

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

21 - Klamath and Shasta Valleys and Basins

MLRA 21 - Klamath and Shasta Valleys and Basins



Figure 21-1: Location of MLRA 21 in Land Resource Region D

Introduction

This area (shown in fig. 21-1) is in California (65 percent) and Oregon (35 percent). It makes up about 11,495 square miles (29,790 square kilometers). The towns of Alturas, Adin, Canby, Yreka, and Fall River Mills, California, and Klamath Falls, Lakeview, Malin, and Merrill, Oregon, are in this MLRA. U.S. Highways 97 and 385 cross the west and east parts of this area, respectively. Numerous national forests are in the MLRA, including the Klamath, Modoc, Fremont, Lassen, Plumas, and Shasta National Forests.

Physiography

This area is in a transition zone between the Basin and Range Province to the southeast, the Cascade and Klamath Mountains to the west and northwest, and the Sierra Nevada Mountains to the south. Most of this MLRA is in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. Small areas in the west and northwest parts of the MLRA are in the Middle Cascade Mountains Section of the Cascade-Sierra Province of the Pacific Mountain System. The Shasta River Valley portion of this MLRA, near Yreka, is along the western edge of the Cascade Range, near the Klamath Mountains, while the Scott River Valley portion is farther west within the Klamath Mountains. The Modoc portion of the MLRA is characterized by a vast volcanic upland interspersed with numerous reservoirs, lakes, and narrow stream valleys that comprise the Pit and Klamath River drainages; hydrologically separate, internally drained basins with lakes or periodically dry lakebeds; and isolated volcanic peaks.

Elevation typically ranges from 2,600 to 4,600 feet (795 to 1,400 meters), but many mountain peaks exceed 7,000 feet (2,135 meters) and a few peaks in Oregon exceed 8,000 feet (2,440 meters). Lava plateaus and many valleys and basins make up most of the area. Steep mountain

spurs and rimrock escarpments surround the plateaus.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Klamath-Northern California Coastal (1801), 47 percent; Sacramento (1802), 36 percent; North Lahontan (1808), 11 percent; and Oregon Closed Basins (1712), 6 percent. The Klamath River originates in this area.

Geology

The Modoc portion of this MLRA is underlain by Cenozoic volcanic rocks. Surface exposures are dominated by Miocene to Pleistocene “flood basalts” and rhyolite ash. Andesites, volcanic mudflow deposits, and rhyolitic intrusives also occur. Volcanism and the extrusion of flood basalts occurred as a result of crustal thinning and extension associated with development of the Basin and Range. Valleys are typically underlain by recent alluvial, lacustrine, and dry lakebed (playa) deposits. Pliocene to Pleistocene nonmarine sedimentary deposits (including fan and stream terrace deposits and old lake deposits) underlie portions of many of the basins.

The geology of the Shasta River Valley portion of this MLRA is complex, reflecting its location between the Klamath Mountains and the High Cascades. Uplands in the northern and western parts of the area are underlain by pre-Cenozoic metamorphics and sedimentary formations, while the eastern portion is dominated by Tertiary and Quaternary volcanics.

The Scott River Valley portion of this MLRA is underlain by alluvium and alluvial terrace deposits derived from the nearby Klamath Mountains, which are locally composed of pre-Cenozoic metamorphic, granitic, and ultramafic rocks.

Climate

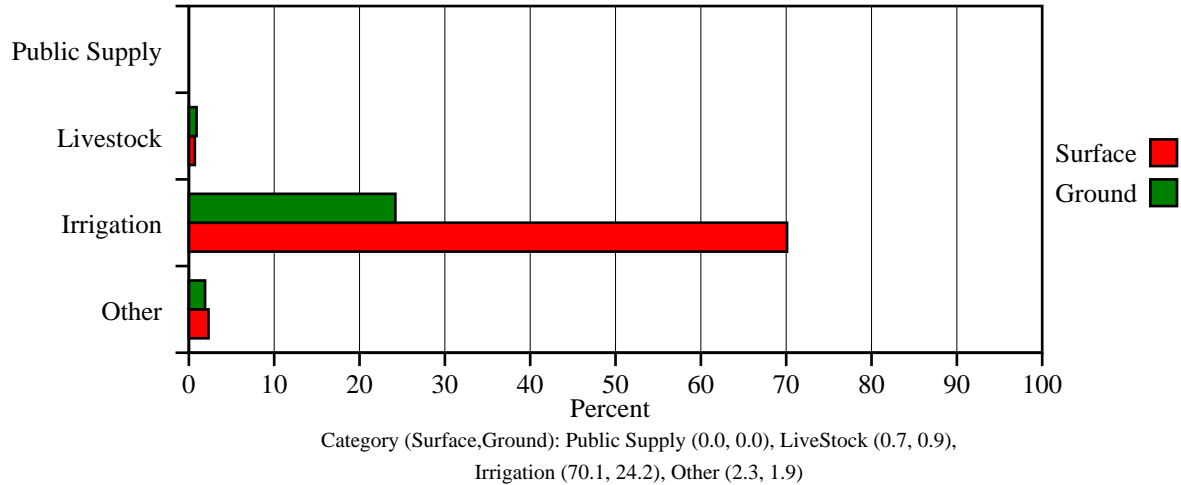
The average annual precipitation is 12 to 30 inches (305 to 760 millimeters) in most of this area. The drier areas can receive as little as 9 inches (230 millimeters). In small areas at high elevations on the western and southwestern edges of this MLRA, the average annual precipitation is much higher, 30 to 58 inches (760 to 1,475 millimeters). Higher precipitation zones also occur in the scattered mountain ranges throughout the rest of this area. Most of the rainfall occurs as low- or moderate-intensity, Pacific frontal storms during the winter. At the higher elevations, rain generally turns to snow. Snow may fall at the lower elevations in winter but does not last. Summers are dry. The average annual temperature is 39 to 52 degrees F (4 to 11 degrees C). The freeze-free period averages 130 days and ranges from 70 to 185 days.

