

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AC01

Endangered and Threatened Wildlife and Plants; Proposed Determination of Critical Habitat for the Mojave Population of the Desert Tortoise

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to designate critical habitat for the Mojave population of the desert tortoise (*Gopherus agassizii*), a species federally listed as threatened under the Endangered Species Act of 1973, as amended (Act). Located primarily on Federal land, and to a lesser extent on State, private and Tribal lands, this proposed critical habitat designation would result in additional protection requirements under section 7 of the Act with regard to activities that require Federal agency action. Section 4 of the Act requires the Service to consider economic costs and benefits prior to making a final decision on the size and scope of critical habitat. The Service solicits data and comments from the public on all aspects of this proposal, including additional data on the economic impacts of the designation and a valuation technique for determining benefits.

DATES: Comments from all interested parties on the proposed determination and associated economic analysis must be received in writing by October 29, 1993. The economic analysis is available for public review and can be obtained by writing or calling the Nevada Field Office at the address and telephone number listed below. The Service intends to conduct one public hearing at each of the following locations. Each hearing will be held from 1 to 4 p.m. and 6 to 8 p.m.:

1. Wednesday, October 6, 1993, Riverside, California;
2. Tuesday, October 12, 1993, Las Vegas, Nevada; and
3. Thursday, October 14, 1993, St. George, Utah.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, Nevada Field Office, U.S. Fish and Wildlife Service, 4600 Kietzke Lane, Building C-125, Reno, Nevada 89502. The complete file for this rule, including comments and materials received, will be available for public inspection, by appointment,

during normal business hours at the above address. The public hearings will be held at the following locations:

1. Riverside, California—Riverside Municipal Auditorium, 3485 7th Street;
 2. Las Vegas, Nevada—Clark County Commission Chambers, 225 Bridger Avenue, 1st Floor; and
 3. St. George, Utah—Cox Auditorium, The Dixie Center, 425 South 700 East.
- FOR FURTHER INFORMATION CONTACT: Mr. David L. Harlow, Field Supervisor, Nevada Field Office, U.S. Fish and Wildlife Service, at the above address (702/784-5227).

SUPPLEMENTARY INFORMATION:**Background**

The Mojave population of the desert tortoise, referred to herein as desert tortoise or tortoise, is one of three species in the genus *Gopherus* found in the United States. The Berlandier's tortoise (*G. berlandieri*) is found in northeastern Mexico and southern Texas. The gopher tortoise (*G. polyphemus*) is found in the hot, humid portions of the southeastern United States. *G. agassizii* is relatively large, with adults measuring up to 15 inches in shell length, and inhabits the Mojave, Colorado, and Sonoran Deserts in the southwestern United States and adjacent Mexico. The species is divided into the Sonoran and Mojave populations. The Sonoran population occurs south and east of the Colorado River in Arizona and Mexico, while the Mojave population occupies those portions of the Mojave and Colorado Deserts north and west of the Colorado River in southwestern Utah, northwestern Arizona, southern Nevada, and California.

Previous Federal Actions

On August 20, 1980, the Service listed the Beaver Dam Slope population of the desert tortoise (*Gopherus agassizii*), in southwestern Utah, as a threatened species and designated 35 square miles of critical habitat (45 FR 55654). On September 14, 1984, the Service received a petition from the Environmental Defense Fund, Natural Resources Defense Council, and Defenders of Wildlife to list the desert tortoise in Arizona, California, and Nevada as endangered. In September 1985, the Service determined that the listing was warranted, but precluded by other listing actions of higher priority under authority of section 4(b)(3)(iii) of the Act (50 FR 49868). The Service made annual findings of warranted but precluded from 1985 through 1989 under section 4(b)(3)(C) of the Act. On May 31, 1989, the same three

environmental organizations provided substantial new information and petitioned the Service to list the desert tortoise as endangered throughout its range in the United States, under the expedited emergency provisions of the Act. As a result of the new information, on August 4, 1989 (54 FR 32326), the Service listed the Mojave population, excluding the Beaver Dam Slope population in Utah, as endangered by emergency rule. The Mojave population was designated in the emergency rule as all tortoises occurring north and west of the Colorado River, in California, Nevada, Arizona, and Utah. The Mojave population was then proposed under normal listing procedures on October 13, 1989 (54 FR 42270), and listed as threatened on April 2, 1990 (55 FR 12178).

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. The Service's regulations (50 CFR 424.12(a)(2)) state that critical habitat is not determinable if information sufficient to perform required analyses of the impacts of the designation is lacking or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat. At the time of listing, the Service found that critical habitat was not determinable because the specific size and spatial configuration of essential habitats, as well as vital linkages connecting areas necessary for ensuring the conservation of the Mojave desert population throughout its range, could not be determined without further information.

On January 8, 1993, several plaintiffs filed a motion seeking in *Desert Tortoise et al. v. Lujan et al.*, Civ. No. 93-0114 MHP (N.D. Cal.) to stop the transfer of public land to the State of California for construction of a low-level nuclear waste disposal facility in Ward Valley located in southern California. The plaintiffs contended that the Service violated the Act by failing to designate critical habitat for the desert tortoise and sought an injunction prohibiting transfer of the site until critical habitat was designated and a new section 7 biological opinion that addressed the effects of the transfer on critical habitat was completed.

On January 27, 1993, the Natural Resources Defense Council and other environmental groups sued to compel designation of critical habitat for the Mojave population of the desert tortoise, alleging that the Secretary had failed to meet the designation deadline under section 4(b)(6)(C)(ii) of the Act (*Natural*

Resources Defense Council v. Babbitt, No. C-93-0301 MHP (N.D. Cal.)). Plaintiffs further requested the court to prohibit the Service from issuing any further biological opinions for the tortoise under section 7 of the Act until critical habitat was designated.

The two cases regarding critical habitat were consolidated, and on May 21, 1993, the plaintiffs and the Secretary agreed on a stipulation requiring the defendants to propose critical habitat for the desert tortoise by August 1, 1993, and to designate critical habitat by December 1, 1993. On July 30, 1993, the plaintiffs agreed to an extension of these deadlines to August 29, 1993, for a proposal and December 15, 1993, for a final decision.

On March 30, 1993, the Service announced the availability of the *Draft Recovery Plan for the Desert Tortoise (Mojave Population)* (Draft Recovery Plan) (58 FR 16691). The Draft Recovery Plan (USFWS 1993) divides the range of the desert tortoise into 6 recovery units and recommends establishment of 14 Desert Wildlife Management Areas (DWMAs) within the recovery units. Within each DWMA, the Draft Recovery Plan recommends specific management actions to effect recovery of desert tortoises. The public comment period on the Draft Recovery Plan closed on June 30, 1993.

Ecological Considerations

The range of the Mojave population of the desert tortoise includes portions of the Mojave Desert and the Colorado Desert division of the Sonoran Desert (Colorado Desert), and spans portions of four states. The Mojave Desert is located in southern California, southern Nevada, northwestern Arizona, and southwestern Utah. It is bordered on the north by the Great Basin Desert, on the west by the Sierra Nevada and Tehachapi ranges, on the south by the San Gabriel and San Bernardino Mountains and the Colorado Desert, and on the east by the Grand Wash Cliffs and Hualapai Mountains of Arizona. This area includes parts of Inyo, Kern, Los Angeles, San Bernardino, and Riverside Counties in California; the northwestern part of Mohave County, Arizona; Clark County, and the southern parts of Esmeralda, Nye, and Lincoln Counties in Nevada; and part of Washington County, Utah. The Colorado Desert is located south of the Mojave Desert, east of California's Peninsular Ranges, and west of the Colorado River. This area includes Imperial County and parts of San Bernardino and Riverside Counties, California.

The desert tortoise is most commonly found within the desert scrub vegetation

type, primarily in creosote bush-scrub vegetation, but also in succulent scrub, cheesebush scrub, blackbush scrub, hopsage scrub, shadscale scrub, microphyll woodland, and Mojave saltbush-allscale scrub. Within the desert microphyll woodland, the desert tortoise occurs in blue palo verde-ironwood-smoke tree woodland. The tortoise also occurs in scrub-steppe vegetation types of the desert and semidesert grassland complex (USFWS 1993).

Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas (USFWS 1993).

The size of desert tortoise home ranges varies with respect to location and year. Females have long-term home ranges that are approximately half that of the average male, which range from 10 to 80 hectares (Berry 1986).

Although desert tortoise populations are not generally known to inhabit elevations much above 4,000 feet, tortoise burrows have been located at 4,800 feet in the Providence and Clark Mountains of the eastern Mojave (Luckenbach 1982; W. Yumiko, pers. comm., 1992). Reliable sources have recorded desert tortoises at 7,300 feet in Death Valley National Monument, California (Luckenbach 1982); at 4,800 feet in the Goodsprings Mountains (R. Marlow, pers. comm.) and the Spring Range, Nevada (C. Stevenson, pers. comm.); at 5,000 feet in the East Pahrangat Range, Nevada (C. Stevenson, pers. comm.); and at 5,200 feet on the Nevada Test Site (B. Burge, pers. comm.). In addition, numerous anecdotal reports place desert tortoises as high as 7,000 feet on Mount Charleston, Nevada, and in the Clark Mountains, California. Fossil remains from the Pleistocene to late Holocene (12,000 to 1,000 years before present) indicate the preferred habitat of the desert tortoise included elevations far exceeding those of today, perhaps in response to arid climatic episodes that

occurred during this epoch (Morafka and Brussard, in prep.; Schneider and Everson 1989). This fossil evidence indicates that the species may have spent less than 10 percent of its taxonomic life span in the contemporary warm creosote bush desert, the remainder having been spent in more mesic, equable, and productive climates and ecosystems. This implies that contemporary tortoise populations in most of the Mojave region are likely to be vulnerable to adverse climatic conditions and to regional climate change (Morafka and Brussard, in prep.).

Throughout its geographic distribution, the desert tortoise exhibits many trait variations. For example, three basic shell shapes (phenotypes) are indicative of desert tortoise populations in distinct geographic areas within their range (Weinstein and Berry 1988). Tortoises occurring in California and southern Nevada exhibit a boxlike, high-domed shell phenotype; Beaver Dam Slope tortoises have a short plastron (underside) and a low-domed shell phenotype; and Sonoran Desert tortoises have a pear-shaped, low-domed shell phenotype (Weinstein and Berry 1988). Furthermore, identification of the three phenotypes parallels results of mitochondrial DNA (mtDNA) studies that also "type" desert tortoises into the same three populations based on genetics (Lamb *et al.* 1989). Other trait variations are found in the behavior, physiology, and ecology of the desert tortoise, further identifying population differences throughout the desert tortoise's range (Weinstein and Berry 1988). It is because of this immense variability that six distinct population segments of the Mojave population have been proposed in the Draft Recovery Plan (USFWS 1993). The six recovery units within the range of the desert tortoise, as outlined in the Draft Recovery Plan, represent the biotic and abiotic variability found in the desert tortoise.

The Northern Colorado Recovery Unit is located completely in California, southwest of the town of Needles, with the western bank of the Colorado River as an eastern boundary. This unit is varied, both vegetationally and topographically. It includes elements of both Colorado Desert and Mojave Desert floras with succulent scrub (*Fouquieria*, *Opuntia*, *Yucca* species), blue palo verde-smoke tree woodland, cheesebush scrub (northern Colorado Desert type), creosote bush scrub, and big galleta scrub steppe (USFWS 1993). The cover provided by shrubs and grasses varies considerably within valleys and appears to be dependent on soil types and

amounts of desert pavement (USFWS 1993). Elevations range from about 600 to 4,700 feet. A number of basins and ranges are represented, characterized by flats, valleys, alluvial fans, lava flows, and small washes. Desert tortoises are found here in washes as well as in many of the other habitat types. They feed on both summer and winter annuals and den singly in burrows under shrubs, in intershrub spaces, and occasionally in washes (USFWS 1993).

One DWMA (Chemehuevi) has been proposed in the Draft Recovery Plan for the Northern Colorado Recovery Unit. Current desert tortoise densities within this area are greater here than in many of the other recovery units (approximately 10 to 275 adults per square mile, with an average density of 35 adults per square mile). However, this Recovery Unit has the potential to support an average density of 70 adults per square mile in protected areas if managed appropriately (USFWS 1993). It has been suggested that regional densities were probably depressed due to military activities in the 1940's, livestock grazing, and other human uses (USFWS 1993). The Bureau of Land Management (BLM) manages the majority of the lands within this unit, while the remaining lands are in private or State ownership. Desert tortoises within this Recovery Unit have the "California" mtDNA haplotype and shell type common to California and southwestern Nevada. Allozyme frequencies differ significantly between this Recovery Unit and the Western Mojave Recovery Unit indicating some degree of reproductive isolation between the two (USFWS 1993).

The Eastern Colorado Recovery Unit is also located completely within California. It lies directly to the south of the Northern Colorado Recovery Unit, southwest of the town of Blythe, California, and northwest of Yuma, Arizona, with the western bank of the Colorado River as an eastern boundary. Plant communities are typical of the Colorado subdivision of the Sonoran Desert. Tortoises here occupy well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub (*Fouquieria*, *Opuntia*, *Yucca* species), creosote bush scrub, and blue palo verde-ironwood-smoke tree communities. Elevations in this unit range from about 400 to 4,500 feet. Winter burrows are generally shorter in length, and activity periods are longer than in the western Mojave. These desert tortoises feed on summer and winter annuals and some cacti. They typically occupy shelter sites singly within banks of washes, in shallow

burrows on alluvial fans, and under shrubs.

The Draft Recovery Plan has proposed one DWMA (Chuckwalla) for the Eastern Colorado Recovery Unit, although a portion of the Joshua Tree DWMA lies within the boundaries of both the Western Mojave and the Eastern Colorado Recovery Units. Current tortoise densities within the DWMA are approximately 5 to 175 adults per square mile, with an average density of 15 adults per square mile. With increased management in protected areas, it is thought that densities could reach an average of 40 adult tortoises per square mile (USFWS 1993). Included within this unit is the Chuckwalla Bench, an area for which an average estimated population was recorded of about 500 tortoises per square mile between the years 1979 and 1982, the highest known density of desert tortoises (USFWS 1993). Declines in this area may have been due to vandalism, predation by ravens, and vehicle-related mortality, in conjunction with poor environmental conditions (USFWS 1993). Like the Northern Colorado Recovery Unit, much of the historical habitat degradation is due to military activities in the 1940's. Land ownership is a checkerboard of BLM, military, and private lands. Like the Northern Colorado Recovery Unit described above, desert tortoises here have the "California" mtDNA haplotype and shell type (USFWS 1993).

The Western Mojave Recovery Unit lies to the northwest of the Eastern Colorado Recovery Unit and to the west of the Northern Colorado and Eastern Mojave Recovery Units in California. Although the majority of the Recovery Unit is considered to be within the Mojave Desert, the southeastern portion is transitional between the Mojave and Colorado deserts. The northern portion of the Western Mojave Recovery Unit is transitional with the Eastern/Northeastern Mojave Recovery Units. These transitional areas result in extremely heterogeneous vegetation and topography, offering a diverse range of habitats for the desert tortoise—a feature that may be important over the long-term in the event of climatic changes. Vegetation is characterized by creosote bush scrub, Mojave saltbush-allscale scrub (endemic), Indian rice grass scrub-steppe, hopsage scrub, big galleta scrub steppe, cheesebush scrub (west Mojave type), desert psammophytes, and blackbush scrub. California juniper—one-leaf pinon woodlands dominate the higher elevations. Topography is varied with flats, valleys, alluvial fans, rolling hills, mountainous slopes, rock outcrops, bedlands, sand dunes, and

lava flows. Desert tortoises occur here primarily in velleys, on alluvial fans, and on rolling hills in saltbush, creosote bush, and scrub steppe communities. Elevations range from 1,500 to 5,800 feet. The majority of desert tortoises within this unit den singly, but in the transitional northernmost section of the unit more than one desert tortoise may inhabit a shelter site. Shelter sites are dug deep during winter and summer periods of inactivity, and are usually located under shrubs on alluvial fans and sometimes in washes. Above-ground activity occurs primarily in the spring when the animals forage on winter annuals, some herbaceous perennials, and cacti. These desert tortoises are generally adapted to a regime of winter rains and occasional summer storms.

The four DWMA's proposed within the Western Mojave Recovery Unit are characterized by high, contiguous population densities (5 to 250 desert tortoise per square mile, with an average of 20 adults per square mile). It is thought that with increased management in protected areas over the long-term, densities of 50 to 100 adults per square mile could be obtained (USFWS 1993). Several military operations, urbanization, agricultural development, sheep grazing, off-highway vehicle (OHV) activities, and disease within this Recovery Unit are thought to be responsible for population declines since the 1930's. Proposed military expansion would result in further loss of desert tortoises and their habitat. This Recovery Unit contains pockets of the most protected and undisturbed desert tortoise habitat, and also contains some of the most threatened areas (USFWS 1993). Land ownership within this unit is a mixture of private, BLM, military, National Park Service, and State lands. The Service does not propose the Desert Tortoise Natural Area (DTNA) and Joshua Tree National Monument, in California, as critical habitat since these two areas already receive adequate protection. However, because these two areas are important to the recovery of the tortoise, the Service may reconsider designating these areas as critical habitat should changes in current management activities occur. Desert tortoises here have the "California" mtDNA haplotype and shell type (USFWS 1993).

