

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

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MLRA Explorer Custom Report

Z - Caribbean Region

272 - Humid Coastal Plains

## MLRA 272 - Humid Coastal Plains

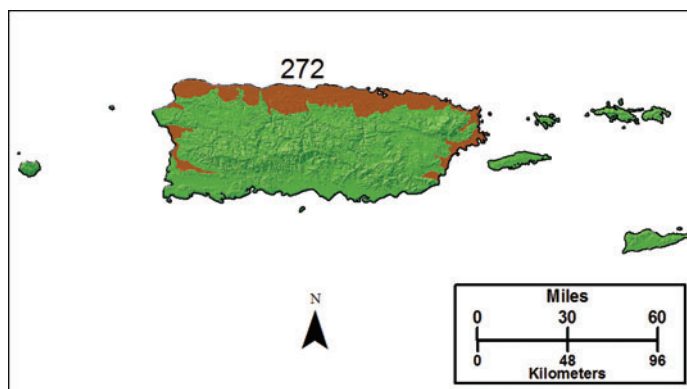


Figure 272-1: Location of MLRA 272 in Land Resource Region Z

### Introduction

This MLRA is primarily on the northern coast of Puerto Rico, but it includes small areas on the east and west coasts (fig. 272-1). It makes up about 965 square miles (2,500 square kilometers). From west to east, the cities of Isabela, Quebradillas, Camuy, Hatillo, Arecibo, Barceloneta, Manati, Dorado, Toa Baja, Toa Alta, Bayamón, Guaynabo, San Juan, Carolina, and Loíza are in the part of this MLRA on the northern coast. The cities of Aguadilla and Mayagüez are in the part on the west coast, and the cities of Fajardo and Ceiba are in the part on the east coast. More than half of Puerto Rico's population lives in this MLRA. Puerto Rico State Road 2 connects San Juan and Mayagüez, and Puerto Rico State Road 3 connects San Juan and Ceiba. The "Expreso de Diego," Puerto Rico Highway 22, connects San Juan and Arecibo.

### Physiography

This area is divided into two distinct zones. One zone consists of the flat alluvial plains and terraces along the coast, and the second consists of the irregular features of karst limestone in inland areas. In the northwest corner of the MLRA, limestone forms a sharp cliff rising almost 200 feet (60 meters) a short distance inland from the beach. In the rest of the area, the karst is eroded and is expressed as either low, rolling hills or steep-sided, isolated hills. Longitudinal depressions parallel the coast from Arecibo to Sabana Seca. Swamps and lagoons have developed in these depressions. Elevation ranges from sea level to 2,300 feet (0 to 700 meters).

The only major Hydrologic Unit Area (identified by a four-digit number) that makes up this MLRA is Puerto Rico (2101). Streams generally flow to the north in this area. Most of the drainage in the karst zone is underground.

### Geology

The mountainous part of this MLRA consists of a series of limestone formations that originated in a marine basin north of the island during the Oligocene to Miocene epoch of the Tertiary period (30 to 15 million years ago). After the uplift of these sediments to their present elevation, dissolution of the calcareous rocks produced a distinct karst topography. The limestones of the north coast account for nearly one-fifth of Puerto Rico's land area.

The flat part of this MLRA consists of various alluvial sediments of Quaternary age. The most extensive of these are the so-called "Blanket Deposits," which developed during the late Tertiary and early Quaternary as a result of the erosion of the interior of the island following the uplift.

These deposits consist of sand, silt, and clay in various proportions.

The small areas on the east and west coasts are made up of alluvial flood plains and wave-cut coastal terraces that consist of river alluvium. Lower lying swamps and marshes are near the coast and adjacent to many of the larger rivers. An extensive swampy area is east of Arecibo on the north coast.

## Climate

The average annual precipitation in most of this area is 60 to 65 inches (1,525 to 1,650 millimeters), increasing with elevation. 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 local flooding and landslide problems. The area 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 temperature is about 77 degrees F (25 degrees C). There is little difference in air temperature between the summer and winter seasons. This MLRA is freeze-free.

