There are many ways to enjoy Grand Canyon National Park. Following are some suggestions to help you get the most out of your visit. Here is what to do if you have:

**TWO OR THREE HOURS**
Visit Yavapai Museum where you may view exhibits about the geologic history of Grand Canyon. Magnificent views of the Canyon are seen from the Museum. Visit the West Rim Drive for many scenic views. The drive begins just west of Bright Angel Lodge and follow the rim for eight miles to Hermits Rest. Accessible only by Shuttle during summer. The Colorado River may be seen from Hopi Point, Mohave Point, and Pima Point.

**HALF DAY**
Having experienced the above, stop at the Visitor Center and explore exhibits which trace the human and natural history of Grand Canyon. Be sure to view the 15-minute slide program for an informative introduction to Grand Canyon.

Take a leisurely walk along any portion of the Rim Nature Trail. The paved trail extends from Yavapai Museum to Maricopa Point.

**ONE DAY OR MORE**
Enjoy the above activities, then consider a drive along the East Rim to Desert View (25 miles [40 km], 45 minutes one way). At Desert View is the famous Watchtower, and views of the Colorado River and Painted Desert. Tusayan Museum and ruin are located three miles west of Desert View.

Hike a short distance into the Canyon. The Bright Angel Trail or South Kaibab Trail are recommended. Remember, it usually takes twice as long to hike up as it does going down. Carry water at all times of year.

Join a Ranger for an interpretive walk or talk to learn more about the human and natural history of Grand Canyon. See THINGS TO DO elsewhere in The Guide for program information.

See the sunrise or sunset from the Canyon rim. Arrive early and observe the Canyon’s changing colors and moods.
**VILLAGE AREA PROGRAMS**

Grand Canyon is on Mountain Standard Time year round.

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<tr>
<th>Activity</th>
<th>Sun</th>
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<tr>
<td>GEOLOGY TALK*</td>
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<td>CANYON TALK*</td>
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<td>FIRESIDE CHAT*</td>
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<td>GEOLOGY TALK*</td>
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<td>NATURE WALK</td>
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<td>EVENING PROGRAM*</td>
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Programs continued on next page.

Translated information about Grand Canyon's natural and cultural history is available for sale in German, French, and Japanese. Inquire at the Visitor Center and museums.

*Indicates program is Wheelchair Accessible with Assistance. The National Park Service provides wheelchairs for temporary use by park visitors. No rental fee is charged. Wheelchairs are available at the Visitor Center and Yavapai Museum.
DESERT VIEW PROGRAMS

Grand Canyon is on Mountain Standard Time year round.

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<th>Activity</th>
<th>Sun</th>
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<tr>
<td>TUSAYAN RUIN TOUR*</td>
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Visitor Center

The Visitor Center, six miles north of the Park's south entrance station, is open daily from 8:00 a.m. to 5:00 p.m. General information about the Park, maps and brochures may be obtained at the Information Desk. A Grand Canyon Natural History Association bookstore is located in the lobby. Open daily from 8:00 a.m. to 5:00 p.m. Exhibits about the natural and cultural history of the Grand Canyon may be viewed in the Visitor Center exhibit hall. Media programs are shown in the Visitor Center Auditorium every half hour starting at 8:30 a.m. - 4:30 p.m.

Tusayan Museum

A visit to Tusayan Ruin and Museum will provide a glimpse of Anasazi life at Grand Canyon some 800 years ago. The museum, located 3 miles west of Desert View, is open daily from 9 a.m. to 5 p.m. A self-guiding trail leads through the adjacent 800-year-old ruin. Books, maps, and videos are available at the Natural History Association bookstore in the museum lobby.*

Yavapai Museum

Yavapai Museum, located 3/4-mile east of the Visitor Center, features exhibits about the geologic history of the Grand Canyon of the Colorado River. A panorama of the Canyon is visible through the museum's large windows. The museum is open daily from 8 a.m. to 5 p.m. Books, maps, and videos are available at the Natural History Association book store in the museum lobby.* Yavapai Museum will be closed Christmas Day, December 25.

Junior Rangers

Children up to age 12 may become Junior Rangers by completing the activities outlined for them in Young Adventurer, a special newspaper just for kids. Pick up your copy of Young Adventurer at the visitor center, or at Tusayan or Yavapai Museums.*

*Indicates program is Wheelchair Accessible with Assistance. The National Park Service provides wheelchairs for temporary use by park visitors. No rental fee is charged. Wheelchairs are available at the Visitor Center and Yavapai Museum.

"When your spirit cries for peace, come to a world of canyons deep in an old land; feel the exultation of high plateaus, the strength of moving waters, the simplicity of sand and grass, and the silence of growth."

— August Fruge
Anasazi legacy

Grand Canyon has been home to people for over 4,000 years. Around 2,500 B.C. the earliest inhabitants of the area left small split-twig figurines in caves of the Redwall Limestone. These figurines are thought to be a form of hunting magic.

Little else remains to tell us about their lives. For thousands of years people continued to live in Grand Canyon. The best evidence of prehistoric people living here dates to over 1,000 years ago. People known as the Anasazi built dwellings of stone and mud, made pottery and stone tools and farmed. They lived here for over 500 years. After the Anasazi left Grand Canyon, isolated groups of people moved into the area. In the late 1800s white men came to mine the minerals and eventually to find greater monetary reward in operating tourist enterprises.

Nearly 2,500 archeological sites have been found at Grand Canyon representing occupation throughout the past 4,000 years. Please preserve our archeological heritage. Federal and state laws institute civil and criminal penalties for the defacement of archeological sites or theft of artifacts. More important is the history, preserved for thousands of years, which will be lost through carelessness. Please:

- Leave all artifacts in their original locations.
- Walk around, not through walls or mounds and do not lean on these fragile structures.
- With your help and care these remains will be preserved for others to discover and be kept unimpaired for future study. Contact a ranger for more information or to share your findings.

Split-twig figurines

*After climbing the steep talus slope the Indians entered the dark recess in the cliff face. Sorting through the willow twigs they had brought from the creek bed below, they split the most supple to within several inches of the cut end using a stone bladehafted in a wooden handle.

*As they twisted and wrapped, the images of animals began to take shape. One had horns much like the desert bighorn sheep; in the body cavity of another a pellet of deer feces was placed as if to give some credence to the tiny deer effigy. The body of the third was pierced by a small willow twig in imitation of a spear.

*A juniper torch was lit when the effigies were finished, and they were cached deep within the cave and covered with a cairn of rocks.**

Anthropologists suspect that this scene was repeated over a period of 1,000 years as Desert Culture hunters sought to ensure a successful hunt. The figurines left behind some 4000 years ago are the oldest record of human life in the Grand Canyon. In recent years park employees have removed them from the isolated caves in the Redwall Limestone because of increased vandalism of arch-aeological sites.

* Taken from A Sketch of Grand Canyon Prehistory by A. Trinkle Jones and Robert C. Euler, Published by the Grand Canyon Natural History Association, 1979.

Tusayan Ruin

Much of the historical interest of the Grand Canyon is geological, but at Tusayan Ruin there is a change of focus to the human history of the area.

Tusayan Pueblo, one of more than 2,000 prehistoric Indian ruins at Grand Canyon, was occupied by about 30 people around 1185 A.D. The Indians who built it were ancestors of the present day Hopi who now live to the east of the Canyon.

These 12th-Century Indians were not settled peoples. They cultivated corn, beans, and squash, which were supplemented by many edible wild plants and the deer, mountain sheep, and rabbits they hunted.

The ruin was abandoned in 1225 A.D., as were most of the Pueblo ruined at Grand Canyon. At that time severe drought conditions coupled with other climatic changes made it increasingly difficult for the people to continue their agricultural way of life. They relocated near more dependable sources of water to the east.

A visit to Tusayan Ruin and Museum will provide a glimpse of life at Grand Canyon some 800 years ago. The Museum, located four miles west of Desert View, is open daily from 9 a.m. to 5 p.m. A self-guiding trail leads through the adjacent 800-year-old ruin.

Crossword puzzle is found on page 12.
The forest surrounding you at Grand Canyon National Park is unique in many ways. It is a forest in miniature, an island of pinyon pine and juniper supporting a select family of plants and animals.

Grand Canyon National Park is located on the Colorado Plateau, an area of approximately 130,000 square miles, encompassing Northeastern Arizona, Southwestern Utah, Southwestern Colorado, and Northwestern New Mexico. Elevations on the Plateau range from 4000 feet to over 12,000 feet. The pinyon-juniper forest is found in the 4000 to 7500-foot elevation range.

The Plateau climate is dry; rain comes in summer months during the "monsoon" season, with thunderstorms occurring almost every afternoon. These storms originate in the Gulf of California and move quickly northward, releasing large quantities of rain in a short period of time. Unfortunately, most of this moisture does not deeply penetrate the rocky soil.

