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DISTRIBUTION, HABITAT AND HABITS OF THE DESERT TORTOISE (Gopherus agassizii) IN THE EASTERN MOJAVE DESERT

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ABSTRACT

The desert tortoise is widely distributed across most of southern Nevada below 1500 meters elevation and then ranges northeast into the Arizona Strip and southwestern Utah. There are several large populations, but also many isolated groups of desert tortoises due to the rugged topography and, possibly, unsuitable soils. We suggest that the greatest threats to tortoises in the eastern Mojave Desert are with peripheral populations (e.g., isolated demes in the Dixie Valley, Utah, or in the upper Coyote Springs Valley and in the Tule Desert, Nevada). Tortoises in the eastern Mojave Desert occupy a wide variety of habitats from flats and bajadas in lower elevation (hot deserts) to rocky slopes bordering on blackbrush and juniper woodland. In winter they use shallow burrows near Las Vegas but frequent deep caves in the northeast edge of their range. Tortoises in all areas may occur in steep, rocky habitats. Climatic extremes are frequent in this region and rainfall can be spotty due to several major mountain ranges that cause rain shadows (reduced rainfall). Forage is highly variable and this species can be an opportunistic herbivore.

Place map here.

The distribution of the desert tortoise Gopherus agassizii on the Nevada Test Site (NTS) is generally restricted to the southern one-third of the site. Tanner and Jorgensen (1963) stated, "We found it more commonly in the Larrea Franseria community and surrounding foothills." Their published localities indicated that desert tortoises were known to inhabit Frenchman Flat, Mercury Valley, Rock Valley and Jackass Flats. Tortoise distribution corresponds relatively well with the distribution of Larrea tridentata (Beatley, 1979). Along the eastern boundary of the NTS tortoise sign was observed at elevations of 975-1100 meters northeast of Frenchman Playa (Patton et al., 1986). Northwestern Frenchman Flat appears to contain the highest densities of desert tortoises on the NTS, ~45 per square mile (Hunter and Medica, 1989). Tortoises occur in this region to elevations of approximately 1300 meters and inhabit the washes that have steep slopes and "caliche" outcrops as illustrated in photographs. The vegetation of this region consists primarily of Larrea-Ambrosia interspersed with Yucca brevifolia.

In northern Jackass Flats, the desert tortoise occurs in the creosote bush habitat at lower elevations, but as you proceed north or to higher elevations up the rocky slopes and alluvial fans, the vegetation becomes predominantly Coleogyne with some Larrea at elevations of approximately 1300 meters. Tortoise sign has been observed along the southern foothills of the Calico Hills and they are likely to occur into the Calico Hill's region although this area has not been researched. Western Jackass Flats is bordered by Yucca Mountain that has a low density of tortoises (Medica et al., 1981). Tortoises have been observed on Yucca Mountain at elevations of 1500-1600

meters (Collins et al., 1983). The desert tortoise is rare or absent within the central, sandy, portions of Jackass Flats (Medica et al., 1981).

The vegetation surrounding Frenchman Playa, consisting primarily of saltbush, appears to be poor habitat for the desert tortoise. Presumably, this lack of habitat on playas and the nearby surrounding areas may occur throughout the range of the desert tortoise. Low tortoise densities were observed by Turner et al. (1982) around the periphery of Ivanpah Playa.

Mountain tops can also appear as gaps within the distribution of the desert tortoise. Carcasses have been reported from mountain tops (Tanner and Jorgensen, 1963; Woodbury and Hardy, 1948). It is likely that tortoises actually do climb on to rugged outcrops as has been noted by NTS personnel who regularly fly in helicopters and observed a desert tortoise on the tops of isolated hills in Jackass Flats with an elevation of 1323 meters.

Isolated records of tortoises and/or their signs exist for Crater Flat (Karl, 1981), the vicinity southwest of Bare Mountain at elevations of 960-1158 meters (C. Stevenson, personal communication) and the vicinity north of Beatty between Indian Spring and Crystal Springs (L. Grover, personal communication).