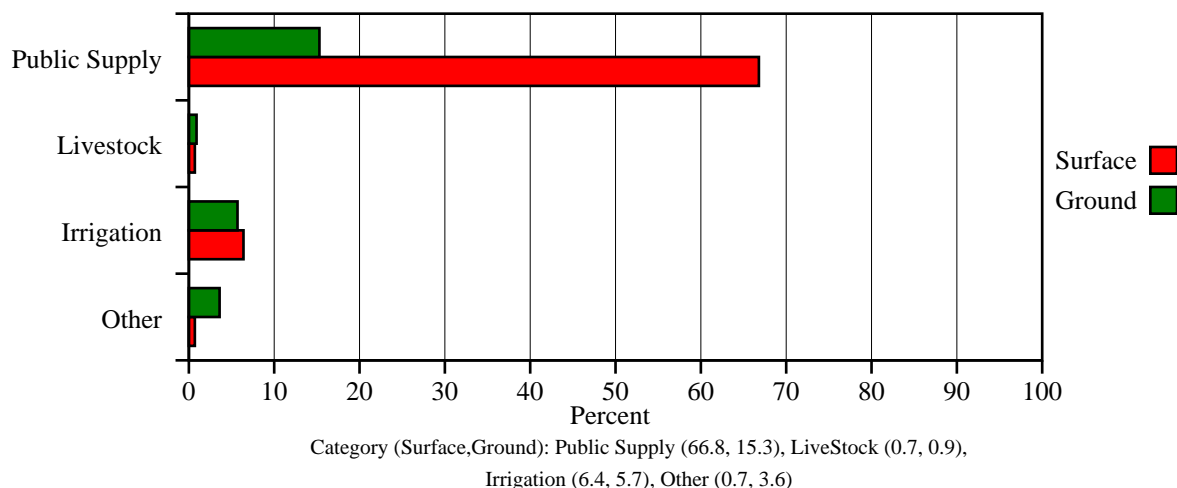
## Water

The total withdrawals average 265 million gallons per day (1,005 million liters per day). About 25 percent is from ground water sources, and 75 percent is from surface water sources. Rainfall and perennial streams provide ample supplies of surface water in this area. Manmade lakes are used to trap and store runoff water for cooling hydroelectric power plants and for public supply at the lower elevations in this area. The surface water generally is of good quality, meeting the recommended standards for drinking water. Most of the streams near population centers are contaminated with fecal coliform. Also, most sewage treatment plants discharge partially treated effluent into streams during most of the year. These discharges generally occur near the coast.

The North Coast Limestone is one of the most heavily used aquifers on the island. Ample supplies of ground water in this aquifer are generally of good quality. Both the water table and artesian water meet the recommended standards for drinking water. The calcium bicarbonate type of water in the water table aquifer can change to a sodium chloride type near the coast because of the intrusion of saltwater. The higher levels of chloride typically exceed the recommended limits for total dissolved solids for drinking water. The hydrodynamic pressure in the artesian aquifer provides a positive flow of freshwater into the ocean at some distance offshore, so there is no chloride contamination in this deeper aquifer.

The alluvial valley deposits on the east and west coasts are another source of ground water in this area. The level of total dissolved solids in the West Coast alluvial valley aquifer is much higher than the recommended level for drinking water. The intrusion of seawater is a major problem in this aquifer. The level of total dissolved solids in the East Coast alluvial valley aquifer is not much higher than the level in the North Coast limestone aquifer. The water in the East Coast alluvial valley aquifer is suitable only for irrigation and livestock, however, because of high levels of iron and manganese, from volcanic rocks and ancient swamp deposits.

## MLRA 272 Water Use by Category



## Soils

The soils in this MLRA include a wide range of Ultisols, Inceptisols, Entisols, Histosols, Oxisols, Mollisols, and Alfisols. All of the soils in the area have an isohyperthermic soil temperature regime, most have an ustic soil moisture regime, and most are clayey and have mixed or kaolinitic mineralogy. There are four distinct geomorphic areas in this MLRA=coastal plains, flood plains along rivers, small lagoon-like depressions, and areas of limestone karst. On the coastal plains, the dominant soils are Ultisols or Oxisols and the dominant suborders are deep, well drained Udults or Udox. On the flood plains, the dominant soils are Mollisols or Inceptisols and the dominant suborders are poorly drained Aquolls, somewhat poorly drained Aquepts, or well drained Udolls. In the small depressions, the dominant soils are Histosols or Entisols and the dominant suborders are poorly drained Saprists or Aquepts. Miscellaneous areas of swamps and marshes are in these depressions. In the extensive areas of limestone karst, the dominant soils are Mollisols or Alfisols and the dominant suborders are Rendolls, Udolls, or Udalfs.

## Biology

The dominant plant species in this area are Caribgrass, streambank millet, para grass, beach sedge, Durban crowfoot grass, Jamaica fingergrass, lovegrass, flame tree, white oak, beachgrass, St. Augustine grass, carpetgrass, southern sandbur, knotroot bristlegrass, albizia tree, bayhops, seapurslane, Puerto Rico royal palm, wireweed, coconut tree, stargrass, pangolagrass, Venezuela grass, Kleberg's bluestem, Tanner grass, Napier grass, signalgrass, and guineagrass. The dominant vegetation on wetlands includes red mangrove, white mangrove, black mangrove, button mangrove, southern cattail, leatherfern, and para grass.

Some of the major wildlife species in this area include bananaquit, zenaída dove, smooth-billed ani, Puerto Rican lizard cuckoo, lesser Antillean pewee, yellow warbler, cave swallow, white-crowned pigeon, barn swallow, cattle egret, great egret (*Garza real*), green heron (Martinete), little blue heron, northern waterthrush, West India whistling duck, white-rumped sandpiper, semipalmated sandpiper, least sandpiper, greater yellowlegs, Wilson's plover, yellow-crowned night-heron, blue-winged teal, and white-cheeked pintail.

## Land Use

Most of this area is in farms averaging 35 acres (14 hectares) in size. The pastures in the area support native and improved grasses. Many large dairy farms are in the area. The cropland in the MLRA includes about 3,000 acres (1,215 hectares) of farmland of statewide importance, which is planted to pineapples and is in areas of Oxisols. Many areas that formerly were used for sugarcane are now used for hayland or sod grasses. Orchards, consisting mainly of orange and grapefruit trees, are important in some areas. Urban development is significant, especially in areas adjacent to large metropolitan centers. It is a serious land use problem because it results in the loss of prime farmland.

The major soil resource concerns are water erosion (sheet and rill); maintenance of the content of organic matter, tilth, and fertility of the soils; crusting; and water infiltration. Water-quality concerns include surface water contaminants derived from organic and inorganic fertilizers. Water-quantity concerns include runoff, flooding, and water management on nonirrigated land.

Conservation practices on cropland generally include conservation crop rotations, bedding, deep tillage, 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 272 Land Use by Category**

