ENVIRONMENTAL ASSESSMENT

FOR

1994 EXPERIMENTAL PROGRAM

TO

SHOOT RAVENS

U.S. Department of the Interior
Bureau of Land Management
California Desert District Office
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CHAPTER I

PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 STATUS OF THE DESERT TORTOISE

The desert tortoise (Gopherus [=Xerobates] agassizii) is distributed over portions of the Mojave, Colorado, and Sonoran deserts of the southwestern United States and adjacent Mexico. The species was listed as a threatened species by the U. S. Fish and Wildlife Service (FWS) in 1989. Populations and habitats are being adversely affected by a variety of activities (FWS 1993). Reasons for the listings included widespread population declines and fragmentation of extant habitats. Contributing causes for the population declines include vandalism and poaching, off-highway vehicle activity, urbanization, construction projects, livestock grazing, disease, drought, predation, and habitat destruction from various other sources.

Common raven (Corvus corax) populations in the California deserts have increased significantly since the early 1940's in response to expanding human use of the desert. Sewage ponds, landfills, powerlines, roads, and other uses have increased available drinking, foraging, roosting, and nesting opportunities for ravens, particularly in the western Mojave Desert. In recent years, raven predation on juvenile desert tortoises has increased to a point where recruitment of young tortoises into the adult population has apparently been significantly reduced or eliminated in many tortoise populations (Fig. 2 in Bureau of Land Management [BLM] 1990a). Support for the hypotheses that raven populations have increased and that ravens impact some tortoise populations was discussed in the Draft Raven Management Plan (BLM 1990a), associated Draft Environmental Impact Statement (BLM 1990b), and in public comments to those two documents, which are all incorporated into this Environmental Assessment by reference (see also Boarman 1993).

1.2 NEED FOR ACTION

One major source of loss to juvenile desert tortoise populations in particular areas is excessive predation by the common raven. Carcasses of juvenile tortoises have been found beneath many raven nests and perch sites; 250 juvenile tortoise carcasses were found beneath one raven nest between 1987 and 1988. Raven predation on young desert tortoises has been documented as a significant contributor to declines in several populations (Berry 1985; BLM 1990a; Boarman 1993). Currently, the number of juvenile desert tortoises being found on study plots has declined by as much as as 77 to 100% in portions of the western Mojave and Colorado deserts (Berry 1991). In some areas, recruitment into the reproductively-active adult population has been greatly reduced (BLM 1990a). The level of raven predation on

tortoises is considerably higher than is natural because raven populations have expanded in size and geographic extent, probably because of increased food and water sources and creation of additional nesting and perching sites. Because many tortoise populations are declining so rapidly it has become necessary for the BLM to reduce predation by ravens in some areas in order to aid the recovery of desert tortoise populations (FWS 1993).

In 1989, a pilot control program was initiated by the BLM in cooperation with the FWS, California Department of Fish and Game, Animal Damage Control (ADC) and the U.S. Department of Defense (BLM 1989). The purpose of the pilot program was to reduce raven predation on juvenile tortoises and gain information necessary to design a long-term raven control program. The pilot program primarily consisted of poisoning ravens with hard-boiled eggs injected with the avicide DRC-1339. The pilot program was stopped by a Temporary Restraining Order filed by the Humane Society of the United States (HSUS vs Manuel Lujan et al. 1989). The lawsuit was subsequently settled out of court, but the pilot program was not re-initiated.

In 1990, as part of its broader tortoise management program (BLM 1988), the BLM drafted and issued a Raven Management Plan (BLM 1990a) and an associated Draft Environmental Impact Statement (DEIS; BLM 1990b) that proposed a long-term strategy for reducing the threat raven predation poses to desert tortoise recovery in California. The plan included lethal control by poison and shooting; non-lethal control such as nest destruction, sterilization, and removal of roadkills; habitat management such as changing landfill operation methods and altering perch sites; and research into pertinent aspects of raven behavior and ecology. As part of the public input process, the BLM convened a Technical Review Team (TRT) for Raven Management composed of professional biologists and conservation policy specialists. The Raven Management Plan and Environmental Impact Statement are presently being reviewed and rewritten by the BLM and are expected to be completed and implemented sometime in the summer of 1994.

