



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
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SUMMARY
BIOLOGICAL OPINION ON THE EFFECTS TO
KUENZLER HEDGEHOG CACTUS FROM THE PROPOSAL TO ISSUE A 10-YEAR
GRAZING PERMIT ON THE EAGLE CREEK ALLOTMENT, SMOKEY BEAR RANGER
DISTRICT, LINCOLN NATIONAL FOREST, NEW MEXICO

Cons. # 22420-2007-F-0074

Date of the biological opinion: August 25, 2008

Action agency: Lincoln National Forest

Project: This consultation concerns the effects of issuance of a 10-year grazing permit on the Eagle Creek Allotment on the Kuenzler hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*) (cactus). The allotment is located in the Smokey Bear Ranger District in the Lincoln National Forest (Forest) of Lincoln County, New Mexico.

Species affected: Kuenzler hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*).

Biological Opinion: The proposed action is not likely to jeopardize the Kuenzler's hedgehog cactus.

Incidental take statement: Not applicable to plants.

Conservation Recommendations: Implementation of conservation recommendations is discretionary. Seven conservation recommendations are provided.



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August 25, 2008

Cons. # 22420-2007-F-0074

Jacque Buchanan, Forest Supervisor
Lincoln National Forest
1101 New York Avenue
Alamogordo, New Mexico 88310-6992

Dear Ms. Buchanan:

This document transmits the U. S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed U.S. Department of Agriculture, Lincoln National Forest (Forest Service) Eagle Creek Allotment and the issuance of a 10-year term grazing permit and effects on the endangered Kuenzler's hedgehog cactus (cactus) (*Echinocereus fendleri* var. *kuenzleri*). You have determined that the proposed action "may affect, is likely to adversely affect" the cactus. We received your letter on March 7, 2007, requesting formal consultation in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The "Biological Assessment (BA) for the Eagle Creek Allotment, Lincoln National Forest, Smokey Bear Ranger District, Lincoln County, New Mexico," dated February 23, 2007, evaluates anticipated effects on the cactus and its habitat resulting from the proposed action. The proposed action is to issue a 10-year grazing permit for 125 to 258 head of livestock yearlong to Eagle Creek Land and Cattle Company.

This Biological Opinion (BO) is based on information provided in the BA, *Framework for Streamlining Informal Consultation for Livestock Grazing, UDSA Forest Service, Southwestern Region* (Guidance Criteria) dated March 15, 2005, other information available to the Service, and telephone conversations with your staff. A complete administrative record of this consultation is on file in the Service's New Mexico Ecological Services Field Office.

Consultation History

Consultation began on March 7, 2007, when the Forest submitted their BA requesting formal consultation with the Service. The request for formal consultation was acknowledged by the Service in a letter dated June 26, 2007. Comments were received on the draft BO on August 19, 2008.

BIOLOGICAL OPINION

I. Description of the proposed action

Action Area

The action area for the proposed project includes all areas directly or indirectly affected by the Federal action. The action area for the proposed project is defined as the Eagle Creek Allotment.

Proposed Action

The Forest Service is proposing to authorize grazing within the Eagle Creek Allotment, approximately 16,865 acres (ac). The yearlong permit will authorize from 125 to 258 head of cattle, depending on climatic trends (variable numbers). Lower stocking rates will be used during years of low forage production and higher stocking rates will be used during years of increased forage production. Exact stocking rates will be based primarily on precipitation levels and forage production, with distribution of water sources, permittee management practices, and future watershed restoration projects also considered. A deferred rotation system will be used involving 13 pastures, with a goal of managing resources at low levels of use to preserve soil productivity. Pastures will be evaluated each season and a rotation will be determined at that time. Any pasture showing signs of low production will be rested or deferred from grazing until adequate production is obtained. Pastures will be managed for levels of 30 to 40 percent (average) or less utilization in key areas. Utilization levels in pastures with the cactus also will be set at no more than 40 percent. Monitoring will occur within key areas and in habitat occupied by the cactus to ensure forage use limits of 40 percent are not exceeded. Use level assessment will be based on key species, identified as blue grama (*Bouteloua gracilis*), wolftail (*Lycurus pheoides*), sideoats grama (*Bouteloua curtipendula*), Arizona fescue (*Festuca arizonica*), and mountain muhly (*Muhlenbergia montana*). Existing structural range improvements would be maintained to effectively serve their intended purpose (including 41 miles of interior fencing, 17.6 miles of pipeline, 5 wells, 18 troughs, and 19 dirt stock tanks). The construction of 2, 1 ac exclosures around 2 small populations, totaling 8 Kuenzler's cacti individuals, will occur within one year of the decision of this BO to protect these 2 small cacti populations from trampling by livestock (L. Cordova, pers. comm., 2007a). The goal of this management proposal is for forage production, vegetative species diversity, soil productivity, and watershed conditions to move toward or be maintained at the highest range condition throughout the allotment.

