

Joshua Tree Guide



Plants removed from the path of the road rehabilitation project will be cared for until they can be relocated. See Saving the Plants on page 12 and road construction information on page 3. Photo by Richard Shendel.

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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. An assistive listening system is available for use during ranger 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, and on designated bike trails. There are no bicycle paths along roads. Bikes are prohibited on backcountry and nature trails.

bus tours

Several companies offer tours of the park by bus or van. Contact a travel agent for additional information.

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 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 Hidden Valley Campground.

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.

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 bulletin on horse use before you come.

international visitors

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 dangerous creatures as they lose their fear of humans.

leave no trace

During your visit 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, 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 by permit. Permit applications are available at entrance stations and visitor centers. Bolting in wilderness is not allowed.

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 and creates an unsightly mess and plastic six-pack rings strangle birds. 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.

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.

Expect Travel Delays this Spring

The park has begun an extensive road construction project and visitors may experience delays of up to 15 minutes this spring when traveling between Quail Springs and Cap Rock on Park Boulevard (see the inset map on page six). Summer visitors should be aware that this portion of the road may be closed Monday through Friday during July and August.

Six miles of main park road will be reconstructed during the first phase of the project. The intersection of Park Boulevard with the entrance to the Hidden Valley day-use area will be realigned to make it safer. Hidden Valley Campground will get a new entrance and visitors traveling to the Desert Queen Ranch, Barker Dam Nature Trail, or to climbing areas around the Wonderland of Rocks will no longer have to drive through the campground. The road from the newly aligned Park Boulevard to Barker Dam will be paved.

The parking area for the Barker Dam Nature Trail, currently located in a wash, will be removed, the area replanted, and a new parking area constructed in a more environmentally sound location. The existing parking areas at the Quail Springs picnic area, the Boy Scout trailhead, the Hidden Valley trailhead, and the Lost Horse ranger station access road, will be reconstructed and expanded, and new parking areas will be constructed at the Hemingway Buttress rock formation, the Wonderland of Rocks backcountry staging area, and the "mojave plants" exhibit area.

The fiscal 2001 phase of the project is funded by the Federal Lands Highway Program at six million dollars. Phase two will continue the reconstruction of Park Boulevard from Cap Rock to Jumbo Rocks Campground hopefully in 2002. Next comes Keys View Road and Pinto Basin Road from Pinto Wye to Cottonwood Spring in 2005.

A Season's Inconvenience Leads to Long-term Resource Protection and Visitor Safety

As you drive through Joshua Tree National Park this spring and summer, you may encounter delays associated with a major road construction project. We apologize for the inconvenience and would like to explain why the project is necessary.

Many park roads are old mining and ranching roads that were simply oiled and paved over. They were constructed without the benefit of engineering and do not meet today's safety standards. Many show signs of wear and tear as a result of increased visitation and the use of larger vehicles by park visitors. In many places, the asphalt along roads' edges has broken down because large vehicles, such as buses and recreational vehicles, must pull over on road shoulders to allow for passage.

Studies from the early 1990s showed that designated parking was only adequate for one-third of the park's visitors during peak use. Increased visitation throughout the decade has only magnified the problem. Most designated parking areas and pullouts are too small to accommodate increased park use and are not located near popular attractions. Visitors park along roads and walk crosscountry to the sites. This expands bare spots at the edges of roadways and parking areas and creates social trailing, which damages native vegetation and soils.

When vehicles meet on the Barker Dam Road, they must pull off the side of the road onto vegetation or back up for long distances. Many Joshua trees adjacent to the road have been effected by soil compaction. Native vegetation, including Joshua trees, on the edge of poorly defined parking areas, pullouts, and narrow roads are trampled by visitors or destroyed by vehicles.

The paved and curbed parking areas and pullouts will provide for more direct access to the primary attractions and will decrease the distance that visitors are required to travel on foot. The project will eliminate the confusion caused by a multitude of social trails and the trails' visual impacts, hazards associated with walking along the road's edge, and dust raised by vehicular traffic.

