

JOSHUA TREE *journal*

Fall 1992-Winter 1993

Activities Information Regulations

Free

Welcome

to Joshua Tree National Monument, a spectacular place of desert beauty and unusual diversity. This area was set aside in 1936 to preserve a representative and scenic portion of the Mojave and Colorado deserts for the benefit and enjoyment of present and future generations.

To limit the impact of over a million visitors a year, we need your help. Please pick up litter and watch wildlife from a distance without feeding them. If you observe historic or prehistoric artifacts, please only look and enjoy. Do not touch, move, or collect these items. They are not only for your enjoyment, but also for that of future generations. Tour the park safely and with sensitivity for other visitors and for the plants and animals for whom this park may be their only home.

As you visit Joshua Tree National Monument this season, we hope you take advantage of our programs that help you better understand the desert and this very special place. Please look for scheduled programs, hikes, and special events posted on bulletin boards throughout the park. We think you will appreciate your visit more by a better understanding of your surroundings.

Whatever your reason for coming here, we hope you are rewarded by what you see, hear, touch, or smell.

Do you have any concerns or ideas for improving your national monument? Let us know what you enjoyed about the monument too. Please drop a note to: Superintendent, Joshua Tree National Monument, 74485 National Monument Drive, Twentynine Palms, CA 92277.

Dave Moore, Superintendent

In This Issue

- | | |
|----------------------------|---|
| ■ Astronomy | 6 |
| ■ Backcountry Information | 5 |
| ■ Birding | 6 |
| ■ Campgrounds | 3 |
| ■ Desert Safety Check List | 8 |
| ■ Emergency Numbers | 2 |
| ■ Four-wheel Drive Roads | 8 |
| ■ Hiking | 3 |
| ■ Mountain Biking | 8 |
| ■ Nature Trails | 4 |
| ■ Park Regulations | 2 |
| ■ What to See & Do | 2 |

For Our International Visitors

Park information in Dutch (**nederlands**), French (**français**), German (**Deutsch**), and Japanese (日本語) is available in the visitor centers.

More Than a Monument

Bill Truesdell
Chief Naturalist

Joshua Tree National Monument is known throughout California as a desert park offering great climbing, camping, hiking, and wildflower viewing. Throughout the world Joshua Tree also has the recognition of being part of an international biosphere reserve representing the Colorado and Mojave deserts.

The biosphere is the thin layer of the Earth's crust, waters, and atmosphere that supports life. Biosphere reserve is an international designation used by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). This classification is given to unique land areas, representing and conserving examples of natural systems around the world. Areas such as deserts, tropical rainforests, seashores, river systems, and mountains are included.

In 1971 UNESCO launched its Man and the Biosphere Program (MAB) and gathered nominations for reserve sites. Now there are three hundred reserves in 75 countries, including 47 in the United States.

Joshua Tree National Monument, Death Valley National Monument, Anza Borrego Desert State Park, and the Santa Rosa Mountains Deep Canyon Research Center are all part of the designated Colorado and Mojave Desert Biosphere Reserve. They serve as core areas of the reserve. Human impact is kept to a minimum, natural and cultural resources are carefully protected, environmental monitoring is ongoing, research is carried out, and education is provided.



Phil Dunham Photo ©

Surrounding these core areas is the bulk of the Colorado and Mojave deserts, totaling over 25 million acres (10.1 million hectares). In the surrounding areas a multiple use zone is recognized, where human occupancy occurs and sustainable development is permitted, but where educational efforts are carried out to encourage compatible use practices and lessen human impacts on the region.

Human beings are altering the environment more than any other species. In biosphere reserves, scientists, park managers, and local people cooperate in developing programs for managing land and water to meet

human needs, while conserving the natural processes and preserving the biological resources.

At Joshua Tree National Monument interpretive programs are offered explaining natural processes and how to reduce impacts. Through the park's Center for Arid Lands Restoration we also offer advice and assistance with choosing the right plants for yards or gardens to lessen water consumption.

The Man and the Biosphere Program was initiated because human beings are rapidly altering the environments on which all life depends. There is a need for harmony between man and the Earth's biosphere.

Shaping the Landscape of Joshua Tree

Caryn Davidson
Volunteer

To a layperson, such as myself, the prospect of trying to understand the geology of Joshua Tree National Monument is a daunting one. It is not just my meager grasp of what makes a rock a rock that trips me up. My ability to comprehend the amount of time required to produce geologic wonders falters somewhere between the knowledge that my ancestors came from southern Germany and the prospect that our desert was once submerged beneath an ancient sea.

As Stephen Jay Gould so neatly put it in a recent column in *Natural History* magazine: "Popular culture is notori-

ously poor at understanding the geological view of time. In fact, we have trouble grasping anything that needs to be measured on a scale greatly different from the length of our lives. We can just about imagine 1776, 1066 begins to get very dim, and more than a few thousand years eludes our comprehension. When we must think of a process cycling at frequencies measured in tens to hundreds of thousands of years (as with glacial episodes of our current ice age), we fail to grasp the amplitude and fall back upon our usual parochialism of viewing the present moment as an ultimate reality."

continued on page 7

What to See and Do

For the first-time visitor the desert may appear bleak and drab. On closer examination the desert is actually full of fascinating and unique living systems interwoven together. A rich cultural history and surreal geologic features add allure to the desert. The monument offers the visitor endless opportunities for exploration and discovery. Depending on the number of hours you want to spend and your interest, here are some ideas to help you plan your visit.

IF YOU HAVE FOUR HOURS OR LESS, begin your visit at a park visitor center. The Oasis Visitor Center in Twentynine Palms is open 8 a.m. to 4:30 p.m. daily except Christmas. The Black Rock Canyon and Cottonwood visitor centers are open daily 8 a.m. to 4 p.m. except for Christmas and occasional closures due to staff shortages. Park brochures and newspapers, cultural and natural history exhibits, and specific information are available at the visitor centers.

With limited time you may want to confine your sightseeing to the main park roads.

Many pullouts with wayside exhibits dot the park roads. Another article on page 4 lists nature trails and short walks located throughout the monument. Consider experiencing at least one of these walks during a short park visit.

IF YOUR PLAN TO SPEND AN ENTIRE DAY, be sure to include several nature trails in your schedule. If you are in the park mid-October to mid-December or mid-February through mid-May, plan to participate in ranger-led programs Fridays through Sundays. Check at the visitor centers and the bulletin boards in the campgrounds for program listings. These presentations will add enjoyment and understanding to your visit.

