Major Land Resource Area 244X
Northern Brooks Range Mountains

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Description

United States Department of Agriculture, Natural Resources Conservation Service. 2022. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture, Agriculture Handbook 296. MLRA 244 (fig. 244-1) includes the high mountains and valleys on the northern side of the Brooks Range, where surface water drains into the Colville River and other Arctic Ocean drainage basins. It makes up about 14,525 square miles (37,615 square kilometers). The terrain consists of steep, rugged, high mountains and narrow valleys. The underlying bedrock geology consists almost entirely of stratified sedimentary rocks of Paleozoic and Precambrian age. The area is entirely remote wildland and is sparsely populated. It is in the zone of continuous permafrost. MLRA 244 has boundaries based on physiography with MLRAs 246, 245, and 243. MLRA 246 (Arctic Coastal Plain) has a level to gently rolling plain along the coast of the Arctic Ocean. MLRA 245 (Arctic Foothills) has broad, rounded hills and nearly level uplands at the base of the Brooks Range. MLRA 243 (Western Brooks Range Mountains, Foothills, and Valleys) encompasses the southern slopes of the De Long Mountains, the Baird Mountains, the Noatak River drainage, and the lower Kobuk River drainage. MLRA 244 shares a less apparent boundary with MLRAs 234 (Interior Brooks Range Mountains) and 231 (Interior Alaska Highlands), which are distinguishable by a continental subarctic climate. Physiography This area lies within the Arctic Mountains province of the Rocky Mountain System. The Brooks Range is the most northerly extension of the Rocky Mountains. In places small glaciers occur at the higher elevations, particularly in the Romanzof Mountains, in the eastern part of the area. The upper mountain slopes generally are rocky, having extensive surface bedrock and rock rubble. The lower slopes are characterized by coalescing fans and steep footslopes that extend to stream channels in narrow valleys. The bottoms of the valleys along the larger rivers and streams have nearly level flood plains and stream terraces and some rolling uplands. Elevation ranges from about 1,969 feet (600 meters) along the edge of the Arctic Foothills (MLRA 245) to 8,570 feet (2,613 meters) at the summit of Mount Igikpak, in the western part of the MLRA along the border with the adjacent Brooks Range. Numerous rivers drain this MLRA through the Arctic Foothills and Coastal Plain to the Arctic Ocean. The major rivers are the Kongakut, Aichilik, Jago, Canning, Ivishak, Ribdon, Atigun, Anaktuvuk, and Killik Rivers. Lakes make up less than 2 percent of the area. In the mountains, permafrost is most evident in areas of deep unconsolidated deposits. In valleys, thick layers of permafrost occur in both fine textured and coarse textured deposits. Periglacial features, including gelifluction lobes, polygons, and stripes, are common on stream terraces, on hills, and in gently sloping areas in the mountains. Geology Except for the highest peaks, the steep upper ridges, and some unglaciated valleys, most of this area was covered with glacial ice during the Early and Middle Pleistocene. In many places, the ice extended northward down onto the adjacent Arctic Foothills (MLRA 245). By the Late Pleistocene, only the highest valleys and mountains remained glaciated. Most glacial deposits have eroded away or have been buried by mountain colluvium and alluvium, which accumulated during the Holocene Epoch across about 75 percent of the present landscape. Slightly modified to highly modified glacial moraines, drift, and outwash deposits are extensive on the lower mountain slopes and in valleys at the lower elevations. These deposits cover about 20 percent of the MLRA. Flood plains, stream terraces, and alluvial fans have Recent and Pleistocene fluvial deposits. Inclusions of Paleozoic and Early Jurassic volcanic and igneous rocks occur in the eastern part of the MLRA. Climate Brief, cool summers and long, very cold winters characterize the continental arctic climate of the area. The average annual precipitation throughout most of this area ranges from 15 to 40 inches (380 to 1,015 millimeters). The average annual snowfall is about 50 to 100 inches (125 to 255 centimeters). The average annual temperature ranges from about 8 to 16 degrees F (-13 to -9 degrees C). Freezing temperatures can occur in any month of the year. Water This sparsely populated MLRA has very limited amounts of freshwater available. Because of its chemical quality, the surface water generally is suitable for all uses, but the rivers are frozen for much of the year or flow little during winter. Most of the water used for domestic supply is probably obtained from private wells. Small communities and rural landowners can obtain ground water either from bedrock aquifers or from unconsolidated sediments in river valleys (alluvium or glacial outwash). Where these aquifers are close to the surface, they are highly susceptible to contamination from surface activities. Possible sources of contamination include septic systems, landfills, and leaking fuel storage tanks. Soils The dominant soil order in this MLRA is Gelisols. The soils in the area generally have a pergelic soil temperature class, an aquic or udic moisture regime, and mixed mineralogy. Miscellaneous (nonsoil) areas make up about 75 percent of this MLRA. The most common are rubble land, chutes, rock outcrop, and small glaciers. The main soils: Aquiturbels, Histoturbels, Molliturbels, and Haploturbels that are shallow or moderately deep to permafrost, are poorly drained or very poorly drained, and formed in loamy to stony colluvium, slope alluvium, and residuum Fibristels that are shallow or moderately deep to permafrost, are very poorly drained, and formed in thick deposits of organic material; in depressions, drainageways, and basins Biological Resources Because of the shallow soils, high winds, and harsh climate, the vegetation is sparse and generally limited to valleys and the lower mountain slopes. Dwarf scrub communities on mountain slopes and ridges are dominated by black crowberry, ericaceous shrubs, Dryas, and dwarf willow. On shallow, rocky soils and exposed sites, lichens and scattered herbs dominate the ground layer. Bare soil and bedrock generally are extensive. On the more mesic sites, sedges, forbs, and mosses cover most of the surface. Areas at the lower elevations and deeper soils in basins and on terraces generally support low willow and ericaceous shrub scrub and mesic graminoid herbaceous communities, commonly with extensive areas of tussock-forming sedges. Depressions, drainageways, and other saturated sites support wet sedge meadows, sedge-shrub meadows, and wet sedge- moss meadows. Low and tall willow scrub is dominant on flood plains. Mammals common to the area include brown bear, black bear, wolf,

