



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

2-21-90-F-050

August 29, 1991

MEMORANDUM

TO: District Manager, Arizona Strip District, Bureau of Land Management, St. George, Utah

FROM: Field Supervisor

SUBJECT: Biological Opinion for the Jacobson Access Road (A-23200), Mohave County, Arizona

This Biological Opinion responds to your request dated April 17, 1991, for reinitiation of formal consultation with the Fish and Wildlife Service (FWS) pursuant to Section 7 of the Endangered Species Act (Act) of 1973, as amended. At issue are impacts that upgrading an existing road may have on the desert tortoise (*Gopherus agassizii*), a federally listed threatened species. The Biological Opinion on Jacobson's Access Road (22-21-90-F-050) was issued on April 4, 1990. Your request for reinitiation was received on April 22, 1991.

This Biological Opinion was prepared using information contained in your Section 7 evaluation (April 16, 1991); memoranda dated April 17, 1991, and August 20, 1991; Environmental Assessment (EA No. AZ 010-88-012) and Land Report for Jacobson Access Road (January 10, 1990); Addendum to EA No. AZ-010-88-012 Jacobson Access Road Amendment; information in our files; and discussions with your staff.

Biological Opinion

It is our biological opinion that the proposed action to upgrade the existing road for access to Mr. Warren Jacobson's property is not likely to jeopardize the continued existence of the threatened Mojave population of the desert tortoise. Critical habitat was designated for the Beaver Dam Slope subpopulation in Utah in 1980, but not for the subpopulations in Arizona, California, and Nevada. Therefore, no critical habitat will be destroyed or adversely modified by these activities.

Description of the Proposed Action

Mr. Jacobson has submitted a request for an amendment to an existing right-of-way. The Bureau of Land Management (BLM) granted a right-of-way to Mr. Jacobson that was evaluated in a Biological Opinion (2-21-90-F-050) issued

on April 4, 1990. The right-of-way begins at old Highway 91, follows a ridge down the side of a drainage, across a bench and steep slope, and down to the floodplain. The road provides access to the North 1/2 of Lots 3 & 4, N $\frac{1}{2}$ N $\frac{1}{2}$ NW $\frac{1}{4}$ sec. 2, T. 39 N., R. 15 W. (BLM memorandum, January 10, 1990). The BLM proposes to grant an additional right-of-way that will connect the existing road to a part of Mr. Jacobson's property (Figure 1). The proposed right-of-way consists of upgrading an existing track (40 feet by 650 linear feet) across BLM land (A-23200). The work would start within 6 months of issuance of the right-of-way permit.

This site was selected for the road because of its location adjacent to private lands and because it requires less public land while still meeting the needs of the applicant. The entire area within the right-of-way will not be required for the road and will not be entirely disturbed. Access will be provided via Highway 91 and the road constructed under the existing right-of-way grant.

The road will be built by grading a strip along an existing track with heavy equipment. Some minor flood control work, such as small runoff channels, may be required. All necessary flood control work would be contained within the proposed right-of-way.

Location of proposed right-of-way:

A-23200, T. 40 N., R. 16 W., sec. 35 G&SRM
along the southern edge (0.6 acre)

Species Account and Environmental Baseline

On April 2, 1990, the FWS determined the Mojave population of the desert tortoise to be threatened (Fish and Wildlife Service, 1990). The desert tortoise, a large, herbivorous reptile, is generally active when annual plants are most common, during spring, early summer, and autumn months. Tortoises usually spend the remainder of the year in burrows or dens, escaping the extreme weather conditions of the desert. Burrowing habits of desert tortoises vary greatly in different geographic locations. Burrows may be located under bushes, in the banks or beds of washes, in rock outcrops, or in caliche caves.

The desert tortoise occurs in the United States throughout much of the Mojave and Sonoran deserts of California, Nevada, Arizona, and southwestern Utah, and in Mexico from Sonora to northern Sinaloa. Further information on the range, biology, and ecology of the desert tortoise can be found in Berry, ed. (1984), Duck and Snider (1988), Hohman and Ohmart (1980), Karl (1983), Luckenbach (1982), and Weinstein et al. (1987).

The soils on the proposed site are composed of gravelly, fine, sandy loams on 2 to 40% slopes with south or east aspects. The primary vegetation consists of creosotebush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), big galleta (*Hilaria rigida*), Indian ricegrass (*Oryzopsis hymenoides*), and bladdersage (*Salazaria mexicana*). The area shows signs of extensive human disturbance as indicated by dirt roads, vehicle tracks, and trash (BLM memorandum, April 17, 1991).

The 1990 surveys of the original road resulted in no desert tortoise sign. However, surveys of the surrounding area resulted in a tortoise carapace, scat, and potential sheltersites within 0.25 mile of the road.

The proposed site was surveyed for desert tortoise sign by a BLM wildlife biologist and an Arizona Game and Fish Department (AGFD) research assistant on March 20, 1991. Transects (10 meters apart) were walked across the parcel for 100% coverage of the site plus inspection of an additional area extending 100 meters from the site boundaries. The survey resulted in locating one active sheltersite along the top of the steep slope. Scat was present within the sheltersite. No tortoises or tortoise carcasses were encountered. The highest densities of desert tortoise in the area were reported by Hohman and Ohmart (1980) and Duck and Snider (1988) at 50 tortoises per square mile. Densities are estimated to be below 5 tortoises per square mile near the project site (BLM memorandum, April 17, 1991). Desert tortoises in the project area have been found that exhibit signs of an upper respiratory tract disease.