If solitude is what you are after, plan an all-day hike. Obtain hiking maps and trail information from the visitor centers. The desert, fascinating as it is, can be life-threatening for those unfamiliar with its potential dangers. Be sure to review "Desert Safety Check List" on page 8 before you go hiking. Remember, dogs are not allowed more than 100 yards (90 meters) from any road, campground, or picnic area.

Some visitors like to experience the desert from the seat of a mountain bike. Bicycles are considered vehicles and are not allowed anywhere off roads. They are not allowed on trails, service roads, or any other roads closed to vehicle traffic. Refer to mountain biking article on page 8 for more information.

Joshua Tree National Monument has gained international attention as a superb rock-climbing area. Many visitors flock to the park to climb or to watch the rock climbers in action.

WITH MORE THAN ONE DAY IN THE PARK, more options are available. There are nine campgrounds and backcountry camping is permitted. You will find information concerning camping and backcountry use on page 3 and 5 respectively.

Books and topographic maps available at park sales areas give information needed for longer hikes. For "peak baggers," the monument has ten mountains over 5,000 feet (1524 meters) in elevation. Or make it your goal to hike to all the park oases. Other trails lead you to remnants of the gold mining era, a colorful part of the monument's cultural history.

Whatever your choice of activity, your time at Joshua Tree will be well spent. The desert holds much more than what is readily apparent to the casual observer.



IN CASE OF EMERGENCY,

contact any park ranger, dial 911, or call collect to the 24-hour Dispatch

Center - (714) 383-5651. These numbers are **FOR EMERGENCY ONLY**. Pay phones are located at the Visitor Centers in Twentynine Palms and Black Rock Canyon. You can also find pay phones in the town of Joshua Tree, at the Indian Cove Market, and at Chiriaco Summit (12 miles southeast of Cottonwood).

Some Park Regulations And Why

National parks and monuments are protected.

Plants and animals removed from their unique environments soon perish. Removal, disturbance, destruction, and disfigurement of anything is prohibited. This will permit those who come in the future to enjoy this park as you have.

Feeding of wildlife is prohibited.

Feeding coyotes, ground squirrels, and other animals weans them from their natural food supplies, causes overpopulation problems, and turns them into dangerous creatures as they lose their fear of humans. **Keep the wildlife wild.**

State and federal vehicle laws apply in the monument.

Park roads are narrow and winding. Some areas are congested. The vehicle laws and speed limits are there for your own safety and well being.

Pets cannot be left unattended. They must be on a leash at all times. They are prohibited on

trails and beyond 100 yards (90 meters) from any road, campground, and picnic area.

The sight of your pet, the noises it makes, and the scents and waste products it leaves behind, can disrupt the natural wildlife community and reduce the survival of some of its inhabitants. Some pets are considered delicacies by local predators. Your pet may also be an annoyance to other visitors.

All vehicles, including bicycles, are prohibited off established roads.

The desert ecosystem is fragile. Vehicle tires destroy vegetation. Off-road driving or riding creates ruts, upsetting the delicate drainage patterns, compacting the soil, and leaving visual scars for

years. Plants are crushed and uprooted. Wildlife homes and shelters are destroyed and their food and water supplies are altered or obliterated.

Collecting any vegetation, living or dead, is prohibited. Fires are limited to campground and picnic area fireplaces.

Gathering native vegetation or building fires outside designated fireplaces creates fire hazards and radically alters the appearance and life cycle of the desert. Desert vegetation grows slowly and depends on recycling decomposed organic material for survival. Ashes remaining from a fire take years to disappear, meanwhile spoiling the sight other visitors may have traveled a thousand miles to enjoy.

Dispose of your trash properly.

The dry desert climate cannot quickly decompose paper, aluminum, glass, and other litter.

Certain areas within the monument are designated as restricted or day use only.

Entering restricted areas is prohibited. Some areas are privately owned; others protect wildlife or historical sites. Day use areas are set aside to protect sensitive populations of wildlife. They are closed from dusk to dawn.

Prospecting, including the use of metal detectors, is prohibited.

These practices remove formations other visitors would enjoy seeing, disturb plants and animals, and scar the landscape.

Firearms, fireworks, traps, bows and arrows, BB guns, slingshots are not allowed.

Federal law requires you to wear seat belts

when driving in a national park

 Campgrounds	Elevation		Number of Sites		Fee/night		Water		Chemical Toilets		Flush Toilets		Tables		Fireplaces		Dump Station		Horses Permitted		Remarks
	Individual/Family	Group (Reservation required)	Per individual/family site=/g	Per group site=/g	•	•	•	•	•	•	•	•	•	•	•	•	•	•			
Belle	3,800' 1,158 m	17					•		•	•											
Black Rock Canyon	4,000' 1,219 m	100			\$10/i		•		•	•	•	•	•	•							Campsite No.62 is wheelchair accessible ♿
Cottonwood	3,000' 914 m	62	3		\$8/i \$15/g		•		•	•	•	•	•								Group site No.2 is wheelchair accessible ♿
Hidden Valley	4,200' 1,280 m	39						•		•	•										
Indian Cove	3,200' 975 m	107	13		See remarks			•		•	•										Group sites 1,2 \$30/night Group sites 3-13 \$15/night
Jumbo Rocks	4,400' 1,341 m	130						•		•	•										Campsite No.46 is wheelchair accessible ♿
Ryan	4,300' 1,310 m	29						•		•	•										•
Sheep Pass	4,500' 1,371 m		6		\$10/g			•		•	•										
White Tank	3,800' 1,158 m	15						•		•	•										

- Showers are not available. There are no hookups for recreational vehicles.
- Bring your own water. If you run out of water, it is available at the Oasis Visitor Center in Twentynine Palms, Indian Cove Ranger Station, and Black Rock Canyon and Cottonwood campgrounds.
- Bring your own firewood and kindling. All vegetation in the monument is protected.
- Campfires are allowed in designated firepits only.
- Two cars and up to six people are allowed at each individual/family campsite. Group site capacity ranges from ten to seventy people.
- Quiet hours are from 8 p.m. to 7 a.m. This includes generators and motors.
- Obtain reservations for individual/family sites at Black Rock Canyon and all group sites by calling 1-800-365-2267. All other campgrounds are first come, first served—it is wise to arrive as early as possible.
- There is a 14-day camping limit from September through May and a 30-day limit from June through August.
- Belle and Ryan campgrounds are usually closed during the summer when the park is less crowded.
- When in doubt, ask a ranger.

