Habitat Management for Desert Tortoise in Nevada

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The desert tortoise *(Gopherus agassizii)* is a unique terrestrial reptile that inhabits the southwestern desert regions of California, Nevada, Utah, and Arizona in the U.S. and Sonora and Sinaloa in Mexico. In Nevada, the desert tortoise occurs in the Mojave Desert regions of Clark, southern Nye, and Lincoln counties. In addition to this free living population, there are over 40,000 tortoises kept as pets within Clark County's urban areas. With the exception of domestic animals within these urban areas, the desert tortoise in Nevada is a State-protected and rare reptile.

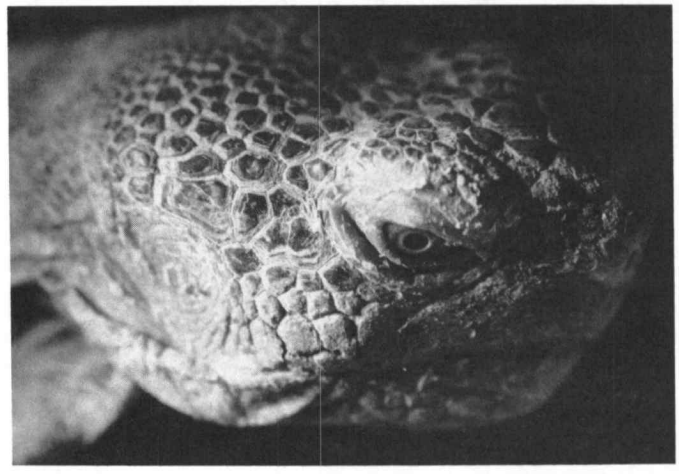
Approximately 80 percent of Nevada's desert tortoise habitat occurs on public lands administered by the Bureau of Land Management's (BLM) Las Vegas District. Approximately 144 square miles of this habitat support densities of 40 or more animals per square mile (see Table 1).

Table 1. Tortoise densities and population estimates in Nevada.

Tortoise density	Sq. Miles	Population Estimates Minimum	Maximum
90-175 tortoises/sq. mile	31	2,790	5,425
40-90 tortoises/sq. mile	113	4,520	10,170
20-40 tortoises/sq. mile	637	12,740	25,480
Less than 20 tortoises/sq. mile	6,015	6,015	120,300
TOTALS	6,796	26,065	161,375

Estimates put the mean tortoise at approximately 93,720 individuals (NDOW 1985). Most population numbers were derived using 30-day census techniques, which result in very conservative estimates. Historic information on tortoise distribution in Nevada is limited primarily to personal communication with local residents and a small number of literature citings (e.g. Grant, 1936) and museum collections. Starting in 1977, the BLM has contracted numerous inventory efforts to determine distribution and relative densities of the desert tortoise in southern Nevada (Karl 1980). Such data collected in 1979 and 1980 were incorporated into BLM's planning for Clark County.

In 1983, a tortoise die-off was identified in Piute Valley in a Nevada Department of Wildlife (NDOW) study by Paul Schneider. BLM and NDOW biologists studied the remains of 109 carcasses and concluded that the major die-off occurred during the late summer or early fall of 1981 and was limited primarily to a relatively small area of the Crescent Peak grazing allotment. Mortimore and Schneider (1983) suggest that the die-off was due in part to the drought of 1981 and that habitat had been adversely impacted by the long-term grazing intensity in the area. In 1985, BLM initiated ephemeral forage production studies for desert tortoise. The results of the transects read for three allotments in Piute Valley indicated a wide range of dry ephemeral forage production (11-303 lbs./acre) depending upon the plot and time read.