Winter brings snowfall from Pacific storms. The higher elevations on the North Rim of the park receive up to eleven feet of snowfall, while the South Rim averages four or five feet a year. The forest has adapted over time to the dry climate, lower elevations, and rocky soil of the Colorado Plateau.

Depending upon where you stand, you will see more of one type of tree than another. As you walk along the rim trail here at Grand Canyon National Park, you will see an equal number of pinyon and juniper trees. The predominant pinyon is the Colorado Pinyon (Pinus edulis) which is distinguished from the juniper in that it has cones and needles. Pinyons rarely reach more than 35 feet in height, and they grow very slowly -- top growth may be less than 0.3 cm. Growth occurs during spring and summer months. Since growth of the pinyon is closely associated with rainfall, a dry year results in little or no new growth.

Juniper

Berries are not palatable to humans, but are used in the distilling of gin.

The pinyon does not bear cones until it is 25 years old, and seed production does not occur until the tree is at least 75 years of age. Pinyon seeds are heavy and usually are not dispersed by wind. This task is left to small animals and birds. The Pinyon Jay, Clark's Nutcracker, Scrub Jay, and Steller's Jay, all of which live in the pinyon-juniper forest, collect cones and seeds in the fall and store them on south-facing slopes. Those seeds which are not eaten will germinate in spring with the melting snows. Not only does this symbiotic relationship benefit the future pinyon tree, but also birds receive nourishment throughout the winter from the stored seeds.

Small animals such as the Pinyon Mouse and Cliff Chipmunk carry and cache seeds in their middens, though these seeds are not carried nearly as far afield as those carried by birds. If you look closely at the forest floor, you will notice that it is relatively free of grass, pine needles, and duff. This sparse groundcover is conducive to pinyon and juniper growth. Small seedlings take hold and flourish in rocky outcroppings -- the less interference from other plants, the better!

Juniper trees looks similar to pinyons from a distance, but when you take a closer look you will see the difference. One unique characteristic is the rough-textured bark. The trunk of the juniper also appears more gnarled than that of the pinyon and its branches are bushier. The most common species of juniper at Grand Canyon National Park is Utah juniper (Juniperus osteosperma), with the alligator juniper (Juniperus deppeana) found less frequently.

Hardy junipers are even more adapted to arid areas than pinyons, and extend to lower elevations in the park. The juniper does not grow as tall as the pinyon, rarely topping fifteen feet, while the trunk is typically less than a foot in diameter. Small, bluish-colored "berries" form in late summer and are eaten by small animals and birds such as Townsend's Solitaires, American Robins, and Western Bluebirds. These birds collect berries during winter, eat them, and disperse the seeds during flight.

Pinyon Mice rely on the juniper for food and shelter, but do not play a major role in the caching and carrying of seeds. Both pinyon and juniper trees maintain mutually beneficial relationships with the birds and animals of the forest. For without each other, they would not have a chance for survival.

Certain other plants live harmoniously in association with pinyon and juniper. Big Sagebrush, Rabbitbrush or Chamisa, Gambel Oak, and Banana Yucca are hearty plants requiring little water and lots of sunlight, which is ample among the widely-spaced pinyons and junipers.

Humans living in or near the Canyon benefit from the plants in this unique forest. Anasazi Indians, who made their home in this area almost a thousand years ago, gathered the relatively reliable crop of pinyon nuts, a food rich in protein and fat (pinyon nuts are second only to cashews in protein value). The Anasazi also used the pinyon and juniper for shelter. Today Navajo, Havasupai, and Paiute Indians harvest pinyon nuts each fall, either by shaking the trees or gathering nuts that have already fallen to the ground.

Juniper berries are not particularly delectable to humans, but they are used in the distilling of gin.

Pinyon and juniper trees also provide a source of fuel. The slow-, steady-burning juniper is prized for cooking fires. Pinyon trees play an important role in Indian religious ceremonies and folk medicine. Pollen is used in certain Navajo rituals; pinyon gum is believed to give the Hopi protection against sorcerers; and resin is used to seal baskets for use as water jugs, as well as healing cuts and sores.

Look closely at the pinyon-juniper forest, its unique features, and the close relationship it fosters with both man and animal. If you walk the Canyon trails at dawn or dusk, you will see in its shadows the illusion of a velvet cloak upon this Plateau which lies between the "low and high."
EMERGENCY - 911

Dial 911 from a pay phone or residence. Dial 9-911 from your hotel or motel room.

LODGING

BRIGHT ANGEL LODGE: On the rim. $33-182. EL TOVAR HOTEL: On the rim. $57-222.

KACHINA LODGE: On the rim. $82-88. Make reservations at El Tovar Hotel. THUNDERBIRD LODGE: On the rim. $82-88. Make reservations at Bright Angel Lodge.

MASWIK LODGE: Located at the west end of the Village. $40-86. YAVAPAI LODGE: Located near Mather Village. Open 5-10 a.m. and 11 a.m.-1 a.m. daily.

Located in Bright Angel Lodge. Open 6:30 a.m.- 7 p.m. daily.

BABBITT'S GENERAL STORE: Located in Bright Angel Lodge. Open 8 a.m.-6 p.m. daily. Transportation Desk in person. day

Front desks of the above lodges are open 24 hours a day. For same-day reservations call (602) 638-2631 or write to Grand Canyon National Park Lodges, P.O. Box 699, Grand Canyon, AZ 86023.

PHANTOM RANCH: Overnight dormitory and cabin space is located at the bottom of the Canyon. Advance reservations are necessary. Call (602) 638-2401 or contact the Bright Angel Transportation Desk in person.

6:00 a.m.- 7:00 p.m.

FOOD AND DRINK

BABBITT'S DELICATESSEN: Babbitt's General Store. Open 8 a.m.- 6 p.m.

BABBITT'S GENERAL STORE: Located across from the Visitor Center. Open 8 a.m.- 7 p.m. daily.

BRIGHT ANGEL RESTAURANT: Located in Bright Angel Lodge. Open 6:30 a.m.- 10 p.m. daily. Lounge open 11 a.m.- 12:30 a.m. daily.

ARIZONA STEAKHOUSE: Located at east end of Bright Angel Lodge. Opens 5- 10 p.m. No reservations accepted. Cocktails available.

EL TOVAR DINING ROOM: View of the Canyon. Open daily for breakfast, 6:30- 11 a.m.; lunch, 11:30 a.m.- 2 p.m.; dinner, 5-10 p.m. Lounge open 11 a.m.- 1 a.m. daily.

HERMITS REST FOUNTAIN: Closed

MASWIK CAFETERIA: Located in Maswik Lodge at the west end of the Village. Open 6 a.m.- 10 p.m. daily. Sports Lounge open 11 a.m.- 1 a.m. daily.


PHANTOM RANCH: Breakfast, lunch, and stew or steak dinner are available by advance reservations call (602) 638-2401 or write to Grand Canyon National Park Lodges, P.O. Box 699, Grand Canyon, AZ 86023.

TRANSPORTATION

TRANSPORTATION DESKS: Information about taxi, bus, tours, mule rides, horseback riding, Phantom Ranch facilities, and sightseeing air tours of Grand Canyon is available at Transportation Desks in lodge lobbies:

Bright Angel Transportation Desk handles arrangements for Phantom Ranch and Mule Trips. Open 7 a.m.- 6 p.m. daily.

Maswik Transportation Desk is open daily.

Yavapai Transportation Desk is open daily when Lodge is open.

AUTOMOBILE RENTAL: available year-round by contacting rental desks at Grand Canyon Airport. Budget Rent-a-Car, c/o Grand Canyon Airport, Grand Canyon, AZ 86023, (602) 638-9360; Dollar Rent-a-Car, Box 3296, Grand Canyon, AZ 86023, (602) 638-2625.

Buses: Bus service between Grand Canyon National Park and Flagstaff or Williams, Arizona, is offered by Nava-Hopi Tours; call (602) 774-5003, or inquire at lodge transportation desks for schedule. Greyhound Bus Lines offers service to Flagstaff and Williams, Arizona, from points nationwide.

RAIL: Steam Train service is once more available between Williams, Arizona and Grand Canyon National Park. Limited winter schedule. Call 1-800-THE-TRAIN for reservations and information. AMTRAK stops at Flagstaff, Arizona, and connecting bus service is available daily through Nava-Hopi Tours (see above). For AMTRAK information, call (602) 774-8679 or 1-800-872-7245. The Railroad Express provides bus service for people wanting to take only one-way trip on the Steam Train. Passengers may ride to Williams with Fred Harvey Transportation and take the train to Grand Canyon. Contact any Transportation Desk for information or call 1-800-THE-TRAIN.

MULE TRIPS: One- and two-day mule trips into the Canyon depart in the morning and are available on a waiting-list basis. Beginning November 1, a three-day mule trip into the Canyon. Call (602) 638-2631 or contact the Bright Angel Transportation Desk for full information.

RIVER TRIPS: Smooth water raft trips on the Colorado River are available through October 31. Contact any transportation desk. A list of river tour operators is available upon request at the Visitor Center and museums.