The project area once was better desert tortoise habitat, but the population has become isolated by construction of Highway 91 and Interstate 15 to the north. The Virgin River to the south is also a barrier to tortoise movements. Although the area between the river and the freeway may have been historic habitat, the original character has been altered so that the population may no longer be viable (BLM memorandum, April 17, 1991). To the west of the project area, the City of Mesquite, Nevada, and development on private lands (Peppermill Golf Course and Arvada Game Ranch) in Arizona have completed the process of isolation.

Through the BLM document entitled "Desert Tortoise Habitat Management on Public Lands: A Rangeland Plan" (Spang et al. 1988) the BLM was directed to categorize all tortoise habitat into three categories based on (1) importance of the habitat to maintaining viable populations, (2) resolvability of conflicts, (3) tortoise population density (based on the standard transects), and (4) population status (stable, increasing, or decreasing). The proposed access road is on the edge of category III desert tortoise habitat, as indicated in the BLM's draft 1990 Arizona Strip Resource Management Plan. The goal for management of public lands within category III habitats is to limit tortoise habitat and population declines to the extent possible by mitigating impacts. Criteria for designating

Category III habitats are: (1) The habitat area is not essential to maintenance of viable populations; (2) most conflicts are not resolvable; (3) the habitat area supports low to medium tortoise densities and is not contiguous with medium or high tortoise density areas; and (4) the existing population is stable or decreasing.

Effects of the Proposed Action on the Listed Species

This proposed action is in an area that is near private holdings, along the edge of public lands east of Mesquite, Nevada. The site has received substantial use and has been adversely affected by past activities. The proposed project area is also isolated from adjacent relatively undisturbed tortoise habitat. The existing conditions of habitat quantity and quality on the site are poor and will be further altered by the proposed action. Additional urban development will continue to occur in the general vicinity of this proposed action.

The proposed project will result in the alteration of 0.6 acre of desert tortoise habitat. Tortoises may be killed or injured due to crushing by vehicles and may be harassed through removal from construction of the access road. Furthermore, vehicles that stray from this access road could crush tortoises both on the surface or in their burrows. Additional indirect impacts may occur from noise produced by vehicles and construction equipment (Bondello 1976, Bondello et al. 1979) and the attraction of ravens to the area if trash is not removed immediately (Berry 1985 and Bureau of Land Management 1990). The access road also creates the potential for tortoise mortalities on the road following completion.

The FWS does not expect the impacts of upgrading the access road to appreciably reduce the likelihood of survival and recovery of the desert tortoise in the wild. The proposed right-of-way traverses a low density population of desert tortoises which has already been isolated by existing roads. Impacts to tortoises from the road right-of-way represent a small impact to the Mojave desert tortoise population, when total tortoise population numbers and geographical extent are considered.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in Section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

Outdoor recreational activities, which will increase proportionally with an increased human population, have the potential to adversely impact desert tortoise habitat in the area. Off-road vehicle use is already extensive in the area. Off-road vehicles can kill tortoises on the surface or in burrows, crush or damage burrows and nests, damage or destroy vegetation used for cover or food, and compact the soil, which inhibits the germination of plants and construction of burrows. Recreational target shooting is also widespread in the area, which could potentially harm desert tortoises. Other general recreational use, including camping, picnicking, sightseeing, hiking, bird watching, equestrian use, and rock and mineral collecting can result in desert tortoise habitat destruction. Other human impacts associated with increased development include desert tortoise collection, vandalism, and fire.

Lands to the east, south, and west of the proposed action are in private ownership and some have been developed. Although not specifically part of this action, it seems certain that additional roadway will be constructed on private lands in the NW $\frac{1}{4}$ sec. 2, T. 39 N., R. 16 W. Due to the land ownership pattern and the history of the area, there is an increased likelihood that there will be urbanization of the general area in the near future. The urban development may include single family dwellings, mobile home trailer parks, public service and recreational facilities, roads, schools, and stores. This urbanization will decrease desert tortoise habitat quality and quantity and increase the potential for tortoise mortalities and habitat fragmentation, especially by increased vehicular traffic. Another adverse effect caused by urbanization is the increased harassment and mortality to desert tortoises by domestic dogs.

Incidental Take

Section 9 of the Act, as amended, prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. 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 Sections 7(b)(4) and 7(o)(2) of the Act, 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 this incidental take statement. The measures described below are nondiscretionary and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.

The FWS anticipates that the following take could occur as a result of the activities associated with construction of the proposed right-of-way. The level of take is based on the analysis of impacts provided above, results of tortoise surveys, and the protective and mitigative measures offered by the applicant or required by the BLM.

1. Two (2) tortoises may be taken in the form of harassment through the removal of tortoises (a) excavated from burrows, and (b) found above ground within the right-of-way during construction of the Jacobson Access Road.
2. One (1) nest containing an unquantifiable number of tortoise eggs may be taken during construction activities.
3. A total of 0.6 acre of tortoise habitat may be taken during construction of the Jacobson Access Road.
4. An unquantifiable number of tortoises may be taken in the form of indirect mortality through predation by ravens drawn to trash on the construction sites.

