



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

September 28, 1989

MEMORANDUM

2-21-89-F-166

TO: District Manager, Phoenix District Office, Bureau of Land
Management, Phoenix, Arizona

FROM: Field Supervisor

SUBJECT: Biological Opinion on the Coordinated Resource Management Plan
for the Cocoraque and Agua Dulce Ranches

This biological opinion is our response to your July 5 request to initiate formal consultation pursuant to Section 7 of the Endangered Species Act (Act) of 1973 (as amended). The action under consultation is the Coordinated Resource Management Plan (CRMP) for the Cocoraque and Agua Dulce Ranches, west of Tucson. The CRMP will affect land managed by the Phoenix District (District) of the Bureau of Land Management (BLM). This consultation was initiated on July 10, 1989 the day we received your request.

The species of concern in this consultation are Tumamoc globeberry (Tumamoca macdougalii) and Nichol Turk's head cactus (Echinocactus horizonthalonius var. nicholii). Desert tortoise (Gopherus agassizii), a candidate category 2 species currently under petition, is also found in the project area.

BIOLOGICAL OPINION

It is my biological opinion that conducting this project as described in the BLM's Biological Assessment and supporting documents is not likely to jeopardize the continued existence of Tumamoc globeberry and Nichol Turk's head cactus.

BACKGROUND INFORMATION

Nichol Turk's head cactus was added to the list of endangered species on October 26, 1979 (44 FR 61927). This cactus occurs on limestone talus in the Waterman and Vekol Mountains in Pima County, Arizona. The habitat is characterized by scattered trees and shrubs of the Sonoran desertscrub. The species is threatened by mining development and exploration, off-road vehicle use, and other recreational uses of its habitat.

The population of Nichol Turk's head cactus in the Waterman Mountains occurs on land managed by the BLM, the Tohono O'Odham Tribe, and private owners. On lands managed by the BLM, management of the cactus is complicated by mining claims covering large segments of the densest populations.

Tumamoc globeberry (globeberry) was added to the list of endangered species on April 29, 1986 (51 FR 15906). This desert vine occurs in the Sonoran desertscrub under trees and shrubs, which act as nurse plants and physical support for the vine. The species is threatened by loss of habitat due to agricultural and urban development, road building, degradation of habitat due to livestock grazing, and predation by javelina.

IMPACTS OF THE ACTION

The presence of cattle and related ranching activities on an allotment may effect Tumamoc globeberry and Nichol Turk's head cactus in many ways. These effects include death or damage due to trampling (particularly vulnerable seedlings), denudation of areas surrounding water sources or other congregation spots, soil compaction, degradation of habitat caused by increased erosion and loss of plant vigor, and changing drainage patterns due to construction of roads, dikes, or impoundments. The historic effects of livestock in this area have left the Cocoraque and Agua Dulce Ranches in fair to poor condition. Although cattle have been removed from the ranches for several years, recovery has been slow. Previously, yearlong use was permitted. This CRMP would require replacing yearlong use with a rest rotation system for managing livestock. Under a rest-rotation system, the effects of cattle are usually less than the effects under yearlong use. Near water sources, livestock and wildlife can affect the habitat of Tumamoc globeberry and Nichol Turk's head cactus by causing loss of plants due to trampling and habitat degradation due to soil disruption and compaction. These effects can be severe and can result in denuded or nearly denuded areas. These impacts will be minimized by not placing new water sources near populations of Tumamoc globeberry and Nichol Turk's head cactus and by moving or replacing waters that are found to be causing habitat deterioration near populations of these species.

Timing the season of livestock use to avoid the season of Nichol Turk's head cactus growth and reproduction will benefit the recovery of this species. Livestock use of the Harlow pasture will be restricted to the period from October 1 to January 31 to avoid trampling impacts during both the flowering and seedling establishment periods.

Loss of plants could occur from the direct effects of constructing erosion-control gabions, range improvements and other structures. The BLM proposes to survey these areas and determine the presence or absence of globeberry or Nichol Turk's head cactus in the project area. Range improvement facilities can be realigned to avoid direct effects.

We support the effort to construct gabions to arrest the serious erosion that is occurring in the area. These gabions will help to conserve soil and habitat for Tumamoc globeberry and are likely to benefit the species.