Be an inspiration to the others. Leave your campsite as clean or cleaner than when you found it.

HIKING TRAILS IN JOSHUA TREE NATIONAL MONUMENT FOR INFORMATION ON OTHER HIKES IN THE PARK PLEASE REFER TO PUBLICATIONS AVAILABLE AT PARK SALES AREAS				
Trail	Round-trip Mileage	Time	Starting Point	Trail Description/Rating
Boy Scout	16 miles (25.8 km)	1-2 days	Indian Cove backcountry board or Keys West backcountry board 0.5 mile (0.8 km) east of Quail Springs picnic area.	Scenic Trail through the westernmost edge of the Wonderland of Rocks. See backcountry article on page 5 for information on overnight use. Moderate.
49 Palms Oasis	3 miles (4.8 km)	2-3 hours	Parking area at end of Canyon Road, 4 miles (6.4 km) west of Twentynine Palms off Highway 62.	Several stands of fan palms, evidence of past fires, and pools of water are found at the oasis. Moderately strenuous.
Lost Horse Mine/Mountain	4 miles (6.4 km)	3-4 hours	Parking area 1.2 miles (1.9 km) east of Keys View Road.	Site of ten-stamp mill and foundations. Summit elevation, 5278 feet (1,583 meters). Moderately strenuous.
Lost Palms Oasis	7.5 miles (11.2 km)	4-6 hours	Cottonwood Springs Oasis or Campground.	A canyon with numerous palm stands. A side trip to Victory Palms and Munsen Canyon involves boulder scrambling. Moderate to oasis overlook, then strenuous.
Mastodon Peak	3 miles (4.8 km)	2 hours	Cottonwood Springs Oasis or Campground.	Excellent views of the Eagle Mountains and Salton Sea. Summit elevation, 3,371 feet (1,011 meters). Moderate.
Ryan Mountain	3 miles (4.8 km)	2-3 hours	Ryan Mountain parking area or Sheep Pass Campground.	Excellent views of Lost Horse, Queen, and Pleasant valleys. Summit elevation, 5461 feet (1,638 meters). Strenuous.

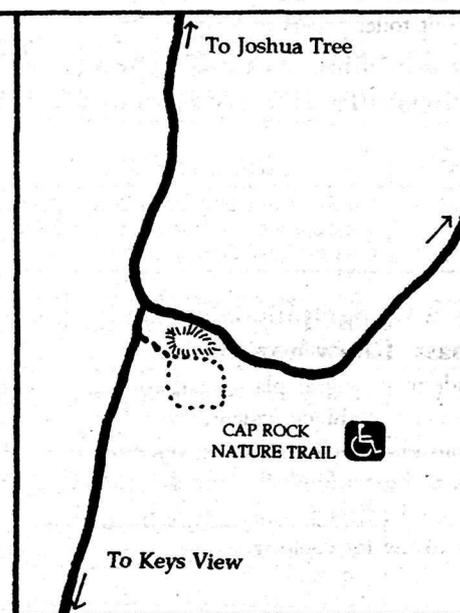
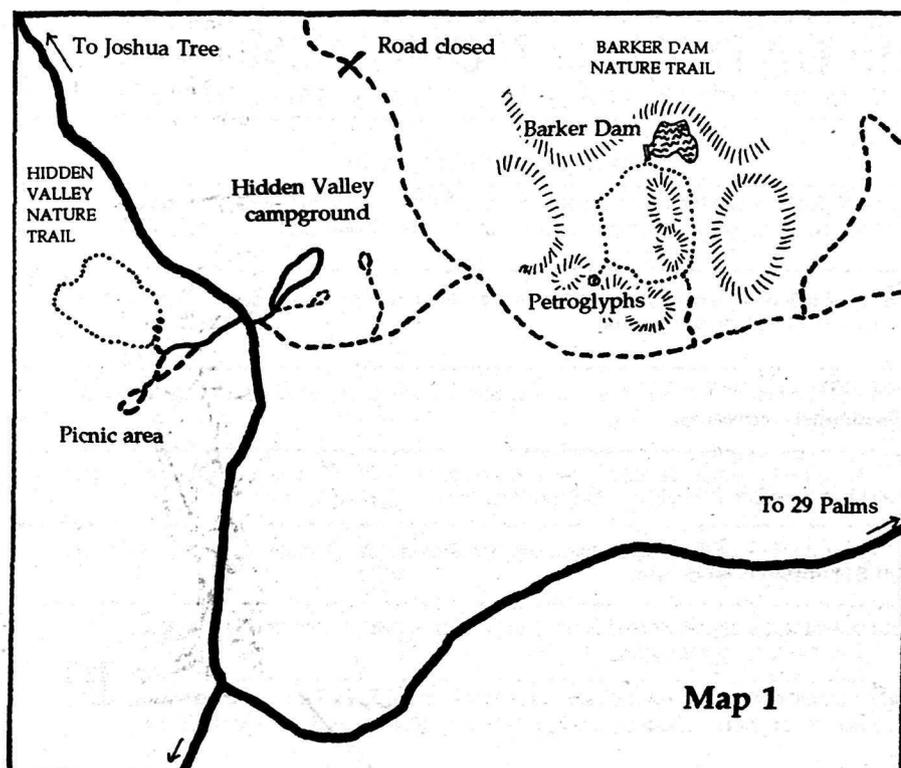
Thirty-five miles of the California Riding and Hiking Trail pass through the monument. Access to the trail is at its junction with Covington Flats, Keys View, and Squaw Tank (Geology Tour) roads; at Ryan Campground; south of Belle Campground; and near the north entrance to the monument. This allows for shorter hikes of 4, 6.7, or 11 miles (6.4, 10.7, or 17.6 km). Two to three days are required to hike the entire length of the trail.