Reasonable and Prudent Measures

The FWS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take authorized by this Biological Opinion:

1. Measures shall be taken to minimize harm to tortoises by any project-related activity.
2. Measures shall be taken to minimize habitat disturbance due to project-related activities.
3. Measures shall be taken to minimize predation of desert tortoises by ravens.
4. Measures shall be taken to ensure compliance with the reasonable and prudent measures and terms and conditions contained in this Biological Opinion.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, the BLM must ensure that the applicant complies with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement reasonable and prudent measure number 1, the following terms and conditions shall be implemented:
 - a. The construction right-of-way shall be inspected for tortoises and their burrows not more than one working day prior to any surface disturbing activities. The inspection shall be conducted by a qualified tortoise biologist and shall provide 100% coverage of the right-of-way. The area shall be surveyed three times unless no tortoises are found on the second pass.
 - b. If any tortoises are found within construction areas after the initial removal of tortoises, all construction activities shall cease until the tortoise has been removed by a qualified tortoise biologist, in accordance with Appendix A. The definition of "take" includes capture. Therefore, any unauthorized person who removes a tortoise from the site could be guilty of take.
 - c. Tortoises removed from the project area shall be released into undisturbed habitat 300 to 1000 feet from the collection site, away from the project area. Tortoises removed from the project shall be placed in the shade of a shrub or in a natural unoccupied burrow similar to the hibernaculum in which it was found or in an artificially constructed burrow following the protocol provided in Appendix A. Tortoises shall not be placed on lands not under the ownership of the BLM without the written permission of the landowner. Tortoises shall be purposefully moved only by qualified tortoise biologists, solely for the purpose of moving them out of harm's way.

If a suitable location is not found, tortoises shall be (1) provided to research or translocation projects approved and permitted by the FWS, (2) provided to educational facilities possessing the appropriate State and Federal permits, and/or (3) made available for adoption. The FWS recommends that potential recipients of tortoises meet the guidelines developed by the AGFD. Should facilities not meet these criteria, the FWS is concerned that the tortoises would not be cared for in a humane fashion. If tortoises cannot be placed in one of these

programs, they may be disposed of humanely through euthanasia by a qualified veterinarian or biologist licensed to do so. The tortoise remains will be properly preserved and deposited in an appropriate museum collection approved by the FWS or cremated.

Tortoises showing symptoms of Upper Respiratory Tract Disease shall be left in the wild after gathering data specified in Appendix A. To minimize the risk of spreading the Upper Respiratory Tract Disease, each tortoise shall be handled with a separate pair of disposable gloves. All materials used to handle or contain tortoises will be used once and then discarded or sterilized. Cardboard boxes used to hold tortoises shall be purchased new, used once, and then discarded.

- d. Following construction, all areas requiring maintenance shall be inspected for tortoises by a qualified tortoise biologist not more than one day prior to initiation of the work. Any tortoises located shall be removed in accordance with b and c above and Appendix A.
2. To implement reasonable and prudent measure number 2, the following terms and conditions shall be implemented:
 - a. All habitat disturbance shall be restricted to the right-of-way construction zone, which shall be adequately marked or flagged prior to onset of construction. All equipment and materials shall be stored within the boundaries of the identified areas. Construction vehicle traffic shall be restricted to existing roads.
 - b. To compensate for loss of desert tortoise habitat, Mr. Jacobson shall assist the BLM in closing and rehabilitating 1,000 linear feet of unauthorized roads in the vicinity of the proposed action. These roads shall be identified by a multi-discipline team including a BLM lands and realty specialist and a biologist. A BLM biologist shall accompany any work crew during road rehabilitation to ensure that no take of desert tortoise occurs.

Alternatively to 2.b., Mr. Jacobson may provide \$240.00 (0.6 acres at \$400.00 per acre) into an interest-bearing compensation fund established with no overhead charges by the BLM and the FWS. This fund is to be established and maintained for purchase of land as a first priority or research as a second priority for Mojave desert tortoise habitat and/or tortoise biological needs in Arizona. Distribution of funds will be per the concurrence of the FWS in coordination with BLM and AGFD.

3. To implement reasonable and prudent measure number 3, the following term and condition shall be implemented:
 - a. The BLM and/or its designee shall implement a litter control program during construction that will include the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility at the end of each work week.

4. To implement reasonable and prudent measure number 4, the following terms and conditions shall be implemented:
 - a. The BLM shall designate an individual as contact representative who will be responsible for overseeing compliance with the protective stipulations for the desert tortoise and providing coordination between the BLM and the FWS.

 - b. Prior to start of pre-construction and construction activities in any areas occupied by the desert tortoise or in which tortoise habitat is found, all present and future employees who will work in such areas shall be informed, through an educational program, of the occurrence of the desert tortoise in the project area and of the threatened status of the species. They shall be advised of the definition of "take," the potential for impacts to the tortoise, and the potential penalties (up to \$25,000 in fines and 6 months in prison) for taking a threatened species. They shall also be informed of the terms and conditions included in this Biological Opinion. The contents of the education program shall be submitted to the FWS for review and approval prior to its implementation. The program shall also be presented to all supervisory personnel, and supervisory and maintenance personnel associated with maintenance activities in tortoise habitat. All such persons shall sign a statement indicating that they have completed the education program and understand fully its provisions and the terms and conditions included in this Biological Opinion.