The Eastern Mojave Recovery Unit, located primarily in California, extends into Nevada in the Amargosa, Pahrump, and Piute Valleys. It lies directly to the north of the Northern Colorado Recovery Unit, with the western bank of the Colorado River as an eastern boundary. This Recovery Unit is

isolated from the Western Mojave Recovery Unit by the Baker Sink, where desert tortoises do not occur. Vegetation within the eastern portion of this unit is transitional between the Colorado Desert and the Mojave Desert communities and is represented by big galleta-scrub steppe, succulent scrub (*Yucca*, *Opuntia* species), creosote bush scrub, cheesebush scrub (east Mojave type), and Indian rice grass scrub-steppe. Desert tortoises are active here in the spring and in late summer/early autumn because this region receives both winter and summer rains, resulting in two distinct annual floras on which tortoises can feed. These desert tortoises occupy a variety of vegetation types and feed on summer and winter annuals, cacti, perennial grasses, and herbaceous perennials. Topography is characterized by flats, valleys, alluvial fans, washes, and rocky slopes. Elevations range from 1,600 to 4,900 feet. Desert tortoises generally den singly in caliche caves, on alluvial fans, and in washes.

Current population densities within the three DWMA's proposed by the Draft Recovery Plan for the Eastern Mojave Recovery Unit are patchy and varied, with pockets of high densities (5 to 350 tortoises per square mile, with an average density of 25 adult tortoises per square mile). High-density populations, which are thought to have occurred historically throughout this unit, have been impacted over the years by a combination of cattle grazing, military operations, and other forms of human-caused disturbances. With appropriate long-term management in protected areas, it is likely that population densities of 60 to 75 adult desert tortoises per square mile can be obtained (USFWS 1993). Land ownership is predominantly Federal (BLM and National Park Service), with the remainder being a mixture of private and State ownership. Desert tortoises here have the "California" mtDNA haplotype and shell type (USFWS 1993). They are also differentiated from desert tortoises in the Northeastern Mojave Recovery Unit at several allozyme loci (Brussard and Britten 1993).

The Northeastern Mojave Recovery Unit is found primarily in Nevada, but extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern Arizona. Vegetation is characterized by creosote bush scrub, big galleta scrub-steppe, desert needlegrass scrub-steppe, and blackbush scrub (in the higher elevations). Topography is varied, with flats, valleys, alluvial fans, and rocky slopes. Much of the northern portion of the unit is characterized as basin and

range, rising to high elevations that range from 2,500 to 12,000 feet. Tortoises throughout the unit are generally found in creosote bush scrub communities on flats, valley bottoms, and alluvial fans, but they occasionally use other habitats, such as rocky slopes and blackbush scrub. Desert tortoises often occur in groups of two or more in shelter sites located in caliche, on alluvial fans, and in washes. They typically eat summer and winter annuals, cacti, and perennial grasses.

Four DWMA's are proposed by the Draft Recovery Plan for the Northeastern Mojave Recovery Unit. Desert tortoises in this Recovery Unit, the northern portion of which represents the northernmost distribution of the species, are found in low densities (approximately 10 to 20 adults per square mile). Historically, much higher densities were found in the central and southern portions of the Recovery Unit, with the most dramatic declines caused by urban development in the Las Vegas Valley. With appropriate long-term management in protected areas, the unit may support densities of 40 to 50 adult desert tortoises per square mile (USFWS 1993). Most land in this unit is administered by BLM, with the remainder a mixture of private and State ownership. An area of 35 square miles in Utah on the Beaver Dam Slope, in the northeastern portion of the Recovery Unit, was designated as critical habitat in 1980; however, with continued grazing in this area, populations of desert tortoise have continued to decline. As with the DTNA and Joshua Tree National Monument DWMA, the Service believes that desert tortoise habitat within the Coyote Spring DWMA on the Desert National Wildlife Range is already afforded protection equal to that of critical habitat and subsequently does not include it in this proposal. Three mtDNA haplotypes are found in this Recovery Unit, but they exhibit low allozyme variability with relatively little local differentiation. A distinctive shell phenotype occurs in the Beaver Dam Slope region, differentiating it from the California and Sonoran Desert shell types (Weinstein and Berry 1988, USFWS 1993).

The Upper Virgin River Recovery Unit is at the extreme northeastern edge of the species' range in the area of St. George, Utah. It is characterized by a transitional vegetation represented by sagebrush scrub, psammophytes, Great Basin (sand sage), blackbush scrub, and Utah juniper—one-leaf pinon woodland. Here, desert tortoises live in a complex and rugged topography consisting of rock caves, canyons, mesas, sand dunes, and sandstone outcrops. Over most of

the Mojave Region, desert tortoises inhabit large flats and gently-sloping alluvial fans common to the Mojave Desert. However, desert tortoises in the Upper Virgin River Recovery Unit are more commonly found in broken habitat with rock outcroppings. Elevations range from 2,500 to 4,500 feet. Tortoises in this environment travel to sand dunes for egg laying and use other habitats for foraging. Desert tortoises in this heterogeneous habitat may use sandstone and lava caves or rock outcroppings for shelter sites and travel to sand dunes for egg laying. Two or more desert tortoises often use the same shelter site, as do those in the Northeastern Mojave Recovery Unit (USFWS 1993).

One DWMA is proposed by the Draft Recovery Plan for the Upper Virgin River Recovery Unit. Due to the heterogeneity of the habitat, desert tortoises occur in a patchwork of high- and low-density populations. Current densities in this Recovery Unit are high (approximately 250 tortoises per square mile). The current population has likely persisted primarily because rugged terrain and poor access discourage human-caused habitat destruction and direct sources of desert tortoise mortality. Populations should persist at current densities over the long-term if managed appropriately within protected areas (USFWS 1993). Current land ownership is a patchwork of Federal, State, private, and some Tribal lands. Shell morphology and mtDNA have not been studied in this Recovery Unit, but allozyme variation is similar to that found in the Northeastern Mojave Recovery Unit (USFWS 1993).

Management Considerations

Current and historic desert tortoise habitat loss, deterioration, and fragmentation is largely attributable to urban development, military operations, and multiple-uses of public land, such as OHV activities and livestock grazing. Historically, habitat reduction and fragmentation have not been uniform throughout the desert tortoise's range, but have been concentrated around populated areas, such as Mohave, Boron, Kramer Junction, Barstow, Victorville, Apple Valley, Lucerne Valley, and Twentynine Palms, California. Similar patterns are evident near Las Vegas, Laughlin, and Mesquite, Nevada; and St. George, Utah.

Human "predation" (taking desert tortoises out of their natural populations either by death (accidental or intentional) or by removal) is also a major factor in the decline of the desert tortoise. People illegally collect desert tortoises for pets, food, and commercial

trade. Some immigrants to the United States collect desert tortoises for medicinal or other cultural purposes (USFWS 1993).

Desert tortoises are often struck and killed by vehicles on roads and highways, and mortality of desert tortoises due to gunshot and OHV activities is common in many parts of the Mojave Region, particularly near cities and towns. In the western Mojave Desert of California, 14.3 percent of the carcasses found on 11 permanent study plots showed evidence of gunshot (Sievers *et al.* 1988). At one plot, 28 percent of the carcasses had evidence of gunshot. Loss of tortoises from vandalism has also been reported in northwestern Arizona. Approximately 10 percent of shell remains from a tortoise study plot near Littlefield, Arizona, had gunshot wounds (USFWS 1990).

OHV use in the desert has increased and proliferated since the 1960's (USFWS 1993). As of 1980, OHV activities affected approximately 25 percent of all desert tortoise habitat in California, as well as substantial portions in southern Nevada (USFWS 1993). Negative effects range from minor habitat alteration to total denudation of extensive areas. While direct effects are immediate (mortality from crushing, collection, and vandalism), indirect effects can be either immediate (disruption of soil integrity; degradation of annual plants, grasses, and perennial plants; and/or destruction of desert tortoise shelter sites), delayed, and/or cumulative (soil loss due to erosion, soil compaction and its effects on annual and perennial plants, water pollution, and litter and refuse) (Biosystems Analysis 1991).

Impacts of roads within desert tortoise habitat extend significantly beyond the tracks that are created (Nicholson 1978). Thus, well-used OHV areas often result in depressed tortoise populations extending beyond the immediate boundaries of the directly disturbed habitat.

The use of OHVs appears to have a significant effect on tortoise abundance and distribution. Vehicle route proliferation has occurred in many areas and can result in a significant cumulative loss of habitat. Human access increases the incidence of tortoise mortality from collecting, gunshot, and crushing by vehicles.

Desert tortoises, particularly hatchlings and juveniles, are preyed upon by several native species of mammals, reptiles, and birds. Domestic and feral dogs are a new source of mortality.

Common raven (*Corvus corax*) populations in the southwestern deserts have increased significantly since the 1940's, presumably in response to expanding human use of the desert. Sewage ponds, landfills (authorized and unauthorized), powerlines, roads, and other human uses have increased available foraging, roosting, and nesting opportunities for ravens. Over the last 20 years, raven populations in the western Mojave Desert have increased 1528 percent between 1968 and 1988, (about 15 percent per year), and increased in the Colorado-Sonoran Deserts 474 percent (over 9 percent per year). While not all ravens may include tortoises as significant components of their diets, these birds are highly opportunistic in their feeding patterns and concentrate on easily available seasonal food sources, such as juvenile tortoises. Increased mortality of young desert tortoises, combined with drastically lowered survivorship of adults, is likely responsible for observed catastrophic population declines (USFWS 1993).

Domestic livestock grazing has occurred in desert tortoise habitat since the mid-1800's, with an increase in intensity near the turn of the century to the mid-1930's (Biosystems Analysis 1991). Grazing has been implicated as one of the major impacts to tortoises and their habitat. Direct impacts from grazing include trampling of both tortoises and shelter sites; indirect impacts include loss of plant cover, reduction in number of suitable shelter sites, change in vegetation, compaction of soils, reduced water infiltration, erosion, inhibition of nitrogen fixation in desert plants, and the provision of a favorable seed bed for exotic annual vegetation (USFWS 1991, USFWS 1993). Habitat destruction and degradation are especially evident in livestock watering, bedding, loading, and unloading areas (USFWS 1991).

The degree and nature of impacts from livestock grazing are dependent upon the local ecosystem, grazing history, seasons of use, stocking rates, annual rainfall, and density of the tortoise population (USFWS 1990). Desert ecosystems require decades to recover from disturbances, and desert tortoises are incapable of rapid growth, even under optimum conditions.

An upper respiratory tract disease (URTD) is prevalent in captive desert tortoises and has been identified in wild desert tortoises in many localities in the western Mojave Desert and in limited localities elsewhere. URTD appears to be spreading and may have been introduced to wild populations through illegal releases of diseased captive

desert tortoises. Wild desert tortoises with signs of URTD are commonly found near cities and towns with concentrations of captive desert tortoises (Marlow and Brussard 1993). Disease has contributed to high mortality rates in the western Mojave Desert in the last 4 years (Avery and Berry 1990, USFWS 1993).

Recent studies have demonstrated *Mycoplasma agassizii* sp. nov. as the causative agent of URTD. Predisposing factors, such as habitat degradation, poor nutrition, and drought, are likely involved in increasing the susceptibility of individual animals to disease (Jacobson *et al.* 1991). Drought and concomitant poor nutrition have the potential to compromise desert tortoises immunologically and, therefore, make them more susceptible to URTD and other diseases. Controlling human-related spread of URTD, improving habitat conditions, and monitoring health status of desert tortoise populations are some of the more important management tools that can be used in controlling URTD in wild populations of the desert tortoise (USFWS 1993).

A shell disease has also been observed in the Chuckwalla Bench population in the eastern Colorado Desert (Jacobson *et al.* 1992). A variety of mineral and metal deficiencies, as well as various toxicants, are known to cause integumentary pathology in mammals, suggesting disease or toxicosis may be responsible for these observed shell abnormalities (USFWS 1993). Another shell disease, osteopenia, occurs in desert tortoise populations on the Beaver Dam Slope and may be related to poor nutrition (Jarchow and May 1989).

Existing Protection

On August 20, 1980, the Service listed the Beaver Dam Slope subpopulation in Utah as threatened with critical habitat (45 FR 55654). The listing included designation of 35 square miles of critical habitat, which included establishment of the "Woodbury Desert Study Area," a 3,040-acre research enclosure for determining range improvement in the absence of livestock (USFWS 1990). Since its listing in 1989, all additional portions of the Mojave desert tortoise's range have been covered by the protective measures of sections 7, 9, and 10 of the Act.

The States of Nevada, California, Arizona, and Utah have established laws that provide varying levels of protection for individual desert tortoises. The State of Nevada affords limited protection to the desert tortoise, having established it as a protected

reptile under section 501.110.1(d) of the Nevada Revised Statutes (NRS), protected and rare outside of the urban areas of Clark County (Las Vegas) under section 503.080.1(a) of the Nevada Administrative Code, and unlawful to transport across State lines without the written consent of the Nevada Department of Wildlife. Nevada does not have any laws that regulate the degradation of desert tortoise habitat.

The California Fish and Game Commission acknowledged the desert tortoise as a State threatened species on June 22, 1989, amending the California Code of Regulations, 670.5(b)(4) of title 14. California also authorized legislation to regulate modification of desert tortoise habitat. It is the only State with such authority (USFWS 1990). California has also designated the desert tortoise as its official State reptile.

The Arizona Game and Fish Commission extended full protection from take to the desert tortoise, effective January 1, 1988, through Commission Order 43: Reptiles. Also prohibited is the sale of desert tortoises and their importation to the State, as well as the release of captive tortoises into the wild. There is no State authority in Arizona to regulate the modification of desert tortoise habitat.

In Utah, the desert tortoise is considered a "prohibited reptile," protecting it from collection, importation, transportation, possession, sale, transfer, or release because it poses unacceptable disease, ecological, environmental, or human health or safety risks. No State regulations exist to stop the loss or degradation of desert tortoise habitat through land development or other actions (USFWS 1990).

Draft Desert Tortoise Recovery Plan

Section 2(c)(1) of the Act declares that " * * * all Federal departments and agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." Section 3(3) of the Act defines conservation to include all measures needed to recover the species and remove it from the list of endangered and threatened wildlife and plants. The Act mandates the conservation of listed species through different mechanisms, such as: Section 7 (requiring Federal agencies to further the purposes of the Act by carrying out conservation programs and ensuring that Federal actions will not likely jeopardize the continued existence of the listed species or result in the destruction or adverse modification of designated critical habitat); section 9 (prohibiting take of

listed species); section 10 (wildlife research permits and conservation planning on State and private lands); section 6 (cooperative State and Federal grants); land acquisition; and research. Other Federal laws also require conservation of threatened and endangered species, such as the Federal Land Policy Management Act and various other State and Federal laws and regulations.

Recovery planning under section 4(f) of the Act is the "umbrella" that eventually guides all of these activities and promotes a species' conservation and eventual delisting. Recovery plans provide guidance, which may include population goals and identification of areas in need of protection or special management, so that a species can be removed from the Lists of Endangered and Threatened Wildlife and Plants. Recovery plans usually include management recommendations for areas proposed or designated as critical habitat.

After listing the Mojave population of the desert tortoise as threatened on April 2, 1990 (55 FR 12178), the Service appointed members to the Desert Tortoise Recovery Team to prepare a recovery plan, as called for by section 4(f) of the Act. On March 30, 1993, the Service released the Draft Recovery Plan for the Desert Tortoise (Mojave Population) for public review and comment (58 FR 16691). The Draft Recovery Plan presents a conservation strategy that applies the principles of conservation biology and population modeling and uses current desert tortoise research data. It describes a strategy for recovery and delisting of the Mojave population of the desert tortoise that includes:

- (1) Identification of desert tortoise recovery units within the Mojave Region;
- (2) Establishment of a system of DWMA's within recovery units where management actions are necessary to affect recovery;
- (3) Development and implementation of specific recovery actions within DWMA's, which target reduction or elimination of factors that have caused declines in desert tortoise populations; and
- (4) Quantitative recovery goals for each recovery unit.

In addition, the Draft Recovery Plan recommends an amendment process and further research on desert tortoise biology and management.

To minimize the potential risk over the long-term, the Draft Recovery Plan recommends establishment of multiple DWMA's (whenever possible) within the

six recovery units (as defined earlier in this document) and implementation of reserve-level protection within them. The number and location of DWMA's should be determined first and foremost by the need for recovery in each of the six desert tortoise recovery units. DWMA's should be located in areas with good desert tortoise habitat currently supporting at least 800 adult desert tortoises at a density of no less than 10 per square mile to avoid potential fitness declines and demographic stochasticity. These DWMA's should be large enough to support a viable population (at least 50,000 adult desert tortoises where possible) at "target density." Target density is defined as the density of desert tortoises that the DWMA is capable of supporting under optimal management. The Draft Recovery Plan proposes target densities for each DWMA, which range from 40 to 100 desert tortoises per square mile. Desert tortoise census data, historical accounts, and expert opinion were used to determine target densities.

Given these requisites and extant desert tortoise habitat within the 6 recovery units, the Draft Recovery Plan identifies 14 proposed DWMA's. Portions of some DWMA's occur in more than one recovery unit. DWMA's should consist primarily of a limited use zone (LUZ), where human activities that negatively impact desert tortoises are strictly curtailed. In addition to the LUZs, DWMA's might have some habitat designated as an experimental management zone (EMZ), where certain activities prohibited in the LUZ may be permitted on an experimental basis during the recovery period. Research activities in EMZs would be important in furthering understanding of desert tortoise ecology and how populations respond to various human impacts. However, because experimental activities within an EMZ may adversely affect desert tortoise populations, the Draft Recovery Plan recommends that the EMZ should be no more than 10 percent of the total DWMA area and should be located toward the periphery.

