

Yellowstone National Park is a treasure that inspires awe in travelers from around the world. New Zealand and Iceland are known for geysers, but nowhere are there as many as in Yellowstone. At the heart of Yellowstone's past, present, and future lies volcanism. About 2 million years ago, then 1.2 million years ago, and again 600,000 years ago, huge volcanic eruptions occurred here. The latest spewed out nearly 240 cubic miles of debris. The park's present central portion collapsed, forming a 28 by 47-mile caldera, or basin—see dashed outline on large map. The magmatic heat powering those eruptions still powers the

park's geysers, hot springs, fumaroles, and mud pots. The Grand Canyon of the Yellowstone gives a glimpse of Earth's interior: its waterfalls highlight the boundaries of the lava flows and thermal areas. Rugged mountains flank the park's volcanic plateau, rewarding both eye and spirit. Yellowstone's wildlife includes the American bison (buffalo), elk, grizzly and black bears, trumpeter swans, and Yellowstone cutthroat trout. Vegetation types range from near-desert vegetation near the North Entrance to subalpine meadows and forests on Mount Washburn. Lodgepole pine covers 60 percent of the park and makes up 80

percent of the forested areas. Yellowstone would be a premier national park for its scenery or wildlife alone, but its history resonates with colorful tales of fur trappers—Jim Bridger and Osborne Russell—and explorers and surveyors, photographers and artists. William Henry Jackson's photographs and Thomas Moran's sketches influenced Congress to establish Yellowstone as the world's first national park in 1872. This national park idea has become a land-use model for many nations, and Yellowstone has evolved from a pleasuring ground and wildlife refuge to today's International Biosphere Reserve and World Heritage site, too.

The guide below helps you choose what to see in your time in Yellowstone. It gives capsule advice on three parts of the Grand Loop's figure-eight shaped road system that presents the park's major attractions. Facilities and services are shown on the maps and can be found in gateway communities, too: Jackson and Cody, Wyo., and West Yellowstone, Gardiner, Silver Gate, and Cooke City, Mont. Ask at the visitor centers for other publications to help you see the park, because its roads sample only a fraction of Yellowstone National Park. The rest is backcountry—traversed by more than 1,000 miles of trails.

Minerva Terrace, Mammoth Hot Springs, photograph by Hendryk Katser/Index Stock

A Guide to the Park and Its Wildlife



All wildlife, especially bison and bears, can be dangerous; keep your distance! Never approach, harass, or feed any animals, even small ones. It is illegal to approach within 100 yards of bears or 25 yards of other wildlife or within any distance in which harassment occurs. Best times to see wild animals in summer are early morning and late evening. **Pets** must be leashed and are prohibited on trails and in the backcountry.

Maximum speed limit is 45 mph, lower when posted. Drive defensively! Traffic accidents cause more injuries to visitors than natural hazards. Use pullouts to watch wildlife and to let faster traffic pass. Be alert for pedestrians and bicyclists. Driving off roads is not permitted. Store valuables securely, lock your vehicle, and report thefts or accidents promptly to a ranger. **Defacing of park features**, collecting archeological or natural objects, littering, and picking wildflowers are illegal. Geysers areas and hot springs are fragile and unstable; **stay on trails** to protect yourself and park features. To throw coars or other items in thermal pools damages them and is illegal.

Climbing in the Canyon area is dangerous and is prohibited. **Swimming or bathing in thermal pools** or streams whose waters originate entirely from a thermal spring or pool is prohibited. **Permits for fishing and boating** are required and available at ranger stations. Know the regulations before you fish; many streams are catch-and-release or fly-fishing only; some are closed to fishing. Boating is allowed only on lakes; they are dangerously cold. **Camp and build fires** only in designated areas. Backcountry permits are required for all overnight trips. Tell your plans to a ranger. It is unsafe to hike alone. Always register at the trailhead before your trip. Know how to store your food in bear country. Vehicles and bicycles are prohibited on trails.

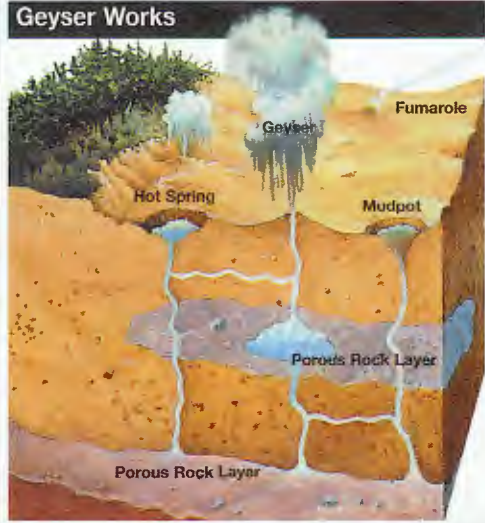
For emergencies, dial 911 or (307) 344-7381.