During the public comment period for the DEIS, two major concerns were expressed over the use of poison for lethal control of ravens: (1) use of poison does not target individual ravens and (2) other species may be impacted by the poison. One potentially viable alternative to poisoning is shooting, which was proposed in the DEIS. Shooting is both very specific and does not expose other species to death. However, there is some question as to whether shooting is an efficient means of controlling depreciating ravens. First, it has been claimed that ravens are very difficult to shoot because they generally are very wary of humans. Second, because ravens are extremely intelligent and adaptable, it has been suggested that if a bird is shot at but escapes, it will be much more wary of humans, or the specific shooting individual, and will be even more difficult to be shot at a second time. If shooting of ravens is to be considered a viable means of reducing predation, its efficacy must be evaluated.

In 1993, the BLM implemented an experimental program to shoot ravens with the intent to determine the cost and efficacy of shooting as a means of removing ravens to reduce their impact on tortoise populations. An Environmental Assessment (EA) and Record of Decision (ROD) on the program were issued on March 24, 1993. The HSUS filed an appeal of the EA on April 27, objecting to removal of ravens with chicks on the nest without evidence that those ravens were eating tortoises. The appeal was withdrawn on May 12 after BLM agreed to only shoot birds if tortoise shells were found within their presumed territories. On May 13 ADC commenced shooting under Interagency agreement (B950-A2-0035), and by June 14th 17 adults were shot and 10 chicks were euthanized.

One major objective of the 1993 Experimental Program to Shoot Ravens was to determine if shooting is effective at removing all birds from foraging within a specific area. Acceptance of the HSUS's condition prevented that objective from being met in 1993. Accordingly, BLM proposes to again execute an Experimental Program to Shoot Ravens in 1994, but it will begin earlier in the year so that more birds can be removed before eggs hatch. The 1994 program will also provide additional data on removing targeted birds to validate data collected in 1993.

The field work will be undertaken by ADC using funds provided by the National Biological Survey (NBS), a new research agency within the U. S. Department of the Interior. An NBS research biologist will assist ADC staff by providing the study design, determining specific methods to be employed, targeting ravens, directing field work, . and evaluating the data. The BLM will issue the EA and ROD on the project.

The Proposed Action described below will obtain this crucial information while also reducing raven predation in specific areas during the interim while the long-range plan is being completed.

CHAPTER 2

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is a combined control and research program. It was developed from unanimous recommendations by the Raven TRT. The focus for study efforts will be primarily on public lands administered by BLM.

2.1 PROPOSED ACTION

2.1.1 Project Description

The goal of the proposed action is two fold: (1) to facilitate survival of juvenile tortoises in certain areas by removing ravens thought to be preying on them, and (2) determine the efficacy and cost of shooting as a means of controlling raven populations. Two objectives are designed to achieve the goal of removing ravens that prey on tortoises.

Objective 1 - To remove all ravens foraging within the Desert Tortoise Natural Area (DTNA), Kern County. The tortoise population at the DTNA is in critical condition because it has experienced high levels of mortality from disease, predation, and other factors.

Objective 2 - To remove selected ravens that are responsible for predation on tortoises in other areas of the California Desert Conservation Area (CDCA).

Three additional objectives are designed to achieve the goal of determining the efficacy of shooting ravens.

Objective 3 - To determine the cost and effort necessary to shoot individual ravens.

Objective 4 - To determine the efficacy and effectiveness of shooting to remove all foraging ravens from one area, the Desert Tortoise Natural Area (DTNA), for a limited period of time.

Objective 5 - To determine the effect raven removal has on tortoise populations.

