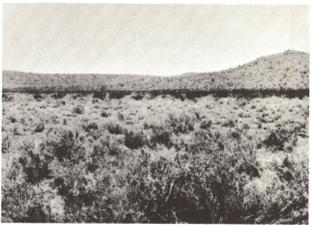


Paloverde-saguaro community near the Superstition Mountains. Approximate altitude, 2,000 feet above mean sea level. Photograph by G. Wharton James [re dated] courtesy of the Southwestern Museum, Los Angeles.



Desert saltbush community (foreground) near Chandler. Dark vegetation at right mid-ground is creosotebush community; vegetation on the hills is the paloverde-saguaro community. Altitude, 1,200 feet above mean sea level. Photograph by H. L. Shantz, 1915.



Creosotebush community north of Casa Grande; Sacaton Mountains in background. Altitude, 1,400 feet above mean sea level. Photograph by R. M. Turner, 1974.

**CHAPARRAL**

**GRASSLAND**

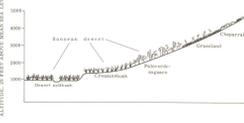
**SONORAN DESERT**

Paloverde-saguaro    Creosotebush    Desert saltbush  
Stippled where    Stippled where    Stippled where  
inferred            inferred            inferred

**DECIDUOUS RIPARIAN FOREST**

Includes saltcedar, mesquite, cottonwood, willow, and other riparian species growing along perennial and ephemeral streams and where ground water is at shallow depth

The vegetation of the Phoenix area falls mainly within the Sonoran desert although small areas of deciduous riparian forest, grassland, and chaparral occur. Vegetation changes with increasing altitude are shown in the following hypothetical profile.



**SONORAN DESERT**

The vegetation of the Sonoran desert occupies the lowest, most arid areas and extends to altitudes of about 3,000 feet where the terrain is gentle and to altitudes of about 4,500 feet on steep southerly slopes. Only the following plant communities are recognized in the map area: Paloverde-saguaro, creosotebush, and desert saltbush.

**Paloverde-saguaro community.**—The paloverde-saguaro community is a complex assemblage composed of small trees, such as foothill paloverde and ironwood; shrubs, such as creosotebush and bursage; and the giant saguaro and several other species of cacti. The paloverde-saguaro community occupies bajadas and mountain slopes above the creosotebush community. Because of the diversity and density of the plant life, this community is regarded as the most scenic of the Phoenix area deserts and, therefore, provides the most desirable home-building sites. The coarse soil in which most of the community grows probably is not an important source of dust; however, once the surface of the soil is disturbed, the community is likely to be invaded by desert-broom, species of mustard, and annual grasses.

**Creosotebush community.**—The creosotebush community occupies lower and more arid areas than the paloverde-saguaro community. Creosotebush is the dominant plant on loamy soils; on sandy soils, dominance is shared by white bursage or a coarse bunchgrass, big galleta. The even stature and spacing of the plants and the floristic simplicity of the community produce a monotonously uniform landscape. The community occupies flat terrain on the slightly tilted plains and lower bajadas surrounding the mountains, which contributes further to the impression of uniformity. The height and spacing of the creosotebush are good indicators of the aridity of the habitat. One study has shown that in gently sloping areas that have low or no drainage channels, 6 inches of precipitation will support about 150 plants per acre, and 12 inches of precipitation will support about 300 plants per acre. Caliche is common in this plant community, particularly where the soil is derived from basalt. The soil is readily airborne, especially where the plant cover is removed or where the natural algal-limpal crust is destroyed.

**Desert saltbush community.**—Desert saltbush, a gray 2- to 5-foot-tall shrub, grows in the fine-grained alluvium that fills the valleys. Desert saltbush formerly was the most widespread plant community in the bottom lands along the Gila and Salt Rivers. Other saltbush species were common, especially cholla, which occurred in sandy soils. Because of the extensive agricultural development, this vegetation now is rare in the bottom lands. Mesquite is a common subdominant species, and the saguaro is a rare member of the community. The areas that support desert saltbush are monotonous in appearance because of the simple uniform composition of the vegetation. The soil may contain excessive salt accumulations; however, the soil is highly productive when it is irrigated and the salts is flushed out. The fine-textured soil is readily airborne.

