

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

**Endangered and Threatened Wildlife and Plants; Listing as Threatened With Critical Habitat for the Beaver Dam Slope Population of the Desert Tortoise in Utah**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** The Service determines the Beaver Dam Slope population of the desert tortoise (*Gopherus agassizii*) to be a Threatened species and determines the Critical Habitat of the species. The tortoise population occurs on the Beaver Dam Slope of southwestern Washington County, Utah. This action is being taken because the population is continuing to decline because of habitat deterioration and because of past overcollection. The Bureau of Land Management, which owns the entire Critical Habitat, has recently taken steps which it is hoped can maintain a viable population of tortoises and allow for maximum grazing. For this reason, the tortoise is being listed as Threatened instead of Endangered as originally proposed. The rule provides the full protection of the Endangered Species Act of 1973, as amended, to this population.

**DATES:** The rule becomes effective on September 19, 1980.

**ADDRESSES:** Questions concerning this action may be addressed to Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. Comments and materials relating to the rule are available for public inspection during normal business hours at the Service's Office of Endangered Species, Suite 500, 1000 N. Glebe Road, Arlington, Virginia.

**FOR FURTHER INFORMATION CONTACT:** Mr. John L. Spinks, Jr., Chief, Office of Endangered Species, U.S. Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C. 20240 (703/235-2771).

**SUPPLEMENTARY INFORMATION:****Background**

On August 8, 1977, the U.S. Fish and Wildlife Service was petitioned by Dr. Glenn R. Stewart on behalf of the Desert Tortoise Council to list the Utah desert tortoise population as Endangered under provisions of the Endangered Species Act of 1973. Included in the petition was a recommendation for Critical Habitat. The main threats to this unique

population were said to be competition from grazing animals, overgrazed habitat, and problems with collection of individuals.

After careful review of the petition by the Office of Endangered Species, the Director of the Service notified the Desert Tortoise Council on August 30, 1977, that the petition did indeed supply substantial information as required by the Act to warrant a proposal to list the population under provisions of the Act. On August 23, 1978, the Fish and Wildlife Service published a proposal to list this population as Endangered and included a 35 square mile area of Bureau of Land Management administered land in southwestern Utah as Critical Habitat (43 FR 37662-37665).

On March 6, 1979, the Service withdrew all proposed Critical Habitats until such time as they could be repropoed in accordance with the 1978 amendments (see the *Federal Register*, 44 FR 12382-12384). On December 7, 1979, the Service repropoed Critical Habitat to include exactly the same area as originally proposed. See the *Federal Register* of December 7, 1979 (44 FR 70680-70682) or the Service's January 1980, *Endangered Species Technical Bulletin* for details.

In conjunction with the repropoal for Critical Habitat, the Service held a public meeting in St. George, Utah, on January 10, 1980, to explain the proposal, answer public questions, and to solicit additional information on the biology of the tortoise and the economic effects of a Critical Habitat designation on Federally authorized and funded projects in the area. Several individuals, including U.S. Senators Hatch and Garn, requested that a public hearing be held on the repropoal of Critical Habitat. Accordingly, a public hearing was held on March 25, 1980, at St. George, Utah, to take testimony on the designation of Critical Habitat. That testimony is part of the public record and has been carefully considered in the drafting of this final rule.

All public comment periods were closed on April 9, 1980.

The following section provides a brief introduction to the biology of the Beaver Dam Slope population of the desert tortoise. More information may be obtained by consulting the references cited at the end of this section.

The desert tortoise, *Gopherus agassizii*, is one of three species of the genus *Gopherus* occurring in the United States. A fourth *Gopherus*, *G. flavomarginatus*, occurs in Mexico and is listed as Endangered on the U.S. List of Endangered and Threatened Wildlife and Plants. The desert tortoise inhabits the Mojave and Sonoran deserts of the

southwestern United States (Arizona, California, Nevada, Utah) and adjacent areas of Mexico as far south as southern Sonora. The biology of this species has been reviewed by Ernst and Barbour (1972), Smith and Smith (1979) and Auffenberg and Franz (1978); extensive references on this species have been provided by Douglas (1975, 1977). Throughout the United States, the tortoise has been the subject of extensive research as to its status, biology, potential threats and distribution; most of this research has been sponsored or conducted by the Bureau of Land Management in cooperation with the various states. The chief threats to the tortoise include habitat destruction through development for residential and agricultural use, overgrazing (Berry, 1978), geothermal development, taking as pets (now largely controlled by individual states), malicious killing, from being run over on roads, and for competition with grazing or feral animals. Natural predation may or may not be a significant factor in the decline of this species, depending on age class involved.

From 1936 to 1946, the Beaver Dam Slope population was studied by Drs. Angus Woodbury and Ross Hardy. While the whole Beaver Dam Slope was surveyed, they concentrated their efforts in a two square mile area where they found the greatest concentration of tortoises. Some 270 tortoises were marked and a few are reported to remain thus making them part of one of the oldest marked populations of vertebrates in the world. According to the petition submitted by the Desert Tortoise Council in 1977, 2000 tortoises may have inhabited the slope at one time with fewer than 350 remaining. The ecology of this population is discussed by Woodbury and Hardy (1948), Coombs (1974a,b; 1977a,b,c; 1979) and Hansen et al. (1976). Concern for the continued survival of the tortoise on the Beaver Dam Slope is expressed by Coombs (1977c), Hardy (1976) and Stewart (1976). Dodd (1978) reviewed the status of the petition to list this species as Endangered and Day (1979), Smith (1979), and Rowley (1978) discussed aspects of State and BLM management programs and why they believe the tortoise population should not receive Federal protection.

Over the last few years, the Bureau of Land Management has made adjustments to correct livestock grazing problems (statement of F. Rowley at St. George hearing). Fifty percent of cattle use was reduced in 1965 with another 23 percent proposed (however, this is in litigation at present). Adjustments have

been made in season of use and an Allotment Management Plan (AMP) is in the process of being implemented. BLM has proposed the establishment of a 3040 acre natural study area for the desert tortoise. Further studies have been contracted. In addition, Mr. Rowley has indicated that grazing will in the future not extend beyond April 30. The AMP calls for a stocking rate of 26 acres/cow/ month which allows 156 acres per cow for the six-month grazing season. Mr. Rowley believes that trampling will therefore be insignificant. BLM's land use plan calls for vehicles to be restricted to existing roads and trails.

The steps outlined above, form the basis for the Service's decision that this population should be listed as Threatened instead of Endangered as originally proposed in 1978 (see discussion below).

The latest survey of the tortoise was sponsored in 1980 by the Utah Division of Wildlife Resources and BLM. A 60 day study revealed a total of 82 tortoises over a 30 square mile area. Ninety shells were recovered but were reported to be only a part of those seen. Of interest is that a balanced sex ratio was found.

#### Summary of Comments and Recommendations

Section 4(b)(1)(C) of the Act requires that a summary of all comments and recommendations received be published in the Federal Register prior to adding any species to the list of Endangered and Threatened Wildlife and Plants.

In the August 23, 1978, Federal Register (43 FR 37662-37665) the Service proposed to list the Beaver Dam Slope population of the desert tortoise (*Gopherus agassizii*) as Endangered with Critical Habitat. The Critical Habitat portion of this proposal was withdrawn on March 6, 1979 (44 FR 12382-12384) and repropoed on December 7, 1979 (44 FR 70680-70682).

Comments received thru April 9, 1980, on the proposed listing of this tortoise population are summarized below. A total of 85 comments were received in response to the original proposal and reproposal of Critical Habitat. 24 comments were formally presented for the record at the public hearing in St. George; these comments are summarized below with the other comments. Responses were received from Governor Scott Matheson of Utah, Senator Orrin Hatch of Utah, Utah State Senator Ivan Matheson, Douglas F. Day (Utah Division of Wildlife Resources), various city and county representatives, concerned local citizens, scientists, conservation organizations, the Bureau of Land Management, and several other governmental organizations.

In a letter dated October 31, 1978, Gov. Matheson states that the State's position on the proposed listing had not changed since the Division of Wildlife Resources letter of September 23, 1977 (as summarized in the Federal Register proposal of August 23, 1978; 43 FR 37662-37665). He recommended "the status of the desert tortoise in this area be kept under review until all the facts are in before a final decision is made." In a letter dated April 8, 1980, Gov. Matheson reiterated the State's opposition and made four points:

(1) There is no compelling reason to distinguish the Beaver Dam Slope population of the desert tortoise from the range of the tortoise generally. Any endangered species designation or critical habitat proposal should be based upon a careful and comprehensive analysis of the tortoise range to determine where restrictive actions are necessary and appropriate.

(2) The presumed threats to the population are not substantiated and do not recognize changing conditions. The Fish and Wildlife Service cites overgrazing as a threat to the tortoise population, yet the proposal fails to document overgrazing and more importantly, fails to link grazing activity in any meaningful way to tortoise mortality. To the contrary some data suggests that livestock predators may be a significant threat to young tortoises.

The Fish and Wildlife Service has also failed to adequately consider recent actions of the Bureau of Land Management to reduce grazing use and establish a 3,000 acre protected area for the tortoise. BLM is currently restrained from implementing this program, but there is no evidence that the tortoise population cannot tolerate a short delay. It is logical to await the outcome of the grazing environmental statement process and to use that time to resolve some of the biological questions that have surfaced in this review.

The proposal does not recognize that collection and removal of tortoises has declined with the rerouting of traffic to Interstate 15. The Fish and Wildlife Service should reexamine the removal problem based on new traffic patterns.

Finally, the Fish and Wildlife Service has failed to document any substantial off-road vehicle use or establish any link from the ORB [sic] use to tortoise mortality.

(3) Section 4(b)(4) of the Endangered Species Act requires a consideration of economic and other impacts in a critical habitat decision. Livestock grazing in the area is a significant contributor to the local economy. Precise quantification of the impact is not possible as the proposal does not detail the level or extent of grazing cuts required to mitigate the alleged threat. I am sure that the St. George hearing provided some indication of the potential economic impacts.