To achieve the objectives, ADC, Linder a blanket depredation permit from the FWS, will attempt to remove all ravens feeding within and immediately around the DTNA, while collecting data on the cost of the effort. ADC will also shoot individual ravens in other areas where there is sufficient evidence (as defined below) that ravens are preying on tortoises. Any chicks found in nests of removed adults will be euthanized with chloroform if the nest is safely accessible to ADC personnel. To minimize the potential for mortality to non-target wildlife species during raven control efforts, shooting will only be accomplished by designated ADC employees.

2.1.2 Methods

Objective 1: Remove All Ravens Feeding within the DTNA - Between March 1 and approximately June 30, 1994, and possibly again between September 1 and

October 31, 1994, when most tortoises are likely to be out of their burrows, all ravens found in or very near to the DTNA will be shot by ADC personnel with rifle or shotgun, depending on safety concerns and distance from the bird. As unanimously recommended by the TRT, all ravens will be removed if they are likely to be foraging, nesting, or hunting in the DTNA. No raven will be shot if it is more than 1 mile from the DTNA (except birds targeted for Objective 2, below). To mitigate potential problems, shooting in areas of heavy recreational use will not take place during weekends to ensure public safety. Also, for this and all other objectives, personnel will comply with all motor vehicle limitations including staying on designated routes in Class L areas.

Objective 2: Remove Selected Ravens Preying on Tortoises - BLM, NBS, or ADC personnel will identify areas of present or recent raven predation. Decisions of which birds to target for removal will be made jointly between ADC, NBS, and BLM.

As unanimously recommended by the TRT, any bird will be targeted for removal if it is in close proximity to three or more tortoise shells that are found showing signs consistent with raven predation (e.g., hole pecked in carapace or plastron; bill marks or punctures on shell; forelimbs, hind limbs, or head removed; or beneath raven nests or known perches). The three shells and the raven must be within approximately 0.25 miles from each other and the shells must be from tortoises that have died within the last year, as determined by the keys presented in Berry and Woodman (1984). Additionally, any raven will be targeted for removal if it is observed in the act of catching or eating a tortoise. As previously agreed to by the TRT, if nestlings of any bird shot are founbd, they will be disposed of humanely. To mitigate potential problems, shooting in areas of heavy recreational use will not take place during weekends to ensure public safety. Also, shots will not be fired in the direction of power towers, telephone poles, or other structures where there could be monetary or human health effects.

Objective 3: Cost of Shooting Individual Ravens - ADC personnel will collect data on the time necessary to successfully shoot individual ravens. Data collected for each attempt will include: exact location, date, time of day, weather conditions, how bird was found, distance to bird when first observed, behavior of bird prior to shooting, number of other ravens in the vicinity, method used to stalk or approach the bird, time necessary for stalking, distance of approach before bird flew, distance of approach before first shot was fired, type and caliber of firearm used, number of shots fired, behavior of target raven after each shot, behavior of other ravens in the vicinity, and total time elapsed for attempt. NBS personnel will analyze the data to determine the cost per bird in terms of time and money, the effect missing has on bird behavior, and to make recommendations on whether or not shooting is a cost- effective method of control and what are the best means of stalking and successfully hitting birds. The results will be compared against the cost and effectiveness of live trapping ravens, which will be determined experimentally at a later date.

Objective 4: Effectiveness of Shooting as a Control Method - To determine the effect of control on the presence of ravens within the DTNA, BLM, NBS, or ADC personnel will survey the raven population in the vicinity of the DTNA on a weekly to biweekly basis throughout the duration of the control program. Ravens will then be surveyed by BLM or NBS personnel on a monthly to bimonthly basis for at least one year thereafter. Data will also be used from surveys conducted at the DTNA prior to the start of the program, including extensive data collected as part of the 1993 removal program. The data will be compared among survey days, seasons, and years.