Paving and appropriate drainage will eliminate the channeling effect that water and wind-caused erosion has created. In some places, the Barker Dam Road is several feet below the surrounding desert floor because of the erosion. The project

will reduce the hazards of flash flooding and impaired visibility and create safe walking areas for pedestrians. Smoother traffic flow and elimination of congestion will facilitate timely emergency responses and create a safer driving experience.



We understand your concerns when you see the disturbed areas created by the construction project. Vegetation disturbance will be minimized because the construction will occur primarily in previously disturbed areas or within narrow construction limits around new parking areas. An extensive soil and plant salvage project which began last fall has saved over 1,000 plants from being destroyed. (See page 12.)

These concerns were carefully considered in the 1995 General Management Plan and in the road design process. The project also received public review in an environmental assessment early in 2000.

This is one of the most important infrastructure improvements in the park's history. It will dramatically improve visitors' experiences in the Hidden Valley campground by eliminating the traffic to Barker Dam from the campground. Ultimately, this project will provide for enhanced protection of park resources and visitor safety.

COOPERATION RESULTS IN A WIN-WIN SITUATION

"The National Park Service protects our nation's heritage through the preservation of our country's special places—treasured natural and cultural resources—for the enjoyment of this and future generations. The U.S. military protects our heritage through a strong national defense to ensure that this and future generations have the freedom to continue to preserve and enjoy these special places. There must be constructive engagement between these two government agencies to honor these two missions." —John Reynolds, Pacific West Regional Director, National Park Service

Over the last several years, the U.S. Navy and Joshua Tree National Park have worked together to relocate a low altitude military training route (MTR). The MTR passed over seven of nine campgrounds, six of eight picnic areas, the greatest concentration of desert tortoise, bighorn sheep lambing and water areas, visitor use areas, major climbing routes, and the major scenic park road. To decrease the impacts on the park, the U.S. Navy voluntarily raised the floor of the MTR to 1,500 feet above ground level, but that diluted the effectiveness of the training that the pilots received.

Through the cooperative efforts of the U.S. Navy and Joshua Tree National Park, the route now transects the southern portion of the park. It no longer flies over visitor use areas and it avoids almost all desert tortoise, bighorn sheep areas, and cultural resources. The floor of the training route was returned to 200 feet above ground level for part of the route. In the end, the impacts to park visitors and to natural and cultural resources have been either eliminated or drastically reduced and the quality of the training that the pilots receive has been enhanced. Visitors to Keys View may have the opportunity to see these military training flights.

Campgrounds

Campgrounds	Elevation	Sites	Fee	Group Sites	Group Fee	Horse Camp	Water	Flush Toilets	Chemical Toilets	Tables	Fire Grates	Dump Station	Camping Regulations
Belle	3800'	18							*	*	*		<p>There is a 30-day camping limit each year. However, only 14 nights total may occur from October through May.</p> <p>Campsites are limited to six people, three tents, and two cars. Group sites accommodate ten to seventy people.</p> <p>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. It is wise to arrive as early as possible.</p> <p>There are no hookups for recreational vehicles.</p> <p>Water is available at Oasis Visitor Center, Indian Cove Ranger Station, West Entrance, and Black Rock and Cottonwood campgrounds. Showers are not available.</p> <p>All vegetation in the park is protected. If you want to make a campfire, bring your own firewood.</p> <p>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.</p>
Black Rock	4000'	100	\$10			\$10	*	*		*	*	*	
Cottonwood	3000'	62	\$10	3	\$25		*	*		*	*	*	
Hidden Valley	4200'	39							*	*	*		
Indian Cove	3200'	101	\$10	13	\$20/35				*	*	*		
Jumbo Rocks	4400'	125							*	*	*		
Ryan	4300'	31				*			*	*	*		
Sheep Pass	4500'			6	\$20/35				*	*	*		
White Tank	3800'	15							*	*	*		

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

What to See and Do

For a first-time visitor the desert may appear bleak and drab. Viewed from the road, the desert only hints at its vitality. Closer examination reveals a fascinating variety of plants and animals. A rich cultural history and surreal geologic features add to the attraction of this place. 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. A ranger-led program will add enjoyment and understanding to your visit. Check at visitor centers and on campground bulletin boards for listings.

