United States Department of the Interior

FISH AND WILDLIFE SERVICE
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January 23, 2003

Cons. #2-22-01-F-22

Steve Reed, Environmental Program Manager
New Mexico State Highway and
Transportation Department
P.O. Box 1149
Santa Fe, New Mexico 87504

Dear Mr. Reed:

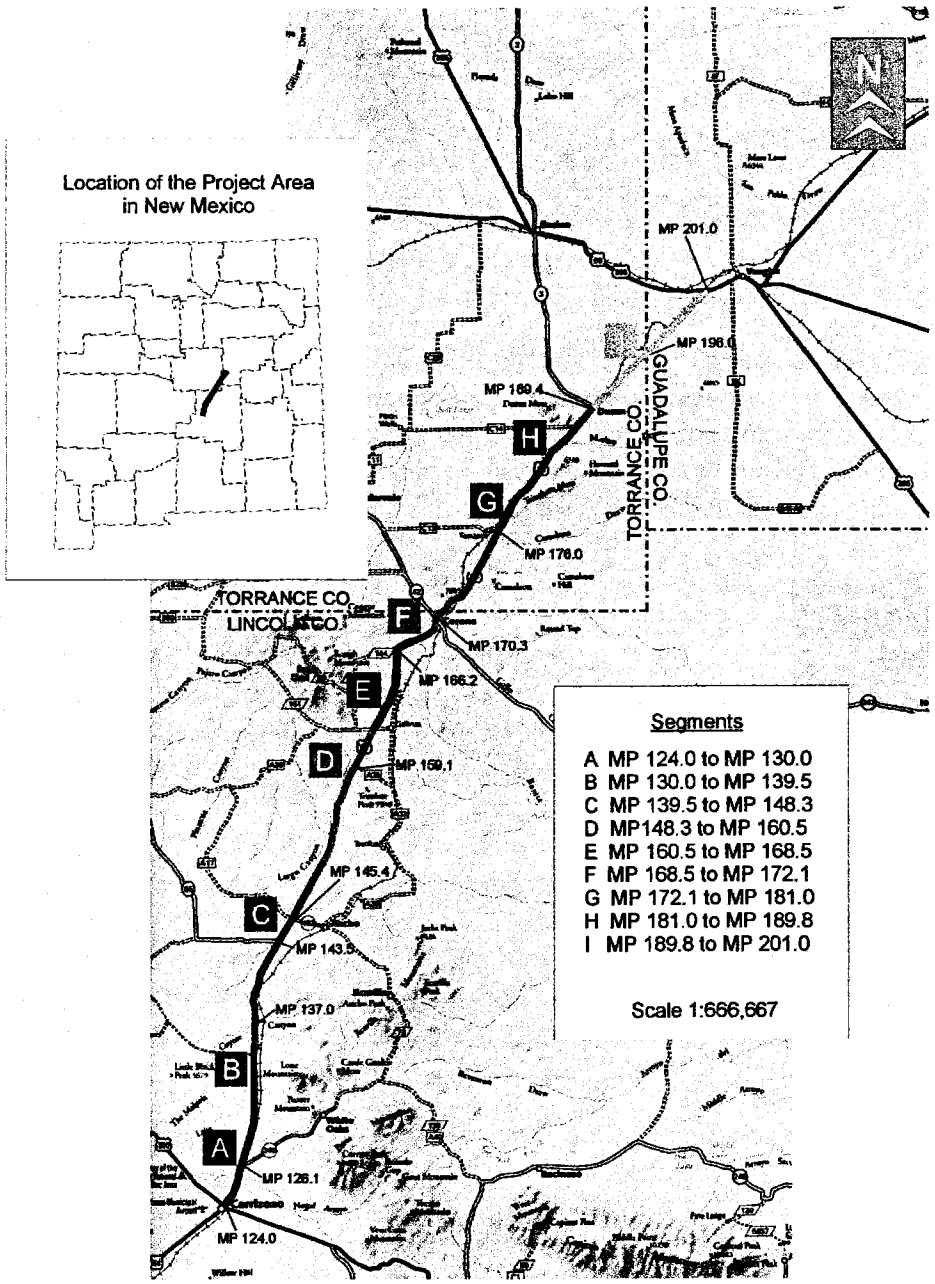
This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) based on our review of the Realignment and Reconstruction of U.S. 54, Carrizozo to Vaughn (MP 130-MP 201) and its effects on the endangered Kuenzler's hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Formal consultation was initiated on July 27, 2002.

