

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
23 - Malheur High Plateau

MLRA 23 - Malheur High Plateau



Figure 23-1: Location of MLRA 23 in Land Resource Region D

Introduction

This area (shown in fig. 23-1) is in Oregon (67 percent), Nevada (25 percent), and California (8 percent). It makes up about 22,895 square miles (59,320 square kilometers). It has no major cities. The only major highway in this area, U.S. Highway 395, crosses the southern tip of the part of the area in California. The Sierra Army Depot Military Reservation occurs in this MLRA. Malheur Lake and numerous wilderness study areas and national wildlife refuges also occur in this MLRA.

Physiography

All of this MLRA is on the Intermontane Plateaus. The southern two-thirds of the area is in the Great Basin Section of the Basin and Range Province. Almost all of the northern third of the area is in the Harney Section of the Columbia Plateaus Province, and a small part of the northern third is in the Payette Section of the Columbia Plateau Province. Elevation ranges from 3,900 to 6,900 feet (1,190 to 2,105 meters) in most of the area, but it exceeds 9,000 feet (2,745 meters) on some mountains. This area consists primarily of nearly level to moderately steep plateaus, basins, and valleys bordered by long, gently sloping alluvial fans. Occasional north-south trending fault-block mountain ranges separate the basins. Volcanic plateaus rise sharply above the valleys. Drainage patterns have not yet been established on the youngest lava plateaus.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Oregon Closed Basins (1712), 58 percent; Black Rock Desert-Humboldt (1604), 23 percent; North Lahontan (1808), 9 percent; Middle Columbia (1707), 6 percent; and Middle Snake (1705), 4 percent. The area has no major rivers. It consists mostly of closed basins.

Geology

Most of this area consists of young andesite and basalt layers (6 to 17 million years old). Older volcanic rocks and marine and continental sediments are exposed in the mountain ranges. These north-south trending ranges are uplifted fault blocks. The basins between the mountains and lava plateaus are filled with a mixture of Quaternary alluvium, continental sediments, and volcanic ash. The long alluvial fans consist of coarser alluvium near the mountains and fine grained sediments at their distal ends. Playas or shallow lakes are common in the lowest areas within the closed basins.

Climate

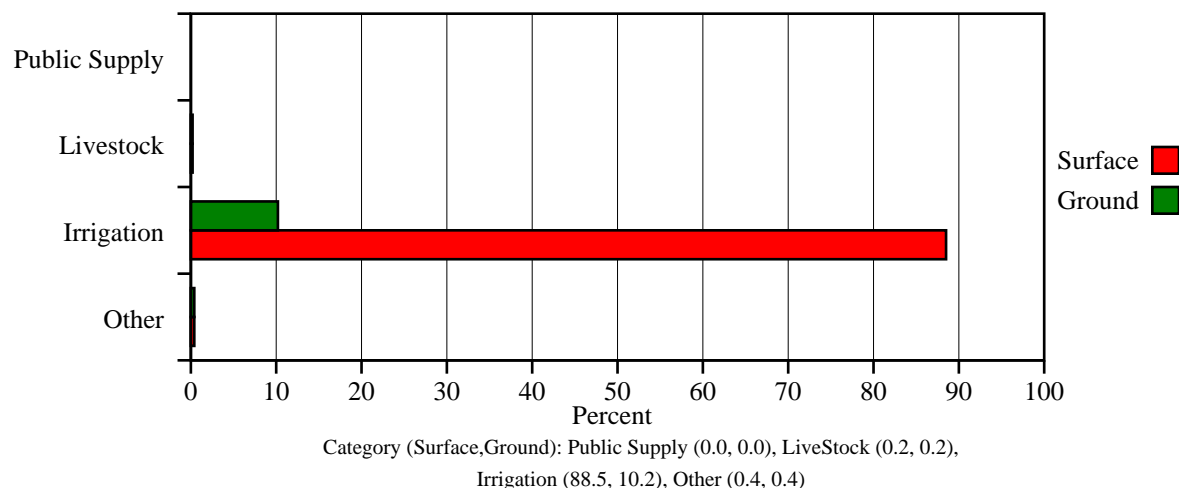
In most of this area, the average annual precipitation is 6 to 12 inches (150 to 305 millimeters). It is as much as 57 inches (1,450 millimeters), however, in the mountain ranges. The precipitation is fairly evenly distributed throughout fall, winter, and spring but is low in summer. Snow can occur throughout the area in winter. The average annual temperature is 39 to 52 degrees F (4 to 11 degrees C), decreasing with elevation. The freeze-free period averages 105 days and ranges from 35 to 175 days, decreasing in length with elevation.

Water

The total withdrawals average 1,080 million gallons per day (4,090 million liters per day). About 11 percent is from ground water sources, and 89 percent is from surface water sources. Surface water is scarce, except in areas at the higher elevations where precipitation is greater. Streamflow is erratic and depends mostly on runoff from melting snow. Most of the water is used for irrigating grain and hay for cattle feed. Irrigated areas are on alluvial fans and pluvial lake terraces. Surface water from mountain runoff is generally of excellent quality. As the water seeps through the alluvial fan deposits, salts left in the soil as a result of evapotranspiration are dissolved. In the wetter years, when springs discharge this seepage water at the toe of the fan, the water quality is degraded. As the surface water evaporates on its path to a playa, the salt concentrations increase, making the water unsuitable for all uses.