Reporting Requirements

Upon locating dead, injured, or sick desert tortoises, initial notification must be made to the FWS's Division of Law Enforcement, Sr. Resident Agent Frank Shoemaker, Mesa, Arizona (Telephone: 602/379-6443). Instructions for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement consistent with the provisions of this incidental take statement. Care must be taken in handling sick or injured

animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. All tortoise remains shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions.

Prior to construction, the BLM shall make arrangements with the institution regarding proper disposition of potential museum specimens. Should no institutions want the tortoise specimens, the remains may be disposed of in any appropriate manner. In conjunction with the care of sick or injured tortoises, or the preservation of biological materials from a dead tortoise, the BLM has the responsibility to ensure that information relative to the date, time and location of the tortoise when found, and possible cause of injury or death of each tortoise be recorded and provided to the FWS. Should injured animals be treated by a veterinarian and survive, the FWS should be contacted regarding final disposition of these tortoises. The FWS contact person is Jay Slack, Ecological Services, Phoenix, Arizona (Telephone: 602/379-4720 or FTS 261-4720).

The BLM shall notify this office of all tortoises killed, injured, or removed from the project area within 3 days of each occurrence. Within 30 days after the completion of the project, the BLM shall provide the FWS with a report detailing all tortoise-related activities undertaken in association with this project, including tortoise biologist activities, actual number of tortoises injured, killed, or moved, and effectiveness of the terms and conditions provided in this Biological Opinion.

If, during the course of the action, the amount or extent of the incidental take limit is reached, the BLM shall immediately notify the FWS in writing. If the incidental take limit is exceeded, the BLM must immediately cease the activity resulting in the take and reinitiate consultation with the FWS to avoid violation of Section 9 of the Act. Operations must be stopped in the interim period between initiation and completion of the new consultation if it is determined by the FWS that the impact of the additional take will cause an irreversible and adverse impact on the species, as required by 50 CFR § 402.14(i). The BLM should provide an explanation of the causes of the additional take.

Conservation Recommendations

Sections 2(c) and 7(a)(1) of the Act direct 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 FWS's suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or

regarding development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibilities for the species.

The BLM should examine all roads under its jurisdiction within desert tortoise habitat and block and reclaim those not used for legal access. This measure would reduce unauthorized access to the desert by off-road vehicles, collection of tortoises, and vandalism.

In order for the FWS to be kept informed of actions that either minimize or avoid adverse effects, or that benefit listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

Conclusion

This concludes formal consultation on granting a right-of-way for the Jacobson Access Road, as outlined in your April 17, 1991, request. As required by 50 CFR § 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is reached, (2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. We would appreciate notification of your final decision on this action.

We appreciate the assistance and cooperation of your staff throughout this consultation process. If we can be of further assistance, please contact Jay Slack or me (Telephone: 602/379-4720 or FTS 261-4720).



Sam F. Spiller

cc: Assistant Regional Director, Fish and Wildlife Enhancement,
Albuquerque, New Mexico (FWE-SE)
State Director, Bureau of Land Management, Phoenix, Arizona
Director, Arizona Game and Fish Department, Phoenix, Arizona

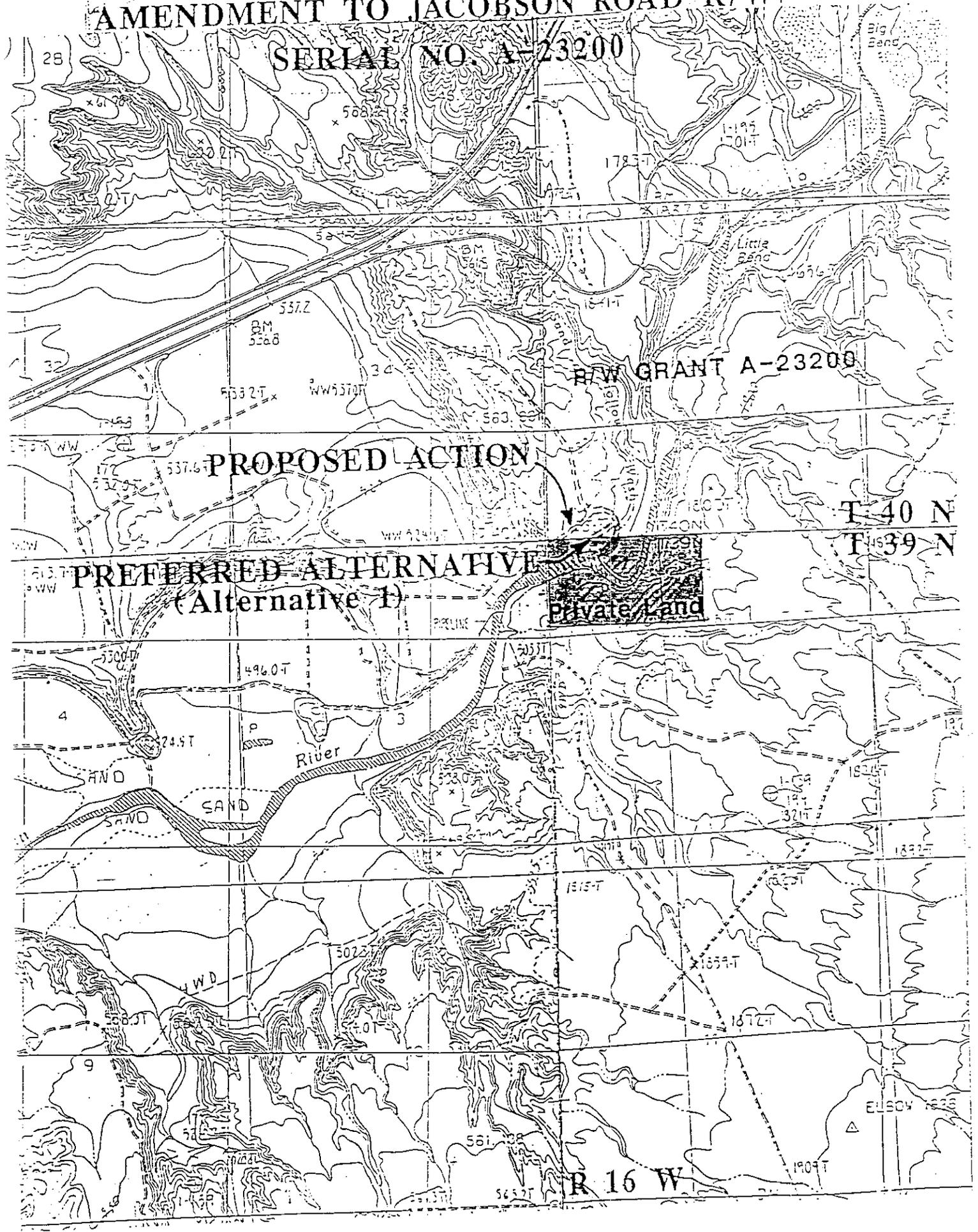
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FIGURE 1

