus* habitat and populations. However, together with the information collected by Smith *et al.* (2001) and Barker (1991), it suggests that caution is warranted in the application of fire across landscapes inhabited by this subspecies.

A long history of grazing and the absence of fire from the Peloncillo Mountains have resulted in a situation where, if fire occurs during warm seasons when fuels are dry, many woodland patches are likely to burn hot and rattlesnake habitat is likely to be lost. Current fire planning by the Coronado National Forest, Natural Resource Conservation Service, Bureau of Land Management, Malpai Borderlands Group, and others is targeting mid- to high-elevation areas of

the Peloncillo Mountains, including habitats of the ridge-nosed rattlesnake. To change fire regimes back to a more natural pattern of frequent ground fires without destroying woodland habitats will require careful application of cool-season or low-intensity fire in woodlands in a way that consumes ladder fuels and understory vegetation without creating a crown fire. However, any attempt to reestablish a natural fire regime in the Peloncillo Mountains will depend upon properly managed livestock grazing so that sufficient fine fuels remain on the landscape to carry a fire.

The proposed action allows for some high-intensity fires in high-quality (3 and 4) New Mexico ridge-nosed rattlesnake habitat. The CNF predicts that in the FMAs that contain the highest amount of high-quality New Mexico ridge-nosed rattlesnake habitat (FMAs IV and V), no more than 5-10 percent of the area will be subject to high-intensity fire in any given fire event (Table 2). In addition, you are proposing that no more than 10 percent of high-quality New Mexico ridge-nosed rattlesnake habitat in FMAs IV and V will be affected by high-intensity fire over the 10-year life of this Plan. You are also proposing that no more than 20 percent of the remaining high-quality New Mexico ridge-nosed rattlesnake habitat that occurs outside of these FMAs will be affected by high-intensity fire over the life of this Plan. While this offers considerable protection for the habitat that is reasonably certain to be occupied by New Mexico ridge-nosed rattlesnakes, it also allows for some modification of habitat and possible loss of habitat and New Mexico ridge-nosed rattlesnakes. You have described methods to reduce fine fuels within the pine-oak component without compromising the canopy cover in those areas. While you cannot guarantee that all snake habitat will be protected from stand replacing fire, you are taking many precautions to reduce the risk of high-intensity fire in these sensitive areas. The proposed action does not allow for prescribed burning at the time that the snakes are active (July 15-October 31). The proposed action calls for the management of wildland and prescribed fire to create a more natural fire regime that results in a mosaic of habitat types over time. Under this scenario, there may be short-term, adverse effects to New Mexico ridge-nosed rattlesnakes and their habitat, but the long-term benefits to the overall ecosystem should benefit this species. In the end, protection of habitat without reduction of fuels may prove to be more detrimental to the New Mexico ridge-nosed rattlesnake, as the effects from high-intensity natural fires will remove habitat, possibly in the long-term.

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 majority of occupied and potential habitat for the ridge-nosed rattlesnake in the Peloncillo Mountains is administered the CNF. Smaller areas are privately owned or administered by the Bureau of Land Management. Thus, most activities anticipated in the project area would be Federal actions subject to consultation and are not considered cumulative. Livestock grazing and other ranching activities occur on the limited private lands in the Peloncillo Mountains above 5,000 ft. There is increased traffic in the area from undocumented aliens and drug smugglers

along the Mexican border. These activities may result in localized habitat degradation. They may also increase the risk of fire. Regardless of land ownership, the threat of illegal collection and unauthorized off-road vehicle use may occur.

Conclusion

After reviewing the current status of the New Mexico ridge-nosed rattlesnake, the environmental baseline for the action area, and the anticipated effects of the proposed Peloncillo Programmatic Fire Plan, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the New Mexico ridge-nosed rattlesnake. No critical habitat has been designated for this species in the Peloncillo Mountains, thus none will be affected. In making our determination we considered the following:

- The population of New Mexico ridge-nosed rattlesnake in the Peloncillos seems to be smaller than in the Animas Mountains in New Mexico and in northwestern Chihuahua, Mexico. New Mexico ridge-nosed rattlesnake habitat in the Peloncillos occurs at lower elevations, is drier, and the vegetation community is more open than in other areas. Only 25 New Mexico ridge-nosed rattlesnakes have been found in the project area, even though there has been considerable time devoted to search efforts. Habitat for the New Mexico ridge-nosed rattlesnake has been mapped based on the best information we presently have. Areas that are known to be occupied and that have the highest potential for occupancy have been delineated. Areas within the project area have experienced fires of varying intensities. Under the proposed action, some high-quality New Mexico ridge-nosed rattlesnake habitat may be subject to severe fire effects, but the amount of habitat predicted to be affected is small compared to what will be protected. Observations suggest that the snakes can survive fires of low to moderate intensity and that New Mexico ridge-nosed rattlesnake habitat may best be preserved in the long-term by allowing fire to resume its natural role in the Peloncillo Mountain ecosystem.
- Cumulative effects considered in this analysis are illegal collection, unauthorized off-road vehicle use, and increased human traffic associated with the Mexican border. These activities will most likely continue into the foreseeable future.
- The proposed conservation measures provide for considerable reduction in adverse effects associated with the proposed action. There is a maximum threshold for the amount of high quality New Mexico ridge-nosed rattlesnake habitat that will be affected over the 10-year life of the Plan. The fire prescriptions proposed also limit the amount of habitat that will be subjected to severe fire effects. There are several techniques that you will use to reduce the intensity of fire in sensitive habitats (pine/oak stringers and riparian areas). The implementation of the 18 proposed conservation measures are crucial for the conservation of the species in the Peloncillo Mountains.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation 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. “Harm” is defined (50 CFR Sect. 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 Sect. 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 behavioral 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 sections 7(b)(4) and 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 Anticipated