To RIM TO RIM: Round-trip transportation service between Grand Canyon’s South and North Rims. For additional information or reservations, call (602) 638-2820 or contact any lodge transportation desk.

SHUTTLE: Hourly scheduled shuttle service between Grand Canyon Village and the village of Tusayan, and Grand Canyon Airport. Inquire at Transportation Desks for schedule.

TAXI: Service is available to the airport, trailsheads and other destinations, 24-hour service daily. Call 638-2822 or 638-2631.

YAKI SHUTTLE: Transportation to Yaki Point is available. Cost per passenger: $3.00. Shuttle leaves Bright Angel Lodge; 7:10 a.m. & 10:10 a.m., Maswik Lodge; 7:20 a.m. & 10:20 a.m., Backcountry Reservation Office; 7:30 a.m. & 10:30 a.m.

LOST AND FOUND

Lost items should be reported at the Visitor Center or Yavapai Museum. Found items should be turned in at the same facilities. Call 638-7798 weekdays from 8 a.m.-noon, or 1-4 p.m.

CURIOUS

Bright Angel Gift Shop 7 a.m.- 10 p.m. El Tovar Gift Shop ... 7 am. - 10 p.m. El Tovar Newsstand ... 7 a.m.- 10 p.m. Hopi House Gift Shop ... 8 a.m.- 5 p.m. Lookout Studio ... 9 a.m.- 5 p.m. Maswik Gift Shop ... 9 a.m.- 10 p.m. Yavapai Curio ... 8 a.m.- 5 p.m.

Film processing ... 10 a.m.- 5 p.m.

DESSERT VIEW IN-PARK SERVICES

Chevron Service Station ... 8 a.m.- 5 p.m. Trading Post ... 8 a.m.- 5 p.m. Watchtower Gift Shop ... 9 a.m.- 5 p.m. Watchtower Stairs ... 9 a.m.- 4:30 p.m.

SERVICES ORGANIZATIONS

Lions Club: Meets first and third Wednesdays at Maswik Lodge, 7 p.m. Call 638-2769 for information.

Alcoholics Anonymous: Meets Monday 7 p.m. and Friday 6:30 p.m. at the Fred Harvey Training Center. Call 638-2769 for information.

Grand Canyon Rotary Club: Meets Thursdays at Noon at the Canyon Room, El Tovar Hotel.

MEDICAL SERVICES

Grand Canyon Clinic: Open Monday-Friday 8 a.m.- 5:30 p.m.; Saturday 9:00 a.m. - noon. After hours care available. 24-Hour Emergency services. Phone 638-2551 or 638-2469.

Pharmacy: Open Monday-Friday, 8:30 a.m.- 5:30 p.m. Phone 638-2460.

DENTIST: Open Monday, Tuesday & Wednesday 8 a.m.- 3 p.m.; Call 638-2395.

RECREATIONAL SERVICES

Church of Jesus Christ of Latter-Day Saints: Branch President Donald E. Ekel. Address: Yavapai, 638-2792; home phone, 638-9425. All meetings held at Shrine of Ages. Sunday: 7 a.m. Melchizedek Priesthood; 8:15 a.m. Aaronic Priesthood; Young Women, Sunday Primary; 9:30 a.m. Sacrament Meeting; 10:45 a.m. Relief Society.

Roman Catholic: Father Bill O'Connor. Address: (602) 638-9391. Services: 5:30 p.m. Sunday; 8:30 a.m. and 10:30 a.m. All services at El Cristo Rey Chapel, located on the corner of Boulevard and Albright streets. Free parking. Park in Grand Canyon School lot.

Grand Canyon Assembly of God: David F. Haynes, Pastor. Phone 638-2759. All services held at the Community Building. Sunday: Sunday School, 9 a.m.; Worship services 10 a.m. and 6 p.m. Thursday: Worship and Bible Study, 7 p.m.

Grand Canyon Baptist Church: Brother Ronald Nation. Office phone 638-9421, home phone 638-2284. Sunday: 9:30 a.m. and 5:00 p.m. Worship Service, Shrine of the Ages Auditorium; 11 a.m. Sunday School, at the Grand Canyon School. Wednesday: 7 p.m. Prayer and Bible Study, Shrine of the Ages; 7 p.m. RA; and GA's, WMU and Brotherhood at the Shrine of the Ages, Tusayan Baptist Mission; Sunday: 7 p.m. Worship Service, Grand Canyon Squire Inn, Hopi Room. Wednesday: Prayer and Bible Study, Hopi Room 7 p.m.

A Christian Ministry in the National Parks: Interdenominational. Resident Minister: Richard J. Matuson, 638-2340. Sunday: 8:30 a.m. Worship at the West Rim Worship Site through October 31. 11:00 a.m. Worship at Shrine of the Ages. Contact Jonathan Noyer for details. Tuesday: 8 p.m. Bible Study in Church Office, 39 Cochonino Dr.

DART: Open Monday, Tuesday & Wednesday 8 a.m.- 3 p.m.; Call 638-2395.

ALCOHOLICS ANONYMOUS

Alcoholics Anonymous: Meets Monday 7 p.m. and Friday 6:30 p.m. at the Fred Harvey Training Center. Call 638-2769 for information.

Grand Canyon Rotary Club: Meets Thursdays at Noon at the Canyon Room, El Tovar Hotel.

The guide to the grand canyon national park
Other Services

BANK: Valley National Bank is located in Mather Center. Open Monday-Thursday, 10 a.m.-3 p.m.; Friday, 10 a.m.-5 p.m. and 4-6 p.m. Will cash travelers checks and exchange foreign currency. Cannot accept out-of-town checks. Cash advances on charge cards and wire transfers are available. A 24-hour automated teller machine accepts cards from Valley National Bank, American Express, Plus and Star systems, Arizona Interchange Network, and Master Teller.

POST OFFICE: Located in Mather Center. Window service Monday-Friday, 9 a.m.-4:30 p.m.; Saturday, 11 a.m.-1 p.m. Stamps available in lobby. Lobby open 5 a.m.-10 p.m. daily.

TELEGRAPH: A telegraph office is located in Grand Canyon National Park Lodges, General Offices. Open daily 8 a.m.-5 p.m.

GARAGE: Mechanic services available at Grand Canyon Garage, located east of Grand Canyon National Park Lodges, General Offices. Open 8 a.m.-5 p.m. daily. 24-hour emergency service. Phone 638-2631.

FUEL: Gasoline, diesel fuel, and propane are available at Grand Canyon Chevron, located across from the Visitor Center. Open daily 8 a.m.-7 p.m., December 16-January 1, open daily 8 a.m.-5 p.m. Gasoline is also available at Grand Canyon Interstate Park. Open daily 8 a.m.-6 p.m. Will cash travelers checks and exchange foreign currency. Cannot accept out-of-town checks. Cash advances on charge cards and wire transfers are available. 24-hour emergency service. Phone 638-2631.

24-hour emergency service. Phone 638-2631.

LAUNDRY & SHOWERS: Near Mather Campground. Open daily, 8 a.m.-8 p.m. Occasionally temporary changes in hours of operation may be necessary due to extreme weather conditions. Call 638-2631 ext. 6075 for possible changes.

BEAUTY & BARBER SHOP: Bright Angel Hair Design is located in Bright Angel Lodge. Open Tuesday-Saturday, 9 a.m.-5 p.m.; additional hours by appointment.

PET KENNELS: Open daily, 7:30 a.m.-5 p.m. After 5 p.m. contact Fire and Safety for retrieval by calling 638-2631.

Equipment

Equipment Sales: Camping, hiking, and backpacking equipment may be purchased at Babbitt’s General Store, located in Mather Center; open daily 8 a.m.-7 p.m.

Equipment Rental: Camping, hiking, and backpacking equipment may be rented at Babbitt’s General Store, located in Mather Center; open daily 8 a.m.-7 p.m.

Equipment Repair: Limited repair services are available at Babbitt’s General Store (see Equipment Rental listing for location and hours).

Camping on the South Rim

Camping may only be permitted in designated campsites in the National Park. Violators are subject to citation and/or fine.

Mather Campground: Operated by the National Park service, campsites (no hookups available) are $15 per site per night ($5 for Golden Age Passport holders). Reservations may be made at participating National Park Service areas. Check at the Campground Entrance Station for daily campsite availability and reservation details.

Desert View Campground: Closed for the season.

Trailer Village: Trailer sites with hookups are located next to Mather Campground; $15.00 per site per night. Campers may register at the entrance of Trailer Village. Please call (602) 638-2631 for seasonal hours and same-day reservations. For advance reservations call (602) 638-2401 or write to Grand Canyon National Park Lodges, P.O. Box 699, Grand Canyon, AZ 86023.

Camper Village: Commercial campground located seven miles south of Grand Canyon Village in the town of Tusayan. Hookups are available. Call 638-2887 for further information.

Ten-X Campground: Closed for the season.