There is also evidence of minable concentrations of important minerals in the Beaver Dam Mountain. The mineral impacts of the critical habitat proposal need to be carefully analyzed.

(4) Other factors to be considered should include the local government policy toward

land use restrictions. Again, that should be apparent from the public hearing.

Senator Hatch opposed the proposed designation of Critical Habitat stating:

(1) The consequences of the Critical Habitat designation to the management of affected federally controlled lands are potentially more severe than has been publically represented by the Service.

(2) Inquiry at the Office of Endangered Species failed to produce "definitive empirical evidence" for justification of the proposal.

(3) The most recent work was done at a time of poor range conditions because of drought. This may account for the "alleged decline".

(4) Since collecting is prohibited by Utah State law, a Critical Habitat designation will add nothing to the status improvement.

(5) ORV use is not a problem in this area.

(6) The population is not "unique".

Senator Hatch states that while he is "in support of reasonable measures to protect the tortoise population as a research sample," he believes the proposed designation [of Critical Habitat] is not a justified or prudent federal action.

State Senator Matheson strongly opposed the designation in two letters and states:

It is these kinds of tactics which continue to stir the Sagebrush Rebellion. It will bring a like move against the efforts of the Fish and Wildlife Service if they don't begin to give some credence to local needs and desires. The tremendous economic impact that would occur to the cattlemen of this area if 38 square miles were withdrawn has not been sufficiently measured. Cattle is [sic] one of the most important backbones of the Washington County economy. If we do not begin to see some rational action on the part of the Interior Department with recommendation for the well being of the people living in the area rather than the well being of useless animals, we may have to take actions that would be more severe than the Sagebrush Rebellion as a last alternative.

Mr. Day submitted a long letter and states:

We feel that a status review of the entire desert tortoise complex of the southwestern United States and northern Mexico would be in order to fully and logically assess the status of the species, rather than the piecemeal approach that seems to be operating now. A completely documented package would certainly be more palatable to the many and varied interests voicing support or complaints about the current procedure and proposal.

Studies conducted to date have documented current status of the Beaver Dam Slope population but have not been of long enough duration to indicate trends. This Division will soon be contracting with the Bureau of Land Management for further study to add to our knowledge base regarding this population, but only long-term monitoring will indicate the trend of numbers and age structure.

The apparent key to restoring this population to a higher level, based on present knowledge, is to reverse the trend in the forage base. The BLM's program, keyed to implementation of the Hot Desert ES, is designed to do this by various grazing management practices. The fencing of 3,040 acres for exclusive use by tortoise will also aid greatly. Unfortunately, both of these actions have been stymied by a recent court injunction against the imposition of grazing adjustments and the closure of the above-mentioned acreage. It appears that Department of the Interior's efforts would be better spent in trying to gain favorable judicial decisions to implement the ES, a document required by legal action brought by the NRDC. We strongly believe that endangered status will do nothing that improved grazing practices cannot do, and public sentiment will undoubtedly be more favorable towards all concerned, if the Service proposal is not implemented.

We are gravely concerned that listing this subpopulation of the desert tortoise as endangered will have severe repercussions on the population itself for several reasons: (1) the "Sagebrush Rebellion" feeling in southern Utah is very strong, and misguided individuals or vandals might use this "excuse" to cause physical harm to tortoises; (2) current research on artificial propagation will be hampered because of permit red tape; (3) captive tortoises will not be turned in for obvious reasons, and our success with returning captives to the wild has been good to date; (4) the president's attempt to balance the federal budget may result in funding cuts for endangered species work, negating the very results desired; (5) delays in implementing any positive on-the-ground action by any agency until a recovery plan is drafted, reviewed, finalized and approved.

At the public hearing in St. George, a representative of Senators Garn and Hatch made the following points in opposing the proposed listing:

(1) The Hot Desert Grazing Management Plan developed by the Dixie Resource Office of the Bureau of Land Management (BLM) concluded that there are insufficient data to warrant listing.

(2) They state that there is a degree of dependence of desert tortoise upon livestock.

(3) The BLM has sufficient discretion in land management to afford adequate protection until more studies are completed.

(4) They state that there are insufficient data to make a Critical Habitat determination. Critical Habitat is an overreaction to the decline of the tortoise. They claim there is no evidence of the negative effects of livestock on tortoises. They support the fencing off of 3,000 acres by BLM to determine the effects of grazing. They believe that there will be a major negative impact on the cattle industry in southwestern Utah.

(5) The concept of Critical Habitat is called drastic and inflexible. They say this if the species is thriving elsewhere, it makes no sense to focus on a less significant area.

The following State and Federal government agencies were contacted but either had no comments or did not have any data concerning the

population: U.S. Geological Survey, U.S. Air Force, U.S. Army Corps of Engineers, Arizona Game and Fish Department, California Department of Fish and Game, and Utah State Environmental Coordinating Committee. Both the Department of Energy and the BLM Utah State Director supplied information on the potential economic impacts of the proposed listing. The BLM office in Washington called for a full status review throughout the tortoise's range. BLM's Dixie Resource Area Office opposed the listing and reviewed past and proposed projects concerning the tortoise on the Beaver Dam Slope (see Background). Nevada Power and Light Co. provided information on the proposed Alton Pipeline, the Navajo-McCullough transmission line corridor, and the proposed Warner Valley McCullough transmission line right-of-ways. They recommended the elimination of any areas which might be affected from a Critical Habitat designation. One commenter neither supported nor opposed the proposal but requested additional information.

The following is a summary of comments of those who opposed the proposed listing and/or designation of Critical Habitat. One comment stated that there are many endangered species designations already in southwestern Utah. The commenter then stated that the Government now wants to "lock up" an area for the desert tortoise and perhaps other areas in addition to areas already "locked up".

There were 18 comments which stated that the reason the tortoise had declined on the Beaver Dam Slope was not because of problems with grazing but because tourists took tortoises as pets. This occurred primarily before the completion of the nearby interstate highway which uses another route than through the Beaver Dam Slope. This point was especially stressed by long time residents of the area and many recounted stories of tortoise selling. While many people thought this problem was not now significant, a few thought it might still be occurring.

Four comments stated that the tortoise population was not unique since the species has a large range and the Beaver Dam Slope population is not recognized as taxonomically distinct. Two persons stated that the BLM and environmentalists are waging an economic war on cattlemen and that the proposal is just another example. Two comments stated that a Critical Habitat designation may actually harm the tortoise population by drawing attention to it. One person stated that Eric

Coombs, the person who did much of the work on the tortoise population in the 1970's, did not support the proposed listing and that, instead of Critical Habitat, areas on the Beaver Dam Slope should be declared "crucial" habitat and the tortoise designated "sensitive" instead of endangered.

One comment provided extensive discussion about how the Fish and Wildlife Service had not, in their opinion, followed proper government regulatory procedures. One comment stated that the Fish and Wildlife Service and BLM are at odds in their regulatory responsibility with regard to the Beaver Dam Slope. Eight comments were received which stated that the data used for the proposal were insufficient; most of these comments did not supply additional information. One comment stated that the Service should have prepared an environmental impact statement and that the requirements of NEPA are not satisfied until one is prepared. One commenter said that the Fish and Wildlife Service had inadequately cooperated with the Utah BLM concerning the desert tortoise. Three persons called for an "Economic Impact Statement" prior to any listing with Critical Habitat.

Three individuals questioned whether the desert tortoise was endangered throughout all or a significant portion of its range. These persons generally felt that the tortoise should not be listed unless it is endangered throughout its range. Seven comments were received which questioned the evidence the competition between cattle and tortoises. These commenters believe such evidence is weak or nonexistent and believe that the preponderance of evidence is that cows offer little competition from foraging.

Four persons stated that livestock grazing is good for tortoises because grazing practices allow the introduction of annuals on which the tortoise can feed. Three comments report that when grazing levels were up to ten times more on the Beaver Dam Slope than at present, more tortoises were present. These individuals believed that this indicated that cows were not responsible for the tortoise's decline. Two individuals questioned whether the atomic testing of the 1950's may have contributed to a decline in numbers of tortoises in southwestern Utah.

Two commenters stated that if the area was left alone (i.e., no government action), the tortoise population would recover by itself. Two individuals stated that instead of a Critical Habitat designation, 200 acres should be set aside by BLM in Utah to compliment BLM's 500 acre desert tortoise study

area in Arizona. One comment said that drought may be a factor in the apparent declining status of the tortoise in the 1970's.

Three letters were received which said that there had been no economic input requested from Washington County officials or those ranchers directly affected by the proposal. These letters claimed that only BLM was contacted for information and that the local people had no input to the proposed rules.

Many comments (16), especially from local ranchers and cattle associations, strongly protested any elimination or reduction of grazing in southwestern Utah which they felt would occur if this population's Critical Habitat was officially designated. Eight comments claimed that the proposal was either setting aside the land or "locking it up" from any other uses and that this should not be allowed. Six commenters stated that the ranges on the Beaver Dam Slope are not in poor condition and that this area is really prime winter range. One individual said that the Desert Tortoise Council is an outside obstructionist environmental group causing trouble. This person concluded that "the people have no power." Three additional letters expressed general complaints about government and governmental regulations. One person stated that the proposal infringed on the historical heritage of southwestern Utah.

There were five comments which addressed the Desert Tortoise Council's presentation at the meeting in St. George as either based on incorrect data or a "malicious attempt to distort facts." Eight commenters stated that there is no evidence that cattle step on dens or burrows or that they step on tortoises. Some of these individuals noted that the Beaver Dam Slope is primarily used for winter grazing when tortoises are likely to be hibernating.

Two comments stated that a potential cause of tortoise mortality is that they fight and during the course of fighting, one may be turned over and unable to right itself. There were 15 comments that predation by coyotes, bobcats, and/or kit foxes may have been significant causes of mortality; most believed cows were not a factor in the tortoise's decline. Three individuals stated that tortoises have actually increased in number or remained at a stable population level since man's presence had been "removed" from the Beaver Dam Slope.

