Logging

Converting trees into wood products

Rural Montana west of the Continental Divide is mainly forested mountains. One of the most significant economic activities in those forests is something that Montanans and visitors rarely see: logging. The only clues are "Trucks Entering" signs (indicating nearby logging activity), an occasional sawmill surrounded by piles of logs, or a glimpse of a logged mountainside in the distance.

Otherwise, it's easy to drive throughout this forested region and have no idea that timber harvest is taking place behind the tall conifers lining the roads.

As in farm and ranch country elsewhere in the state, most jobs in rural northwestern Montana are in the service, health care, and government sectors. But the timber industry is vital to the culture and identity of many communities and still plays a role in the region's economy.

Above: Loading a logging truck in northwestern Montana.
SHUTTERSTOCK

Left: Signs are often the only indication that logging activity may be going on in the area.
SHUTTERSTOCK

"Timber" is typically used to refer to trees—or the wood of standing trees—that have yet to be cut or processed. "Lumber" usually refers to wood that has been milled to make building materials (boards and planks).

EARLY YEARS

The forests of what is now western Montana have been managed by people for thousands of years. Native Americans regularly set fires that killed small trees encroaching mountain meadows, thereby maintaining lush open grasslands used by elk, deer, and other huntable wildlife. The low-intensity fires also cleaned out forest undergrowth, creating park-like landscapes that allowed for easier travel amid the towering ponderosa pines, Douglas firs, and lodgepole pines. Indigenous people also set fires to encourage certain medicinal or food plants to grow, and cut lodgepole pines for tepee poles.

But not until the arrival of European-Americans and their steel crosscut saws did logging begin to shape western Montana forests.

In the mid-1800s Montana's fledgling timber industry was fueled by the mining industry's demand for sluice boxes, firewood, cabins, stores, wagons, and bridges. Shortly after that, with the arrival of railroads and copper mining, the timber industry boomed. The railroads laid millions of wood ties beneath their tracks and used timbers to brace tunnels and support trestles and bridges. Mines required timber to support miles of underground tunnels and shafts, and smelters burned thousands of cords of wood daily to fuel the ovens that converted ore into copper.

After a decline during the Great Depression, Montana's logging industry rebounded and grew over the next 40 years with increasing demand for lumber during World War II and the post-war housing boom.

Above: a horse team with a large load of timber in northwestern Montana, 1900. Left: Cutting a ponderosa pine with a two-person crosscut saw on the bench north of the Kootenai River near Libby, 1921. Below: Logging and milling operations on the Blackfoot River at Bonner, 1950.

FROM TOP: MONTANA HISTORICAL SOCIETY LIBRARY AND ARCHIVES; UNIVERSITY OF MONTANA MANSFIELD LIBRARY; UNIVERSITY OF MONTANA MANSFIELD LIBRARY

CHANGING ATTITUDES

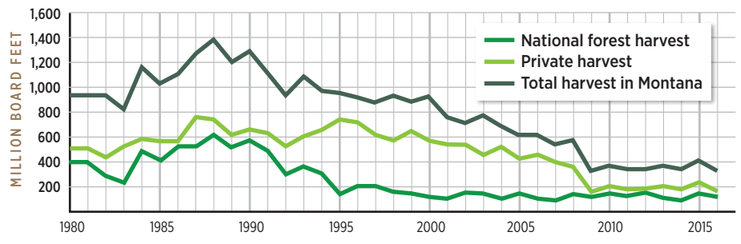
Americans' attitudes toward logging began to change in the 1960s, as images of clear-cut forests were shown in news reports. Vast forestlands had been shorn to bare soil, and an increasingly "green" public began demanding conservation measures. In the early 1970s, that pressure intensified with passage of the Endangered Species and National Environmental Protection acts.

Then as now, concerns about logging included threats to imperiled wildlife species, the loss of old-growth forests, trucks and other heavy equipment compacting soil and spreading noxious weeds, and silt washing down from dirt logging roads and clogging fragile streams.

In response, the federal government began to impose ever-stricter rules on how and where logging could be done.