**GRASSLAND**

The altitude of the grassland ranges from 1,500 to 5,000 feet above mean sea level; above about 3,000 feet altitude the range of the grassland is climatically determined; below 3,000 feet, the grassland occurs mainly in low flat areas subject to seasonal flooding (swales). Typically, there is a sparse to dense grass cover and a scattering of shrubs. Many species of grass occur in the grassland, including several species of grama grass and threeawns; other common grass species are toboggan, Arizona cottontop, and bush mulch. Many grassland shrubs are the same shrubs that occur in moist Sonoran desert environments and include mesquite, catclaw, blue paloverde, and desert hackberry. The Sonoran desert "indicator" species, such as saguaro, foothill paloverde, ironwood, and bursage, are absent.

The most productive grassland may support as many as 30 head of cattle per square mile; however, shrubs are conspicuous in most of the grassland, and, where erosion and grazing have been extreme, grass is rare, and the grassland has become dominated by shrubs. Shrub domination of the grassland is a recent occurrence. The invasion of the grassland by shrubs probably began one or two decades before the end of the 19th century. The time when shrubs increased coincides with two prominent events in the region: (1) the advent of widespread livestock grazing and (2) the increasing aridity caused by a decrease in rainfall and an increase in temperature.

At its upper altitudinal margin, which may be 4,000 feet or higher, the grassland abuts upon the chaparral. In places the grassland intrudes upon the Sonoran desert, extending to altitudes as low as 1,000 feet; where surrounded by the Sonoran desert, the grassland may be dominated by toboggan, but these toboggan stands are often invaded by woody species, such as mesquite, jimmyweed, and stakedweed. Grassland is infrequent in the Phoenix area. Stands of this community too small to map are found on ridge tops and north slopes above an altitude of about 4,000 feet in the White Tank Mountains and the Sierra Estrella.

**CHAPARRAL**

Chaparral is composed mainly of short spineless evergreen shrubs, which grow from 3 to 6 feet tall and have thick leathery leaves. This community ranges in altitude from about 3,500 to 7,000 feet. In most of the area, pointleaf manzanita and scrub oak are the dominant plants. A few deciduous shrubs—mainly squawbush—and a few ferny shrubs—mainly walt-minute bush—are present in the community. The shrubs in the chaparral community recover quickly after fires; some sprout from root crowns, and seeds of others germinate best following fires. During dry seasons, these shrubs burn readily, and the longer the elapsed time since the last fire, the greater the flammability of the vegetation. Urban areas that invade this community face the risk of fire and the possible attendant loss of property and lives.

**DECIDUOUS RIPARIAN FOREST**

Riparian vegetation is present along stream channels and their associated terraces and in areas with shallow ground water. This community is present in some form at all altitudes in the Phoenix area. The plants may be tall and grow in dense stands; the maximum height and density are attained in habitats of abundant moisture. As the altitude changes along a stream channel, a progressive change takes place in the species composition. Near an altitude of 4,000 feet, willow, Goodding willow, cottonwood, Arizona ash, canyon hackberry, and cottonwood are common. As lower altitudes are approached or as the streams debouch from the mountains, these species may be replaced wholly or in part by mesquite, catclaw, desert willow, and blue paloverde. At any given altitude, the deciduous riparian forest includes some plants that are characteristic of the vegetation of the adjacent uplands. Saltcedar, a species introduced by man, has become prominent along most stream channels since the 1930's; saltcedar grows especially densely in the large silt deposits at the head of reservoirs replacing the native seepwillow that would normally grow at such sites.

Included in the deciduous riparian forest community are forests of mesquite, which grow in such artificially created habitats as irrigation overflow areas or areas behind runoff retention dams. This is probably the most rapidly changing community as highway construction, flood-control projects, and other activities of man alter the runoff pattern of the landscape. Where ground-water levels have dropped markedly, the mesquite forest is dying.