(Additional records shall be included within this section to complete the desert tortoise distribution to the west of the NTS using information available at the Bureau of Land Management, Nevada Department of Wildlife and the U.S. Air Force.)

In drought years desert tortoises have been observed feeding on shrubs such as Krameria parvifolia (see photo). During 1980 and 1981 tortoises in Ivanpah Valley, California consumed grasses, cacti and annuals that made up 80-95% of their diet (% frequency) based upon scat analysis. Perennials made up a somewhat small portion of the diet (1-3%). During the drought year (1981), in Ivanpah Valley, 87% of the tortoises diet from mid-May to late June consisted of cacti (including the fruit of Opuntia; Turner et al., 1984). Opuntia is present on the NTS, but is not as abundant as in Ivanpah Valley. Tortoises in Rock Valley have exhibited a shrinking (dehydration?) of the scales that is particularly visible on the top of the head (see photos or slides). Tortoises have been observed commonly along paved roads on the southern portion of NTS this spring (April-May 1990). Because of a continuing drought, there are few if any annual plants available in the desert, except those along the roadsides this season (see photo). The tortoises that have been observed along roadways all appear well hydrated and lack the sunken prefrontal and frontal scales that some Rock Valley tortoises exhibit. Therefore, tortoises that either reside near roadsides or can frequent a roadside, might have a significant ecological advantage.

The unusual condition exhibited by some Rock Valley tortoises (concave, possibly dehydrated scales on the head) may have been identical with the unusual condition exhibited in the prefrontal and frontal scales of the newly described tortoise from Baja, California (Ottley and Velazques Solis, 1990). It almost appears that if the scales were scraped against rough soil or rocky burrows the scales might become badly worn down and give a very flat and smooth appearance.