Out-of-Park Services

South Rim

The following facilities are located in Tusayan, just outside the Park’s south entrance on U.S. Highway 64 South. Additional services are also available. Consult the local telephone directory for further information.

LODGING

Grand Canyon Squire Inn ........................................ 638-2681
Moqui Lodge .................................................. 638-2424
Quality Inn ................................................ 638-2673
Red Feather Lodge ................................................... 638-2414
Seven Mile Lodge ............................................ 638-2291
CAMPING

Camper Village .................................................. 638-2887
Ten-X Campground (USFS) .................................... 638-2443

FOOD

Babbitt’s General Store ........................................... 638-2854
Canyon Food Mart .............................................. 638-2608
Galaxy 4 Restaurants ........................................... 638-2694
McDonald’s ................................................... 638-2208
Moqui Restaurant .............................................. 638-2424
Squire Inn Restaurant ........................................... 638-2681
Tusayan Steak House ................................................ 638-2780
We Cook Pizza, Etc ............................................. 638-2278

Facilities & Services

Services for special populations

Programs, services and facilities that are fully or marginally accessible to persons with a physical disability are noted throughout The Guide using the following symbols:

- Wheelchair accessible
- Accessible with assistance

The National Park Service provides wheelchairs for temporary use by park visitors. No rental fee is charged. A wheelchair is usually available at the Yavapai Museum and the Visitor Center. Visitors requiring wheelchairs may obtain a temporary permit at the West Rim kiosk for access to West Rim Drive in the summer. To obtain a temporary parking permit for handicap parking inquire at the Visitor Center or at Yavapai and Tusayan Museums.

Some ranger programs are adapted to meet the needs of persons with vision impairment. Tusayan Museum offers an exhibit guide in large print, and some exhibits at Yavapai Museum are accessible to those with vision impairment.

The Grand Canyon National Park Accessibility Guide is available upon request at the Visitor Center. Because this Access Guide is currently being revised, visitors are encouraged to check with rangers at the desk for the most current information about accessibility.

North Rim

The average distance across the Grand Canyon “as the raven flies” is ten miles. However, getting from the South Rim to the North Rim by automobile requires a five-hour drive of 215 miles.

Full-service accommodations are available at the Canyon’s North Rim from mid-May to mid-October, weather permitting. Reservations are strongly recommended. Additional facilities are available in the surrounding National Forest and nearby town of Jacob Lake.

A separate Guide issue is published for the North Rim, and includes details about facilities and services as well as program and hiking information. Inquire at the South Rim Visitor Center. Quantities are limited.

Tips for a Safe Visit

To help make your visit to Grand Canyon safe and enjoyable, here are a few tips from the National Park Service:

- Watch your children. Your hand and voice may be too far away once your child has climbed over a barrier or wall.
- Keep your distance from wildlife. Do not feed, touch, or disturb animals in the park. Rodents may bite and large animals have been known to kick when startled.
- Find a friend. Most hiker fatalities occur with solo hikers. Make sure someone knows your plans. Overnight stays in the Canyon require a free permit. Ask a ranger for permit information.
- Pay attention to weather changes. Use caution when walking near the canyon rim and driving in the Park, especially in rainy or snowy conditions.
- Keep your limits. Elevation on the South Rim is 7,000 feet (2134 meters) above sea level. People with heart and respiratory problems should be especially cautious about over exertion.
- Keep track of your belongings. Remove all valuables from your car and trunk. Immediately report any suspicious activity to a ranger. Thieves work quickly.
- Pets must be physically restrained at all times. They are allowed on paved rim trails but not below the rim. The only exception is guide dogs for people who are blind or deaf.
- Bicycles are permitted only on primary paved roads, secondary dirt roads and fire roads. Helmets are strongly recommended, and headlights and reflectors are required at night.
- Bicycle use is strictly prohibited off-road and on trails. Violators will be cited and fined, and their bicycles confiscated.
- Obey posted speed limits.
- Protect your park. Grand Canyon National Park is fully protected by federal law to preserve it for future generations. Do not disturb or remove any natural or cultural feature, including fossils, rocks, plants, animals, and artifacts.
- Emergency - Dial 911 from pay phones or residences. From hotel or motel rooms dial 9-911. A 24-hour emergency telephone is located at the Visitor Center, to the left of the front door.
- Parking in handicapped areas is restricted to vehicles displaying handicapped license plates. Temporary parking permits are available at the Visitor Center, Yavapai and Tusayan Museums.
- Camp only within designated campsites in the National Park. Violators may be fined.
- Fishing requires an Arizona fishing license. Licenses are available at Babbitt’s General Store in Grand Canyon Village.
- Visitors are responsible for knowing park rules and regulations.
**The Guide to the Grand Canyon National Park**

**West Rim Drive and Nature Trail**

The West Rim Drive begins just west of Grand Canyon Village and continues along the Canyon rim for eight miles, ending at Hermits Rest. Numerous overlooks afford fine views of the Canyon and occasional glimpses of the Colorado River. See stop for details.

No water or restrooms are available along the West Rim Drive until you reach Hermits Rest.

**TRAILVIEW I & II**

From Trailview Overlook you have an excellent view of the Village to your right. On the southeastern horizon you can see the Las Vegas Strip, Red Rock, and Mount Charleston.

The Bright Angel Trail winds into the Canyon from your right. You can follow it to Indian Garden, the patch of vegetation once on the Tonto Plateau. - 4.6 miles from the rim, and a vertical drop of 3,000 feet. If you look carefully you may be able to see hikers or mules on the trail.

The Phantom Plane Trail extends south from Indian Garden to the edge of the Tonto Plateau.

Bright Angel Trail follows a side canyon that was formed by erosion along the Bright Angel Trail which runs north-south across the entire breadth of the main canyon. Movement along this half-mile canyon corridor is accentuated by the lack of vegetation. The resulting lack of water in the canyon makes it a very effective cutting tool.

**MOJAVE POINT**

A stretch of whitecliffs known as Hermits Rest can be seen along the river toward the western end of the rim. Hermits Rest is the site of the rapids numerous waves in additete on the rim. Hermits and two rapids from upstream from this point, Chuar and Salt Creek Rapids, are formed at the mouth of side creeks whose headwaters have washed down through the various river terraces. These processes of erosion and deposition continue to shape and reshape the canyon. As a result, the landscape you see before you is ever changing.

**POWELL MEMORIAL**

In 1869, Powell and a party of nine men navigated the Colorado River through Grand Canyon. Until that time the river's course had never been charted and on most maps the region was an ominous blank. With heavy wooden boats, crude or no sailing equipment, poor provisions, and no way of knowing what dangers were ahead, Powell set out to chart this unknown region, testing tributaries and tributaries as they were along.

**HIPPO POINT**

From this point you can see a long section of the Colorado River, including a portion of Great Falls to the west. This viewpoint also has the best view of Upper Antelope Slot Canyon.

The entire course of the river is 1,450 miles from source to source in Wyoming to the Gulf of California - 277 of these miles are in Grand Canyon National Park. As the river flows through the park the river drops 2,000 feet in elevation. This steep decline, coupled with the tremendous whirlpool created in the water, makes it a very effective cutting tool.

**HERMITS REST**

This point, the side canyon, and two rapids are named after Louis Boucher, who was the first to record information from this area. The rapids were named by Powell in 1869. The rapids that are named for him have their own names. Hermits Rest, a stone-and-mortar house designed by Mary Jane Colter, was built in 1934. From this overlook you can see a long stretch of Whitewater known as Hermit and two rapids seen upstream from this point. From here you can see the Colorado River, and the river's course parallels the river's course for miles.

**SUNRISE & SUNSET**

November 23 - 7:07 a.m. 5:27 p.m.

November 24 - 7:13 a.m. 5:21 p.m.

November 25 - 7:18 a.m. 5:16 p.m.

November 26 - 7:24 a.m. 5:14 p.m.

December 1 - 7:32 a.m. 5:13 p.m.

December 2 - 7:37 a.m. 5:12 p.m.

January 1 - 7:39 a.m. 5:12 p.m.

January 2 - 7:40 a.m. 5:13 p.m.

Each year one million copies of The Guide to Grand Canyon National Park are printed and distributed to park visitors free of charge.

Recycle it!

Each year the average American uses 580 pounds of paper - almost 5 trees worth!
Hiking in the Grand Canyon

From many Grand Canyon viewpoints you can clearly see hiking trails winding down from the rim. Dangerously alluring, these footpaths rapidly descend from the cool shaded forest at the rim to some of the world's most demanding hiking terrain.

The dayhiker, out for just a few hours, and the overnight backpacker must be equally prepared for the lack of water, extreme heat and cold, and isolation characteristic of the Grand Canyon. There are several places where the comforts of hotels, campgrounds, shops, and restaurants are found so close to such a harsh environment.

Remember that your descent into the canyon, although brief, marks your entry into a world in which preparation, self-reliance, and common sense are crucial. You are responsible for your own safety and well being as well as that of everyone in your hiking party.