The BLM has identified the desert tortoise as a sensitive species within the State of Nevada. (photo by J. Ross)

On September 14, 1984, the U.S. Fish and Wildlife Service (USFWS) was petitioned by Defenders of Wildlife, Environmental Defense Fund and the Natural Resources Defense Council to list the desert tortoise as an endangered species throughout its remaining range in Arizona, California, and Nevada. The tortoise population in the Beaver Dam Slope area of Utah was listed as threatened in 1980. Input was provided to the USFWS by both the BLM and NDOW, as well as from other interested parties, to determine whether or not the species population status is secure. Berry et al. (1984) is an extensive report submitted to the USFWS by the Desert Tortoise Council, a group organized in 1975 to assure continued survival of desert tortoise throughout its existing range. The Nevada State Board of Wildlife Commissioners' position is that current available data do not support the listing of the desert tortoise as an endangered or threatened species in Nevada (NDOW 1985). The Endangered Species Act of 1973 defines an "endangered species" as any species which is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is one not in danger of extinction now but likely to become endangered within the foreseeable future throughout all or a significant portion of its range. On October 26, 1985, the Commission-

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ers stated that desert tortoise should continue to receive priority management consideration on public lands in concert with the multiple use management concept and that NDOW should continue to work with land management agencies to minimize existing and potential problems.

The BLM and NDOW recognize the desert tortoise as a sensitive species, because its range is fairly restricted and any appreciable reduction in numbers, habitat availability, or habitat condition could necessitate threatened or endangered listing. BLM's fundamental objective is to maintain or increase current population levels of this sensitive animal through early habitat protection and enhancement.

In September, 1985, the USFWS in Washington issued a finding that listing of the desert tortoise throughout its range is warranted, but precluded by other pending proposals of higher priority. Additional data are being gathered, existing data are being further evaluated, and expeditious progress is being made to list or delist species. When presently available data need supplementation, the species receives a lower priority for listing than species with complete data, depending on the degree of threat facing a species. Administratively, the USFWS feels a "warranted but precluded" finding is appropriate for the desert tortoise while developing the data necessary to support a proposal.

If the desert tortoise is ultimately listed, the species would receive protection under the Endangered Species Act. Among the benefits of listing are prohibitions on interstate or international trade in listed species without a permit; obligation for the USFWS to develop a species recovery plan; and the possibility of Federal funding for state conservation efforts, as authorized under Section 6 of the Act for states that have approved endangered species cooperative agreements with the USFWS. Exceptions to the prohibition on take are available in certain circumstances for species listed as threatened. Habitat conservation is addressed under Section 7 of

Frontier 500 off-road vehicle race near Sloan, Nev., October 1984. Over 681,000 acres of crucial desert tortoise habitat in the BLM's Las Vegas District have restrictions in regards to off-road vehicle use. (photo by J. Ross)

the Act, which requires Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize a listed species or adversely modify its critical habitat. If a Federal agency finds that one of its activities may affect a listed species, it is required to consult with the USFWS. Through consultations early in the planning process, it is usually possible to find ways of achieving project goals without jeopardizing listed species.

Some loss of management flexibility may result from listing. For example, the consequences of listing may not necessarily be the end of livestock grazing in crucial tortoise habitat, but flexibility of the livestock operator and Federal land management agency would certainly be limited. Flexibility of the operator to move livestock to take advantage of good ephemeral forage production years may be impaired as required consultation with USFWS may take up to 90 days. In the meantime, however, BLM has found that grazing management systems can be designed to ensure that viable populations of desert tortoise can coexist with livestock.