AMENDMENT TO JACOBSON ROAD R/W

SERIAL NO. A-23200



PROPOSED ACTION

PREFERRED ALTERNATIVE
(Alternative 1)

Private Land

River

SAND

T 40 N

T 39 N

R 16 W

ELSON

Appendix A

Desert Tortoise Handling and Overwintering Procedures

(Note: Much of the information contained herein was obtained from Chapter III, Protocols for Handling Live Tortoises, in the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. This handbook is a cooperative effort among federal and state agencies. Primary editor is Dr. Cecil Schwalbe of the University of Arizona, Tucson, Arizona. The information on handling tortoise eggs was developed by the Reno Field Station in consultation with Dr. Schwalbe, Betty Burge of Las Vegas, Nevada, and the FWS's Ventura Field Office.)

1. All desert tortoises shall be handled in a careful manner. This includes lifting the animal slowly, fully supporting the animal in an upright position, and completing various measurements in the minimum amount of time. A tortoise can be damaged or die of intestinal torsion. If a tortoise must be turned over on its back, this should be done gently. The fieldworker shall turn the tortoise over by carefully rolling it over on its side to its back, and return the tortoise to the upright position by rolling it back in the same direction. The tortoise shall not be rolled end over end, side over side, or spun.

Tortoises, especially females, may be fatally damaged by blows, butting, or overturning, which results in egg yolk peritonitis brought on by seepage of egg yolk or breakage of shelled eggs into the peritoneal cavity. Handling of potentially gravid females shall be done very carefully.

To prevent hyperthermia, on warm days a tortoise must be kept in the shade (of the fieldworker, a pack, other equipment, etc.) except during photography. Tortoises shall not be weighed, measured, etc. when air temperatures exceed 90°F (32°C) at 1.5 m (4.9 ft) above ground unless measures are taken to insure the animal does not overheat. Tortoises shall be placed in shaded areas during handling, and if the animal is to be held for a longer period, it shall be individually placed in a sterile cardboard box, placed in a shaded, cool location and returned to the site of capture or relocation at sunrise on the following day. **CAUTION! TEMPERATURES ARE MUCH HIGHER NEARER THE GROUND.** Take extreme caution to avoid overheating a tortoise whenever surface temperatures exceed 86°F (30°C). Shield the bulb of the thermometer from direct solar radiation and wind when measuring temperatures.

2. Because of the threat of Upper Respiratory Tract Disease (URTD), all tortoises shall be handled so as to minimize the chances of spreading the disease, even if URTD has not been documented in a given locality. All personnel handling tortoises must be initially trained using protocols developed by Dr. Cecil Schwalbe of the University of Arizona. These protocols will be used to minimize the spread of URTD. All personnel handling tortoises shall wear disposable latex or plastic gloves to prevent transmission of diseases among tortoises. Not more than one tortoise shall be handled with each pair of gloves.

2

All equipment that comes in contact with any tortoise shall be sterilized before it is used on another tortoise. For example, triangular files for notching, calipers for measuring shell length, rules, and other equipment should be sterilized by soaking in 95% isopropyl or ethyl alcohol for at least 20 minutes before using on another tortoise. A 25% solution of chlorine bleach may also be used, but bleach is extremely corrosive and may damage many types of equipment. Wooden rules should not be used; they are difficult to sterilize because of the porosity of the wood. Use metal or plastic rules instead.

To avoid sterilizing spring scales or weighing straps prior to weighing each tortoise, use individual "T-shirt" bags, the plastic bags with two handles that are used to bag groceries. The handles of the bag can be used to suspend the tortoise during weighing.