For the Eagle Creek Allotment, the total of 16,865 ac is designated as full capacity, with 5,734 ac (34 percent) as potential grazing capacity, and 11,131 ac (66 percent) as limited capacity due to steep slopes, high juniper density, and rocky, shallow soils. At present, 66 percent of the allotment has impaired soil conditions, which concentrates grazing by ungulates into the remaining 34 percent of the total acreage. The allotment is currently being managed under levels C and D (low to moderate, with pasture deferment and improvement of livestock distribution) as described in the Lincoln National Forest Plan approved in 1986, with supplements approved in

June of 1996. The current permit authorizes 228 head of cattle to be grazed from March 1 to February 28 each year. In 1990, a 228 ac cactus enclosure was established within the Eagle Creek Allotment near Fort Stanton, which has excluded livestock impacts from this area. A complete inventory of all range improvements within the allotment was conducted with the permittee in the spring of 2005. The range improvements (fence, water structures, cattle-guards, gates) were all functioning and in satisfactory condition.

II. Status of the species (range-wide)

Species description, life history, and population dynamics

Horst Kuenzler collected the type specimen of the cactus in 1961. In 1976, the cactus was identified as *E. kuenzleri* (USDI-U.S. Fish and Wildlife Service 1985). Prior to 1976, the cactus was known as *E. pseudohempelii*, and was included in the 1975 plant notice of review (40 FR 27824) as *E. hempelii*. When *E. kuenzleri* was listed as endangered in 1979, many experts of the taxon believed it was a subspecies or variant of *E. fendleri*, and not a separate species. With Dr. Lyman Benson's 1982 publication, The Cacti of the United States and Canada, the name *E. fendleri* var. *kuenzleri* became accepted and was changed in the July 1984 list of Endangered and Threatened Wildlife and Plants (Benson 1982, USDI-U.S. Fish and Wildlife Service 1985).

The cactus is perennial and reproduction is sexual (Blue Earth Ecological Consultants, Inc. 2002). There is no evidence of reproduction by bulbils, tubers, stolons or rhizomes and the cactus does not appear to reproduce by vegetative fragmentation (Blue Earth Ecological Consultants, Inc. 2002). Pollination is primarily by bees, although butterflies and beetles may also pollinate flowers. Greenhouse studies at Mesa Gardens in Belen indicated the cactus is an obligate outcrosser and is incapable of self-fertilization.

The cactus may be single-stemmed or branched. The stems are solitary or in a cluster, more or less conical, about 6 inches (15 centimeters [cm]) tall and 4 inches (in) (10 cm) wide with 9 to 12 prominent ribs with tubercles from which spine clusters originate (USDI-U.S. Fish and Wildlife Service 1985). The spines are angular, bulbous, and fused at the base. Central spines are usually absent, while radial spines vary from two to six and are variable in size up to 1 in (2.5 cm) long (USDI-U.S. Fish and Wildlife Service 1985).

Budding occurs in April and flowering normally occurs during the latter half of May in to early June. Warm years can initiate earlier flowering and cool springs may delay flowering until early June (Blue Earth Ecological Consultants, Inc. 2002). Flowers are large for the size of the plant, up to 4 in (10 cm) long (USDI-U.S. Fish and Wildlife Service 1985). Fruits form in August. Fruits are bright red when mature, ovoid to cylindrical, may be over 2 in (5 cm) long, and are spiny with miniature versions of the stem spines. Each plant may have three to six fruits, each fruit having an average of 1,050 seeds (Blue Earth Ecological Consultants, Inc. 2002). Seeds are black and pitted. Seed dispersal by rodents, wind and water occurs in September and October (Blue Earth Ecological Consultants, Inc. 2002). Seed viability is over 90 percent and seeds may survive in the soil for up to five years (Blue Earth Ecological Consultants, Inc. 2002).

