





# Yellowstone National Park

Yellowstone National Park, the oldest, one of the largest, and probably the best-known national park in the United States. It is situated principally in northwestern Wyoming and partly in southern Montana and eastern Idaho and includes the greatest concentration of hydrothermal features in the world. The park was established by the U.S. Congress on March 1, 1872, as the country's—and the world's—first national park. The park, which forms a squarelike rectangle with an irregular eastern side, is 63 miles (101 km) from north to south and 54 miles (87 km) from east to west at its widest point and covers an area of 3,472 square miles (8,992 square km). Headquarters are at Mammoth Hot Springs near the northern entrance to the park.









## Natural environment

### Geology

Yellowstone is situated in a region that has always been volcanically and seismically active. Tectonic movement of the North American Plate had thinned Earth's crust in the area, forming a hot spot (a place where a dome of magma, or molten rock, comes close to the surface). A subsurface magma dome built up in the Yellowstone area and blew up in one of the world's most cataclysmic volcanic eruptions.

That eruption caused the magma dome that had built up to collapse as its contents were released, leaving an enormous caldera. The present-day Yellowstone Caldera, the product of that eruption, is a roughly oval-shaped basin some 30 by 45 miles (50 by 70 km) that occupies the west-central portion of the national park and includes the northern two-thirds of Yellowstone Lake

The Yellowstone region is also extremely active seismically. A network of faults associated with the region's volcanic history underlies the park's surface, and the region experiences hundreds of small earthquakes each year. The great majority of those quakes are of magnitude 2.0 or less and are not felt by people in the area, but occasionally a more powerful temblor will strike in the region and have effects in the park. One such event, a deadly quake that struck in 1959 in southern Montana just outside the northwestern corner of the park, affected a number of hydrothermal features in Yellowstone, including its iconic geyser, Old Faithful.

### Physical features

Yellowstone's relief is the result of tectonic activity (volcanism and earthquakes) combined with the erosional actions of ice and water. Three mountain ranges, each aligned roughly north to south, protrude into the park: the Gallatin Range in the northwest, the Absaroka Range in the east, and the northern extremity of the Teton Range along the park's southwestern boundary. The tallest mountains in the park are in the Absarokas, where many summits exceed elevations of 10,000 feet (3,050 metres). The range's Eagle Peak, on the park's boundary in the southeast, is the high point, reaching 11,358 feet (3,462 metres). Aside from its rugged mountains and spectacular deep glacier-carved valleys, the park has unusual geologic features, including fossil forests, eroded basaltic lava flows, a black obsidian (volcanic glass) mountain, and odd erosional forms.

Yellowstone is also known for its many scenic lakes and rivers. The park's largest body of water is Yellowstone Lake, which, having a surface area of 132 square miles (342 square km) and lying at an elevation of 7,730 feet (2,356 metres), is the highest mountain lake of its size in North America. The West Thumb area—a knoblike protrusion of the lake on its west side—was formed by a relatively small eruption in the caldera about 150,000 years ago. The next largest lake, Shoshone Lake, lies in the caldera southwest of Yellowstone Lake.



### A few more things to keep in mind:

**Weather:** Temperatures in Yellowstone vary due to elevation. Be prepared for anything from warm summer temperatures to snow as late as June.

Entrance passes are good for seven days for both Yellowstone and Grand Teton National Parks and cost **\$25** for private, noncommercial vehicles; **\$12** for single-entry (foot, bike, etc.); and **\$20** for motorcycles. Go to [www.nps.gov/yell](http://www.nps.gov/yell) and click on "Fees & Reservations."

When driving in Yellowstone, it's hard to predict how long it will take to get from one place to another. Partly, it depends on traffic and weather, but it also depends on how often you want to stop to look at scenery and wildlife. You'll receive a map when you enter the park, and popular sights along the roads are clearly marked. When you see a line of cars pulled onto the shoulder of the road, it usually means there's an animal within viewing distance — and the more cars, the better the sighting. Safely view and photograph animals from the road and do not approach or disturb them.