The fieldworker's clothes shall be changed completely, including shoes, before visiting other tortoise sites. Dr. Schwalbe defines a site as follows: "As a general rule, a single valley or desert mountain range would be considered one site, unless there were special circumstances, such as URTD confirmed in one part of a valley, but not thought to occur in other parts of that valley. In such an instance, a change of clothes would be necessary before visiting other parts of that valley." Always visit the site with known occurrence of URTD last to minimize the chance of spreading the disease. Vehicle undercarriages and tires shall be washed when travelling between sites where URTD is known or suspected to occur. The fieldworker is not required to wash vehicles if there are no confirmed reports of URTD on a study site. The fieldworker shall consider that wet soil carrying microbes will adhere to vehicles, and such microbes are less likely to die before a new study area is visited. It is advisable to wash a vehicle after driving in wet soil if feasible.

When transported by vehicle or confined, each tortoise shall be contained in a newly-purchased, clean cardboard box of an appropriate size. Boxes shall be discarded after use. Tortoises shall never be placed in automobile trunks or on floorboards in an unconfined manner. Tortoises shall never be placed in the bed of a truck over the catalytic converter as this area of the metal bed may become extremely hot. Tortoises must not be left unattended in vehicles; this measure is intended to eliminate accidental mortality caused by overheating. Truck beds and floorboards must be padded and travel shall be at speeds which eliminate unnecessary vibrations.

3. All tortoises removed from the project area and released into the wild as a result of mitigation measures for this project shall be individually marked, per BLM standards (Attachment A-1). Notching and tagging are the current preferred methods for long-term marking and are supplemented with photographs and drawings. All four methods should be used to insure that over time the tortoise can be properly identified in future years.

Notching: "v" shaped notches are placed in the marginal scutes using a triangular file or, in the case of young tortoises, a nail clipper. The bridge marginal scutes, that is, those marginal scutes that connect the carapace to the plastron (M4 through M7) shall not be notched because of the difficulty in identifying the shallow notches in later years. Care shall be taken to avoid deep cuts that could cause bleeding. Generally, bleeding does not occur unless notches pass through the bony tissue. If notches are too deep and bone is damaged, regeneration of the tissue may occur and the area notches will be sloughed. For example, several tortoises notched in 1980 and recaptured in 1987 have barely recognizable notches. For information on how to properly notch a desert tortoise, please refer to Chapter III, Protocols for Handling Live Tortoises from the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats.

Tagging: Tagging was originally used in 1977 and appears to be as effective or better than notching for a long-term marking technique. Place a small dot of white paint on the fourth left costal scute; wait for the paint to dry. Write the identifying number for that tortoise on the dry dot using permanent black ink. Wait for the ink to dry and cover the dot and the ink with quick-drying clear epoxy. Note that the epoxy shall not touch the suture lines between the scutes. Numbers shall not be placed in the middle of the scute as this area may be sloughed or rubbed depending on the age of the tortoise and habitat in which it occurs.

In addition a photograph (35mm slide) of the carapace and fourth left costal scute shall be taken. If possible dust off the tortoise with a small brush to remove mud or dust from the scutes. Remember the brush must be either sterilized or disposed of after each use. Place a small piece of white paper (16 mm x 90 mm) on the edge of the shell with information on the study site name, date, and tortoise number. The tortoise shell area and fourth costal scute shall fill the slide frame. Drawings shall be made showing any anomalies (e.g., extra or missing marginal, costal, or vertebral scutes) or injuries (e.g., punctures holes from canines, tooth scrapes).

The responsible Federal Agency shall develop its own cataloging format to enable it and others to track tortoises handled as a result of development projects.

4. A standard data sheet should be developed to record the following information:
 - A. Name of person collecting the animal.
 - B. Exact location and date of collection.
 - C. The individual number assigned to that animal.
 - D. The over-wintering location of the tortoise.
 - E. The release site and date of release of the animal.

- F. Health condition of the tortoise, including measured weight and length at initial capture and release. In addition to this information complete the URTD checklist (Attachments A-2 & A-3).
 - G. Photographs of carapace, plastron, and fourth left costal scute.
 - H. The information specified in 4.A. through 4.G. must be supplied to the responsible Federal agency and the Fish and Wildlife Service (FWS) immediately after cessation of both tortoise clearing and release activities. The information shall be provided in the form of a report accompanied by data sheets.
5. Tortoises found actively moving on the surface, and to be removed from the project site, shall be released between 150 and 1000 feet from the outer boundary of the project area nearest the capture point. Relocated tortoises shall be placed under a shrub in the shade. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. Should the capture occur late in the day so the animal will not have sufficient time to find a suitable burrow for the night, the tortoise shall be placed in a clean cardboard box as described above and held in an appropriate place safe from predators and danger of hyperthermia, until release can occur in the morning.
6. If tortoises found in burrows, and to be removed from the project site and released into the wild, are removed from burrows between November 1 and March 15, shall be transported in cardboard boxes to the approved over-wintering site. Each tortoise shall be placed in an artificial burrow within a fenced enclosure with one tortoise per enclosure. Each enclosure must be separate from adjacent pens so that one tortoise can not place its head or limbs through the fence and physically contact a tortoise in an adjacent enclosure. Fencing does not need to be buried but shall be stable enough to preclude escape.

The main chamber of the burrow shall be constructed of plywood and the roof placed approximately 2.5 feet below the soil surface. The burrow's tunnel shall be eight to 10 feet long with a gentle slope (e.g., about 4:1). The tunnel shall be stabilized on the top with PVC pipe cut in half. The pipe shall be no smaller than 15 inch in diameter and soil shall be used to adjust tunnel to tortoise size. After placement of the tortoise in the burrow, the entrance of the tunnel shall be partially blocked with loose topsoil.