The biological evaluation is unclear about whether or not the BLM would permit land imprinting and seeding in the area covered under this CRMP. Imprinting would affect Tumamoc globeberry by causing the death or damage to globeberries occurring in the path of the imprinter, as well as the death or damage to nurse plants needed for the survival of globeberries. Death of nurse plants would negatively affect the globeberry, as would the short-term loss of cover from damaged nurse plants that may resprout.

Tumamoc globeberry may be affected if seeding with non-native species occurs in globeberry populations after imprinting. If BLM is "uncertain" about the "degree of effect from non-native species into the occupied habitat," we recommend that the BLM refrain from introducing non-natives until an effect or lack of effect can be demonstrated. For our conservation recommendations on this subject, please refer to page 4 of this memorandum.

The Service supports the conclusion that, because of low survivorship and decreased reproductive output of transplanted Tumamoc globeberries, transplanting will not be used as mitigation unless a more successful means of transplanting is developed. We also support the conclusion that Nichol Turk's head cactus may experience the same effects from transplantation. We therefore recommend that the BLM plan projects to avoid impacts to the cactus or, if that option is not possible, transfer salvaged plants to public botanical institutions for educational and seed production purposes.

We support additional habitat surveys and population monitoring studies for Tumamoc globeberry. We also support the experiments that will determine whether or not seeding Tumamoc globeberry is an appropriate or successful management tool. Because we believe these studies will help us better understand this species and its management needs, we believe these efforts will have a beneficial effect.

In addition to the beneficial effects; however, some unforeseen negative effects may occur. Increasing the density of a sparsely distributed species may actually decrease the survivorship of individuals by attracting more predators. Javelina and rodents may increase consumption of tubers where globeberries are concentrated.

The Service agrees with the goal of increasing plant reproduction (page 12) but does not agree with the method to achieve this goal. Certain schools of thought believe that trampling by livestock will increase plant reproduction by planting seed and breaking the soil crust. However, other schools of thought believe that trampling decreases plant reproduction due to the negative affects of trampling seedlings and soil compaction. We believe that presenting the statement on page 12 as if it were fact is inappropriate.

The CRMP makes no statements about predator control. We believe that the removal of large predators may be one reason why javelina populations are reportedly increasing. Javelina are an important source of mortality of many Tumamoc globeberry plants. Allowing predator populations to reach natural levels may moderate javelina populations and allow for the recovery of globeberry plants.

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. The term "conservation recommendations" has been defined as suggestions of the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The following are the Service's Conservation Recommendations:

1. The BLM should re-write the CRMP to clearly state that imprinting will not be permitted in areas containing Tumamoc globeberry. If the BLM does not wish to re-write the CRMP, then the Service recommends that another formal consultation occur that would include an evaluation of the cumulative effects on Tumamoc globeberry of land imprinting and seeding on lands managed by BLM. This consultation is limited to the Cocoraque and Agua Dulce Ranches and does not consider the effects of imprinting on Tumamoc globeberry rangewide.
2. BLM should use native species when seeding within five miles of unoccupied globeberry habitat. Some non-native grasses are very aggressive and could spread from unoccupied habitat into occupied habitat, thus potentially affecting the globeberry. Native grasses

and ephemerals have been successfully established by commercial operators when the proper planting times and techniques were used. The value of native plant species to the native insects, reptiles, birds and mammals exceeds that of non-native plants.

3. Please correct the statement on page 12 of the CRMP to more objectively reflect the effects of livestock on plant reproduction.
4. The Service is concerned about the effects of livestock on the habitat of Tumamoc globeberry, Nichol Turk's head cactus and desert tortoise. Historically, habitat manipulations, such as impoundments, imprinting, and seeding, and the removal of plant biomass by livestock, have changed the habitat of these three species with the result that these allotments are now in fair to poor condition. The Service would appreciate further clarification by the BLM in this CRMP regarding:
 - a. The current carrying capacity.
 - b. The condition the BLM intends to achieve, including not only acceptable percent utilization levels on key species but also the acceptable form class for trees and shrubs. The CRMP now states utilization levels in subjective terms such as "light" or "moderate."
 - c. Given the current carrying capacity, is the current stocking rate on these two allotments acceptable?
 - d. A statement of intent about what the BLM will do if the percent utilization and form class limits are exceeded.
 - e. The CRMP states that Tumamoc globeberry is ". . . threatened by habitat loss from erosion and predation and may be impacted by any land management activity that removes or breaks down vegetation." We believe this statement is an over-simplification of the management situation. We recommend that this CRMP should discuss the long-term effects of livestock grazing on the habitat of this species as well as the effects on Nichol Turk's head cactus and desert tortoise. In addition, the CRMP should discuss the ways in which the BLM plans to rectify this habitat degradation.
 - f. Please clarify page 14 of the CRMP, which states that the stocking rate will increase to 400 CYLs (cows yearlong). Under what conditions will this increase be permitted?
 - g. Please clarify the meaning of "artificial treatments" as range management techniques referred to on page 18.