Other factors too were changing the logging industry. Introduced in the late 1980s, timber harvest mechanisms began to replace human loggers. For instance, the harvester machine, operated by just one person, could cut, delimb, and segment a 100-foot tree in less than a minute. Modern sawmills also became highly mechanized and computerized, using lasers, scanners, and sensors that increased the precision of cuts with fewer

Montana timber harvest, 1980–2016



Timber is harvested in Montana from both public and private lands. Since the peak in the late 1980s, total harvest has declined by 85 percent. Since 2009, timber harvests have stabilized, but at levels not seen since the 1940s. SOURCE: UNIVERSITY OF MONTANA BUREAU OF BUSINESS AND ECONOMIC RESEARCH.

FWP and timber harvest

The U.S. Forest Service (USFS) regularly updates management plans for each national forest. It also prepares a plan for each "timber sale," in which commercial logging companies bid on a contract to cut and remove specified timber in certain areas under certain conditions. In Montana, FWP biologists recommend to USFS teams ways for management and timber sale cuts to best benefit wildlife and do as little harm as possible to bull trout and other native species.

Examples include creating more open areas for elk grazing habitat, protecting streamside areas, leaving snags for cavity-nesting birds, and conserving stands of dense conifers that block snowfall and provide essential winter cover for elk and deer.

On some forested state wildlife management areas, FWP uses timber harvest to improve wildlife habitat, reduce hazardous fuels, and decrease insect infestations.

The department also works directly with timber companies to purchase conservation easements for properties with critical wildlife habitat.

In this 2015 photo, an FWP staff member, timber company representative, and the mayor of Whitefish review the Haskill Basin and Trumbull Creek conservation easements. In addition to helping keep the town's water supply clean, the easements protect spawning habitat for cutthroat trout, preserve scenic vistas, and allow sustainable logging.

Above: Initial cuts to square off a log. Below: Machining logs into planks. Left: Marks Lumber in Clancy manufactures circle-sawn lumber (showing arched blade marks), timbers, flooring, and siding.

CLOCKWISE FROM TOP LEFT: SHUTTERSTOCK; JEREMIE HOLLMAN; SHUTTERSTOCK; SHUTTERSTOCK; MARK'S LUMBER

Turning trees into boards

For decades, trees were felled by sawyers using two-person crosscut saws, then stacked on large wood "skids" pulled by teams of horses or mules for transport. By the mid-1950s, chainsaws had replaced hand saws, and trucks were hauling the downed timber.

Since the late 1980s, tree felling, limbing (cutting off branches), and bucking (cutting trunks into segments) have become increasingly mechanized. Nowadays, a logging operation might begin with a feller-buncher machine grabbing several trees at a time with a robot arm (boom), cutting them at ground level, and stacking them in piles for skidding. The delimber picks up each tree and runs it through a log processor with blades that cut the branches off.

Once at the sawmill, the round logs are first placed on conveyor belts and carried to a machine that strips the bark, which is sold as mulch or used to fuel kilns at the mill. Each log then goes through a metal detector to check for wire fencing, nails, or other metal that can ruin sawmill blades. Next, the logs are clamped on a conveyor belt and cut it in half lengthwise with the head rig saw. The sections are then milled—run through a bandsaw and trimmed—to create boards of various dimensions and lengths.

The lumber is either air dried or dried in a kiln to increase stability and reduce shrinkage during manufacturing.

Wood chips are sold as mulch, biofuel, and animal bedding, while sawdust is collected for making particle board.

workers required. Meanwhile, competition has increased from Canada's massive timber industry, which faces fewer federal or provincial laws protecting forest ecosystems and wildlife, and from fast-growing tree plantations in the southern United States.

All of these factors led to a major decline in logging in northwestern Montana. While tourism and the health and service sectors have filled some employment gaps, many one-time logging towns continue to struggle.

IMPROVED PRACTICES

Though it contributed to job loss in logging communities, the nation's growing environmental ethic resulted in timber harvest that does less harm to forest ecosystems.

Standard now are voluntary best management practices that protect water quality and wildlife habitat. In addition, federal and state laws and regulations now require the U.S. Forest Service (USFS) to write forest management plans and environmental assessments that identify how policies and timber sales will protect ecosystems and imperiled fish and wildlife species.