If any tortoise excavated is underweight, as determined by comparison to regressions developed by Dr. Michael Weinstein for the tortoises at the Honda project, the tortoise shall be placed in a room at a temperature of 90° to 100°F and allowed to soak in fresh water for two to three hours. After rehydration and drying, the tortoise shall be cooled to hibernation temperature slowly and placed in an artificial burrow. This procedure shall be implemented only by persons instructed in this manner of treatment.

Beginning in February, activity of the tortoises within the artificial burrows shall be monitored to determine an appropriate release time. Tortoises shall be released in the morning hours when temperatures are conducive to activity. The appropriate time for release will probably occur in the third week of March.

Each tortoise shall be released between 150 and 1000 feet from the outer boundary of the project area nearest the capture point. Released tortoises shall be placed under a shrub in the shade. Releases shall occur at a temperature that is suitable for activity, with reasonable expectation that the temperature will remain within the tortoise's thermal preference long enough for the tortoise to adjust to its surroundings. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. To facilitate this measure, each tortoise must be accompanied by one of the approved biologists. There shall be no mass releases of animals.

7. Tortoise eggs shall be moved to artificial nests either in the wild or at an approved facility. Biologists must receive special training in the procedures outlined below, but such training can be obtained after a nest is actually found. If this is done, the nest shall be carefully covered with soil so as not to move the eggs and protected until on-site training is provided. The responsible Federal agency shall ensure that this training is made available.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature 6 inches above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, large tool use shall be discontinued and the nest excavated by the biologist using his or her hands. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because these eggs are very fragile, some may break during handling. This will be lethal to egg contents. Such an accident can be expected to occur until techniques are developed to avoid this type of incident. Broken eggs shall be buried nearby and left in the field, or the contents preserved and provided to qualified researchers.

The biologist shall measure and record the depth of the nest below the soil surface, the location of the nest in relation to any adjacent shrub (ie, whether on the north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately one inch of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that in the original nest.

If good tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet from outer boundary of the project site. Prepare a nest with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. Carefully transfer the eggs, maintaining their original orientation, to the new nest. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be monitored by a qualified biologist. The monitoring program shall be developed in consultation with the FWS.

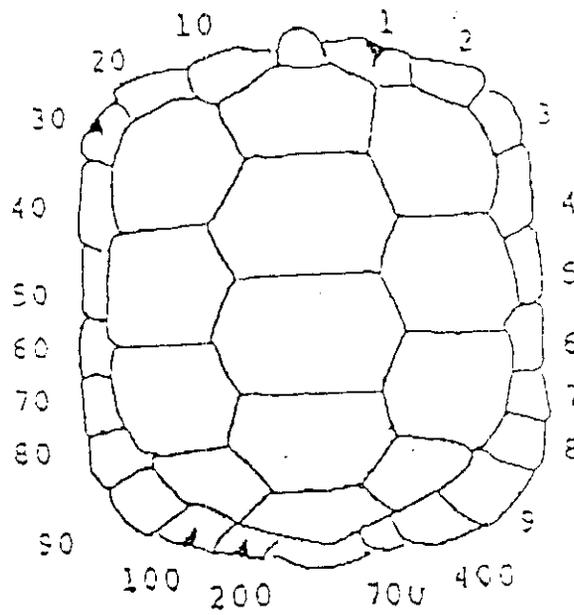
If a suitable site for a new nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. Place a small amount of soil in a bucket and transfer the eggs to the bucket using the technique specified above, making sure the eggs are touching one another. Carefully fill the bucket to the depth of the original nest, but leave the top of the soil layer 3 inches below the rim of the bucket so that future hatchlings cannot escape. Bury the bucket in soil in a safe location at an approved holding facility.

The biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

8. Should any deviation from the procedures outlined above be necessary, the approved biologist shall contact the FWS as soon as possible.
9. A final report, containing all the information noted above and including release information, must be supplied to the FWS and the responsible Federal agency within one month of the final releases or disposition of tortoises.

Attachments

Tortoise number = 331



Tortoise number = 331

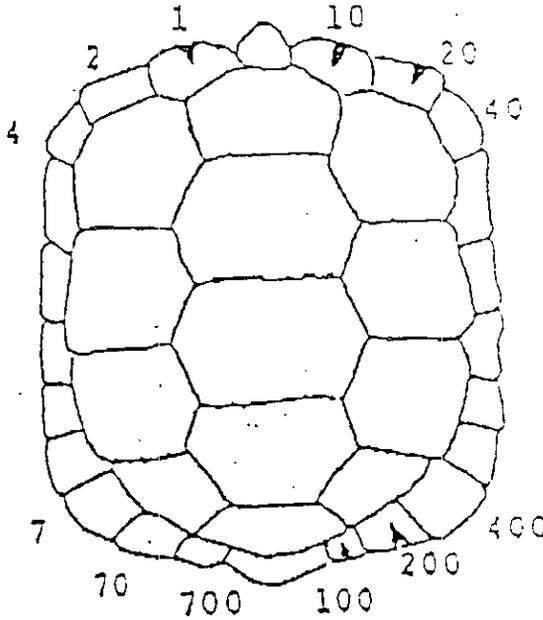


Figure III-2. Coding system (notching) for desert tortoises. Top: System used on most BLM plots in California, Nevada and Arizona. Some workers do not use the bridge scutes (marginals four through seven) when marking turtles or tortoises. Bottom: System used on BLM plots in Utah and on the Arizona Strip.