caribou, and Dall sheep. The smaller mammals include marmot, red fox, Arctic fox, wolverine, ground squirrel, lemming, and pika. Common raptors include golden eagles, marsh hawks, and snowy owls. Land Use Residents of nearby villages use this remote area primarily for subsistence hunting, fishing, and gathering (fig. 244-2). The area also is used for sport hunting and other kinds of wildland recreation. Most visitors are served by air taxi, guiding, and outfitting companies operating out of the major Alaska communities. Most of the communities in the area are along the major rivers at the lower elevations. Mineral resources have been prospected and mined in several places. Construction and maintenance of the Dalton Highway have led to the development of numerous sand and gravel pits along the road corridor. Generally, no major resource concerns affect land use in this sparsely populated area. Because of the highways and pipeline that cross the area, however, disturbance of the fragile permafrost-affected soils is a concern. Disturbance of the insulating organic material at the surface results in thawing of the upper soil layers. This thawing can lead to ponding, soil subsidence, erosion, and disruption of surface drainage. All management activities need to include protection of the organic surface material and the thermal balance of the soils.

Ecological site keys

MLRA 244X PES Key

I. Mountains

A. Derived from calcareous limestone

1 organic wet soils ... YX244X00A102 – Calcareous, Wet Arctic Mountain Slopes

2 moist to dry mineral soils ... YX244X00A103 – Calcareous, Dry Arctic Mountain Slopes

B. Derived from non-calcareous sources of colluvium

1 Permafrost influenced/affected soils

i. Soils pond during the growing season ... YX244X00A111 – Arctic Mountain Hummocks

ii. Soils do not pond ... YX244X00A113 – Arctic Tussock Tundra Mountain Slopes

2 Soils with no permafrost ... YX244X00A112 – Arctic Shallow Tundra Mountain Slopes

II. Valleys

A. Lowland positions, Floodplains ... YX244X00A202 – Arctic Mountain Valley Floodplains

B. Upland positions, terraces ... YX244X00A204 – Arctic Mountain Valley Terraces