ACKNOWLEDGMENTS

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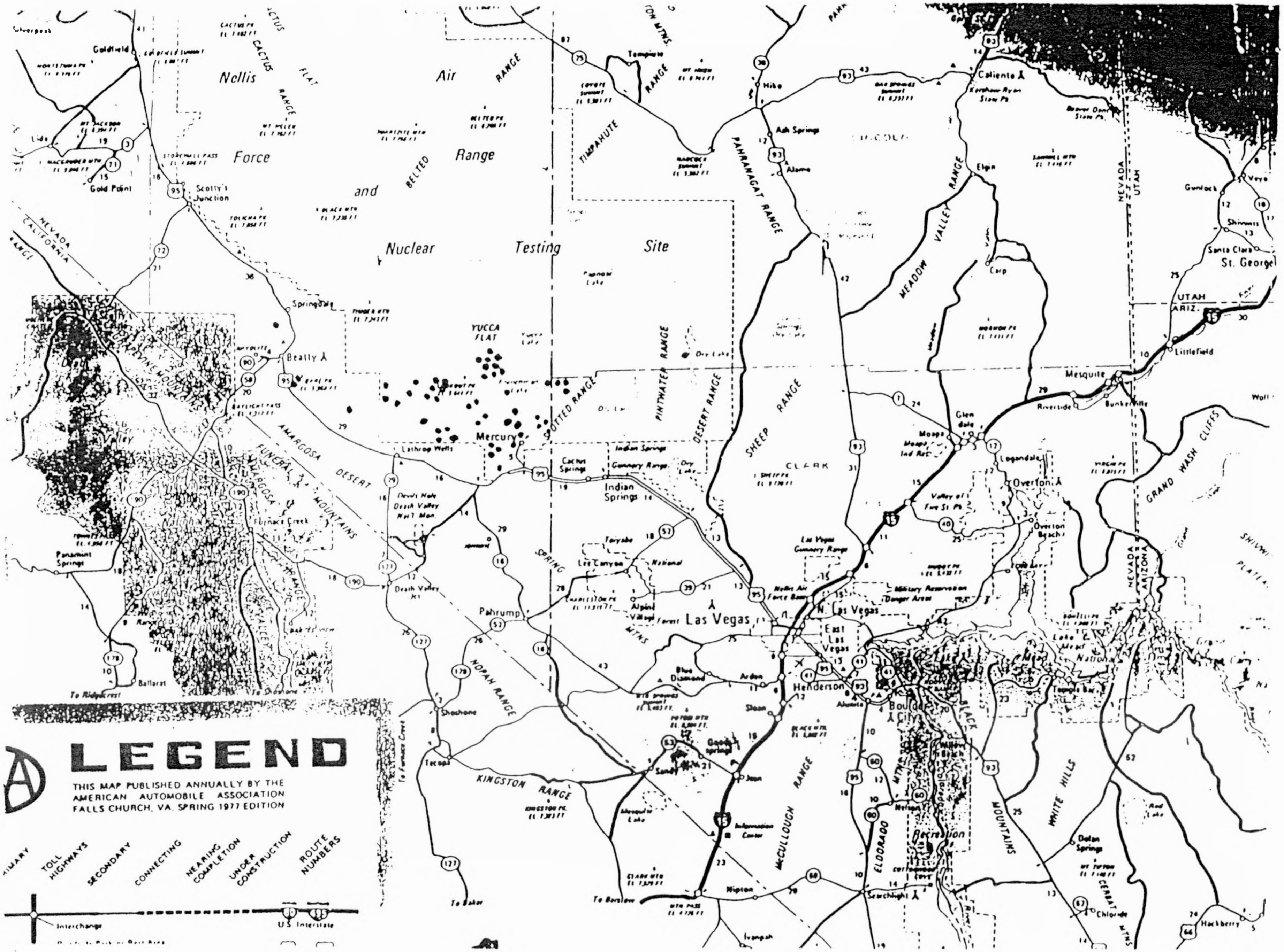
LEGEND
THIS MAP PUBLISHED ANNUALLY BY THE
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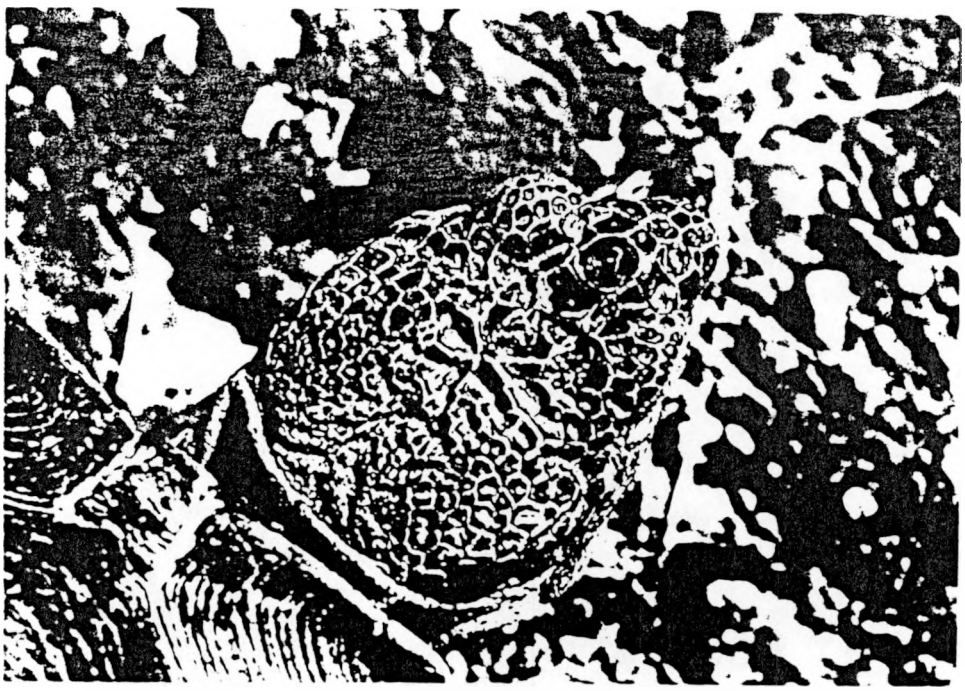
FALLS CHURCH, VA. SPRING 1977 EDITION
TOLL HIGHWAYS
SECONDARY
CONNECTING
NEARING COMPLETION
UNDER CONSTRUCTION
ROUTE NUMBERS
Interchange
U.S.
Interstate
Nellis Air Force Range and Nuclear Testing Site
Goldfield
Lida
Gold Point
Scotty's Junction
Springdale
Beatty
YUCCA FLAT
Mercury
Lathrop Wells
Cactus Springs
Indian Springs
AMARGOSA DESERT
FUNERAL MOUNTAINS
Furnace Creek
Panamint Springs
Death Valley Jct
Pahrump
Shoshone
Tecopa
NOPAH RANGE
KINGSTON RANGE
SPRING MTNS
Lee Canyon
Las Vegas
N. Las Vegas
East Las Vegas
Henderson
Blue Diamond
Arden
Sloan
Goodsprings
Sandy
Jean
Nipton
Searchlight
Nelson
Boulder City
ELDORADO MTNS
McCULLOUGH RANGE
SHEEP RANGE
DESERT RANGE
PINTWATER RANGE
SPOTTED RANGE
TIMPAHUTE RANGE
PAHRANAGAT RANGE
Hiko
Ash Springs
Alamo
Tempiute
Caliente
Elgin
MEADOW VALLEY RANGE
Carp
CLARK
Moapa
Glendale
Logandale
Overton
Overton Beach
Mesquite
Bunkerville
Riverside
Littlefield
St. George
Santa Clara
Shivwits
Gunlock
Veyo
UTAH
ARIZ.
NEVADA
CALIFORNIA
GRAND WASH CLIFFS
WHITE HILLS
BLACK MOUNTAINS
CERBAT MTNS
Dolan Springs
Chloride
Hackberry
Temple Bar
Lake Mead National Recreation Area
Ivanpah
To Barstow
To Baker
To Ridgecrest
Ballarat
Information Center
Military Reservation Danger Areas
Nellis Air Force Base
Las Vegas Gunnery Range
Indian Springs Gunnery Range

