



**MONTANA
Natural Heritage
Program**

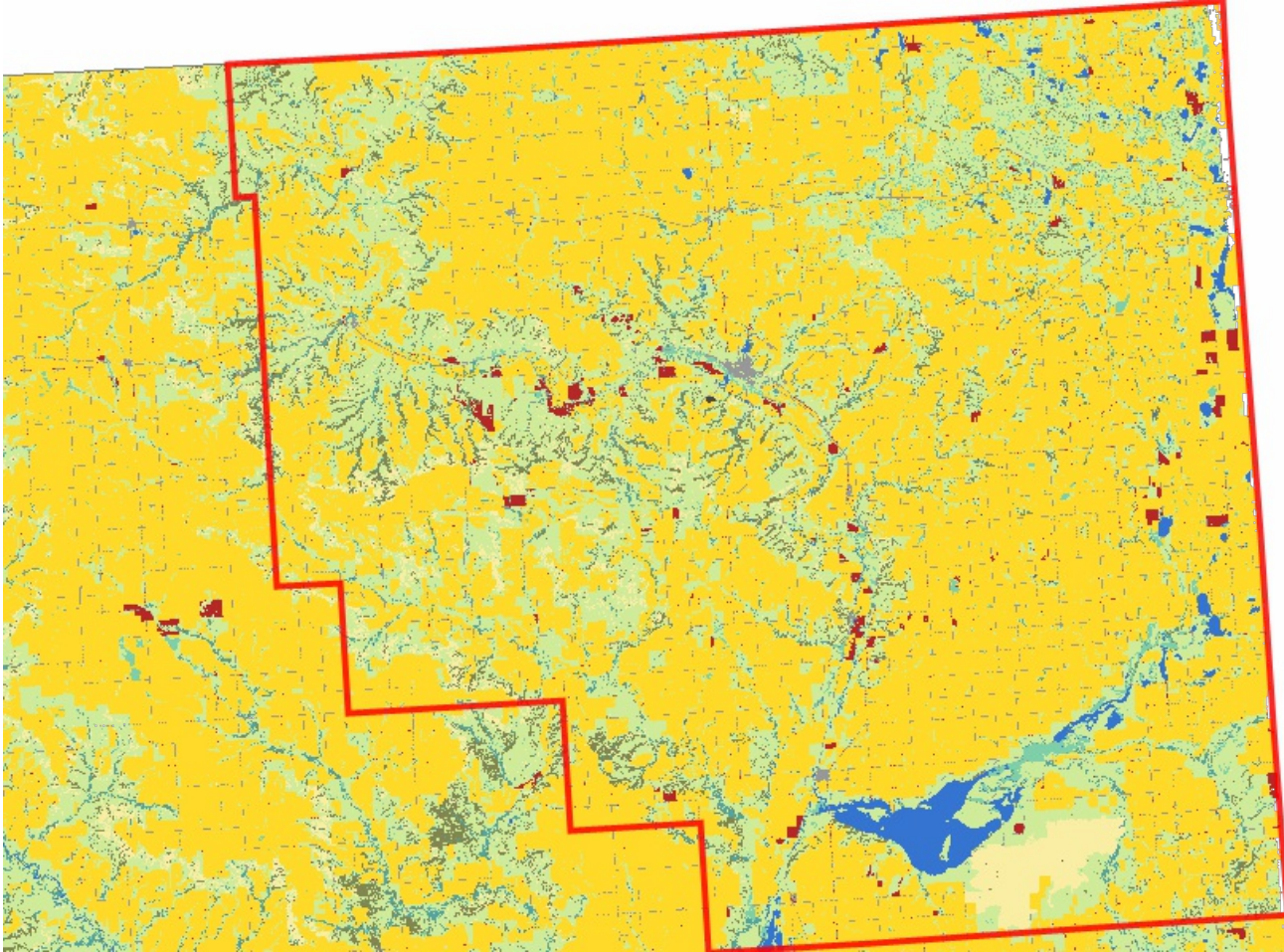
A program of the Montana State Library's
Natural Resource Information System
operated by the University of Montana.