If solitude is what you are after, plan an all-day hike. A list of hikes is included in this publication and trail information can be obtained from visitor centers 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 just 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, available at park sales areas, 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 I10.

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 but may be too dangerous to approach.

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 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), cross 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

The road turns south from the paved road two miles (3.2 km) west of Jumbo Rocks Campground. 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 printed guide 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 in the high desert. 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 *and* HIKING

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 630,800 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.

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.

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.

Hiking

It is easy to get disoriented in the desert: washes and animal trails crisscross 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 and learn how to use them before you head out.

Know your limitations. You should not attempt to climb cliffs or 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.

Coping with the weather

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

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

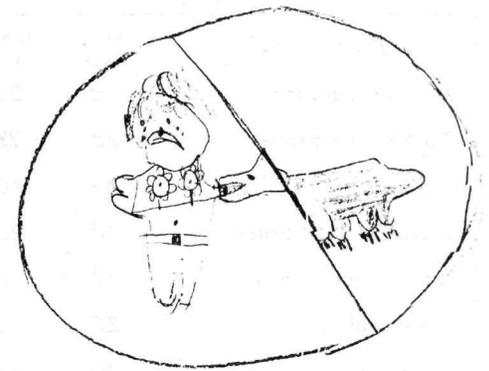
Although rain is relatively rare in the desert, when it does come it can really pour down. Even when it isn't raining where you are, rain in the mountains can run off so fast as to cause flash floods. Stay alert.

Stock animals

To minimize vegetation damage and soil erosion, stock animals are restricted to designated horse trails and washes.

Plan to pack along sufficient water and feed (pellet form only), as your animals are not allowed to drink from any of the water sources in the park or graze the vegetation.

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, and you will have to pay a big fine!

Welcome to Joshua Tree National Park, an increasingly popular destination for people from throughout the United States and the world. Some come seeking solitude, others recreation; some come to learn about the natural and cultural wonders of this desert region, still others to be reassured that there are still areas offering a glimpse of the natural world as it once existed.

During your visit, I encourage you to get out of your vehicle and look, listen, smell, and explore. Rangers are available to assist you with questions about the many attractions and activities in this desert environment.

The future of the national park service is as strong as the support and commitment of the people we serve. With your assistance Joshua Tree will survive intact for the enjoyment of generations to follow. Rest assured that the staff and volunteers at Joshua Tree National Park are committed to doing our part to defend and protect this special place.

Should you have recommendations for improving your national park, please write me at 74485 National Park Drive, Twentynine Palms, CA 92277-3597 or email: ernie_quintana@nps.gov.

Ernest Quintana

Ernest Quintana, Superintendent

Black Rock Canyon Offers Good Hiking and More

Located in the northwest corner of the park, the road to Black Rock Canyon deadends 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 restrooms 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.

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 ridgelines overlooking the often snowy peaks of San Jacinto and San Geronio. 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, jays, and roadrunners. A serious birder might be rewarded with a glimpse of a Scott's Oriole or LeConte's thrasher. More elusive species such as bobcat, big-horn 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.

How Far Is It?	Oasis of Mara	Cottonwood Spring	West Entrance
Belle Campground	9	28	28
Black Rock Canyon	28	73	17
Cap Rock	19	40	16
Cholla Cactus Garden	18	20	36
Cottonwood Spring	38	0	51
Hidden Valley	20	42	14
Indian Cove	10	48	13
Interstate 10	45	7	35
Jumbo Rocks Campground	11	33	23
Keys View	24	45	21
Oasis of Mara	0	38	34
Ryan Campground	18	39	16
Sheep Pass Campground	16	37	19
West Entrance	34	51	0
White Tank Campground	11	27	29

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
indiochmbr@aol.com
http://www.indiochamber.org

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

Palm Springs
190 W. Amado Rd.
Palm Springs, CA 92262
(760) 325-1577
PSChamber@worldnet.att.net
http://www.psychamber.org

