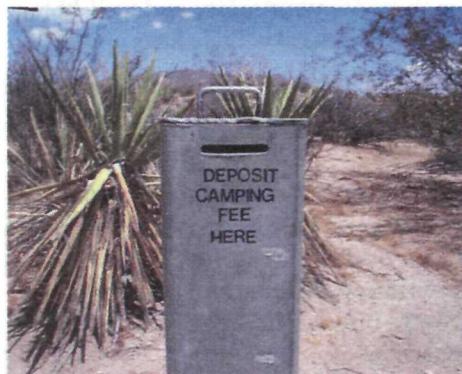




Joshua Tree Guide

A Planning Guide for Visitors
to Joshua Tree National Park
Fall, 2004

New Camping Fees



On February 17, 2004 the National Park Service (NPS) began charging \$5.00 per campsite at Belle, Hidden Valley, Jumbo Rocks, Ryan, and White Tank campgrounds. Campers are required to fill out a "fee envelope," enclose their campground fee, and place the envelope in an "iron ranger." Campers should place the stub from their fee envelope on their vehicle's dashboard so it can be clearly seen by rangers in the campgrounds.

Golden Age and Golden Access pass holders will receive a 50 percent discount for the site they occupy but National Park Pass and Golden Eagle pass holders will not qualify for the discount. Fees may be paid by cash, check, or travelers check in U. S. currency. Change will be unavailable and refunds will not be made for overpayments or early departures.

Site availability is still first-come, first-served. The October through May, 14-day camping limit (the 14-day limit is for a total of 14 days of camping in one or more campgrounds) continues to be in effect, as is the maximum of six people, three tents, and two vehicles per campsite.

Camping fees on public lands are not a new idea. The Land and Water Conservation Fund Act (LWCF), the first legislation to allow for the collection of fees for outdoor recreation and accompanying facilities run by public agencies, became effective January 1, 1965. Joshua Tree National Park began charging camping fees at Cottonwood Campground on July 10, 1965. The park collected \$6.50 during that first month! Joshua Tree National Park began collecting a \$5.00 per vehicle entrance fee on February 2, 1987 and in October of the same year \$10.00 per night camping fees began at Black Rock Campground.

In 1996 the Recreational Fee Demonstration Program (Fee Demo) authorized parks to charge fees for facilities and services provided by the National Park Service and allowed the NPS to keep the funds generated by national parks, rather than send them to the U.S. Treasury. Fee Demo parks, such as Joshua Tree, retain eighty percent of park fees; the other 20 percent is used to support national parks that do not have a fee system. Entrance fees at Joshua Tree National Park were increased to \$10.00 per vehicle and a \$10.00 camping fee was instituted at Indian Cove Campground.

As a direct result of the Fee Demonstration Program, the last several years have

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California Desert Protection 10th Anniversary Celebration



1994 ~ 2004

People from all over the world visit Joshua Tree National Park to explore the desert. Many come to hike, sightsee, rock climb, observe wildlife, and look at unusual plants, among other activities. They come wanting to know more about the "desert wasteland." This year the park celebrates its tenth year anniversary as a national park thanks to the California Desert Protection Act of 1994.

While the park celebrates its tenth anniversary, the park as a national monument has been around much longer. Many credit Minerva Hamilton Hoyt, a well-to-do lady from Pasadena, with establishing Joshua Tree National Monument. Called the "Apostle of the Cacti," she came to the desert in the 1920s. Bereaved and wanting to find a place to heal her heart from the deaths of her husband and son, who were killed in two separate accidents, it was to the southern California desert she headed, a place she knew already for its peace and quiet. There she promptly fell in

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JOSHUA TREE NATIONAL PARK
74485 NATIONAL PARK DRIVE
TWENTYNINE PALMS, CA 92277

—Important information

accessibility

The nature trails at Bajada, Cap Rock, and the Oasis of Mara are accessible. Assistive listening systems and sign-language interpreters are available for some programs with prior notice.

all terrain vehicles

ATVs may not be used in the park.

bicycling

Bicycling is permitted on public roads, both paved and dirt. There are no bicycle paths and many roads are narrow, so ride cautiously. Bikes are prohibited on backcountry and nature trails.

campfires

Campfires are permitted in campgrounds and in picnic areas where fire grates are provided. Campfires are not allowed in the backcountry. Collecting vegetation, living or dead, is prohibited, so bring firewood.

climate

Days are typically clear with less than 25 percent humidity. Temperatures are most comfortable in the spring and fall, with an average high/low of 85°F and 50°F respectively. Winter brings cooler days, around 60°F, and freezing nights. It occasionally snows at higher elevations. Summers are hot, over—sometimes well over—100°F during the day and not cooling much below 75°F until the early hours of the morning.

commercial filming

When filming or photography involves advertising a product or service, the use of models, sets, props, or the use of a restricted site, a film permit is required.

day-use and restricted areas

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

dehydration

It is easy to become dehydrated in arid desert environments. Even if you only plan to drive through the park, you should have some water with you. If you are going to camp, we recommend one gallon of water per person per day. If you are going to be hiking or biking, you will want to take along two gallons per person. Drink the water and do not economize. When the water is half gone, it is time to turn back.

emergency phones

In an emergency call San Bernardino Dispatch at 909-383-5651. Call collect. Pay phones are located at the visitor center in Twentynine Palms and at Black Rock Campground. You can find pay phones in the town of Joshua Tree and at Chiriaco Summit (12 miles southeast of Cottonwood). Emergency-

only phones are located at the Indian Cove ranger station and at Intersection Rock parking area.

environment

Two deserts, two large ecosystems whose characteristics are determined primarily by elevation, come together at Joshua Tree National Park. Below 3,000 feet, the Colorado Desert encompasses the eastern part of the park and features natural gardens of ocotillo and cholla cactus. The higher, moister, and slightly cooler Mojave Desert is the special habitat of the Joshua tree. Joshua tree forests occur in the western half of the park, which also includes some of the most interesting geologic displays found in California's deserts. In addition, five fan palm oases dot the park, indicating those few areas where water occurs naturally and where wildlife abounds.

entrance fees

Admission to the park is \$10 per vehicle and is good for seven consecutive days. A Joshua Tree Pass may be purchased for \$25 and a National Parks Pass, which is good for all National Park Service sites, costs \$50. Both are good for 12 months. A Golden Age Pass may be purchased by any U.S. citizen 62 or older for \$10, and it is good for life.

firearms and weapons

Firearms, including fireworks, traps, bows, BB guns, paint-ball guns, and slingshots are not allowed in the park.

food, lodging, services

There are no concessions within the park. However, surrounding communities can fulfill most visitor needs. Contact local chambers of commerce for information. Their telephone numbers and web addresses are listed on page six of this publication.

getting to the park

The park is located about 140 miles east of Los Angeles via I-10. Entrances to the park are located off CA HWY 62 (Twentynine Palms Highway), at the towns of Joshua Tree and Twentynine Palms. A third entrance is located about 25 miles east of Indio off I-10.

horses

Horseback riding is a popular way to experience the park. Because of the special requirements for stock in desert areas, you will want to request the site bulletin on horse use before you come.

international visitors

Park information is available at visitor centers and entrance stations in Dutch, French, German, Italian, Japanese, and Spanish.

keep wildlife wild

Feeding coyotes, squirrels, and other animals weans them from their natural food supplies, causes overpopulation,

and turns them into aggressive creatures as they lose their fear of humans.

leave no trace

During your visit please pick up trash around campgrounds and trails. Your actions will inspire other park visitors.

lost & found

Report lost, and turn in found, items at any visitor center or ranger station. Lost articles will be returned if found.

off-road driving

Vehicles, including bicycles, are prohibited off established roads. The desert ecosystem is fragile. Off-road driving and riding creates ruts, upsetting delicate drainage patterns, compacting the soil, and leaving visual scars for years. Plants are crushed and uprooted. Wildlife shelters are destroyed, and food and water supplies are altered or obliterated.

parking

Park roads, even the paved roads, are narrow, winding, and have soft, sandy shoulders. Accidents occur when visitors stop along the road to admire a view or make a picture. There are many pullouts and parking lots, so wait until you get to one before stopping.

pets

While pets are allowed in the park, their activities are restricted. They must be on a leash at all times and cannot be more than 150 feet from a road, picnic area, or campground; they are prohibited from trails, and they must never be left unattended—not even in a vehicle.

potable water

Water is available at the visitor center in Twentynine Palms, at Black Rock and Cottonwood campgrounds, at the entrance station south of Joshua Tree, and at the Indian Cove ranger station.

rock climbing

Climbers may replace existing unsafe bolts, and new bolts may be placed in non-wilderness areas using the bolting checklist. Bolting in wilderness requires a permit. Bolting checklists and permit applications are available at entrance stations and visitor centers.

stay out and stay alive

Mining was an important activity in this area and numerous mining sites can be found within the park. If you choose to visit them, use extreme caution and do not enter old mine workings.

