

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

MLRA Explorer Custom Report

Z - Caribbean Region

271 - Semiarid Mountains and Valleys

MLRA 271 - Semiarid Mountains and Valleys

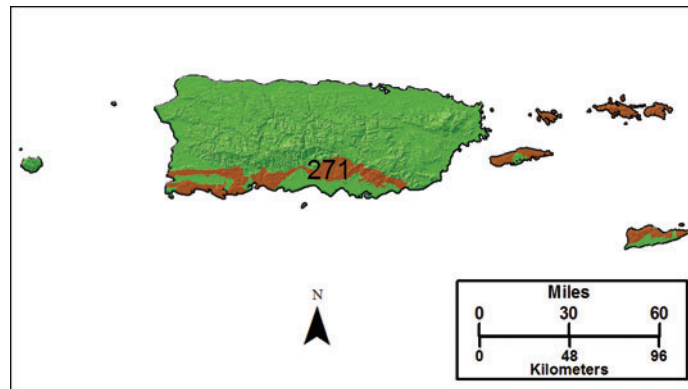


Figure 271-1: Location of MLRA 271 in Land Resource Region Z

Introduction

This area (shown in fig. 271-1) is in Puerto Rico (71 percent), the Virgin Islands (20 percent), and the outlying islands of Vieques and Culebra (9 percent). It makes up about 525 square miles (1,365 square kilometers). From west to east, the towns of Cabo Rojo, Lajas, Guanica, Yauco, Peñuelas, Juana Díaz, Coamo, Salinas, Guayama, and Arroyo, Puerto Rico, are in this area. All of St. John and St. Thomas and the towns of Christiansted and Frederiksted, St. Croix, are in the area.

Physiography

The part of this area in Puerto Rico consists of semiarid mountains that form the southern slopes of the central mountain chain (Cordillera Central), which extends from east to west across the length of the island. Slopes generally range from moderately steep to very steep. They are nearly vertical in the northernmost part of the area. Elevation ranges from 160 to 1,300 feet (50 to 395 meters).

The part of this area in the Virgin Islands and in the two outlying islands is mountainous. A ridge of mountains characterizes the northeast and northwest corners of St. Croix. Mount Eagle, the highest peak in St. Croix, is 1,165 feet (355 meters) high. St. Thomas and St. John are characterized by irregular coastlines, many bays, steep slopes, and small drainage areas. Crown Mountain, the highest peak in St. Thomas, is 1,556 feet (474 meters) above sea level. Bordeaux Mountain, the highest peak in St. John, is 1,297 feet (395 meters) above sea level.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Puerto Rico (2101), 71 percent; Virgin Islands (2102), 20 percent; and Caribbean Outlying Islands (2103), 9 percent. All of the streams in the part of this area in Puerto Rico flow to the south; none are perennial.

Geology

The geology of this MLRA is very diverse. The part of the area in Puerto Rico consists of steep mountainsides composed mainly of Cretaceous rocks. The lower mountains consist of Tertiary limestone. Ultrabasic rocks (serpentinite) occur in Sierra Bermeja, in southwestern Puerto Rico. Together with the chert fragments in the same area, they constitute the oldest rocks on the island. They formed in the late Jurassic period, probably 150 million years ago. Most of the part of the MLRA in Puerto Rico has a mixture of limestone and volcanic rocks in the higher, steeper areas. Some igneous intrusives also occur in the parts of the MLRA in Puerto Rico and the outlying

islands. Volcanic rocks are dominant, however, in the higher parts of the Virgin Islands and the other outlying islands around Puerto Rico.

Climate

The average annual precipitation in the part of this MLRA in Puerto Rico is 35 to 45 inches (890 to 1,145 millimeters) near the coast and is as much as 60 inches (1,525 millimeters) in the higher inland areas. Much of the rainfall is lost through evapotranspiration, and the year-round air temperatures are high. Thus, the climate is semiarid. Most of the rainfall occurs in the afternoons as frequent trade-wind showers from May to October, but tropical storms and hurricanes can produce high amounts of rain that can result in widespread flooding problems. This part of the MLRA is typically drier from December through March, rainy during April and May, semidry in June and July, and wet from August through November.