Objective 5: Effect of Raven Removal on Tortoise Populations - It will be very difficult to determine the impact of this limited program on increased recruitment of juvenile and immature tortoises into the adult population because: (i) tortoises require 12 to 20 years to reach maturity, (ii) the numbers of juveniles currently occurring at the DTNA are very low, and (iii) it is quite difficult to survey for juveniles. Nonetheless, it is important to attempt to measure the effect of the control program on local tortoise populations. Surveys of the tortoise population at the DTNA have been conducted periodically since 1979, including the spring of 1993. Data collected at two permanent study plots for tortoise populations from previous and future - years will be compared. Each plot is generally visited once every four years and the two plots in the DTNA are surveyed in different years from each other. If funds become available, the plots will be surveyed more frequently to help evaluate the control program.

The effect on tortoise populations of removing individually targeted ravens for Objective 2 will be determined indirectly by periodically surveying potential nest and perch sites in the vicinity where each bird was removed to see if tortoise shells continue to be deposited. If they do, then other or additional birds are likely eating the tortoises. If shells do not continue to be deposited, then the sole predator was probably removed and we can determine how long it takes for another tortoise- eating bird to occupy the site. Additionally, if the effort is very near to a permanent study plot for studying desert tortoise populations, post-control data from the study plot will be compared to pre-control data.

2.2 ALTERNATIVES CONSIDERED

2.2.1 Full-scale Management Alternative

The Full-scale Management Alternative was described in BLM (1990a) and evaluated as the Proposed Action in BLM (1990b); both of these documents are incorporated here by reference. This alternative included the use of an avicide (DRC-1339) at landfills and other sites, several non-lethal behavioral modification actions, alteration of landfills, and other actions. This alternative was dropped because we are still

evaluating and developing the full-scale management program, and are not yet ready to implement it. Efforts have already been undertaken to work with several solid waste management agencies and proponents of new proposed landfill projects to implement practices that would reduce raven reliance on landfills and to monitor raven populations in the vicinity of landfills.

2.2.2 No Action Alternative

The No Action Alternative was considered and dropped for two reasons. First, the information that will be yielded by the Proposed Action is important for designing the full-scale raven management program. Second, tortoise populations are listed as threatened, many of their populations are still suffering precipitous declines, and predation on juveniles is still occurring. With the consent of the TRT, we determined that it is necessary to implement some reduction of raven predation in the interim while the raven management program is being developed.

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following resources were considered and would not be affected by the Proposed Action:

Air Quality
Floodplains
Hazardous Wastes
Prime and Unique Farmlands
Social and Economic Resources
Sole Source Drinking Water
Water Quality
Wetlands and Riparian Areas
Wild and Scenic Rivers

3.1 RECREATION

Implementation of the proposed raven study is not expected to adversely affect any land uses on public lands. Shooting in areas of heavy recreational use will not take place during weekends to ensure public safety. No other uses will be affected by the shooting program.

3.2 PHYSIOGRAPHY AND VEGETATION

Project actions are not expected to affect either soils or vegetation. Vehicle access to all raven control sites will be on approved routes of travel. Field personnel will travel on foot to reach sites where access by motorized vehicles is prohibited. There will be no impact on vegetation.

3.3 WILDLIFE

Implementation of the Proposed Action would result in the mortality of up to 65 adult and juvenile common ravens. This number is based on an estimated 14 breeding and 20 non-breeding adult and juvenile ravens in the DTNA (data from 1993 shoot program) and an additional 31 adult or juvenile ravens to be targeted in other areas of the desert. While some ravens known to feed on tortoises would be killed, other ravens only suspected of eating tortoises are likely to also be killed. In addition, some ravens that might not eat tortoises may be removed. The total raven population in the desert, although unknown, is likely in the tens of thousands, so the impact on overall raven populations within most parts of the CDCA will be negligible.

The major concern for the HSUS when they appealed the 1993 proposed program was that a large number of chicks may be unnecessarily euthanized because the program started relatively late in the breeding season. In 1994, the program will begin in early March, well before eggs hatch. As a result, a large proportion of removals are expected to occur before chicks are in the nest, particularly in the DTNA.