One comment stated that tortoises have been successfully released back to their habitat. There were 20 comments which stated a belief that a designation of Critical Habitat would have adverse

economic effects on the local ranchers or economy. Some of those who commented provided information about their ranching operations and how a complete stoppage of grazing rights would affect them.

Two individuals read the following statement adopted by the American Farm Bureau Federation:

At our 1980 meeting in Phoenix, Arizona, our delegate adopted the following policy positions on the Endangered Species Act: "The National Endangered Species Act of 1973 should be amended to provide that:

1. Listing a species as endangered shall be upon that basis alone and not on the basis of "rarity".

2. The law shall not encroach upon economic agricultural or sivicultural practices;

3. Proof of a species being endangered shall be on the petitioner or the Department of the Interior and not on the general public; and

4. Scientific data supporting the inclusion of a species shall receive wide dissemination to landowners and private organizations representing the rights of these landowners.

All federal and state agencies should be required to adopt procedures where by any proposed new or amended regulation shall be accompanied by *economic impact statements*.

Dr. James E. Bowns made the following statement:

*Habitat modification or deterioration by grazing animals*

The F.R.R. states that overgrazing could be expected to adversely modify critical habitat since cows:

- (1) trample burrows
- (2) may trample young tortoises
- (3) destroy cover sites
- (4) compete for food items especially in the spring and early summer

There are many references to overgrazing and continued habitat deterioration from various desert tortoise studies and reports. The following are three such statements.

(1) Range deterioration has occurred since the 1940's and perennial grasses are no longer common (Coombs, 1977b).

(2) The desert tortoise population is greatly depleted since the 1930's and 1940's. "Without doubt, part of this is caused by the deterioration of the range because of overgrazing by livestock. Once fairly common grasses are no longer in evidence and the size and vigor of most shrubs has diminished." (Hardy, 1976)

(3) *Casual observations* indicate livestock have a deleterious affect on tortoise populations *although no* field studies have been undertaken to determine the effects of grazing on the tortoise. (Berry, 1978)

All of the above statements are biased judgments that have no objective studies or data to support them. With all due respect to Dr. Hardy (statement #2 above), I find it difficult to believe that one's memory is adequate to recall such changes over a period of 30 to 40 years.

During the 1930's and 1940's, sheep grazed the area in the spring and statements were

made that "sheep herds swept the carpet clean (and) the tortoise access to the fresh green vegetation is limited to a few days" (Woodbury and Hardy, 1948). Cattle also grazed this area in the winter. It has been stated that livestock numbers were higher at that time than at any time previously. The sheep herds are now gone and cattle graze mainly during the winter and early spring. Cattle numbers on this allotment were reduced by 50 percent in 1965, yet it is assumed by some individuals or groups that this range is still overgrazed.

An important perennial grass in this area is bush muhly (*Muhlenbergia porteri*). This grass is reported to have been more abundant in the 1930's and 1940's although there are no studies or data to support this contention. It was also reported as a primary food item for the tortoise by Woodbury and Hardy (1948). Fecal analysis of desert tortoises diets indicates that it is presently not used by the tortoise (Coombs, 1977a). If this plant is being used, it should be evident from the fecal analysis technique because of its highly fibrous structure.

Recent studies repeatedly mention filaree (*Erodium cicutarium*) and red brome (*Bromus rubens*) as the primary food items of the tortoise and both of these species are introduced annuals.

There is an urgent need for better data to support the contention that bush muhly is important in the tortoise diet and that it has, in fact, decreased since the 1940's. This grass is named bush muhly because of its tendency to grow within the shrubs. It is assumed that this provides the plant protection from grazing by livestock, which it undoubtedly does, but this phenomenon is probably not due to grazing pressure alone. This species has a very brittle inflorescence which can easily become lodged within a shrub following disarticulation. The shrub can then provide a more favorable microenvironment for the establishment and growth of the grass (e.g. lower temperatures, more favorable moisture, higher nitrogen, phosphorous, and possibly other nutrients) in contrast to the interspaces between the shrubs. There is also recent evidence that bush muhly will sometimes kill the host shrub by shading the lower branches (Welsh and Beck, 1978). The death of such host shrubs is evident on the Beaver Dam Slope.

Bush muhly is a warm season grass that greens up in the spring, but flowers and produces seed following the summer rains which provide approximately one-third of the total yearly precipitation. The critical stage in the life cycle of this plant and the time it would be most susceptible to grazing damage is July, August and September. No cattle graze this area during this critical period. It is conceivable that this grass could provide an important source of water and nutrients for the tortoise at that time.

As mentioned previously, annuals are the primary forage plants for the tortoise and cattle in the spring. Observations indicate that use of perennial grasses is light when annuals are being consumed. The production of annuals in this area is dependent on winter precipitation not livestock grazing. When the annuals dry up, tortoise activity declines and summer aestivation begins (Berry, 1978)

whether or not livestock graze the area. There is also evidence that tortoise may not lay eggs on dry years (Berry, 1978) when annual production is low, indicating a dependence on these annuals.

A proposal has been made by (Coombs, 1977a) to eliminate grazing below 3,000-foot elevation after April 1 to leave annuals for the tortoise. Coombs (1974) estimates a population of 350 tortoise on the Beaver Dam Slope which he estimates will consume 8,140 pounds of vegetation over a 145-day period of activity. The range of consumption being 5,500 to 11,220 pounds per year depending on the period of activity. I have assumed there are 50 square miles of habitat on the Beaver Dam Slope where tortoise and cattle use overlaps. I have also estimated the area will produce a minimum of 100 pounds of forage per acre (a very small amount considering annual production on favorable years). From these figures, I calculate that at the level of 11,200 pounds of forage consumed per year by the tortoise, there is 285 times as much forage produced as is consumed by the tortoise. At the 5,500-pound level of forage consumption, there would be 582 times as much forage produced as is consumed by the tortoise.

It has also been proposed that a rest rotation grazing system be implemented in this area. This type of system may have a detrimental impact on this range and the tortoise because of a higher rate of utilization on the grazed pasture and the low mobility of the tortoise resulting in a forage deficiency.

Some data (Coombs, 1977a) indicates an increase in winter fat (*Ceratoides lanata*) over the past 30 years which would indicate this range is improving. However, quantitative plant data to support any significant plant changes for this area are grossly inadequate.

#### *Livestock impacts on dens and summer holes*

Coombs (1977a) states that the number and location of winter dens is the most significant single factor in determining the distribution and carrying capacity of the tortoise habitat in Utah. Cattle can have little or no impact on winter dens because they are located at the edge of arroyos and beneath the petrocalcic horizons.

Summer holes are used by tortoise to escape the high summer temperatures. A tortoise may have several holes within its summer range. These holes are seldom used from one year to the next and locations vary each year with new territories (Coombs, 1977a).

Cattle do not graze this area during the hot part of the year, and it is not apparent how critical these holes are during the spring when cattle are in the area.

#### *Trampling of tortoise by livestock*

Reference is made to an individual (Berry, 1978) who described the loss of a juvenile tortoise and its small burrow presumably by sheep in the spring. During the same spring, a small two- to three-year-old tortoise was found with a hole in its shell near a water trough which appeared to have been killed by sheep. I do not condone the loss of these tortoises, but these isolated instances have been extrapolated to cattle ranges and

trampling of tortoise by cattle on the Beaver Dam Slope has not been documented and this implied impact is probably greatly exaggerated.

#### *Collection of tortoise*

The general decline in desert tortoise populations can be attributed to constant collecting by man. This is particularly true for the Beaver Dam Slope population because of its close proximity to Interstate Highway [SIC] US-91 and former service stations in that area. This problem has been largely alleviated by rerouting traffic along Interstate 15.

Selective collection could also account for the changes in sex ratios since the 1940's when the sex ratio was 64 percent female and 36 percent male to the present ratio of 30 percent female and 70 percent male (Coombs, 1974). Females tend to remain near the winter dens longer than males and are therefore, more vulnerable to collection.

The age structure of this population included 90 percent adults in the 1935-1945 period (Berry, 1976) and in 1977, was composed of 70 percent adult (Coombs, 1977a). This change could indicate that the population structure is improving.

#### *Impact of predation on the tortoise*

This is a factor that many wildlife biologists choose to overlook or discount as having a significant impact on the tortoise. Coombs (1974) states that predation is now a great threat to the tortoise population on the Beaver Dam Slope, and there have been many reported incidents of predation in this area. This factor is probably greater than realized because there would be little, if anything, left of a hatchling tortoise killed by some predators. Coombs (1977a) lists eight and possibly ten mammalian predators and seven predatory birds likely to harm the tortoise. He also lists several other mammals that compete with the tortoise for food and space. The kit fox and gila monster are also listed as nest and egg predators (Coombs, 1977a).

A plan that is seriously designed to protect the tortoise must certainly include some type of predator control program or at least a close evaluation of the impact of predation on tortoise survival. There is much more direct evidence that predation is a serious problem than there is for the implied impacts of livestock competition and habitat deterioration.

#### *Intensive study area*

A 3,040-acre (4.75 square mile) enclosure (not yet functional) has been constructed in this area by the Bureau of Land Management to exclude livestock grazing. It is my opinion that this enclosure is larger than required to evaluate this and other problems in this area, and is probably a compromise because of this critical habitat proposal. Coombs (1977a) reports that the actual area within the continuum of good tortoise habitat is only 13 square miles on the Beaver Dam Slope.

There is a serious lack of good objective data to evaluate the tortoise problem and the impact of livestock grazing. Therefore, I suggest the following studies be initiated:

(1) forage habits and nutritional requirements of the tortoise.

(2) extent of competition with livestock.  
(3) vegetation changes with and without livestock grazing. This would necessitate long-term studies.

(4) predator control or predator exclusion and its impact on tortoise survival.