Remember, Yellowstone is big. You won't be able to see it all in a single visit. You're liable to meet fellow travelers who have been here dozens of times and still haven't exhausted its possibilities. But don't worry, Yellowstone will still be here for your second, fifth and 10th visits. The iconic spots — Old Faithful, Lower Falls, Yellowstone Lake — will be familiar from paintings and photographs, but seeing them in person is a humbling, enthralling experience. They're not just as good as you've imagined — they're better.





Yellowstone’s principal attractions, however, are its some 10,000 hydrothermal features, which constitute roughly half of all those known in the world. The region’s deeply fractured crust allows groundwater to seep down to where it makes contact with the magma. The superheated and mineral-rich water then returns to the surface as steam vents, fumaroles, colorful hot pools, mud cauldrons, paint pots, hot springs and terraces, hot rivers, and geysers. Of the park’s more than 300 geysers—greater than half of the world’s total—many erupt to heights of 100 feet (30 metres) or more. Old Faithful, in west-central Yellowstone, the most famous geyser in the park, erupts fairly regularly, roughly every 90 minutes with a range of reasonably predictable variability.

### Climate

Yellowstone’s climate can be described as cool temperate and continental. It is also considerably variable, influenced by the park’s high average elevation, relatively high latitude, location deep within the continent, and mountainous terrain. Temperatures almost always decrease with elevation gain. Because of Yellowstone’s large area and variegated topography, weather conditions at different locations within the park can vary widely at any given time. In addition, conditions can change dramatically in a short period of time at one location.

Summer days are warm and relatively sunny, with daytime temperatures reaching about 80 °F in July at lower elevations before dropping to nighttime lows in the 40s or 50s F. Temperatures are usually cooler higher in the mountains. Although precipitation totals in the warm months generally are light, summer afternoon thunderstorms are common. Winters are cold and snowy, as temperatures rarely rise above the mid-20s F and often drop to 0 °F or lower at night. Snowfall is heavy in most areas, especially at higher elevations, and typically begins in early autumn and continues into April or May.

### Plant and animal life

Some 1,350 species of flowering plants have been identified in Yellowstone. About four-fifths of the park’s area is forested, and the vast majority of the tree growth consists of lodgepole pines. Among the several other conifer species in the park are whitebark pine, found at higher elevations, especially in the Absarokas; and Douglas firs, which dominate at lower elevations, notably in northern areas. Cottonwoods and willows grow along streams, and stands of aspens occur in many sections. Hundreds of types of wildflowers thrive in a variety of habitats. The earliest blossom in April and the latest in September.



Animal life in Yellowstone is typical of the Rocky Mountain West, and the park boasts the greatest assemblage of mammals—more than five dozen species—in the United States, outside of Alaska. Bison (buffalo), the largest of the mammals, were brought back from near extinction at the beginning of the 20th century. Other large mammals often seen in Yellowstone include elk, mule deer, black bears, foxes, and coyotes. There are smaller populations of brown (grizzly) bears, bighorn sheep, pronghorns, mountain goats, and moose. Bobcats are thought to be present throughout the park, but their numbers are unknown, and there are occasional sightings of lynx and pumas (mountain lions). Common smaller mammals include badgers, martens, weasels, river otters, hares and rabbits, shrews, a variety of bats, and many species of small rodents. Wolves were successfully reintroduced into Yellowstone in 1995 and are now found throughout much of the park. Beavers have also made a significant comeback, and several hundred live along streams and lakes, mainly in the northwest, southeast, and southwest.