Bear country! Grizzly and black bears are wild and dangerous. People have been seriously injured and killed by both. Bears appear tolerant of people but may attack without warning. Always view bears from a safe distance. **FEEDING ANY WILDLIFE IS ILLEGAL.** Animals who get handouts often become aggressive and have to be killed. To avoid personal injury store all food in your car, never in your tent. Dispose of garbage in bear-proof garbage cans. Get information about hiking and camping in bear country at a visitor center.



Old Faithful, by Frank Battlie

Old Faithful to Mammoth Hot Springs



Surface water seeps down into porous rock layers to be heated under pressure and then rises back up as geysers or hot springs. As superheated water nears the surface the pressure drops, and it flashes into the steam of a geyser. Hot springs occur when water emerges that is not superheated or under pressure. Fumaroles do not have enough moisture to flow, so they vent steam. Mud pots form over fumaroles whose acid gases decompose rocks into mud and clay.

A main route to Old Faithful is from the south by way of Jackson, Wyo., and the South Entrance. The park road crosses the Continental Divide three times; waters flow east of it to the Atlantic Ocean or west to the Pacific. This route passes five geyser basins—West Thumb, Upper (Old Faithful), Midway, Lower, and Norris—on the way to Mammoth Hot Springs. Sampling the world's largest concentration of geysers, you follow the beautiful Firehole and Gibbon rivers. A visitor center at Old Faithful and museums at Norris tell aspects of the park's stories.

Old Faithful Old Faithful Geyser is the world's best known geyser. Its eruption intervals have long varied around an average of 65 minutes, ranging from 30 to 120 minutes. Recent earthquakes have lengthened

the average interval to 80 minutes. Find out the eruption times of nearby geysers at the visitor centers.

Old Faithful to Madison In Black Sand Basin bright colors of Sunset Lake and Emerald Pool attract photographers. At Biscuit Basin mineral deposits took biscuit shapes, but an earthquake in 1959 triggered changes destroying the biscuits. At Midway Geyser Basin you may walk to Excelsior Geyser Crater and Grand Prismatic Spring. Firehole Lake Drive (one-way, northbound) loops off the main road to Great Fountain Geyser, Firehole Lake, and a variety of hot pools. Lower Geyser Basin features Fountain Paint Pot. Firehole Canyon Drive (one-way loop, southbound), starting south of Madison Junction, passes Firehole Lake. Roadside forests are mainly lodgepole pine, some reddened by the feeding of mountain pine beetles, and others burned by wildfire in 1988. West Yellowstone, Mont., lies 14 miles west of Madison Junction. From Madison to Norris you drive along the Yellowstone caldera's northwest rim. Gibbon Falls cascade over the caldera wall.

Norris Junction to Mammoth Hot Springs Norris Geyser Basin's array of thermal features is unparalleled. Steamboat Geyser, the world's largest, erupts at irregular intervals of days to years. Echinus Geyser erupts about once per hour. Porcelain Basin is the park's hottest exposed area. Norris Museum exhibits explain geyser workings.

At Norris Junction you can turn east toward the Canyon area. At Canyon you can go north to Tower or south to Lake (see tours at right). Continuing north of Norris you pass Obsidian Cliff. Obsidian is a volcanic glass excellent for projectile points and cutting tools. It was traded throughout North America by American Indians. Two miles south of Mammoth Hot Springs the Upper Terrace Loop Drive passes through a thermal area. Garbled limber pines on some extinct formations are more than 500 years old. At Mammoth Hot Springs the travertine (calcium carbonate) forms spectacular terraces. Most new rock from Yellowstone's geysers is geyserite, a noncrystalline mineral chemically similar to glass. Exhibits at the Albright Visitor Center portray the park's history and wildlife and how the U.S. Army protected the park from 1886 to 1916. Park headquarters is in the buildings of Fort Yellowstone, a 19th-century cavalry post. Gardiner, Mont., is five miles to the north. The Yellowstone River flows north to the Missouri River.