Fieldworker _____
 Site no. _____
 Township _____ Range _____
 Section _____ Grid _____
 County _____
 State _____

Tort. no. _____
 Capttype _____
 Sex _____
 Weight (g) _____
 feces/void _____
 total (g) _____

Date (mo/d/yr) _____
 Time (PST) _____
 Weather conditions (recency of precipitation, pooled water) _____

POTENTIAL NASAL DISCHARGE		EYES, CHIN GLANDS, INTEGUMENT		PARASITES
BEAK/NOSE	Yes	No	Circle eyes or lids: Yes No	Describe
Beak/nose wet	___	___	Eye/lids whitened or	_____
Beak/nose damp	___	___	discolored	_____
Beak/nose dry	___	___	Eyes/lids wet	_____
Nasal exudate present	___	___	Eyes/lids swollen	URINE
Exudate clear	___	___	Eyes sunken	Voided? _____
Exudate cloudy	___	___	dull, cloudy	_____
Exudate white	___	___	clear, bright	Viscosity _____
Exudate yellow	___	___	Chin glands draining	_____
Exudate green	___	___	INTEGUMENT ³	_____
Bubble(s) from nares	___	___	Integument dull	_____
Nares:			Integument glossy	Particulates _____
One occluded	___	___	Normal elasticity	_____
Both occluded	___	___	Skin peeling	_____
Dirt on nose/beak	___	___	ORAL CAVITY ⁴	Footnote 4. Important observations opportunistically, if tortoise opens mouth.
Dirt in nares	___	___	Observed	_____
FORELEGS			Discharge present	_____
Dried dirt on forelegs	___	___	Membranes pink	_____
Moisture on forelegs	___	___	Membranes pale, white	_____
Dried exud. on scales ¹	___	___	Smells/mouth rot	_____
Scales cracking ²	___	___	POSTURE/BEHAVIOR	_____
BREATHING			Alert, responsive	_____
Smooth, clear	___	___	Lethargic	_____
Wheezing	___	___	Can pull limbs/head	_____
Rasping	___	___	tightly into shell	_____
			Limbs, head hanging	_____
			limp and loose	_____

¹ Dr. Jacobson described a situation similar to humans with draining noses: shiny integument glossy with dried exudate.

² Taken a step from footnote 1, the integument can crack from effects of exudate, as in a human with chapped lips.

³ This will be difficult, but do the best you can. For normal elasticity, gently pull skin on limbs, note how quickly skin returns to position. Show sites for peeling skin on page 2

Attachment A-3

Fieldworker _____

Tort. no. _____

Date (Mo/d/yr) _____

Site no. _____

EVIDENCE OF SHELL DISEASE

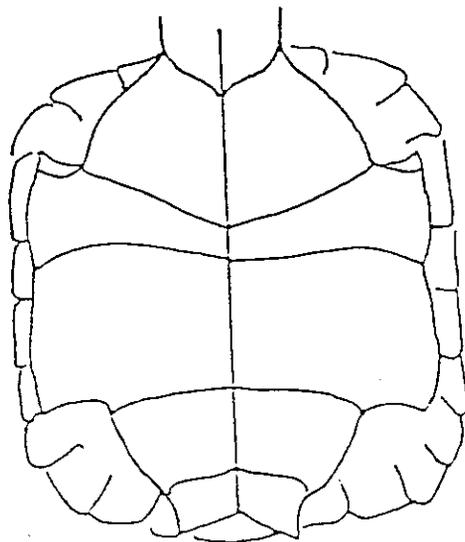
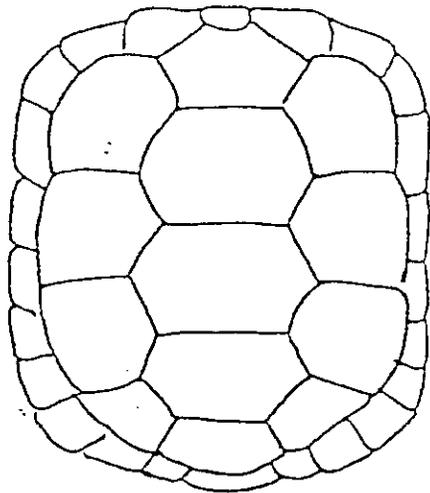
	Yes	No
Lesions present	___	___
Lesions active	___	___
Lesions healed	___	___
Necrosis present	___	___
Pitting	___	___
Pitting diffuse	___	___
Pitting concen.	___	___
Fungal areas	___	___
Gular intact	___	___

EVIDENCE OF TRAUMA TO:

	Yes	No
Head	___	___
Forelimbs	___	___
Hindlimbs	___	___
Shell	___	___
Describe _____		

TISSUE SAMPLES COLLECTED:

	Yes	No
Blood	___	___
Urine	___	___
Nasal smear	___	___
Nasal wash	___	___
Bone plug	___	___
Scute scrapings	___	___
Other (describe) _____		



GENERAL LEGEND FOR DIAGRAM

-  Shell necrosis
-  Trauma (lesions, i)
-  Ticks, mites

In general, show all at
with lesions, necrosis,
pitting, fungus, and i