NATURE TRAILS

Short walks, most with informational signing
Watch for sign shown at left

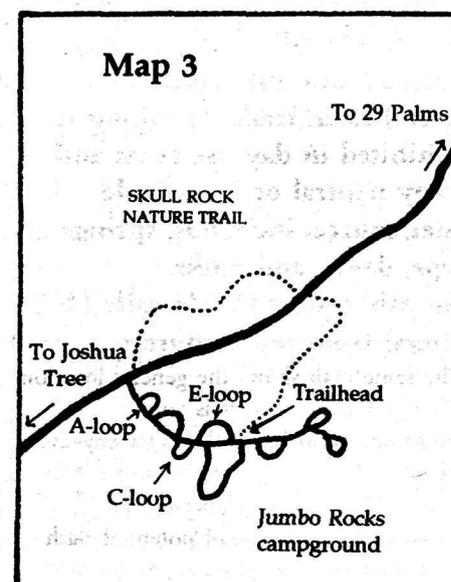
Trail	Mileage	Starting Point	Trail Highlights
Arch Rock	0.3-mile (0.5-km) loop	White Tank Campground, opposite site 9	Signs along the trail interpret the geology of the area and the natural creation of an arch.
Barker Dam (See map 1 below)	1.1-mile (1.8-km) loop	Enter the Hidden Valley Campground and follow the dirt road that goes off to the right. Follow the signs to the parking area.	The loop trail brings you to Barker Dam, built to collect water for the cattle of early ranchers. The trail back to the parking lot takes you past Native American petroglyphs. These authentic carvings were unfortunately painted over by a film crew in an attempt to make them more visible.
Cap Rock (See map 2 below)	0.4-mile (0.6-km) loop	Cap Rock parking area, southeast of Hidden Valley Campground at the junction with Keys View Road.	The paved trail leads you past fascinating rock formations, with signs interpreting the geology and plants of the Mojave Desert.
Cholla Cactus Garden	.25-mile (0.4-km) loop	Point of interest 9 on the park brochure map. On the main park road, 20 miles (32.0 km) north of the Cottonwood Visitor Center.	The trail travels through an unusually dense concentration of Bigelow cholla. A brochure, available at the start of the trail, helps you pick out the well-camouflaged homes of pack rats inhabiting the garden, as well as other wildlife and vegetation characterizing the Colorado Desert.
Cottonwood Springs	1-mile (1.6-km)	Cottonwood Campground, sites 13A and 13B (north end) or Oasis parking lot (south end).	Signs interpret the plants and animals of the Colorado Desert as the trail travels through rolling hills on its way to the Cottonwood Springs Oasis.
Hidden Valley (See map 1 below)	1-mile (1.6-km) loop	Hidden Valley picnic area, point of interest 3 on the park brochure map.	The trail, which involves some easy boulder scrambling, takes you into a rock-enclosed valley rumored to have been used as a hideout for cattle and horse rustlers in the late 1800's.
High View	1.3-mile (2.1-km) loop	South Park parking area, to the northwest of Black Rock Canyon Campground.	The view from the top, near Summit Peak (elevation 4,500 feet or 1,372 meters), makes this hike well worth its moderately steep, 300-foot (90-meter) elevation gain. A brochure, describing the flora and scenery along the trail, is available at the Black Rock Canyon Visitor Center.
Indian Cove	0.6-mile (1.0-km) loop	West end of Indian Cove Campground.	This easy trail follows a wash for most of the walk. Watch for desert tortoises, as Indian Cove is a favorite habitat area. If you do spot one, please observe it quietly from a distance. Tortoises are protected by state and federal law.
Keys View	0.25-mile (0.4-km) loop	Keys View, point of interest 6 on park brochure map.	This outstanding scenic point gives a superb sweeping view of the valley, mountains, and desert from its elevation of 5195 feet (1,558 meters).
Oasis of Mara	0.5-mile (0.8-km) loop	Oasis Visitor Center, Twentynine Palms.	The Oasis was once a popular gathering place for several tribes of Native Americans, including the Serrano, Cahuilla and Chemehuevi. This easy, paved trail is a good introduction to the monument.
Skull Rock (See map 3 below)	1.7-mile (2.7-km) loop	Jumbo Rocks Campground, beyond Loop E entrance.	Interpretive signs guide you through boulder piles, desert washes, and a rocky alleyway. The trail crosses the road and loops back to the campground entrance.