1491E

Plot C Tortoise# 1411♀ Headscales
(11) (NTS Area 25)
Rock Valley fenced plot



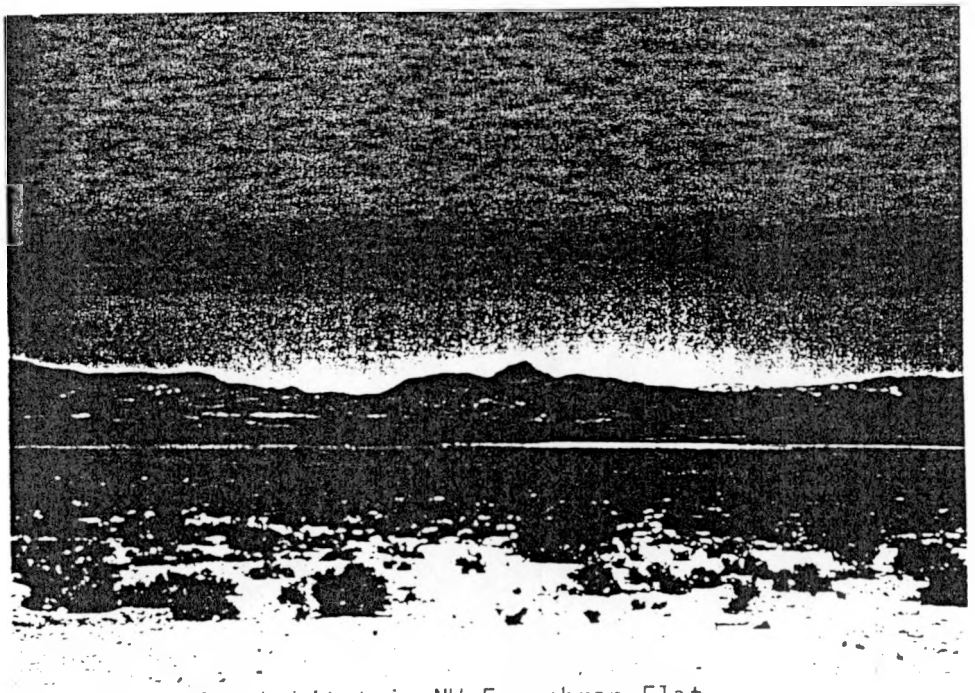
Desert Tortoise habitat in NW
Frenchman Flat
NTS Area 6