take only pictures

Over 1.25 million people visit Joshua Tree National Park each year. If each visitor took only one rock or one branch from a bush, the park, our national heritage, would soon be gone. Removal, disturbance, destruction, or disfigurement of anything in the park is unlawful.

trash

Our dry desert climate cannot quickly decompose such things as orange peels, apple cores, egg shells, and other picnic remains. Loose paper blows into bushes creating an unsightly mess, and plastic six-pack rings can strangle wildlife. Dispose of your trash in a responsible manner and recycle whatever you can.

vehicle laws

Park roads are narrow and winding. Some areas are congested. Speed limits are there for your safety and well-being. State and federal vehicle laws apply within the park.

visitor activities

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

visitor centers

The park's main visitor center is located at the Oasis of Mara in Twentynine Palms. It is open 8 a.m. to 5 p.m. The Cottonwood Visitor Center is open from 8 a.m. to 4 p.m. Books, videos, maps, and related items are available, as well as cultural and natural history exhibits, and park rangers to answer your questions. wildflowers
Spring blooming periods vary with elevation, temperature, and the amount of moisture in the soil. You can get current information by calling the park.

wildlife viewing

It is a thrill to see wild animals in the park, but remember: this is their home and they should not be disturbed. This includes the use of artificial light for viewing them.

world wide web

If you are "connected," check out the National Park Service publications on the web at www.nps.gov. We are adding more information all the time. For information about other desert attractions in California, surf over to www.californiadesert.gov.

you are responsible

You are responsible for knowing and obeying park rules. Check at visitor centers, at entrance stations, and on bulletin boards to find out what they are. When in doubt, ask a ranger.

New Camping Fees continued from Page 1

seen many positive changes in all nine of the park's campgrounds. During the last four years Joshua Tree has spent an average of \$337,350 per year operating, maintaining, and improving campgrounds. Fiberglass pit toilets have been replaced with larger vault toilets, significantly improving campers' bathroom experience. Wobbly wooden picnic tables have been replaced with sturdy concrete tables, and new fire grates have been installed at many campsites. The generators at several campground amphitheaters have been replaced with quiet, energy-efficient solar power technology.

Although improvements have been made in all nine campgrounds, funds for these improvements have come from entrance fees and camping fees charged at Black Rock, Cottonwood, Indian Cove, and Sheep Pass campgrounds. Belle, Hidden Valley, Jumbo Rocks, Ryan, and White Tank provide 234 campsites or 47 percent of the park total, but campers there have not contributed to the cost of maintaining and improving those campgrounds. The costs will now be borne by all park campground users in keeping with the principle that public land users should bear at least part of the expense for the facilities they enjoy.

Campers can expect additional benefits from the new camping fees, including:

- Increased National Park Service staff presence in the affected campgrounds
- Camping opportunities for more visitors through enforcement of maximum length of stay limits
- Reduced confusion over campsite occupancy
- More interpretive programs in the campgrounds
- Improved trash collection management in the campgrounds with reduced food subsidies to predatory ravens and beggar coyotes



Park Stewardship Through the Arts is the not-for-profit artist-in-residence program at Joshua Tree National Park. Visit www.artmojave.org on the Internet for more information.

Desert Protection continued from Page 1

love with the desert around Twentynine Palms and Palm Springs. She saw beauty in the desert where others might see nothing.

During this time she became alarmed at the vast number of desert plants that were being taken to decorate the yards of people on the coast. The Devil's Garden, located just north of Interstate 10 on California Highway 62, was disappearing. Large barrel cacti, taller than a man and so big around that it took several people to encircle one, were being dug up and carted to the coast where many of them died. She saw the desert being destroyed and decided to work to save a land she had come to love. Creating a traveling exhibit that went across the United States and to Europe, she worked to help people appreciate the unique beauty of the desert plants. In 1930 she founded the International Deserts Conservation League to protect the desert. Working hard with others, she helped people to appreciate the desert and why it should be saved. Lobbying hard, Hoyt and the League worked to establish a national park called Desert Plants National Park.

In 1936 her dream to save the desert came true when President Franklin D. Roosevelt established Joshua Tree National Monument through Presidential Proclamation #2193. This bill set aside 825,340 acres under the National Park Service. While Hoyt strove to have the park created to protect desert plants, the bill actually states the "lands contain historic and prehistoric structures and have situated thereon various objects of historic and scientific interest..." This legislative history reveals that while the proclamation indicates a strong cultural resource emphasis, another important reason for the establishment of the monument was the preservation of the natural resources of the Colorado and Mojave Deserts. Joshua Tree National Monument was created because of both the cultural and the natural resources found within its boundaries.

In 1941 World War II broke out. Many National Park Service sites had lands withdrawn to help with the war effort and industrialization. Some lands contained minerals needed to build weapons and ships; other lands were used for raising beef

to feed the troops. Due in part to the war effort and massive building of the country in the late 1940s and 1950s, the Phillips Bill in 1950 transferred 289,500 acres of the park back to the public domain for mining. This adjusted the monument's land size to 558,126 acres. The boundaries of the monument were adjusted two more times. In 1951 the Oasis of Mara was donated to the monument for preservation. The Black Rock Canyon area was added in the 1970s.

In the 1970s and 1980s concerned citizens worked to protect more of the California Desert. As populations expanded and more people came to recreate in the "desert wasteland," desert residents and others concerned about the fragile nature of the desert ecosystems and the slow-growing plants, worked hard to protect more of the desert before it was irrevocably changed. Their efforts were finally realized in 1994. Under the California Desert Protection Act of 1994, numerous desert lands are set aside for preservation. With this law, Joshua Tree National Monument was given national park status and the name became Joshua Tree National Park. Much of the land taken away in 1950 was returned to the park, adjusting the park's land size to 792,726 acres, still short of its original size.

The California Desert Protection Act did more than just change Joshua Tree's name and add lands back. To protect these unique lands, Congress passed the largest parks and wilderness legislation in the history of the continental United States. Over 3.1 million acres of land were transferred from the Bureau of Land Management to the National Park Service. These lands increased the size of Joshua Tree and Death Valley, now both national parks, and created Mojave National Preserve. Along with this, many other lands were protected as desert wilderness areas. Overall nearly eight million acres were set aside as protected desert.

Thanks in part to many people, large portions of our desert lands are protected for future generations. This year, help Joshua Tree National Park and all the desert areas celebrate this momentous legislation. Special celebrations will take place in the Morongo Basin on the north side of the park the weekend of November 10th through the 14th. Join us as we rededicate ourselves to the appreciation of these special lands.

by Education Specialist Lorna Lange-Daggs

Tenth Anniversary Events

November 11th — 7 to 9 p.m.

A community discussion about the importance of Morongo Valley and the Big Morongo Canyon Preserve, neighbors of the park, in providing an ecological link between the park and the San Bernardino Mountains will be held in the Covington Park All-Purpose Room, 1116 Vale Drive, Morongo Valley. Call 760-218-6668 for more information.

November 12th — 7:30 p.m. to midnight

Renowned night-sky photographer Wally Pacholka will give a slide show. The Andromeda Society will provide telescopes for star-gazing, and there will be live music until midnight. Hi Desert Playhouse Guild Hall, 61231 29 Palms Hwy., Joshua Tree. Call 760-366-3723 for more information.

November 13th — A fun-filled day in 29 Palms!

10 a.m., 11:30 a.m., and 1 p.m. — buses will leave from the 29 Palms Historical Society parking lot for tours of the 29 Palms murals.
3 p.m. — Joshua Tree National Park will commemorate the 10th anniversary at the Oasis Visitor Center by unveiling a mural depicting Minerva Hoyt and presenting the First Annual Minerva Hoyt California Desert Conservation Award.
6 p.m. — Jim Cornett, educator and desert ecologist, and television personality Huell Howser will talk at an anniversary gala dinner at the 29 Palms Community Services Center. Call for reservations: 760-367-3445.

November 14th — 1 to 4 p.m.

Yucca Valley will host an afternoon of park-oriented activities for the whole family at the Community Center, 57090 29 Palms Hwy, Yucca Valley. Music, art, and historical collections, community organization displays, Joshua Tree birthday cake and refreshments will be included. Call 760-369-7212 for more information.

Campgrounds

Campgrounds	Elevation	Sites	Fee	Group Sites	Group Fee	Horse Camp	Water	Flush Toilets	Chemical Toilets	Tables	Fire Grates	Dump Station
Belle	3800'	18	\$5					*	*	*		
Black Rock	4000'	100	\$10			\$10	*	*		*	*	*
Cottonwood	3000'	62	\$10	3	\$25		*	*		*	*	*
Hidden Valley	4200'	45	\$5					*	*	*		
Indian Cove	3200'	101	\$10	13	\$20/35				*	*	*	
Jumbo Rocks	4400'	125	\$5					*	*	*		
Ryan	4300'	31	\$5			\$5		*	*	*		
Sheep Pass	4500'			6	\$20/35				*	*	*	
White Tank	3800'	15	\$5					*	*	*		

Camping Regulations

There is a 30-day camping limit each year. However, only 14 nights total may occur from October through May.