5. For two reasons, we do not support salvaging Mammillaria thornberi plants from lands that are proposed for exchange (page 13). First, a parcel of land that is identified for exchange in the proposal may not become part of the final exchange package. Secondly, the land use (primarily ranching) throughout much of the area that is being exchanged may not be changed significantly. Therefore, we question the necessity of salvaging plants that face no apparent habitat loss, particularly when this species has a low survivorship following transplantation (McLaughlin 1988). We recommend that the BLM avoid transplanting Mammillaria as mitigation for project impacts.

Other Species of Concern

The Sonoran population of desert tortoise is a candidate category 2 species (54 FR 554) currently under petition for listing as endangered (50 FR 13054). The species is found on upper bajadas, foothills, washes, and mountain slopes in the lower elevations of Arizona.

We recommend that the BLM rewrite the statements regarding desert tortoise on page 8. Based on the information available to the Service, the statement about forage seems to be incorrect. The quality and quantity of forage may be a major limiting factor for tortoises. The amount of fresh herbaceous plant growth during the winter-spring can be very variable from year to year. The relative abundance of native species has declined during the past century in part because non-native species have increased.

We recommend that the last sentence regarding desert tortoise on page 8 be changed to indicate that drought and heavy livestock use can also threaten the survivorship of adult and juvenile tortoises.

The CRMP should contain actions that BLM will carry out to conserve and protect the desert tortoise. Specifically, we recommend that the CRMP should contain guidelines for the removal of livestock during dry years when winter-spring production of annuals is less than a specific amount, such as 400-450 pounds per acre. A similar rule should apply to summer herbaceous plant production. No new livestock water developments should be placed closer than 0.5 mile to desert tortoise habitat. We suggest that this plan incorporate the recommendations of the Arizona Interagency Desert Tortoise Team. We support the commitment of BLM to inventory appropriate habitat for desert tortoise (page 18).

Seeding of non-native species is not likely to benefit desert tortoise because non-native plants may not provide the nutritional requirements the species needs for reproduction and maintenance. Evidence to support the importance of native species in the desert tortoise's diet has been reported in the Beaver Dam Slope, Utah population.

The Service is concerned that the BLM has consulted on this CRMP after it was finalized and signed by various Federal and State agencies. As we have notified BLM in the past and as stated in the Section 7 regulations, formal consultation should occur prior to affecting the action, which in this case is a CRMP committing the BLM to certain management techniques. The regulations state that the agency shall make no irretrievable or irreversible commitment of resources that would remove the alternative to remove jeopardy or prevent adverse modification of critical habitat until formal consultation is completed. Because the BLM did not complete formal consultation prior to committing themselves to a management plan, the Service believes the BLM was not in compliance with Section 7 of the Act. This is the second time within a one-year period that the BLM failed to consult prior to an action. We hope that these two actions do not represent a trend. The Service recommends that the BLM considers this CRMP a draft and incorporate the recommendations and clarifications suggested in this biological opinion.

This biological opinion concludes formal consultation on this action. Reinitiation of formal consultation is required if new information reveals effects of the action that may affect listed species or critical habitat in a manner or extent not considered in this opinion, and/or if a new species listed or critical habitat designated that may be affected by the action.

The Service understands that this CRMP represents time, effort and coordination among many parties. We support this effort to improve the resources of the Cocoraque and Agua Dulce Ranches.

If we may be of further assistance, please contact Sue Rutman or me (Telephone: 602/261-4720 or FTS 261-4720).



Sam F. Spiller

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
(AWE/SE and HC)
Director, Fish and Wildlife Service, Washington, D.C. (EHC)
State Director, Bureau of Land Management, Arizona State Office,
Phoenix, Arizona
Director, Arizona Game and Fish Department, Phoenix, Arizona

Literature Cited

McLaughlin, S. P. 1988. Salvage, Propagation, and Reestablishment of Mammillaria thornberi: Final Report, 1987-1988. Tucson Water, Tucson, Arizona.