In determining the appropriate sizes of the proposed DWMA's, the Draft Recovery Plan considers three important factors:

- (1) Numbers of individuals and their densities now extant within each DWMA (for genetic considerations);
- (2) Number of adult tortoises necessary for a viable population over the long-term (based upon the population viability analysis); and
- (3) Size necessary to support a viable population at a target density.

To maximize recovery potential from a genetic standpoint, the Draft Recovery

Plan recommends that, at conception, a minimum of 20,000 desert tortoises of all age classes should be captured within a DWMA. This would result in an effective population (the number of individuals in a population passing on their genes to the next generation) of 500 animals, and an adult population of about 800 (at current estimated densities) (USFWS 1993). However, the Draft Recovery Plan suggests that more area than the ratio of desired number of adults/target density should be included in the DWMA to ensure protection of an adequate number of founder individuals. This recommendation is based on the following:

- (1) Most current density estimates have large confidence limits;
- (2) Good desert tortoise habitat is usually discontinuously distributed;
- (3) Few extant desert tortoise populations now have a stable age distribution; and
- (4) Implementation of recovery actions will not be immediate.

Even after a population is considered to be recovered, it may become extinct due to a variety of random events. However, large populations have a lower probability of extinction than small populations (USFWS 1993). A population viability analysis (PVA) provides an estimate of how large a population must be to have a given probability of persistence over a certain period of time. The results of the PVA in the Draft Recovery Plan suggest that a minimum of 50,000 adult animals are required for a desert tortoise population to have a 50 percent probability of persistence for 500 years, or 20 desert tortoise generations. This prediction was based upon observed variability in population growth rates during the period 1979-91, in which population growth rates varied considerably. The PVA was based upon existing management data from several different locations. As management activities are intensified and additional data become available, population estimates may improve, and DWMA sizes and the recovery criteria may be adjusted if appropriate.

Reserves (DWMA) should be large enough to accommodate viable populations at target densities. For example, at a target density of 100 adult desert tortoises per square mile, a DWMA of 500 square miles (320,000 acres) would be required to support 50,000 adult desert tortoises (50,000/100). Because each recovery unit has its own unique characteristics that result in differing target densities, DWMA sizes will vary by recovery unit.

For some recovery units, DWMA sizes large enough to capture a population of

50,000 adult desert tortoises at target density will not be possible. In these cases, a system of DWMA sizes capable of supporting as many desert tortoises as possible should be established. When circumstances permit, these areas should be large enough to support at least 20,000 adult animals to ensure long-term genetic variation. Smaller DWMA sizes may be viable in the long-term with appropriate management.

The objective of the Draft Recovery Plan is the recovery and delisting of the Mojave population of the desert tortoise. Desert tortoise populations have declined substantially throughout the Mojave Region in the last 2 decades. These populations grow slowly, and significant improvement in the status of the Mojave population will be a very long process, measured in decades or centuries in most parts of the Mojave Region. Nevertheless, delisting of the desert tortoise may be considered if the following criteria are met:

- (1) As determined by a scientifically credible monitoring plan, the population within a recovery unit exhibits a statistically significant upward trend toward target density or remains stationary at target density for at least 12 years (one-half of a desert tortoise generation);
- (2) Enough habitat is protected within a recovery unit and/or the habitat and desert tortoise populations are managed intensively enough to ensure long-term population viability;
- (3) Regulatory mechanisms or land management commitments have been implemented that provide for adequate long-term protection of desert tortoises and their habitat; and
- (4) The population is unlikely to need protection under the Act in the foreseeable future.

The Service would delist the Mojave population of the desert tortoise if the delisting criteria were met, because protection under the Act would be unnecessary. With the delisting criteria met, the desert tortoise and its habitat would continue to be protected under other regulatory mechanisms outlined in a final recovery plan. Upon delisting, the interim protection afforded by the Act in the designation of critical habitat would be eliminated.

Critical Habitat

Definition

The Service considers the conservation of a species in its designation of critical habitat. However, designation of critical habitat will not, in itself, lead to the recovery of the species, but it is one of several measures available to contribute to the

conservation of a species. Critical habitat helps to focus conservation activities by identifying areas that contain essential habitat features (primary constituent elements) that require special management.

The Endangered Species Act defines critical habitat as:

- (i) 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 geographical 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 purpose of the Act is to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species * * * (16 U.S.C. 1531(b)). By definition, the critical habitat provision of section 7(a)(2) offers protection to areas containing physical or biological features "essential to the conservation of [listed] species". "Conservation" is defined as " * * * to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (16 U.S.C. 1532(3)). Therefore, the use of the term "conservation" in the Act's definition of critical habitat means that designated critical habitat is related to a species' eventual recovery. This implies that designation of critical habitat is closely tied to what the Service believes the species needs in terms of habitat to recover.

Designating critical habitat does not create a management plan; it does not establish numerical population goals; it does not prescribe specific management actions (inside or outside of critical habitat); and it has no direct effect on areas not designated. Specific management recommendations for critical habitat are more appropriately addressed in recovery plans, management plans, and in section 7 consultations.

Designation of critical habitat may be reevaluated and revised at any time that

new information indicates that changes are warranted. The Service may revise critical habitat if land management plans, recovery plans, or other conservation strategies that are developed and fully implemented reduce the need for the additional protection provided by any critical habitat designation. For example, after the Desert Tortoise Recovery Plan is finalized, land management agencies may implement increased protection for the desert tortoise. If protection measures are implemented, the Service may revise its critical habitat designation in the future. It is also possible that, with increased protection, some components of environmental variability that threaten tortoise populations (or increase the variance of growth rates) and result in the need for large populations will be decreased. In such an event, a population viability analysis—considering population trends based on the variance of population growth rates—might suggest smaller, but still viable, populations, which would require less habitat (i.e., smaller DWMA's and less need for critical habitat designation). Therefore, critical habitat units could be decreased in size, increased in size, or eliminated based on changes in certain environmental variables or changes in land status.

In proposing to designate critical habitat for the desert tortoise, the Service reviewed its overall approach to the conservation of the desert tortoise undertaken since the emergency listing of the desert tortoise in August 1989. In addition, the Service reviewed all available information that pertains to habitat requirements of this species. Inherent difficulties in designating critical habitat for wide-ranging species, such as the desert tortoise, dictate that not all habitat within the range of the species be included in the proposed designation. In fact, section 3(C) of the Act states that, in most cases, critical habitat should not encompass the entire range of the species. Based upon the parameters discussed below, the Service determined the appropriateness of including specific areas.

The Service believes that the definition of critical habitat, while explicitly mentioning the features essential to conservation of a species, implicitly requires that the areas themselves be essential to the species' survival and recovery. Not all areas containing those features of a listed species' habitat are necessarily essential to species' conservation. Conversely, areas not currently containing all of the essential features, but with the capability to do so in the future, may still be needed for the long-term

recovery of the species, particularly in certain portions of the range, and may be proposed as critical habitat. However, areas not included in critical habitat that contain one or more of the essential features are also important to the species' conservation and would be addressed under the other facets of the Act and other conservation laws and regulations (e.g., Federal Land Policy Management Act).

For the desert tortoise, loss of an entire critical habitat unit could preclude recovery or reduce the likelihood of survival of the species. Further, gradual degradation of a critical habitat unit to the point where it no longer fulfills the overall function for which it was proposed (e.g., nesting, foraging, sheltering, dispersal, and gene flow) could preclude the survival and recovery of the species. The level of disturbance that a critical habitat unit could withstand and continue to fulfill its intended purpose is variable throughout the desert tortoise's range and would need to be reviewed in the context of its current status, condition, and location. Critical habitat units in some areas may be less able to support healthy local populations of desert tortoises than units in other areas.

Primary Constituent Elements

The Service is required to base critical habitat proposals upon the best scientific data available (50 CFR 424.12). In determining what areas are to be proposed as critical habitat, the Service considers those physical and biological attributes that are essential to the conservation of the species and that may require special management considerations or protection. Such requirements, as stated in 50 CFR 424.12, include, but are not limited to, the following:

- (1) Space for individual and population growth, and for normal behavior;
- (2) Food, water, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, rearing of offspring; and generally; and
- (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The Service has determined that the physical and biological habitat features (referred to as the primary constituent elements) that support nesting, foraging, sheltering, dispersal, and/or gene flow are essential to the conservation of the desert tortoise. These elements were determined from studies on desert tortoise habitat preferences (e.g., habitat structure and use, forage requirements)

throughout the range of the species (USFWS 1993). These attributes include one or more of the following: Sufficient space to support viable populations within each of the six recovery units and provide for movements, dispersal, and gene flow; sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

Proposed critical habitat for the desert tortoise encompasses portions of the Mojave and Colorado Deserts that contain the primary constituent elements and focuses on areas that are essential to the species' recovery. The proposed critical habitat unit boundaries are based on proposed DWMA's in the Draft Recovery Plan. Because the boundaries were drawn to conform with accepted principles of conservation biology, the areas may contain both "suitable" and "unsuitable" habitat. The term "suitable" generally refers to habitat that provides the constituent elements of nesting, sheltering, foraging, dispersal, and gene flow.

Relation to Draft Desert Tortoise Recovery Plan

The Draft Recovery Plan proposes 14 DWMA's within the 6 recovery units within the range of the desert tortoise. The Service used the DWMA's as the basis for proposed critical habitat units because:

- (1) The Draft Recovery Plan's conservation strategy is based upon the best available information on desert tortoises gathered and analyzed over the past 20 years;
- (2) The Draft Recovery Plan represents an in-depth analysis of the conservation needs of the desert tortoise;
- (3) The areas recommended as DWMA's were proposed by experts familiar with the species and its habitat based on the principles of conservation biology; and
- (4) Use of the DWMA's is consistent with the Service's other conservation efforts (e.g., it has been the focus in section 7 consultations and conservation planning).

The Service's identification of areas within the proposed DWMA's containing the primary constituent elements described above was based on the seven principles of conservation biology used in the Draft Recovery Plan:

- (1) Reserves should be well-distributed across a species' native range;
- (2) Reserves should contain large blocks of habitat with large populations of the target species;
- (3) Blocks of habitat should be close together;
- (4) Reserves should contain contiguous rather than fragmented habitat;
- (5) Habitat patches should contain minimal edge to area ratios;
- (6) Blocks should be interconnected by corridors or linkages containing protected, preferred habitat for the target species; and
- (7) Blocks of habitat should be roadless or otherwise inaccessible to humans.

Critical habitat is based on the framework of the Draft Recovery Plan. Should a final approved recovery plan vary significantly from the draft, or significantly change the assumptions underlying this proposed critical habitat, then the Service may propose revised critical habitat boundaries.

Adjustments to Legally Described Boundaries

The regulations require that the Service define "by specific limits using reference points and lines as found on standard topographic maps" those areas proposed for critical habitat designation (50 CFR 424.12 (c)). After selecting DWMA's as the starting point, the Service made several types of adjustments. To facilitate legal definition, critical habitat unit boundaries were adjusted to adjacent section lines, depending upon the amount and quality of habitat within the adjacent sections. The boundaries generally follow the 4,100-foot elevation contour line. When adjacent to cities or towns, critical habitat boundaries were drawn on 1/2 or 1/4 section lines to remove as much unsuitable habitat as possible.

In addition to adjusting DWMA boundaries to meet the requirements to define critical habitat boundaries, the

Service made other changes. Some proposed critical habitat units represent more precisely described desert tortoise habitat within the DWMA boundary, and thus, encompass a much smaller area. For example, portions of DWMA's were not included in critical habitat if unsuitable habitat was identifiable on available maps and the exclusion would not affect the size or configuration recommendations made by the Draft Recovery Plan. Conversely, some critical habitat boundaries were expanded beyond DWMA boundaries to include additional habitat based on information recently made available to the Service.

In addressing the above factors, the Service considered existing suitable habitat and desert tortoise populations that were not included in existing DWMA's and areas where additional protection should be considered to reduce the risk to recovery. When including other areas, the Service considered factors similar to those outlined in the Draft Recovery Plan on contiguity, shape, habitat quality, and spacing. Areas with minimal fragmentation were selected over areas with more extensive fragmentation.

The desert tortoise requires large, contiguous areas of habitat to meet its life requisites. Human activities have reduced much of the habitat in some areas to small, fragmented, and isolated areas that are not expected to support viable populations over time. In some cases, those areas were proposed as critical habitat when they were needed to promote future development of large contiguous habitat areas or serve as key linkage areas with the potential to support desert tortoises in the future.

Effects of the Designation

Total Acres Included in Critical Habitat The proposed designation of critical habitat for the desert tortoise identifies 12 areas encompassing a total of approximately 6.6 million acres. Based on biological connectivity and to encourage consistent management across State lines and management boundaries, portions of the Piute-

Eldorado (Nevada) and Fenner (California) DWMA's were combined into a single critical habitat unit (Piute-Eldorado). Three critical habitat unit boundaries span more than one State—Piute-Eldorado (California and Nevada), Gold Butte-Pakoon (Nevada and Arizona), and Beaver Dam Slope (Nevada, Arizona, and Utah). The Service proposes eight critical habitat units totaling 4,776,700 acres in California; four units totaling 1,314,000 acres in Nevada; two units totaling 137,200 acres in Utah; and two units totaling 417,400 acres in Arizona. Table 1 provides a breakout by State of the approximate acreage in each proposed critical habitat unit. The proposed critical habitat includes 4,995,400 acres of BLM land, 247,400 acres of military lands, and 151,200 acres of National Park Service land (Table 2). The totals in Table 2 include all Federal, State, private, and Tribal lands within the proposed critical habitat units.

TABLE 1.—APPROXIMATE ACREAGES OF PROPOSED CRITICAL HABITAT FOR THE DESERT TORTOISE BY CRITICAL HABITAT UNIT

[Figures are rounded to the nearest hundred]

Critical habitat unit	Acres
California:	
Chemehuevi	937,400
Chuckwalla	1,022,600
Fremont-Kramer	518,000
Ivanpah Valley	632,400
Pinto Mountains	171,700
Ord-Rodman	274,000
Piute-Eldorado	453,800
Superior-Cronese	767,000
Nevada:	
Beaver Dam Slope	87,400
Gold Butte-Pakoon	192,300
Mormon Mesa	504,300
Piute-Eldorado	530,000
Utah:	
Beaver Dam Slope	74,500
Upper Virgin River	62,700
Arizona:	
Beaver Dam Slope	40,800
Gold Butte-Pakoon	376,800

TABLE 2.—APPROXIMATE ACREAGE OF PROPOSED CRITICAL HABITAT FOR THE DESERT TORTOISE BY LANDOWNERSHIP [Figures are rounded to the nearest hundred]

	California	Nevada	Utah	Arizona	Total
Bureau of Land Management	3,341,500	1,198,500	91,400	364,000	4,995,400
Military	247,400	0	0	0	247,400
National Park Service	0	107,600	0	43,600	151,200
State	132,900	0	28,000	9,200	170,100
Tribal	0	0	1,600	0	1,600
Private	1,054,900	7,900	16,100	600	1,079,500
Forest Service	0	0	100	0	100
TOTAL	4,776,700	1,314,000	137,200	417,400	6,645,300

TABLE 2.—APPROXIMATE ACREAGE OF PROPOSED CRITICAL HABITAT* FOR THE DESERT TORTOISE BY LANDOWNERSHIP
Continued
[Figures are rounded to the nearest hundred]

	California	Nevada	Utah	Arizona	Total
Number of Critical Habitat Units	8	4	2	2	*12

*Two areas overlap two states, one area overlaps three states.

Acreege totals for any private or other lands that may be intermingled within the proposed critical habitat units were not included in the totals if the areas were not large enough to be identified through the geographic information system (GIS). Developed areas, such as towns, airports, roads, dry lakes, and water bodies are not proposed for designation as critical habitat even if physically situated within the boundaries of proposed critical habitat units, because they will never contain primary constituent elements. If possible, the acreage totals were adjusted to reflect their exclusion. However, in some cases, it was not possible to physically remove these acres from the total acreage figures. Much of the private land included in the proposed boundaries results from checkerboard land ownership along railroads. The majority of desert tortoises and suitable desert tortoise habitat (i.e., for nesting, sheltering, foraging, dispersal, and gene flow) are found primarily on BLM lands.

Management Aspects of Critical Habitat

The Service's intent in proposing critical habitat is to provide habitat that contains primary constituent elements in sufficient quantities to maintain viable populations of desert tortoises within the six recovery units. This proposal will help reduce the risk associated with the near-term reduction in desert tortoise numbers and cumulative loss of habitat anticipated from on-going management plans. Critical habitat offers additional protection through section 7, but it does not replace the management recommendations provided by the Draft Recovery Plan. Designation of critical habitat will, however, provide regulatory protection and help retain options until long-term conservation plans are accepted and fully implemented.

Although critical habitat is not intended as a management or conservation plan, association with the Draft Recovery Plan leaves the perception that critical habitat is a form of that plan. The Draft Recovery Plan, critical habitat, and other conservation processes are working with the same

land base containing the same specific locations of desert tortoise populations within recovery units; it is therefore inevitable that these processes overlap. Critical habitat is based upon the recommendations of the Draft Recovery Plan because it lays out a framework for identifying and evaluating habitat that is founded on scientific principles. Designation of critical habitat does not offer specific direction for managing desert tortoise habitat. That type of direction, as well as any change in direction, will come through administration of other facets of the Act (e.g., section 7, section 10, and recovery planning) or through development of land management plans addressing the desert tortoise.