Campsites are limited to six people, three tents, and two cars. Group sites accommodate ten to seventy people.

Obtain reservations for sites at Black Rock, Indian Cove, and all group sites by calling 1-800-365-2267. Other campgrounds are first-come, first-served. Camp only in designated campsites.

There are no hookups for recreational vehicles.

Water is available at Oasis Visitor Center, Indian Cove Ranger Station, West Entrance, and Black Rock and Cottonwood campgrounds. Showers are not available.

All vegetation in the park is protected. If you want to make a campfire, bring your own firewood.

Quiet hours are from 10 p.m. to 6 a.m. Generator use is limited to six hours a day: 7 to 9 a.m., noon to 2 p.m., and 5 to 7 p.m.

Be an inspiration to others; leave your campsite cleaner than you found it.

What To See and Do

Viewed from the road the desert may appear bleak and drab. Closer examination reveals a fascinating variety of plants and animals and surreal geologic features. Joshua Tree National Park offers visitors endless opportunities for exploration and discovery. Depending on the number of hours you have to spend, your interests and energy, here are some ideas to consider:

IF YOU HAVE FOUR HOURS OR LESS, begin your tour at a park visitor center. Park staff will be happy to provide you with current information about conditions in the park as well as answers to your questions.

With limited time you may want to confine your sightseeing to the main park roads. Many pullouts with wayside exhibits dot these roads. A list of nature trails and short walks appears in this publication. Consider experiencing at least one of these walks during a short park visit.

On clear days the vista from Keys View extends beyond Salton Sea to Mexico and is well worth the additional 20-minute drive.

IF YOU PLAN TO SPEND AN ENTIRE DAY, there will be time to walk several nature trails or take a longer hike; several are listed on page 7 of this publication. A ranger-led program will add enjoyment and understanding to your visit. Check at visitor centers and on campground bulletin boards for listings. Or, call ahead and reserve a spot on the popular Desert Queen Ranch guided walking tour.

Some visitors like to experience the desert from the seat of a mountain bike. The park offers an extensive network of dirt roads that make for less crowded and safer cycling than the paved main roads. A selection of road trips is included in the article titled Backcountry Roads in this publication.

Joshua Tree has gained international attention as a superb rock-climbing area. Many visitors enjoy watching the rock climbers in action.

WITH MORE THAN ONE DAY IN THE PARK, your options increase. There are nine campgrounds and backcountry camping is permitted. You will find information concerning camping and backcountry use elsewhere in this publication.

Books and topographic maps give information needed for longer hikes. For "peak baggers," the park has ten mountains over 5,000 feet (1,524 m) 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 park's cultural history.

Whatever you choose, your time will be rewarding. The desert holds much more than what is readily apparent to the casual observer. A NOTE OF CAUTION: The desert, fascinating as it is, can be life-threatening for those unfamiliar with its potential dangers. It is essential that you carry water with you—even if you are only driving through. Cars break down; keys get locked inside; accidents happen.

Backcountry Roads

for mountain bikes and 4-wheel drive vehicles

Mountain bikes and 4-wheel drive vehicles are welcome in the park. For your own safety and for the protection of natural features, 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 park are narrow with soft shoulders. Curves, boulder piles, and Joshua trees restrict the vision of bikers and motorists. The unpaved roads in the park are safer for bikes and offer many opportunities to explore the area. Here is a sampling:

Pinkham Canyon Road

This challenging 20-mile (32.4-km) road begins at Cottonwood Visitor Center, travels along Smoke Tree Wash, and then cuts down Pinkham Canyon. Sections of the road run through soft sand and rocky flood plains. The road connects to a service road next to I-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, and winds through canyons in the Eagle Mountains. The first nine miles (14.5 km) are within the park boundary. Beyond that point is Bureau of Land Management land and a number of side roads. Several old mines are located near these roads. Use extreme caution when exploring old mines.

Old Dale Road

This 23-mile (37.3 km) road starts at the same point as Black Eagle Mine Road. The first 11 miles (17.8 km), cross Pinto Basin, a flat, sandy dry lake bed. Leaving the basin, the road climbs a steep

hill, then crosses the park boundary. A number of side roads veer off toward old mines and residences. The main road leads to CA HWY 62, 15 miles (24.3 km) east of Twentynine Palms.

Queen Valley Roads

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

Geology Tour Road

An 18-mile motor tour leads through one of the park's most fascinating landscapes. The road turns south from the paved road two miles (3.2 km) west of Jumbo Rocks Campground. There are 16 stops and it takes approximately two hours to make the round trip. 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 explores Pleasant Valley. A descriptive brochure that highlights each stop is available at the beginning of the road.

Covington Flats

The dirt roads in Covington Flats offer access to some of the park's largest Joshua trees, junipers, and pinyon pines. From Covington Flats picnic area to Eureka Peak is 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 if you ride or drive over to the backcountry board, a starting point for excellent hiking.

BACKCOUNTRY CAMPING, HIKING, and HORSEBACK RIDING

Joshua Tree National Park is a back-packer's dream with its mild winter climate and interesting rock formations, plants, and wildlife. It embraces 794,000 acres of which 585,040 acres have been designated wilderness. By observing the guidelines below, your venture into the backcountry should be safe and enjoyable. If you have questions, ask a ranger. It is your responsibility to know and abide by park regulations.

Registering

If you will be out overnight, register at a backcountry board. The map in this publication indicates the location of the twelve backcountry boards. An unregistered vehicle or a vehicle left overnight somewhere other than at a backcountry board is a cause for concern about the safety of the vehicle's occupants. It is also subject to citation and towing.

Hiking

It is easy to get disoriented in the desert: washes and animal trails criss-cross the terrain obscuring trails, boulder piles are confusingly similar, and there are not many prominent features by which to guide yourself. Do get yourself a topographic map and compass or GPS unit and learn how to use them before you head out. Cell phones are often not usable inside the park.

Know your limitations and don't take risks. You should not attempt to climb steep terrain without adequate equipment, conditioning, and training. Accidents can be fatal.

Carry a minimum of one gallon of water per person per day just for drinking, two gallons in hot weather or if you are planning a strenuous trip. You will need additional water for cooking and hygiene.

And don't forget the other essentials: rain protection, a flashlight, a mirror and whistle, a first-aid kit, pencil and paper, a pocket knife, and extra food.

Locating your camp

Your wilderness camp must be located one mile from the road and 500 feet from any trail. Make yourself aware of any day-use areas in the vicinity (they are indicated on the topo maps at the backcountry boards) and make certain to camp outside their boundaries.

Washes may seem inviting places to sleep because they are relatively level, but it is important to realize that they got that way because flash floods "bulldozed" the rocks and vegetation out of the way.

Domestic issues

Water sources in the park are not potable and are reserved for wildlife, so you will have to carry in an adequate supply for drinking, cooking, and hygiene. You will want to give some thought to the trade-off between the water required to hydrate dried foods and the heftier weight of canned and fresh foods. If you want to heat something you will need to pack in a stove and fuel as open fires are prohibited in the backcountry.

Bring plastic bags to hold your garbage and pack it out. Buried trash gets dug up by animals and scattered by the wind; it is not a pretty sight. Do bury human waste in "cat" holes six inches deep. Don't bury your toilet paper; put it in plastic (zip-locks work nicely) and pack it out. Leave no trace, as they say.

Coping with the weather

That old desert sun can damage eyes as well as skin. Wear a hat and sunglasses and use sun-blocking lotion liberally.

Temperature changes of 40 degrees within 24 hours are common. Bring a variety of clothes so you can layer on and off as conditions change.

Although rain is relatively rare in the desert, when it does come it can really pour down. Even when it isn't raining where you are, rain in the mountains can run off so fast as to cause flash floods. Stay alert.

Horseback riding

Horseback riding is a popular way to experience the backcountry and there are 253 miles of equestrian trails and trail corridors that traverse open lands, canyon bottoms, and dry washes.

Because of the special requirements for horses, care should be taken in planning your trip. You may call 760-367-5500 and request that a horse bulletin be mailed to you.



National Park Service
U.S. Department of the Interior

Joshua Tree National Park

Designations

National Park - 1994
Biosphere Reserve - 1984
National Monument - 1936

Size

794,000 acres

Superintendent

Curt Sauer

Park Information

760-367-5500

Web Site

www.nps.gov/jotr/

Mailing Address

74485 National Park Drive
Twentynine Palms, CA 92277

E-mail

jotr_info@nps.gov

Fax Number

760-367-6392

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

Black Rock Canyon Offers Good Hiking and More

Located in the northwest corner of the park, the road to Black Rock Canyon dead-ends at the campground. Campsites are located on a hillside at the mouth of the canyon surrounded by Joshua trees, junipers, cholla cacti, and a variety of desert shrubs. Spring blooms usually begin with the Joshua trees in late February followed by shrubs and annuals through May.

This quiet, family campground is a good introduction for first-time campers. Each campsite has a picnic table and fire ring with rest rooms and water nearby. If you forget to bring your firewood, shopping facilities are only five miles away in the town of Yucca Valley. Campsites vary in size and can accommodate both tents and RVs. A day-use picnic area and dump station are also available. For horse owners, a separate area is provided for overnight camping or staging a ride.