Plot C Tortoise #5111 ♀ Headscales
(10) (NTS Area 25)
Rock Valley fenced plot.

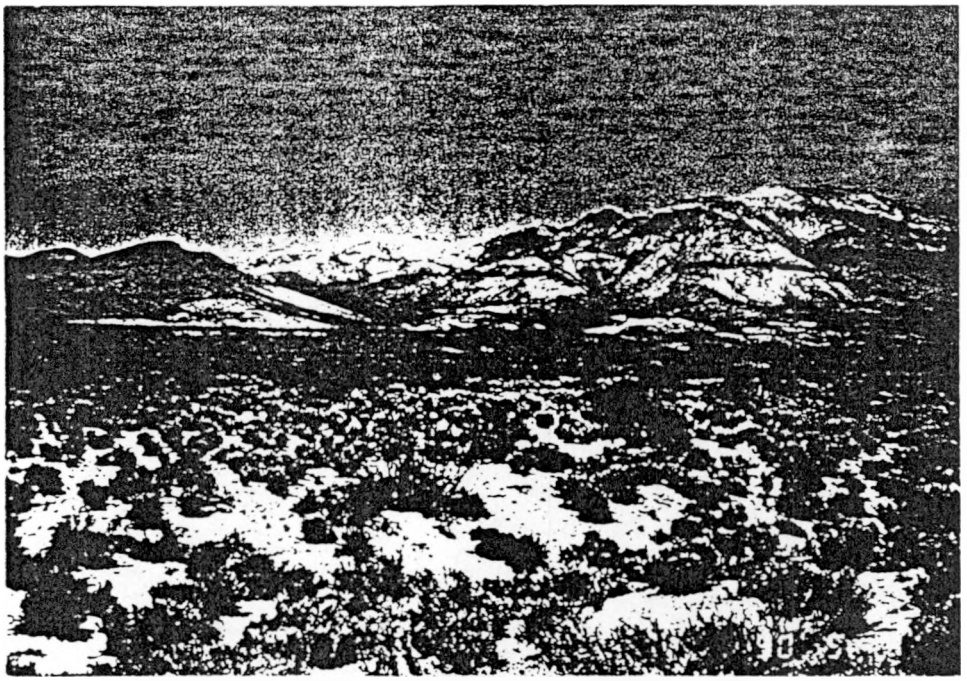
Tortoise Wash "Caliche" overhangs with desert Tortoise burrows
(NTS Area 6)

Desert Tortoise burrow under "Caliche"
overhang in N W Frenchman Flat
(Area 6 NTS)

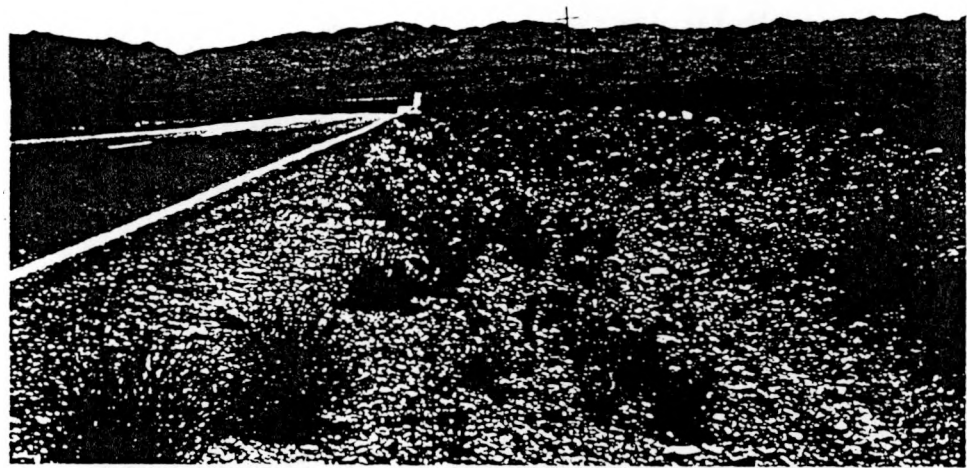
Frenchman FLat "Ecotone" between
Larrea & Airplex Lycium
NTS Area 5