Characteristics used to separate the cactus from the other cacti in its range are the contorted, white, chalky-textured spines and large, magenta flowers (USDI-U.S. Fish and Wildlife Service 1985). The cactus has a greater number of longer and more slender spines, typically less tubercled stems, and narrower fruits. A similar species, *E. triglochidiatus* is usually clustered and larger, no dark line on spines, fewer ribs (5-7), and red flowers. *E. occineus* var. *gurneyi* also has red flowers. Its stems are densely clustered; spines are mostly terete (New Mexico Rare Plants 2005).

Typical cactus habitat is the lower fringes of the piñon-juniper woodland from about 5,200 feet (ft) to 6,600 ft (1,600 meters [m] to 2,200 m) elevation (Blue Earth Ecological Consultants, Inc. 2002). Occupied habitat consists of gentle slopes (15 to 60 percent) or benches with gravelly to rocky soils and southern, eastern, and western exposures (New Mexico Department of Game and Fish, Performance Report 1991; Blue Earth Ecological Consultants, Inc. 2002). Soils may be derived from limestone or intrusive rocks of the Sacramento or Capitan uplifts. The cactus also occurs on unconsolidated, gravel hills in the Fort Stanton area (Blue Earth Ecological Consultants, Inc. 2002). The cactus occurs in areas with about 180 frost-free days and average precipitation of about 16 in (41 cm).

Other common plants associated with the cactus include yerba (*Baccharis pternoides*), blue grama grass (*Bouteloua gracilis*), plains lovegrass (*Eragrostis intermedia*), buckwheat (*Eriogonum havardii*), goldman's silktassel (*Garrya ovata* ssp. *goldmanii*), false pennyroyal (*Hedeoma pulchella*), bladderpod (*Lesquerella valida*), pincushion cactus (*Mammillaria heyderi*), and sage (*Salvia earlei*) (USDI-U.S. Fish and Wildlife Service 1985).

Status and distribution

The cactus was proposed for listing as endangered on June 16, 1976, (41 FR 24523) and was federally listed as endangered on October 26, 1979, with no critical habitat designated due to the threat of collection (44 FR 61924). The cactus is protected from removal or reduction to possession from any area under Federal jurisdiction (50 CFR 17.61 and 17.71). The cactus is also listed as endangered by the State of New Mexico (NMSA 1978 75-6-1). State law prohibits collection of the cactus without a permit from the Rare Plants Program of the New Mexico Energy, Minerals, and Natural Resources Department. A recovery plan for the cactus is in place (USDI-U.S. Fish and Wildlife Service 1985).

The type locality for the 1976 description of the cactus was near Elk, Otero County, New Mexico (USDI-U.S. Fish and Wildlife Service 1985). The recovery plan for the cactus identified two populations in the Rio Hondo and Rio Peñasco drainages in Chaves, Lincoln, and Otero Counties, New Mexico (USDI-U.S. Fish and Wildlife Service 1985). The range of the cactus was described as extremely limited in 1984, with known populations limited to near Elk and Mayhill, in east-central Otero County and the plains east of Elk in west-central Eddy County (New Mexico Native Plant Protection Advisory Committee 1984). The species account for the cactus developed in 1988 shows cluster populations in the Fort Stanton area along the south side of the Capitan Mountains and in the northern end of the Guadalupe Mountains in southeastern

Otero County, in addition to the two previously described populations (USDI-U.S. Fish and Wildlife Service 1985; Blue Earth Ecological Consultants, Inc. 2002).