Campers register and pay camping fees at the nature center located in the middle of the campground. The staff at this small visitor center can help plan your hikes and sightseeing. Maps, books, nature guides, and children's activity books may be purchased there.

The hills behind the campground offer a variety of hiking trails including the Hi-View Nature Trail. The interpretive guide for this trail, available at the nature center, identifies the vegetation along this scenic 1.3-mile walk. For those looking for longer trails, Eureka Peak, Panorama Loop, and Warren Peak take hikers to ridge lines overlooking the often snowy peaks of San Jacinto and San Gorgonio. The trailhead for a 35-mile section of the California Riding and Hiking Trail is located at Black Rock. Backpackers can register at the backcountry board here for overnight wilderness trips.

But you don't have to hike to enjoy the Black Rock Canyon area. Wildlife sightings are frequent in the campground. Visitors often encounter ground squirrels, jackrabbits, and cottontails. Frequent bird sightings include cactus wrens, Gambel's quail, great horned owls, scrub-jays, and roadrunners. A lucky birder might be rewarded with a glimpse of a Scott's oriole, pinyon jay, or LeConte's thrasher. More elusive species such as bobcat, bighorn sheep, mountain lions, desert tortoises, and mule deer have all been seen in the area. As the sun sets, listen for the "singing" of coyotes living on the outskirts of the campground.

Please do not feed wild animals in Joshua Tree National Park. People food is unhealthy for them and they can become aggressive and harm you.

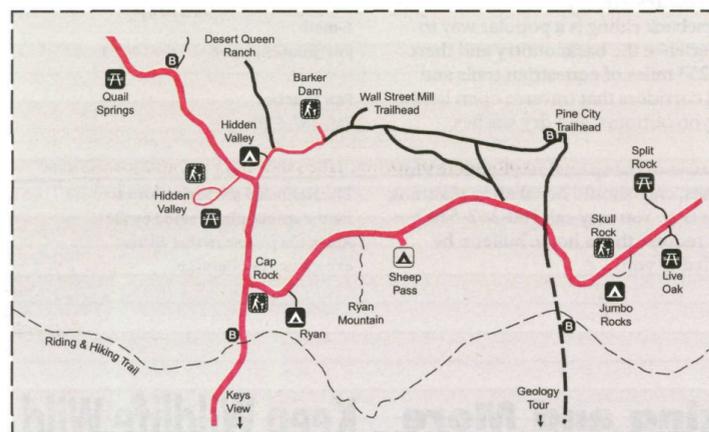
Keep Wildlife Wild



Don't feed coyotes!

People food is not healthy for them. It makes them into beggars, and they might bite you. Also, it is against the law, and a ranger will give you a ticket, then you will have to pay a big fine!

How Far Is It?	Oasis of Mara	Cottonwood Spring	West Entrance
Belle Campground	9	28	23
Black Rock Canyon	28	73	12
Cap Rock	19	40	11
Cholla Cactus Garden	18	20	31
Cottonwood Spring	38	0	46
Hidden Valley	20	42	9
Indian Cove	10	48	18
Interstate 10	45	7	35
Jumbo Rocks Campground	11	33	18
Keys View	24	45	16
Oasis of Mara	0	38	29
Ryan Campground	18	39	11
Sheep Pass Campground	16	37	14
West Entrance	34	51	0
White Tank Campground	11	27	24



Area Information

For information about accommodations and attractions in surrounding communities, you may contact the following chambers of commerce:

Indio
82503 Hwy 111
Indio, CA 92201
(760) 347-0676
indiochamber@aol.com
www.indiochamber.org

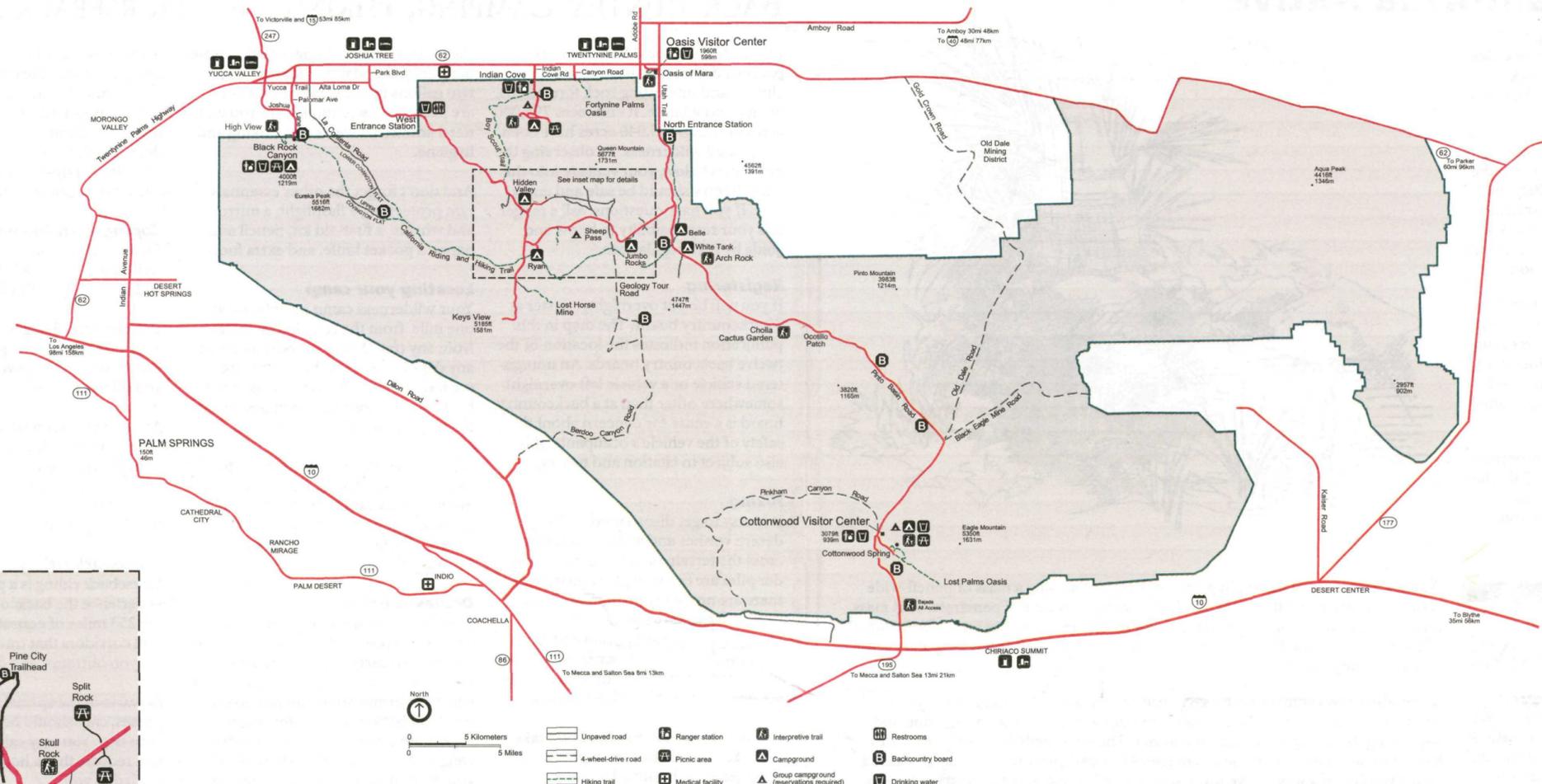
Joshua Tree
P.O. Box 600
Joshua Tree, CA 92252
(760) 366-3723
www.joshuatreechamber.org

Palm Springs
190 W. Amado Rd.
Palm Springs, CA 92262

(760) 325-1577
PSChamber@worldnet.att.net
www.pschamber.org

Twentynine Palms
6455 Mesquite Ave. Unit A
Twentynine Palms, CA 92277
(760) 367-3445
www.29chamber.com

Yucca Valley
56300 29 Palms Hwy.
Yucca Valley, CA 92284
(760) 365-6323
chamber@yuccavalley.org
www.yuccavalley.org



Ranger Programs
Desert Queen Ranch tours,
Evening campground talks,
Discovery walks,
Star parties,
And much more.
Pick up a current schedule at a visitor center or look on
campground bulletin boards. We also publish program
schedules on our website: www.nps.gov/jotr.

