USDA icon **Natural Resources Conservation Service**

Major Land Resource Area 243X
Western Brooks Range Mountains, Foothills, and Valleys

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Description

Boundaries and important features: The Western Brooks Range Mountains, Foothills, and Valleys MLRA (MLRA 243X) encompasses the southern slopes of the De Long Mountains, the Baird Mountains, the Noatak River drainage, and the lower Kobuk River drainage. The southern limit of the area includes the western Lockwood Hills, Sheklukshuk and Waring Mountains, and Kiana and Igichuk Hills. MLRA 243 makes up 22,705 square miles. This MLRA shares boundaries with MLRAs 242X, 244X, and 245X. MLRA 242X (Northern Seward Peninsula-Selawik Lowlands) has nearly level to rolling plains, river deltas, and extended mountain footslopes. MLRA 244X (Northern Brooks Range Mountains) has steep, rugged, high mountains and narrow valleys. MLRA 245X (Arctic Foothills) has broad, rounded hills and nearly level uplands at the base of the Brooks Range. MLRA 243X shares a less apparent boundary with MLRAs 233 (Upper Kobuk and Koyukuk Hills and Valleys) and 234X (Interior Brooks Range Mountains), where a continental subarctic climate prevails. Kobuk Valley National Park is located in the south-central portion of MLRA 243X, along the Kobuk River. Kobuk Valley National Park has an area of around 1.75 million acres and was designated to preserve the 100 ft high Great Kobuk Sand Dunes and the surrounding area which includes the Onion Portage caribou migration route. The Noatak National Preserve is located in the north-central portion of the MLRA, along the Noatak River corridor. The Noatak River is the nation’s largest unaltered river basin, and the preserve is around 6.5 million acres. 5.7 million acres of the preserve are designated as wilderness. The Noatak River is also a designated National Wild and Scenic River. The Red Dog Mine is located in the northwestern portion of the MLRA. The Red Dog Mine is the world’s largest producer of zinc and has the world’s largest zinc reserves. The mine is the primary economic driver of the Northwest Arctic Borough. The Northwest Arctic Borough was formed in 1986 on the economic basis of taxing the mine. Geology: The entire area was glaciated during the Early and Middle Pleistocene, except for possibly small portions of the Baird Mountains. By the Late Pleistocene, glaciers had retreated from most of the area, except for the central, upper-elevation portions of the De Long Mountains in the northern part of the MLRA. The valley of the upper Noatak River was likely covered by extensive proglacial lakes during parts of the Pleistocene Epoch. In the mountains, glacial deposits have eroded away or been buried by mountain colluvium and alluvium, which accumulated during the Holocene Epoch across about 60 percent of the present landscape. Glacial moraines, drift, and outwash deposits are extensive on the lower mountain slopes and in valleys at the mid and lower elevations. These deposits cover about 18 percent of the MLRA. Flood plains, stream terraces, and alluvial fans have recent and Pleistocene fluvial deposits. The underlying bedrock geology consists almost entirely of stratified sedimentary rocks of Paleozoic and Precambrian age and, in some cases, Cretaceous age. This area is in the zone of continuous permafrost. In the mountains, permafrost is most evident in unconsolidated materials. In the valleys, thick layers of permafrost occur in both fine textured and coarse textured materials. Depth to the base of the permafrost layer may be 1,000 feet (305 meters) or more. In close proximity to water bodies, it may be 600 feet (185 meters) or more. Periglacial features, such as pingos, thermokarst pits, thaw lakes, solifluction lobes, and high- and low-center polygons, are common on-stream terraces, on the lower mountain slopes, and in swales on foothills. Soils: The dominant soil orders in this MLRA are Gelisols, Entisols, Inceptisols, and Mollisols. The soils in the area have a gelic soil temperature regime and an aquic or udic soil moisture regime. The Gelisols are shallow or moderately deep to permafrost, occur on fine to gravelly textured sediments, and are very poorly to moderately well drained. Common Gelisol suborders are Histels, Orthels, and Turbels. The Histels have thick accumulations of surface organic material and occur in depressions, lake margins, and shallow basins. The Orthels and Turbels have comparably thinner surface organic material with the Turbels being cryoturbated. These widespread soils occur on slopes of mountains, hills, and plains across the MLRA. Inceptisols (suborder Gelepts), Mollisols (suborder Gelolls), and Entisols (suborder Gelents) occur on upper mountain slopes and ridges formed in loamy to stony colluvium and residuum. These bedrock controlled soils are shallow to deep and are well drained. Entisols (suborder Cryofluvents) on flood plains formed in stratified loamy, sandy, and gravelly alluvium and are somewhat poorly to well drained. Vegetation Dynamics: The mountain slopes and ridges in this area generally support dwarf scrub dominated by Dryas, ericaceous shrubs including crowberry, and dwarf willow. Lichens and scattered herbs dominate the ground layer on shallow, rocky soils and exposed sites. There are extensive areas of bare soil and bedrock. On the more mesic sites, sedges, forbs, and mosses cover most of the surface. Areas at the lower elevations and areas of the deeper soils on nearly level uplands, terraces, and basins generally support low willow and ericaceous shrub scrub and mesic graminoid herbaceous communities, commonly with extensive areas of tussock-forming sedges. Saturated sites support wet sedge meadows and wet sedge-moss meadows. Flood plains support a mixture of tall and low scrub dominated by various willows, shrub birch, and alder. Climate: Short, generally cool summers and long, very cold winters characterize the continental arctic climate of the area. The average annual precipitation ranges from about 10 to 15 inches (255 to 380 millimeters) at the lower elevations in the western part of this MLRA and along the central Noatak River and from about 20 to 40 inches (510 to 1,015 millimeters) in the mountains. The average annual snowfall is about 35 to 100 inches (90 to 255 centimeters). The average annual temperature ranges from about 8 to 16 degrees F (-13 to -9 degrees C). Snow and freezing temperatures can occur in any month of the year, particularly at the higher elevations.

Ecological site keys

LRR Key

Y Trees not present due to climate, Northern Alaska LRR (Arctic Biome). Use the key for MLRA 243.

X1 Trees present due to climate, Interior Alaska LRR (Boreal Biome). Use this key for MLRA 233.

MLRA 243

A. low-elevation slopes of plains, hills, and mountains. The arctic lowlands life zone occurs below 1000 feet on average.

1 Polygonal ground ... R243XY401AK – Arctic scrub peat polygons

2 Not as above

i. Ponding occurs frequently to occasionally, turf hummock are common ... R243XY201AK – Arctic tussock gravelly frozen slopes

ii. Ponding does not occur, nonsorted circles are common ... R243XY402AK – Arctic scrub gravelly frozen slopes

B. High-elevation slopes of plains, hills, and mountains. The arctic alpine life zone occurs above 1000 feet on average.

1 Swales ... R243XY301AK – Alpine scrub gravelly swales

2 Not as above

i. Limestone, marble, and other carbonate rich bedrock

a. Dry and gravelly soils without permafrost ... R243XY404AK – Alpine dwarf scrub gravelly limestone slopes

b. wet and silty soils with permafrost. These poorly drained soils have a water table between 0 and 10 inches. ... R243XY302AK – Alpine scrub gravelly frozen slopes

ii. Acidic bedrock ... R243XY403AK – Arctic dwarf scrub gravelly slopes