The cactus is now known to be more abundant and widespread than when it was listed as endangered in 1979. DeBruin (1993) and Chauvin et al. (1998) documented 1,611 sightings of cacti on Federal lands on the east-slope of the Sacramento Mountains. Additional populations in highway rights-of-way have been found on the west slopes of the Sacramento Mountains near Carrizozo for an additional 98 cacti (Knight 1999, Bleakly 2001). Sivinski (1996) observed 68 cacti on the Lincoln National Forest in the Guadalupe Mountains and an additional 100 in 1999 (Sivinski 1999). The Guadalupe Mountains surveys of Bureau of Land Management (BLM) jurisdictions found 191 cacti (Ladyman et al. 1998, Chauvin et al. 2001). Subsequent surveys in 1998, 2001, and 2002 by Forest Service contractors found 594 previously undocumented cacti on BLM lands in the Fort Stanton area in 2003, another 231 cacti in 2004, and an additional 18 on BLM land in the Guadalupe Mountains (USDI-Bureau of Land Management 2003, 2004). Combined together, there have been up to 245 individuals on the Smokey Bear Ranger District (USDA-Forest Service 2007a), 514 plants observed and reported on the Guadalupe Ranger District (Fragua 2005), and 30 on the Sacramento Ranger District (USDA-Forest Service 2007a) for a total of 789 individuals on the Lincoln National Forest. On the Smokey Bear Ranger District, data from 1998 and 2001 recorded 227 to 245 cacti (USDA-Forest Service 2007a). One hundred and seventy-three of these cacti, located on the east end of the Vera Cruz Allotment, are under re-examination for correct identification (USDA-Forest Service 2007a). In total, botanists have found 3,276 cacti during inventories of Federal lands.

Much of the Federal jurisdictions within the range of the cactus have been surveyed, usually within the most suitable habitats. Large areas of State, private and tribal lands contain suitable habitats that have not been surveyed for the presence of this cactus (USDI-U.S. Fish and Wildlife Service 2005).

The total number of cacti is impossible to obtain because they are difficult to detect when not flowering, many habitats are inaccessible, and populations may fluctuate up and down over time (USDI-U.S. Fish and Wildlife Service 2005). However, it is reasonable to estimate several thousand cacti within the known range of this cactus (USDI-U.S. Fish and Wildlife Service 2005). In 2005, the Service estimated that researchers have observed approximately 3,300 individual cacti. Most field botanists feel this number should be doubled to 6,600 individual cacti. Since only about half the suitable habitat has been searched, that number could reasonably be doubled again to an estimated 13,200 individuals (USDI-U.S. Fish and Wildlife Service 2005). Population trends have not been adequately assessed because all attempts at monitoring programs by State and Federal agencies have lasted only three to five consecutive years and monitored few individual plants (USDI-U.S. Fish and Wildlife Service 2005).

III. Environmental baseline

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the

action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone section 7 consultation, and the impacts of State and private actions that are contemporaneous with the consultation in progress. The environmental baseline defines the status of the species and its habitat in the action area to provide a platform from which to assess the effects of the action now under consultation.

Status of species within the action area

Echinocereus fendleri var. *kuenzleri* is known to inhabit the northern section of the Eagle Creek Allotment. Within the allotment, the majority of plants has been found between 6,600 and 6,800 feet. Occupied or potential habitat for the cactus comprises an estimated 5,996 ac (approximately 36 percent) of the 16,865 ac of the Eagle Creek analysis area. Within the allotment, the cactus occupies gravelly flats and rocky hillsides with microsites of stable surfaces and slopes of under 5 percent (USDA-Forest Service 2007a). Cacti prefer limestone or igneous/meta-volcanic substrates, and often are surrounded by good grass cover (USDA-Forest Service 2007a, L. Cordova, pers. comm., 2007b). Known occupied habitat comprises 230 ac (1.4 percent of the 16,865 ac), made up of the 228 ac enclosure and the two additional acres outside of the enclosure where the cactus was found during surveys in 1998. Of the 227 to 245 known plants on the Smokey Bear Ranger District, approximately 46 individuals are located within the 228 ac enclosure. Monitoring of cacti within the enclosure has occurred approximately every three years since the early 1990s. An additional 8 plants are growing outside of the enclosure in the two ac that are currently exposed to livestock. Of the 5,996 ac of potential cactus habitat, 1,805 ac (~30 percent) have been surveyed and 4,191 ac (~70 percent) remain unsurveyed as of July, 2007 (L. Cordova, pers. comm., 2007a). Earlier in 2007, 417 ac were surveyed for the cactus within the Eagle Creek Allotment (157 ac in West and 260 ac in Stanton), but no cacti were discovered (L. Cordova, pers. comm., 2007a). There are no current plans to survey again for the cactus in 2007 within the Eagle Creek Allotment.