I will support a reasonable, carefully-considered recovery plan that will benefit this tortoise population. However, only after the above-mentioned studies, and possibly others, have been conducted and evaluated.

I am adamantly opposed to the present proposal if it seeks to eliminate livestock grazing without objective quantitative data in support of such drastic and economically-devastating action on the local cattle operators.

Dr. Darwin B. Nielsen made the following points:

I have been asked by the affected ranchers to do a study to try to ascertain some of the economic impacts that the proposed action would have on their businesses. The point at which I took off on this study was the assumption that grazing would be totally eliminated on the Beaver Dam Slope critical habitat area, which was one of the options considered in the write-up I had on this proposal.

The economic impacts presented in this statement are based on estimates of what would happen if "Option 2—No Grazing" is adopted for the Beaver Dam Slope critical habitat. Eight permittee livestockmen are involved in this proposed action. They range from fairly large ranches to rather modest livestock enterprises. Ranchers are faced with several alternative actions when grazing cuts on federal lands are imposed on them. Some of these alternatives are: (1) replace the lost grazing by leasing other land, using owned lands more intensely or feeding hay; (2) reduce herd size to fit the new seasonal mix of grazing lands imposed on them; or (3) give up on the livestock business and sell their remaining grazing resources.

The ranchers affected by this proposed action are also part of a larger group involved in the Hot Desert EIS. Substantial grazing cuts are proposed, based on the EIS, that will put increased pressures for any alternative sources of feed during the winter and spring grazing seasons. Interviews have been held with these ranchers in an attempt to determine what alternative courses of action are available to them.

Data were also collected to estimate the economic impacts of such proposed actions as the EIS and the tortoise proposal. Data gathered from these ranchers (those involved in the EIS and those involved in both the EIS and the tortoise proposal) are used to make estimates of the economic impacts of the proposed actions on the Beaver Dam Slope.

Since the proposed actions resulting from the Hot Desert EIS are in litigation at the present time, and since the resulting grazing cuts have not been made, this statement will approach the economic impacts from two points in time or two base periods: First, grazing use before any action is taken as a result of the EIS; and second, assuming proposed EIS cuts are imposed on the ranchers. An additional assumption is made that all of the ranchers stay in business.

Thus, this analysis is conservative to the degree that this assumption does not hold and ranchers do not go out of business.

*Permit Values*

Grazing permits on federal grazing lands have a value that is in part determined by local conditions relative to the supply and demand for grazing resources. The value of these permits is an integral part of the capital structure of the ranch. When grazing is curtailed, the value of these permits is a loss to the rancher. Permit values in the Hot Desert area before the proposed actions of the EIS were reported to be about \$20 per animal unit month (AUM). The estimated value of permits lost to the eight ranchers is given in Table 1. Ranchers are referred to only by number. Thus, these ranchers would have expected loss in ranch capital assets of between \$36,000 and \$20,000, depending on who gets the responsibility of the grazing cut, i.e., the EIS or the tortoise. This is a one-time loss of a capital asset not an annual cost or loss.

It was determined through rancher interviews that since so many ranchers in the area were facing potential losses of grazing during the winter and spring seasons that there was not anywhere near enough grazing available from other lands to offset this potential loss on BLM lands. The only alternative, if herd size is to be maintained, is to bring hay into the area for feeding. The estimated cost of having hay delivered into the area was \$90 per ton. (The cost is probably higher this winter-spring, 1980). Hay can be converted into AUM's on the basis of about three AUM's per ton or 666 pounds of hay per AUM. At this conversion rate, the cost of replacing an AUM lost on the BLM with hay feeding would be \$30 per AUM. Estimates of the cost of replacing lost BLM grazing by feeding hay (exclusive of the extra cost of feeding) are given in Table 2.

If ranchers decided to keep their herds intact by feeding hay to replace the AUM's lost, it would cost them between \$54,000 and \$30,000 each year. Ranchers indicated that this was too expensive an alternative, and, thus, they would not be able to do it. If one could estimate the added cost of labor and equipment required to feed the hay to the animals, this would be a very expensive alternative. This alternative also assumes hay will be available in the amounts needed.

*Annual Income Losses*

Many ranchers have only a couple of alternative courses of action as they are faced with cuts on BLM lands. They can reduce their herd size to accommodate the cut or they can give up on the system and leave the business. When grazing cuts such as the one under consideration here are imposed on a rancher, they usually only affect a seasonal range use. For example, a ranch is seasonally balanced and provides feed for 500 cows from various sources, BLM, FS, private, and state. Suppose the BLM cuts his winter grazing by 50 head for six months. If he has no alternative sources of feed for this period, he would have to cut his cow herd to 450 cows. He may be able to use his excess summer grazing with yearlings, but he could not winter cows over. Often, ranchers

are caught with limited flexibility in changing the seasonal use of their rangelands. In estimating the expected income losses ranchers would suffer from BLM cuts, a seasonal balance chart was set up for each ranch before and after the cut. This allows one to visualize the adjustment problems the rancher faces. From these charts, an estimate was made of how many cows he could run after the cut, assuming no new resources (hay or other grazing) were available or affordable. Initially, estimates were made only of the decrease in ranch income as a result of the proposed losses of grazing on the Beaver Dam Slope. These estimates are shown in Table 3.

These estimates assume all ranchers run a cow-calf operation, an 85-percent calf crop, 400-pound steer calves, 375-pound heifer calves, 900-pounds cull cows, \$.90/lb. steers, \$.80/lb. heifers, and \$.45/lb. on cull cows. An estimate of the decreases in expenses that would accompany these losses of income as the herds are reduced in size was not made because of time constraints. However, this has been done in the past on other ranch situations which would be similar to this situation. The rancher's fixed expenses go down very little, if any, in the short run. His annual variable expenses will go down, but they will not go down nearly as much as his income goes down. In fact, only a few expense items will go down. For example, grazing fees paid, property taxes on cattle, veterinarian expenses, trucking and marketing, and maybe a few others. One case studied showed income decreases of 15 percent while costs decreased by about six percent.

There is another way to approach this income loss estimate. It is reported that the tortoise-proposed action will reduce grazing by 168 head for these eight ranchers. This would reduce expected sales as follows:

168 cows x .85 calf crop = 143 calves.....	
72 steer calves + 71 heifer calves .....	
72 steers x 400 lbs./hd. x \$.90/lb. ....	= \$25,920
71 heifers x 375 lbs./hd. x \$.80/lb. ....	= 21,300
<b>Total .....</b>	<b>47,220</b>

The \$47,220 loss of income computed here would be comparable to Base II loss of \$45,155 in Table 3.

One should keep in mind, when evaluating the magnitude or the impact of these income losses, that the net income loss comes directly out of the ranch families' living allowance. So what might seem like a rather modest impact in the county or state may be devastating for the individual. As ranches are forced to reduce herd size, they become less and less efficient in the production of food. The fixed costs are spread over fewer and fewer animals, thus, the average cost of producing beef goes up.

As ranchers' incomes are reduced, they have fewer dollars to spend in the local and state economy. As their spending is reduced, it has a multiple-effect on economic activity in the local communities and the state. Locally, this multiplier would probably be around 1.6 to 2.2; for the state, the multiplier

could be as high as 4.0. This says that for every dollar reduction of income in the livestock sector, there will be a total decrease of four dollars in economic activity in the state. Thus, the total impact of an income loss of \$75,730 could amount to a reduction in economic activity of \$302,920 in the state.

Three commenters state that the Fish and Wildlife Service did not consult properly with local people in the St. George area. Nine comments were made that both the tortoises and cows can coexist without any more restrictions. Two letters urged thorough studies throughout the species' entire range before any designation of the population as Endangered. One comment stated that removal of livestock would not result in the sudden improvement of the range. Two comments stated that the Service had already predetermined its position on the listing. Two comments stated that the reasons for listing were not correct since they were not occurring at present. One individual said that the Fish and Wildlife Service does not have the constitutional authority to be making any decisions in Utah.

Finally, Mr. Frank Rowley (BLM, Utah) outlined BLM's programs while opposing the listing:

"In the proposal notice reference is made that overgrazing by livestock is one of the key factors involved in the decline of the desert tortoise population. We admit that overgrazing has been a problem in the past, but the notice has failed to recognize the steps which have been taken to correct this problem. In the last ten years, BLM has made substantial adjustments to correct livestock grazing problems. During this period, 73 percent of the cattle use has been reduced in the area (approximately) a 50 percent reduction in 1965 and approximately a 23 percent average reduction proposed in our recent decisions. Adjustments have also been made in the season of use, significantly reducing competitive spring use, and an allotment management plan is in the process of being implemented. In 1978, the average forage production for annual brome grass and filaree was 860 pounds of air dry forage per acre. When the cattle were removed in May, there was an average of 241 pounds of annual forage per acre remaining. These facts suggest that steps are being taken to reduce the impacts of livestock grazing over the area. We would also like to note that the livestockmen have cooperated with us and moved their cattle to other pastures when requested.

Not only has BLM made adjustments to livestock use, we have also proposed establishment of a 3,040-acre natural study area to enhance the desert tortoise population. This year we will let a contract to study the effects of grazing versus non-grazing so more information will be available to evaluate this problem. This area encompasses the historic Woodbury-Hardy study area and several other critical desert tortoise denning areas. It is also proposed in

the allotment management plan that grazing in the remaining portions of Beaver Dam allotment would not extend beyond April 30th.

Trampling of vegetation, burrows, and young tortoises is listed as a major concern. The allotment will be stocked at a rate of 26 acres/cow/month. Based on a six-month grazing season, 156 acres are allocated to each cow for the six-month grazing season. Based on this vast acreage, trampling is insignificant and of minor importance to the welfare and survival of the desert tortoise.