In a recent three-year period, 750 hikers on the Bright Angel and Kaibab Trails were able to return to the rim only after seeking assistance from park rangers. By following the recommendations below, you can ensure that your hike in the Grand Canyon will be memorable as a pleasurable, rather than a disastrous, experience.

Grand Canyon trails involve a downhill trip followed by an uphill climb. Use your watch to keep track of your hiking time. Save energy for the return trip and plan on it taking at least twice as long as the descent. Carry a flashlight in case you do not reach the top before dark.

The climate here is extremely dry year-round and temperatures in the Canyon soar round and temperatures in the Canyon soar in summer. It is well matched to your ability and physical condition. A good rule to follow is to decide how many hours you wish to hike. When 1/3 of the time has passed, turn around and begin to hike out. Backcountry rangers can assist you in planning a trip within your capabilities.

Day hiking in Grand Canyon is one way to experience some of the canyon's rich natural beauty and immense size. No permits are required for day hikes.

A number of popular day hikes are described below. For information about more strenuous or longer day hikes, inquire at the Backcountry Reservations Office.

The round-trip (RT) hiking times listed below are averages for hikers in good physical condition. A good rule to follow is to decide how many hours you wish to hike. When 1/3 of the time has passed, turn around and begin to hike out. Backcountry rangers can assist you in planning a trip within your capabilities.

Day hiking, whether for one hour or the entire day, can provide an excellent introduction to the Inner Canyon. During the extreme weather conditions of winter and summer, hiking without a heavy pack is often more enjoyable than an overnight trip. As a dayhiker, you are entirely on your own. No permit is required and you do not need to inform the rangers of your plans.

It is still necessary, however, to do some advance planning. Water should be taken on any hike lasting longer than 30 minutes. Remember also to watch your watch; allow 1/3 of your time for going down and 2/3 for coming up.

It is the casual, unprepared dayhiker, more often than the backpacker, who experiences extreme fatigue and dehydration on the trail. Dayhikers account for 60% of the search and rescue efforts along Grand Canyon trails. Do not hike farther than your supplies and stamina permit.

There are no loop trails for dayhikers; you will be hiking on the same trail in both directions. The scenery, however, is quite different, depending on which way you are facing. You can also look for fossils, petroglyphs, and mining relics as you walk. If you do find something of interest, remember to leave it undisturbed for the enjoyment of other hikers.

The dayhiker is as responsible as the backpacker for observing wilderness etiquette. If you are not familiar with these policies, please talk to a ranger. Be sure any children accompanying you also understand proper backcountry manners.

Backpackers who have attempted the "Day Hikes" section found on page 10 has information on specific trails. Read the descriptions carefully to choose one that is well matched to your ability and equipment.

Warning: Do not attempt to hike from the rim to the Colorado River and back in one day. Many people who attempt this have suffered serious illness or death.

LEBENSgefährlich: Unnehmen Sie keine Wanderung von Schlagabtafeln hinunter bis zum Colorado Fluß und wieder hinauf innerhalb eines Tages! Viele Wanderer, die eine solche Tour versucht haben, erlitten schwer gesundheitliche Folgen bzw. den Tod.

NE TEVENT PAS de faire une randonnée aller et retour depuis le bord du canyon jusqu’au fleuve Colorado dans une seule journée! Beaucoup ayant tenté cette excursion subissent de graves maladies ou même la mort.
Camping below the rim

Overnight
Backpacking in the Grand Canyon provides a degree of solitude, wilderness, and silence that is increasingly difficult to find. In the 1970s, overcrowding and environmental degradation made it necessary to institute a set of rules and regulations to which all backcountry users are subject.

Permit Required
Chief among these is the requirement to obtain a permit. The main purpose of the permit is to control the number of people in one place at one time and thereby limit the impact from litter, human waste, and trampling of the ground. Guests of Phantom Ranch Lodge do not need permits.

Write for Reservations
At all other hours, write for reservations. The main purpose of the permit is to control the number of people in one place at one time and thereby limit the impact from litter, human waste, and trampling of the ground. Guests of Phantom Ranch Lodge do not need permits.

Call for Information
Information is available by telephone which is answered from 11 a.m. to 5 p.m. (MST), Monday through Friday, except on federal holidays. At all other hours, information is provided by a variety of recorded messages. The telephone number is (602) 638-7888.

In Person
If you are in the park, you may visit the Backcountry Reservations Office, open from 8 a.m. to 12 noon, and 3 p.m. to 5 p.m. daily; the office opens at 7 a.m. in the summer. The office is near Mather Campground, next to the showers and laundry. Here hikers without reservations can place their names on the waiting list for cancellations. The North Rim Backcountry Office, open in summer only, is in the Administration Building.

Planning a Trip
To obtain a permit, backpackers must submit a night-by-night itinerary. Planning information is available from the Backcountry Reservations Office and in many publications available commercially. Keep your trip within your capabilities. After you have started your hike, you are required to follow your itinerary.

Availability of water, temperature extremes, snow pack, and your level of experience are a few of the more important considerations. Hiking with a heavy backpack on steep rocky trails requires excellent balance; many trails demand an unusual degree of agility and constant attention to footing.

On the Trail
Carry as light a pack as possible during the summer and on any hike involving long ascents and descents. A heavy pack adds to the extreme stress already placed on the knees by the angle of the trails. Essential items include a signal mirror, first aid kit, and sturdy water containers. An equipment checklist is available from the Backcountry Reservations Office.

Your Sole Support
Keep your feet happy by wearing good footwear that is broken in. Use molekine to prevent chafed spots from becoming blisters or abrasions. Light hiking or running shoes are adequate on the Kaibab and Bright Angel Trails; hiking boots should be worn on all other trails for traction, ankle support, and protection from rocks. Good boots are just as important for children as for adults. August, 1986: 25-year-old female fell to her death while climbing above a waterfall in tennis shoes.

Trouble on the trail
Occasionally, true emergencies occur in the backcountry. Never abandon someone who is in trouble. Call for help, use your signal mirror, or send a message with another hiker. Almost all emergencies can be avoided with proper forethought. Many problems, when closely examined, are not truly critical and can be resolved by those involved.

Two genuine emergencies are heat stroke and hypothermia. Heat stroke occurs when the body overheats uncontrollably. Symptoms include hot dry skin, rapid, shallow breathing, and loss of consciousness. Cool the patient immediately and send for help. July, 1988: 52-year-old man, dayhiking to the Colorado River with one liter of water, developed a body temperature of 109 degrees F. Rangers successfully rescued him one mile from Indian Garden.

Hypothermia results when the body cannot keep itself warm. Early symptoms are shivering, drowsiness, and fatigue. Late symptoms are irrational behavior and loss of consciousness. Patients should be given dry clothing and hot drinks, be protected from wind, rain and cold, and be warmed by skin contact with another person. February, 1989: Hypothermic man found face down in snow on Bright Angel Trail, 1-1/4 miles from rim. Hiker had attempted rim to river roundtrip with no food, water, or extra clothing. Victim was close to death when found by rangers.

Obviously, hikers develop heat exhaustion as a result of overexertion and dehydration. The best treatment is to rest as long as necessary, often several hours, while increasing food and water consumption. Hikers suffering from heat exhaustion do not usually need additional assistance. Fatigue and muscle soreness are not medical emergencies.

Helicopter evacuations are an ambulance service. If your medical condition would not warrant an ambulance in your hometown, do not anticipate being flown out of the canyon. Flying a helicopter in the Grand Canyon is risky, given the uneven terrain for landings and the odd wind currents. We take it so seriously that full leather boots, flame resistant gloves, flame resistant flight suits, and crash helmets must be worn by every passenger.

If someone asks you to convey a request for assistance, please try to obtain the following information: nature of problem, number of people involved, physical description of the people involved, and the location. If possible, please remain available to answer additional questions.

Rangers are prepared to respond to problems of all kinds and will provide a necessary and appropriate level of assistance. Evaluate your situation rationally and thoroughly before requesting for help.