Other species of small vertebrates are likely to benefit from raven control measures. Ravens are opportunistic predators and are known to eat small vertebrates (Knight and Call 1980, Camp et al. 1993). Some small vertebrate populations could increase slightly if raven predation pressures are reduced.

To minimize the potential for mortality to non-target wildlife species during raven control efforts, shooting will only be accomplished by designated ADC employees.

Non-target wildlife species are not likely to be negatively impacted by the shooting program. Recruitment of desert tortoises should increase as a result of the program.

3.4 LIVESTOCK GRAZING

The Proposed Action will not have any adverse impacts on livestock or livestock operators. Livestock operators may benefit indirectly from the program, since

ravens have been documented as sources of lamb and calf mortality (Larsen and Dietrich 1970, USDA 1987).

3.5 CULTURAL RESOURCES

Native American tribal groups have inhabited the CDCA for many centuries. Although recent data are unavailable, ethnographic notes collected for the preparation of the CDCA plan (BLM 1980) suggest that the raven may be a species with traditional or spiritual values to the Desert Cahuilia, Chemehuevi, and Mojave Indians. The Native American community considers many native species, including desert tortoises, to be important aspects of the natural and spiritual environment.

Predator control measures described in the Proposed Action would reduce total raven numbers by only a small factor in the entire California Desert Conservation Area. Population numbers would remain at levels much higher than extrapolated historic raven numbers, and the impact on any traditional values of Native Americans would be insignificant.

3.6 WILDERNESS STUDY AREAS, UNUSUAL PLANT ASSEMBLAGES, AND AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The proposed action will not have any negative impacts on wilderness study areas, unusual plant assemblages, or areas of critical environmental concern. Vehicle use will be restricted to approved routes of travel.

Passive recreational activities may benefit from the program. In the immediate future, reduction of excessive raven predation may enhance opportunities for the public to observe and photograph juvenile tortoises.

Some areas may experience a temporary increase in noise levels from the shooting of individual ravens, but the increased noise levels are expected to be very short-term, temporary in nature, and insignificant.

3.7 OTHER ENVIRONMENTAL RESOURCES

The proposed action is not expected to have any impacts on paleontological resources or to ground and surface waters. Opportunities to view ravens will be diminished somewhat over a very limited area. However, because the goal of the program is to collect data and reduce raven predation on tortoises, not lower overall raven densities, this visual impact is not expected to be significant.

3.8 THE HUMAN ENVIRONMENT

Because of the short-term nature of the project, no impact on local economies is anticipated.

Some local communities may receive negative impacts from the proposed action if gunshots from the shooting program can be heard in the communities nearby. This impact is not considered significant and can be reduced by implementation of the proposed mitigation measures.

CHAPTER 4

AGENCIES AND PERSONS CONSULTED

Individuals from government agencies, professional wildlife organizations, and conservation organizations were contacted during preparation of the Environmental Assessment and are listed below. The contacts were made in person, by telephone or FAX, and through conference calls. An asterisk represents an organization with a representative on the Raven TRT.

Steve Johnson, Defenders of Wildlife*
Jim St. Amant, Desert Tortoise Council*
Tom Dodson, Desert Tortoise Preserve Committee*
Dr. John Grandy, Humane Society of the United States*
John Borneman, National Audubon Society*
Jack Parriott and Maynard Small, U.S. Department of Agriculture, Animal Damage Control*
Ray Bransfield, U.S. Departmentof Interior, Fish and Wildlife Service
Frank Hoover, California Department of Fish and Game
Mr. Lenny Young*
Daniel Pearson, Southern California Edison*
Dr. Faith Campbell, Natural Resources Defense Council*
Dr. William 1. Boarman and Dr. John Oldemeyer, U.S. Department of Interior, National Biological Survey