#### *Predation and Man*

The removal of desert tortoises by the public has subsided since the construction of Interstate 15. However, this problem has not been completely eliminated and is expected to continue, even if the desert tortoise is listed as an endangered species. We feel that this designation will hinder the present tortoise recovery program since people who knowingly violate the law may be reluctant to return the tortoise for fear of the penalties which could be imposed on them.

Off-road vehicle (ORV) use is listed as one of the major detrimental factors affecting the tortoise. The off-road vehicle use is minor, only occasional ORV use occurs, there are no resource values which have attracted ORV users into this area. Our land use plan calls for vehicles to be restricted to existing roads and trails.

As you may be aware, the effects of radioactive fallout on humans and livestock in Washington County, Utah, as a result of the atomic bomb testing in Nevada is now being investigated. Radio fallout could have affected animal populations, including the desert tortoise, in Utah, Arizona, and Nevada. This possibility should be considered.

The following is a summary of comments of those who favored the proposed listing and designation of Critical Habitat.

Three comments advocated either the complete stoppage of livestock grazing on the Beaver Dam Slope or the cessation of grazing between April and September as the best way to protect both the tortoises and the land. Three commenters agreed that the population has shown declines since it was first studied in 1936. There were 23 comments which supported the listing with Critical Habitat for the reasons provided in the various **Federal Register** documents.

Two statements gave opposition to the State's proposal to the release of captive tortoises on Beaver Dam Slope and cited reasons why uncontrolled release is biologically unjustified. Two comments cited collection as an important factor in the decline of the tortoise population, especially since people may be unaware of the State's collecting prohibitions.

Two persons cited habitat destruction as a major cause of the tortoise's decline. One of those, Dr. Ross Hardy,

who conducted the original studies on this population, states:

On page 87 of my monograph on "The Influence of Types of Soil Upon the Local Distribution of Some Mammals in Southwestern Utah" (Ecological Monographs, Vol. 15, No. 1, Jan. 1945) I included a count of the number and kinds of perennial shrubs as well as measurements (height x width) on "quadrat 9" in this area. Since then (measured in the summer of 1941) there has been an easily noticeable and measurable decline in the number and size of these shrubs as well as in the amount of perennial grass present in this area. Without doubt the destruction of habitat is one of the chief if not the main cause of the tortoise decline.

One comment strongly disagreed with the State's request for more time to study the matter saying that enough information is already at hand on which to make a judgement. Four individuals cited overgrazing as a specific cause of the tortoise's decline. One comment noted that predation may account for as much as 35% mortality among tortoises. One comment stressed that the State of Utah has not emphasized patrolling the tortoise habitat although he did mention that the State is short of funds and manpower for tortoise work.

One commenter, Mr. Eric Coombs, stated that the destruction of palatable shrubs such as Mormon tea and winterfat may be more important than that of creosote bush. He further states:

Also, the trampling of forage is portrayed in a low key when I believe that in case of competition and removal of vegetation presently critical to tortoise survival, that the affects of trampling are higher than that of direct removal as forage. The removal of perennials is a long-term problem, whereas the trampling of important forbs and annual grasses during the critical spring feeding period is the major concern.

Three persons stated that the historical and scientific value of the Beaver Dam Slope population cannot be overstressed. One commenter believed that the populations of tortoises in the hills north of St. George and in Paradise Canyon did not result entirely from introduction of captives and therefore should be included under provisions of the Act. Two individuals commented on work being conducted in nearby areas in Arizona and Nevada and, while agreeing with the proposed rule, stressed that population surveys in other areas are urgently needed.

One commenter advocated the closure of the area to all off-road vehicle (ORV) use and another stressed that ORV's must be monitored especially during certain times, such as on holidays. One comment stressed the importance of the Beaver Dam Slope as a biological transition area harboring many interesting plants and animals. Two

individuals believed that the State's efforts or those of BLM are inadequate to protect the Beaver Dam Slope population of the desert tortoise.

Finally, the Desert Tortoise Council submitted a long letter discussing the tortoise and its management:

#### *Allotment Management Plan (AMP)*

The AMP was drafted in 1976 and revised in March, 1977. It is stated in the AMP (p. 7) that current livestock forage conditions, based on desirable forage studies, are in fair condition over 47 percent of the allotment and in poor condition on 53 percent of the area. It further states that all areas rated as poor can be improved to fair condition except Beaver Dam Wash. No areas have been rated as good and none can be improved to a good forage condition. Large washes receive heavy grazing, and the range condition trend there is downward.

The AMP states that annual species are grazed each year during the growth period and that annual grazing does not allow for the necessary rest required by perennial plants to restore vigor and produce seed (p. 13). Further, "during the spring one sheep herd trails through the middle of the desert tortoise area located in the lower half of the allotment."

None of the documents sent to the Desert Tortoise Council address sheep grazing, except for the above quote taken from the draft AMP. The grazing pressure exerted by sheep is quite different for cattle. Sheep will essentially eat all desirable plants to the ground surface level, essentially denuding an area of desirable forage as they move through it. Since no mention is made to their control, the Council is concerned that sheep are not being regulated on the Beaver Dam Slope.

Reproductive success has long been well recognized as too low on the Beaver Dam Slope to sustain the tortoise population (Woodbury and Hardy, 1948; Coombs, 1974, 1977 a and b). This point is also discussed in the AMP, "the excessively heavy grazing of livestock on the area over the past 80 years suggests a nutritional problem, but available evidence is not conclusive. Other possible causes include an inadequate number of mature females, excessive predation on eggs and young, and human disturbance."

The Plan proposes to use *Ephedra nevadensis* and *Muhlenbergia porteri* as indicators of range improvement, for, "by meeting the physiological requirements of these two species, the requirements of the other desirable forage species can be met to the fullest extent possible." It is questionable that by meeting the physiological conditions for growth and vigor of *Ephedra* and *Muhlenbergia* (2 out of every 3 years) will necessarily meet the conditions for many other forage species. Moreover, under the proposed 3-year rest-rotation grazing schedule, grazing will be permitted on the Beaver Dam Slope every third year through April, yet it is indicated that *Ephedra* begins growth at the beginning of March and *Muhlenbergia* in early April. Grazing will thus overlap with the onset of the growth period and thus will in turn adversely affect attempted range improvement.

If cattle are present on the Beaver Dam Slope through April, then the tortoise will be directly competing with livestock when the tortoise emerges from the hibernaculum during March. Further, managing a range for perennial species fails to address specific annual species requirements of the tortoise. For example, in his letter to the U.S. Fish and Wildlife Service in response to the public meeting (letter of January 10, 1980), Mr. Rowley states that in 1978, 840 pounds of air dried forage (brome grass and filaree) were produced per acre, and that after the livestock were removed, 241 pounds remained. Specifically not mentioned is the amount of forage produced on dry years and on average years, for 1978 was an unusually wet year. Further, the AMP does not discuss how the range will be managed during dry years. Cattle grazing during dry years will essentially preclude the availability of required forage for the desert tortoise.

Mr. Rowley states, that regarding the leaving of 241 pounds per acre of forage available to the tortoise, "These facts suggest that steps are being taken to reduce the impact of livestock grazing over the area." We have not seen data to substantiate this statement. 1978 was not a typical year for it was very wet, and we were not supplied data from 1977 or 1979 for comparison, thus we cannot determine if the range is being managed for the tortoise. The desert tortoise has evolved a survival strategy adapted to existing ecological conditions. If nutrition plays a role in this tortoise population's decline, as indicated in the literature (Woodbury and Hardy, 1948; Hardy, 1976; Coombs, 1974, 1977 a and b; and Hohman and Ohmart, 1978), reduction of the spring annual food source by 72 percent once every three years does not appear consistent with the objective of improving conditions for the tortoise. Livestock concentrate near washes and areas where forage is most abundant. If forage conditions are good in or near the areas of high tortoise concentration, the reduction of cattle to 26 acre/cows/month, or 156 acres allotted to each cow over a 6-month grazing period (as outlined in Mr. Rowley's letter), will not make more forage available to tortoises in these areas or increase space for them to avoid being trampled.

#### Range Conditions

The range data sheets supplied to the Desert Tortoise Council cover the period from about 1963 to 1977. Range trend index sheets for the various allotments on the Beaver Dam Slope were evaluated by a range scientist, and it is impossible to draw any conclusion from them. Trend indices were plotted using species cover values only; factors important to determining range condition change such as annual and seasonal precipitation, temperature ranges, soil types, etc. were not taken into account. Thus, the data do not support, or refute for that matter, the supposition that the range is being managed for the tortoise.

BLM records indicate a history of grazing problems on the Beaver Dam Slope, e.g.:

1. A notice from the BLM to licensees, dated April 16, 1958, called a meeting, "to discuss management problems in the Beaver Dam Slope area."

2. Minutes of a BLM and Cattleman meeting (December 7, 1964) state, "It was agreed by all livestock owners that something be done to control cattle use in the Beaver Dam Slope allotment."

Although these conditions were recognized at least as early as 1958, the data do not indicate a significant improvement in range conditions since that time.

Individual range data sheets indicate that plots range from fair to poor condition. Little of the data appear to be applicable to desert tortoise forage conditions and requirements. Many of the data sheets indicate that forage species reproduction was poor and grazing pressure was cited as moderate to heavy. Several sheets from the Indian Springs allotment indicate that, "most of the plants of undesirable composition," reproduction was fair, past grazing as heavy and present grazing as moderate and occasionally heavy.

Similar assessments are cited in the Castle Cliffs, Beaver Dam and Santa Clara allotments.

#### Draft 1980 Beaver Dam Slope Habitat Management Plan

"The overall goal of the Beaver Dam Slope Habitat Management Plan is to improve and protect wildlife with species emphasis on stabilizing and improving the declining Beaver Dam Slope desert tortoise population."

In recognition of the above need, the HMP states that the tortoise population, "is only 10-20 percent of the level of 35 years ago and has nearly stopped reproducing." The HMP's objectives include:

1. stabilize the Beaver Dam Slope desert tortoise population and increase the population growth rate at least to 5 percent per year;

2. study and manage for the desert tortoise, in part by establishing the "Woodbury Desert Study Area" of 3040 acres.

