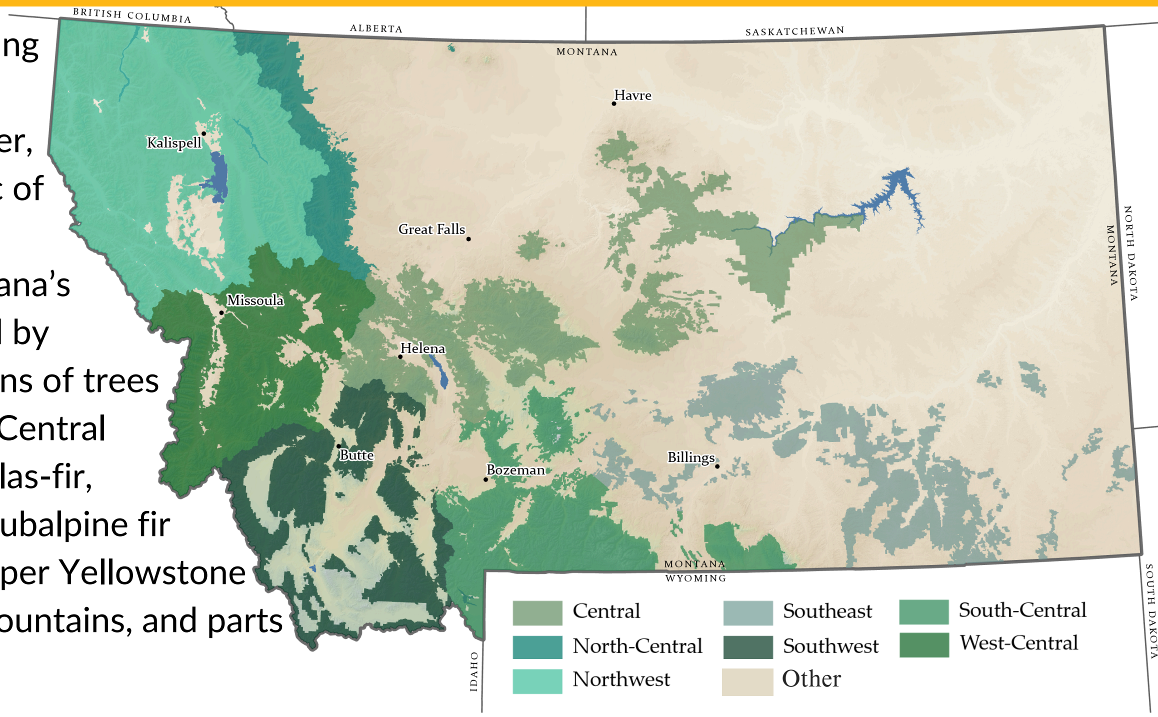
The South-Central Forest Region

MONTANA DNRC

What trees are around you?

The answer changes depending on climate, topography, and natural disturbances. Together, these factors create a mosaic of different forest types called forest regions. Each of Montana's eight regions is characterized by certain types and compositions of trees and other plants. The South-Central Forest Region includes Douglas-fir, lodgepole pine, spruce, and subalpine fir forests in the Gallatin and upper Yellowstone River drainages, the Pryor Mountains, and parts of the Bighorn Range.



1 Below 5,500 ft, grasslands are common. Limber pine forests may grow, mostly in areas with limestone soil.

2 Between 5,500 and 7,000 ft in elevation, forests tend to include a mix of Douglas-fir, lodgepole pine, and spruce trees.

3 Above 7,000 ft in elevation, subalpine fir and whitebark pine are numerous. Elevations above 9,500 ft are often too harsh to support any tree growth.

Topography

Imagine a trip up a mountainside in south-central Montana. The forest changes based on elevation, steepness, and direction. Even small changes can make a big difference in how much water, sunlight, or wind a certain area receives, and what types of trees are able to grow. The pictures above illustrate how elevation affects forests in the South-Central Forest Region. Soil type also impacts tree growth. Pockets of limestone soil are common in the South-Central Forest Region. Limestone soil is moister and has more nutrients than many other types of soil, so species like limber pine and Douglas-fir grow especially well in these areas.

The South-Central Forest Region includes the cultural homelands of the Tséstho'e (Cheyenne), Shoshone-Bannock, Séliš-Ql̓ispé, Cayuse, Umatilla and Walla Walla, Očhéthi Šakówiŋ, Niitsítpiis-stahkoii ᖹᐟᒧᐧᐨᑯᐧ ᓴᐦᖳᐟ (Blackfoot / Niitsítapi ᖹᐟᒧᐧᒣᑯ), and Apsáalooke (Crow) peoples.

Average July Daily High
80'F

Average January Daily Low
10'F

Annual Precipitation
21"

Climate

The South-Central Forest Region's cold, dry climate limits the range and type of forests. Strong chinook winds are common during the cooler months. Chinook winds happen after air loses moisture going over the western slope of a mountain range. As the dry air moves down the eastern slope, it rapidly warms. Chinook winds cause trees to lose water, as evidenced by "red belts" - swaths of forests with dry, brown needles. If severe enough, the sudden water loss can kill trees.

Disturbances

While topography and climate change forests over thousands of years, natural disturbances can change the way a forest looks in months, days, or even hours. Fire, pests, disease, avalanches, and windstorms are natural parts of the South-Central Forest Region. Often these disturbances help keep forests healthy by creating new space for trees to grow and returning nutrients to the soil. After a major disturbance like a fire, the forest grows back in stages over many years. This process is called succession. The pictures to the right depict a typical succession cycle of a lodgepole pine forest in the South-Central Forest Region. Forest regions are determined by the types of trees present in the climax forest, but it is common to see many stages of succession occurring at the same time.

1 Disturbance

Disturbances occur at different scales. For example, the southwestern grasslands historically burned every 3-20 years. In lodgepole pine forests, meanwhile, low-severity fires historically occurred every few years and high-severity fires every 100+ years.

2 Pioneer Species

The first plants to grow after a major disturbance are called pioneer species. Many wildflowers like lupine and fireweed are pioneer species, as well as a variety of grasses. Lodgepole pines often have serotinous cones that only open in extreme heat. As a result, lodgepole pine seedlings also quickly spring up following a high-severity fire.

3 Shrub Stage

As years pass, lodgepole pine saplings become thicker and taller. Young stands are often called "doghair stands" to reflect the closeknit nature of the growing trees. At this point, the trees begin to shade out grasses, flowers, and shrubs.

4 Climax Forest

After decades, the trees that first repopulated the disturbance mature. This stage is called the "climax forest" and will remaining until the next large disturbance. In the Southwestern Forest Region, some areas may never grow forests; here, grasslands represent the climax stage.

Resources

Read more about the different forest regions in "Forest Regions of Montana" at: **https://www.fs.usda.gov/research/treesearch/32532**

Read more about disturbance and succession in "Fire Ecology of Montana Forest Habitat Types East of the Continental Divide" at: **https://www.fs.usda.gov/research/treesearch/29570**