Despite those improvements, however, environmental groups often sue the USFS over proposed timber sales, contending that the agency hasn't adequately addressed harm to old-growth forest and federally protected bull trout, whitebark pine, Canada lynx, and grizzly bears. When federal courts agree, the sales are stopped.

Right and below right: Harvester machines have replaced entire teams of loggers who once cut, delimbed, and loaded logs onto trucks—and in turn supported local businesses with their paychecks. See a timber harvester in action:

CLOCKWISE FROM TOP: ANDREAS BEER; LANCE CHEUNG/USFS; KATE & ADAM RICE; JASON BUSCEMA

The American public weighs in

Though not the only factor, a major reason for Montana's declining timber industry has been restrictions and delays caused by environmental regulations.

Much logging in Montana is done on publicly owned national forests, and the American public has a large say in how those lands are managed. For instance, the Endangered Species Act continues to see overwhelming national public support, even though its requirements cause economic hardship in places like northwestern Montana.

Canada lynx

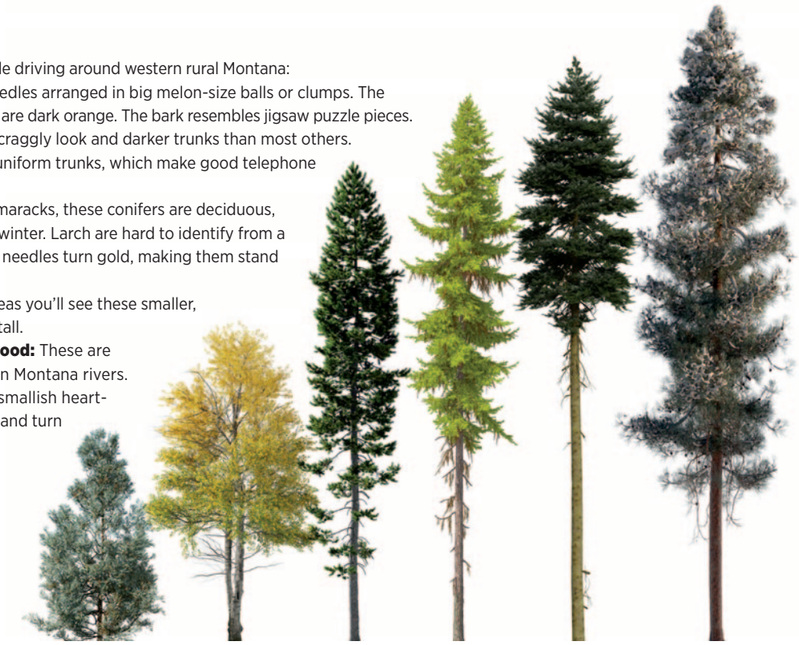
A federal court ruling that nixes a proposed timber sale on the Flathead National Forest because it hasn't adequately considered the health of bull trout, grizzly bears, or Canada lynx may help those protected species. But that decision also can spell bad economic news for a Kalispell sawmill.

Trees

The most common trees you'll see while driving around western rural Montana:

- **Ponderosa pine:** Look for longer needles arranged in big melon-size balls or clumps. The trunks of larger, older ponderosa pines are dark orange. The bark resembles jigsaw puzzle pieces.
- **Douglas fir:** These conifers have a scraggly look and darker trunks than most others.
- **Lodgepole pine:** Look for straight, uniform trunks, which make good telephone poles, fence posts, and tepee poles.
- **Western larch:** Locally known as tamaracks, these conifers are deciduous, meaning they lose their needles each winter. Larch are hard to identify from a distance in summer, but in late fall the needles turn gold, making them stand out from other conifer species.
- **Rocky Mountain juniper:** In drier areas you'll see these smaller, scrubby trees that grow 10 to 40 feet tall.
- **Quaking aspen and black cottonwood:** These are the most common trees along western Montana rivers. Aspens have smooth white bark and smallish heart-shaped leaves that flutter in the wind and turn yellow in the fall. Black cottonwoods, usually the tallest trees along rivers, have rough, dark-colored bark.

Trees are far less prevalent in drier eastern Montana. You'll find ponderosa pines and Douglas firs in the island ranges. Along rivers and streams, look for peachleaf willow, cottonwood, American plum, chokecherry, box elder, quaking aspen, and green ash.