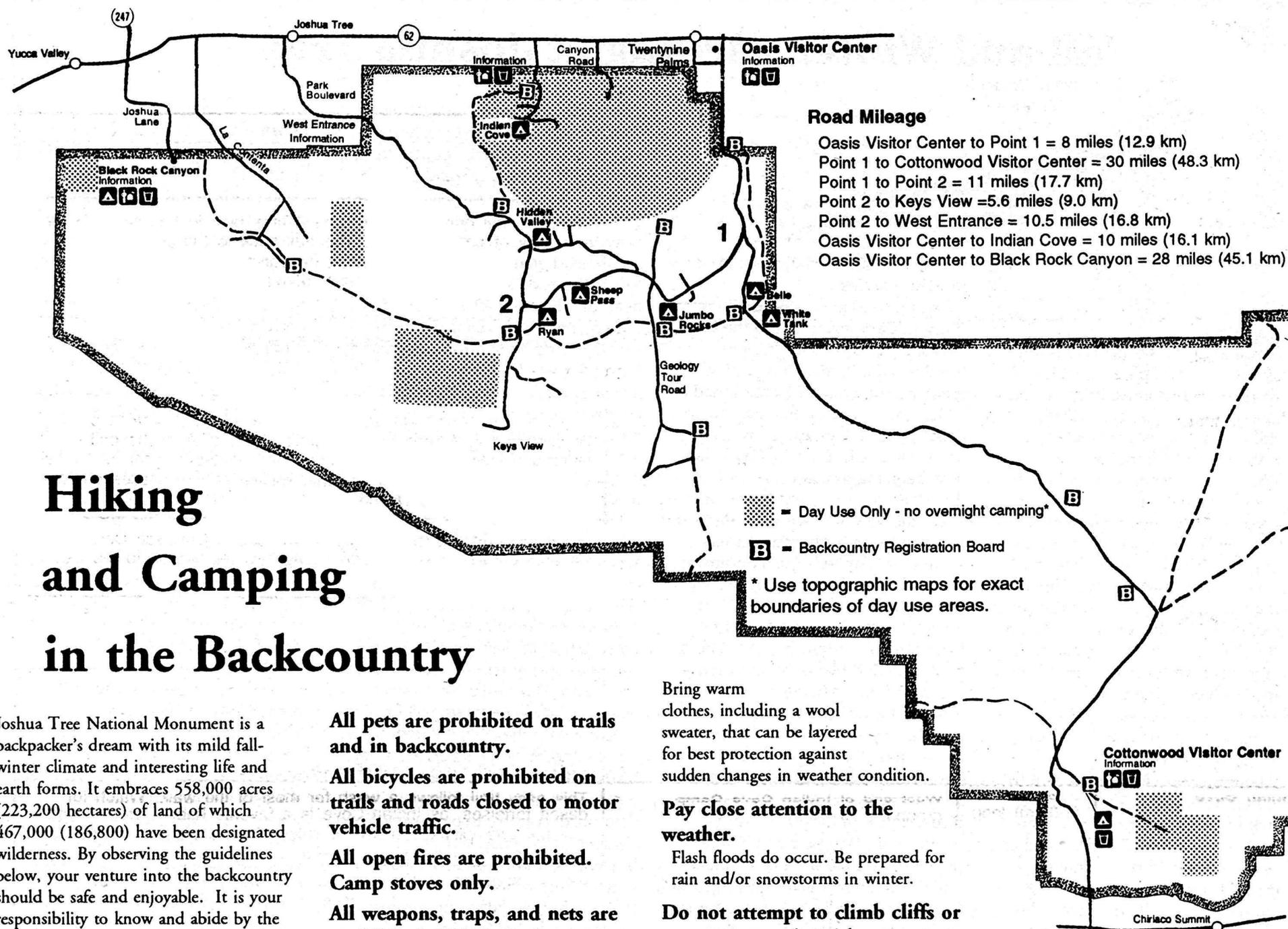


NATURE TRAILS

- Paved road
- - - Dirt road
- Hiking trail

* Maps not drawn to scale





Hiking and Camping in the Backcountry

Joshua Tree National Monument is a backpacker's dream with its mild fall-winter climate and interesting life and earth forms. It embraces 558,000 acres (223,200 hectares) of land of which 467,000 (186,800) have been designated wilderness. By observing the guidelines below, your venture into the backcountry should be safe and enjoyable. It is your responsibility to know and abide by the park regulations. If you have any questions, ask a ranger.

All overnight users must register at a backcountry board before entering the backcountry.

The map on this page indicates the location of the twelve backcountry boards. Follow the instructions for self-registration. Unregistered vehicles or vehicles left overnight anywhere other than at a backcountry board are subject to citation and/or towing.

All wilderness camping must be at least one mile (1.6 km) from any road and 500 feet (150 meters) from trails. Camping is prohibited in day-use areas and at any natural or man-made water source, including springs, seeps, dams, and tanks.

Campsites must be 1/4 mile (400 meters) from water sources.

The same map shows the general location of each day-use area. It is your responsibility to know the exact day-use area boundaries. Contact a ranger if in doubt. Camping in washes is not recommended because of potential flash flood dangers.

All pets are prohibited on trails and in backcountry.

All bicycles are prohibited on trails and roads closed to motor vehicle traffic.

All open fires are prohibited. Camp stoves only.

All weapons, traps, and nets are prohibited. This includes possessing, using, discharging, or carrying.

Pack out all garbage.

Buried trash will be dug up by animals and scattered by the wind creating an unappetizing sight. Bury human waste in holes at least six inches (15 cm) deep and pack out toilet papers in a zip-lock bag.

Carry a minimum of one gallon (3.8 liters) of water per person per day

Carry two gallons (7.6 liters) per person in hot weather or if planning a strenuous trip. Carry additional water for cooking and personal hygiene.

Carry a topographic map and compass. Know how to use them.

Include in your gear plastic garbage bags or raincoat, flashlight, mirror, whistle, first-aid kit, pencil and paper, pocket knife, and extra food. Do not use freeze-dried food unless you plan to carry extra water to use for cooking.

Dress for the weather.

Temperature drops of 40°F (22°C) in a 24-hour period are common in the desert. Wear a hat, sunglasses, and sturdy boots. Use sunblocking lotion liberally.

Bring warm clothes, including a wool sweater, that can be layered for best protection against sudden changes in weather condition.

Pay close attention to the weather.

Flash floods do occur. Be prepared for rain and/or snowstorms in winter.

Do not attempt to climb cliffs or any steep terrain without adequate equipment and training. Accidents can be fatal.

The following is prohibited: Possessing, destroying, disturbing, injuring, defacing, removing, and digging from its natural state

- a. Living or dead wildlife.
- b. Plant or plant parts, both living and dead.
- c. Non-fossilized or fossilized specimens.
- d. Mineral resources such as stones, sand, rock formations, and mineral elements.
- e. Any archaeological or historic site or structure, including mines and mining areas.

All stock animals are subject to the following restrictions for resource preservation and the enjoyment of others:

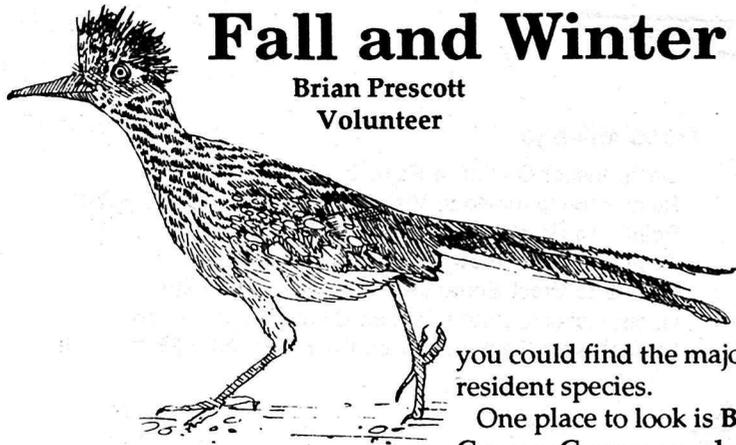
- a. No overnight backcountry camping without special permit.
- b. No grazing permitted.
- c. No stock animals within 1/4 mile (400 meters) of any natural or man-made water sources, including springs, seeps, dams, or tanks.

- d. All stock animals must stay on marked trails and washes to minimize vegetation damage, and soil erosion, compacting, and rutting.
- e. Only Ryan and Black Rock campgrounds are equipped with facilities for overnight camping with stock animals.
- f. All stock animals are restricted to pellet form of feed in the backcountry.
- g. No horses on the Hidden Valley, Barker Dam, or Ryan Mountain trails.
- h. No riding in the open desert, except in washes.



Fall and Winter Birding at Joshua Tree

Brian Prescott
Volunteer



you could find the majority of the resident species.

Bird activity slows in late summer and fall, as summer residents leave for their winter homes. Bright orioles and several types of flycatchers, swallows, and sparrows head south for Mexico and Central America.

The resident nesting species have finished raising their young, and, if the young birds haven't left the territory yet, the apron strings are being cut. For the young birds it's time to go out on their own. The new territory could be just down the wash or on the other side of the mountain.

It's also the time of year that most songbirds molt their feathers. They fall out a few at a time and are replaced by new ones. The fresh feathers will keep the birds warm during the approaching winter.