The average annual precipitation in the part of this MLRA on St. Croix is 40 to 50 inches (1,015 to 1,270 millimeters), decreasing nearer the coast. St. Thomas is the driest of the Virgin Islands. Its annual precipitation is 35 to 42 inches (890 to 1,065 millimeters). St. John is the wettest island. Its annual precipitation is 40 to 55 inches (1,015 to 1,395 millimeters). No records are kept on the annual precipitation in the outlying islands. The annual amount on these islands is probably similar to the amount on St. Croix.

The average annual temperature in this MLRA is about 79 degrees F (26 degrees C). The difference between the temperature in summer and that in winter is less than 8 degrees F (5 degrees C). This MLRA is freeze-free.

Water

The total withdrawals average 75 million gallons per day (285 million liters per day). About 42 percent is from ground water sources, and 58 percent is from surface water sources. Rainfall provides an ample supply of surface water in the part of this area in Puerto Rico, but most of the precipitation is lost through evapotranspiration before it can reach streams or the ground water table. Manmade lakes are used to trap and store runoff water for public supply and some irrigation. The area has no perennial streams. Fecal coliform levels generally are high during periods when the streams are flowing. During dry periods, the effluent from sewage treatment plants typically makes up almost all of the flow in streams near population centers.

The South Coastal Plains aquifer, one of the two most important aquifers in Puerto Rico, underlies most of the southern half of this MLRA. This alluvial deposit generally holds calcium bicarbonate water. Along the coast, however, the intrusion of saltwater changes the ground water to a sodium chloride type. The surface water and ground water generally meet the recommended standards for all uses. The ground water is very hard, and the highest concentrations of nitrate on the island occur in the South Coastal Plains aquifer. Nitrate levels are still below the limit allowed in drinking water (10 parts per million or milligrams per liter).

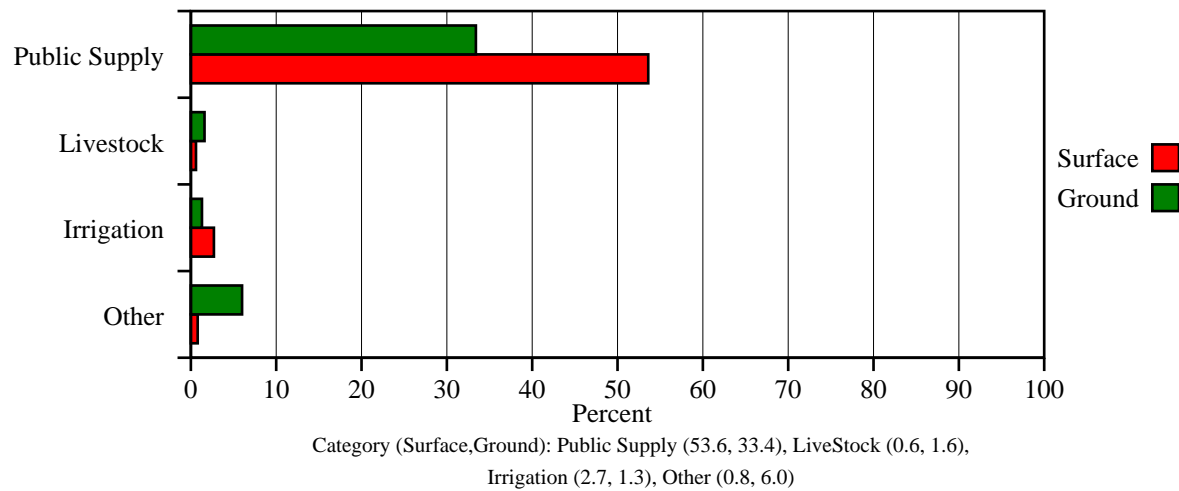
Alluvial deposits in valleys and volcanic rocks are the primary sources of ground water in the northern half of the part of this MLRA in Puerto Rico. Narrow valley floors and steep volcanic rock slopes adjacent to the valleys limit the quantities of available ground water in these two aquifers. Most of the ground water used in this area is from the South Coastal Plains aquifer.

In the part of this MLRA on the Virgin Islands and on the outlying islands, streams do not flow throughout the year and the amount of available ground water in the volcanic rocks is low. Thus, the freshwater needs on these islands typically exceed the annual supplies. Rooftop catchments and seawater conversion plants are used to provide almost all of the potable water on the islands. Contamination from sewage effluent and septic systems creates water-quality problems.