This BO is based on information provided in the April 22, 2002, biological survey report (Blue Earth Ecological Consultants, 2002), and other sources of information available to the Service. On April 23, 2002, we received three revised pages (i, ii, and 24) of the biological survey report that corrected the determination of effect for the Kuenzler's hedgehog cactus from "may affect, not likely to adversely affect" to "may affect, likely to adversely affect." A complete administrative record of this consultation is on file at the New Mexico Ecological Services Field Office, Albuquerque, New Mexico.

In order to successfully implement the conservation measures for Kuenzler's hedgehog cactus identified in the proposed action, this BO is being prepared well in advance (4-5 years) of the highway construction. Due to the length of time between issuance of this BO and the beginning of construction, we recommend future surveys for listed species be performed prior to construction in order to confirm "no effect" to northern aplomado falcon (*Falco femoralis septentrionalis*) and black-footed ferret (*Mustela nigripes*).

Description of the Proposed Action

The Federal Highway Administration (FHA) and New Mexico State Highway and Transportation Department are proposing to realign and reconstruct U.S. Highway 54 from Carrizozo to Vaughn. The proposed action would take place between Mile Post (MP) 123.5 and 200.9 (Figure 1). Paved shoulders would be added and safety hazards minimized.



MP 140

MP 136.1

Figure 1. Action area (Blue Earth Ecological Consultants, 2002)

The reconstructed highway will be built at an approximate 21.3 meter (m) (70 feet (ft)) offset to one or the other side of the existing centerline. For most of the project, the new road will be east of the existing centerline. Within the communities of Carrizozo and Duran, the highway would be constructed along the centerline, and to the west of center. A continuous turning lane would be constructed through towns.

The rural segments would consist of two 3.6 m (12 ft) travel lanes, 2.4 m (8 ft) paved shoulders, and 6:1 surfacing tapers about 1.8 m (6 ft) wide. The resulting roadway would result in a paved width of approximately 15.8 m (52 ft). The road would be designed for 70 miles/hour (113 kilometers/hour) vehicle speeds. Cut slopes would be contoured to 3:1, with a maximum grade of five percent.

Conservation measures that are part of the proposed action and designed to minimize impacts to Kuenzler's hedgehog cactus include:

1. Four years prior to initiation of construction, a 7.5 acre reserve tract of land east of and adjacent to the existing highway right-of-way at Mile Post (MP) 136.1 will be purchased from the private landowner and fenced to exclude livestock.

2. Immediately following purchase and fencing of the reserve tract, a program of collecting seeds, raising, and transplanting cacti, will be implemented to move cacti which would be killed by highway construction.

    a. Mature fruits will be collected in August and taken to a greenhouse facility where cacti will be raised from seed and transplanted to the reserve tract.

    b. Up to six adult cacti will be transplanted from the construction area to the reserve tract annually for 4-5 years.

    c. The single Kuenzler's hedgehog cactus from MP 140 will be moved to the reserve tract.

    d. All Kuenzler's hedgehog cacti found that would be impacted by the proposed project will be moved to the reserve tract.

3. Plant biomass, percent ground cover, and species composition will be compared between the highway right-of-way and the reserve tract to assess and compare habitat conditions.

4. Establishment success within the reserve tract shall be defined by survival of at least 75 percent of the transplants, including flowering and fruiting of cacti in the reserve tract.