About fifty species are resident in the monument all year. Some, like black-throated sparrows and common ravens, are hard to miss. Others, like pinyon jays and LeConte's thrashers, require some luck and guidance to find. If you have a day or two to visit several different habitats,

One place to look is **Black Rock Canyon Campground** and the surrounding area. You might see Gambel's quail, mourning doves, greater roadrunners, great horned owls, Anna's hummingbirds, northern flickers, scrub jays, cactus wrens, northern mockingbirds, California thrashers, loggerhead shrikes, black-throated sparrows, and house finches.

Another good viewing habitat is the **Indian Cove Campground** area. Watch for Gambel's quail, mourning doves, Costa's hummingbirds, Say's phoebes, common ravens, canyon wrens, Bewick's wrens, LeConte's thrashers, black-tailed gnatcatchers, phainopeplas, black-throated sparrows, and house finches.

At the **Oasis Visitor Center** and the oasis trail in Twentynine Palms, look for Cooper's hawks, American kestrels, greater roadrunners, Costa's and Anna's hummingbirds, northern flickers, verdins, northern mockingbirds, phainopeplas, starlings, and house finches.

In the **Hidden Valley Campground**, **Barker Dam**, and **Lost Horse Valley** areas, watch for red-tailed hawks;

golden eagles; American kestrels; Gambel's quail; white-throated swifts; ladder-backed woodpeckers; northern flickers; Say's and black phoebes; scrub and pinyon jays; plain tit-mouses; bushtits; Bewick's, cactus, canyon, and rock wrens; blue-gray and black-tailed gnatcatchers; California thrashers; rufous-sided towhees; and house finches.

If you are in the vicinity of **Cottonwood Spring**, look for Cooper's and red-tailed hawks, Gambel's quail, Costa's and Anna's hummingbirds, common ravens, verdins, cactus and rock wrens, northern mockingbirds, black-tailed gnatcatchers, phainopeplas, loggerhead shrikes, starlings, lesser goldfinches, and house finches.

The various habitats of Joshua Tree provide winter homes for these birds. Last spring's conditions have an effect on the number of species and the number of birds wintering in the monument. Good rainfall with corresponding plant growth in the previous spring will produce a good seed crop. This will attract seed-eaters, such as sparrows and finches.

Along with these seed-eaters come hawks and owls. This winter influx of birds will also add to some of the resident species. These birds leave the cold north country to be close to food sources. Some possibilities are burrowing and long-eared owls, Anna's hummingbirds, northern flickers, horned larks, blue-gray gnatcatchers, and loggerhead shrikes.

Some common winter visitors, such as white-crowned sparrows, come from as far away as Alaska. Some species move only a few miles. This is called vertical migration, because these birds move down from the local mountains to a lower elevation. Birds of this type are western and mountain bluebirds, American robins, mountain chickadees, house wrens, hermit thrushes, ruby-crowned kinglets, and chipping sparrows.

Since 1966 a Christmas Bird Count, sponsored by the National Audubon Society, has been held at Joshua Tree National Monument, usually in the last week of December. Over the years more than 130 species have been recorded on these counts at Joshua Tree. Any one year will produce fifty to sixty species during this one-day event. The results of this count and others all over North America are compiled and published in the National Audubon Society's *American Birds* the following year.

Take a walk in the monument for an hour or for the whole day. You are bound to see a few birds. For help with identification contact a park naturalist. Check the current listing of weekend ranger-led programs to see if a bird walk is scheduled during your visit. If you want information on the Christmas Bird Count, contact the count compiler, Brian Prescott, at 6737 Rycroft Drive, Riverside, California 92506; call (714)780-3146 between 9 AM and 9 PM.

Searching the Night Sky for Celestial Delights

Roger Howell
Volunteer

This fall and winter there will be many evening celestial delights tempting you to gaze skyward while visiting Joshua Tree. In addition to "solid" sights, like the planets and the moon, there will be lots of "fuzzy" sights, like meteor showers, the great Andromeda Galaxy, and the Orion Nebula, to keep your head tilted upward as you sit around the campfire.

First on the agenda this fall is the appearance of Saturn, with its beautiful rings. Saturn will be visible in the constellation Capricornus all fall and winter. Saturn will be well placed for viewing in the southwest sky at dusk. The rings are visible through a small telescope. In 1610, Galileo, using his telescope gazed at Saturn and noticed the planet did not look round—it appeared to have "ears." Of course, the "ears" were its stunning rings.

This fall and winter it's Mars-observing season! Every two years Mars comes close to the Earth. This year we will have the opportunity to view the North Pole of Mars, a part of the planet that has been tipped away from us the last few years. This winter Mars will be shining brightly in the constellation Gemini, low in the eastern sky right after sunset.

Be sure to look for the Earth's sister planet, Venus, this fall. The "evening star," really a planet, will be blazing brightly in the western sky at sunset. A special treat on October 28 will be the crescent moon appearing close to Venus in the early evening sky.

But let's go searching for "fuzzy" celestial delights this fall and winter! As you would expect, the best views of "fuzzy" sights like galaxies, meteors, and nebulae are in dark sky areas like Joshua Tree. Our galaxy, the Milky Way, is spectacular when viewed from the desert.

Galaxies are large collections of stars. Our sister galaxy, Andromeda, will be visible early this fall and can be found in the night sky near Pegasus, the winged horse. You will be able to spot the great Andromeda Galaxy with your

unaided eye, but it looks best through binoculars.

Another fantastic fall/winter Joshua Tree "fuzzy" is the Orion Nebula. It can be spotted as the middle "star" in the sword of the mighty hunter Orion. This is my favorite constellation. The Orion Nebula is the birthplace of stars—literally, a stellar nursery. A nebula is a large cloud of hydrogen gas in outer space that is collapsing due to gravity and forming new baby stars.

Meteors are dusty particles, better known as "shooting stars," that burn up as they enter our atmosphere. They are what is left of comets, like Halley's Comet.

This fall and winter at Joshua Tree you may witness five meteor showers. Meteor showers are named after the constellation from which they come. For example, the Geminids in mid-December will come from the constellation Gemini. The Orionids will be visible on October 21, the Taurids on November 8, the Leonids on November 17, and the spectacular Quadrantids on January 4.

If you want to learn more about the dark skies over Joshua Tree, plan on attending a star talk at Cottonwood Spring Campground campfire circle. The lectures include a colorful astronomy slide show, a free star chart, and even a chance to gaze through a telescope at the wonders of the cosmos! Cottonwood star talks this fall will be on October 31 and November 21 at 7 PM.