We anticipate the following form of take as a result of the proposed action: harm to New Mexico ridge-nosed rattlesnakes through the implementation of the Peloncillo Programmatic Fire Management Plan. Objectives of the plan consist of reducing catastrophic fires, developing mosaic habitat patterns, and promoting natural ecological processes (Forest Service 2004). Activities associated with the implementation of this plan may kill or injure ridge-nosed rattlesnakes through the use of heavy equipment and fire effects from back burns and prescribed burns. These activities may also contribute to an increase in snake predation due to loss of ground cover, potentially reduce prey species numbers, and alter suitable habitat so as to significantly disrupt normal behavior patterns including, but not limited to, breeding, feeding, or sheltering.

We anticipate that incidental take of New Mexico ridge-nosed rattlesnakes will be difficult to detect for the following reasons: the species has small body size and cryptic coloration, and several actions (e.g., prescribed fires) will take place on such a large scale that detection of a dead or injured individual will be extremely difficult. The level of anticipated take is quantified separately for each action. Take is quantified by the number of individuals for actions where it is relatively easy to detect individuals, but potential core habitat ranked by Holycross and Smith (2001) as “habitats probably or likely supporting a deme of *C. w. obscurus*” (habitats 3 and 4) is used as a surrogate when projects are on a scale where detection of individuals is extremely unlikely.

New Mexico ridge-nosed Rattlesnake

We anticipate the following incidental take for the New Mexico ridge-nosed rattlesnake:

1. One New Mexico ridge-nosed rattlesnake will be killed or injured; or
2. Up to 10% of delineated core habitat ranked as 3 or 4 (Holycross and Smith

2001), in FMAs IV and V (Upper Cloverdale Creek Watershed) will be affected by high-intensity fire during the life of the Plan. A high-canopy consuming fire is one where 90% to 100% of the wooded overstory canopy is burned off; or

3. Up to 20% of delineated core habitat ranked as 3 or 4 (Holycross and Smith 2001) in the remaining FMAs will be affected by high-intensity fire during the life of this Plan.

EFFECT OF THE TAKE

In this biological opinion, we find that this level of anticipated take is not likely to jeopardize the continued existence of the New Mexico ridge-nosed rattlesnake.

REASONABLE AND PRUDENT MEASURES

We believe that all of the proposed conservation measures adequately minimize the incidental take anticipated in this biological opinion, and we have no further reasonable and prudent measures or terms and conditions.

DISPOSITION OF DEAD, INJURED, OR SICK NEW MEXICO RIDGE-NOSED RATTLESNAKE

Upon locating a dead, injured, or sick New Mexico ridge-nosed rattlesnake, initial notification must be made to the Service's Law Enforcement Office, 2450 West Broadway Road # 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, 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 biological material in the best possible state. If possible, the remains of intact ridge-nosed rattlesnakes, shall be placed with educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above shall be obtained and the carcass left in place.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution prior to implementation of the action. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should any treated rattlesnake survive, the Service should be contacted regarding the final disposition of the animal.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of listed species.

Conservation recommendations are discretionary agency activities to minimize or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information on listed species. The recommendations provided here do not necessarily represent complete fulfillment of the agency's section 2(c) or 7(a)(1) responsibilities for the New Mexico ridge-nosed rattlesnake or Lesser long-nosed bat. In furtherance of the purposes of the Act, we recommend implementing the following actions:

1. Participate in the revision and implementation of the recovery plan for this species.
2. Initiate studies to determine the effects of chemical fire retardants on the montane rattlesnakes and their habitat.
3. Provide training for all employees and contractors on identification of New Mexico ridge-nosed rattlesnakes, taking of photo vouchers, and recording locations.
4. You have stated that cool-season fires may have greater soil erosion associated with them as compared to spring fires. Investigate the relationship of soil erosion and timing of fires to quantify this observation.
5. Monitor the long-term response of vegetation within the class 3 and 4 New Mexico ridge-nosed rattlesnake habitat to high-intensity burns. This will assist in our analysis of short-term adverse impacts to the New Mexico ridge-nosed rattlesnake versus the long-term beneficial effects of this action.
6. Continue to coordinate and support, to the greatest extent possible, the monitoring of the status of the *Leptonycteris* roost that is known to exist in the Peloncillo Mountains. Please provide us with any information received about that roost.