5. The reserve tract would be fenced and protected from livestock and/or highway maintenance activities.

Species Description, Life History, and Populations Dynamics

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

A single Kuenzler's hedgehog cactus may be single stemmed or branched. The stems are normally 15 centimeters (cm) (6 inches (in)) long and 10 cm (4 in) wide with 9 to 12 prominent ribs with tubercles from which spine clusters originate. The spines are not round, 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 2.5 cm (1 in) long. (Castetter *et al.* 1976).

Flowers are large for the size of the plant, up to 11 cm (4 in) long (Taylor 1985). Fruits are bright red when mature, ovoid to cylindrical, may be over 5 cm (2 inches) long, and are spiny with miniature versions of the stem spines. Seeds are black and pitted. Characteristics used to separate Kuenzler's hedgehog cactus from the other cacti in its range are the few, contorted, white, chalky textured spines and large, magenta flowers (USFWS 1985).

Typical Kuenzler's hedgehog cactus habitat is the lower fringes of the pinyon-juniper woodland. The dominant tree being one-seed juniper (*Juniperus monosperma*) although the species can be found associated with alligator-bark juniper (*Juniperus deppeana*) and piñon pine (*Pinus edulis*). Soils can be best described as skeletal decomposed limestone (USFWS 1985).

In addition to one-seed juniper, alligator-bark juniper, and piñon pine, other common plants associated with Kuenzler's hedgehog 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*) (USFWS 1985).

Status and Distribution

Kuenzler's hedgehog cactus was proposed for listing as endangered on June 16, 1976, (41 FR 24523) and was federally listed as endangered on October 29, 1979, with no critical habitat designated due to the threat of collection (44 FR 61924). The recovery plan for Kuenzler's hedgehog cactus identified two populations of cacti in the Rio Hondo and Rio Peñasco drainages in Lincoln County (U.S. Fish and Wildlife Service 1985). There are currently seven locales where the cactus is documented in New Mexico. These areas are found in Chaves, Eddy,

Lincoln, and Otero Counties (Blue Earth Ecological Consultants, 2002). The total number of known plants found on U.S. Forest Service and Bureau of Land Management lands is approximately 1,600 (Chauvin et al. 2001). Although Kuenzler's hedgehog cactus is also present on Tribal, private, and State lands, the majority of known plants reside on federally owned lands. The Kuenzler's hedgehog cacti discovered during surveys for this project represent a northern expansion of the plant's distribution. The closest known Kuenzler's hedgehog cacti population is approximately 25 kilometers southeast of the action area.

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 current 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 the species within the Action Area

Twenty-three Kuenzler's hedgehog cacti were identified within the proposed footprint for the reconstructed highway at MP 136.1. Three additional cacti were found outside the proposed footprint. A lone cacti was identified at MP 140. This population represents the northernmost range limit of Kuenzler's hedgehog cactus. It is not known if this population of cacti extends onto the private lands adjacent to the highway right-of-way, however, 30 m on either side were intensively surveyed. An additional 50-70 m to the west and 200 m to the east of the primary search area was less intensively surveyed. Of the 26 cacti found during surveys for this project, all but three cacti were inside the highway right-of-way fence.

The cacti found at MP 136.1 and 140 exhibit a range of mophological characteristics (variation in spination) suggesting introgression between *Echinocereus fendleri var. kuenzleri* and *Echinocereus fendleri var. fendleri*. Pending further research defining the taxonomic identity, these cacti will be treated as the endangered *kuenzleri* variety pursuant to section 4(e) of the Act.

Factors Affecting the Species in the Action Area

Factors affecting Kuenzler's hedgehog cactus range-wide are grazing, collection, ground disturbance associated with road construction or maintenance, and fire. Of the 26 cacti found during surveys for this project, almost 90 percent were inside the highway right-of-way fence. This suggests that the lands inside the highway right-of-way provide better habitat for Kuenzler's hedgehog cactus than those outside. The most probable explanation for this distribution would be the absence of grazing inside the right-of-way. Other threats that may affect the cactus (collection, fire, ground disturbance) could be more severe inside the highway right-of-way than outside.