Lower Falls, Grand Canyon of the Yellowstone, by Frank Battlie

To Tower-Roosevelt and Canyon Village

The road east from Mammoth Hot Springs leads you four miles to Undine Falls, then 0.2 miles to Lava Creek (picnic area). Three miles farther east look for waterfowl and muskrats at Blacktail Ponds. Blacktail Plateau Drive, a one-way dirt road eastbound, leaves the main road to traverse grass and sagebrush-covered hills as well as forests of Douglas fir, Engelmann spruce, and lodgepole pine. Watch for pronghorns, mule deer, and elk. Scattered groves of quaking aspen trees turn gold in autumn. The next side road leads to a petrified rockwood tree. Such trees, some still upright, are found over hundreds of square miles in northern Yellowstone.

Tower-Roosevelt to Northeast Entrance Lamar Valley, accessible all year, is winter range for elk and bison. During the park's main season you may camp at Slough Creek or Pebble Creek campgrounds en route to the Northeast Entrance, 29 miles from Tower Junction. Just beyond the junction are Silver Gate (one mile) and Cooke City (four miles), Mont. The Beartooth Highway (U.S. 212) climbs to more than 10,900 feet at Beartooth Pass.

Tower-Roosevelt to Canyon Village Tower Fall, tumbling 132 feet, was named for the adjacent volcanic pinnacles. Tower Creek flows into the Yellowstone River. South from Tower Fall, as you drive up Mount Washburn, look east, downslope, into prime grizzly bear country on Antelope Creek. To provide grizzly bear refuge this area is closed to human travel. **DO NOT TRY TO FEED OR APPROACH BEARS.** The main road next crosses Dunraven Pass (8,859 feet elevation) amidst broad-topped whitebark pines and spire-shaped subalpine fir. Meadows display wildflowers in the best of summer. From Washburn Hot Springs Overlook south of the pass you can see the Yellowstone caldera. Its north boundary is Mount Washburn; its south boundary is the Red Mountains 35 miles away. On clear days you can see the Teton Range on the right beyond the Red Mountains.

Canyon Village A 2.5-mile one-way loop road leads to a spur road to Inspiration Point. The Grand Canyon of the Yellowstone plunges 1,000 feet. Hot water acting on volcanic rock created the canyon's colors, but the river's yellow banks at its distant Missouri River confluence occasioned the Minnetaree Indian name French trappers translated *roche jaune*, yellow stone. Although the canyon was downcut rapidly more than once—perhaps by great glacial outburst floods—there is little deepening taking place today.



Since the late 1800s Yellowstone has been a travelers' mecca. The world's first national park proved a popular success. These folks hiked into the Grand Canyon of the Yellowstone, where Uncle Tom Richardson served their picnic.

Grand View gives spectacular views of the canyon. Lookout Point affords a vista of Lower Falls, and a steep trail descends to a closer viewpoint. Back on the main road, turn left in 0.3 miles to view the brink of the 109-foot Upper Falls. On the main road again, go 0.6 miles south to South Rim Drive and cross the Chittenden Bridge to the Uncle Tom's Parking Area. Trails here offer close views of the Upper and Lower Falls. South Rim Drive leads to Artist Point for another view of the canyon and Lower Falls.

Hayden Valley The road here follows the Yellowstone River's meanderings across a former lakebed. After the great glaciers retreated Yellowstone Lake was far larger than today, and this area was flooded. The lake left fine silt and impermeable clay soil that permits little tree growth but allows rich shrubland that provides food for the wild animals. Waterfowl—including white pelicans and trumpeter swans—is abundant in marshy areas. In this open parkland you may see moose, bison, and occasionally even grizzly bears. **VIEW LARGE ANIMALS ONLY AT A DISTANCE, FROM YOUR CAR OR FROM ROADSIDES.** Do not stop in roadways; use roadside parking areas for your safety. No fishing is allowed for a six-mile section in Hayden Valley, to provide quiet for animals and scenic views of untrammeled wilderness for you. Stop at Mud Volcano and see the varied thermal features there. In June and July you might see spawning cutthroat trout jumping at Le Hardy Rapids, three miles north of Fishing Bridge.



Yellowstone Lake, by Robert Johnson

The Lake Area

East Entrance to Fishing Bridge Junction Cody, Wyo., lies 50 miles beyond the East Entrance. As you cross 8,530-foot elevation Sylvan Pass watch for the pikas and yellow-bellied marmots, (illustrated above), in the rocky debris of talus slopes. You descend the west slope of the Absaroka Range, eroded volcanic mountains named for the Crow Indians. Near Yellowstone Lake a spur road leads to Lake Butte Overlook for a view of this huge body of water. Yellowstone Lake occupies only the southeast quarter of the Yellowstone caldera (see top text). At the overlook you are just outside its east boundary. Just north of the lake the land surface has recently risen as much as one inch per year. This suggests future volcanic activity. As you drive along the lake's edge, you can see Steamboat Springs, a hot spring remnant on a line of faults, or fractures in the Earth, which also passes through Mary Bay and Indian Pond to the northwest. Bay and pond both occupy geologically recent hydrothermal explosion craters. Bottom sediments in Mary Bay are still very warm. Be alert for moose browsing in sedge meadows and marshes along Pelican Creek flats as you approach Fishing Bridge.