Factors affecting species environment within the action area

The Eagle Creek Allotment is situated between 5,700 and 7,400 feet in elevation and comprised of moderately steep slopes intermixed with gentle, gravelly to rocky slopes, gradually rolling down to moderately sloping valleys to level bottomlands. The vegetation is characterized by small portions of mixed conifer, ponderosa pine, and oak brush, but primarily is composed of piñon-juniper grading into predominantly blue grama grasslands. The geology consists of alluvium (700 ac; 4 percent), the San Andres Formation (6,063 ac; 36 percent), and the Yeso Formation (10,102 ac; 60 percent) (USDA-Forest Service 2007b).

At the present time, there are no significant mining or oil and gas production activities within the habitat of the cactus. Most of the known occupied habitats occur in relatively remote areas, which are unlikely to be converted to land uses other than open range for livestock grazing (USDI-U.S. Fish and Wildlife Service 2005). Occupied and potential habitats of Kuenzler's cactus can be accessed by off-road vehicles, although habitat locations are remote and some use is restricted by locked gates (L. Cordova, pers. comm., 2007b).

Threats to the cactus include off-road vehicle traffic, road improvements, construction activities, cattle grazing and other livestock management activities, herbicide spraying, illegal collecting, severe weather (primarily drought and freezing), and potentially fire. Activities involving ground disturbance and/or removal of grass (i.e., off-road vehicle use, road maintenance or other types of construction, livestock grazing and management) may increase erosion potential, contribute to seedling mortality, and contribute to winter freezing or summer sun-burning of cacti.

Off-road vehicles, particularly those being driven off of approved dirt roads or illegally, can directly damage or crush cacti or indirectly lead to destruction of habitat from crushing or removing grasses and from local soil erosion. Road densities are estimated at 1.2 miles per section, which are greater than recommended road miles per section for wildlife such as elk, but use of roads is limited due to private land and primitive roads (USDA-Forest Service 2007b). Highway construction and maintenance activities may threaten populations. However, some of the densest populations are found within the protective confines of highway rights-of-way, where livestock grazing is excluded (Blue Earth Ecological Consultants, Inc. 2002).

There is anecdotal evidence that livestock grazing may cause increased mortality of the cactus. A two-year study (1984-1985) by The Nature Conservancy found that during a year of cattle grazing with 65 percent forage utilization, cactus mortality outside a fenced enclosure was 12 percent while there was zero mortality inside the enclosure where no grazing had occurred (Bates 1985). The major cause of known mortality to individuals is trampling by livestock. Livestock grazing also removes grass cover, which reduces the suitability of sites for seed germination and seedling establishment and exposes adult plants (USDI-U.S. Fish and Wildlife Service 1985, 2005). Concentrating livestock by placing salting or watering points can increase the likelihood of trampling. No evidence of serious habitat modification from grazing was observed under prescribed grazing management in the Rawhide fire area (Sivinski 1996).

The encroachment of juniper and piñon trees into rangelands is an ongoing issue in many areas in the Southwest. Invading juniper and piñon trees, as well as noxious weeds, are viewed as a continuing problem within the Eagle Creek Allotment and may need to be addressed in the future with herbicides and approved integrated pest management techniques (USDA-Forest Service 2007a, 2007b). The application of herbicides may affect the cactus. At this time, there are no plans to use herbicides on the allotment.

In 1985, the Service reported that collectors had reduced its numbers to the point of near extinction in the wild (USDI-U.S. Fish and Wildlife Service 1985). Illegal collection of the cactus from its natural habitats has not had a significant observable impact on the known populations during recent years (USDI-U.S. Fish and Wildlife Service 2005). Some illegal take has occurred and will likely continue, especially at the type locality and other well-known and easily accessible locations (USDI-U.S. Fish and Wildlife Service 2005). However, most populations are relatively remote, dispersed, and less likely to be impacted by casual collectors (USDI-U.S. Fish and Wildlife Service 2005). This plant is readily available from commercial

growers, who probably satisfy much of the demand from cactus hobbyists (USDI-U.S. Fish and Wildlife Service 2005).