Do Nothing

"Do Nothing to mar its grandeur, for the ages have been at work upon it and man cannot improve it. Keep it for your children, your children's children and all who come after you . . ."
ACROSS
2. Miocene, Pliocene, Pleistocene, etc.
5. Prickly pear genus
10. Popular sunset point on West Rim
11. Decisions, decisions: either/
12. Observe (past tense)
13. 3 of 4 compass points
16. Bird sighting: allen's; feathered
examples include canyon
42. Lipan, Moran, & Yaki provide this
44. Suntan producing light
45. Famous hotel's initials
50. Big screen movie
51. The Grand Canyon averages 1 mile
52. Gov't agency regulating air quality
53. Ruins of this at Tusayan museum
55. Tentative conjunction
56. Desert bighorn
57. Rest
58. In combination with 63 Across:
59. Type of yucca found locally
60. Most famous Grand Canyon burro
61. Mormon tea
62. Much-read prospectus
63. Century plant
64. A rock layer: wall limestone
66. Resource quality concern
67. Bright winter constellation
68. Civilian Conservation Corps (abbr.)
69. These pocket the limestone cliffs
70. Wife of WW. Bass
71. Parts per million (abbr.)
72. Studio by the Bright Angel trailhead;
73. Same as 22 across
74. Bicycle (colloq.)
75. Bicycle (colloq.)
76. Traditionally hottest month (abbr.)
77. Bright Angel Trail
78. Describing a vast, inland ocean
79. Of Cen- and Mes-; the one meaning
80. Night before the big vacation
81. Pink reptile; endangered species
82. Used to chop wood

DOWN
1. Rumored temple home of dinosaurs
2. Evening Program (abbr.)
3. pine
4. Anasazi Indians used the root of the
yucca plant for this
5. Object of 1880s copper rush
6. Leave the driving to
7. Suffix common to Esplanade, Colonade
8. A pair
9. Verkamp's artist
10. Bright winter constellation
11. No two Grand Canyon temples are
the
12. Observe (past tense)
13. Geologic
14. Hiker's companion
17. Not a profane rock
18. Endemic
19. Parts per million (abbr.)
20. Between Pima and Mohave Points
21. Local geology museum
22. Sightseeing pilot
23. Company (abbr.)
24. Kaibab plateau
27. Ruins of this at Tusayan museum
29. Volcanic intrusion
30. Lich__ symbiotic bare rock colonizer
31. Called "Grand Canyon Shangri-la"
32. Sunset designation
34. Rock layer
35. Lost from the rock record
36. Moved to present location 1905
37. Female desert bighorn sheep
38. Look at
40. None of this at Visitor Center
41. Meta__ ail: protective fence
42. Lipan, Moran, & Yaki provide this
43. A cavorting raven
44. Suntan producing light
46. Sound uttered when soaking feet after
a long day hiking
47. Not on a mile ride
48. Gaze through binoculars
49. Thousands and thousands of years
50. Big screen movie
51. The Grand Canyon averages 1 mile
54. that the East Rim Drive?
55. Tentative conjunction
56. Desert bighorn
57. Rest
58. In combination with 63 Across:
60. Most famous Grand Canyon burro
61. Mormon tea
62. Much-read prospectus
63. Local winged acrobat
64. A rock layer: wall limestone
65. Determining a rock's age (past tense)
66. Resource quality concern
67. The that bind (pl)
68. Civilian Conservation Corps (abbr.)
69. These pocket the limestone cliffs
70. Wife of WW. Bass
71. Parts per million (abbr.)
72. Studio by the Bright Angel trailhead;
73. Same as 22 across
74. A single, bright rock layer in the
Painted Desert
75. Bicycle (colloq.)
76. Traditionally hottest month (abbr.)
77. Bright Angel Trail
78. Describing a vast, inland ocean
79. Of Cen- and Mes-; the one meaning

Wasted money

Wait! By tossing that soda can or cigarette butt to the ground, you are throwing your money away. Not literally perhaps, but Grand Canyon National Park spent more than $30,000 on litter pick-up last year alone. If every visitor uses the waste receptacles provided at overlooks and facilities this year, the National Park Service can better spend those funds to benefit park resources or improve visitor services. It's so easy, if we all pitch in.

Litter lingers:
Aluminum cans . . . . . . . . . . . . 80-100 years
Glass bottles . . . . . . . . . . . . . 1,000,000 years
Plastic bags . . . . . . . . . . . . . 10-20 years
Plastic film containers . . . . . . . 20-30 years
Pink reptile; endangered species

Porcupine
Porcupines walk "pigeon-toed," leaving prints turned in at an angle. Even distinct tracks may not show clear toe prints, but they will show the rough texture from the surface of the foot. The animal's tail trails along behind, leaving drag marks. In deep snow, the porcupine plows a wide trough. Trails often end at a tree where some bark may be chewed off.

For more information about deciphering tracks in the snow see page 13.
Winter at the Grand Canyon is a difficult season for plants and animals alike. The winter environment changes drastically from the hot summer environment, causing plants and animals to adapt to these changes.

At mid-latitudes solar energy reaching the earth on a winter day is only half what it was in summer. If snow is on the ground, 75-95% of the sunlight hitting the snow is reflected back into space. The resulting cold temperatures create a great deal of stress on the plants and animals living here. As plants die or become dormant, and many animals leave the area for the season, the remaining animals have difficulty finding food. This scarcity of food creates further hardships. In response to these stresses, plants and animals have adapted to survive winter conditions.

**Plants** living on the rim of the Grand Canyon must be hardy to withstand extreme variations between winter and summer temperatures. Most plants live longer than one year and go dormant in the winter. Herbs die back as winter approaches, leaving an underground bulb or root which stores energy for rapid growth the following spring. Most trees in the park are conifers which are able to withstand both winter cold and seasonal drought. Unlike deciduous trees which drop their leaves in fall, conifers keep their foliage throughout the year, which enables them to convert sunlight into usable energy during the winter. To keep from freezing, trees reduce the water content of their sap. Like antifreeze, the concentrated sap prevents plant tissue from freezing at low temperatures. Trees are further insulated by bark and woody tissue, and their foliage is protected by a thick, waxy coating.

One winter challenge that is often overlooked is drought. Even if there is water in the ground, it is usually frozen and cannot be absorbed by the roots. Trees continue to lose water through their foliage, especially on windy days, and have difficulty replenishing it. The needles’ waxy coating helps to reduce water loss.

**Animals** use three different strategies to survive the winter: they migrate, hibernate, or stay where they are and weather the elements.

At first glance, migrating to warmer climates might appear to be the easiest alternative. Most species of birds migrate, either moving from the plateau to the inner canyon, or leaving the region entirely. Migration, however, requires tremendous energy. Birds expend a great deal of energy flying, but walking overland is ten times as costly. Consequently, very few land animals migrate.

One Grand Canyon resident that does migrate is the mule deer. Many move either into the inner canyon or downhill to lower elevations of the plateau. For the majority of land-bound animals, migration is too costly, and they remain on the rim.

Some animals, such as ground squirrels, chipmunks, and reptiles hibernate. Rock squirrels and skunks become dormant. They reduce their body functions to bare maintenance levels to conserve energy, although they will wake periodically throughout the winter.

The third strategy is to remain active during the winter, and cope with the elements. Year-round residents overcome winter’s cold temperatures in a variety of ways. The fur of mammals and feathers of birds provide excellent insulation. Birds further reduce heat loss by fluffing their feathers to trap pockets of warm air. Some birds such as the chickadee go into a nightly torpor, allowing their body temperatures to drop by 10-20 degrees, to reduce loss of body heat.

Many mammals curl up in a ball or huddle together to expose less surface area to the cold. Small mammals lose a higher proportion of body heat than large animals. They avoid extreme cold by burrowing into the snow. Although snow itself is cold, it can act as an insulating blanket. Inner layers of snow remain close to freezing temperature, while areas not protected by snow can drop far below freezing.

Winter adaptations are diverse and ingenious. But all share the common goal of allowing plants and animals to survive the winter at Grand Canyon National Park.

**Plants** living on the rim of the Grand Canyon must be hardy to withstand extreme variations between winter and summer temperatures. Most plants live longer than one year and go dormant in the winter. Herbs die back as winter approaches, leaving an underground bulb or root which stores energy for rapid growth the following spring. Most trees in the park are conifers which are able to withstand both winter cold and seasonal drought. Unlike deciduous trees which drop their leaves in fall, conifers keep their foliage throughout the year, which enables them to convert sunlight into usable energy during the winter. To keep from freezing, trees reduce the water content of their sap. Like antifreeze, the concentrated sap prevents plant tissue from freezing at low temperatures. Trees are further insulated by bark and woody tissue, and their foliage is protected by a thick, waxy coating.

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**Tracks in the snow**

A story of animal activity is revealed in the snow -- the tracks of a squirrel running from tree to tree, or those of a mouse whose trek across a meadow suddenly ends among the wing prints of an owl.

Observers are more likely to see animal tracks than to see the animals themselves. To see an animal, both you and it must be in the same place at the same time; but tracks may last for days, leaving a record of all the animals that have passed by.

