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

MLRA Explorer Custom Report

C - California Subtropical Fruit, Truck, and Specialty Crop Region
20 - Southern California Mountains
MLRA 20 - Southern California Mountains

Figure 20-1: Location of MLRA 20 in Land Resource Region C

Introduction

This area is entirely in California (fig. 20-1). It makes up about 9,605 square miles (24,890 square kilometers). The towns of Santa Barbara, Fillmore, Ramona, and Banning, California, are in this MLRA. A major portion of the MLRA is made up of national forests, including Los Padres, San Rafael, Angeles, Cleveland, and San Bernardino National Forests. The area has numerous Indian reservations. Interstate 5 crosses the center of the northern half of the area, and Interstate 15 crosses the eastern end of the northern half.

Physiography

The northern half of this area is in the Los Angeles Ranges Section of the Pacific Border Province of the Pacific Mountain System. The northwestern end of the MLRA is in the California Coast Ranges Section of the same province and system. The mountains in this area are called the Transverse Ranges since their trend is almost east and west, almost perpendicular to all other mountain ranges in California. In the northwestern end of the area, the Transverse Ranges merge with the Coast Range. The southern half of this MLRA is called the Peninsular Range and is in the
Lower Californian Province of the Pacific Mountain System. The Sierra Madre, San Gabriel, San Bernardino, Santa Rosa, and Vallecitos Mountains occur in this area, from north to south. The eight Channel Islands also occur in this area.

This MLRA is an area of narrow mountain ranges and broad fault blocks. Elevation ranges from 1,000 to 7,900 feet (305 to 2,400 meters) in most of the area. The highest peaks can exceed 12,000 feet (3,660 meters). A narrow strip along the northern edge of the area is almost at sea level. The strongly sloping to precipitous mountains have unstable slopes and sharp crests. Valleys are typically narrow and are filled with alluvium. Almost all of the valleys have streams with actively eroding banks. The valley floors for Calleguas Creek and the Santa Clara River are wide, and colluvial slopes and alluvial fans have formed at the edges of these valleys.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Southern California Coastal (1807), 71 percent; Central California Coastal (1806), 14 percent; Southern Mojave-Salton Sea (1810), 8 percent; Northern Mojave-Mono Lake (1809), 5 percent; and Tulare-Buena Vista Lakes (1803), 2 percent. The Santa Clara River, the chief source of sand for the beaches to the south, originates in this area. The headwaters of the Los Angeles River also are in this area.

Geology

The mountains in the Transverse Ranges primarily consist of uplifted and tilted Cenozoic marine sediments. The far eastern end of this range consists of Precambrian rocks and Mesozoic volcanics. The Peninsular Range is primarily granite. Mesozoic sediments that have been metamorphosed occur at the margins of the granitic intrusives. The valleys are filled with relatively coarse alluvium since most of the sediments have not moved far from their source.

The Transverse Ranges are very young from a geological perspective and are bounded by the San Andreas Fault. This fault occurs where the North American continental plate is sliding over the Pacific Ocean plate. Earthquakes are common as the two plates slip past each other. Landslides also are a major land-forming process in this MLRA. These frequently occur during rainstorms in winter, when the soils become saturated, and following brush fires after the root systems of the brush decay.

Climate

The average annual precipitation in this area is 8 to 51 inches (205 to 1,295 millimeters), increasing with elevation. Most of the rainfall occurs as low- or moderate-intensity, Pacific frontal storms during winter. Rain can turn to snow at the higher elevations. A little snow may fall in winter, but it does not last. Summers are dry. The average annual temperature is 41 to 66 degrees F (5 to 19 degrees C), decreasing with elevation. The freeze-free period averages 245 days and ranges from 125 to 365 days in most of the area. It decreases in length with elevation. The longest freeze-free period occurs at the lower elevations along the western edge of the area.

The climate on the eight Channel Islands can differ somewhat from the climate on the mainland portions of this MLRA. The southern Channel Islands tend to be warmer and drier than their northern counterparts because the California Current (ocean current) is warmer when it reaches the southern islands. Santa Catalina Island has an average annual precipitation of 12 inches (305 millimeters measured for over 30 years at Avalon) and an average annual summer temperature of 59 to 74 degrees F (15 to 23 degrees C). The average annual winter temperature, recorded at Avalon, ranges from 49 to 63 degrees F (9 to 17 degrees C). The northern islands have a climate that tends to be moderated by fog. They have slightly higher humidity and lower cloud cover than the adjacent coastal mainlands. These northern islands, especially Santa Cruz and Santa Rosa, receive consistent and regular winds prevailing from the northwest. These winds may have higher velocity than the mainland winds.
Water

The total withdrawals average 395 million gallons per day (1,495 million liters per day). About 61 percent is from ground water sources, and 39 percent is from surface water sources. The moderate rainfall provides water for brushland and range and also meets part of the water needs of the adjacent lower areas. Runoff is rapid. All but the larger streams and those that drain from the higher watersheds are dry through the summer and in periods of low precipitation. There are very few manmade or natural lakes in the area. Most of the public water supplies are obtained from surface water diverted from northern California rivers. This water is of good quality and is suitable for drinking after minimal treatment.