Latitude Longitude
48.40830 -103.98268
48.99650 -105.10803

Land Cover

Summarized by: **Sheridan (County)**



**Human Land Use
Agriculture**

Cultivated Crops

58%
**(632,724
Acres)**

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.



18%
(191,407
Acres)

Grassland Systems

Lowland/Prairie Grassland

Great Plains Sand Prairie

The sand prairies constitute a very unique system within the western Great Plains. The unifying and controlling feature for this system is that coarse-textured soils predominate and the dominant grasses are well-adapted to this condition. In the northwestern portion of the system's range, stand size corresponds to the area of exposed caprock sandstone, and small patches predominate, but larger patches are found embedded in the encompassing Great Plains Mixed Grass Prairie, and usually occupy higher positions in local landscapes where former caprock formations have eroded into more subdued and planar topography. In most of eastern Montana, substrates supporting this system have weathered in place from sandstone caprock. Soils can be relatively thin or deep due to varying amounts of downslope movement of weathered sands. Needle and thread (*Hesperostipa comata*) is the dominant grass species. Other frequent species include little bluestem (*Schizachyrium scoparium*), often occurring with threadleaf sedge (*Carex filifolia*) and dominating both sandy sites and actively eroding sites. Prairie sandreed (*Calamovilfa longifolia*), sand bluestem (*Andropogon hallii*) and big bluestem (*Andropogon gerardii*) are sporadically distributed and found generally on the coarsest-textured sands. Other graminoids include bluebunch wheatgrass (*Pseudoroegneria spicata*), sun sedge (*Carex inops ssp. heliophila*), and purple threeawn (*Aristida purpurea*). Characteristic forbs differ by occurrence, but species of scurf pea (*Psoraleum* species) and Indian breadroot (*Pediomelum*) species are common. Communities of silver sage (*Artemisia cana ssp. cana*) or skunkbush sumac (*Rhus trilobata*) can occur within this system. Wind erosion, fire and grazing constitute the other major dynamic processes that can influence this system.



10%
(108,095
Acres)

Grassland Systems

Lowland/Prairie Grassland

Great Plains Mixedgrass Prairie

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square kilometers, interrupted only by wetland/riparian areas or sand prairies. Soils are primarily fine and medium-textured. The growing season averages 115 days, ranging from 100 days on the Canadian border to 130 days on the Wyoming border. Climate is typical of mid-continental regions with long severe winters and hot summers. Grasses typically comprise the greatest canopy cover, and western wheatgrass (*Pascopyrum smithii*) is usually dominant. Other species include thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Near the Canadian border in north-central Montana, this system grades into rough fescue (*Festuca campestris*) and Idaho fescue (*Festuca idahoensis*) grasslands. Remnants of shortbristle needle and thread (*Hesperostipa curtisetata*) dominated vegetation are found in northernmost Montana and North Dakota, and are associated with productive sites, now mostly converted to farmland. Forb diversity is typically high. In areas of southeastern and central Montana where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush-western wheatgrass (*Artemisia tridentata ssp. wyomingensis/ Pascopyrum smithii*). Fire and grazing are the primary drivers of this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and Japanese brome (*Bromus japonicus*) increase in dominance; both of these rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*)/western wheatgrass (*Pascopyrum smithii*) or into pure crested wheatgrass (*Agropyron cristatum*) stands.



3% (35,065
Acres)

Forest and Woodland Systems

Deciduous dominated forest and woodland

Great Plains Wooded Draw and Ravine

This system is typically associated with highly intermittent or ephemeral streams. It may occur on steep northern slopes or within canyon bottoms where soil moisture and topography produce higher moisture levels than are common throughout most of the area. In some areas of the western Great Plains, in higher elevation draws and ravines, Rocky Mountain juniper (*Juniperus scopulorum*) can dominate the canopy. Aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), or boxelder maple (*Acer negundo*) are commonly present in portions of the northwestern Great Plains. In central and eastern Montana, green ash (*Fraxinus pennsylvanicus*) or chokecherry (*Prunus virginiana*) are the usual dominants. Douglas hawthorne (*Crataegus douglasii*) is occasionally seen as a dominant in south-central Montana, especially around the Pryor Mountains. This system is found in ravines formed by ephemeral and intermittent streams, and on toeslopes and north-facing backslopes. Generally, these systems are less than 50 meters (165 feet) wide, although the linear extent may be considerable. Soils are usually deep and loamy. Flooding is very short in duration when it occurs, as water is rapidly channeled downslope.