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

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

SPRING RANGER PROGRAMS

Desert Queen Ranch Tours by reservation
Call 760-367-5555

Saturday Evening Campfire Programs

Sunday Morning Orientation Coffees

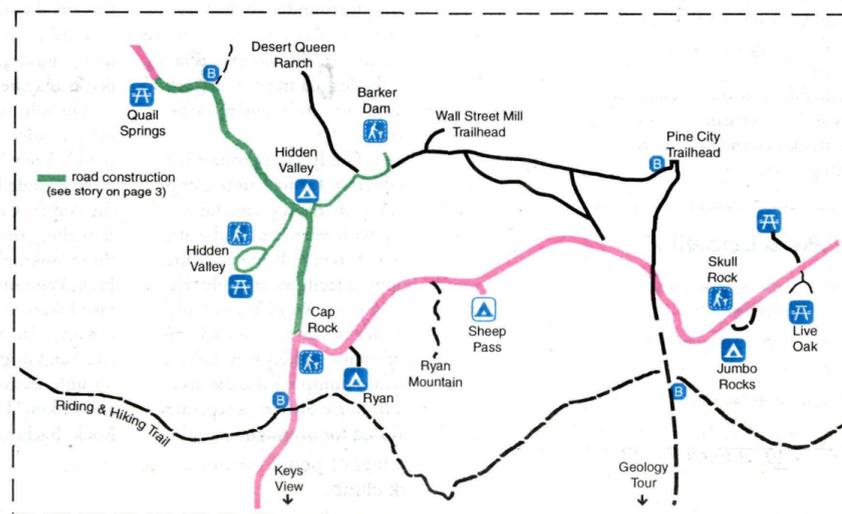
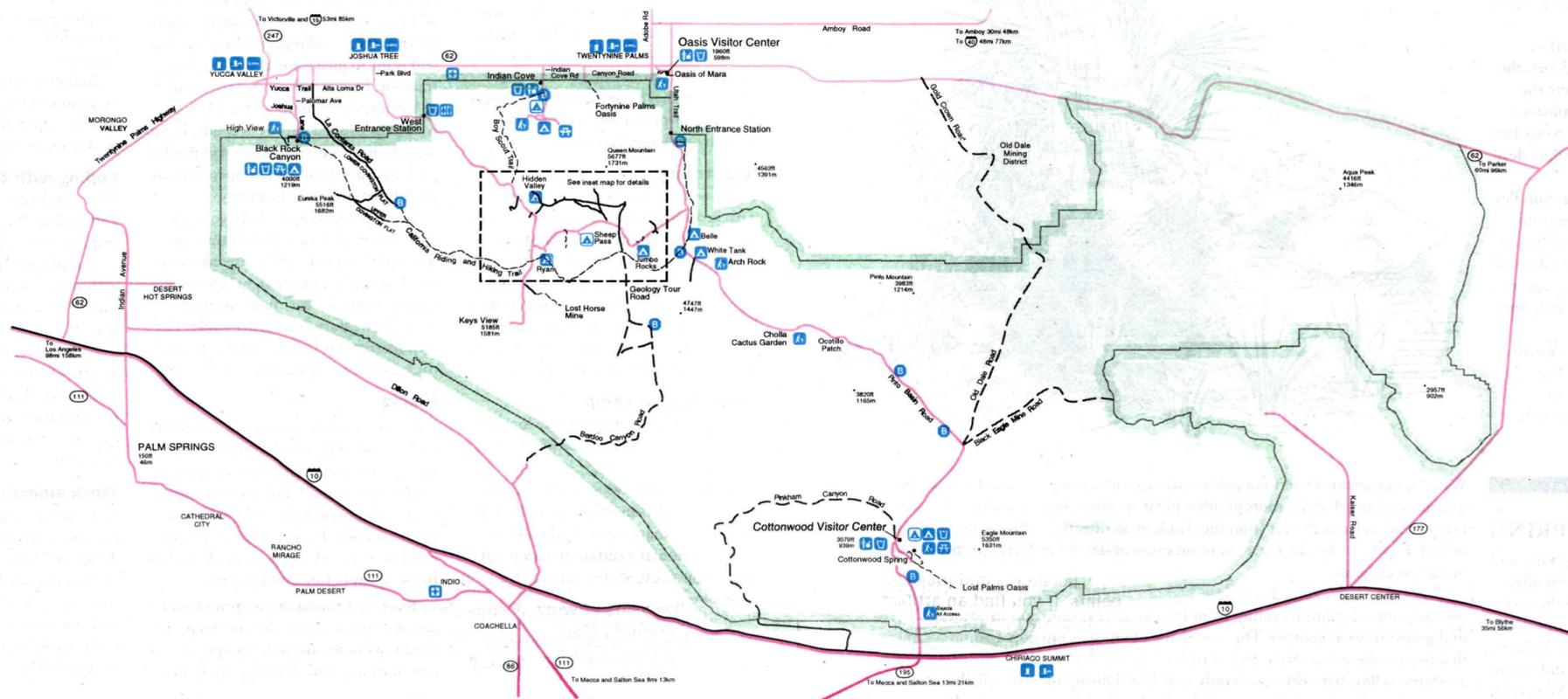
Morning and afternoon discovery walks