NATURE TRAILS



Trail	Mileage	Starting Point
Arch Rock	.3-mile loop (0.5-km)	White Tank Campground, opposite site 9
Bajada All-Access	.25-mile loop (0.4-km)	South of Cottonwood, one-half mile from the southern entrance to the park
Barker Dam	1.1-mile loop (1.8-km)	Barker Dam parking area
Cap Rock	.4-mile loop (0.6-km)	Cap Rock parking area, at the junction of Park Blvd. and Keys View Road
Cholla Cactus Garden	.25-mile loop (0.4-km)	20 miles north of Cottonwood Visitor Center
Cottonwood Spring	1-mile (1.6-km)	Cottonwood Spring parking area
Hidden Valley	1-mile loop (1.6-km)	Hidden Valley picnic area
Hi-View	1.3-mile loop (2.1-km)	Northwest of Black Rock Campground
Indian Cove	.6-mile loop (1-km)	West end of Indian Cove Campground
Keys View	.25-mile loop (0.4-km)	Keys View
Oasis of Mara	.5-mile loop (0.8-km)	Oasis Visitor Center, Twentynine Palms
Skull Rock	.25-mile (0.4-km)	Jumbo Rocks Campground

The Joshua Tree Guide is produced by the employees and volunteers of Joshua Tree National Park and Joshua Tree National Park Association and is published by Joshua Tree National Park Association. It is printed on recycled paper.



HIKING TRAILS

Trail	Round-trip Mileage	Time	Starting Point	Trail Description
Boy Scout Trail	16 miles 25.8km	1-2 days	Indian Cove backcountry board or Keys West backcountry board 0.5 mile (0.8km) east of Quail Springs Picnic area	Scenic trail through the western most edge of the Wonderland of Rocks. See backcountry board 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 Hwy 62	Several stands of fan palms, evidence of past fires, and pools of water are found at the oasis. The plants in this area are especially fragile, so walk lightly. Moderately strenuous.
Lost Horse Mine/Mt.	4 miles (6.4 km)	3-4 hour	Parking area 1.2 miles (1.9 km) east of Keys View Road	Site of ten-stamp mill and foundations. Summit elevation: 5278 feet (1609 m). Moderately strenuous.
Lost Palms Oasis	7.5 miles (11.2 km)	4-6 hours	Cottonwood Spring or Cottonwood 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)	2-3 hours	Cottonwood Spring or Cottonwood Campground	Excellent views of the Eagle Mountains and Salton Sea. Summit elevation: 3371 feet (1027 m). 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 (1664 m). Moderately strenuous.

Thirty-five miles of the California Riding and Hiking Trail pass through the park. 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 park. 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.

The Desert Fan Palm: A California Native

In an otherwise hot and sparse environment, palm oases are a luxuriant gift of shade and solace. The verdant display requires a constant supply of water so oases often occur along fault lines, where uplifted layers of hard impermeable rock forces underground water to the surface. There are only 158 desert fan palm oases in North America. Five are located in Joshua Tree National Park.

The desert fan palm, *Washingtonia filifera*, is native to the low hot deserts of Southern California where it can live for 80 to 90 years. Towering up to 75 feet, the desert fan palm is among the tallest of North American palms. It is definitely the heaviest: a mature desert fan palm can weigh as much as three tons. Its distinctive leaves are shaped like a fan and folded like an accordion. They measure up to six feet in length and are nearly as wide. Looking much like "petticoats," the fan palm's dead leaves remain attached to its trunk until removed by fire, wind, or flood.

Fire is beneficial for palms and rarely kills an adult. In palms the vascular bundles, those tubes that transport water and nutrients, are scattered throughout the trunk. This arrangement provides insulation from the heat of a fire. In contrast, trees such as oaks have all their vascular tissue in a ring just beneath the bark. Fire does kill young palms, but it also removes competitors and opens up space for palm seeds to germinate. In fact, desert fan palms increase seed production immediately after fires. A healthy palm can produce as many as 350,000 seeds.

People have been attracted to palm oases since prehistoric times. Native Americans ate the palm fruit and used the fronds to build waterproof dwellings. The Cahuillas (pronounced: Ka-wee-yahs) periodically set fire to oases in order to increase fruit production and to remove the sharp-edged palm fronds littering the oasis floor. The Cahuillas also planted palm seeds in promising locations.



WHERE IN THE PARK IS COTTONWOOD SPRING?

Cottonwood Spring Oasis, one of the best kept secrets in Joshua Tree National Park, is just seven miles from the southern entrance to the park. The spring, the result of earthquake activity, was used for centuries by the Cahuilla Indians, who left bedrock mortars and clay pots, or ollas, in the area.

Cottonwood Spring was an important water stop for prospectors, miners, and teamsters traveling from Mecca to mines in the north. Water was necessary for gold processing, so a number of gold mills were located here. The remains of an arrastra, a primitive type of gold mill, can be found near the spring, and concrete ruins mark the sites of two later gold mills in the area.

Cottonwood Spring was first mentioned in a gold mine claim filed in 1875, indicating that the trees are native. Fan palms first appear around 1920, perhaps growing from seeds deposited by a bird or coyote.

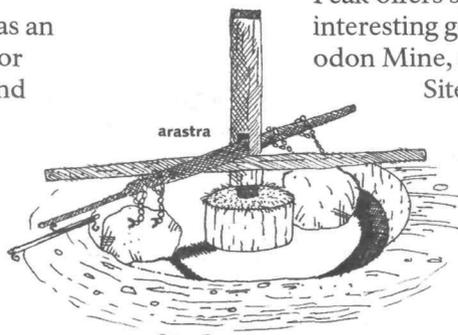
A number of hikes begin at Cottonwood Spring. A short, easy walk down Cottonwood Wash leads past a second oasis to a dry falls. In wet years, the falls can become a scene of rushing water and red-spotted toads. Bighorn sheep

often come up the wash for water in the early hours. An old teamster road drops down past the falls to the lower wash. A short hike leads through palo verde and desert willow trees to the remains of Moorten's Mill.

The three-mile loop trail to Mastodon Peak offers spectacular views, interesting geology, the Mastodon Mine, and the Winona Mill Site. And, for those looking for a longer hike—eight miles round trip—and the largest stand of fan palms in the park, the Lost Palms Oasis trail is a sure winner.

But you don't have to hike to enjoy Cottonwood Spring. This is one of the best birding spots in the park, so bring your binoculars and sit a spell.

The campground, which has water and rest rooms, is located one-half mile from Cottonwood Spring via a signed trail; there are also shaded picnic tables in the campground. To learn more about the plants, animals, and history of this fascinating place, join a ranger-led hike, walk, or campfire program, offered most weekends.



Water is a necessity. Desert fan palms suck up water using a mass of pencil-wide rootlets so dense that the roots of other plant species cannot penetrate. This mass may extend as far as 20 feet from the trunk in all directions. But water, in the form of flash floods, is also the most common cause of death for desert fan palms living in narrow canyons.

Water also draws animals such as bighorn sheep, Gambel's quail, and coyotes to palm oases. Coyotes help spread palms by eating palm fruit at one location and depositing the undigested seeds at another. The cool shade of an oasis provides habitat for animals that live nowhere else. After dark, a rush of air may be caused by the passing of a western yellow bat—they only roost in palms. During the day, a flash of yellow-orange might be a hooded oriole preparing to build its woven sack-like nest under the large green leaves of a desert fan palm. The dime-sized holes seen in the trunks of palms are exit holes of the two-inch, blue-black, giant palm-boring beetle, *Dinapate wrightii*, who lives exclusively in palm oases.

The larvae of the *Dinapate* beetle spend about five years chewing tunnels within the trunks of desert fan palms. The chewing is so loud that woodpeckers use the noise to locate the larvae. Successful larva pupate within the trunk then chew their way out. Because their rear end is wider than their front end, they exit going backwards to avoid getting stuck. Emerging in June, males and females mate and then die within a few weeks. Eventually these beetles can kill a palm, but they only inhabit older trees. Giant palm-boring beetles keep the palm population young and vibrant. The presence of these beetles is actually a sign of a healthy oasis.

Palms stand straight and tall, looking proud and invincible. But they aren't. Any place can be overly loved. As you explore these oases of wonder, take care. Use existing paths. Watch out for young palms—seedlings look like thick blades of grass. We do not want the presence of people to be a sign of a declining oasis.



Think Globally, Act Locally

Bring your aluminum and metal cans, glass, and plastic to a campground recycling center.

Share or recycle this Joshua Tree Guide when you have finished reading it.

Participate in recycling in your community.

CAMPGROUND ASTRONOMY

Camping away from city lights gives many of us city dwellers a chance to see the sky as we have never seen it. A great way to introduce someone to the "dark sky" is to tour the Milky Way with binoculars. First just lie back on the ground and gaze at the band of light. Notice how it is brighter in places, with clumps of light and dark streaks where stars seem to be absent. Realize that the glow of light is from stars so far away that we can't quite make them out. The dark lanes are actually interstellar dust that blocks our view. The clumps of light are clouds of stars.

Find one of those star clouds and, without taking your gaze away from it, raise your binoculars to your eyes. The cloud will resolve into hundreds of stars, with perhaps smaller clumps and hazy patches in the field of view.

Notice how the Milky Way seems to be very bright and dense to the south near the horizon? You are looking toward the center of our galaxy, where the stars are richest. The constellations Sagittarius and Scorpio lie in this direction.

Just west of Sagittarius is Scorpio, one of the few constellations that looks like its name. Scorpio is distinguished by the bright red star Antares, located in the scorpion's neck. Look at Antares with binoculars. See the large fuzzy ball of light next to it? That is a large globular cluster.