The Service expects that Federal and non-Federal agencies will produce biologically sound, long-term land management plans that contribute to conservation of desert tortoises. Biologically credible plans offer opportunities for resolving conflicts between multiple uses of land and desert tortoise conservation, and then offer a basis for present and future land management decisions. The Service will revisit its designation of critical habitat if land management plans (e.g., resource management plans), a final recovery plan, or other conservation strategies are developed and fully implemented.

Available Conservation Measures

Section 7—Consultation

Section 4(b)(8) of the Act requires, for any proposed or final regulation that designates critical habitat, a brief description and evaluation of those activities (public or private) that may adversely modify such habitat or may be affected by such designation. Regulations found at 50 CFR 402.02 define destruction or adverse modification of critical habitat as a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.

Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to destroy or adversely modify critical habitat. This Federal responsibility accompanies, and is in addition to, the requirement in section 7(a)(2) of the Act that Federal agencies ensure their actions do not jeopardize the continued existence of any listed species. As required by 50 CFR 402.14, a Federal agency must consult with the Service if it determines an action may affect a listed species or critical habitat. Thus, the requirement to consider adverse modification of critical habitat is an incremental section 7 consideration above and beyond section 7 review to evaluate jeopardy and incidental take of the species. Regulations implementing this interagency cooperation provision of the Act are found at 50 CFR part 402.

Conference on Current Activities

Section 7(a)(4) of the Act and 50 CFR 402.10 of the regulations require Federal agencies confer with the Service on any action that is likely to result in destruction or adverse modification of proposed critical habitat. The Act requires Federal agencies to reinstate consultation should conditions change (e.g., if the Service designates critical habitat), consequently, some Federal agencies will likely request conference with the Service on actions, even though formal consultation has been completed. Conference reports provide conservation recommendations to assist the agency in eliminating conflicts that may be caused by the proposed action. The conservation recommendations in a conference report are advisory recommendations.

If an agency requests, and the Service concurs, the Service may issue a formal conference report. Formal conference reports on proposed critical habitat contain a biological opinion that is prepared according to 50 CFR 402.14, as if critical habitat were designated. The Service may adopt the formal conference report as the biological opinion when the critical habitat is designated, if no significant information or changes in the action alter the

content of the opinion (see 50 CFR 402.10(d)).

Examples of Proposed Actions

A number of Federal agencies or departments fund, authorize, or carry out actions that affect lands that the Service proposes to designate as critical habitat. Among these agencies are BLM, Department of Defense, Bureau of Mines, Corps of Engineers, Bureau of Reclamation, Bureau of Indian Affairs, Federal Energy Regulatory Commission, National Park Service, Federal Highway Administration, and Department of Housing and Urban Development. Federal agencies and the Service are currently consulting on numerous activities proposed within the range of the desert tortoise. These activities include Federal land management plans; BLM livestock grazing operations; road, trail, and utility construction and maintenance; mining plans of operation; land sales, leases, and exchanges; Federal housing loans; BLM recreation and public purpose leases; permits for OHV activities; military operations; sand and gravel operations; rights-of-way; landfills; and a number of smaller actions. The economic analysis provides more details on specific projects affected by critical habitat designation.

The Service expects that proposed actions that are inconsistent with land management recommendations for DWMA's in the Draft Recovery Plan would likely be considered to adversely modify critical habitat constituent elements. Thus, livestock grazing and OHV activities would likely result in destruction or adverse modification of critical habitat, because such activities preclude the development of large, contiguous blocks of habitat. Proposed actions that are consistent with the recommendations within the Draft Recovery Plan would not be likely to result in destruction or adverse modification of critical habitat.

Areas proposed for designation as critical habitat support a number of existing and proposed commercial and non-commercial activities. Commercial activities that may affect proposed desert tortoise critical habitat include, but are not limited to, livestock grazing, sand and gravel extraction, mining, OHV activities, military operations, landfills, rights-of-way, and utility corridors.

For some actions, the Service may propose minor modifications to the project design that may avoid adverse modification of critical habitat. In the case of a proposed upgrade of a powerline right-of-way corridor, for example, the Service may recommend that the corridor be expanded on one

side of the existing corridor versus the other side to avoid impacts to habitat where the primary constituent elements are of higher quality. For projects that may result in more severe impacts, substantial project changes may be necessary. The Service would propose reasonable and prudent alternatives to the agency's proposed action. Reasonable and prudent alternatives, by definition, would allow the intended purpose of the project to go forward without adversely modifying critical habitat.

No reasonable and prudent alternatives may be available for some proposed actions. In these situations, the Service would issue an adverse modification biological opinion with no reasonable and prudent alternatives.

Commercial activities not likely to destroy or adversely modify critical habitat include various site-specific activities such as scenic tours. Conducting desert tortoise surveys would not likely destroy or adversely modify critical habitat. Non-commercial activities are largely associated with recreation and are not considered likely to adversely affect critical habitat, provided they do not involve use of vehicles off of designated roads. Such activities include hiking, camping, hunting, and various activities associated with nature appreciation. In certain critical habitat units, where more intensive management is needed, e.g., the proposed Upper Virgin River Critical Habitat Unit, the effects of recreational activities will be evaluated on a case-by-case basis.

Some activities could be considered to be of benefit to desert tortoise habitat and, therefore, would also not be expected to destroy or adversely modify critical habitat. Examples of activities that could be of benefit to critical habitat include protective measures such as some forms of fire suppression and restoration of disturbed areas. Further research may support or refute any potential benefits from such actions. At this time, they will be evaluated on a case-by-case basis.

In general, activities that do not remove or degrade constituent elements of habitat for desert tortoises are not likely to destroy or adversely modify critical habitat. Each proposed action would be examined pursuant to section 7 of the Act in relation to its site-specific impacts. Thus, proposed actions may or may not destroy or adversely modify critical habitat, depending on the type and extent of the action and the pre-project condition of the area in relation to desert tortoise habitat needs. The involved Federal agencies can assist the Service in its

evaluation of proposed actions by providing detailed information on the habitat configuration of a project area, habitat conditions of surrounding areas, and information on known locations of desert tortoises.

The proposed designation of critical habitat does not imply that lands outside of critical habitat do not play an important role in the conservation of the desert tortoise. Lands outside of critical habitat are important to providing nesting, sheltering, foraging, gene flow, and dispersal habitat for desert tortoises. Federal activities outside of critical habitat are still subject to review under section 7, if they may affect the desert tortoise. The Service expects that management activities outside of critical habitat on Federal lands would be managed as recommended by a final recovery plan, BLM's Rangewide Plan, or other valid plans.

Other Conservation Measures: Non-Federal Lands

Section 9 of the Act prohibits intentional and non-intentional "take" of listed species and applies to all landowners regardless of whether or not their lands are within critical habitat. The term "take", as defined by the Act, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. "Harass" is defined as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which includes breeding, feeding, or sheltering. "Harm" in the definition of "take" means any action, including habitat modification, which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR part 17).

Section 10(a)(1)(B) authorizes the Service to issue permits for the taking of listed species incidental to otherwise lawful activities, such as housing development. Incidental take permit applications must be supported by a habitat conservation plan (HCP) that identifies conservation measures that the permittee agrees to implement to conserve the species. A key element of the Service's review of an HCP is a determination of the plan's effect upon the long-term conservation of the species. An HCP would be approved and a section 10(a)(1)(B) permit issued if it would minimize and mitigate the impacts of the taking and would not appreciably reduce the likelihood of

survival and recovery of that species in the wild.

Due to limited Federal involvement, the Service expects that few, if any, formal section 7 consultations would be initiated for State lands that are included in proposed critical habitat. The States are subject to the "take" prohibitions under section 9 of the Act, however, and may enter into the section 10 HCP process where appropriate.

Desert tortoises occurring on lands outside critical habitat boundaries are still subject to section 9 prohibitions. The Service envisions that the role of desert tortoise habitat in the conservation of the desert tortoise will be addressed through section 7, the HCP process, the recovery planning process, and other appropriate State and Federal laws. On these lands, it is expected that recovery goals will be achieved through the use of other conservation mechanisms available to the Service and other landowners (e.g., land exchanges, conservation and development easements).

Summary of Economic Analysis

Section 4(b)(2) of the Act requires the Service to designate critical habitat on the basis of the best scientific data available and to consider the economic effects and other relevant impacts of specifying any particular area as critical habitat. The Secretary may exclude areas from critical habitat if he determines that the benefits of such exclusions outweigh the benefits of specifying such areas as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such areas as critical habitat will result in the extinction of the species concerned.

The economic effects of designating critical habitat for the desert tortoise are the incremental impacts over and above those impacts that occurred as a result of implementation of management plans, such as BLM's Rangeland Plan, resource management plans, habitat conservation plans that have already been implemented, and previous events, including the emergency listing of the desert tortoise in August 1989. The economic analysis considers the critical habitat impacts to be those incremental impacts that are expected as a result of the critical habitat proposal.

Economics of the Impact Area

The economic analysis describes the current economic conditions, prior to designation of critical habitat, of the region that contains critical habitat units. Significant industry sectors within the regional economy are

identified, and key economic measures related to employment and production are presented. Demographic, census, and land ownership trends holding economic consequences also are identified.

Detailed analysis focuses on three economic activities on Federal lands: Recreation, mining, and grazing. Trends of usage and economic production of these activities will be presented, as will estimates of impacts to these activities, from designation of critical habitat.

The regional economy is defined as the counties that contain critical habitat units. If any portion of a critical habitat unit is located in a county, the entire county is included in the regional economy. The study includes the following counties: Mohave County, Arizona; Imperial, Kern, Los Angeles, Riverside, and San Bernardino Counties, California; Clark and Lincoln Counties, Nevada; and Washington County, Utah.

Benefits

The conservation of the desert tortoise and its habitat through designation of critical habitat may result in a wide range of benefits. These benefits include preservation of recreation and existence values that will increase the benefits for most affected activities. Scenic beauty contributes to the quality of desert recreational experiences. Many of the proposed areas are adjacent to or within Wilderness Study Areas, or in designated Wilderness Areas. Habitat conservation will enhance the wilderness values of these adjacent or contiguous areas.

Many of the resource services provided by critical habitat are not marketed. The lack of market prices makes it difficult to value them in dollar terms, as compared to some cost impacts, such as impacts to livestock grazing. As a result, this analysis currently focuses on the cost impacts, primarily related to livestock grazing. No comprehensive estimate of the benefits of designating critical habitat is feasible with available data. Rather, the analysis provides a discussion of the kinds of benefits that are expected to ensue, with empirical data and examples as available. Existence values represent an additional category of non-use benefit, albeit one that remains difficult to measure. Furthermore, there are preservation benefits that society places on endangered species for the option of future recreational use, with the knowledge that the desert tortoise's natural ecosystem exists and is protected, and the satisfaction from its bequest to future generations. Many of these benefits are expected to increase in relative value over time. As human

activities continue to reduce desert ecosystems, the remaining areas will become less available and more valuable. Habitat protection for the desert tortoise clearly benefits other species as well as the human use and enjoyment of these species.

Biodiversity Benefits

Designation of critical habitat for the desert tortoise would contribute to the protection of the biotic diversity of the arid Southwest. The tortoise's habitat includes components that make it useful to a variety of other desert species whose existence is enhanced through retention of original characteristics of their habitat. Modification or elimination of activities that would adversely modify the natural ecology of the region will conserve the desert tortoise as well as other animal and plant species.

Recreational Use Benefits

Direct, non-consumptive recreational use of the desert tortoise (i.e., tortoise watching) occurs, although it is limited by the desert tortoise's burrowing habits and its relatively dispersed populations. Some recreational activities may be relocated or restricted due to critical habitat designation, particularly off-highway-vehicle use.

Intrinsic Values

Users and non-users of natural resources place value on knowing that resources will exist in the future. Benefits, which may be substantial, reside in the form of ensured future existence and availability for use, and in the ability to preserve the resource for future generations. By designating critical habitat for the desert tortoise, land managers will assure the retention of option and bequest values, potentially providing benefits far outside the designated habitat region.

Economic Baseline

In assessing the economic impacts of the proposed critical habitat, the Service has used the expected economic situation consistent with restrictions that were in place at the time of proposing critical habitat. The principal land use restrictions that were already in place were BLM's Management Framework Plans, Resource Management Plans, and habitat management plans; BLM's Rangeland Plan; National Park Service land management policies; military land-use policies; and the listing of the desert tortoise as a threatened species.

Management of the desert tortoise, and curtailment of the activities that threatened the species, began when the

Desert Tortoise Preserve was established in 1973 by BLM in the Western Mojave Desert (USFWS 1993b). The preserve was expanded and formally designated a Research Natural Area as well as an Area of Critical Environmental Concern by 1980 (USFWS 1993). In 1988, BLM published its Rangewide Plan (Spang *et al.* 1988), which is based on the categorization of desert tortoise habitat on BLM land into three categories based on: (1) importance of the habitat to maintaining viable populations; (2) resolvability of conflicts; (3) desert tortoise density; and (4) desert tortoise population status (stable, increasing, or decreasing). Category 1 lands are the most important to desert tortoises for survival and recovery, and category 3 lands are the least important. The Rangewide Plan provides management goals and objectives for each form of authorized multiple use within each of the categories on BLM land, including livestock grazing, mining, and OHV activities. All critical habitat units in this proposed rule minimally include category 1 and/or 2 habitats. Additionally, critical habitat units contain some category 3 habitats, uncategorized habitats, and lands managed by other Federal entities.

The Service has assumed a distinction exists between the effects of listing the species and the incremental effects of designating critical habitat. The differences between listing and designation of critical habitat vary within each critical habitat unit based on existing management.

Eight critical habitat units, or portions thereof, are proposed in California (Chemehuevi, Chuckwalla, Pinto Mountain, Piute-Eldorado (includes Fenner DWMA), Ivanpah, Fremont-Kramer, Ord-Rodman, and Superior-Cronese). All are managed primarily by BLM according to guidance provided in the California Desert Conservation Area Plan of 1980, as amended (Desert Plan), and the 1992 California Statewide Desert Tortoise Management Policy (Tortoise Management Policy). The Desert Plan defines four classes of land use with differing management goals and prescriptions. Classes include controlled use (wilderness and areas recommended for wilderness), limited use, moderate use, and intensive use (vehicle travel restrictions range from designated routes only in limited-use areas to no vehicular restrictions in intensive use areas). The Tortoise Management Policy designates three categories of desert tortoise habitat in which varying levels of protection are afforded to the desert tortoise and its habitat. Additional management guidance is provided in livestock

allotment management plans (AMPs), habitat management plans (HMPs) for desert tortoises and other wildlife species, the East Mojave National Scenic Area Plan, and management plans for specific Areas of Critical Environmental Concern (ACECs).

The West Mojave Coordinated Management Plan and the Eastern Colorado Desert HMP are BLM management plans currently in preparation that will have an important effect on desert tortoise management in California. The West Mojave Coordinated Management Plan will be the basis for a programmatic section 7 consultation for BLM activities in the western Mojave Desert and may serve as a basis for habitat conservation plan(s) for local governments in the section 10(a)(1)(B) permit process. The Eastern Colorado Desert HMP will address all BLM activities in the Chuckwalla Bench area and will provide a framework for a programmatic section 7 consultation.

The proposed Chuckwalla Critical Habitat Unit is managed by BLM and the Navy (Chocolate Mountains Aerial Gunnery Range). Parts of the Superior-Cronese area are managed by the Army (National Training Center at Fort Irwin) and the Navy (China Lake Naval Air Weapons Station). The Fremont-Kramer area includes a portion of Edwards Air Force Base.

Portions of the proposed Piute-Eldorado and Ivanpah Critical Habitat Units in California are within the boundaries of the East Mojave National Scenic Area, which affords special protection to the area's natural, scenic, and other values (Desert Plan 1980).

Several programmatic and other biological opinions have resulted in additional regulation of activities within desert tortoise habitat in California. Biological opinions have limited grazing of sheep to category 3 habitats. Programmatic consultations have been completed for land use plans at the Naval Air Weapons Station and the Rand-Fremont Valley areas. The Service has also completed a biological opinion concerning the on-going mission for the Army's National Training Center at Fort Irwin. Programmatic consultations also exist that define standard terms and conditions for mining operations disturbing less than 10 acres, for non-competitive vehicle races, such as poker runs, which occur on designated routes in some desert tortoise areas, and for the four OHV management areas within the western Mojave Desert.

The Service and BLM are currently developing a programmatic approach to long-term pipeline maintenance. The Service and the Navy are also informally consulting on a programmatic

consultation for training activities at the Marine Corps Air Ground Combat Center (MCAGCC) and within the Chocolate Mountains Aerial Gunnery Range.

In Nevada, the majority of the desert tortoise habitat is managed by BLM under the Clark County Management Framework Plan. The Stateline Resource Area of the Las Vegas District has prepared a draft Resource Management Plan that proposes designation of ACECs for desert tortoises; however, this document has not yet been finalized. Livestock grazing in Nevada is restricted to the period of June 15 to March 1, in accordance with BLM's proposed livestock grazing program and the Service's biological opinion that analyzed that proposal. However, as of this date, BLM's decision to implement this seasonal restriction has been stayed by an Administrative Law Judge. In southern Clark County, portions of the proposed Piute-Eldorado Critical Habitat Unit are also managed by the National Park Service (Lake Mead National Recreation Area).