Weekend geology hikes and nature walks

Activities especially for kids

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 (5-km)	White Tank Campground, opposite site 9
Bajada All Access	25-mile loop (4-km)	south of Cottonwood, one-half mile from the southern entrance to the park
Barker Dam	11-mile loop (1.8-km)	Barker Dam parking area
Cap Rock	4-mile loop (6-km)	Cap Rock parking area, at the junction of Park Blvd. and Keys View Road
Cholla Cactus Garden	25-mile loop (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
High 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 (4-km)	Keys View
Oasis of Mara	5-mile loop (8-km)	Oasis Visitor Center, Twentynine Palms
Skull Rock	25-mile (4-km)	Jumbo Rocks Campground, just beyond loop E.

Joshua Tree Guide
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HIKING TRAILS



Trail	Roundtrip Mileage	Time	Starting Point	Trail Description
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 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/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: 5,278 feet (1,609 meters). 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: 3,371 feet (1,027 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: 5,461 feet (1,664 meters). 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.

Wilderness

"...the most distinctive, and perhaps the most impressive, characteristic of American scenery is its wildness."

John Muir 1833-1914

"A wilderness...is recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."—The Wilderness Act of 1964

Wilderness has been described as the "best of the best" of our public lands. Congress designated approximately 75 percent of the park as wilderness, the largest such area near the urban complexes of southern California. Wilderness offers visitors an opportunity to see an area that is predominantly free of roads, buildings, powerlines — the visual intrusions associated with modern life. Wilderness offers solitude, tranquility, quiet contemplation, and freedom to study a place substantially unaffected by human activity.

Joshua Tree National Park's wilderness units showcases the characteristics of the Mojave and Colorado desert. The outstanding geologic area that encompasses the rugged Wonderland of Rocks comprises one wilderness unit. A large portion of the Little San Bernardino Mountains, a magnificent erosional display that possesses a fine desert plant community and Nelson bighorn sheep ranges embodies another. Expansive areas, such as the Hexie Mountains, the broad expanse of the Pinto Basin, the Eagle Mountains and the Coxcomb Mountains, highlight other wilderness units of the park.

Wilderness provides an opportunity for recreational experiences, such as hiking, horseback riding and climbing, which are primitive, nonmechanized, and nonmotorized. Such experiences provide opportunities for solitude. In wilderness, visitors do not remain; they leave the area in an unimpaired state, with little or no trace of their presence.

After five years of work, Joshua Tree National Park's first Backcountry and Wilderness Management Plan was approved in January 2000. It provides direction about how we should manage the parks' backcountry and wilderness areas. We want to thank the public for your interest and participation in the planning process. We have a plan that will provide enhanced opportunities for visitor enjoyment while preserving and protecting this special part of the California desert. We encourage you to get out and enjoy your park.