Turn your attention northward, above and to the left of the stars of Sagittarius. You will see a large cloud of stars. This is the Scutum star cloud. With binoculars you should easily see a hazy patch of light. This is a beautiful open star cluster.

As we move farther north, higher in the sky, we see the star clouds in the constellation Cygnus, the swan. This constellation also looks like its name. We can see the neck pointing south, and the wings stretched east and west. The bright star behind the wings is Deneb, the "tail" of Cygnus.

To help identify the many objects you will find with binoculars, you will want a star chart. A circular "star finder," also known as a "planisphere," will show the location of many celestial objects.

Rockpiles

The geologic landscape of Joshua Tree has long fascinated visitors to this desert. How did the rocks take on such fantastic shapes? What forces sculpted them?

Geologists believe the face of our modern landscape was born more than 100 million years ago. Molten liquid, heated by the continuous movement of Earth's crust, oozed upward and cooled while still below the surface. These plutonic intrusions are a granitic rock called monzogranite.

The monzogranite developed a system of rectangular joints. One set, oriented roughly horizontally, resulted from the removal, by erosion, of the miles of overlying rock, called gneiss (pronounced "nice"). Another set of joints is oriented vertically, roughly paralleling the contact of the monzogranite with its surrounding rocks. The third set is also vertical, but cuts the second set at high angles. The resulting system of joints tended to develop rectangular blocks. (figure 1) Good examples of the joint system may be seen at Jumbo Rocks, Wonderland of Rocks, and Split Rock.

As ground water percolated down through the monzogranite's joint fractures, it began to transform some hard mineral grains along its path into soft

clay, while it loosened and freed grains resistant to solution. Rectangular stones slowly weathered to spheres of hard rock surrounded by soft clay containing loose mineral grains. Imagine holding an ice cube under the faucet. The cube rounds away at the corners first, because that is the part most exposed to the force of the water. A similar thing happened here, but over millions of years, on a grand scale, and during a much wetter climate. (figure 2)

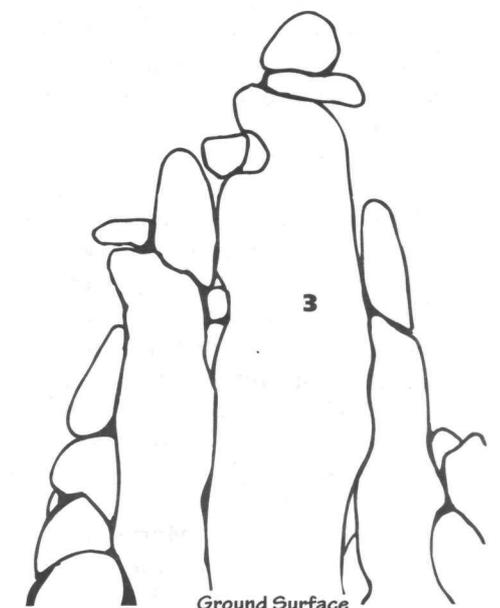
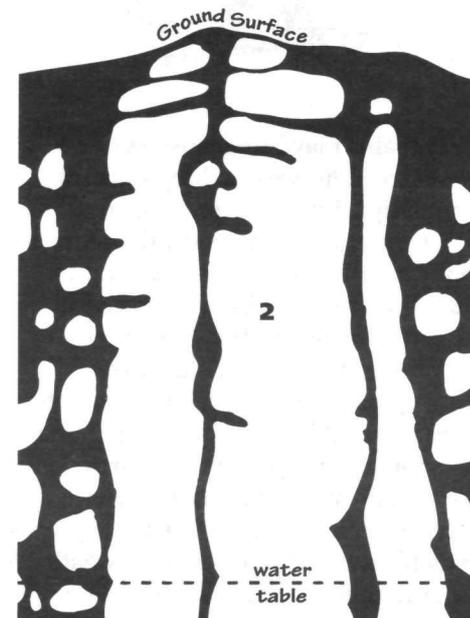
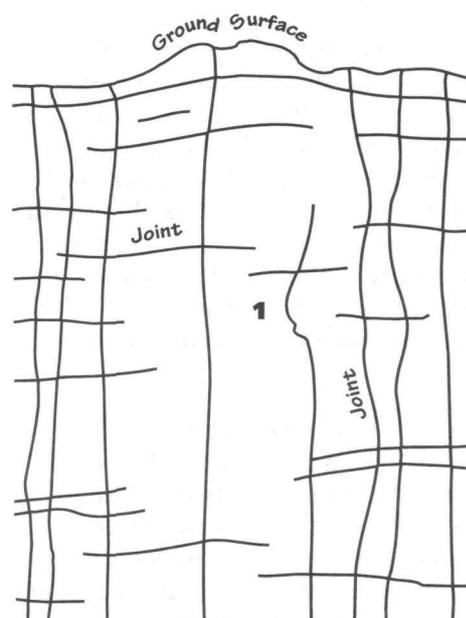
After the arrival of the arid climate of recent times, flash floods began washing away the protective ground surface. As they were exposed, the huge eroded

boulders settled one on top of another, creating those impressive rock piles we see today. (figure 3)

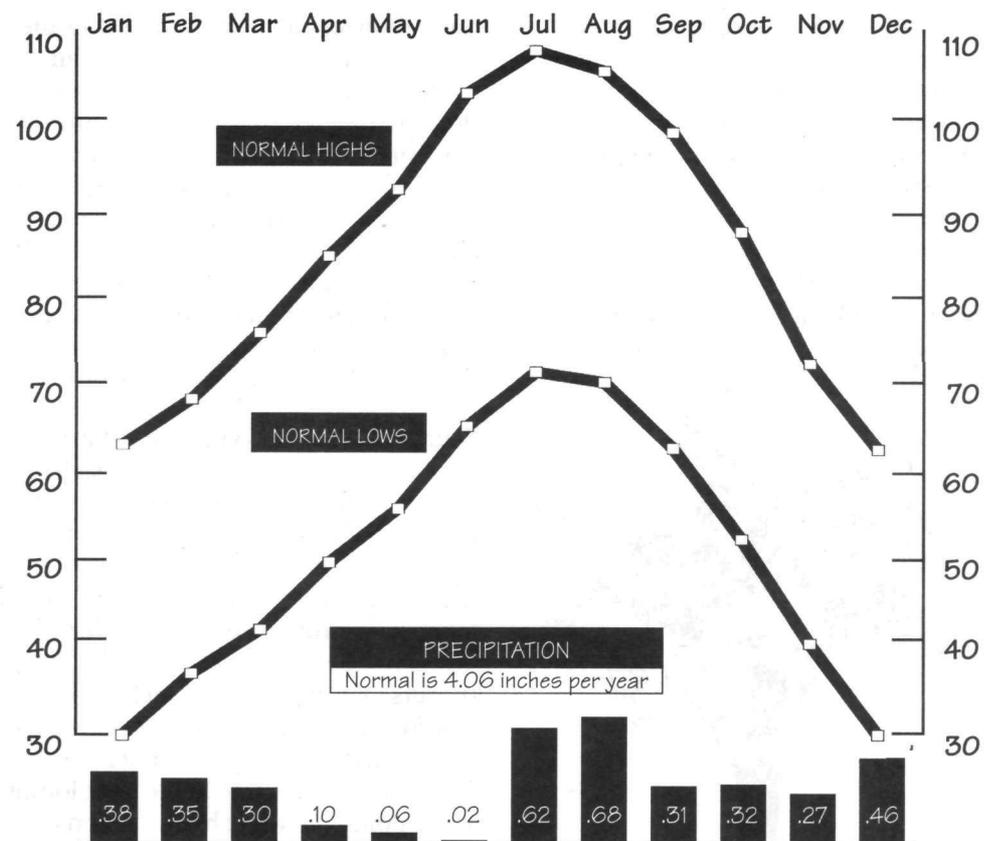
Visitors also wonder about the "broken terrace walls" laced throughout the boulders. These are naturally occurring formations called dikes. Younger than the surrounding monzogranite, dikes were formed when molten rock was pushed into existing joint fractures. Light-colored dikes formed as a mixture of quartz and potassium minerals cooled in these tight spaces. Suggesting the work of a stonemason, they broke into uniform blocks when they were exposed to the surface.

Of the dynamic processes that erode rock material, water, even in arid environments, is the most important. Wind action is also important, but less so than the action of water.

The processes operating in the arid conditions of the present are only partially responsible for the sculpturing of the rocks. The present landscape is essentially a collection of relic features inherited from earlier times of higher rainfall and lower temperatures.



The Weather



Measurements were taken at 1,960 feet. You can expect seven to 12 degrees cooler temperatures and 3.5 inches more precipitation at higher elevations.