More than 300 different species of birds have been identified as living year-round or seasonally in Yellowstone or migrating through the park in spring and autumn. Songbirds and woodpeckers constitute the greatest number of species. Among the permanent residents are jays, chickadees, nuthatches, ravens, and waterfowl such as trumpeter swans and Canada geese. The populations of three of the park’s raptors—bald eagles, ospreys, and peregrine falcons—have made significant recoveries after having been severely depleted in the mid-20th century

Most of the park’s lakes and streams have natural fish populations, but many are located above waterfalls and other impediments and have introduced populations. For decades Yellowstone’s waterways were stocked with fish—including three indigenous sport species (cutthroat trout, Arctic grayling, and Rocky Mountain whitefish) and several nonnative species (mainly trout)—but that practice was ended in the 1950s. Some of the more remote lakes and streams subsequently reverted to their fishless state

Fewer than a dozen reptile and amphibian species are found in Yellowstone, in large part because of the region’s cold and relatively dry climate. Notable types include prairie rattlesnakes, the only venomous species in the park; boreal chorus frogs; and blotched tiger salamanders, which are common in fishless lakes and ponds.

Also of note are the many varieties of thermophiles (heat-tolerant extremophiles) that thrive in the park’s hydrothermal features and are responsible for many of their distinctive colors. Prokaryotic types—e.g., varieties of algae and bacteria—can be found in such features as Norris Geyser Basin and Mammoth Hot Springs, respectively.





## Three Steps to a Summer Vacation in Yellowstone

### Step 1: Book Lodging

#### *Up to 8 months in advance*

There are nine wonderful lodging options in the park, ranging from rustic simplicity to historic opulence. However, all are often fully booked months before the summer season, so be sure to make your reservations early. If you're planning to camp, there are five campgrounds run by Xanterra Parks & Resorts that allow reservations (call 307-344-7311). Seven campgrounds, however, are run by the National Park Service on a first-come, first-served basis and often fill up by mid-morning.

You can also consider staying near the national park in Jackson (60 miles south) or Cody (50 miles east). Your options range from ranches and cabins to vacation rentals and B&Bs, and most offer daily transportation to and from Yellowstone.

### Step 2: Coordinate Travel

#### *Up to 4 months in advance*

Although much of Yellowstone's appeal is its unspoiled seclusion, it's easily accessible for travelers. If you're planning on flying, the Yellowstone Regional Airport is about two miles outside of Cody, near the park's East Entrance, and it offers service from Salt Lake City and Denver. Jackson Hole Airport is about 50 miles south of the park's South Entrance. Car rentals and shuttle services to the lodges inside park, nearby towns and hotels are available at all of the airports.

### Step 3: Choose your adventures

#### *Up to 3 months in advance*

Because Yellowstone is so large and there are so many things to see and do, it's a good idea to plan your adventures well in advance.

Whether you choose to embark on a day hike or on a backcountry excursion, venturing away from the paved roads in Yellowstone is a wonderful way to experience its peaceful grandeur. Information, safety tips and maps for day hikes are available. Camping in the backcountry requires a permit, and campsites can be reserved in advance.





## Human imprint

### Early history and creation of the park

Archaeological evidence recovered in Yellowstone indicates that there has been a sustained human presence in the region since sometime after the end of the last glaciation there (about 13,000 to 14,000 years ago), with the oldest artifacts dating to more than 11,000 years ago. Little is known about those early peoples. Wind River Shoshone (also called Sheep Eaters) are thought to have arrived in the Yellowstone area about 1400 ce. Many other groups followed, and those peoples either lived in or near the land now occupied by the park or visited the area to hunt, trade, or conduct ceremonies.

The first person of European ancestry to venture into the Yellowstone region was American trapper and explorer John Colter, who reached the area in 1807–08 after having been a part of and then leaving the Lewis and Clark Expedition in 1806. Other trappers—including Jim Bridger, Joseph Meeks, and Osborne Russell—told of seeing the canyon, lake, and geysers. The first published account of the region was by Daniel Potts, whose letter to his brother vividly describing Yellowstone Lake and the West Thumb Geyser Basin appeared in a Philadelphia newspaper in 1827. Another trapper, Warren Angus Ferris, visited Yellowstone and was the first to use the name geyser for the hydrothermal features there. Ferris, who was a trained surveyor, prepared a map of the Yellowstone area in 1836.