**Coyote & Gray Fox**

*Prints of canines are longer than they are wide. Unlike cats, canines cannot retract their claws, so claw marks are almost always present. Coyote and fox prints are very similar, and both animals live on the South Rim. However, foxes tend to avoid open areas, and are less common here than coyotes.*

**Abert Squirrel & Rock Squirrel**

*Squirrels have four toes on their front feet and five toes on their hind feet. Their tracks usually begin and end at trees. Rock squirrels become dormant during the colder parts of winter; when they are out, they will be near the canyon rim. Abert squirrels are found away from the rim in the Ponderosa pine forest. More tracks on page 12.*

**Mule Deer**

*Since deer are heavy and have slender legs, they almost always leave tracks in the snow. Their hooves form a heart-shaped print which tapers to a point. In soft snow they also leave two small circular marks behind the hoof from “dewclaws.”*

**Mouse**

*Mice have the same toe pattern as that of squirrels; size alone easily distinguishes their tracks. Sometimes tail marks will be found between the prints.*

**Feline prints are equal in length and width. Because cats retract their claws while walking, their tracks do not show claw marks.**

**L 3-1/2” W 2-1/2”**

**Mouse**

**L 2” W 1”**

**Abert Squirrel & Rock Squirrel**

**L 2-1/2” W 2”**

**Coyote & Gray Fox**

**L 2” W 1”**

**Mule Deer**

**L 3-1/2” W 2-1/2”**

**Bobcat**

**L 2” W 2”**
If you’re planning ahead...

If you are using The Guide to plan a future trip to Grand Canyon National Park, here are some tips to assure a pleasant stay.

**Lodging and Camping:** Summer season at Grand Canyon is extremely busy. Plan ahead. If you plan to stay at the park overnight DO NOT ARRIVE without reservations for accommodations. Rooms and campsites will be filled before you arrive.

**Mule Trips:** Mule trips into the canyon from the South Rim are booked up to a year in advance. Make reservations as far in advance as possible. A waiting list is available in the event of cancellations, but it is not wise to count on getting a trip this way. Trips from the North Rim (a 5-hour drive from Grand Canyon Village) are easier to get without advance reservations.

**Backcountry Accommodations:** Overnight accommodations at Phantom Ranch Lodge and Bright Angel Campground are usually booked months in advance. Make reservations as early as possible. See listings under Facilities and Services elsewhere in The Guide for more information.

**Rims:** Although the South and North rims of the Grand Canyon average only ten miles apart as the raven flies, the North Rim may be reached only by car (a 215-mile drive from South Rim; allow 5 hours), or by hiking (a very strenuous hike taking more than one day). Be sure your reservations are for the rim you will be visiting.

**Keys:** Bring an extra set of car keys. If you are locked out, it may be a very long wait for a locksmith.

**Services:** Grand Canyon is in a remote area. Bring with you what you need.

**Weather:** Be prepared for extreme conditions and sudden fluctuations. Bring clothing and equipment to cover all weather conditions.

**Additional Information**

Additional information is available from the following sources:

- Grand Canyon National Park, P.O. Box 129, Grand Canyon, AZ 86023. General information (602) 638-7888.
- Grand Canyon National Park Lodges, P.O. Box 659, Grand Canyon, AZ 86023; (606) 638-2401.
- Grand Canyon Chamber of Commerce, P.O. Box 3007, Grand Canyon, AZ 86023.
- Arizona Department of Tourism, 1100 W. Washington St. Phoenix, AZ 85007; (602) 542-TOUR.

**Road Conditions**

Listed below are commercial phone numbers for a recorded message of road conditions surrounding the Grand Canyon area:

| Grand Canyon National Park | (602) 638-7888 |
| California | (901) 455-7623 |
| Colorado | (303) 245-8800 |
| New Mexico | (505) 827-9300 |
| Nevada | (702) 385-0181 |
| Utah | (801) 964-6000 |

**Grand Canyon Climates**

Weather at Grand Canyon is unpredictable. At any time of year visitors should bring rain gear. In winter, even if you plan to hike into the Inner Canyon, be prepared for cold, wet weather.

**South Rim** (elevation 7000 feet/2135 meters) is open all year. Summer temperatures range from highs in the 80’s (upper 20° C) to lows in the 50’s (lower teens C). Expect afternoon thunderstorms from mid to late summer. Winter temperatures range from highs in the 20’s-30’s (-7° to -1° C) to lows well below zero (-18° C). Snow may be expected from mid November to April. Accumulated snow is usually less than 2 feet deep. Late spring and fall are characterized by moderate temperatures.

**North Rim** (elevation 8000-9000 feet/2400-2743 meters) is open from late May through October, weather permitting. Summer temperatures average 3-6 degrees cooler than the South Rim, and afternoon rain is common in late summer. During winter months Highway 67 to the North Rim is closed to vehicles and no services are available. Snowshoeing and cross-country skiing are permitted. For winter access information contact Grand Canyon Backcountry Office, P.O. Box 129, Grand Canyon, AZ 86023.

**The Inner Canyon**, accessible only by foot or mule, is open all year from South Rim access points; summer only from the North Rim. Elevation at Phantom Ranch, along the Colorado River, is 2400 feet/732 meters. Summer temperatures range from highs in excess of 100° (38° C) to lows in the 70’s (20° C). Winter temperatures range from the 60’s (lower teens C) to the 50’s (lower teens C). Snow is rare at the bottom, but rain is not uncommon. Expect snow and cold temperatures at the rim as you hike out.

**Temperatures and Precipitation**

<table>
<thead>
<tr>
<th></th>
<th><strong>South Rim</strong></th>
<th><strong>North Rim</strong></th>
<th><strong>Inner Gorge</strong></th>
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<tbody>
<tr>
<td>Average</td>
<td>Max° Min° Precip</td>
<td>Max° Min° Precip</td>
<td>Max° Min° Precip</td>
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<tr>
<td>January</td>
<td>41 18 3.32</td>
<td>37 16 3.17</td>
<td>56 36 .68</td>
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<tr>
<td>February</td>
<td>45 21 1.55</td>
<td>39 18 3.22</td>
<td>62 42 .75</td>
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<tr>
<td>March</td>
<td>51 25 1.38</td>
<td>44 21 2.63</td>
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<tr>
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<td>60 32 .93</td>
<td>53 29 .73</td>
<td>82 56 .47</td>
</tr>
<tr>
<td>May</td>
<td>70 39 .66</td>
<td>62 34 1.17</td>
<td>92 63 .36</td>
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<tr>
<td>June</td>
<td>81 47 .42</td>
<td>73 40 .86</td>
<td>101 72 .30</td>
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<tr>
<td>July</td>
<td>84 54 1.81</td>
<td>77 46 1.93</td>
<td>106 78 .84</td>
</tr>
<tr>
<td>August</td>
<td>82 53 2.25</td>
<td>75 45 2.85</td>
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The national parks and monuments of the Colorado Plateau preserve many of the nation's natural and cultural treasures. A visit to Grand Canyon National Park will be enriched by side trips to any of these sites, each as spectacular in its own way as the Grand Canyon itself.

Information about facilities and services may be obtained by writing to the addresses listed below. Mileages are approximate, and are calculated from Grand Canyon Village on the South Rim.

**Arches National Park**, P.O. Box 907, Moab, UT 84532. 320 mi/518 km.

**Black Canyon of the Gunnison National Monument**, P.O. Box 1648, Montrose, CO 81402. 419 mi/679 km.

**Bryce Canyon National Park**, Bryce Canyon, UT 84717. 310 mi/500 km.

**Grand Canyon Climates**

**Canyon de Chelly National Monument**, P.O. Box 388, Chinle, AZ 86533. 243 mi/392 km.

**Canyonlands National Park**, 125 W. 2nd South, Moab, UT 84532. 328 mi/531 km.

**Capitol Reef National Park**, Torrey, UT 84775. 362 mi/587 km.

**Cedar Breaks National Monument**, P.O. Box 749, Cedar City, UT 84720. 277 mi/445 km.

**Chaco Culture National Historical Park**, Star Rt. 4, Box 6500, Bloomfield, NM 87413. 366 mi/593 km.

**Colorado National Monument**, Fruita, CO 81521. 477 mi/773 km.

**El Morro National Monument**, Raman, NM 87321. 329 mi/533 km.

**Grand Canyon National Recreation Area/Rainbow Bridge National Monument**, P.O. Box 1207, Page, AZ 86023. 215 mi/347 km.