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitat, we request notification of the implementation of any conservation recommendations.

CLOSING STATEMENT

This concludes formal consultation on the Peloncillo Programmatic Fire Management Plan, affecting lands managed by you and the BLM in Arizona and New Mexico. 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.

We appreciate your cooperation and commitment and that of the Malpai Borderlands Group to develop sound conservation strategies on behalf of endangered species.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM
Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
Doug Hardy, District Ranger, Douglas Ranger District, Douglas, AZ
Assistant Field Supervisor, Fish and Wildlife, Tucson, AZ

State Director, Bureau of Land Management, Phoenix, AZ
Natural Resource Conservation Service, Douglas, AZ (Attn: Don Decker)
Director, Arizona Game and Fish Department, Phoenix, AZ (Attn: J. Scott)
Director, New Mexico Fish and Game Department, Santa Fe, NM (Attn:C. Painter)
Peter Warren, Grassland Conservation Program Manager, The Nature Conservancy, Tucson,
AZ
Bill MacDonald, Executive Director, Malpai Borderlands Group

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Appendix A

CONCURRENCES

In your September 21, 2004, request for formal consultation, you concluded that the proposed Peloncillo Programmatic Fire Plan is not likely to adversely affect the jaguar, lesser long-nosed bat, Mexican long-nosed bat, Northern aplomado falcon, Mexican spotted owl, and Chiricahua leopard frog. We concur with these findings based on the following reasons:

Jaguar (*Panthera onca*):

- The proposed action calls for low-intensity fires in riparian areas, which may serve as movement corridors for the jaguar. The canopy cover will not be removed through the proposed action, and the prescribed fire should have little effect on the use of these areas by jaguars.
- The proposed action does not involve habitat type conversion or the fragmentation or blocking of movement corridors that jaguars may use between Mexico and the United States.
- The prey base for the jaguar (white-tailed and mule deer) may be enhanced, in the short term, by the prescribed fire. Long-term changes in vegetation structure may also enhance the prey base.

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*):

- There are no known maternity roosts in the Peloncillos.
- The proposed action calls for low to moderate fire intensities in the FMAs that contain potential foraging habitat for the lesser long-nosed bat.
- Within broadleaf woodland communities, fire intensities will be maintained at such a level where agave mortality does not exceed 20%.
- Ignition patterns of the prescribed burn will avoid excessive concentrations of smoke or human activities adjacent to occupied bat roosts.
- Research in areas that burned in the Maverick fire concluded that nectar production in agaves was not affected by fire (Slauson 1998), so the proposed action will not significantly affect the food resource for the bat.

Mexican long-nosed bat (*Leptonycteris nivalis*):

- This species has not been documented in the Peloncillo Mountains.

- Individuals have been found in the Animas Mountains, within 40 km (25 air miles) of the Peloncillos. This is within foraging range for the species. The food resource, agaves, is the same as for the lesser long-nosed bat.
- The proposed action calls for low to moderate fire intensities in the FMAs that contain potential foraging habitat for the Mexican long-nosed bat.
- Within broadleaf woodland communities, fire intensities will be maintained at such a level where agave mortality does not exceed 20%.
- Ignition patterns of the prescribed burn will avoid excessive concentrations of smoke or human activities adjacent to occupied bat roosts.
- Research in areas that burned in the Maverick fire concluded that nectar production in agaves was not affected by fire (Slauson 1998), so the proposed action will not significantly affect the food resource for the bat

Northern aplomado falcon (*Falco femoralis septentrionalis*):

- There have been no reported sightings of this species in the Peloncillos (surveys done in 1993-2000).
- Johnson's (1994) Peregrine Falcon Breeding Activity Restrictions/Impact Assessment will be utilized as a guide when developing appropriate management strategies.
- No prescribed fire ignitions nor wildfire suppression activities will occur within 1.0 mile of any known active falcon eyrie during the breeding season (February 15 through June 30) unless preempted by firefighter or public safety concerns.
- The majority of potential habitat in the proposed project area is currently not suitable due to increased density of mesquite trees.
- The proposed action targets these areas for reduced densities of mesquite and should improve habitat that is currently unsuitable.

Mexican spotted owl (*Strix occidentalis lucida*):

- Surveys have been conducted in suitable habitat, and no owls have been located.
- Field surveys will be conducted within potential owl protected or restricted habitat as defined by the Mexican Spotted Owl recovery Plan.

- The proposed action is not expected to significantly alter what suitable habitat is present in the action area because of the provisions to not burn pine-oak vegetation with high intensity fire.
- The proposed action will reduce the threat of catastrophic wildfire in suitable habitat by removing accumulated ground fuels, which can create ladder fuels that could lead to the destruction of large trees
- Fire may increase the prey base for the owl over the long-term by increasing grass cover in areas that burn.

Chiricahua leopard frog (*Rana chiricahuensis*):

- Surveys for frogs and potential habitat have been conducted in the project area. No frogs have been located and only one site, Maverick Spring, was identified as potentially suitable habitat.
- Prescribed fire ignitions will not be permitted within 0.25 mile of known perennial wetland habitats.