In 1991, the Piute-Eldorado Valley was established as a Tortoise Management Area (TMA), as mitigation for the incidental take of desert tortoises in the Las Vegas Valley, pursuant to section 10(a)(1)(B) of the Act. The Short-Term Habitat Conservation Plan for the Desert Tortoise in the Las Vegas Valley, Clark County, Nevada (Regional Environmental Consultants 1991b), which described this mitigation, provides land-use control measures for this area. These measures include prohibition of competitive and commercial events, except in some portions of Eldorado Valley, placing livestock grazing areas into nonuse status, and designation of roads and trails.

The majority of the lands within the Gold Butte-Pakoon and Beaver Dam Slope Critical Habitat Units in Arizona are managed by BLM under the Arizona Strip Management Plan. This plan designated the Beaver Dam Slope Area of Critical Environmental Concern and includes management prescriptions designed to minimize impacts to desert tortoises and their habitat. All desert tortoise habitat in Arizona is within the area managed by the Virgin River-Pakoon Basin Habitat Management Plan, a cooperative Sikes Act document written by BLM and the Arizona Game and Fish Department. Additionally, desert tortoise habitat occurring in wilderness areas in Arizona is managed according to the Paiute-Beaver Dam Wilderness Management Plan and the Grand Wash Cliffs Wilderness Management Plan. Grazing is

administered according to the Cedar Wash, Highway, Beaver Dam Slope, Mormon Well, Littlefield Community, Mesquite Community, Mosby-Nay, Pakoon Springs, Pakoon, Cottonwood, Mud and Cane, and Tassi Allotment Management Plans. In addition to prescriptions set forth in these allotment management plans, a Service biological opinion on livestock grazing limited grazing to the period from June 1 to March 15.

In Utah, the proposed Beaver Dam Slope Critical Habitat Unit is primarily managed by BLM. This Critical Habitat Unit includes a 35-square-mile area designated as critical habitat for the desert tortoise. In the Castle Cliffs allotment, a 3,040-acre enclosure encompassing the historic Woodbury-Hardy study area and several other important tortoise shelter site areas was established to serve as a natural study area to enhance the tortoise population. However, the enclosure was never completely operational or effective in eliminating grazing in the area. BLM reduced the enclosure to 1,500 acres, where grazing was completely excluded. The Dixie Resource Area developed a resource management plan for the area, but the final document was rejected and the process has been reinitiated. Currently, BLM management in the Beaver Dam Slope Critical Habitat Unit is conducted under the Habitat Management Plan adopted in 1980.

BLM and State of Utah are the primary managers of the proposed Upper Virgin River Critical Habitat Unit. Smaller amounts of habitat are owned by private entities and by the Paiute Indians. Several consultations have been initiated regarding grazing, housing development, horse racing, and energy pipeline developments, for which the Service has prepared draft biological opinions. Also, Washington County is pursuing development of a habitat conservation plan for the area encompassing the proposed Upper Virgin River Critical Habitat Unit, and the Service is providing guidance for development of this plan. BLM is pursuing land exchanges with the State of Utah for consolidation of desert tortoise habitat within the proposed Upper Virgin River Critical Habitat Unit for ease of management and for long-term conservation of the desert tortoise and other desert species. BLM Dixie Resource Area is currently preparing a Resource Management Plan to guide land management on BLM lands encompassing the proposed Upper Virgin River Critical Habitat Unit. Because of the area's small size and its proximity to an expanding urban population center, the Service has

maintained that any significant losses of habitat within this area would jeopardize the continued existence of desert tortoises within the Upper Virgin River Recovery Unit.

Economic Effects

The economic effects resulting from the prohibition of adverse modification of critical habitat by section 7 of the Act (effects above those of listing and other land management decisions) are the subject of the economic analysis. The economic analysis identifies and quantifies, as feasible, added probable costs and benefits that may result from critical habitat designation for the desert tortoise. Economic effects are the costs or benefits to society of precluding or limiting specific land uses. Economic costs and benefits to society are defined as the changes in economic rents and consumer surpluses expected to be derived from the land area under consideration, with and without its designation as critical habitat. The economic analysis also considers regional economic impacts. Economic impacts are the employment and revenue consequences of critical habitat designation on local economies.

Known or potential mineral resources within proposed critical habitat areas include, but are not limited to, silver, gold, uranium, gallium, copper, gypsum, sand and gravel, and oil and gas. Most of the proposed critical habitat areas are covered with active mining claims, although a very small percentage of these have had plans of operations filed and are actually disturbed. Fees must be paid to maintain these claims starting in September 1993; therefore, many claims may expire. Most current mining activities within proposed critical habitat have been subject to section 7 consultation between BLM and the Service. Designation of critical habitat may increase costs of mitigation required for future proposed projects above those incurred prior to designation, due to rerouting access to sites and site reclamation. In instances of mining projects that may significantly destroy and fragment critical habitat, the Service may determine that such projects adversely modify critical habitat, and that no reasonable or prudent alternatives are available. In such cases, the Federal agency or the applicant may request an exemption under section 7(e) of the Act. There may be some economic impact to Federal land managing agencies due to increased costs of evaluation and monitoring of project proposals. The Service is unaware of any proposed mineral development projects within

proposed critical habitat that are reasonably certain to occur.

Recreational activities within proposed critical habitat areas include hiking; camping; hunting; nature appreciation; rock hounding; rock climbing; survival training; mountain bicycling; horseback riding; jeep tours; and off-highway travel by motorcycles, 4-wheel-drive vehicles, and buggies. Both commercial and non-commercial events occur in these areas. Most activities have been previously restricted by implementation of various land management plans and through completed section 7 consultations. In many areas proposed for critical habitat, recreational travel has already been restricted to designated roads and trails. In accordance with BLM's Rangeland Plan, most commercial off-highway races and endurance events have already been excluded from category 1 and 2 habitats. Some additional economic impact may occur to recreational activities that are within critical habitat that have not been previously restricted. The economic impacts to these activities will primarily be the cost impact of displacing them to other areas.

Cattle and sheep grazing occur throughout much of the range of the desert tortoise. In addition, grazing by feral horses and burros occurs in several proposed critical habitat areas. Cattle and sheep grazing have been subject to review under section 7 of the Act throughout the range of the desert tortoise. Most of the proposed critical habitat areas have been placed under seasonal restriction. Removal of cattle, sheep, horses, and burros from critical habitat would have an additional incremental economic impact to lease holders and administering Federal land managing agencies.

A portion of proposed critical habitat includes Department of Defense lands administered by the Departments of the Navy, Air Force, Army, and Marine Corps. Critical habitat areas are used by these agencies for weapons system testing, weapons training, overflight training, tank maneuvers, infantry training, aerial bombardment, paratrooper operations, artillery bombardment, explosive ordnance disposal, and radar and communication facilities. Many of these activities already have been subject to section 7 consultation; additional restrictions and mitigation will likely be required in some areas designated as critical habitat. Some activities or plans may be required to be displaced to other areas. The economic impact of such displacement may depend on the availability of areas on existing military

lands or elsewhere that can meet the intended needs of these Defense agencies.

Many of the proposed critical habitat areas include intermixed Federal, State, or private lands. Thus, access to private or State lands may require permits for rights-of-way across Federal lands. In addition, utility rights-of-way are common throughout these proposed areas and new corridors are proposed or expected. Existing rights-of-way will not be affected by designation of critical habitat. Future rights-of-way will be reviewed through section 7 consultations. Although many rights-of-way and utility corridors already require habitat restoration, this level and frequency will likely increase with designation of critical habitat.

Federal land sales, leases, and exchanges resulting in loss of critical habitat from Federal ownership would likely adversely modify critical habitat if the disposed lands contained primary constituent elements. Whether or not specific sales, leases, or exchanges, such as the proposed Ward Valley low-level nuclear waste disposal site, would adversely modify critical habitat would be determined during section 7 consultation. The Service cannot predetermine the outcome of such consultation, but the economic effects of precluding any known proposed projects are assessed in the economic analysis. Some private lands within the critical habitat boundaries may be proposed for development and require Federal loan guarantees or other Federal permits. These projects may adversely modify critical habitat; thus, the Federal funding or approval may be affected by critical habitat.

Effect on State and Private Lands

Impacts of critical habitat designation may occur on State or private lands where there is a Federal involvement (e.g., Federal funding, permitting, etc.) subject to section 7 of the Act. Impacts on State or private entities may also result if the decision on a proposed action in federally owned critical habitat, such as a right-of-way permit, could affect economic activity on adjoining non-Federal land. Each action would be evaluated by the Federal agency under section 7 in relation to its site-specific impact and desert tortoise habitat needs.

Balancing Process and Criteria

Section 4(b)(2) of the Act authorizes the Secretary to exclude areas from critical habitat if the benefits of exclusion outweigh the benefits of inclusion, provided that the exclusion would not result in the extinction of the

species. Following receipt of additional economic cost and benefit, and other relevant impact information, the Service will evaluate proposed critical habitat boundaries on a case-by-case basis. If specific areas are identified where the impacts are costly, the Service will evaluate the biological needs of the desert tortoise within that particular area. Following this two-staged evaluation, the Service may revise critical habitat boundaries.

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and effective as possible. Consequently, the Service used the most current data available to evaluate habitat for consideration as critical habitat. Therefore, comments or suggestions from the public, governmental agencies, Indian Nations, the scientific community, industry, and any other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) The reasons why any habitat (either existing or additional areas) should or should not be determined to be critical habitat as provided by section 4 of the Act;

(2) Information regarding actions that should be considered necessary to achieve recovery of the desert tortoise and the conditions that might allow it to be removed from the list of endangered and threatened wildlife and plants (Federal agencies should include information on the relation of the proposal to existing or expected land management plans);

(3) Specific information on the amount and distribution of suitable desert tortoise habitat and numbers and distribution of desert tortoises by landowner and land designation (all land-management agencies or affected parties should provide updated information and maps);

(4) Specific information on the ability or values of proposed areas to support other listed, proposed, or candidate species and the relation of this proposal to maintaining biodiversity and ecosystem integrity;

(5) Current or planned activities in the subject area and their possible impacts on proposed critical habitat;

(6) Any foreseeable economic or other impacts resulting from the proposed designation of critical habitat;

(7) Economic values associated with benefits of designating critical habitat for the desert tortoise (such benefits include those derived from non-consumptive uses (e.g., hiking, camping, bird watching), enhanced watershed

protection, improved air quality, increased soil retention, "existence values," and reductions in administrative costs); and

(8) The methodology the Service might use, under section 4(b)(2) of the Act, in determining if the benefits of excluding an area from critical habitat outweigh the benefits of specifying the area as critical habitat.

Public Hearings

Section 4(b)(5)(e) of the Act requires that a public hearing be held, if requested, within 45 days of a proposed rule. As indicated under "DATES" and "ADDRESSES," the Service has scheduled three public hearings on this proposal due to the anticipated number of requests for such hearings.

Parties wishing to make statements for the record should bring a copy of their statement to the hearing. In anticipation of the large number of parties at each hearing, oral statements will be limited to 3 minutes. There are no limits on the length of the written statement presented at the hearing or subsequently submitted for the record. Written comments will be accepted from any party until the close of the comment period (see "DATES"). Written submissions will be given the same weight and consideration as oral comments presented at any hearing.

The Service will publish a final decision on this issue by December 15, 1993. The final decision on this proposed designation of critical habitat will take into consideration the comments and any additional information received by the Service.

National Environmental Policy Act

The Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

Regulatory Flexibility Act and Executive Order 12291

The Department of the Interior has determined that designation of critical habitat for this species will not constitute a major rule under Executive Order 12291. The Service has determined that a significant economic effect on a substantial number of small entities does not exist under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). Based on the information discussed in this rule concerning public projects and private activities within

critical habitat units, significant economic impacts will not result from the critical habitat designation. Also, no direct costs, enforcement costs, information collection, or recordkeeping requirements are imposed on small entities by this designation. Further, the rule contains no recordkeeping requirements as defined by the Paperwork Reduction Act of 1980.

References Cited

A complete list of all references cited herein is available upon request from the Field Supervisor, Nevada Field Office (see ADDRESSES section).

Authors

The primary authors of this rule and its associated critical habitat unit maps are Sheryl L. Barrett, Christine Mullen, Mark Maley, Michael Burroughs, and David L. Harlow, U.S. Fish and Wildlife Service, Nevada Field Office, (see ADDRESSES section); James Rorabaugh and Tim MacGillivray, U.S. Fish and Wildlife Service, Ventura Field Office; Marilet Zablan, U.S. Fish and Wildlife Service, Utah State Office; James Slack, U.S. Fish and Wildlife Service, Arizona Field Office; Arthur Davenport, U.S. Fish and Wildlife Service, Carlsbad Field Office; Al Pfister, U.S. Fish and Wildlife Service, Portland, Oregon; and Dirk Draper, U.S. Fish and Wildlife Service, National Ecology Research Center, Ft. Collins, Colorado.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Proposed Regulation Promulgation

Accordingly, it is hereby proposed to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—(AMENDED)

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

§ 17.95 (Amended)

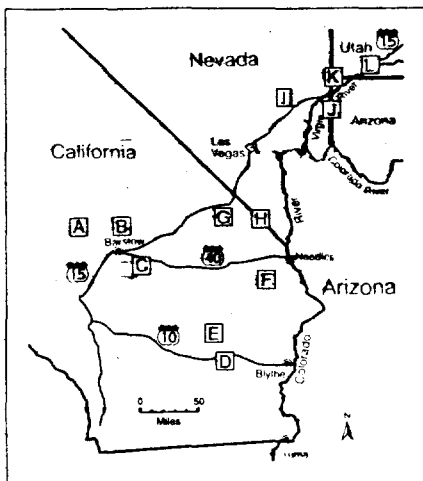
2. It is proposed to amend § 17.95(c) by removing the critical habitat of the Beaver Dam Slope population of the desert tortoise and adding the following new critical habitat of the desert tortoise (*Gopherus agassizii*) to read as follows:

§ 17.95 Critical Habitat—fish and wildlife.

• * * * *
 (c) * * * *
 • * * * *

Desert Tortoise—Mojave Population (*Gopherus agassizii*)

Index map follows:

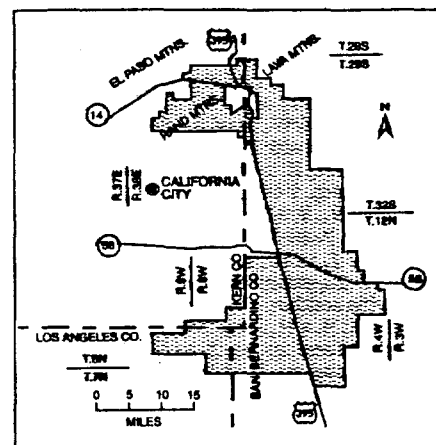


California. Areas of land as follows:
 1. **Fremont-Kramer Unit.** Kern, Los Angeles, and San Bernardino Counties. From Bureau of Land Management Maps: Victorville 1978 and Cuddeback Lake 1978. (Index map location A).

Mt. Diablo Meridian: T. 29 S., R. 39 E., secs. 13, 14, 22–26, 35, and 36; T. 29 S., R. 40 E., secs. 12–33; T. 29 S., R. 41 E., secs. 7, 8, 17–20, 27–30, and 32–36; T. 30 S., R. 38 E., secs. 24–28, 35, and 36; T. 30 S., R. 39 E., secs. 1–36 except secs. 3–5; T. 30 S., R. 40 E., secs. 4–9, and 13–36, except that portion of secs. 13, 14, and 23 lying northwesterly of the Randsburg-Mojave Road; T. 30 S., R. 41 E., secs. 1–36, except secs. 5–8, and 20 and that portion of secs. 17 and 18 lying easterly of U.S. Highway 395; T. 30 S., R. 42 E., secs. 7–10, 15–22, and 27–34; T. 31 S., R. 40 E., secs. 1 and 6, except that portion of sec. 6 lying southeasterly of the Randsburg-Mojave Road; T. 31 S., R. 41 E., secs. 1–17, 20–29, and 32–36, except that portion of secs. 20, 29 and 32 lying westerly of U.S. Highway 395; T. 31 S., R. 42 E., secs. 3–10, 15–22, and 27–34; T. 32 S., R. 41 E., secs. 1–4, 9–16, 21–28, and 34–36, except that portion of secs. 4, 9, 16, 21, 27, 28, and 34 lying westerly of U.S. Highway 395; T. 32 S., R. 42 E., secs. 1–36; T. 32 S., R. 43 E., secs. 4–9, 16–21, and 28–33.

San Bernardino Meridian: T. 7 N., R. 5 W., secs. 2–11, and 14–18, except that portion of sec. 18, lying west of U.S. Highway 395; T. 7 N., R. 6 W., secs. 1–6, 12, and 13, except that portion of secs. 1, 12, and 13 lying westerly of U.S. Highway 395; T. 7 N., R. 7 W., secs. 1–6; T. 7 N., R. 8 W., secs. 1–4; T. 8 N., R. 4 W., secs. 6, 7, and 18; T. 8 N., R. 5 W., secs. 1–35 except secs. 24 and 25; T. 8 N., R. 6 W., secs. 1–36; T. 8 N., R. 7 W., secs. 1–36; T. 8 N., R. 8 W., secs. 1–28, and 33–36; T. 8 N., R. 9 W., secs. 1 and 7–24; T.