Drought may act alone or compound exposure effects by exacerbating environmental conditions not conducive to seedling establishment and overall cactus health (USDA-Forest Service 1991). It is also believed that drought conditions and moisture stress could lead to individual plants being lost to rodents or omnivores that may forage on the plants, as well as insects and microbial pathogens (USDA-Forest Service 1998).

Cactus habitat is predominantly arid grassland and piñon-juniper savanna. These cacti usually occur in grass-covered areas and are susceptible to fire. Prescribed fire has become a frequently used land management tool on Federal lands throughout the range of the cactus and is effective at reducing woody vegetation on livestock rangelands (USDI-U.S. Fish and Wildlife Service 2005). Sivinski (1999) studied the effects of a 1993 natural wildfire that burned within a cactus population in the Guadalupe Mountains on the Lincoln National Forest. Seven years after the fire, this population was found to have only one-third the numbers of cacti within the burned area as compared to a similar area of adjacent unburned habitat (USDI-U.S. Fish and Wildlife Service 2005). Fire mortality was apparently severe and regeneration of the burned population segment was slow. Therefore, frequent prescribed fires could have significant impacts on the cactus (USDI-U.S. Fish and Wildlife Service 2005).

IV. Effects of the action

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Indirect effects are those that are caused by the proposed action and manifest later in time, but are still reasonably certain to occur.

Any adverse impacts on this cactus by livestock are indirect with the exception of occasional damage due to trampling (USDI-U.S. Fish and Wildlife Service 1985). The Forest Service determined that trampling of cacti by cattle may occur within occupied sites on the Eagle Creek Allotment. Trampling could lower the reproductive output or result in mortality of cacti. Given that the new permit would be issued for 125 to 258 head of cattle (up to 3,096 head months), compared to the present level of 228 head of cattle (2,736 head months), there is a potential increase of 30 head of cattle (or 360 head months) per year with the new forage use, and consequently, potentially higher impacts from trampling of the cactus by cattle. Additionally, it is possible that livestock may trample cacti within the areas proposed for exclosures prior to their construction. Still, livestock trampling will be avoided after the exclosures are finished. Remedial actions such as livestock removal, use level reassessment, and pasture rotation or resting may be prescribed in the event that adverse impacts to the cactus or declining conditions (soil, drought, cover, etc.) at the cactus sites are detected.

Indirect effects and impacts of interrelated actions of this project to the cactus also were considered. Indirect effects are those that are caused by, or result from, the proposed action, and

manifest later in time, but are reasonably certain to occur. Implementation of the proposed project will result in indirect impacts to the cactus within the Eagle Creek Allotment from trampling and crushing grass cover adjacent to the cactus. Temperature appears to be a crucial element in the survival of cacti populations (New Mexico Department of Game and Fish, Performance Report 1991). Cacti have experienced high levels of winterkill, indicating that this species is sensitive to extreme cold. It has not yet been determined if the sensitivity is to winter temperature or if it is most sensitive to late spring frost (New Mexico Department of Game and Fish, Performance Report 1991). Grass cover is also crucial to the survival of this species (New Mexico Department of Game and Fish, Performance Report 1991). A dense grass cover shields the plant from frost damage. The removal of grass cover around plants also reduces the suitability of sites for seed germination and seedling establishment by exposing germination microsites to more extreme temperature ranges and hardened, compacted, or eroded soil. Moreover, reduced grass cover exposes adult plants to extreme temperatures as well as increased erosion that contribute to mortality (USDI-U.S. Fish and Wildlife Service 1985). Removal and trampling of vegetation around individual cacti are expected to be short term in duration. Although vegetation is expected to recover, this reduction in grass cover is considered an adverse effect.