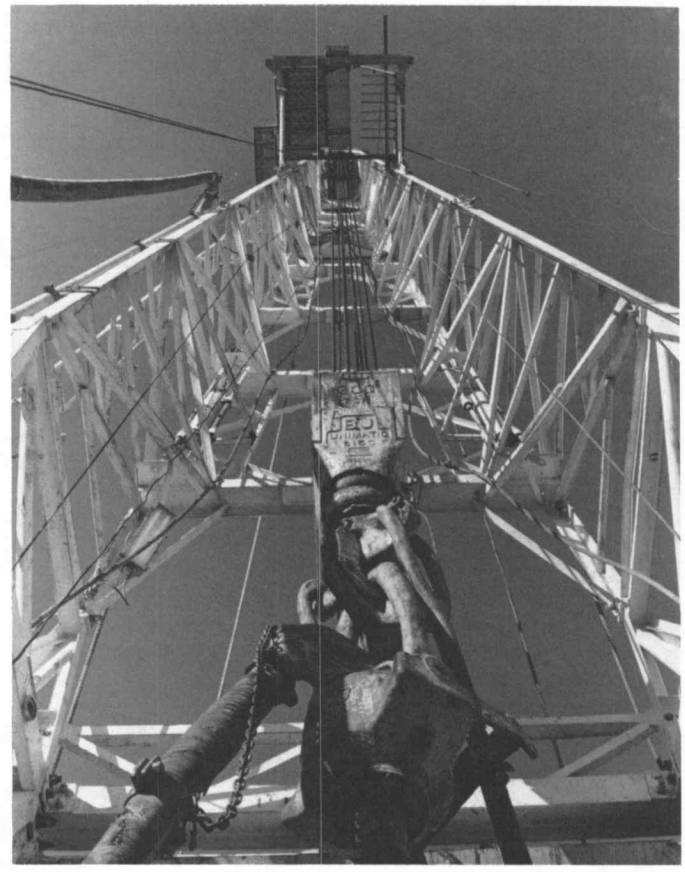
Because the habitat of desert tortoise is in creosote and blackbrush dominated flats, valleys, and bajadas below 4,500 ft. in Nevada, many activities have potential to impact the species' habitat. The Bureau of Land Management manages wildlife habitat values to ensure their full consideration in land use planning and decisionmaking. Wildlife benefits are often realized by incorporating wildlife provisions in other program management plans, developing stipulations and mitigative measures for wildlife and, where necessary, providing habitat rehabilitation following development. Protective mechanisms are in place to prevent deterioration of desert tortoise habitat on the Las Vegas District, and special consideration is being given desert tortoise to prevent the species from becoming threatened or endangered.

Off-Road Vehicle (ORV) Use

Coordinated Resource Management and Planning (CRMP) was used to recommend ORV designations for the 3,097,131-acre Stateline-Virgin Valley Planning area of the Las Vegas District. CRMP is a resource planning and problem-solving process, based upon the philosophy that resource conflicts can best be solved on a local level by direct communication among interest groups and individuals. The 8-month CRMP effort culminated in issuance of ORV designations for Clark County in September, 1984. Depending upon the area, ORV use is limited in 629,726 acres of desert tortoise crucial habitat to: 1. designated roads or to, 2. non-speed competitive and non-competitive use or to, 3. non-competitive use solely or to, 4. existing roads, trails, courses, and sand washes. In other cases, there are limitations on season of use, type of use or number of laps, number of entrants, and location of pitting areas. Off-road vehicle designations for the 3,416,393-acre Caliente Planning Area of the Las Vegas District were issued in December, 1984. Within 51,360 acres of desert tortoise crucial habitat, ORV use is restricted to existing roads and trails.

Lands and Minerals Actions

In 1982, inventories to identify and mitigate impacts of powerline construction to tortoise burrows led to development of mitigation measures for the species. Stipulations have been incorporated into Right-of-Way grants, mining plans and mineral leases for many actions within BLM's Las Vegas District. For example, desert tortoise stipulations for the Intermountain Powerline Project transmission line project were developed which provide for:



Mitigation measures for lands and minerals actions protect the desert tortoise and its habitat. The location for the access road to this oil drill rig was slightly modified to avoid tortoise burrows. (photo by J. Ross)

1. Availability of an experienced tortoise biologist during new road construction and tower site clearing, and at pulling and tensioning sites.
2. Location, flagging and avoidance of tortoise burrows prior to initiation of surface disturbing activities.
3. Proper handling and moving of tortoise encountered.
4. Required briefings for construction personnel in regards to the status and laws pertaining to the tortoise, the other stipulations above, and techniques for handling tortoises encountered.