9 N., R. 4 W., secs. 2–11, 14–23, 30, and 31; T. 9 N., R. 5 W., secs. 1–36; T. 9 N., R. 6 W., secs. 1–36; T. 9 N., R. 7 W., secs. 1–4, 9–16, and 19–36; T. 9 N., R. 8 W., secs. 24, 25, and 31–36; T. 9 N., R. 9 W., sec. 36; T. 10 N., R. 4 W., secs. 6, 7, 18–20, and 29–34; T. 10 N., R. 5 W., secs. 1–36; T. 10 N., R. 6 W., secs. 1–36 except sec. 6; T. 10 N., R. 7 W., secs. 9–16, 21–28, and 33–36; T. 11 N., R. 5 W., secs. 2–11, 14–23, and 26–35; T. 11 N., R. 6 W., secs. 1–36, except that portion of secs. 6, 7, 18, 19, 30, and 31 lying westerly of U.S. Highway 395; T. 11 N., R. 7 W., that portion of sec. 1, lying easterly U.S. Highway 395; T. 12 N., R. 5 W., secs. 31–35; T. 12 N., R. 6 W., sec. 31–36; T. 12 N., R. 7 W., that portion of sec. 36 lying easterly of U.S. Highway 395.



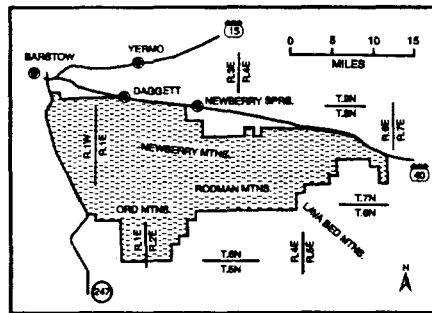
2. **Superior-Cronese Unit.** San Bernardino County. From Bureau of Land Management Maps: Cuddeback Lake 1978, Soda Mts. 1978, Victorville 1978, and Newberry Springs 1978. (Index map location B).

Mt. Diablo Meridian: T. 29 S., R. 42 E., secs. 35 and 36; T. 29 S., R. 43 E., secs. 25, 26, and 31–36; T. 29 S., R. 44 E., secs. 20–36; T. 29 S., R. 45 E., secs. 14–16, 19–23, and 25–36; T. 29 S., R. 46 E., secs. 30–32; T. 30 S., R. 42 E., secs. 1, 2, 11–14, 23–26, 35, and 36; T. 30 S., R. 43 E., secs. 1–36; T. 30 S., R. 44 E., secs. 1–36; T. 30 S., R. 45 E., secs. 1–36; T. 30 S., R. 46 E., secs. 3–36; T. 30 S., R. 47 E., secs. 7–10, 15–22, and 27–34; T. 31 S., R. 42 E., secs. 1, 2, 11–14, 23–26, 35, and 36; T. 31 S., R. 43 E., secs. 1–36; T. 31 S., R. 44 E., secs. 1–36; T. 31 S., R. 45 E., secs. 1–36; T. 31 S., R. 46 E., secs. 1–36; T. 31 S., R. 47 E., secs. 3–10, 15–22, and 27–34; T. 32 S., R. 43 E., secs. 1–3, 10–15, 22–27, and 34–36; T. 32 S., R. 44 E., secs. 1–36; T. 32 S., R. 45 E., secs. 1–36; T. 32 S., R. 46 E., sec. 1–36; T. 32 S., R. 47 E., secs. 3–10, 15–22, and 27–34.

San Bernardino Meridian: T. 9 N., R. 1 W., that portion of secs. 1 and 2 lying northerly of Interstate Highway 15; T. 9 N., R. 1 E., that

portion of sec. 6 lying northerly of Interstate Highway 15; T. 10 N., R. 2 W., secs. 1-29; T. 10 N., R. 1 W., secs. 1-28, 30, and 33-36, except that portion of secs. 33-35 lying southwesterly of Interstate Highway 15; T. 10 N., R. 1 E., secs. 18, 19, 30, and 31; T. 10 N., R. 2 E., secs. 1-5, 8-17, and 22-34, except that portion of secs. 25, 26, and 34 lying southeasterly of Interstate Highway 15; T. 10 N., R. 3 E., secs. 1-12, 14-21, and 30, except that portion of secs. 11, 12, 14-16, 19-21, and 30 lying southeasterly of Interstate Highway 15; T. 10 N., R. 4 E., that portion of secs. 5-7 lying northwesterly of Interstate Highway 15; T. 11 N., R. 5 W., secs. 1 and 12; T. 11 N., R. 4 W., secs. 1-7, 9, 11, and 12; T. 11 N., R. 3 W., secs. 1-18; T. 11 N., R. 2 W., secs. 1-36; T. 11 N., R. 1 W., secs. 1-36; T. 11 N., R. 1 E., secs. 1-31; T. 11 N., R. 2 E., secs. 1-36 except sec. 31; T. 11 N., R. 3 E., secs. 1-36; T. 11 N., R. 4 E., secs. 1-34, except that portion of secs. 25, 26, 33, and 34 lying southeasterly of Interstate Highway 15; T. 11 N., R. 5 E., secs. 1-11 and 15-20, except that portion of secs. 1, 2, 10, 11, 15-17, 19, and 20 lying southeasterly of Interstate Highway 15; T. 12 N., R. 5 W., sec. 36; T. 12 N., R. 4 W., secs. 31-36; T. 12 N., R. 3 W., secs. 31-36; T. 12 N., R. 2 W., secs. 31-36; T. 12 N., R. 1 W., secs. 31-36; T. 12 N., R. 1 E., secs. 1-36; T. 12 N., R. 2 E., secs. 3-36; T. 12 N., R. 3 E., secs. 7-36; T. 12 N., R. 4 E., secs. 7-36; T. 12 N., R. 5 E., secs. 1-5 and 7-36; T. 12 N., R. 6 E., secs. 5-9, 15-22, and 27-34, except that portion of secs. 31-34 lying southerly of Interstate Highway 15; T. 13 N., R. 1 E., secs. 1-36; T. 13 N., R. 2 E., secs. 19 and 29-34; T. 13 N., R. 3 E., secs. 26-28 and 32-36; T. 14 N., R. 1 E., secs. 5-10, 15-23, and 24-36.

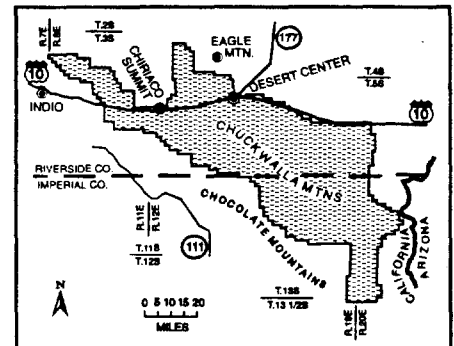
N., R. 6 E., secs. 2, 3, 11, and 14; T. 8 N., R. 1 W., secs. 1-18, 20-29, and 32-36, except that portion of secs. 6, 7, 17, 18, 20, 29, 32, and 33 lying southwesterly of State Highway 247; T. 8 N., R. 1 E., secs. 1-36; T. 8 N., R. 2 E., secs. 2-36; T. 8 N., R. 3 E., secs. 7 and 18-36; T. 8 N., R. 4 E., secs. 13-16 and 18-36; T. 8 N., R. 5 E., secs. 13-36, except that portion of secs. 13-18 lying northerly of Interstate Highway 40; T. 8 N., R. 6 E., secs. 18-21 and 27-36, except that portion of secs. 18-21, 27, 28, 34, and 35 lying northerly of Interstate Highway 40; T. 9 N., R. 1 W., secs. 19, 20, and 25-36, except that portion of secs. 19, 20, and 29-31 lying westerly of State Highway 247; T. 9 N., R. 1 E., secs. 25-36, except that portion of secs. 25-27 lying northerly of Interstate Highway 40; T. 9 N., R. 2 E., secs. 27-35, except that portion of secs. 27-30 lying northerly of Interstate Highway 40.



4. Chuckwalla Unit. Imperial and Riverside Counties. From Bureau of Land Management Maps: Chuckwalla #18 1978, Parker-Blythe #16 1978, Salton Sea #20 1978, and Midway Well #21 1979. (Index map location D).

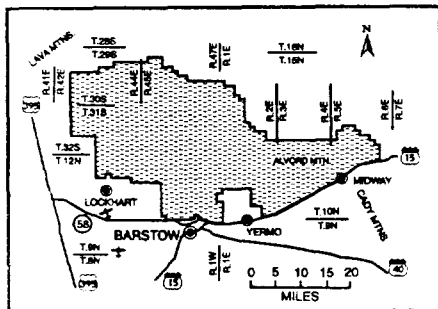
San Bernardino Meridian: T. 3 S., R. 13 E., secs. 19-21 and 27-35; T. 4 S., R. 8 E., secs. 1-6, 8-16, 22-26, and 36; T. 4 S., R. 9 E., secs. 6-10, and 15-36; T. 4 S., R. 10 E., secs. 19-21, and 27-34; T. 4 S., R. 13 E., secs. 2-36 except secs. 12 and 13; T. 4 S., R. 14 E., secs. 27-36; T. 4 S., R. 15 E., secs. 31 and 32; T. 5 S., R. 9 E., secs. 1-4, 12, 13, and 24; T. 5 S., R. 10 E., secs. 2-36 except sec. 31; T. 5 S., R. 11 E., secs. 19-21 and 28-33; T. 5 S., R. 12 E., sec. 36; T. 5 S., R. 13 E., secs. 1-36 except secs. 6 and 7; T. 5 S., R. 14 E., secs. 1-36; T. 5 S., R. 15 E., secs. 4-9, 16-21, 25, S 1/2 sec. 26, S 1/2 sec. 27, and secs. 28-36; T. 5 S., R. 18 E., secs. 28-35; T. 6 S., R. 10 E., secs. 1-4, 9-16, 21-26, 35 and 36; T. 6 S., R. 11 E., secs. 4-36; T. 6 S., R. 12 E., secs. 1-36; T. 6 S., R. 13 E., secs. 1-36; T. 6 S., R. 14 E., secs. 1-36; T. 6 S., R. 15 E., secs. 1-36; T. 6 S., R. 16 E., secs. 1-36; T. 6 S., R. 17 E., secs. 5-9, and 14-36; T. 6 S., R. 18 E., secs. 29-36; T. 6 S., R. 19 E., secs. 31-36; T. 6 S., R. 20 E., secs. 31-34; T. 7 S., R. 11 E., sec. 1; T. 7 S., R. 12 E., secs. 1-6, 9-15, and 23-25; T. 7 S., R. 13 E., secs. 1-30 and 31-36; T. 7 S., R. 14 E., secs. 1-36; T. 7 S., R. 15 E., secs. 1-36; T. 7 S., R. 16

E., secs. 1-36; T. 7 S., R. 17 E., secs. 1-36; T. 7 S., R. 18 E., secs. 1-36; T. 7 S., R. 19 E., secs. 1-36; T. 7 S., R. 20 E., secs. 3-10, 14-23, and 26-35; T. 8 S., R. 13 E., secs. 1, 2, and 11-14; T. 8 S., R. 14 E., secs. 1-18, and secs. 21-26; T. 8 S., R. 15 E., secs. 1-30 and 34-36; T. 8 S., R. 16 E., secs. 1-36; T. 8 S., R. 17 E., secs. 1-36; T. 8 S., R. 18 E., secs. 1-36; T. 8 S., R. 19 E., secs. 1-36; T. 8 S., R. 20 E., secs. 3-10, 15-22, and 28-33; T. 9 S., R. 15 E., sec. 1; T. 9 S., R. 16 E., secs. 1-17, 20-29, and 32-36; T. 9 S., R. 17 E., secs. 1-36; T. 9 S., R. 18 E., secs. 1-36; T. 9 S., R. 19 E., secs. 1-36; T. 9 S., R. 20 E., secs. 5-8, 17-20, and 29-33; T. 10 S., R. 16 E., secs. 1-5, 9-16, and 22-26; T. 10 S., R. 17 E., secs. 1-36; T. 10 S., R. 18 E., secs. 1-36; T. 10 S., R. 19 E., secs. 1-36; T. 10 S., R. 20 E., secs. 3-36; T. 10 S., R. 21 E., secs. 18-21 and 28-34; T. 10 1/2 S., R. 21 E., secs. 31-33; T. 11 S., R. 17 E., secs. 1-5 and 8-15; T. 11 S., R. 18 E., secs. 1-24; T. 11 S., R. 19 E., secs. 1-26, 35, and 36; T. 11 S., R. 20 E., secs. 1-23 and 26-34; T. 11 S., R. 21 E., secs. 4-8; T. 12 S., R. 19 E., secs. 1, 2, 11-14, 23-26, 35, and 36; T. 12 S., R. 20 E., secs. 3-10, 15-22, and 27-34; T. 13 S., R. 19 E., secs. 1-3, 10-15, 22-27, and 34-36; T. 13 S., R. 20 E., secs. 3-10, 14-23, and 26-34.



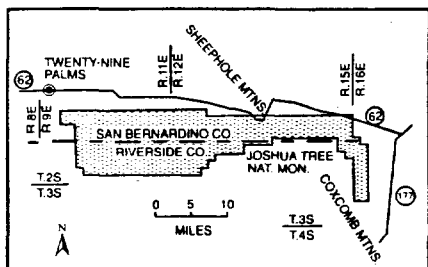
5. Pinto Mountain Unit. Riverside and San Bernardino Counties. From Bureau of Land Management Maps: Yucca Valley 1982, Sheep Hole Mountains 1978, Chuckwalla 1978, and Palm Springs #17 1978. (Index map location E).

San Bernardino Meridian: T. 1 S., R. 9 E., secs. 10-15, 24, 25, and 36; T. 1 S., R. 10 E., secs. 7-36; T. 1 S., R. 11 E., secs. 7-36; T. 1 S., R. 12 E., secs. 7-36 except sec. 12; T. 1 S., R. 13 E., secs. 13-36; T. 1 S., R. 14 E., secs. 13-32; T. 1 S., R. 15 E., secs. 13-30 and 36; T. 1 S., R. 16 E., secs. 18, 19, and 30-32; T. 2 S., R. 9 E., secs. 1, 12, and 13; T. 2 S., R. 10 E., secs. 1-24; T. 2 S., R. 11 E., secs. 1-24; T. 2 S., R. 12 E., sec. 1-22 except sec. 13; T. 2 S., R. 13 E., secs. 3-6; T. 2 S., R. 15 E., sec. 1; T. 2 S., R. 16 E., secs. 4-9, 16, 17, 20, 21, 28, 29, 32, and 33; T. 3 S., R. 16 E., secs. 4, 5, 8, and 9.



3. Ord-Rodman Unit. San Bernardino County. From Bureau of Land Management Maps: Newberry Springs 1978 and Victorville 1978. (Index map location C).

San Bernardino Meridian: T. 6 N., R. 1 E., secs. 1-6, 10-15, 22-27, and 34-36; T. 6 N., R. 2 E., secs. 1-11, 14-22, and 28-33; T. 7 N., R. 1 W., secs. 1-4, 9-15, 22-26, 35, and 36, except that portion of secs. 4, 9, 10, 15, 22, 23, 26, and 35 lying southwesterly of State Highway 247; T. 7 N., R. 1 E., secs. 1-36; T. 7 N., R. 2 E., secs. 1-36; T. 7 N., R. 3 E., secs. 1-36; T. 7 N., R. 4 E., secs. 1-36; T. 7 N., R. 5 E., secs. 2-11 and 15-19; T. 7

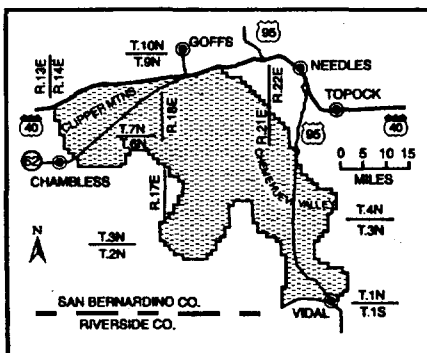


6. Chemehuevi Unit. San Bernardino County. From Bureau of Land Management Maps: Sheep Hole Mts. 1978, Parker 1979, Needles 1978, and Amboy 1991. (Index map location F).

