Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin

MLRA Explorer Custom Report

D - Western Range and Irrigated Region
30 - Mojave Desert

MLRA 30 - Mojave Desert

Figure 30-1: Location of MLRA 30 in Land Resource Region D

Introduction

This area (shown in fig. 30-1) is in California (59 percent), Nevada (28 percent), Arizona (12 percent), and Utah (1 percent). It makes up about 43,750 square miles (113,370 square kilometers). Lancaster, Palmdale, Victorville, Apple Valley, and Barstow, California, Bullhead City and Kingman, Arizona, and Las Vegas, Nevada, are in this MLRA. Interstate 15 connects Las Vegas and Barstow in this area. Interstate 40 connects Kingman and Barstow. Interstate 40 terminates in Barstow, where it intersects with Interstate 15. The Lake Mead National Recreation Area is along the Colorado River, which forms the border between Nevada and Arizona in this MLRA. The Mojave National Preserve, Joshua Tree and Death Valley National Parks, and numerous wilderness study areas and recreational areas occur in this sparsely populated MLRA. Numerous military reservations are in the area, including Edwards Air Force Base, Fort Irwin, China Lake Naval Weapons Center, Goldstone Communications Complex, and Twenty-Nine Palms Marine Corps Base in California and Nellis Air Force Range and Nellis and Indian Springs Air Force Bases in Nevada.

Physiography

This area is in the Basin and Range Province of the Intermontane Plateaus. Most of the MLRA is in the Sonoran Desert Section of this province. The northern third is in the Great Basin Section, and the southeastern part is in the Mexican Highland Section. A small part of the southwest corner is in the Salton Trough Section. Broad basins, valleys, and old lakebeds make up most of the area, but widely spaced mountains trending north to south occur throughout the area. Isolated, short mountain ranges are separated by an aggraded desert plain. The mountains are fault blocks that have been tilted up. Long alluvial fans coalesce with dry lakebeds between some of the ranges.

Elevation ranges from 282 feet (85 meters) below sea level in Death Valley to 3,950 feet (1,205 meters) above sea level in valleys and basins. The lowest elevation occurring on dry land in the world, 282 feet (85 meters) below sea level, occurs in the Badwater Basin in Death Valley. Some mountain ranges have peaks that exceed 11,100 feet (3,385 meters).

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Northern Mojave-Mono Lake (1809), 40 percent; Lower Colorado-Lake Mead (1501), 23 percent; Southern Mojave-Salton Sea (1810), 17 percent; Central Nevada Desert Basins (1606), 11 percent; and Lower Colorado (1503), 9 percent. The Colorado River crosses the eastern end of this area. Other rivers include the Armagosa and Mojave Rivers.

Geology

Most of this area is underlain by Quaternary (Pleistocene to Recent) alluvial deposits on alluvial fans and valley floors. Recent alluvial fans and remnant alluvial fan terraces typically grade from boulder-strewn deposits and coarse desert pavement near the fan apex to finer grained sands, silts, and clays at the distal ends. Playas are at the lowest elevations in the closed basins. They commonly have eolian accumulations along their downwind fringes. Water from shallow subsurface flow and from surface flows that periodically fill the playa basins evaporates, leaving accumulations of evaporite minerals, including salts and borates. Most of the domestic production of borate minerals and boron in the United States comes from surface and underground mines in this MLRA. Upland areas in the MLRA consist of isolated mountain ranges variably underlain by pre-Cenozoic metamorphic and igneous rocks, Paleozoic carbonates, Mesozoic granitics, and Cenozoic nonmarine sedimentary and volcanic deposits. Valuable deposits of silver, gold, talc, and other commodities occur throughout the area, particularly where granitic magma intruded into older sedimentary rocks.

The geology of this area is dynamic and complex. Cenozoic to Recent tectonic extension and crustal thinning have resulted in granitic and other igneous intrusions, geologically recent volcanism, and normal and detachment faulting and associated seismicity. The tectonic setting of this area includes translational movement occurring along the Garlock Fault and along right-lateral strike-slip faults that comprise the Eastern California Shear Zone.

Climate

The average annual precipitation is 2 to 8 inches (50 to 205 millimeters) in most of this extremely dry MLRA. It exceeds 37 inches (940 millimeters) in some scattered areas at the higher elevations in Nevada and southwestern Utah. Most of the rainfall occurs in the winter months as low-intensity precipitation from Pacific storms that are frontal in nature. High-intensity, convective thunderstorms can occur during the summer, but they contribute little to soil moisture. These storms occur more frequently in the eastern part of the area, where they contribute more to soil moisture. Snow is not very common and usually is on the ground for very short periods at the lower elevations, but the highest elevations may have snow for several weeks at a time in the winter. The average annual snowfall ranges from nearly 0 inches in the lowest deserts to more than 30 inches (760 millimeters) at the highest elevations of the Spring Mountains directly west of Las Vegas.