**Hopi Cultural Center**, P.O. Box 67, Second Mesa, AZ 86043. 109 mi/177 km.

**Hubbell Trading Post National Historic Site**, P.O. Box 349, Ganado, AZ 86045. 243 mi/394 km.

**Lake Mead National Recreation Area**, 601 Nevada Highway, Boulder City, NV 89005. 270 mi/435 km.

**Mesa Verde National Park/Hovenweep National Monument**, Mesa Verde NP, CO 81330. 303 mi/488 km.

**Montezuma Castle National Monument**, P.O. Box 219, Camp Verde, AZ 86322. 128 mi/206 km.

**Monument Valley, P.O. Box 93, Monument Valley, UT 84536. 178 mi/287 km.**

**Natural Bridges National Monument**, Box 1, Lake Powell, UT 84533. 242 mi/390 km.

**Navajo National Monument**, HC 71 Box 3, Tonalea, AZ 86044. 145 mi/234 km.

**Navajo Reservation, Navajoland Tourism Office**, P.O. Box 663, Window Rock, AZ 86515.

**Pipe Spring National Monument**, P.O. Box 69, Kanab, UT 84741. 243 mi/390 km.

**Santuarie Del South, Moab, UT 84532. 243 mi/392 km.**

**Zion National Park**, Springdale, UT 84767. 272 mi/439 km.
GRAND CANYON NATURAL HISTORY ASSOCIATION:
Aid to Grand Canyon National Park

PUBLICATIONS

BOOKS
ALONG THE RIM by Nancy Loving. A brief discussion of plant and animal life on the South Rim, and guide to points along East and West rim drives from Desert View to Hermit's Rest. 56 full-color and black-and-white photographs, four maps, landmark keys. 52 pp. $2.95

GRAND CANYON GEOLOGY ALONG BRIGHT ANGEL TRAIL by David Thayer. This lucid explanation of Grand Canyon geology contains 30 photos, 30 line drawings, and 5 section maps of Bright Angel Trail. 6"x8" wirebound. 100 pp. $8.95

GRAND CANYON WILDFLOWERS by Phillips and Richardson. A field guide to the wildflowers of the Grand Canyon area. 160+ color plates representing 140 species. Quick reference to color, location and blooming season. 145 pp. $15.95

GUIDE TO GRAND CANYON VILLAGE HISTORIC DISTRICT by Timothy Manns. Illustrated booklet describing historic buildings in Grand Canyon Village on the South Rim. 24 pp. $2.50

IN THE HOUSE OF STONE AND LIGHT by J. Donald Hughes. Detailed look at the human history of Grand Canyon before and after it became a national park. Historic photographs. 137 pp. $9.50

INTRODUCTION TO GRAND CANYON GEOLOGY by Michael Collier. The story of Grand Canyon geology in lay terms. 40 color plates. 42 pp. $4.00 pb, $7.50 hc

JAPANESE GUIDE TO THE GRAND CANYON by Masahiro Ohta. Introductory guide to Grand Canyon includes a map of the area. Written in Japanese specifically for Japanese visitors. 13 color plates. 26 pp. $5.00

JOHN WESLEY POWELL AND THE ANTHROPOLOGY OF THE CANYON COUNTRY by Fowler, Euler, and Fowler. Reprint of the U.S. Geological Survey professional paper No. 670. Powell's ethnography dating back to the late 1800s. 30 pages. $4.00

LIGHTFALL AND TIME: FIFTEEN SOUTHWESTERN NATIONAL PARKS, by Bennett and Lamb. Paintings and essays about Grand Canyon, Arches, Canyonlands, and 12 other national parks. Informative and inspirational. 64 pages, 15 color plates, 8"x8". $14.95, pb

MOUNTAIN LYING DOWN: VIEWS OF THE NORTH RIM by Shoemaker, Euler, and Collier. The biologic, geologic, and cultural history of the North Rim of the Grand Canyon in lay terms. 36 pp. $3.00

RECOLLECTIONS OF PHANTOM RANCH by Elizabeth Simpson. Pock­size history of Phantom Ranch, the guest quarters at the bottom of the Canyon. Suggestions for day hikes. 28 pp. $2.50

RIVER RUNNERS OF THE GRAND CANYON by David Lavender. A lively history of river running on the Colorado River as it winds its way through Grand Canyon; 1869 to the present. 75 B/W photographs. 188 pp. $15.00

POSTERS
GRAND CANYON NATURE POSTER. Canyon rim setting filled with native birds, insects, reptiles, and plants. Drawn by distinguished artist Lawrence Ormsby. Full Color. Includes key. 37"x25" $5.00

GRAND CARSON POSTER. Photographs by Christopher Brown combine with words of John Wesley Powell to create a moving experience of the Canyon. 18"x24" $5.00

I AM TEN THOUSAND CATHEDRALS ROLLED INTO ONE." Tom Bean photograph shows Grand Canyon at its most dramatic. 11"x14" $4.00

CASSETTE
GRAND CANYON LIFESONGS by Rita Cantu. 45 minutes of mellow vocals and orchestration. Songs written about and in the canyonlands of the Colorado Plateau, and performed by the composer. $9.95

VIDEO
RIVER SONG: A NATURAL HISTORY OF THE COLORADO RIVER, narrated by Richard Chamberlain. The river is the lifeblood of the Grand Canyon, yet because of its remoteness it was not explored completely until 1869. Even today it is a challenge to the adventure­some. In this award-winning film we see animals, plants, geology, and the great river itself. 40 minutes. VHS, PAL. $29.95

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CANYON SONG: A LYRICAL JOURNEY FROM RIM TO RIVER, video narrated by Katharine Ross. Enter the immense Grand Canyon on foot, dropping below its rim to explore, from a hiker's perspective, a wealth of history, geology, botany, and something more -- the indelible imprint left in the hearts of those who come to know the Canyon well. 33 minutes. Closed captioned in VHS-NTSC only. VHS-NTSC, VHS-PAL. $29.95

THE KOLB BROTHERS OF GRAND CANYON by William C. Suran. A collection of mемorable incidents and humorous anecdotes from the lives of these colorful men who lived on the brink of the Canyon. Includes a rich collection of their photographs. 38 B/W photographs, 60 pp. Paperback. $5.95

TONTO PLATFORM POSTER. Inner Canyon setting filled with native birds, insects, mammals, and plants. Illustrated in full color by Lawrence Ormsby. Includes key. 22"x37" $5.00

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East Rim Drive to Desert View

The 25-mile drive along the South Rim between Grand Canyon Village and Desert View is known as East Rim Drive. East Rim offers views of the canyon and the Colorado River, as well as numerous other sights - the Painted Desert, San Francisco Peaks, Indian ruins, and the Desert View Watchtower among them. Restrooms are located at Tusayan Museum and Desert View. Drinking water is available at Desert View.

YAKI POINT
At Yaki Point the heavily traveled Kaibab Trail begins its descent toward Phantom Ranch. This point offers a tremendous view of Wotan's Throne to the northeast, a large flat-topped butte named by the scientist who made the first topographical map of the canyon.

GRANDVIEW POINT
Grandview Point is at a higher elevation than most points along the East Rim Drive. Receiving more moisture, it supports large stands of ponderosa pine and gambel oak, along with pinyon pine and juniper. The trail from Grandview Point leads to Horseshoe Mesa where Pete Berry laid claim to the Last Chance Copper Mine in 1890. In the mid 1890s construction began on the Grandview Hotel, a two-story log structure that was one of Grand Canyon's leading tourist facilities until it closed its doors in 1908.

MORAN POINT
Moran Point was named for the famous 19th-century landscape artist, Thomas Moran, whose impressive works helped convince Congress to establish Grand Canyon as a National Park.

TUSAYAN MUSEUM AND RUIN
Tusayan Museum, on the south side of East Rim Drive, features exhibits about the prehistoric and historic Indian cultures which inhabited the Grand Canyon region. A self-guiding trail leads through the 800-year-old Anasazi ruin adjoining the museum. Museum hours are 9 a.m. to 5 p.m. daily. A Grand Canyon Natural History Association bookstore is located in the lobby.

LIPAN POINT
Lipan Point is also trailhead for Tanner Trail, a nine-mile hike to Unkar Delta. On this tributary fan are found ruins of prehistoric Anasazi dwellings dating back nearly 1000 years. Views from Lipan Point of the Grand Canyon Supergroup, the tilted bright red-black-white rock, are unequaled by any other view from the rim.

NAVAJO POINT
Navajo Point offers excellent views of Escalante Butte and the Colorado River.

DESERT VIEW
Desert View encompasses a broad range of scenic vistas -- from the luminous Painted Desert, home of the Navajo Indians, up Marble Canyon where the Grand Canyon turns sharply to the west, to Cedar Mountain and the Vermillion Cliffs.

WATCHTOWER
Erected in 1932, the Watchtower overlooking this panorama was designed by the remarkable designer-architect, Mary Jane Colter. The tower, which Colter labeled as a "re-creation," stands 70 feet high and 30 feet wide at the base -- larger than any of the Indian towers which inspired it, including those found at Mesa Verde and Canyon de Chelly. The concrete foundation and steel framework were constructed by the bridge department of the Santa Fe Railway. The large observation room on the ground floor was modeled after an Indian kiva. Its ceiling was created with logs salvaged from the old Grandview Hotel, the first hotel built at Grand Canyon. Replicas of ancient petroglyphs and kiva paintings decorate the tower's interior.

The tower provides a panoramic view of the Grand Canyon and the Colorado River. The tower is the highest point on the South Rim, reaching 7522 feet above sea level.

WUPATKI & SUNSET CRATER
Wupatki and Sunset Crater National Monuments are located southeast of Grand Canyon off US 89, along a scenic drive between Cameron and Flagstaff. The multi-story pueblo ruins of Wupatki are remnant dwellings of Sinagua and Anasazi Indians who lived on the western edge of the Painted Desert some 800 years ago. Sunset Crater is Arizona's youngest volcano. It first erupted in 1064 A.D., and was active for about 200 years. The result may be seen today in its 1000-foot cinder cone and tortured lava flows. Visitor Centers are open daily.