The objectives are commendable and represent a positive step. However, the 3040 acre natural area is only 14 percent of the proposed 35 square mile critical habitat identified by the Desert Tortoise Council. This 3040-acre area is totally inadequate as a tortoise protection area. It will serve, however, as a research enclosure for determining range improvement in the absence of livestock.

We are also concerned that the BLM has proposed predator control as a means to protect the tortoise. We do not believe that predator control is a justified means to reducing predation on tortoises. The predator control proposal indicates a less than full understanding of ecological principles and is a less than solid biological approach to managing the tortoise population on the Beaver Dam Slope.

In his letter to the U.S. Fish and Wildlife Service, Mr. Rowley stated that in the last ten years the BLM has made substantial adjustments to correct livestock grazing problems. "During this period, 73 percent of the cattle use has been reduced in the area (approximately 50 percent in 1965 and 23 percent is proposed)." Clearly, this statement is self-contradictory. Only a 50 percent reduction has been achieved. The rest remains to be accomplished. Also, the range

data sheet of this same period (1967) submitted to the Desert Tortoise Council states, "Soil stable; reproduction-light to poor; evidence of grazing-heavy to moderate; trend static." Additionally, Coombs (1974, 1977 a and b) indicated poor range conditions with significant competition between cattle and desert tortoise. Coombs (1974) also states that the tortoise population was still declining by 5-7 percent per year. Thus, the biological data do not indicate that the steps taken by the BLM have been effective measures for managing the tortoise population.

The Council fully supports the desert tortoise studies to be funded by the BLM, but the study itself will not reverse the downward trend of the population.

Mr. Rowley stated several additional objections to the listing of the Beaver Dam Slope population as endangered. These are addressed below.

1. "We feel that this designation will hinder the present tortoise recovery program, since people who unknowingly violate the law may be reluctant to return the tortoise for fear of the penalties which would be imposed on them."

The Council is not aware that Utah BLM has a recovery program. Further, this statement assumes (1) tortoises cannot be returned without penalty, and (2) people will not be informed about how to properly deal with captive tortoises. While this may be of concern to the BLM, the answers to this concern may be very effectively dealt with in a recovery plan.

2. "Off-road vehicles (ORV) use is listed (in the proposal) as one of the major detrimental factors affecting the tortoise. Off-road vehicles use is minor, only occasional ORV use occurs. There are no resource values which attract users into this area."

To quote the draft AMP, "Dominant recreational uses in the allotment are sightseeing, rockhounding, wildlife and botanical observations, and jeeping and other ORV use. Overall use appears to be light. The main use being in the spring and fall."

3. "Radioactive fallout could have affected animal populations including the desert tortoise in both Utah, Arizona and Nevada. The possibility should be considered."

The Council does not see this as anything other than speculation. Neither a case for this suggestion nor any data to support it were presented by the BLM. Attempting to answer such a statement is difficult, as often the case can neither be proved or disproved. As stated by Turner, Rowland and Wood (1966), "in evaluating the influences of nuclear engineering, one must consider the merit of seeking to prove or disprove the existence of nuclear engineering products—remembering that statistically significant effects may have no discernible influence on the organization of a community of plants and animals."

Perhaps the most poignant point here is that Woodbury and Hardy (1948) cite the detrimental effects of livestock competition for forage as being detrimental to the desert tortoise years prior to the nuclear testing in Nevada.

4. "There are no definitive data substantiating the reasons for the population decline."



During their 1934-1945 study period, Woodbury and Hardy (1948) recognized livestock grazing pressure and competition as contributing to the Beaver Dam Slope tortoise population decline. Coombs (1974, 1977 a and b) and Hohman and Ohmart (1978) have also reviewed cattle competition with Beaver Dam Slope cattle and tortoise. BLM records indicate that they were also cognizant of range condition problems, at least during the 1950's and 1960's. Mr. Rowley states in his letter that significant reductions in livestock grazing have taken place in the last ten years. However, Coombs (1974, 1977 a and b), shows clearly that the tortoise population on the Beaver Dam Slope continued to decline during the early 1970's.

Many studies have demonstrated that competition between range cattle and native wildlife is detrimental to wildlife. This subject is addressed in papers on the desert tortoise (Woodbury and Hardy, 1948; Coombs, 1974 and 1977 a and b; Berry, 1978; Ohmart and Hohman, 1978). It is difficult to cite conclusive data that grazing competition is the only cause of the tortoise population decline. However, it is more difficult to say that it is not a major causal factor.

5. "The area identified as critical habitat is much larger than that actually occupied by the tortoise."

The proposed 35-square mile critical habitat is inhabited by the desert tortoise. Review of Coombs (op. cit.) show that 6 or 7 areas of tortoise concentration occur within the proposed critical habitat. The BLM data and records supplied to the Desert Tortoise Council contain no data to support Mr. Rowley's statement; it is in fact incorrect.

#### Discussion and Conclusions

The Service would like to thank all those individuals and organizations that either submitted comments or attended the public meetings and hearings on the proposed rule. It is evident that many people spend a great deal of time in gathering data and preparing a response. All comments have been carefully considered before making a decision; the Service has complied with all requirements of NEPA and Executive Order 12044, as well as those of the Act and its amendments, in making its decision. Much of the evidence presented is contradictory with other evidence supplied during the rule proposal process; this makes a decision difficult but this determination will provide for the best protection of the tortoise and its habitat without imposing undue economic hardship on the ranchers who use the Beaver Dam Slope. The Service will cooperate fully with all parties to minimize the potential impacts of this listing.

Many individuals believed that the tortoise population throughout its range should be assessed either prior to or in addition to a determination of status for the Beaver Dam Slope population.

On August 23, 1978, the Service published a notice of review in the

Federal Register to the effect that a review of the status of the tortoise throughout its range was being conducted (43 FR 37662). Accordingly, the States of Arizona, California, Nevada, and Utah, officials in Mexico, other U.S. government agencies, particularly BLM, and scientists familiar with the species were contacted and requested to supply information pertaining to the tortoise. This review is nearly completed and indicates that the tortoise is facing many threats to its continued survival throughout its range. The Service hopes to have the review completed early this winter and will then decide if sufficient data exist to on Endangered under provisions of the Act. The Endangered Species Act Amendments of 1978 impose a two-year deadline on proposals for Endangered or Threatened warrant a proposal as either Threatened status. The Service has therefore decided to proceed with the listing of the Beaver Dam Slope population now rather than let the proposal expire and repropose the population when substantial new information can be obtained.

While the Service recognizes that the Beaver Dam Slope population is not taxonomically distinct, it believes that it is important with regard to its historical preeminence in turtle ecological studies, the fact that it is the northernmost population of the *C. agassizii*, and that it inhabits an area of unique faunal and floral assemblage. As stated in the introduction, this population has been studied beginning in 1936 and studies continue at present. It is one of the longest studied vertebrate populations, with several individuals marked by Woodbury and Hardy reportedly still being present. Thus the population is important historically in the field of ecological studies. The population is also important since other population studies on the desert tortoise have been undertaken relatively recently; thus the Beaver Dam Slope population serves as a source of baseline information with which to compare more recent findings. The data from the population also provide one of the clearest examples of the result of overcollecting on the population structure and status of tortoises, which are under threats from trade in many parts of the world. The Beaver Dam Slope population inhabits a transition zone between southerly fauna and flora and those of more northerly areas. Thus the ecosystem is distinct. While there are washes which connect the Utah part of the slope with that in Arizona, the low bagility of tortoises in this rocky and wash dissected area probably precludes any appreciable

gene flow. Indeed, gene flow between populations would be very difficult, if not impossible, to demonstrate. Thus the population may be considered distinct.

Some individuals questioned the impact of cattle on the tortoise population. The Service recognizes that there is conflicting evidence on this question (see comments particularly by Dr. Bowns and the Desert Tortoise Council, as well as information contained in Berry (1978), Coombs (1977a,b,c, 1979), and Hohman and Ohmart (1978), for evidence on the effects of grazing on tortoises). The information in the above references forms the basis of the Service's contention that grazing may have a negative impact on tortoise populations. However, the Service believes that the steps already taken or proposed by BLM to reduce grazing between April and September can minimize potential competition for food resources. The Service believes that the impacts of cattle on tortoise populations should be carefully monitored to determine how much impact there may be and methods to reduce it. The Service also notes that a determination of Critical Habitat does not automatically have the effect of eliminating or reducing grazing in this area (see below).

The Service recognizes that predators may be impacting tortoise populations, especially the young. However, tortoises and predators have evolved together long before man introduced additional pressures on the population; a predator removal program should only be considered after careful evaluation of alternatives. The Service acknowledges that the collection of tortoises as pets prior to the completion of I-15 may have been a major cause of the decline in this population. Although the problem seems to have been alleviated by the highway rerouting and State laws against collecting, collection may still be a problem at least occasionally (see Mr. Rowley's comments).

There has been substantial information presented that the habitat of the Beaver Dam Slope has suffered in the past (see Coombs references, Mr. Rowley's letter, Desert Tortoise Council's comments). Grazing allotments were reduced by 50 percent in 1965 and sheep no longer graze the Beaver Dam Slope (but see the Desert Tortoise Council's comments). However, contrary to some statements, the BLM has not reduced grazing by 73 percent. The additional 23 percent is a proposed reduction which has not yet been implemented (such proposal is presently in litigation). It is hoped that the measures proposed by BLM (some of

which have been implemented) since the original proposal appeared in 1978 will allow for continued use of the area by livestock and allow the range to recover. However, as one commenter noted, there will be no sudden improvement; the Slope will have to be carefully monitored for many years to come.