The average annual temperature ranges from 43 degrees F (6 degrees C) in the highest mountains to 76 degrees F (25 degrees C) in areas along the Colorado River in California, Nevada, and Arizona. Most of the lowest deserts have a growing season of nearly 365 days per year, especially along the Colorado River, whereas other desert areas have a freeze-free period of 200 to 330 days per year. In the higher mountains and the higher valleys in Nevada and extreme southwestern Utah, the freeze-free period typically is about 150 to 180 days per year. In the highest mountains, it is as short as 160 days per year.

Death Valley National Park is considered one of the hottest and driest areas in the Western Hemisphere. The average annual precipitation in the park is 1.96 inches (49.8 millimeters), and the

summer air temperatures can be as high as 134 degrees F (56.7 degrees C).

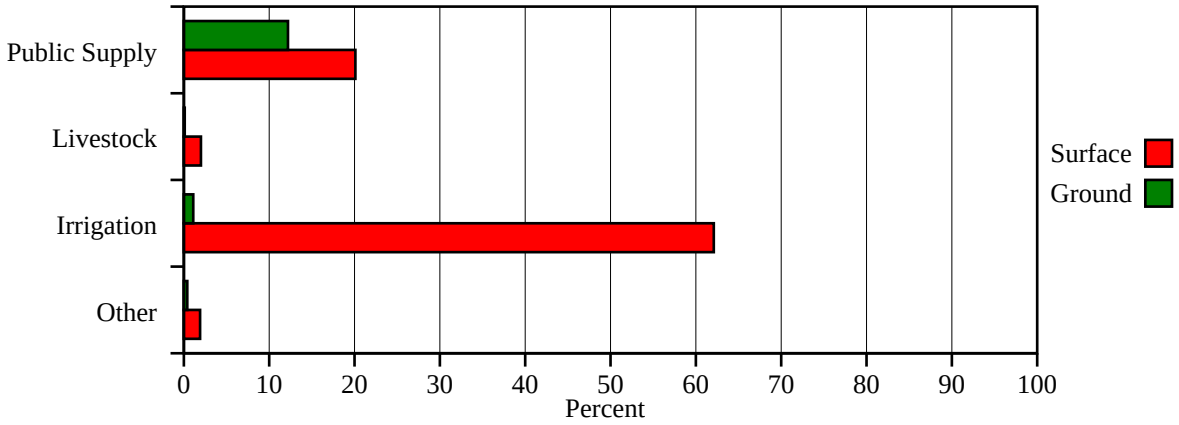
Water

The total withdrawals average 2,565 million gallons per day (9,710 million liters per day). About 14 percent is from ground water sources, and 86 percent is from surface water sources. The low amount of rainfall in this area maintains the desert vegetation, but water is scarce. The public water supply and irrigation water for agriculture are obtained almost entirely from the Colorado and Mojave Rivers. This water is of good quality and is suitable for most uses. Some irrigation water is obtained from large springs in Nevada that typically contain about 1,000 parts per million (milligrams per liter) total dissolved solids.

Ground water is the only water available in Death Valley. In this water, concentrations of total dissolved solids are about 500 parts per million (milligrams per liter) and chloride levels are fairly high. Some public supply, domestic use, and irrigation water is obtained from wells in Nevada and in California. Mountain ranges tend to separate ground water basins (valley fill deposits) in the Mojave Desert. The median value of total dissolved solids is 375 parts per million (milligrams per liter). Total dissolved solids are lowest at the outer edges of the basins, where recharge occurs from surface runoff in the mountains. A level of total dissolved solids of more than 4,000 parts per million (milligrams per liter) is not uncommon under playa lakes in the low parts of the basins.

Ground water in the Las Vegas Valley basin fill aquifer typically exceeds 500 parts per million (milligrams per liter) total dissolved solids. Ground water in the southeast corner of the valley has a total dissolved solids content of more than 2,000 parts per million (milligrams per liter) because of deposits of gypsum and evaporites. This water also contains very high levels of arsenic, boron, and fluoride from natural sources. These contaminants exceed State and Federal standards for drinking water. All of the ground water in this MLRA is very hard.