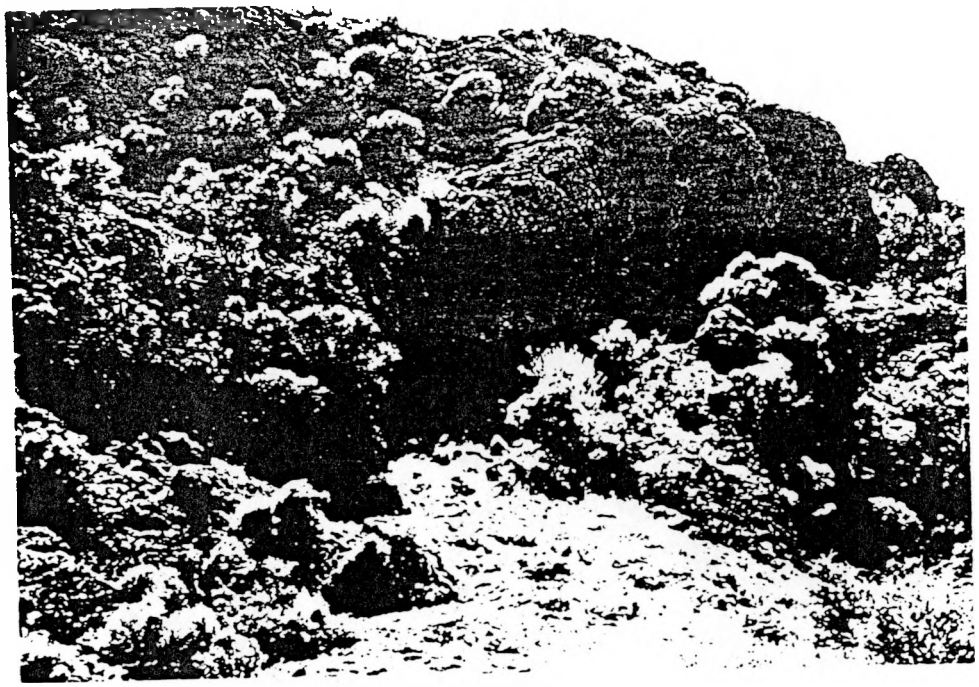
Desert Tortoise habitat in NW Frenchman Flat
(NTS Area 6)