San Bernardino Meridian: T. 1 S., R. 22 E., that portion of secs. 3-5, lying northwesterly of the Atchison Topeka and Santa Fe Railroad; T. 1 S., R. 23 E., that portion of secs. 1-3 lying northerly of the Atchison Topeka and Santa Fe Railroad, except that portion of sec. 1, lying easterly of U.S. Highway 95; T. 1 N., R. 22 E., secs. 1-4, 9-16, 20-29, and 32-36, except that portion of secs. 34-36 lying southerly of the Atchison Topeka and Santa Fe Railroad; T. 1 N., R. 23 E., secs. 1-36, except that portion of secs. 31-34 lying southerly of Atchison Topeka and Santa Fe Railroad; T. 1 N., R. 24 E., secs. 4-9, 16-21, and 29-31; T. 2 N., R. 18 E., secs. 1-5, and 9-14; T. 2 N., R. 19 E., secs. 2-10, and 16-18; T. 2 N., R. 22 E., secs. 1-5, 8-16, 21-28, and 33-36; T. 2 N., R. 23 E., secs. 5-8, 17-21, and 26-36; T. 2 N., R. 24 E., secs. 31 and 32; T. 3 N., R. 17 E., secs. 12, 13, 24, and 25; T. 3 N., R. 18 E., secs. 1-36; T. 3 N., R. 19 E., secs. 1-35; T. 3 N., R. 20 E., secs. 5-8, 18, and 19; T. 3 N., R. 21 E., secs. 1-5, 9-16, 23, and 24; T. 3 N., R. 22 E., secs. 1-36 except sec. 31; T. 3 N., R. 23 E., secs. 2-11, 14-22, and 28-32; T. 4 N., R. 18 E., secs. 1, 2, 10-15, 21-28, and 32-36; T. 4 N., R. 19 E., secs. 1-36; T. 4 N., R. 20 E., secs. 1-12, 16-20, and 29-32; T. 4 N., R. 21 E., secs. 1-17, 20-29, and 32-36; T. 4 N., R. 22 E., secs. 1-36; T. 4 N., R. 23 E., secs. 1-35; T. 4 N., R. 24 E., Secs 6, 7, 18, and 19; T. 5 N., R. 15 E., secs. 1-6; T. 5 N., R. 16 E., secs. 4-6; T. 5 N., R. 18 E., secs. 1-6, 8-17, 22-26, 35, and 36; T. 5 N., R. 19 E., secs. 1-36; T. 5 N., R. 20 E., secs. 1-36; (Unsurveyed) T. 5 N., R. 23 E., protracted secs. 19, and 29-33; T. 6 N., R. 14 E., secs. 1-3, 10-15, and 23-25; T. 6 N., R. 15 E., secs. 1-36; T. 6 N., R. 16 E., secs. 1-23, and 27-34; T. 6 N., R. 17 E., secs. 1-18, 22-26, and 36; T. 6 N., R. 18 E., secs. 1-36; T. 6 N., R. 19 E., secs. 1-36; T. 6 N., R. 20 E., secs. 1-36; T. 6 N., R. 21 E., secs. 1-36; T. 6 N., R. 22 E., secs. 3-10, 15-23, and 26-35; T. 7 N., R. 14 E., secs. 1-5, 8-17, 21-28, and 33-36; T. 7 N., R. 15 E., secs. 1-36; T. 7 N., R. 16 E., secs. 1-36; T. 7 N., R. 17 E., secs. 1-36; T. 7 N., R. 18 E., secs. 1-36; T. 7 N., R. 19 E., secs. 1-36; T. 7 N., R. 20 E., secs. 1-36; T. 7 N., R. 21 E., secs. 1-36; T. 7 N., R. 22

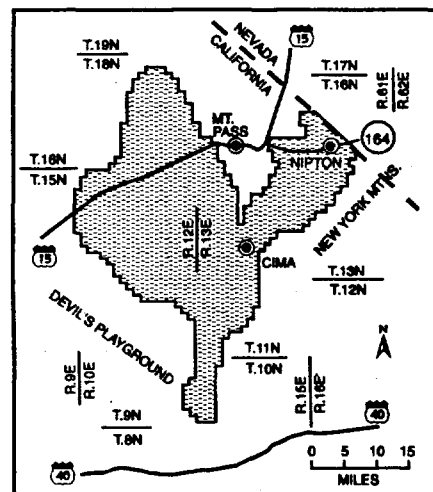
E., secs. 18-20, and 28-34; T. 8 N., R. 14 E., secs. 13, 23-28, and 31-36, except that portion of secs. 13, 23, 24, 26, 27, 28, 31, 32, and 33 lying northwesterly of Interstate Highway 40; T. 8 N., R. 15 E., secs. 9-36, except that portion of secs. 9-12, 17, and 18 lying northwesterly of Interstate Highway 40; T. 8 N., R. 16 E., secs. 1, 2, and 7-10 and 11 lying northerly of Interstate Highway 40; T. 8 N., R. 17 E., secs. 1-36, except that portion of secs. 1, 2, and 7-10 and 11 lying northerly of Interstate Highway 40; T. 8 N., R. 18 E., secs. 1-36, except that portion of sec. 6 lying northerly of Interstate Highway 40; T. 8 N., R. 19 E., secs. 1-36; T. 8 N., R. 20 E., secs. 1-36; T. 8 N., R. 21 E., secs. 7, 17-21, and 27-35; T. 9 N., R. 18 E., that portion of secs. 31-36 lying southerly of Interstate Highway 40; T. 9 N., R. 19 E., secs. 23-29, and 31-36, except that portion of secs. 23, 24, 26-29, 31, and 32 lying northerly of Interstate Highway 40; T. 9 N., R. 20 E., secs. 19, 20, and 29-33, except that portion of secs. 19 and 20 lying northerly of Interstate Highway 40.

E., secs. 1-12, and 14-22; T. 14 N., R. 16 E., sec. 6; T. 15 N., R. 9 E., secs. 24, 25, and 36; T. 15 N., R. 10 E., secs. 1-36 except sec. 6; T. 15 N., R. 11 E., secs. 1-36; T. 15 N., R. 12 E., secs. 1-36; T. 15 N., R. 13 E., secs. 3-11 and 14-36; T. 15 N., R. 14 E., secs. 12, 13, 23-28, and 33-36; T. 15 N., R. 15 E., secs. 1-36; T. 15 N., R. 16 E., secs. 1-11, 14-22, and 28-33; T. 15½ N., R. 14 E., secs. 24 and 25; T. 15½ N., R. 15 E., secs. 19-36; T. 15½ N., R. 16 E., secs. 19-35; T. 16 N., R. 10 E., secs. 25, 35, and 36; T. 16 N., R. 11 E., secs. 1-36; T. 16 N., R. 12 E., secs. 1-36; T. 16 N., R. 12½ E., secs. 12, 13, 24, 25, and 36; T. 16 N., R. 13 E., secs. 7, 17-20, and 29-33; T. 16 N., R. 14 E., secs. 24, 25, 35 and 36, except that portion of secs. 24 and 35 lying northwesterly of Interstate Hwy. 15; T. 16 N., R. 15 E., secs. 1-3, 10-14, and 23-36; T. 16 N., R. 16 E., secs. 6-8, 16-22, and 26-36; T. 17 N., R. 11 E., secs. 1-5, 8-17, 20-29, and 31-36; T. 17 N., R. 12 E., secs. 3-10, 14-23, and 26-36; T. 18 N., R. 11 E., secs. 13, 14, 22-28, and 33-36; T. 18 N., R. 12 E., secs. 18-20, and 28-33.



7. Ivanpah Unit. San Bernardino County. From Bureau of Land Management Maps: Amboy 1991, Ivanpah 1979, and Mesquite Lake 1990. (Index map location G).

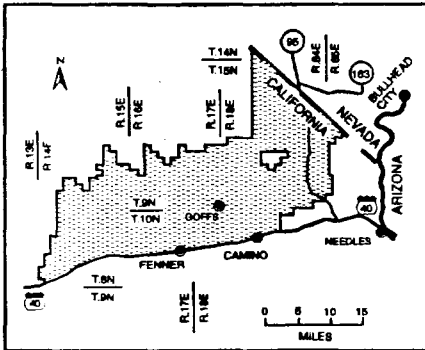
San Bernardino Meridian: T. 9 N., R. 12 E., secs. 1, 2, 11-14, and 24; T. 9 N., R. 13 E., secs. 4-9, 16-21, and 28-30; T. 10 N., R. 12 E., secs. 25, 35, and 36; T. 10 N., R. 13 E., secs. 3-10, 16-21, and 28-33; T. 11 N., R. 12 E., secs. 1, 12, 13, 24, 25, and 36; T. 11 N., R. 13 E., secs. 1-12, 15-21, and 28-33; T. 11 N., R. 14 E., sec. 6; T. 12 N., R. 11 E., secs. 1-5 and 9-15; T. 12 N., R. 12 E., secs. 1-18, 21-27, 35, and 36; T. 12 N., R. 13 E., secs. 1-36; T. 12 N., R. 14 E., secs. 4-9, 16-21, and 29-32; T. 13 N., R. 10 E., secs. 1-5, 10-14, 24, and 25; T. 13 N., R. 11 E., secs. 1-36; T. 13 N., R. 12 E., secs. 1-36; T. 13 N., R. 13 E., secs. 1-36; T. 13 N., R. 14 E., secs. 3-9, 16-21, and 28-33; T. 14 N., R. 9 E., secs. 1, 12, 13, and 24; T. 14 N., R. 10 E., secs. 1-36; (Unsurveyed) T. 14 N., R. 11 E., Protracted secs. 1-35; T. 14 N., R. 11 E., sec. 36; T. 14 N., R. 12 E., secs. 1-36; T. 14 N., R. 13 E., secs. 1-36; T. 14 N., R. 14 E., secs. 1-5, 8-17, and 19-35; T. 14 N., R. 15



8. Piute-Eldorado Unit. San Bernardino County. From Bureau of Land Management Maps: Amboy 1991, Needles 1978, and Ivanpah 1979. (Index map location H).

San Bernardino Meridian: T. 8 N., R. 14 E., secs. 1-4, 8-17, 19-24, 26-30, 32, and 33, except that portion of secs. 13, 23, 24, 26-28, 32 and 33 lying southeasterly of Interstate Highway 40; T. 8 N., R. 15 E., secs. 1-12, 17, and 18, except that portion of secs. 1-12, 17, and 18 lying southeasterly of Interstate Highway 40; T. 8 N., R. 16 E., secs. 1-10, except that portion of sections 1-3 and 6-10 lying southerly of Interstate Highway 40; T. 8 N., R. 17 E., that portion of secs. 1-6, lying northerly of Interstate Highway 40; T. 9 N., R. 14 E., secs. 1-3, 10-15, 22-28, and 33-36; T. 9 N., R. 15 E., secs. 1-36; T. 9 N., R. 16 E., secs. 1-36; T. 9 N., R. 17 E., secs. 1-36, except that portion of sec. 36 lying southerly of Interstate Highway 40; T. 9 N., R. 18 E.,

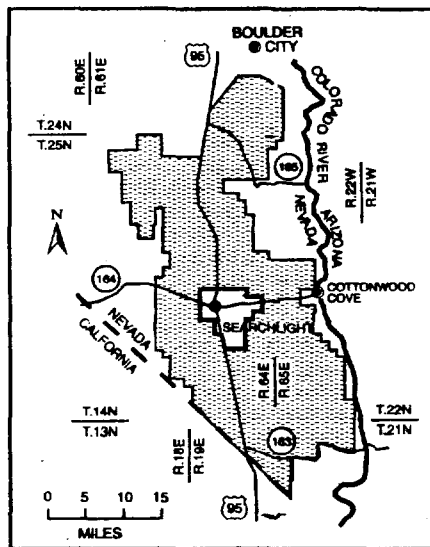
secs. 1-36, except that portion of secs. 31-36 lying southerly of Interstate Highway 40; T. 9 N., R. 19 E., secs. 1-24 and 26-32, except that portion of secs. 26-29, 31, and 32 lying southerly of Interstate Highway 40; T. 9 N., R. 20 E., secs. 3-8 and 17-20, except that portion of secs. 19 and 20 lying southerly of Interstate Highway 40; T. 10 N., R. 14 E., secs. 11-14, 22-27, and 34-36; T. 10 N., R. 15 E., secs. 1-3, 9-16, and 18-36; T. 10 N., R. 16 E., secs. 1-36; T. 10 N., R. 17 E., secs. 1-36; T. 10 N., R. 18 E., secs. 1-36; T. 10 N., R. 19 E., secs. 1-36; T. 10 N., R. 20 E., secs. 1-36; T. 10 N., R. 21 E., secs. 3-10, 15-22, and 28-31; T. 11 N., R. 15 E., secs. 9, 15, 16, 21, 22, 25-29, and 33-36; T. 11 N., R. 16 E., secs. 9, 15, 16, 21-23, 25-28, 31, and 33-36; T. 11 N., R. 17 E., secs. 8, 12-17, and 19-36; T. 11 N., R. 18 E., secs. 1-4 and 7-36; T. 11 N., R. 19 E., secs. 1-13, 18, 19, 23-27, and 29-36; T. 11 N., R. 20 E., secs. 1-11, 14-23, and 26-35; T. 12 N., R. 19 E., secs. 1-36; T. 12 N., R. 20 E., secs. 3-11 and 13-36; T. 12 N., R. 21 E., secs. 19, 30, and 31; T. 13 N., R. 19 E., secs. 3-11 and 13-36; T. 13 N., R. 20 E., secs. 19 and 29-33; T. 14 N., R. 19 E., secs. 19 and 29-33.



Nevada. Areas of land as follows:
9. Piute-Eldorado Unit. Clark County. From Bureau of Land Management Maps: Mesquite Lake 1990, Boulder City 1978, Ivanpah 1979, and Davis Dam 1979. (Index map location H).

Mt. Diablo Meridian: T. 23 S., R. 64 E., secs. 31-36, except that portion of sec. 31 lying northwesterly of the powerline and also except that portion of secs. 34-36 lying northeasterly of the powerline; T. 23½ S., R. 64 E., secs. 31-36, except that portion of sec. 31 lying northwesterly of the powerline; T. 23½ S., R. 65 E., that portion of sec. 31, lying southwesterly of the powerline; T. 24 S., R. 63 E., secs. 1, 2, 11-15, 22-28, and 33-36, except that portion of secs. 1, 2, 11, 14, and 15 lying northwesterly of the powerline and also except that portion of secs. 22, 27, 28, and 33 lying northwesterly of U.S. Highway 95; T. 24 S., R. 64 E., secs. 1-36; T. 24 S., R. 65 E., secs. 6, 7, 18, 19, 30, and 31; T. 25 S., R. 61 E., secs. 13-15, E ½ sec. 16, E ½ sec. 21, secs. 22-27, E ½ sec. 28, secs. 35 and

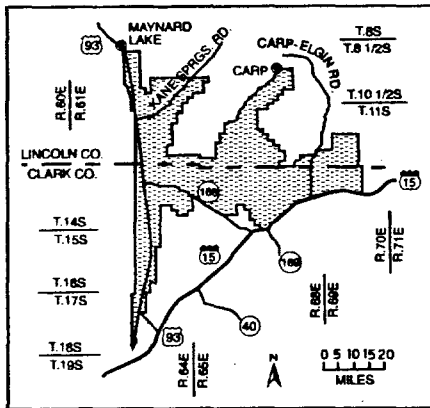
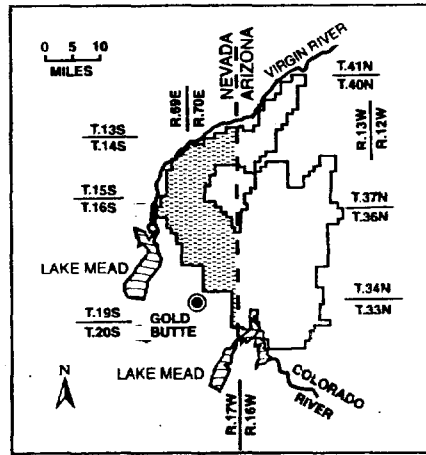
36; T. 25 S., R. 62 E., secs. 4-9, and secs. 16-36; T. 25 S., R. 63 E., secs. 1-4, 9-16, and 19-36, except that portion of secs. 4, 9, and 16 lying northwesterly of U.S. Highway 95; T. 25 S., R. 64 E., secs. 1-35 except secs. 13, 24, and 25; T. 25 S., R. 65 E., sec. 6; T. 26 S., R. 61 E., secs. 1, 2, 11-14, 24, 25, and 36; T. 26 S., R. 62 E., secs. 1-36 except secs. 28 and 33; T. 26 S., R. 63 E., secs. 2-36 except sec. 12; T. 26 S., R. 64 E., secs. 18-20, and 29-33; T. 27 S., R. 62 E., secs. 1-3, 5-8, 10-15, 22-26, 35, and 36; T. 27 S., R. 62½ E., secs. 1, 12, 13, 24, 25, and 36; T. 27 S., R. 63 E., secs. 1-36; T. 27 S., R. 64 E., secs. 4-9, 16-21, and 26-36; T. 27 S., R. 65 E., secs. 31-35; T. 28 S., R. 62 E., secs. 1-3, 9-16, 21-28, and 33-36; T. 28 S., R. 63 E., secs. 1-20, and 29-32; T. 28 S., R. 64 E., secs. 1-18, 21-26, 35, and 36; T. 28 S., R. 65 E., secs. 2-11, 14-21, and 28-35; T. 29 S., R. 62 E., secs. 1-4, 9-16, 21-28, 34, 35 and 36; T. 29 S., R. 63 E., secs. 5-10, 15-23, and 26-36; T. 29 S., R. 64 E., secs. 1-3, 9-16, 21-28, and 31-36; T. 29 S., R. 65 E., secs. 2-36 except secs. 12 and 13; T. 29 S., R. 66 E., secs. 30-32; T. 30 S., R. 62 E., secs. 1, 2, and 11-14; T. 30 S., R. 63 E., secs. 1-36 except secs. 30 and 31; T. 30 S., R. 64 E., secs. 1-36; T. 30 S., R. 65 E., secs. 1-36; T. 30 S., R. 66 E., secs. 4-9, 16-21, and 28-33; T. 31 S., R. 63 E., secs. 1-5, 8-16, 22-26, and 36; T. 31 S., R. 64 E., secs. 1-36; T. 31 S., R. 65 E., secs. 1-36, except that portion of sec. 36 lying southwesterly of State Highway 163; T. 31 S., R. 66 E., secs. 3-10, 15-22, and 27-34, except that portion of sec. 31 lying southwesterly of State Highway 163; T. 32 S., R. 64 E., secs. 1-6, 8-16, 22-26, and 36; T. 32 S., R. 65 E., secs. 1-12, 17-20, and 29-32, except that portion of secs. 1, and 9-12 lying southeasterly or easterly of State Highway 163; T. 32 S., R. 66 E., that portion of secs. 3-6 lying northerly of State Highway 163; T. 33 S., R. 65 E., sec. 5.