2% (18,660
Acres)

Wetland and Riparian Systems

Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

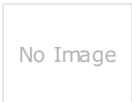


Sparse and Barren Systems Bluff, Badland and Dune

2% (17,160 Acres)

Great Plains Badlands

The Western Great Plains Badlands ecological system occurs within the mixed grass and sand prairie regions of eastern and southeastern Montana, where the land lies well above or below its local base level, shaped by the carving action of streams, erosion, and erodible parent material. It is easily recognized by its rugged, eroded, and often colorful land formations, and the relative absence of vegetative cover. In those areas with vegetation, species can include scattered individuals of many dryland shrubs or herbaceous taxa, including curlycup gumweed (*Grindelia squarrosa*), threadleaf snakeweed (*Gutierrezia sarothrae*) (especially with overuse and grazing), greasewood (*Sarcobatus vermiculatus*), Gardner's saltbush (*Atriplex gardneri*), buckwheat (*Eriogonum* species), plains muhly (*Muhlenbergia cuspidata*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and Hooker's sandwort (*Arenaria hookeri*). Patches of sagebrush (*Artemisia* spp.) can also occur. Climate is typical of mid continental regions with long severe winters and warm summers. Precipitation ranges from 7 to 14 inches per year, with two-thirds of the precipitation falling during the summer, and a third falling in the spring. The sedimentary parent material of exposed rocks and the resultant eroded clay soils are derived from Cretaceous sea beds and are often fossil-rich. Dominant soil types are in the order Entisols. These mineral soils are found primarily on uplands, slopes, and creek bottoms and are easily erodible. The growing season is short, averaging 115 days, with a range from 100 days on the Canadian border to 130 days on the Wyoming border. Land use is limited, except for off-highway vehicle recreation and incidental grazing.



Human Land Use Developed

Other Roads

2% (16,684 Acres) County, city and or rural roads generally open to motor vehicles.

Additional Limited Land Cover

- 1% (12,030 Acres) [Active and Stabilized Dune](#)
- 1% (11,388 Acres) [Introduced Upland Vegetation - Annual and Biennial Forbland](#)
- 1% (10,980 Acres) [Great Plains Riparian](#)
- 1% (8,184 Acres) [Great Plains Prairie Pothole](#)
- 1% (5,557 Acres) [Great Plains Closed Depressional Wetland](#)
- <1% (5,226 Acres) [Pasture/Hay](#)
- <1% (3,631 Acres) [Great Plains Saline Depression Wetland](#)
- <1% (2,366 Acres) [Great Plains Open Freshwater Depression Wetland](#)
- <1% (2,144 Acres) [Major Roads](#)
- <1% (1,887 Acres) [Great Plains Floodplain](#)
- <1% (1,526 Acres) [Railroad](#)
- <1% (1,231 Acres) [Low Intensity Residential](#)
- <1% (565 Acres) [Developed, Open Space](#)
- <1% (237 Acres) [Commercial / Industrial](#)
- <1% (79 Acres) [Oil and Oil / Gas](#)
- <1% (69 Acres) [Quarries, Strip Mines and Gravel Pits](#)
- <1% (54 Acres) [High Intensity Residential](#)
- <1% (23 Acres) [Injection](#)
- <1% (2 Acres) [Gas and Gas Storage](#)
- <1% (2 Acres) [Great Plains Ponderosa Pine Woodland and Savanna](#)

Introduction to Land Cover

Land Use/Land Cover is one of 15 [Montana Spatial Data Infrastructure](#) framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download at the Montana State Library's [Geographic Information Clearinghouse](#).

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

- Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.
- Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.