The Service expects that management practices, such as preventing livestock salting and water developments from overlapping with any occupied cactus sites, herding, removal of cattle from pastures early, and removal of livestock from the allotment if all remaining pastures are not at allowable use levels, will be undertaken to prevent overuse of the forage resource and soil erosion, and to maintain healthy levels of vegetation for Kuenzler's cacti. We anticipate that the proposed light to moderate grazing intensity, the use of a deferred rotation grazing system, and the adjustment in livestock distribution in response to seasonal climate conditions will improve the overall range conditions on the allotment. When forage plants are maintained and responsive livestock management practices are implemented promptly, adverse effects to the cactus will be reduced.

Interrelated actions are actions that are part of a larger action, and are dependent on the larger action for their justification. The use of access roads and vehicles in the project areas are considered interrelated with the implementation of the current project. Although the majority of vehicles will likely stay on roads and trails, effects of the project from interrelated actions have a low potential to result in cacti being harmed by trampling or crushing individual plants if vehicles are not using roads or trails.

V. 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 BO. 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 cactus may be adversely affected on State, private, and local lands by livestock grazing, road maintenance, dispersed recreation (particularly off-road vehicle use), wildlife habitat improvements, severe climate conditions, wildfire related actions and private land uses.

VI. Conclusion

After reviewing the current status of the cactus, the environmental baseline for the action area, the effects of the proposed livestock grazing, and the cumulative effects, it is the Service's biological opinion that the livestock grazing, as proposed, is not likely to jeopardize the continued existence of the cactus. No critical habitat has been designated for this species, therefore, none will be affected.

We reached this conclusion for the following reasons: 1) the relatively low level of anticipated trampling; 2) suitability and sustainability of cactus habitat will not be significantly altered by livestock grazing; 3) herbivory by livestock is not expected; 4) salting and water developments will not occur within or overlap any occupied cactus sites; 5) monitoring will occur within key areas and in occupied habitat to ensure forage use limits of 40 percent are not exceeded in order to protect the cactus; and 6) impacts to herbaceous cover will be short term as current fair to poor range conditions improve.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit take of endangered and threatened species without special exemption. Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants. The Act also protects plants from malicious damage on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law (19 NMAC 21.2).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here relate only to the proposed action and do not represent complete fulfillment of the agency's section 7(a)(1) responsibility for this species. We recommend the following conservation recommendations be implemented for the Eagle Creek Allotment.

- 1 The Forest Service should continue surveying all potential cactus habitat when the plant is easily identified and send survey reports to the Service. Survey data will provide population trend information and contribute to the overall knowledge of this species.
- 2 The Forest Service should exclude grazing from occupied cactus habitat that has a high potential for trampling (e.g. close to existing waters, gathering areas, and/or cattle travel ways), or where forage use monitoring indicates a declining trend in habitat over several (3-5) years.
- 3 The Forest Service should accompany the permittee the first time any inspection or maintenance of the enclosure fencing or gates is performed, so that they can demonstrate the best approach to avoiding the cactus in the vicinity of the enclosure.
- 4 The Forest Service should advise the permittee to keep all vehicles outside of the enclosed area to prevent the formation of tracks within the enclosure and to reduce the chances of damaging cacti.
- 5 Any suspicious collection-related activity within the highway rights-of-way should be reported to the Service immediately.
- 6 The Forest Service should educate law enforcement officers who routinely patrol this area in identifying suspicious collection activity.
- 7 In order to protect cacti from collectors, the Forest Service should keep monitoring of populations inconspicuous.

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

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the issuance of a 10-year term grazing permit on the Eagle Creek Allotment and its effects on the cactus.

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) new information reveals effects of agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this BO; (2) agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this BO; or (3) a new species is listed or critical habitat designated that may be affected by the action.

Jacque Buchanan, Forest Supervisor

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In future communication regarding this project, please refer to consultation #22420-2007-F-74. Please contact Julie McIntyre at (505) 761-4737, Melissa Kreutzian at the letterhead address or at (505) 761-4728 or Eric Hein at the same address or (505) 761-4735 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Wally Murphy", with a horizontal line extending to the right from the end of the signature.

Wally Murphy
Field Supervisor

cc:

District Ranger, Forest Service, Lincoln National Forest, Smokey Bear Ranger District,
Ruidoso, New Mexico
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry
and Resources Conservation Division, Santa Fe, New Mexico

LITERATURE CITED

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