Exhibits at Fishing Bridge Visitor Center feature the park's birds. Fishing Bridge itself spans the Yellowstone River, the lake's outlet. The bridge, closed to fishing in 1973, now offers one of the best wild trout spawning shows anywhere for most of the summer. White pelicans feed on the native cutthroat trout. Because of a high level of bear activity, only hard-sided camping units are allowed in the Fishing Bridge area.

Yellowstone Lake is North America's largest mountain lake. Over geological time it has drained into the Pacific Ocean, and the Arctic Ocean via Hudson Bay. It now drains into the Atlantic via the Gulf of Mexico. The lake is 20 miles long, 14 miles wide, and 390 feet deep at its deepest point. It averages 139 feet deep. Trout generally inhabit the upper 60 feet because their foods rarely occur below that depth. Average August surface temperature is 60°F. Bottom temperature never rises above 42°F. Swimming is discouraged even where not prohibited: such cold waters can cause potentially fatal hypothermia or hyperventilation in just minutes.

Boating is permitted on some park lakes. Get permits—required for all watercraft—and advice on canoeing and kayaking at ranger stations at Lake Village or Grant Village. A marina is at Bridge Bay, and boat ramps are at Grant Village.



Yellowstone has two native subspecies of cutthroat trout (top), named for the red marks on lower jaws. Mountain whitefish are park natives, too.

Traveling toward West Thumb you may walk or bicycle a rough spur road, starting south of Bridge Bay, to see the area's namesake natural bridge. Gull Point Drive loops off the Grand Loop Road for even closer views of the lake's edge.

West Thumb and Grant Village Walk the boardwalk through the geyser basin at lake's edge at West Thumb. Intense heat measured in lake sediments below West Thumb indicates a shallow thermal system underlying this more recent caldera within the Yellowstone caldera. Should the lake level fall just a few feet, an immense steam (hydrothermal) explosion could occur here. That is what created the craters now filled by Mary Bay and Indian Pond, described above. Exhibits at Grant Village Visitor Center, two miles south of West Thumb, highlight the role of fire in Yellowstone. Fishing, boating, and backcountry use permits are available at the ranger station..

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Yellowstone

Yellowstone National Park
Wyoming/Idaho/Montana

National Park Service
U.S. Department of the Interior

Services and Facilities

Emergencies
For medical or other emergencies contact a ranger or call 307-344-7381 or 911.

- Hospital
- Medical clinic

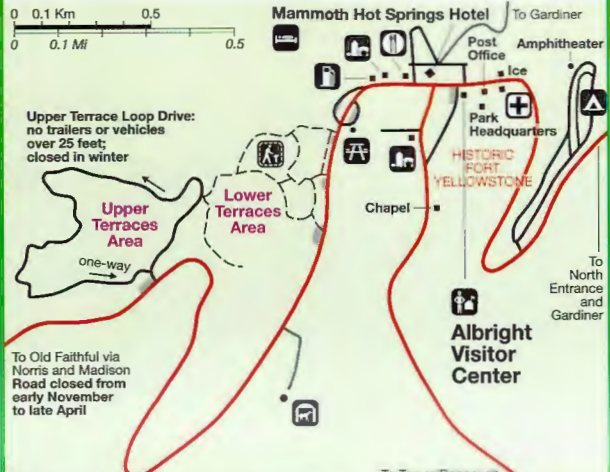
Winter road closures
From early November to early May most park roads are closed. The only exception is the road within the park between the North Entrance and Cooke City. It is open all year.

From mid-December to early March, snowmobiles may be used on the unplowed, groomed park roads. Call park headquarters for regulations.