Range Management

The northern limit of desert tortoise in Nevada is within the Las Vegas District's Caliente Resource Area. The Final Caliente Livestock Grazing Management Environmental Impact Statement, issued in 1979, concluded that grazing reductions and livestock removal during spring and summer (April 1- September 16) would have positive effects on the desert tortoise population (USDI, BLM 1979). Rangeland management guidelines for the resource area were issued in a program summary. The final Caliente Management Framework Plan (MFP) decisions were issued in February, 1982, and the Caliente Grazing CRMP Committee, charged with developing recommendations to implement MFP decisions, has completed action plans on all 80 of the eligible allot-

ments. Monitoring studies have been installed on 51 active and seven inactive grazing allotments, which include wildlife crucial habitat or wild horse herd management areas. Existing forage use and objectives have identified the provision of forage to desert tortoise. In 1985, the BLM's Caliente Resource Area completed a Grapevine Allotment Management Plan. Included in it is a limitation in season of use in the lower pasture to reduce livestock-tortoise conflicts.

Three specific Clark County MFP (USDI, BLM 1984) decisions issued in January 1984 are directly applicable to desert tortoise habitat protection:

1. Grazing...will be consistent with other multiple land use objectives. In crucial desert tortoise habitat, ensure adequate amounts of spring ephemeral forage are made available to desert tortoise. The perennial vegetation resource will be managed at a proper utilization rate to obtain a sustained yield and improve livestock forage conditions. A specific monitoring plan, developed according to guidance contained in the Nevada Task Force's Monitoring Program, will be used to determine if those objectives are being met. If it is demonstrated through monitoring that livestock or wild horse and burro use in a given allotment is having an adverse effect on the resources identified in the multiple land use objectives, particularly on crucial bighorn or desert tortoise habitat, then livestock and wild horse and burro grazing use will be modified to the extent necessary to meet those objectives.

2. Through coordination and consultation, and using monitoring tools, identify habitat needs of wildlife species, particularly desert tortoise and bighorn sheep in their crucial habitats, such as adequate forage, water, cover, etc., and provide for those needs so as to, in time, attain the population goals for those species as mutually agreed to between BLM and NDOW. Consider these needs and multiple land use objectives as identified by allotment prior to authorizing livestock use on ephemeral range.

3. Conduct monitoring studies on rangelands requiring intensive management or where severe conflicts exist. Ensure all grazing ungulates and sensitive species such as desert tortoise are monitored by the program. Ensure related animal data (numbers, competitive uses) is gathered. Use the statewide system as a base.

To provide recommendations to BLM on how to implement these decisions, a Coordinated Resource Management and Planning (CRMP) effort was undertaken. In early 1984, the Clark livestock grazing CRMP effort began. Allotments with desert tortoise crucial habitat were identified for categorization as allotments requiring intensive management because of resource conflicts, and thereby requiring monitoring to determine adequacy of ephemeral forage production, ensure proper forage allocation, and to measure success in achieving stated objectives. The CRMP Committee recommended that BLM conduct ephemeral forage production studies for tortoise. Detailed ephemeral production studies on crucial desert tortoise habitat are undertaken if grazing is proposed between March 1 and May 31 (USDI, BLM 1986).

Wildlife

The Clark County MFP (USDI, BLM 1984) spelled out the following wildlife decisions to benefit desert tortoise habitat:

1. Do not license grazing by domestic sheep in the McCullough Allotment. Allow cattle grazing. (The McCullough Allotment contains 43,520 acres of crucial tortoise habitat).

2. All users of the public land will be encouraged to travel existing roads or trails in crucial wildlife habitats. Where possible, new road or trail construction should be avoided in crucial wildlife habitat. Coordination with mineral or geophysical companies that plan road construction within crucial habitat should be accomplished to mitigate adverse impacts that would occur as a result of such construction.

3. In desert tortoise crucial habitat, limit domestic sheep to a single pass through any use area in any one grazing season. Inspect sheep use areas annually to determine if perennial forage species are being unduly impacted. Adjust use as necessary. Resolve sheep-desert tortoise conflicts on Bunkerville, Gold Butte, Billy Goat Peak, and Christmas Tree Allotments during the CRMP process.

The Caliente MFP (USDI, BLM 1982) issued the following decision specifically in regard to desert tortoise:

1. Protect the desert tortoise and other reptile habitats through protective stipulations in the environmental process. Require the maximum utilization of existing roads and trails by competitive ORV groups and other heavy use groups and organizations. Undertake a continuous public awareness program to inform the public of critical habitat requirements for these desert reptiles.