"I Speak for the Trees" Dr. Seuss, The Lorax

Surrounded by twisted, spiky trees straight out of a Dr. Seuss book, you might begin to question your map. Where are we anyway? In wonder, the traveler pulls over for a snapshot of this prickly oddity; the naturalist reaches for a botanical guide to explain this vegetative spectacle; and the rock climber shouts "Yowch!" when poked by dagger-like spines on the way to the 5.10 climbing route.



a Joshua tree

these pioneers named the tree after the biblical figure, Joshua, seeing the limbs of the tree as outstretched in supplication, guiding the travelers westward. Concurrent with Mormon settlers, ranchers and miners arrived in the high desert with high hopes of raising cattle and digging for gold. These homesteaders used the Joshua tree's limbs and trunks for fencing and corrals. Miners found a source of fuel for the steam engines used in processing ore.

Today we enjoy this yucca for its grotesque appearance, a surprising sight in the landscape of biological interest. The Joshua tree's life cycle begins with the rare germination of a seed, its survival dependent upon well-timed rains. Look for sprouts growing up from within the protective branches of a shrub. Young sprouts may grow several inches in the first five years, then slow down, averaging one-half inch per year thereafter. The tallest Joshua tree in the park looms a whopping forty feet high, a grand presence in the Queen Valley forest; it is estimated to be about 300 years old! These "trees" do not have growth rings like you would find in an oak or pine. This makes aging difficult, but you can divide the height of a Joshua tree by the average annual growth of one-half inch to get a rough estimate.

Known as the park namesake, the Joshua tree, *Yucca brevifolia*, is a giant member of the lily family. Like the California fan palm, *Washingtonia filifera*, the Joshua tree is a monocot, in the subgroup of flowering plants that also includes grasses and orchids. Don't confuse the Joshua tree with the Mojave yucca, *Yucca schidigera*. This close relative can be distinguished by its longer, wider leaves and fibrous threads curling along leaf margins. Both types of yuccas can be seen growing together in the park. The Joshua tree provides a good indicator that you are in the Mojave Desert, but you may also find it growing next to a saguaro cactus in the Sonoran Desert in western Arizona or mixed with pines in the San Bernardino Mountains.

Years ago the Joshua tree was recognized by American Indians for its useful properties: tough leaves were worked into baskets and sandals, and flower buds and raw or roasted seeds made a healthy addition to the diet. The local Cahuilla have long referred to the tree as "hunuvat chiy'a" or "humwichawa," both names are used by a few elders fluent in the language.

By the mid-19th century, Mormon immigrants had made their way across the Colorado River. Legend has it that



a Mojave yucca

Spring rains may bring clusters of white-green flowers on long stalks at branch tips. Like all desert blooms, Joshua trees depend on just the perfect conditions: well-timed rains, and for the Joshua tree, a crisp winter freeze. Researchers believe that below freezing temperatures may damage the growing end of a branch and stimulate flowering, followed by branching. You may notice some Joshua trees grow like straight stalks; these trees have never bloomed—which is why they are branchless! In addition to ideal weather, the pollination of flowers requires a visit from the yucca moth. The moth

Desert Institute

The Desert Institute, the educational branch of the nonprofit Joshua Tree National Park Association, offers outdoor classes related to Joshua Tree National Park and the Mojave Desert. Taught by experts in their field, classes vary in length from one to three days. Optional college credit is offered through UC Riverside for course titles followed by an asterisk (*). Course fees vary from \$45 to \$200.

Fall Class Schedule

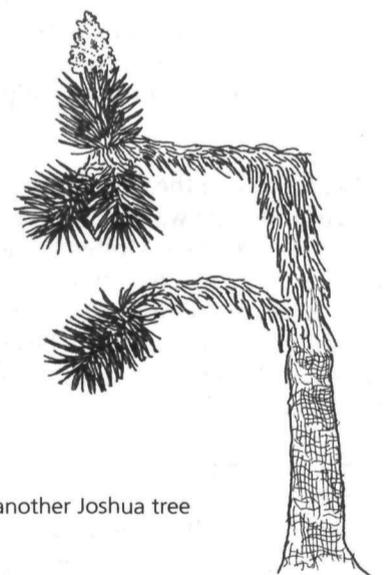
Insects of the Desert	Sep 18
Basic Desert Survival	Sep 26
Map & Compass Basic Skills	Oct 1, 2
Native American Basket Weaving I	Oct 2, 3
Archeology of Joshua Tree National Park*	Oct 8, 9, 10
Desert Night Sky	Oct 9
Mining Tales and Trails	Oct 10
Drawing the Desert	Oct 16
Watercolor Painting in the Park	Oct 17
Explore Johnny Lang Canyon	Oct 17
Photographing the Joshua Tree Landscape	Oct 22, 23
Studying the Desert Bighorn	Oct 23
Indians of the California Desert	Oct 30
Geology of the San Andreas Fault	Oct 31
Native Arrow Making	Nov 6
Queen Mountain: A View from the Top	Nov 7
Native American Plant Cordage	Nov 13
Basic Desert Survival	Nov 14
Geology: Creation of the Joshua Tree Landscape*	Nov 19, 20, 21
Edible Plants of the Desert	Nov 20, 21
Map & Compass Basic Skills	Dec 3, 4
Map & Compass Advanced Skills	Dec 4, 5
Earthquakes, Volcanoes, and Hotspots	Dec 11
Birds of the Salton Sea	Dec 11, 12

Contact us for a brochure or to sign up for a course: www.joshuatree.org / tel. 760-367-5535 / fax 760-367-5583 / eMail desertinstitute@zippnet.net.

collects pollen while laying her eggs inside the flower ovary. As seeds develop and mature, the eggs hatch into larvae, which feed on the seeds. The tree relies on the moth for pollination and the moth relies on the tree for a few seeds for her young—a happy symbiosis. The Joshua tree is also capable of sprouting from roots and branches. Being able to reproduce vegetatively allows a much quicker recovery after damaging floods or fires, which may kill the main tree.

Many birds, mammals, reptiles, and insects depend on the Joshua tree for food and shelter. Keep your eyes open for the yellow and black flash of a Scott's oriole busy making a nest in a yucca's branches. At the base of rocks you may find a wood rat nest built with spiny yucca leaves for protection. As evening falls, the desert night lizard begins poking around under the log of a fallen Joshua tree in search of tasty insects.

You may be at ease with pine or hardwood, or find shade under the domesticated trees in your city park, but in the high desert, Joshua is our tree. It is an important part of the Mojave Desert ecosystem, providing habitat for numerous birds, mammals, insects, and



another Joshua tree

lizards. Joshua tree forests tell a story of survival, resilience, and beauty borne through perseverance. They are the silhouette that reminds those of us who live here that we are home. Like the Lorax we speak for the trees, but often the trees speak to us.

By Vegetation Specialist Jane Rodgers

Publications to help you plan a visit to Joshua Tree National Park

The following publications have been selected for their value in planning your trip to Joshua Tree National Park. These items and many more may be ordered by mail, telephone, fax, or on the web at www.joshuatree.org.

Getting to Know Joshua Tree National Park

Road Guide to Joshua Tree National Park, Decker. Guides visitors on a driving tour through the land where the Mojave and Colorado Deserts meet. 48 pages PB \$5.95

On Foot in Joshua Tree, Furbush. A comprehensive hiking guide featuring 90 park hikes, 40 photos and illustrations, and 26 maps and reference charts. 152 pages PB \$11.95

A Visitor's Guide to Joshua Tree, Cates. A delightful, informative guide blending human and natural history. Enjoyable by desert rats and first-time visitors. 100 pages PB \$6.95

Hiking California's Desert Parks, Cunningham. Presents 111 hikes and backcountry trips in Anza Borrego, Joshua Tree, Death Valley, and Mojave. 373 pages PB \$16.95

Joshua Tree Desert Reflections, Trimble. Dazzling photos and lyrical narrative make this book both the perfect introduction to the park and a treasured memento. 40 pages PB \$9.95

Joshua Tree Video. Excellent introduction to Joshua Tree National Park. 30 minutes VHS \$12.95; PAL \$12.95

Recreation Map of Joshua Tree, Harrison. Colorful map of Joshua Tree National Park highlighting points of interest, campgrounds, picnic areas, topographic features, and backcountry roads and trails. \$8.95

Trails Illustrated Topographic Map of Joshua Tree National Park. Includes elevations, backcountry camping, hikes, routes, and safety. Waterproof and tearproof. \$9.95

Joshua Tree, The Story Behind the Scenery, Vuncannon. Full of color photos and fascinating text, the perfect introduction to the park. 48 pages PB \$9.95; \$10.95 for French or German.

Joshua Tree National Park Geology, Trent and Hazlett. Explores the geology and evolution of the Joshua Tree landscape. Includes sections on plate tectonics, regional geology, and seismic activity. PB \$9.95

50 Best Short Hikes, Krist. Covers Joshua Tree, Death Valley and Mojave. Hikes range from easy nature trails to more challenging routes suitable for a full day of hiking. 204 pages PB \$12.95

On the Road in California

California Trail, Dodd and Gnass. This colorful book chronicles travels over the California-Oregon Trail in search of the land of El Dorado. 64 pages PB \$9.95

California's Wilderness Areas, Wuerthner. Provides the information visitors need to explore the 74 wilderness areas created by the 1994 Desert Protection Act. 320 pages PB \$27.95

The Living Desert, exploring national parks and monuments through natural sounds. Tape \$10.95, CD \$15.95.