MLRA 30 Water Use by Category



Category (Surface,Ground): Public Supply (20.1, 12.2), LiveStock (2.0, 0.1), Irrigation (62.1, 1.1), Other (1.9, 0.4)

Soils

The dominant soil orders in this MLRA are Aridisols and Entisols. The soils in the area dominantly have a thermic soil temperature regime, an aridic soil moisture regime, and mixed or carbonatic mineralogy. They generally are well drained to excessively drained, loamy-skeletal or sandy-skeletal, and shallow to very deep. Torriorthents formed in alluvium on fan pediments, alluvial fans, fan aprons, and flood plains (Arizo, Carrizo, Hesperia, and Yermo series) and in residuum and colluvium on limestone and dolomite hills and mountains (St. Thomas series), on volcanic hills and mountains (Sunrock series), and on granite hills and mountains (Dalvord and

Goldroad series). Torripsamments (Cajon series), Haplocalcids (Gunsight, Huevi, Tonopah, and Weiser series), and Petrocalcids (Bard, Cave, and Mormon Mesa series) formed in alluvium on alluvial fans, fan aprons, mesas, and terraces.

Biology

This area supports thin stands of desert vegetation. Creosotebush, white bursage, Joshua-tree, juniper, yucca, cactus, and Mormon tea are the major species. Numerous annual forbs and grasses grow during years of favorable moisture. Saltbush, saltgrass, alkali sacaton, and iodinebush grow on alkali flats. Indian ricegrass, Joshua-tree, desert needlegrass, and galleta grow on sandy soils.

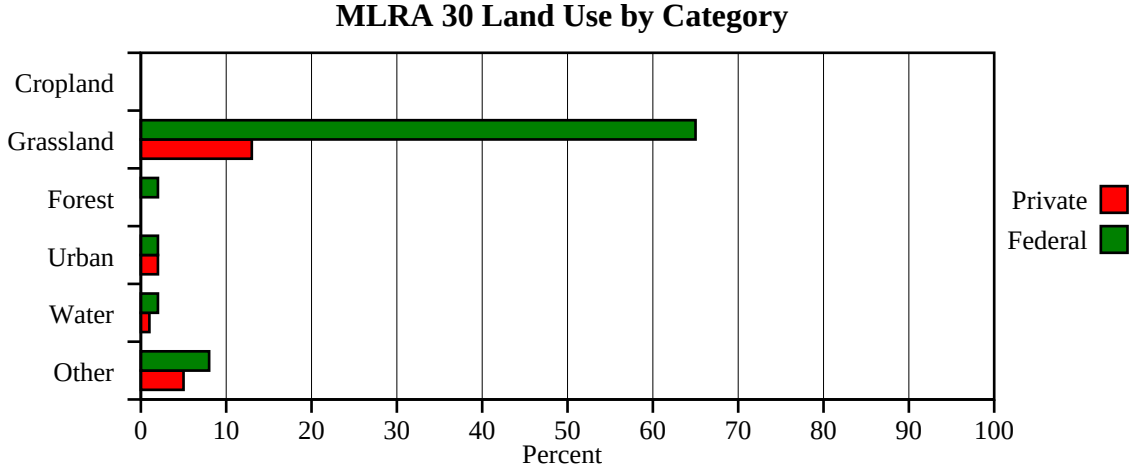
Some of the major wildlife species in this area are antelope, coyote, kit fox, jackrabbit, cottontail, squirrel, roadrunner, Gambel's quail, mourning dove, gopher snake, sidewinder, and rattlesnake. Some water bodies contain various species of pupfish. The desert tortoise, a threatened species, is in parts of this MLRA.Land Use

Land Use

About four-fifths of this area is federally owned. Much of the remainder is owned by local governments. Most of the land has a cover of desert vegetation. The area is used only locally for grazing because of low forage production and the lack of water for livestock. On sites intensively used for recreation, especially where motorcycles and off-road vehicles are driven, the hazards of wind erosion and water erosion are severe. In Utah, where an adequate water supply is available, much of the land that was irrigated cropland or hayland, as well as some of the adjacent rangeland, is undergoing urbanization.

The major soil resource concerns on rangeland are the productivity and sustainability of the soils and the hazards of wind erosion and water erosion. Compaction, soil tilth, management of soil moisture, and wind erosion are the major soil resource concerns on irrigated cropland. In urbanized areas and irrigated fields, differential settling resulting from the content of gypsum in the soils is a management concern, particularly in the area around St. George, Utah.

Conservation practices on irrigated cropland generally include irrigation system improvement, irrigation water management, nutrient management, and pest management. Conservation practices on rangeland include prescribed grazing, development of watering facilities, and erosion control.



Category (Private,Federal): Cropland (0.0, 0.0), Grassland (13.0, 65.0), Forest (0.0, 2.0), Urban (2.0, 2.0), Water (1.0, 2.0), Other (5.0, 8.0)