The operation and maintenance of US 54 may impact the cacti. Mowing the road shoulders, and the application of herbicides and salts, may directly impact cacti and remove taller vegetation that provides thermal cover. Surveys indicate only one cactus is located on the shoulder of the highway where mowing has most likely taken place. It is not clear if cacti from areas within the footprint of the project have been impacted by collection.

Effects of the Action

The proposed re-construction of US 54 at MP 136.1 would destroy 17 of the 26 cacti identified in the action area. The proposed action however includes conservation measures, detailed in the Biological Survey Report and summarized above, intended to minimize the adverse effects to the species. The lone cacti at MP 140, and all impacted cacti at MP 136.1 would be transplanted to the reserve tract. Very little is known about translocation success of Kuenzler's hedgehog cactus, however Nigel Taylor, in The Genus Echinocereus states, "In general *E. fendleri* seems easy to grow, and to propagate, from either seeds or cuttings." Therefore, even if the adult cacti which are moved to the reserve tract do not fare well, the individuals raised in the greenhouse environment may demonstrate better survival rates.

The proposed action does not describe the mechanism for maintenance of the reserve tract fence, or how cactus collection from the reserve tract will be discouraged. If the fence is not maintained, then cattle may enter the reserve tract and trample cacti and/or remove winter cover. Routine monitoring combined with prompt response to any trespass cattle would minimize this potential impact. Discouraging collectors from taking cacti from the reserve tract was not addressed in the proposed action. If collectors learn that Kuenzler's hedgehog cactus are in the reserve tract, they will become susceptible to collection.

Conclusion

After reviewing the current status of Kuenzler's hedgehog cactus, the environmental baseline for the action area, the effects of the proposed reconstruction of US 54, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of this species. No critical habitat has been designated for this species, therefore none will be affected.

Incidental Take Statement

Section 9 of the Act, as amended, prohibits taking (harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harass is further defined as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent to significantly disrupt normal behavior patterns. Normal behavior patterns include, but are not limited to, breeding, feeding, and sheltering. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding,

feeding, or sheltering. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the incidental take statement.

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 endangered plants or the malicious damage of such plants 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.

Conservation Recommendations

1. Any suspicious collection related activity within the right-of-way and Reserve tract should be reported to the Service immediately.

2. The FHA should ensure that employees (including State of New Mexico Highway and Transportation Department employees) who regularly drive by the reserve tract know; 1) the importance of the tract for Kuenzler's hedgehog cactus conservation and, 2) how to report illegal collecting activities.

3. The FHA should educate law enforcement officers who routinely patrol this highway in identifying suspicious collection activity.

4. The FHA should attempt to obtain permission to survey for Kuenzler's hedgehog cacti on the surrounding private land. Survey data would provide population trend information and contribute to the overall knowledge of this species.

5. In order to increase our knowledge of what methods are most effective for transplanting Kuenzler's hedgehog cacti, the FHA should provide annual reports to the Service describing the transplanting and reserve tract monitoring results.

6. We strongly recommend that the fencing around the reserve tract be regularly inspected and repaired.

7. In order to protect these cacti from collectors, the FHA should keep the transplanting activities (including construction of reserve tract fencing, monitoring, and fence repair) inconspicuous.

Reinitiation

This concludes formal consultation on the actions outlined in the request for consultation on the effects of permitting a right-of-way access to habitat occupied by Kuenzler's hedgehog cactus. As provided in 50 CFR 402.16, reinitiation of formal consultation is necessary 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 BO; (3) the agency action is subsequently modified in an manner that causes an effect to the listed species or critical habitat not considered in this BO; or (4) a new species is listed or critical habitat is designated that may be affected by the action.

In future communications regarding this consultation, please refer to consultation #2-22-01-F-0022. If you have any questions, please contact Bill Ostheimer at the letterhead address or at (505) 761-4737.

Sincerely,

Joy E. Nicholopoulos

Joy E. Nicholopoulos
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division, Santa Fe, New Mexico

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