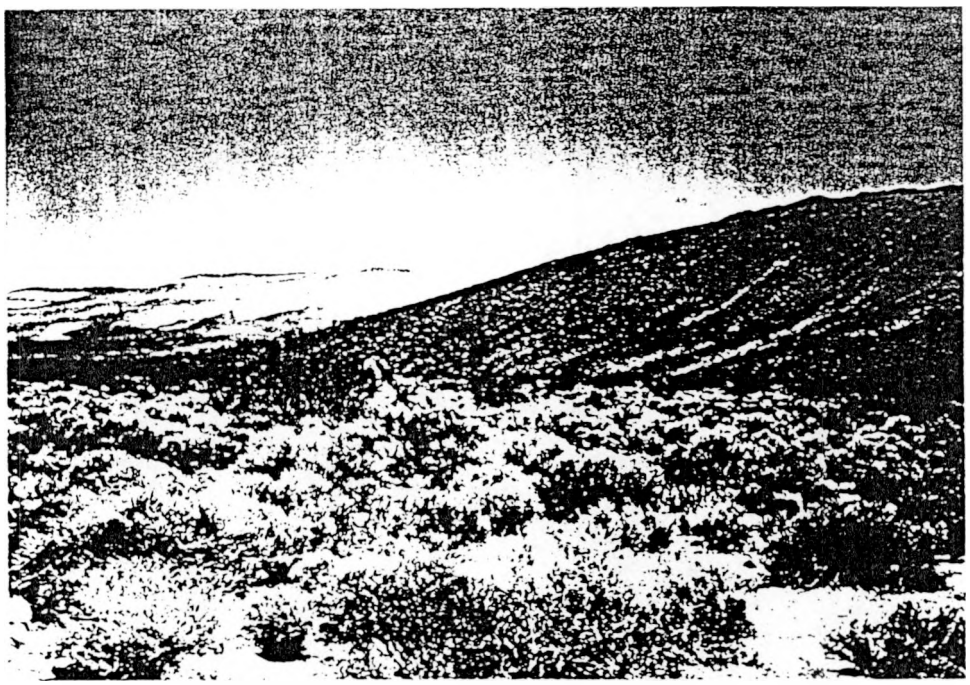
Saddle Mt. Road Tortoise habitat
Larrea widely scattered & Coleogyne.
NTS Area 25



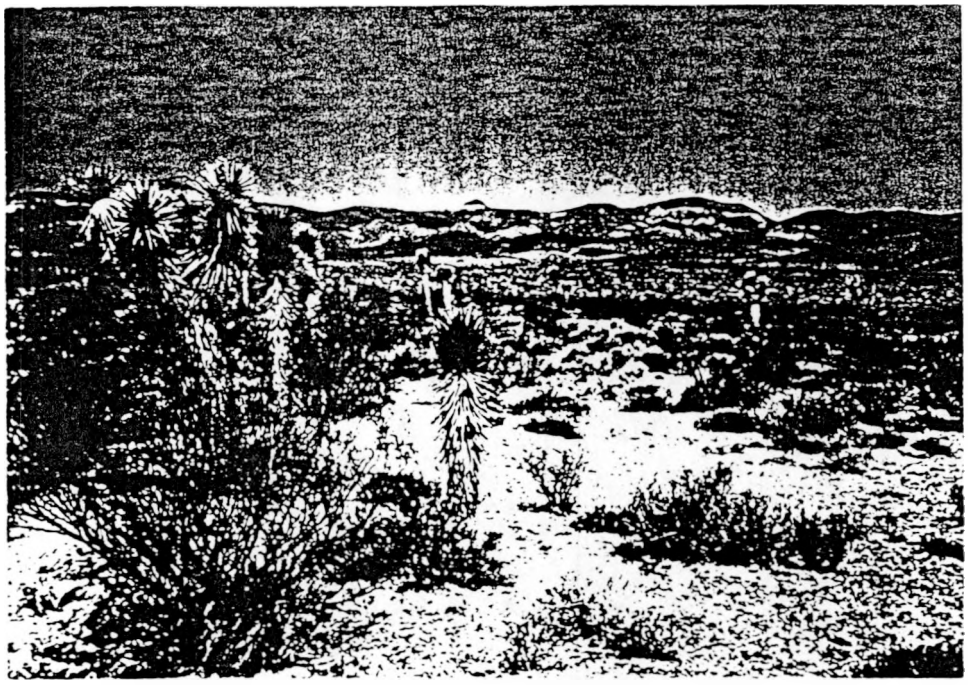
Roadside S. W. of Mercury, NV (NTS)
Illustrating green vegetation during
time of drought Sphaeralcea ambigua



Rock Crerice 4.1 mi SW of Mercury
on South Side of Jackass Flats
Road (NTS Area 22)



Kiwi Mesa E. of Saddle Mt. Rd.
Colegyne with Larrea
NTS Area 25



Red Mt. North of Road drought conditions 25.