Water

The total withdrawals average 1,470 million gallons per day (5,565 million liters per day). About 27 percent is from ground water sources, and 73 percent is from surface water sources. The somewhat limited precipitation and the lack of sufficient water storage limits the supply of water for agriculture. In the narrower valleys, the irrigated land is in areas on alluvial fans where surface runoff from the mountains can be diverted to fields. Some terraces along the major drainages also are irrigated. The surface water is of excellent quality and is suitable for drinking.

Ground water is scarce in the dense lava rocks underlying much of the area. On sites underlain by the more porous rocks, the supplies of ground water are large but are mostly untapped. Some irrigation water is obtained from fracture and rubble zones and layers of sand and gravel within the lava. Also, some is obtained from the basin fill aquifers between the mountain ranges. Little information about the quality of the ground water is available, except that the water is suitable for irrigation.

MLRA 21 Water Use by Category



Soils

The dominant soil order in this MLRA is Mollisols. Small areas of Inceptisols and Histosols are in the basins. The soils in this area dominantly have a mesic or frigid soil temperature regime, a xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are well drained, but they may be poorly drained or very poorly drained in the basins. They generally are loamy, clayey, or sandy and are shallow to very deep. Argixerolls formed in residuum (Lorella and Orhood series) and in residuum mixed with loess and/or volcanic ash (Devada, Royst, and Woodcock series) on plateaus, hills, and mountains. Haploxerolls (Fordney series) formed in sandy alluvium on terraces. Haploxerolls (Petescreek series) formed in residuum on hills and mountains. Paleixerolls (Booth series) formed in colluvium on plateaus, hills, and mountains. Durixerolls (Salisbury series) formed in old alluvium on terraces. Humaquepts (Tulana series) formed in lacustrine sediments on lacustrine bottoms. Haplohemists (Lather series) formed in organic material in marshes.

Biology

This area has a cover of shrubs interspersed with annual and perennial grasses. Nevada bluegrass, Sandberg bluegrass, Idaho fescue, and bluebunch wheatgrass are the major species. The basins and meadows support sedges, wiregrass, slender wheatgrass, creeping wildrye, and bluegrass. Sagebrush, rabbitbrush, bitterbrush, and mountain mahogany are the main shrubs. Western juniper is common, and scattered ponderosa pine trees are on the lower foothills. The higher elevations support ponderosa pine, Douglas-fir, white fir, and California red fir with an understory of bitterbrush and ceanothus.

Some of the major wildlife species in this area are elk, mule deer, antelope, golden eagle, red-tailed hawk, prairie falcon, great horned owl, barn owl, sage grouse, and chukar.

Land Use

Most of the privately and publicly owned land in this area is grazed. A small acreage is used for irrigated potatoes, grain, seed crops, hay, or pasture or for dry-farmed grain. Trees are harvested for lumber in some forested areas.

The major soil resource concerns on cropland are wind erosion, water erosion, maintenance of the content of organic matter and productivity of the soils, conservation of soil moisture, and the quality of irrigation water. The hazard of water erosion is slight in most of the basin areas but can

be high in the steeper areas if the surface is bare. In some areas the hazard of wind erosion is high, especially when the surface is disturbed during the period of highest wind velocities. Maintaining good drainage is the principal management concern in the valley basins. Some sites should be protected from overflow, and others are affected by alkali. Overgrazing and the invasion of undesirable species are management concerns on rangeland. Surface compaction and sedimentation of streams are the major management concerns on forestland.

Conservation practices on cropland generally include irrigation water management, water-control structures, irrigation system improvements, and nutrient management. Conservation practices on rangeland and pasture generally include prescribed grazing, water developments, and brush management.

Conservation practices on forestland generally include forest site preparation, forest stand improvement, and forest trails and landings. These practices help to control compaction, the erosion caused by concentrated flow, and sediment delivery to streams.

MLRA 21 Land Use by Category