Research Needs

Presently, literature searches on the desert tortoise (Hohman and Ohmart 1979, for example) indicate that significant data gaps exist. The BLM's Las Vegas District has developed a statement of research need for the desert tortoise. Objectives would be to determine minimum, viable population levels in various habitat types, test and validate habitat/population models developed in California and their applicability to Nevada, and to relate long-term population trends to causal factors in terms of habitat and environmental variables. The considerable interest in research for the desert tortoise led to the creation of a desert tortoise subcommittee to the Mojave Desert Range Project (MDRP), a group seeking to resolve multiple use range issues in the Mojave Desert through involvement of Cooperative Extension Service Advisors, range specialists and academia in Arizona, California, Utah, and Nevada. The subcommittee identified the following as priority research needs for the desert tortoise:

I. Desert Tortoise Nutrition

A. What are the nutritional forage quantity and quality needs for maintenance of adults, growth of subadults, and reproduction?

B. How do desert tortoise actually obtain these nutrients from their diet in various plant communities?

C. Does livestock grazing decrease the forage available to desert tortoise in such a manner so as to impair maintenance, growth, or reproduction?

II. Desert Tortoise Habitat

A. Does livestock grazing impair the physical habitat, burrows, shrub cover, etc. in such a way that desert tortoises are placed at increased risk?

Management Recommendations

The BLM has demonstrated and will continue to show that the desert tortoise and habitat management for it deserve close scrutiny, consideration, and attention. Continued close coordination with other agencies, interest groups, and public land users will occur. A continued emphasis on monitor-

ing and inventory efforts can be expected. Land use stipulations and mitigation measures will continue to be used to minimize potential impacts within crucial desert tortoise habitat. It is recognized that many of the BLM's wildlife responsibilities can best be met through incorporation of wildlife objectives and protective provisions within the framework of other activities and programs. Specific recommendations on public lands in Nevada for the benefit of desert tortoise include:

1. Issuance of grazing decisions and development of allotment management plans which recognize desert tortoise spring ephemeral forage needs in crucial habitat.

2. Strengthening or supplementing the 1970 Memorandum of Understanding between BLM and NDOW to provide sound management for the desert tortoise and other sensitive species.

3. Development of a Las Vegas Districtwide Habitat Management Plan (HMP) to maintain or improve habitat conditions for desert tortoise. Such a plan would ensure the long-term survival of the species in its natural state by minimizing existing threats and improving habitat consistent with maintaining healthy, stable populations. The effort would be fully coordinated with NDOW and USFWS.

4. Pursuit of a conservation agreement between BLM, NDOW and USFWS to enhance desert tortoise habitat management. Such an agreement would serve to further the purposes of Endangered Species Act, as amended, and would emphasize interagency consultation to evaluate changing management priorities or direction.

5. Development of a coordinated rangewide habitat management strategy for the desert tortoise.

6. Support for additional surveys, monitoring and research to gather habitat and population information and to determine the effects of various land use practices on desert tortoise and its habitat.

7. Further refinement or revision of existing management decisions should the need be identified as a result of new data collected.

8. Pursuit of information and education efforts to keep the public informed of BLM's plans and accomplishments.

In summary, the implementation of and adherence to existing management decisions should meet the objective of maintaining habitat for a viable, self-sustaining population of desert tortoise within Nevada's Mojave Desert ecosystem. Actions being taken by the Bureau of Land Management and Nevada Department of Wildlife indicate firm commitment to management consideration of desert tortoise within the framework of multiple use planning and decisionmaking.

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Wind Erosion Symposium

February 23-24, 1987, is the date of the *Symposium on Soil Erosion by Wind,* Clarion Hotel, Airport, Denver, Colo. It is sponsored by the Colorado Chapter of the Soil Conservation Society of America. Contact: Dr. Hunter Follett, Department of Agronomy, Colorado State University, Fort Collins, Colorado 80521. For registration, (303) 491-6201.