- Check the park newspaper for seasonal dates of services and facilities.
- Ranger station
 - Campground
 - Lodging
 - Food service
 - Picnic area
 - Store
 - Gas station (some have auto repair)
 - Self-guiding trail
 - Horse rental
 - Boat launch

Mammoth Hot Springs

6239ft 1902m



Old Faithful

7365ft 2254m



Canyon Village

7734ft 2357m



West Thumb and Grant Village

7733ft 2357m

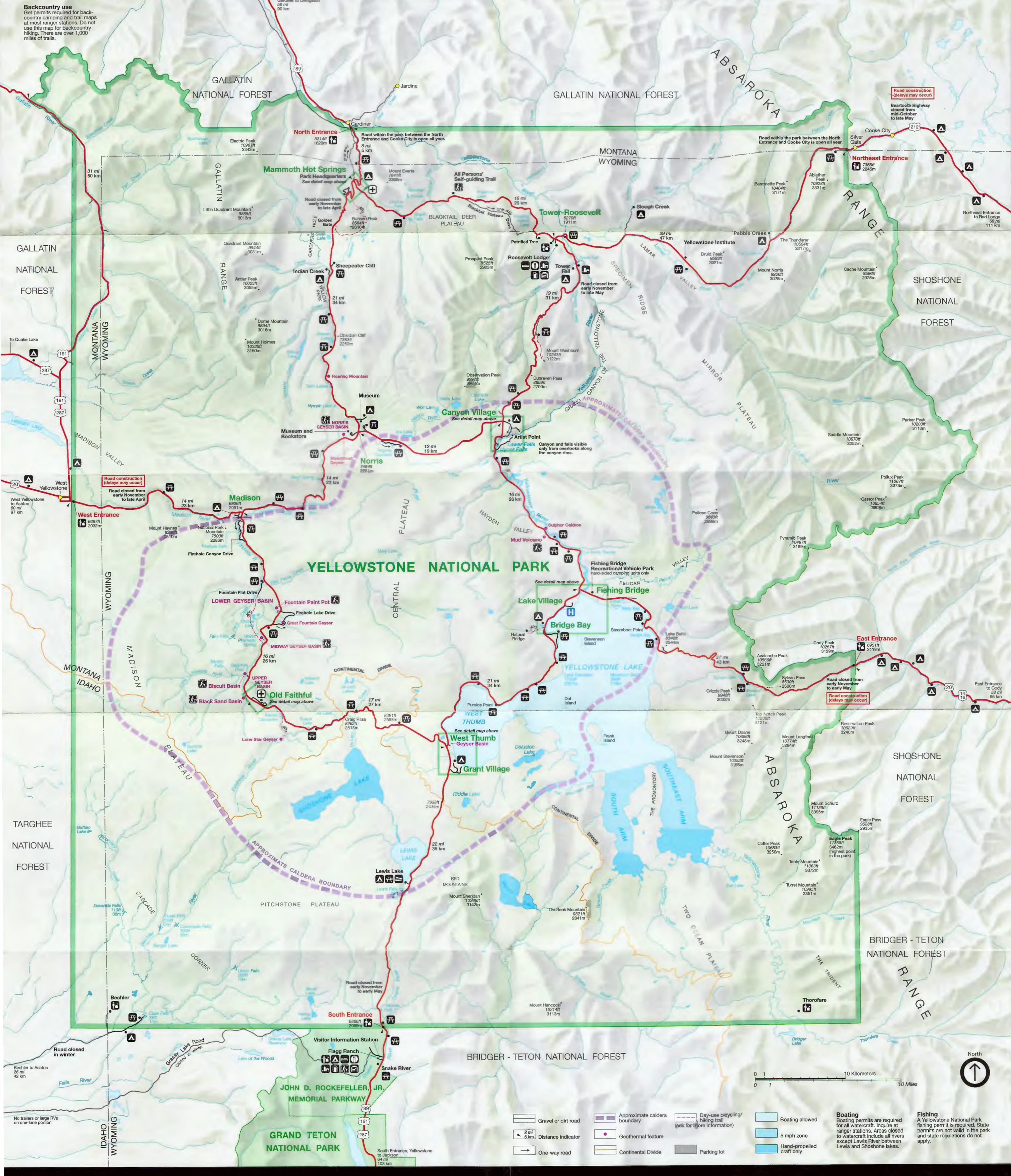


Fishing Bridge, Lake Village and Bridge Bay

7784ft 2373m



Backcountry use
Get permits required for backcountry camping and trail maps at most ranger stations. Do not use this map for backcountry hiking. There are over 1,000 miles of trails.



- Gravel or dirt road
 - Distance indicator
 - One-way road
 - Approximate caldera boundary
 - Geothermal feature
 - Continental Divide
 - Day-use bicycling/hiking trail (ask for more information)
 - Parking lot
 - Boating allowed
 - 5 mph zone
 - Hand-propelled craft only
- Boating**
Boating permits are required for all watercraft. Inquire at ranger stations. Areas closed to watercraft include all rivers except Lewis River between Lewis and Shoshone lakes.
- Fishing**
A Yellowstone National Park fishing permit is required. State permits are not valid in the park and state regulations do not apply.