10. Mormon Mesa Unit. Clark and Lincoln Counties. From Bureau of Land Management Maps: Pahrangat 1978, Clover Mts. 1978, Overton 1978, Indian Springs 1979, Lake Mead 1979, and Las Vegas 1986. (Index map location I).

Mt. Diablo Meridian: T. 9 S., R. 62 E., secs. 13-15, 22-27, and 34-36, except that portion of secs. 15, 22, 27, and 34 lying westerly of the easterly boundary line of the Desert National Wildlife Range; T. 9 S., R. 63 E., secs. 18, 19, 30, and 31; T. 10 S., R. 62 E., secs. 1, 2, 11-14, 23-25, and 36 except that portion of secs. 14, 23, 35, and 36 lying westerly of the easterly boundary line of the Desert National Wildlife Range; T. 10 S., R. 63 E., secs. 6, 7, 10-15, 18-20, and 22-36; T. 10 S., R. 64 E., secs. 7-24 and 26-34; T. 10 S., R. 65 E., secs. 7, 8, 18, and 19; T. 10 S., R. 66 E., secs. 24-26 and 34-36, except that portion of secs. 24-26, 34, and 35 lying northwesterly of Union Pacific Railroad; T. 10 S., R. 67 E., secs. 1-4, 9-24, and 27-33, except that portion of secs. 3, 4, 9, 16-19, 24-26, 34 and 35 lying northwesterly of Union Pacific Railroad; T. 10½ S., R. 66 E., secs. 33-36, except that portion of sec. 33 lying northwesterly of Union Pacific Railroad; T. 10½ S., R. 67 E., secs. 31 and 32; T. 11 S., R. 62 E., that portion of sec. 1 lying easterly of the easterly boundary line of the Desert National Wildlife Range; T. 11 S., R. 63 E., secs. 1-36; T. 11 S., R. 64 E., secs. 4-9, 17-20, 30, and 31; T. 11 S., R. 65 E., secs. 25 and 36; T. 11 S., R. 66 E., secs. 1-5, 8-11, 14-17, 19-23, and 26-36, except that portion of secs. 4, 5, 8, and 17 lying northwesterly of Union Pacific Railroad; T. 11 S., R. 67 E., sec. 6; T. 11½ S., R. 65 E., secs. 35 and 36; T. 12 S., R. 63 E., secs. 1-36; T. 12 S., R. 64 E., secs. 6, 7, and 25-36; T. 12 S., R. 65 E., secs. 1, 2, 10-15, and 22-36; T. 12 S., R. 66 E., secs. 1-36; T. 12 S., R. 67 E., secs. 6-8, 16-22, and 27-33; T. 12 S., R. 68 E., secs. 23-29 and 31-36; T. 12 S., R. 69 E., secs. 1-5, 8-17, and 19-36; T. 12½ S., R. 62 E., that portion of sec. 36, lying easterly of the easterly boundary line of the Desert National Wildlife Range; T. 13 S., R. 62 E., that portion of secs. 1, 12, 13, 24, and 25 lying easterly of the easterly line of the Desert National Wildlife Range; T. 13 S., R. 63 E., secs. 1-36; T. 13 S., R. 64 E., secs. 1-36; T. 13 S., R. 65 E., secs. 1-36, except that portion of sec. 31 lying southwesterly of the northerly right-of-way line of State Highway 168; T. 13 S., R. 66 E., secs. 1-36; T. 13 S., R. 67 E., secs. 1-36; T. 13 S., R. 68 E., secs. 1-36, except that portion of secs. 25 and 33-36 lying southeasterly of Interstate Highway 15; T. 13 S., R. 69 E., secs. 1-30, except that portion of secs. 25-30 lying southerly of Interstate Highway 15; T. 13 S., R. 70 E., secs. 6, 7, 18, 19, 30, and 31, except that portion of secs. 30 and 31 lying southerly of Interstate Highway 15; T. 13½ S., R. 63 E., secs. 31-36; T. 13½ S., R. 64 E., secs. 31-36, except that portion of sec. 36 lying southwesterly of State Highway 168; T. 14 S., R. 63 E., secs. 1-23, and 26-35; T. 14 S., R. 64 E., secs. 2-6, 8-11, 15, and 16; T. 14 S., R. 65 E., secs. 1-6 and 8-16, except that portion of secs. 5, 6, 8, 9, and 13-16 lying southwesterly of State Highway 168; T. 14 S., R. 66 E., secs. 1-8, 10-14, 17, 18, and 23-25, except that

portion of secs. 8 and 17 lying easterly of the Union Pacific Railroad; T. 14 S., R. 67 E., secs. 1-12, 14-22, and 28-32, except that portion of secs. 12, 14, 15, 21, 22, 28, 29, 31 and 32 lying southerly of Interstate Highway 15; T. 14 S., R. 68 E., that portion of secs. 4-7 lying northwesterly of Interstate Highway 15; T. 15 S., R. 63 E., secs. 2-11, 14-22, and 27-34; T. 16 S., R. 63 E., secs. 3-10, 15-22, and 28-33; T. 17 S., R. 63 E., secs. 7-9, 16-21, and 28-32, except that portion of secs. 29 and 32 lying easterly of the westerly boundary line of the Apex Disposal Road; T. 18 S., R. 63 E., secs. 5-8, 17-19, and 29-31, except that portion of secs. 5, 8, 17-19, and 29-31 lying easterly of the westerly boundary line of the Apex Disposal Road, and that portion of sec. 31 lying westerly of the easterly boundary line of Desert National Wildlife Range.

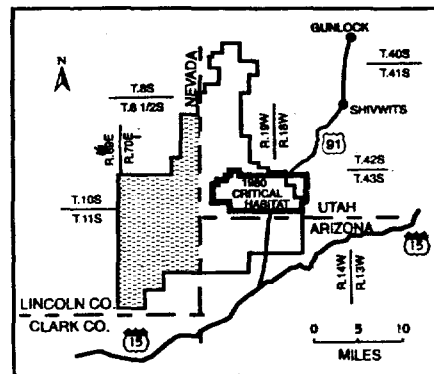


11. Gold Butte-Pakoon Unit. Clark County. From Bureau of Land Management Maps: Overton 1978 and Lake Mead 1979. (Index map location J).

Mt. Diablo Meridian: T. 13 S., R. 71 E., secs. 32-34; T. 14 S., R. 69 E., secs. 24-26, and 34-36; T. 14 S., R. 70 E., secs. 1, and 10-36; T. 14 S., R. 71 E., secs. 3-10, 15-22, and 27-34; T. 15 S., R. 69 E., secs. 1-3, 9-16, 21-28, and 33-36; T. 15 S., R. 70 E., secs. 2-11, 15-22, and 28-33; T. 16 S., R. 69 E., secs. 1-36 except secs. 6, 7, and 29-32; T. 16 S., R. 70 E., secs. 4-36 except sec. 12; T. 16 S., R. 71 E., secs. 19, and 29-32; T. 17 S., R. 69 E., secs. 1-3, 11-14, 24, 25, and 36; T. 17 S., R. 70 E., secs. 1-36; T. 17 S., R. 71 E., secs. 4-10, 15-22, and 27-34; T. 18 S., R. 69 E., sec. 1; T. 18 S., R. 70 E., secs. 1-6, 10-15, 22-27, and 34-36; T. 18 S., R. 71 E., secs. 3-10, 15-22, and 27-34; T. 19 S., R. 71 E., secs. 3, 4, 9, 10, 15, 16, 21, 22, 27, 28, 33 and 34; T. 20 S., R. 71 E., secs. 3 and 4.

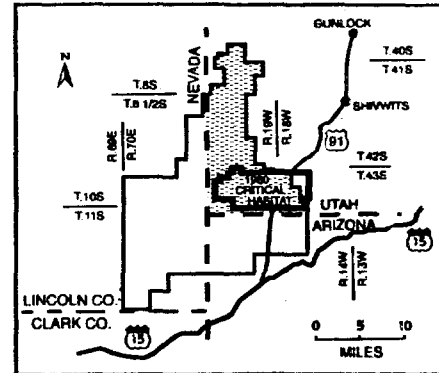
12. Beaver Dam Slope Unit. Lincoln County. From Bureau of Land Management Maps: Clover Mountains 1978 and Overton 1978. (Index map location K).

Mt. Diablo Meridian: T. 8½ S., R. 71 E., that portion of sec. 34 lying south of a westerly extension of the north line of sec. 26, T. 41 S., R. 20 W. (Salt Lake Meridian), Washington County, Utah; T. 9 S., R. 71 E., secs. 3, 10, 15-17, 20-22, 27-29, and 32-34; T. 10 S., R. 70 E., secs. 19-36; T. 10 S., R. 71 E., secs. 3-5, 7-10, 15-22, and 27-34; T. 11 S., R. 70 E., secs. 1-36; T. 11 S., R. 71 E., secs. 3-10, 15-22, and 27-34; T. 12 S., R. 70 E., secs. 1-12, 14-23, and 28-33; T. 12 S., R. 71 E., secs. 3-10.



13. Beaver Dam Slope Unit. Washington County. From Bureau of Land Management Maps: St. George 1980 and Clover Mts. 1978. (Index map location K).

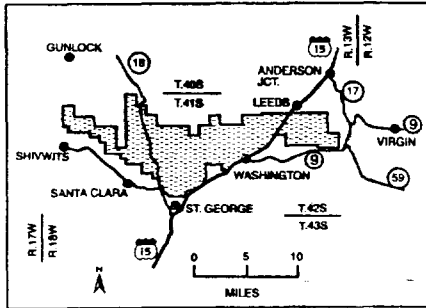
Salt Lake Meridian: T. 40 S., R. 19 W., S½ sec. 28, S½ sec. 29, S½ sec. 31, secs. 32 and 33; T. 41 S., R. 19 W., S½ sec. 2, S½ sec. 3, secs. 4, 5, 6, E½ sec. 7, secs. 8-11, 15-17, E½ sec. 18, and secs. 19-22, and 28-33; T. 41 S., R. 20 W., E½ sec. 1, secs. 24-26, 35, and 36; T. 42 S., R. 19 W., secs. 4-9, 16-22, and 27-34; T. 42 S., R. 20 W., secs. 1, 2, 11-14, 23-26, 35, and 36; T. 43 S., R. 18 W., secs. 7, 8, S½ sec. 16, secs. 17-21, and 27-34; T. 43 S., R. 19 W., secs. 1-36 except N½ sec. 1; T. 43 S., R. 20 W., secs. 1, 2, 11-14, 23-26, 35, and 36.



14. Upper Virgin River Unit. Washington County. From Bureau of Land Management Map: St. George 1980. (Index map location L).

Salt Lake Meridian: T. 41 S., R. 13 W., secs. 16-21, 27-30, and N½N½ sec. 33, and N½N½ sec. 34; T. 41 S., R. 14 W., secs. 13-17 and 19-34, except that portion of secs. 28, 27, and 32-34 lying southeasterly of Interstate Highway 15; T. 41 S., R. 15 W., secs. 14, 19, 20, and 22-36; T. 41 S., R. 16 W., secs. 4, 9, 10, 14-16, 19, 21-28, 30, N½ sec. 31, NW¼ and E½ sec. 32, and secs. 33-36; T. 41 S., R. 17 W., secs. 8, 9, 14-17, NE¼ sec. 21, N½ sec. 22, NW¼ and E½ sec. 23, sec. 24, and NE¼ sec. 25; T. 42 S., R. 14 W., that portion of secs. 5 and 6, lying northwesterly of Interstate 15; T. 42 S., R. 15 W., secs. 1, N½ and N½S½ sec. 2, NE¼ and W½ sec. 3, secs. 4-9, W½ sec. 10, N½N½ sec. 12, W½W½ sec. 15, secs. 16-18, N½ and the N½S½ sec. 19, N½ and the N½S½ sec. 20, secs. 21, and 22.; except that portion of secs. 1 and 12, lying southeasterly of Interstate Highway 15 and except that portion of secs. 15, 20, 21, and 22 lying southeasterly of State Highway 34; T. 42 S., R. 16 W., secs. 1, 2, NW¼ and the NE¼ and the SE¼ sec. 3, N½ sec. 4, NE¼ sec. 10, NW¼ and the NE¼ and the SE¼ sec. 11, sec. 12, E½ and the E½W½ sec. 13, NE¼ sec. 24.

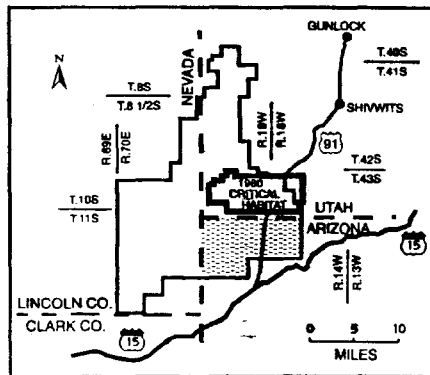
Utah. Areas of land as follows:



Arizona. Areas of land as follows:

15. Beaver Dam Slope Unit. Mohave County. From Bureau of Land Management Maps: Overton 1978 and Littlefield 1987. (Index map location K).

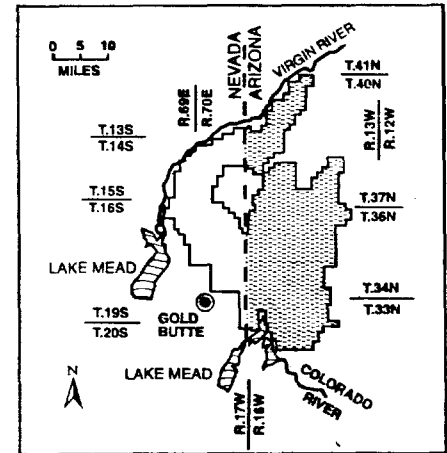
Gila and Salt River Meridian: T. 41 N., R. 14 W., secs. 6, 7, 18, and 19; T. 41 N., R. 15 W., secs. 1-24, 30, and 31; T. 41 N., R. 16 W., secs. 1-5, 8-17, 20-29, and 32-36; T. 42 N., R. 14 W., sec. 31; T. 42 N., R. 15 W., secs. 31-38; T. 42 N., R. 16 W., secs. 32-36.



16. Gold Butte-Pakoon Unit. Mohave County. From Bureau of Land Management Maps: Overton 1978, Littlefield 1987, Mount Trumbull 1986, and Lake Mead 1979. (Index map location J.)

Gila and Salt River Meridian: T. 32 N., R. 14 W., secs. 6 and 7; T. 32 N., R. 15 W., secs. 1-18, except those portions of secs. 13-18 lying south of the Lake Mead National Recreation area boundary line; T. 32 N., R. 16 W., secs. 1, 2, 12, and 13; T. 32½ N., R. 15 W., secs. 31-36; T. 32½ N., R. 16 W., secs. 35 and 36; T. 33 N., R. 14 W., secs. 3-9, 16-21, and 26-32; T. 33 N., R. 15 W., sec. 1-36; T. 33 N., R. 16 W., secs. 1-14, 17-20, 23-26, 29-32, 35, and 36; T. 34 N., R. 14 W., secs. 4-9, 16-21, and 27-34; T. 34 N., R. 15 W., secs. 1-36; T. 34 N., R. 16 W., secs. 1-36; T. 35 N., R. 14 W., secs. 2-35 except secs. 12, 13, 24, 25, and 36; T. 35 N., R. 15 W., secs. 1-36; T. 35 N., R. 16 W., secs. 1-36; T. 36 N., R. 13 W., secs. 6-8, and 17-19; T. 36 N., R. 14 W., secs. 1-35 except sec. 25; T. 36 N., R. 15 W., secs. 1-36; T. 36 N., R. 16 W., secs. 1-36 except secs. 5-7; T. 37 N., R. 14 W., secs. 1-36 except secs. 5-7, and 18; T.

37 N., R. 15 W., secs. 3-36 except secs. 11-14; T. 37 N., R. 16 W., secs. 1, 2, 11-14, 22-28, and 33-36; T. 38 N., R. 13 W., secs. 19, 30 and 31; T. 38 N., R. 14 W., secs. 23-26, and 34-36; T. 38 N., R. 15 W., secs. 5-8, and 27-34; T. 38 N., R. 16 W., secs. 1-38 except secs. 24-26, 31, 32, and 35; T. 39 N., R. 15 W., secs. 2-10, 15-21, and 29-32; T. 39 N., R. 16 W., secs. 1, 12, 13, 20, 23-29, and 32-36; T. 40 N., R. 14 W., secs. 6 and 7; T. 40 N., R. 15 W., secs. 1, 10-15, and 21-36.



Primary constituent elements: desert lands that are used or potentially used by the desert tortoise for nesting, sheltering, foraging, dispersal, or gene flow.

Dated: July 28, 1993.

Richard N. Smith,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 93-20992 Filed 8-27-93; 8:45 am]

BILLING CODE 4310-55-P