The Service acknowledges that annuals are an important food supply of tortoises, especially in years of adequate rainfall. The production of annuals is a complex interaction of proper rainfall, temperature, and general range conditions, and cannot be attributed solely to cattle grazing. Cattle grazing may in some circumstances and in some years lead to an increase in annuals. However, it has not been demonstrated that this is in practice happening on the Beaver Dam Slope on a yearly basis, much less that the tortoise will or has benefited. The Service notes that there is extensive overlap (37 percent) in the foods used by tortoises and cattle.

The Service acknowledges that ORV use is not a major factor in the decline of the tortoise on the Beaver Dam Slope. As long as ORV's are strictly confined to well defined roads in this area, with appropriate warnings to users to be careful to avoid tortoises, there should not be any significant mortality. This situation must be carefully monitored.

The Service acknowledges that drought might affect the status of the population. In fact, it might enhance problems caused by grazing abuses in the past, collection, predation, and general habitat deterioration.

The Service believes that there is substantial information to document the decline of this population as well as the reasons it has declined. The Service acknowledges that no one factor is probably involved. Consequently, before recovery of this population can be effected, additional research on individual factors as well as their interaction is needed. Almost no one doubted that the population has suffered a serious decline. The Service does not believe that it would be in the best interests of the tortoise to delay listing until every facet of its biology is known. The Act requires that the best available biological and commercial data be used to determine whether a species should be listed. The Service has examined all data with regard to this population and believes that the population has declined in numbers to the point where listing it under provisions of the Act is warranted. Solutions to reverse the declining status of the tortoise should not take the course of simple notions (i.e., "kill all predators" or "prevent all grazing"). A recovery program must be developed that recognizes the needs of

the tortoises and the economic concerns of the eight ranchers that depend on the Beaver Dam Slope for winter range. Interaction between the local community and concerned scientists is the best way to preserve the Beaver Dam Slope ecosystem. Immediate research and recovery programs would not, however, be delayed before a recovery plan could be started. A recovery plan would serve as a future guide to efforts needed to maintain the population.

The Service rejects the idea that tortoises are dependent on cattle to maintain their population size. The idea that when cows were abundant, tortoises were abundant so therefore tortoises are dependent on cows is not supported by biological data. Tortoises existed at higher population densities throughout the Southwest long before cattle were introduced.

There were some comments about the desirability and effectiveness of determining Critical Habitat. The Service points out that the Endangered Species Act Amendments of 1978 require that all proposals to list species as either Endangered or Threatened must also contain "to the maximum extent prudent" a determination of Critical Habitat at the time of final listing. The Service believes that Critical Habitat must be included with this final rule to comply with the amendments and the intent of Congress.

Most of those who spoke in opposition to the proposal did not seriously question the status of the Beaver Dam Slope population of the desert tortoise or the potential for its continuing decline. Instead, they voiced concern at the impact of the designation of Critical Habitat on their activities and future use of the Beaver Dam Slope for winter grazing. Actually, there may be many kinds of actions which can be carried out within the Critical Habitat of a species which would not be expected to adversely effect the species. Indeed, no activity is automatically excluded. This point is not well understood by much of the public. There is widespread and erroneous belief that a Critical Habitat designation is somewhat akin to the establishment of a wildlife refuge and automatically closes an area to most human uses. A Critical Habitat designation applies only to Federal agencies, and is an official notification to these agencies that their responsibilities under Section 7 of the Endangered Species Act are applicable in a certain area.

While the Service acknowledges BLM's steps to set aside a 3,040-acre preserve, the Service also notes that the preserve has not actually been set up

because of pending litigation. Therefore, there are no assurances that the preserve will ever become a functioning reality. In any case, the preserve encompasses only the Woodbury-Hardy study area and an additional small area. The final Critical Habitat includes all major tortoise concentrations on the Beaver Dam Slope. A 3,040-acre preserve would only protect one concentration of tortoises with perhaps fewer than 50 females and is therefore too small an area of land to form an ecological unit meeting the needs of the majority of tortoises on the Beaver Dam Slope.

The Service wishes to emphasize that it will work in close cooperation with any agency to minimize impacts of the present rules on future activities in the Beaver Dam Slope area. No automatic limitations are imposed by a designation of Critical Habitat. It does, however, assist Federal agencies in insuring that their actions are not likely to jeopardize the continued existence of the species (Schreiner, 1976).

The Service is also concerned about harm to the tortoises by misguided individuals who do not understand the final rule and may be tempted to harm them in retaliation. The Service hopes that such individuals will not harm defenseless animals but warns that penalties for harming a Threatened species can be quite severe and will be enforced.

The Service points out that there are no provisions in the Act for designations of "crucial" habitats or "sensitive" species. In addition, in a lengthy letter to Dr. Kristin Berry (dated March 7, 1979), Mr. Coombs states:

I do not think that Endangered Status is a panacea in itself, but it is a great step in the right direction in forcing State and Federal agencies to function in behalf of the tortoise and its habitat, instead of livestock interest. Also, money will be available to do something, which is the UDWR's problem and weak excuse. Biologists with good qualifications could then do the work instead of UDWR's force of summer temps, who are not fully trained or acquainted with such important management and study techniques as would be needed to study and manage an endangered K-selected species on such a large scale.

The Service has no reason to doubt the motives or professional standing of the scientists in the Desert Tortoise Council. The Service notes that all decisions must be based solely on the best biological or commercial data available. Any person or group may petition the Service to list a species under provisions of the Act. During the review and proposal process, the Service solicits pertinent biological and

commercial data from the entire public, not any one particular group.

The Service acknowledges that the trampling of young tortoises is a possibility and may not be significant in the decline of the Beaver Dam Slope population. The Service also recognizes there is no proof to the contrary.

The Service agrees that the uncontrolled release of captive tortoises to the Beaver Dam Slope could be detrimental to the population and probably does not allow significant survivorship of the released captives. Before tortoises should be released there should be a thorough examination by a veterinarian for disease, knowledge of the origin of the captive, and knowledge about the population structure and carrying capacity of the environment where the captive is to be released. Even in California, where these requirements are met, release programs have been met with limited success.

The Service has examined Dr. Nielsen's comments on the potential economics of closing grazing on the Beaver Dam Slope. His work essentially arrives at the same results as Rice et al. (1979), though by a different method. The Service points out, however, that closing grazing is not being considered by BLM and the Service does not have the authority to prevent grazing on BLM land. In any case, permits are available to prevent undue economic hardship for a specified period of time.

After a thorough review and consideration of all the information available, the Director has determined that (1) the Beaver Dam Slope population of the desert tortoise is likely to become an Endangered species throughout all or a significant portion of its range due to one or more of the factors described in Section 4(a) of the Act, as specified in the proposal of August 23, 1978 (43 FR 37662-37665), and revised in this listing document (see below) and (2) listing this species as Threatened with the specific Critical Habitat will, with appropriate measures undertaken by the State of Utah and BLM, provide it with necessary protections to ensure its survival.

The summary of factors affecting the species, as required by Section 4(a) of the Act and published in the *Federal Register* of August 23, 1978 (43 FR 37662-37665), is revised below to take into account the information received by the Service since that date. These factors are as follows:

1. *The present or threatened destruction, modification or curtailment of its habitat or range.*—The Beaver Dam Slope has had a long history of overgrazing, especially prior to the mid 1960's before grazing was reduced by

fifty percent. Although both sheep and cattle have grazed in the past, presently only cattle are using the range.

Overgrazing modified the habitat, especially by the reduction of the availability of perennials and native vegetation, particularly Mormon tea and winterfat. The BLM has proposed an additional grazing reduction of 23 percent and eliminating grazing between April and September, both of which should aid in recovery of the range. It will take a long time to recover and must be carefully monitored. Livestock occasionally may collapse summer burrows and may inadvertently step on young tortoises, although the extent to which these contribute to the declining status of the population is in need of more study.

2. *Overutilization for commercial, sporting, scientific, or educational purposes.*—Collection of individuals for pets is thought to have had severe effects on the population in the past, especially since females were reported to be collected more than males because they are sedentary and easier to find than males. Many individuals believe that this is the chief cause of the present status of the population. Collection is probably not a major problem at present although any removal not in connection with conservation efforts would probably be detrimental.

3. *Disease or predation.*—Predation by natural or feral animals, such as coyotes, kit foxes, and bobcats, may be contributing to the decline of the population, especially as it effects eggs and young tortoises, both of which are very vulnerable. Many individuals believe that this is a major factor in the decline of the population although more research is needed to fully assess the problem.

4. *The inadequacy of existing regulatory mechanisms.*—While both the State of Utah and the Bureau of Land Management have regulations protecting the tortoise, they have not been sufficient to halt the decline in the population. By listing the tortoise as Threatened, present State and BLM regulations will be strengthened.

5. *Other natural or manmade factors affecting its continued existence.*—Competition for food items between tortoises and cattle may be contributing to a decline in this population, although as many ecologists have noted, competition is extremely difficult to prove. Competition may be direct (for food items) or indirect (in terms of adequate diet needed for successful reproduction). Dietary overlap is as high as 37.5 percent between cattle and tortoises based on fecal samples. The measures proposed by BLM for

managing the Beaver Dam Slope, if implemented, should eliminate serious competition in the future.

### Critical Habitat

The Act defines "Critical Habitat" as (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features:

(I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

The Service believes that the area proposed as Critical Habitat and which contains the majority of the tortoises on the Beaver Dam Slope, should be designated as Critical Habitat. The tortoises are vulnerable to a variety of threats, as discussed above and in the summary of comments. Because the status of the tortoise has resulted from a variety of interacting causes related to the management of the Beaver Dam Slope, the physical and biological features of this habitat are such as to require special management considerations and protection.

Section 4(b)(4) of the Act requires the Service to consider economic and other impacts of specifying a particular area as critical habitat. The Service has prepared an impact analysis. The estimated impact on grazing should not exceed \$54,000 which is not significant regionally or nationally but may cause a substantial impact upon the income of eight ranches. The Service is notifying Federal agencies that may have jurisdiction over the land and water under consideration in this action.