The limited quantities of ground water in the volcanic rock aquifers on the Virgin Islands are primarily used for domestic purposes. This water is of better quality than the ground water in the calcareous sediments of the King's Hill aquifer underlying the center of St. Croix. The levels of

total dissolved solids (especially chloride), nitrates, and bacteria from fecal sources are much lower in the volcanic rock aquifer.

MLRA 271 Water Use by Category



Soils

The dominant soils in the part of this MLRA in Puerto Rico are Mollisols, Inceptisols, or Alfisols. The dominant suborders are Ustolls and Ustepts. The soils have an isohyperthermic soil temperature regime, an ustic soil moisture regime, and mixed mineralogy. They are underlain by volcanic rocks. They generally are shallow or moderately deep and are clayey. Well drained, shallow Haplustolls (Descalabrado series) are dominant throughout this part of the MLRA. Well drained, moderately deep Dystrustepts (Callabo series) and Haplustolls (Jacana series) are on side slopes and footslopes. Of minor extent are shallow, well drained Haplustalfs (Guayama series) on steep side slopes.

The dominant soils in the part of this MLRA in the Virgin Islands are Mollisols or Inceptisols. The dominant suborders are Ustolls and Ustepts. The soils have an isohyperthermic soil temperature regime, an ustic soil moisture regime, and mixed mineralogy. They are underlain by volcanic rocks. They generally are shallow or moderately deep, well drained clay loams. Haplustolls (Annaberg-Cramer complex and Fredriksdal-Susannaberg complex) and Haplustepts (Victory-Southgate complex) are dominant throughout this part of the MLRA.

Biology

The dominant plant species in this MLRA are hurricanegrass, guineagrass, Mexican bluegrass, buffelgrass, southern sandbur, Egyptian grass, Kleberg's bluestem, flame tree, white oak, goosegrass, sprawling panic, wiregrass, threeawn, coconut tree, slender gramagrass, lovegrass, coconut paspalum, tamarind tree, sweet acacia, maga tree, whorled dropseed, para grass, pata conejo, knotroot bristlegrass, purslane, cockspur, sensitive plant, tautaba, mallow, butterfly pea, century plant, leucaena, giant milkweed, croton, black olive, turpentine, basora, rattlebox, mesquite, Christmas tree, damiana, guayacan tree, and tantan.

Some of the major wildlife species in this area are Adelaide's warbler, barn swallow, Caribbean elaenia, cattle egret, iguana, lesser Antillean pewee, lizards, Puerto Rican lizard cuckoo, mourning dove, northern mockingbird, ovenbird, prairie warbler, Puerto Rican nightjar, sparrow hawk, yellow-faced grassquit, West quail dove, Puerto Rican bullfinch, green-throated carib, brown pelican, common moorhen, masked duck, Puerto Rican woodpecker, Puerto Rican emerald hummingbird, Puerto Rican tody, Puerto Rico vireo (Bien-te-veo), Puerto Rican flycatcher (Jufí),

yellow-shouldered blackbird (Mariquita de Puerto Rico), and donkeys.

Land Use

About 43 percent of the area is pasture, which supports mainly adapted native grasses. About 30 percent is natural forest; 8 percent supports improved species of such hardwoods as mahogany, teak, and eucalyptus.

The mountainous region in northwestern St. Croix, the largest of the Virgin Islands, supports a fairly dense tropical forest. The other parts of the MLRA support a dense growth of thorny bushes and cacti, which generally grow in semiarid regions having low rainfall and high evaporation rates. Although the soils in the Virgin Islands have severe limitations that preclude their use as sites for dwellings, urban development is significant in this MLRA. Urban expansion is becoming a land use problem.

The major soil resource concerns are water erosion (sheet and rill and ephemeral gully or concentrated flow), maintenance of the content of organic matter and tith of the soils, and water infiltration. Water-quality concerns include surface water contaminants derived from organic and inorganic fertilizers. Water-quantity concerns include water management on irrigated land.

Conservation practices on cropland generally include conservation crop rotations, contour farming, grassed waterways, crop residue management systems (especially no-till systems), and nutrient and pest management. Conservation practices on pasture generally include fencing, pasture and hay planting, watering facilities, and prescribed grazing.

MLRA 271 Land Use by Category