The Andromeda Astronomical Society will offer "star parties" in the Hidden Valley area on October 24 at 6:30 PM and November 28 at 5:30 PM. Check the current park program schedule for details.

As you gaze up at the heavens, be thankful that you have a beautiful place like Joshua Tree within just a few hours of the big city. You can escape here to dark skies to behold the wonders of the universe. Let us all help to preserve Joshua Tree so that it may delight our children as it has brought joy into all of our lives for so many years.

Geology, continued from page 1

While we may have difficulty understanding the processes which shape the landscape, we can make some fundamental observations here in the monument. Imagine an archeologist toiling away at a patch of earth, chipping, hammering, and dusting off small particles of dirt and sand, in order to expose a fragment of bone or shell. Similarly, the elements of nature "chip" away at the surface layer of rock here, revealing the layers below.

As the fossilized bone would have undergone changes over time, so would the hidden rock before its appearance on the Earth's surface. When we view Joshua Tree's rock formations, we can better understand the processes at work by identifying the different layers readily apparent in some areas of the park.

As an example, picture the area of Saddle Rock, near Sheep Pass Campground, south of Hidden Valley and on the east side of Lost Horse Valley. The darker surface layer of rock, believed to be somewhere between 1400-1650 million years old, is called Pinto gneiss (pronounced "nice"). This is a metamorphic rock, which began as particles deposited in ancient seas.

Originally soft sedimentary rock, Pinto gneiss has been transformed by great heat and pressure into extremely hard and dense metamorphic rock which can shatter into random jagged shapes. The most abundant minerals in Pinto gneiss are quartz, feldspar, and biotite.

What usually takes our breath away are the lighter-colored outcrops of rock, those towering, gravity-defying piles scattered throughout the

northern part of the monument. At Saddle Rock these outcrops can be observed as quite distinct from the overlying layer of Pinto gneiss surrounding them.

These lighter formations are made of monzogranite, an igneous rock, referred to in this particular part of the monument as White Tank monzogranite. It dates from the Cretaceous period, which means it is approximately 125-155 million years old. White Tank monzogranite is composed of interlocking grains of several kinds of minerals, including feldspar, quartz, mica, iron compounds, and a small amount of biotite.

Although to the casual observer it may look as though these outcrops were heaped into precarious formations by some cataclysmic surface disturbance, they were, in fact, formed primarily beneath the surface. In a molten state from deep within the Earth, the monzogranite flowed upwards until it was blocked by the layer of Pinto gneiss, and then cooled. In the process of cooling it began to form cracks and joints which, because of its chemical composition, occurred along very regular symmetrical lines.

As the Pinto gneiss was worn away through surface erosion, the monzogranite underneath became more susceptible to surface phenomena: water trickled down on its way back to the water table and sped up the process of cracking and jointing by seeping into these spaces. Where the Pinto gneiss was completely worn away, elements such as wind, rain, and the extremes of desert temperatures came into play. The monzogranite formations were now exposed on the surface and subjected to forces

which wore away at the rock, further rounding off corners and exaggerating clefts and crevices.

Spheroidal weathering, a combination of mechanical and chemical weathering, accentuated the rounded curves of the rocks. Undercutting and cavernous weathering, due to the effects of running water, condensation, and dripping water, gave the monument's formations their distinctive shapes. The intrusion of water and plant roots into existing cracks also contributed to the breakdown of the monzogranite.

All of this activity took place over the course of millions of years and continues even now, although humans may not be able to observe many changes during the puny expanse of our lifetimes. That is why those of us who experienced the recent 7.5 earthquake on June 28, 1992, might in some sense consider ourselves privileged to have witnessed (and survived!) such a forceful display of nature's power. One might even say that it was uplifting—or "tectonically uplifting"—since that is exactly what we were experiencing: the movement of one tectonic plate, the Pacific Plate, scraping up against us as we went about our business on the North American Plate. Although the Pacific Plate moves relatively slowly (about two inches per year), the force it produces when it grinds against another plate is now well-known—ask anyone who had planned to sleep in that fateful Sunday morning.

There are large faults, or breaks in the Earth's crust, where these plates meet. The San Andreas Fault, 700 miles long, lies in that portion of California where the two plates meet.

Although their movement is generally imperceptible, occasionally there is more give than glide, and we beings on the surface of the Earth's crust feel this grinding as a very violent movement.

The actual jolt of the crust's displacement is not what usually causes damage on the surface—it is the resulting shock waves that vibrate outwards after the jolt that can be so destructive. When this happens, there can be important changes on the Earth's surface: landslides, rockslides, tsunamis, and sometimes even volcanic eruptions. These events do not always produce results as dramatic as Joshua Tree's rock formations, but they are awe-inspiring in their own way.

It is not known exactly what changes occurred here at Joshua Tree National Monument as a result of the earthquake, but we do know that boulders were dislodged and came tumbling down. Rocks that might have stayed in place for hundreds of thousands of years were jostled around, rearranging a landscape that we will never see again.

The present moment as an "ultimate reality" took on a frightening new meaning—when would the Earth return to her more docile, more predictable behavior? For now she has. Those longer, infathomable cycles of geological time continue, while I, for one, am grateful to have experienced such a spectacular break with the usual protracted business of geological change. After the earthquake, once my initial terror had subsided, I was left with a renewed sense of wonder, and a deeper reverence for the Earth's mighty force and her ultimate power over us all.

JOIN THE JOSHUA TREE NATURAL HISTORY ASSOCIATION

The Joshua Tree Natural History Association, a non-profit support group, was established in 1960 to provide much needed financial and volunteer support to Joshua Tree National Monument. The association assists the National Park Service in the area of visitor assistance, environmental education programs for children, and outdoor classes and tours. The membership fees and the proceeds from sales of maps and publications enable the association to purchase equipment and supplies for the park interpretive programs. As an association member you will receive:

- A membership card
- A 10% discount on all publications sold by the association

To join the association, fill out and mail this form with a check or money order for \$8.00 or a \$5.00 renewal fee to:

JOSHUA TREE NATURAL HISTORY ASSOCIATION
74485 National Monument Drive
Twentynine Palms, CA 92277-3597

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All profits go to the support of interpretive programs
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Help Us Fight Vandalism