### Effects of this Rule

Section 7(a) of the Act provides:

The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of the endangered species and threatened species listed pursuant to Section 4 of this Act. Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to

jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of Section 7 of the Endangered Species Act Amendments of 1978.

This rule now requires Federal agencies not only to insure that activities they authorize, fund, or carry out, are not likely to jeopardize the continued existence of the Beaver Dam Slope population of the desert tortoise, but also to insure that their actions do not result in the destruction or adverse modification of this critical habitat. Provisions for Interagency Cooperation are codified at 50 CFR Part 402.

Section 4(f)(4) of the Act requires, to the maximum extent practicable that any rule which determines critical habitat be accompanied by a brief description and evaluation of those activities which, in the opinion of the Director, may adversely modify such habitat if undertaken, or may be impacted by such designation. Such activities are identified below for this species.

1. Unregulated grazing could seriously affect the tortoise population because of habitat destruction and competition for resources which would result.

2. Unregulated use of ORV's could lead to the destruction of burrows and forage needed by tortoises and also result in the direct killing and maiming of tortoises.

3. The placing of pipelines, transmission lines, and mining operations without consideration of their impacts on the tortoise population could jeopardize tortoises and lead to a further decline in the population's status.

The above three examples are provided as illustrations of the types of activities which may be detrimental to the physical environment of the Beaver Dam Slope population of the desert tortoise Critical Habitat. They are not necessarily examples of what is actually happening at the area listed as Critical Habitat.

Endangered species regulations already published in title 50 of the Code of Federal Regulations set forth a series of general prohibitions and exceptions which apply to all Endangered species. The regulations referred to above, which pertain to threatened species, are found at Section 17.31 of title 50, and are summarized below.

With respect to the Beaver Dam Slope population of the desert tortoise, all

prohibitions of Section 9(a)(1) of the Act, as implemented by 50 CFR 17.31, would apply. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale this species in interstate or foreign commerce. It also would be illegal to possess, sell, deliver, carry, transport, or ship any such wildlife which was illegally taken. Certain exceptions would apply to agents of the Service and State conservation agencies.

Regulations published in the Federal Register of September 28, 1975 (40 FR 44412), codified at 50 CFR 17.22 and 17.23, provide for the issuance of permits to carry out otherwise prohibited activities involving Endangered or Threatened species under certain circumstances. Such permits involving Endangered species are available for scientific purposes or to enhance the propagation or survival of the species. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship which would be suffered if such relief were not available.

#### Effect Internationally

The Service will review the status of the Beaver Dam Slope population of the desert tortoise to determine whether it should be proposed to the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora for placement upon Appendix I to that Convention (all tortoises, genus *Gopherus*, are on Appendix II already), and whether it should be considered under the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, or other appropriate international agreements.

#### National Environmental Policy Act

A final environmental assessment has been prepared and is on file in the Service's Office of Endangered Species. This assessment is the basis for a decision that this rule is not a major Federal Action that significantly affects the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969.

The primary author to this rule is Dr. C. Kenneth Dodd, Jr., Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240. (703/235-1975).

Note.—The Department of the Interior has determined that this is not a significant rule and does not require preparation of a regulatory analysis under Executive Order 12044 and 43 CFR Part 14.

#### Literature Cited

- Auffenberg, W. and R. Franz. 1978. *Gopherus agassizii*. Cat. Amer. Amphib. Rept. 212.1-212.2.
- Berry, K.H. 1978. Livestock grazing and the desert tortoise. pp. 505-519 In: Trans. 43rd. North Amer. Wildl. and Nat. Resources Conf., Washington, D.C.
- Coombs, E.M. 1974a. Utah cooperative desert tortoise study. *Gopherus agassizii*. Report to BLM District Office, Cedar City, Utah.
- Coombs, E.M. 1974b. Desert tortoise *Gopherus agassizii* study. Progress Report Summer 1973 in the Beaver Dam Wash Area. Report to BLM District Office, Cedar City, Utah. 27 pp.
- Coombs, E.M. 1977a. Wildlife observations of the hot desert region, Washington County, Utah, with emphasis on reptilian species and their habitat in relation to livestock grazing. Report to BLM. Cedar City, Utah. 204 pp.
- Coombs, E.M. 1977b. Population status, behavior and physiology of the desert tortoise, *Gopherus agassizii*, in southwestern Utah, with inferences drawn from related desert ectotherms. Report to, BLM, St. George, Utah. 23 pp. 8 fig.
- Coombs, E.M. 1977c. Status of the desert tortoise, *Gopherus agassizii*, in the State of Utah. pp. 95-101 In: Proc. 1977 Symposium, Desert Tortoise Council.
- Coombs, E. M. 1979. Food habits and livestock competition with the desert tortoise on the Beaver Dam Slope, Utah. Abstract of paper presented at 1979 Symposium of Desert Tortoise Council.
- Day, D. 1979. Endangered animals in Utah and adjacent areas. Great Basin Nat. Memoirs No. 3: 35-40.
- Dodd, C. K., Jr. 1978. Status of the petition to list the Beaver Dam Slope population of *Gopherus agassizii* as Endangered. pp. 55-57 In: Proc. of 1978 Symposium, Desert Tortoise Council.
- Douglass, J. F. 1975. Bibliography of the North American land tortoises (Genus *Gopherus*). Spec. Sci. Rept.—Wildlife No. 190, U.S. Fish and Wildlife Service, Washington, D.C. 60 pp.
- Douglass, J. F. 1977. Supplement to the bibliography of the North American land tortoises (Genus *Gopherus*). Smithsonian Herp. Inform. Serv. No. 39: 1-18.
- Ernst, C. H. and R. W. Barbour. 1972. Turtles of the United States. Univ. Press of Kentucky, Lexington, Ky. 347 pp.
- Hansen, R. M., M. K. Johnson, and T. R. Van Devender. 1976. Foods of the desert tortoise, *Gopherus agassizii*, in Arizona and Utah. Herpetologica 32: 247-251.
- Hardy, R. 1976. The Utah population—a look in the 1970's. pp. 84-88 In: Proc. of 1976 Symposium, Desert Tortoise Council.
- Hohman, J. P. and R. D. Ohmart. 1978. Historical range use of the Beaver Dam Slope, Arizona, and its possible effects on the desert tortoise population. pp. 116-125 In: Proceedings of the 1978 Symposium, Desert Tortoise Council.
- Rice, D. N. Starler, and R. Johnson. 1979. Economic impact of designating Critical Habitat for the Beaver Dam Slope population of the desert tortoise

(*Gopherus agassizii*). U.S. Dept. Interior, 19 pp.  
 Rowley, F. 1978. State Report—Utah. pp. 53–54 In: Proc. of 1978 Symposium, Desert Tortoise Council.  
 Schreiner, K. M. 1976. Critical Habitat: what it is—and is not. *Endang. Sp. Tech. Bull.* 1(2): 1,4.  
 Smith, D. A. 1978. State Report—Utah. pp. 48–52 In: Proc. of 1978 Symposium, Desert Tortoise Council.  
 Smith, H. M. and R. B. Smith. 1979. Synopsis of the herpetofauna of Mexico. Vol. VI.

Guide to Mexican turtles, Bibliographic addendum III. John Johnson Publ., N. Bennington, Vt. 1044 pp.  
 Stewart, G. R. 1976. The Utah population of the desert tortoise, *Gopherus agassizii*, is Endangered! p. 122 In: Proc. of 1978 Symposium, Desert Tortoise Council.  
 Turner, F. B., R. H. Rowland, and R. A. Wood. 1968. Nuclear engineering and wildlife: radioactivity in jackrabbits after the Sedan test. *J. Wildl. Manag.* 30(2): 433–443.  
 Woodbury, A. M. and R. Hardy. 1948. Studies

of the desert tortoise, *Gopherus agassizii*. *Ecol. Monog.* 18: 145–200.

**Regulations Promulgation**

Accordingly, Part 17, Subparts B and I, Title 50 of the Code of Federal Regulations are amended as set forth below:

1. Section 17.11 is amended by adding, in alphabetical order, the following to the List of Endangered and Threatened Wildlife:

**§ 17.11 Endangered and Threatened Wildlife.**

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Tortoise, desert.....	<i>Gopherus agassizii</i> .....	U.S.A. (Utah, Arizona, California, Nevada); Mexico.	Beaver Dam Slope, Utah.....	T		17.95(c)	NA

2. Section 17.95(c) is amended by adding the following Critical Habitat description after the Critical Habitat description for the Plymouth red-bellied turtle:

**§ 17.95 Critical Habitat—Fish and Wildlife.**

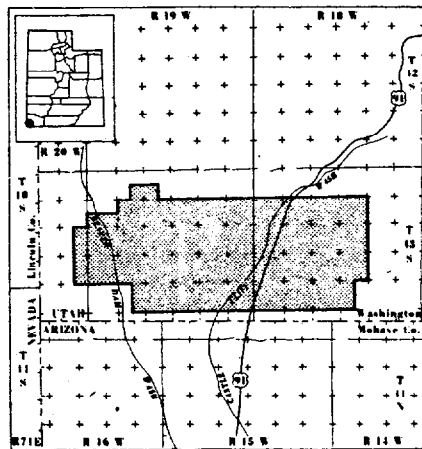
\* \* \* \* \*

(c) *Reptiles.*

**Beaver Dam Slope Population of the Desert Tortoise (*Gopherus agassizii*)**

Utah. Washington County. E½ Sections 13 and 24, T43S R20W; S½ Section 7, all of Sections 8 through 28, E½ Section 29, SE¼ Section 5, SW¼ Section 4, T43S R19W; all of Sections 7 through 10, 15 through 22, 28 through 30, and W½ Section 27, T43S R18W.

*Beaver Dam Slope Population*



Dated: August 14, 1980.  
 Lynn A. Greenwalt,  
 Director, Fish and Wildlife Service.  
 [FR Doc. 80-25318 Filed 8-19-80; 8:45 am]  
 BILLING CODE 4310-55-M