This community is an important habitat for wildlife and is a favored nesting site for game birds, such as mourning and whistling doves and Gambel quail.

**SCIENTIFIC EQUIVALENTS FOR COMMON NAMES OF PLANTS AND ANIMALS USED**

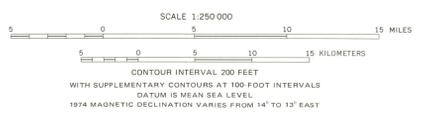
Arizona ash	.....	<i>Fraxinus velutina</i> Torr.
Arizona cottontop	.....	<i>Trichachne californica</i> (Benth.) Chase
Big galleta	.....	<i>Hilaria rigida</i> (Thurb.) Benth.
Blue paloverde	.....	<i>Cercocarpus floridanus</i> Benth.
bursage	.....	<i>Prosopis juliflora</i> Torr.
bush mulch	.....	<i>Muhlenbergia porteri</i> Scribn.
canyon hackberry	.....	<i>Celtis reticulata</i> Torr.
catclaw	.....	<i>Acacia greggii</i> Gray
cholla	.....	<i>Acacia concolor</i> Pursh Nutt.
cottonwood	.....	<i>Populus fremontii</i> Wats.
creosotebush	.....	<i>Larrea tridentata</i> (DC.) Coville
desert-broom	.....	<i>Baccharis arborescens</i> Gray
desert hackberry	.....	<i>Celtis pallida</i> Torr.
desert saltbush	.....	<i>Atriplex polycarpa</i> (Torr.) Wats.
desert willow	.....	<i>Chilopsis linearis</i> (Cov.) Sweet
foothill paloverde	.....	<i>Cercidium microphyllum</i> (Torr.) Rose & Johnston
Goodding willow	.....	<i>Salix gooddingii</i> Ball
grama grass	.....	[various species of <i>Bouteloua</i> ]
ironwood	.....	<i>Oleora rosea</i> Gray
Jimmyweed	.....	<i>Haploappus heterophyllus</i> (Gray) Blake
mesquite	.....	<i>Prosopis juliflora</i> (Swartz) DC.
mustard	.....	[various species of the Cruciferae]
pointleaf manzanita	.....	<i>Arctostaphylos pungens</i> H. B. K.
saguaro	.....	<i>Carnegiea gigantea</i> (Engelm.) Britt. & Rose
saltcedar	.....	<i>Tamarix pentandra</i> Pall.
scrub oak	.....	<i>Quercus dumosa</i> Nutt. var. <i>turbinella</i> (Green) Jepson
seepwillow	.....	<i>Baccharis glutinosa</i> Pres.
stakedweed	.....	<i>Gutierrezia lucida</i> Greene
squawbush	.....	<i>Rhus trilobata</i> Nutt.
threeawn	.....	<i>Panicum Wrightii</i> Wats.
toboggan	.....	[various species of <i>Aristida</i> ]
walt-minute bush	.....	<i>Hilaria mutrix</i> (Buckl.) Benth.
white bursage	.....	<i>Mimosa biuncifera</i> Benth.
willow	.....	<i>Salix</i> sp.

**Animals**

mourning dove	.....	<i>Zenaidura macroura</i> (Linnaeus)
whistling dove	.....	<i>Zenaidura macroura</i> (Linnaeus)
Gambel quail	.....	<i>Lophortyx gambelii</i> Gambel

Vegetation data obtained from maps by the Arizona Game and Fish Department, Oregon State University (Range Resources Program), and from National Aeronautics and Space Administration high-altitude aerial photographs (AMES Research Center); supplementary data obtained from Journal of Agricultural Research, v. 28, no. 8, U.S. Department of Agriculture Soil Survey, and Bureau of Land Management maps.

Base from U.S. Geological Survey  
Phoenix and Mesa 1954-69,  
Ajo 1953-69, Tucson 1956-62



MAP SHOWING VEGETATION IN THE PHOENIX AREA, ARIZONA

By  
R. M. Turner  
1974