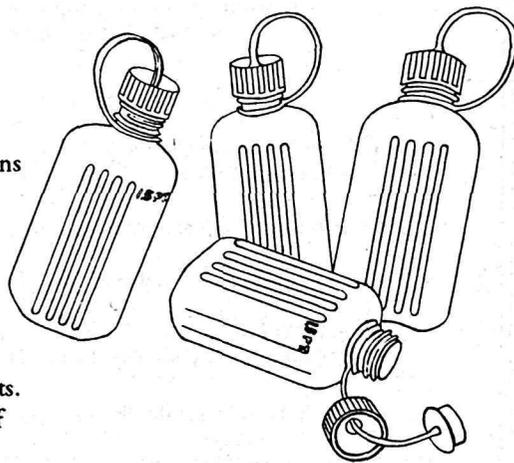
Joshua Tree National Monument needs your active participation for the protection and preservation of the numerous superb yet fragile natural and cultural resources. If you observe damage, please report it immediately. If you witness vandalism in progress, please write down the **license plate number of vehicles** near the scene, descriptions of **people involved**, the **location** and **what is occurring**, and report at once to the nearest ranger, visitor center, or entrance station. If you spot vandalism or disorderly conduct after hours, please go to the nearest phone and call the **San Bernardino Dispatch Center** (call collect for emergencies) at (714)383-5651. You can also dial **911** in emergencies.

IMPORTANT: Do Not attempt to take action yourself. Let the park rangers do their jobs.

The Desert Is Full of Surprises and Some Surprises Can Be Dangerous. Always Be Prepared.

Desert Safety List

1. **Always** be sure that someone knows where you are going and when you expect to return. This is especially important if you travel or hike alone. However, hiking or traveling alone is **NOT** recommended.
2. **Always** carry plenty of water, at least 1 gallon (3.8 liters) per person per day; 2 gallons (7.6 liters) when it is hot or you are performing strenuous activity. Drink the water and do not economize. When the water is half gone, it is time to turn back.
3. Wear sturdy shoes, sunglasses, and a wide-brimmed hat. Apply sun screen. Wear layered clothing. Remember that the desert temperatures can reach over 90°F (32°C) and drop below 50°F (10°C) in one day, depending on the weather and where you are going.
4. Know how to use a topographic map and a compass if you hike cross-country or on trails that are not well defined. It is easy to become disoriented in the desert where many landmarks and rock formations look similar. Know your physical limitations in the heat and rugged desert terrain.
5. **Do Not Enter** mine shafts or associated buildings. They are extremely hazardous.
6. Keep your vehicle well-maintained. Carry extra water and non-protein food, shovel, tools, flares, and blankets. Check road conditions and beware of flash floods.
7. If you are stranded or lost in the desert, stay with your vehicle. It is much easier to spot a vehicle than a wandering person. If you must leave your vehicle, travel when it is cool. Carry all the water available and eat little or no food. Save your sweat by wearing clothing. Mark your routes with stones, notes, or whatever you can find. **THINK AND DON'T PANIC.** If you have followed the above steps, the park will begin a search immediately when you are reported missing.
8. Watch where you put your hands and feet especially during hot summer months. Snakes are active during this time of year.
9. **Again, hiking or traveling alone is not recommended.**



Visitor Activities

Ranger-led programs are offered on the weekends from mid-October through mid-December and from mid-February through April. Check at visitor centers, at entrance stations, and on campground bulletin boards for the current schedule.

Backcountry Roads At Joshua Tree

for mountain bikes and four-wheel drives

Mountain bikes and four-wheel drive vehicles are welcome in Joshua Tree National Monument. For your own safety and for the protection of the natural features of the monument please keep the following in mind:

- Bikes and all other vehicles must stay on established roads. Tire tracks on the open desert can last for years and will spoil the wilderness experience of future hikers.
- Paved roads in the monument are narrow without paved shoulders. Curves, boulder piles, and Joshua trees often restrict the vision of bikers and motorists.
- Helmets are *highly* recommended.

The unpaved roads in the monument are safer for bikes and offer many opportunities to explore the area. The following dirt roads are open to mountain bikes and four-wheel drive vehicles:

Pinkham Canyon Road. This challenging 20-mile (32.4-km) road begins at Cottonwood Visitor Center, travels along Smoke Tree Wash, then cuts down Pinkham Canyon. Sections of the road run through soft sand and rocky flood plains. The road ends at a service road next to Interstate 10.

Black Eagle Mine Road. Beginning 6.5 miles (10.5 km) north of Cottonwood Visitor Center, this dead-end dirt road runs along the edge of Pinto Basin, crosses several dry washes, then winds up through canyons in the Eagle Mountains. The first 6 miles (9.7 km) of the road are within the monument boundary. Beyond that point is Bureau of Land Management land and a number of side roads. Several old mines are located near these roads but may be dangerous to approach.

Old Dale Road. This 23-mile (37.3-km) road starts at the same point as the

Black Eagle Road. For the first 11 miles (17.8 km), the road runs across Pinto Basin, a flat, sandy dry lake bed. Shortly after leaving the basin, the road climbs up a steep hill, then crosses the monument boundary. Near that point a number of side roads veer off toward old mines and private residences. If you stay on the main road you will come out on Highway 62, 15 miles (24.3 km) east of Twentynine Palms.

Queen Valley Roads. A network of roads, totaling 13.4 miles (21.7 km), crisscross this valley of boulder piles and Joshua trees. A bike trip can begin at Hidden Valley campground or at the dirt road opposite the Geology Tour road. Several bike racks have been placed in this area so that visitors can lock their bikes and go hiking.

Geology Tour Road. The road turns south from the paved road 2 miles (3.2 km) west of Jumbo Rocks. The distance from the junction to Squaw Tank is 5.4 miles (8.8 km). This section is mostly downhill but bumpy and sandy. Starting at Squaw Tank a 6-mile (9.7-km) circular route can be taken that explores Pleasant Valley. A guide to the road is available at the beginning of the road.

Covington Flats. The dirt roads in Covington Flats offer access to some of the monument's largest Joshua trees, as well as to junipers, pinon pines, and some of the lushest vegetation in the high desert. A nice trip is from the Covington Flats picnic area to Eureka Peak, 3.8 miles (6.2 km) one way. The dirt road is steep near the end, but the top offers views of Palm Springs, the surrounding mountains, and the Morongo Basin. Your trip will be 6.5 miles (10.5 km) longer round-trip if you ride or drive over to the backcountry board, where some excellent hiking is available.

An Interesting Fact...

Did you know that if we recycled all of our Sunday newspapers, we could save over 500,000 trees each week or 26,000,000 every year? Recycling plays a key role in protecting our environment, conserving natural resources, and reducing the amount of trash going to landfills which are rapidly filling up.

Joshua Tree Journal

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