Rocky Mountain juniper | Quaking aspen | Lodgepole pine | Western larch | Douglas fir | Ponderosa pine

Beetle-killed forests

From the late 1990s through the early 2010s, Montana forests were hit by a massive infestation of mountain pine and Douglas fir beetles. Dying rust-red trees and dead gray trees are still visible. More than 1 million acres of Montana forestland was wiped out by the tiny bugs.

The beetle epidemic was greatest in century-old lodgepole pine stands near the end of their natural lifespan. Intense heat and drought further weakened conifer stands, and a series of mild winters allowed beetles to thrive during colder months when they are usually killed off.

Healthy trees fight back by producing a resin that drowns the bark-boring insects. But old, weakened trees cannot produce enough resin to fight the invaders.

Standing dead trees provide habitat for woodpeckers and other tree-cavity dwellers before falling to the forest floor and decomposing into soil. But the massive beetle infestations also increased the risk of intense wildfires, killed off whitebark pines vital for grizzly bears, and reduced usable timber supply for mills.

Infestations have slowed considerably in recent years due to cold winters and beetles running out of new trees to infest.

CLOCKWISE FROM TOP: SHUTTERSTOCK; THOM BRIDGE; SHUTTERSTOCK

State trust lands

After the Louisiana Purchase of 1803, America had a lot of land but not much money. To generate revenue, the new nation began to sell land in its western territories to settlers. These lands were mapped in checkerboard grids, with one centrally located "section"—640 acres, or 1 square mile—in each 36-square-mile township reserved to support public schools.

As in other states with trust lands, Montana funds schools and land grant colleges with revenue from grazing, farming, timber, mineral, and energy leases on these tracts.

Montana's state trust lands are managed by the Department of Natural Resources and Conservation (DNRC). While their primary purpose is to produce education revenue, many also provide exceptional hunting opportunities and contain important wildlife habitat. Almost all are open to public hunting, fishing, and other outdoor recreation with a Conservation License. Some are marked with small blue or white signs indicating public ownership and the public's right to recreational use, but most require a land ownership map or app to find.

Placed by volunteers with the American Legion, the markers indicate where people have died in traffic accidents.

White crosses

Montana's most sobering roadside markers are the white metal crosses that indicate where people have died in traffic accidents. Established in 1953, volunteers with the Montana American Legion's Fatality Marker Program have installed roughly 2,500 markers, with the families' permission, to alert drivers of potentially dangerous curves or other hazardous highway stretches.

Friends and family members often place plastic flowers and other memorials at the fatality markers. If the decorations become traffic hazards, Montana Department of Transportation crews have to remove them. The American Legion discourages placing any decorations that obscure the markers because that defeats the crosses' main purpose of highway safety education.

Nathanael Lutheran pioneer cemetery in Dagmar

Cemeteries

Rural cemeteries, open to respectful visitors, are typically located next to a church or just outside of town. They often have a decorative stone or iron archway at the entrance. Some well-established ranches and farms also have small, private family graveyards. Cemeteries were often situated on hills, where the deceased could be "closer to heaven" and the land was less likely to be disturbed by flooding. In prairie cemeteries you'll often see a few trees, which had to be watered by hand for years before taking root. The simple inscriptions on the gravestones, sometimes written in Norwegian, German, or other languages, often memorialize children or women who died in childbirth, and give a glimpse into the harsh life of Montana's homestead era.

One-room schools

At one time most rural Montana kids attended one-room schoolhouses. During the early 1900s, the state had 2,600 of these modest educational buildings. Students walked sometimes 3 miles or more each way or rode horses in a group with their siblings and neighbors. A single teacher often taught all grades, K through 8. Younger children listened to older students' lessons, and the older kids tutored the younger ones.

Today a few dozen one-room schoolhouses still hold classes. The rest closed following population declines in most rural counties. Some of the buildings survived longer than surrounding abandoned homesteads because they were repurposed as communal town halls or meeting places.

At some you can still see the single swing, metal slide, or net-less basketball hoop that served as the playground, as well as the lone outhouse that served the students and the teacher.