Proposals for the federal government to protect the Yellowstone region had first been voiced in the mid-1860s, about the same time that such ideas were also being debated for the Yosemite area in California. Part of the impetus was through Jay Cooke and his Northern Pacific Railway Company, which was building a rail line from Lake Superior to the Pacific Northwest that passed just north of Yellowstone. Ferdinand V. Hayden, upon returning from leading the 1871 survey, had informed Cooke that Yellowstone was commercially suited only for recreation. Cooke (seeing the potential for tourism), along with returning members of the 1870 and 1871 journeys and others, became strong advocates for the creation of a national park at Yellowstone. The U.S. Congress passed a bill authorizing the creation of Yellowstone National Park, which was passed and signed into law by Pres. Ulysses S. Grant on March 1, 1872.

### Development of the park

Travel to and in the park in those early years was arduous and undertaken by only a small number of hardy adventurers each year. Added to the physical travel challenges at that time was the ongoing fighting between Native Americans and the U.S. government. The Battle of the Little Bighorn (June 1876) had taken place only some 150 miles (240 km) to the northeast of Yellowstone. The following year Chief Joseph and his Nez Percé band traversed Yellowstone (west-east) in their attempt to evade capture by U.S. troops. They took and briefly held several park visitors hostage before all escaped or were released.

By the early 1880s, however, the hostilities had largely ended, and the Northern Pacific had completed its main track to the Pacific. A spur line from it was built southward to near the park’s northern entrance (just north of park headquarters), and the company began heavily promoting tourism to Yellowstone. The first hotel in the park (at Mammoth) opened in 1883.

Private automobiles were first allowed into the park in 1915. Travel to and within Yellowstone improved considerably in the early 20th century, and the number of visitors each year increased steadily. More lodging was built to accommodate them, most notably the magnificent Old Faithful Inn (completed 1904) in the Upper Geyser Basin. Among the important dignitaries to visit the park in its early decades were Presidents Chester A. Arthur (1883) and Theodore Roosevelt (1903). Park attendance grew annually until the U.S. entry into World War II in 1941, exceeding 100,000 for the first time in 1923 and a half million in 1940 before dropping off drastically during the travel-restricted war years. Yellowstone’s boundaries were adjusted twice in that period (1929 and 1932), after which the park reached its present size.

### The contemporary park

A significant event in Yellowstone’s more recent history was the great fire of 1988 that charred some two-fifths of the park’s forestlands and nearly reached Old Faithful Inn. The forests subsequently have recovered, although areas have been subject to damage by insect pests. Also noteworthy were the reintroduction of wolves in the park, beginning in 1995, and the growth of the wolf population to some 100 individuals in little more than a decade. Annual visits to Yellowstone first exceeded three million in 1992 and have hovered on either side of that mark since then.

Road access to Yellowstone is via entrances in the north, northeast, east, south, and west; a highway also skirts the northwestern portion of the park. The park itself has about 465 miles (750 km) of roads, some two-thirds of which are paved. The road linking the north and northeast entrances stays open year-round, but other park roads close for the winter in early November and reopen between late April and late May. Yellowstone has extensive facilities for park goers, including nine visitor’s centers, and nine hotels and lodges. In addition, there are dozens of dining facilities, service stations, and stores selling food and a variety of other items—most of them concentrated at Mammoth or at locations along the central loop road. All close for the winter, except for lodging and some other facilities that reopen in the Old Faithful and Mammoth areas for the winter season.

A dozen developed campgrounds in Yellowstone are maintained by the National Park Service, and there are more than 300 primitive backcountry campsites that are accessible via the park’s roughly 1,000 miles of trails. In addition, some 15 miles of boardwalks are maintained that give visitors access to many of the best-known hydrothermal features. Hiking, backpacking, camping, fishing, boating, and wildlife watching are popular outdoor activities, as are cross-country skiing and snowshoeing in winter.