The Complete Guide to America's National Parks, Fodor's. Up-to-date guide to all 384 National Park Service sites. 448 pages PB \$19.00

California Roadmap. Includes a list of public recreational areas and places of interest. \$3.95

Life in the Desert

Desert Survival Handbook, Lehman. Explains how to deal with emergencies that might arise in a desert environment. Filled with examples, narratives, and illustrations to aid understanding. 91 pages PB \$7.95

How Indians Used Desert Plants, Cornett. An informative account of the ways early natives used a variety of desert plants for food, tools, building materials, and as an integral part of their daily lives. 62 pages PB \$9.95

Geology Underfoot in Southern California, Sharp and Glazner. An inside view of the southland's often active, sometimes enigmatic, and always interesting landscape. 224 pages PB \$14.00

Desert Solitaire, Abbey. The author's recollection of summers spent as a ranger in the canyon and rim country of southern Utah, including observations of the natural world. 269 pages PB \$13.00

The Joshua Tree, Cornett. Up-to-date information about this symbol of the Mojave Desert and namesake of our national park. 32 pages PB \$6.95

Growing Up at the Desert Queen Ranch, Keys, Kidwell. The true story of the Keys family and their struggle to survive on an isolated desert ranch in the 1920s and '30s. It is a look into a now lost American way of life. 118 pages PB \$14.95

Wildlife of North American Deserts, Cornett. A concise introduction to the most commonly encountered animals in the five North American deserts. 211 pages PB \$12.95

Desert Palm Oasis, Cornett. An exploration of the lush, water-loving fan palms that are such a wonderful surprise in arid desert environments. 47 pages PB \$10.95

Watchable Birds of the Southwest, Gray. A full-color guide to 68 of the Southwest's fun-to-watch species, big and small. Organized by habitat. 187 pages PB \$14.00

100 Desert Wildflowers, Bowers. Color photos and easy-to-read text highlight some of the most common wildflowers of the deserts in the southwest corner of America. 56 pages PB \$7.95

Shrubs and Trees of the Southwest Desert, Bowers. An easy-to-use guide full of descriptions and line drawings of over 100 desert shrubs and trees. 140 pages PB \$12.95

70 Common Cacti, Fischer. Colorful photographs and easy-to-read descriptions demonstrate the unique beauty of the common cacti of the Southwest. 70 pages PB \$7.95

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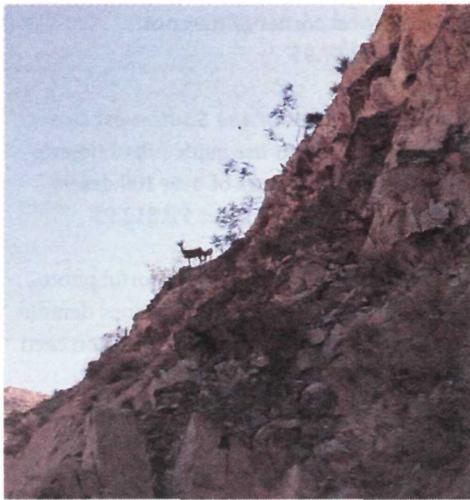
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Desert Bighorn Sheep



Ewe with lamb seeks safety in steep rocky terrain.

The Desert Bighorn, *Ovis canadensis nelsoni*, ranges through the dry, desert mountains of eastern California, much of Nevada, northwestern Arizona, and southern Utah. The total population of this sheep is about 13,000. Two hundred fifty or so live in Joshua Tree National Park.

Male sheep, called rams, often weigh over 200 pounds. They can be recognized by their massive brown horns. The horns curl back over the ears, down and up past the cheeks. By the time a ram is seven or eight years of age, he can have a set of horns with a full curl, a spread of 30 inches, and a weight of almost 30 pounds. Horn size is a symbol of rank in the herd. However, many rams rub off the ends of their horns (called "brooming") because they interfere with their vision. Ewes, the females, are smaller than rams and have shorter, smaller horns that never exceed half a curl.

Aided by cloven hooves that are sharp-edged, elastic, and concave, bighorn zigzag up and down cliff faces with amazing ease.

Desert Bighorn prefer a habitat of steep, rocky terrain for escape from predators, bedding, and lambing. Bighorn zigzag up and down cliff faces with amazing ease. They use ledges only two inches wide for foot holds, and bounce from ledge to ledge over spans as wide as 20 feet. They can move over level ground at 30 miles per hour and scramble up mountain slopes at 15 mph. They are aided by cloven hooves which are sharp-edged, elastic, and concave.

Graze and browse of a wide variety of plant species serve as food. Green grasses are preferred, but when this food is not available, as is the case for most of the year in Joshua Tree, they

feed on a variety of other plants, including cacti. Bighorns have a complex nine-stage digestive process that allows them to maximize removal of nutrients from their food.

The bighorn uses open areas of low growing vegetation near rugged terrain for feeding. This habitat preference divides Joshua Tree's bighorns into three more or less separate herds. The 120 animals that live in the Eagle Mountains at the far eastern boundary of the park is the largest herd. The second consists of about 100 animals and ranges through the main part of the Little San Bernardino Mountains. The smallest herd, which numbers only 30 animals, is found in the Wonderland of Rocks. Members of this last band are the ones most often seen by park visitors. Ewes seldom venture from their natal herd, but rams wander rather frequently.

The Desert Bighorn is most active during daylight, moving to traditional bedding areas at night. During the summer bighorn rest during the hot midday, often on cliffs above their water source. Rest periods are also used for chewing cud.

Water is critical to bighorn survival. In early spring of years with good winter rains they get enough water from the grass they eat to go without drinking. At other times they must trek to a spring or water-holding depression at least every third day. Lactating ewes need to drink almost every day. Making the trek to water is the most dangerous part of a bighorn's life. It is in the narrow canyons, where most springs occur, that the adult sheep's only significant predator, the mountain lion, *Felis concolor*, lies in wait. Most dead sheep found in the

Bachelor band of mature rams.



It is in the narrow canyons, where most springs occur, that the adult sheep's only significant predator, the mountain lion, *Felis concolor*, lies in wait.

park are mountain lion kills.

Bighorn have extremely acute eyesight, which aids in jumping and gaining footholds in the steep terrain. They often watch other animals moving at a distance of almost a mile. During the rut, the bighorn rams snort loudly. The lambs bleat, and the ewes respond with a guttural "ba-aa". They also utter throaty rumbles when frightened.

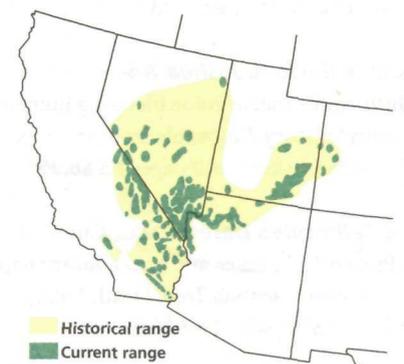
Like all sheep, bighorn are gregarious, sometimes forming herds of over 100 individuals, but small groups of eight to 10 are more common. For most of the year, mature rams stay apart from females and the young in separate bachelor bands.

Rams do not defend territories, but do engage in battles over mating access to a particular female. Overall vigor as well as horn size determines male dominance status. Rutting may occur at any time of year, but seems to peak in August and September. Gestation lasts 150 to 180 days. Desert Bighorn may give birth at any season, but most births

The Desert Bighorn population today is only about 10 percent of what existed before the settlement of the West.

occur from January to April. Twins are rare. Within a few weeks of birth, lambs form bands of their own, seeking out their mothers to suckle only occasionally. By six months of age, they are completely weaned.

Only about one-third of the lambs survive the rigor of their first summer. Ewes are usually ready to breed in their second or third year. Males reach sexual maturity at the same age, but are not usually strong enough to compete for mating until they are seven years old. After reaching adulthood, most bighorn live over 10 years, with maximum life span being 20 years.



Historical range and current distribution of the desert bighorn subspecies, *nelsoni*.

The Desert Bighorn population today is only about 10 percent of what existed before the settlement of the West. This species is extremely sensitive to disease. Like the native humans with whom it shared the southwest for thousands of years, it has little resistance to the diseases of European sheep and cattle. Disease contracted from domestic livestock may be the major factor in decline and loss of populations. Wild horses and burros also compete with Desert Bighorns for water and forage in much of their range. Happily, the bighorn of Joshua Tree National Park are isolated from areas of livestock grazing and face no competition from feral horses or burros.

So far in a 30 plus year research program, our bighorn herds have been judged to be in good condition. The third phase of the assessment began last fall in the Wonderland of Rocks. The park wants to find out if increased recreational use in the area is affecting bighorn sheep behavior. Ten ewes were captured individually using a handheld net-gun fired from a helicopter and collared. The collars transmit their location via satellite so researchers can monitor their behavior.

by Dr. Harold De Lisle, herpetologist