The Savoy schoolhouse in Blaine County operated from the early 1920s until it was abandoned in 1974.

CLOCKWISE FROM TOP LEFT: AMERICAN LEGION DEPARTMENT OF MONTANA; SHUTTERSTOCK; TODD KLASSY

High school sports

The pride of many rural towns is the entrance sign announcing the state championships won by their high school sports teams over the years. High school sports are a big deal across Montana but especially in rural areas. As church and community club attendance has declined during past decades, gymnasiums and playing fields are among the few places left where people gather and unite in a common purpose.

So that bigger schools don't dominate smaller schools, the Montana High School Association has established four sports categories based on enrollment: Class AA: 801 or more students; Class A: 301-800; Class B: 101-300; Class C: 1-100. Most rural high schools are Class C.

Teams in each class are also grouped geographically so they don't have to cross the state to play each other. Top teams in each geographical division compete to determine state champions.

Football is also broken down into Class AA, Class A, and Class B for 11-person squads, and 8-person class and 6-person class for smaller rural schools.

Because many shrinking communities no longer have enough high school kids to field sports teams, nearby towns may form sports "co-ops," where two, three, and even four schools join forces to field teams, like the Malta-Whitewater-Saco-Dodson Mustangs in northeastern Montana. When a co-op is formed, the students in all the schools vote on a new team name and mascot.

The Browning Lady Indians play the East Helena Vigilantes in a Class A girls basketball game.

Rock piles

Anyone who walks around rural Montana fields will eventually come upon large piles of melon-sized rocks—stark reminders of the hard labor required to farm in the early days.

Most of Montana has rocky soil, and larger rocks had to be removed so they didn't damage metal plows. It was usually a teenager's job to pick up (grub) rocks, load them on a wagon or skid, haul the load to the edge of the field, and dump them. Larger boulders were pulled out and dragged off by horses or tractors.

Quonset huts

Quonset huts are rounded metal structures shaped like half-cylinders lying on their sides. These lightweight prefabricated buildings are made of corrugated steel that adds strength and are galvanized (zinc-coated for corrosion resistance). Quonset huts are relatively inexpensive and can be erected quickly and used to store tractors, other machinery, or livestock.

CLOCKWISE FROM TOP: LUKE DURAN; STAFF SGT. DELIA MARCHICK, U.S. AIR FORCE; SHUTTERSTOCK; SHUTTERSTOCK

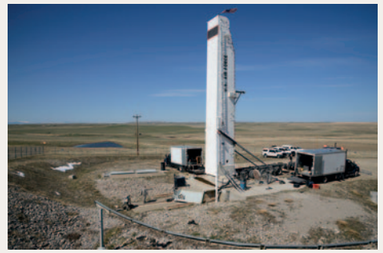
Nuclear missile silos

The scariest—or most reassuring, depending on your perspective—aspects of rural Montana are the roughly 150 nuclear missile silos and launch facilities in the state's central region.

Marked by concrete platforms the size of a large garage foundation and surrounded by a tall fence, the underground sites have no signs or other indications of the lethality beneath. Motion sensors detect any movement within 100 yards and military helicopters patrol overhead for suspicious activity.

The weapons are Minutemen III intercontinental ballistic missiles, or ICBMs, first installed during the height of the Cold War in the 1950s and '60s. Malmstrom Air Force Base 341st Missile Wing, in Great Falls, maintains and operates the missile sites in Montana. Other ICBM silos are located in Wyoming, the Dakotas, and other low-population states.

Each ICBM is buried beneath a 110-ton concrete and steel door. The 60-foot-long missiles each weigh about 80,000 pounds and are at least 20 times more powerful than the atomic bomb dropped over Hiroshima. No one is stationed in the missile bunkers. Each is operated by two members of the Air Force, known as missileers, who are stationed in an underground bunker several miles away, ready to fire the missiles at a moment's notice if so ordered by the president. The comings and goings of missile personnel are classified and take place mainly at night.



Installing an ICBM silo near Great Falls.

In early 2024, the U.S. Air Force announced it would start replacing the half-century-old weapons system with new Sentinel ICBMs. The upgrade is estimated to cost over $130 billion and take around 10 years to complete.