Deep sand and gravel deposits in the valleys yield water for livestock and domestic use and for some irrigation. The median level of total dissolved solids in this ground water is near the national drinking water standard of 500 parts per million (milligrams per liter).

Soils

The dominant soil orders in this MLRA are Alfisols, Entisols, Inceptisols, and Mollisols. The soils in the area dominantly have a mesic or thermic soil temperature regime, a xeric soil moisture regime, and mixed mineralogy. They generally are very shallow to deep, well drained or somewhat excessively drained, and loamy or sandy. The dominant soils formed in residuum. Very shallow and shallow Xerorthents (Cieneba and Exchequer series) are on uplands, and deep Xerorthents (Saugus series) are on terraces and foothills. Shallow Haploxerolls (Friant, Sheephead, and Tollhouse series), deep (Crouch series) and moderately deep (La Posta series) Haploxerolls, and moderately deep Rhodoxeralfs (Las Posas series) are on mountain slopes. Deep Haploxeralfs (Fallbrook series) are on hills. Moderately deep Haploxerepts (Vista series) are on hills and mountain slopes.

Biology

This area supports forest, brush, and shrub-grass mixtures. Open stands of Jeffrey pine, Coulter pine, sugar pine, Douglas-fir, incense-cedar, and oak are at elevations above 4,000 feet (1,220 meters). At elevations above 8,000 feet (2,440 meters), subalpine conifer forests occur. They consist of lodgepole pine, limber pine, white fir, and western juniper. The greater part of the area is covered with sparse to dense stands of brush. Scrub oak, juniper, chamise, ceanothus, manzanita, and red shank are typical species. The rangeland soils support naturalized annual and native
perennial grasses and brush. California juniper, big sagebrush, flattop buckwheat, needlegrass, wild oats, soft chess, cheatgrass, and filaree characterize the plant cover on the coarse textured soils. Oaks, Jeffrey pine, and an understory of soft chess, wild oats, needlegrass, blue wildrye, ceanothus, flattop buckwheat, and other brush species grow on the medium textured soils. Creeping wildrye, pine bluegrass, sedges, and native clovers are the major species in the wet meadows.

The vegetative communities on the Channel Islands include native island endemics, such as island hazardia, island malacothrix, cliff malacothrix, live-forever, island manzanita, island scrub oak, island oak, Channel Island tree poppy, island poppy, island buckwheat, island ceanothus, island redberry, island ironwood, and island monkeyflower. Nonendemics play a significant role in the diverse plant life of the islands. These are California sagebrush, lemonade berry, toyon, coyotebrush, needlegrasses, canyon live oak, and Bishop pine.

Some of the major wildlife species in this MLRA include deer, feral hog, mountain lion, bighorn sheep, coyote, bobcat, raccoon, skunk, jackrabbit, gray squirrel, ground squirrel, rattlesnake, California condor, turkey vulture, roadrunner, crow, quail, pigeon, blackbird, dove, heron, and coot. Species of concern include cactus wren, California gnatchatcher, Bell’s vireo, mountain yellow and red-legged frogs, arroyo toad, and southwestern willow flycatcher.

**Land Use**

Less than one-tenth of this area is used for urban development, and the rest is in farms, ranches, or other private holdings. Less than one-fifth of the area is open woodland and brushland used for grazing. More than half of the area has a brush cover that is not grazed. Most of the larger valleys are used for dry-farmed grain and hay, but in some areas fruits are grown under irrigation.

The major soil resource concern is a severe erosion hazard in areas where the plant cover is depleted or destroyed by overgrazing or fire. Preventing or controlling brush fires is a major concern.

The important conservation practices are prescribed grazing, fencing, and water management on rangeland and other grazing land; erosion control, irrigation water management, and nutrient management on urban land; erosion control, irrigation water management, and nutrient management on cropland, including orchards; and thinning and control of competing vegetation on forestland.