The large supply of ground water in the gravel- and sand-filled valleys and basins is mostly untapped. Little is known about the quality of this ground water in California and Nevada. The basin fill deposits in Oregon have soft to moderately hard water with a median concentration of about 170 parts per million (milligrams per liter) total dissolved solids. The ground water near the alluvial fans typically has lower levels of total dissolved solids than the ground water near playas. Wells closer to the playas typically contain 1,000 or more parts per million (milligrams per liter) total dissolved solids. The volcanic rocks are considered to be aquifers, but they are little used and not much is known about the range of water quality. Water can be found in layers of rubble, cracks, and tubes within the lava. Layers of alluvium and continental sediments occurring between the andesite and basalt flows also may contain ground water.

MLRA 23 Water Use by Category



Soils

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. The soils on uplands generally are well drained, loamy or clayey, and shallow or moderately deep. The soils in basins generally are poorly drained to well drained, loamy or clayey, and very deep. Locally, large areas have an ashy particle-size class and glassy mineralogy.

Shallow Argidurids (Actem series) formed in residuum and colluvium on hills and tablelands. Moderately deep Argidurids (Brace series) formed in residuum and alluvium on structural benches and foothills. Shallow Haplargids (Anawalt and Coztur series) formed in residuum on hills, mountains, and plateaus. Moderately deep Haplocambids (Felcher series) and shallow Haplodurids (Raz series) formed in residuum and colluvium on mountains and plateaus. Moderately deep Haplocryolls (Baconcamp series) formed in colluvium on hills and mountain slopes. Argixerolls (shallow Devada, Ninemile, and Wylo series and moderately deep Bucklake series) formed in residuum on hills, plateaus, and mountain slopes. Moderately deep Palexerolls (Carryback series) formed in colluvium and residuum on plateaus. Very deep Endoaquolls (Fury and Ozamis series), Natrargids (Ausmus series), and Halaquepts (Lolak and Reese series) formed in lacustrine sediments on lake plains. Very deep Haplocambids (Catlow and Enko series), Natrargids (Poujade series), and Paleargids (Spangenburg series) formed in alluvium on lake terraces.

Biology

This area supports a shrub-grass association. Big sagebrush, low sagebrush, rabbitbrush, needlegrasses, and squirreltail are common on the plateaus and mountains. Big sagebrush and basin wildrye are on bottom lands. Spiny hopsage and bud sagebrush are on the drier sites. Greasewood, saltbush, and saltgrass grow on salty and sodic soils in basins. Silver sagebrush grows on moist sites that have intermittent water, such as areas along the margin of playas. Western juniper is on rocky sites. Aspen groves occur on moist sites at high elevations, and isolated stands of Douglas-fir and whitebark pine also occur in the mountains.

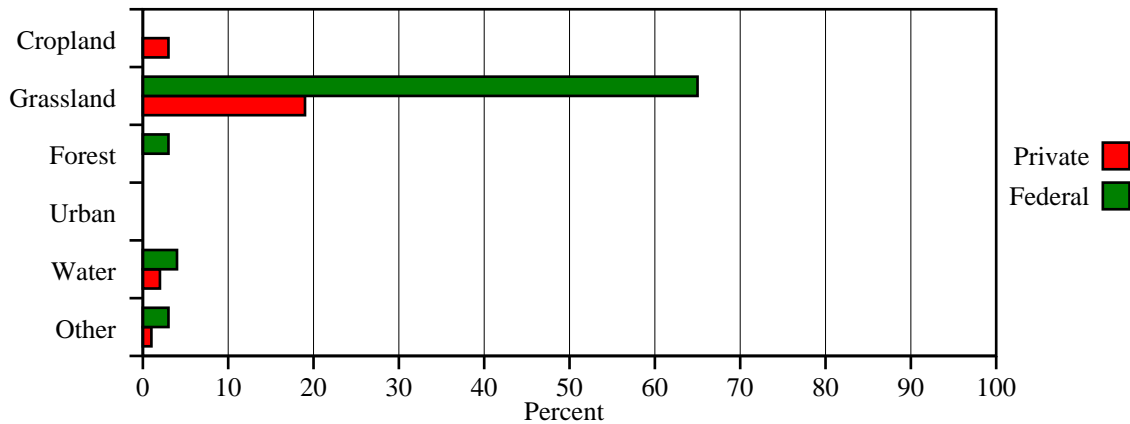
Some of the major wildlife species in this area are elk, mule deer, bighorn sheep, antelope, migratory birds and waterfowl, golden eagle, red-tailed hawk, prairie falcon, great horned owl, long-eared owl, common barn owl, sage grouse, chukar, meadowlark, and vesper sparrow.

Land Use

About 75 percent of this area is federally owned. Native range vegetation covers much of the area. Livestock production on rangeland is the principal agricultural enterprise. A small percentage of the area is used for irrigated alfalfa hay, grain, hay for winter feed, or pasture. Pasture and hay provide seasonal feed for livestock. Small areas on the upper mountain slopes are forested.

The major soil resource concerns are control of wind erosion and reduction of the content of salts and sodium in the areas of soils used for the production of crops or hay. Conservation practices on cropland generally include irrigation water management, crop residue management, and toxic salt reduction. Prescribed grazing, brush management, and development of watering facilities are important conservation practices on rangeland.

MLRA 23 Land Use by Category



Category (Private,Federal): Cropland (3.0, 0.0), Grassland (19.0, 65.0), Forest (0.0, 3.0),
Urban (0.0, 0.0), Water (2.0, 4.0), Other (1.0, 3.0)