Ernest Quintana

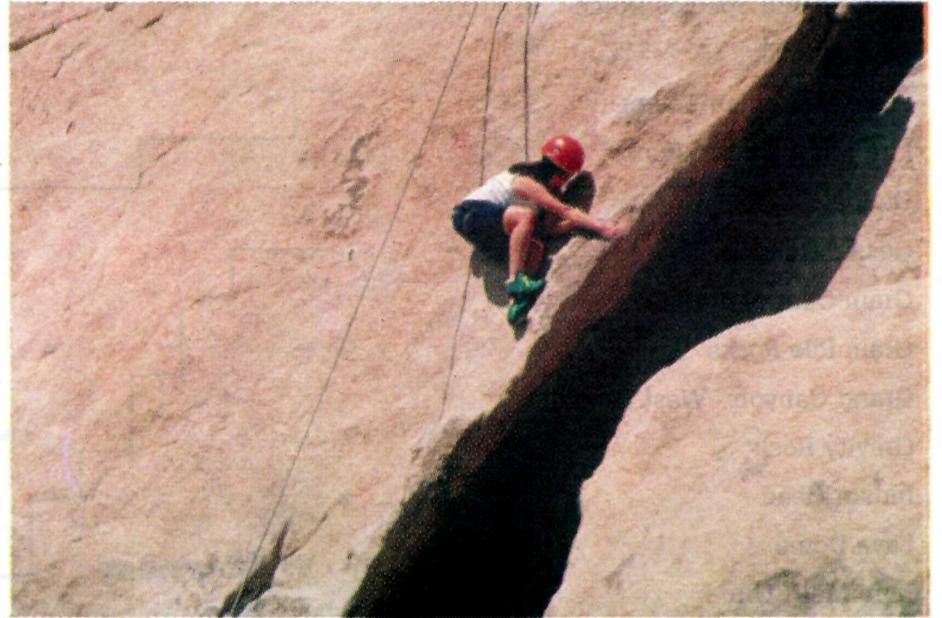
Ernest Quintana, Superintendent

ROCK CLIMBING

Whether you are a first-time climber, a wall climber in gyms, or a seasoned free climber, Joshua Tree has a challenging climb for you. With more than 4,500 different routes, the park offers a full menu of climbing experiences: multiple-pitch climbs at Echo and Saddle rocks, sport climbs in the "real" Hidden Valley, and bouldering at dozens of locations. Whether you are interested in long, face climbs like those in the Astrodomes, or "clean cracks" such as those at Trash Can Rock, there is something for everybody.

Traditionally, Joshua Tree was a winter-time practice area for rock climbers snowed out of Yosemite. But the word spread: the White Tank Monzogranite found here is a solid, "sticky" rock that is fun to climb and the weather here is comfortable for climbing nearly all year. Now thousands of people come to the park each year, during every season, to rock climb.

Dramatic increases in the number of visitors engaging in rock climbing has led park managers to focus attention on how they can provide for climbing access while protecting park resources for future generations. Working with groups such as the Access Fund, Friends of Joshua Tree, the Wilderness Society, and National Parks Conservation Association the park has instituted new bolting procedures for both wilderness and non-wilderness areas.



If you find an unsafe bolt in either wilderness or non-wilderness, you may replace it. Please replace on a piece-by-piece basis and use rock colored bolts and hangers. Use the existing hole whenever possible and when unable, fill the old hole with rock material blended with bonding agents. If you wish to use a power drill, you must first obtain a Special Use Permit.

To place new bolts in non-wilderness, you must complete a checklist, available at park entrance stations and visitor centers. This form prompts the user to consider the impacts associated with the placement of new bolts. The park climbing committee and the park superintendent will review these checklists to ensure that impacts do not reach unacceptable levels.

A permit issued by the park superintendent is required to place new bolts in wilderness. The review process may take up to six months, so advance planning will be needed.

Two areas of the park have been designated as anchor- (bolt) free zone where bolting is not permitted. Although these bolt-free zones cover a large portion of the park, they include very few climbs.

You are responsible for knowing whether you are inside non-wilderness wilderness, or a bolt-free zone. A partial list of climbing routes located close to wilderness boundaries has been provided on pages two and three of this publication.

You can limit your impact on park resources by not leaving chalk or colorful webbing on the rock. Route cleaning and enhancing hand or footholds is prohibited.

If you would like to learn more about climbing in the park, stop by the Climbers Coffee on Sunday mornings at 8:00 a.m. in Hidden Valley Campground. Free coffee aside, it's a great way to meet with other climbers and to discuss climbing issues, etiquette, and regulations with park rangers.

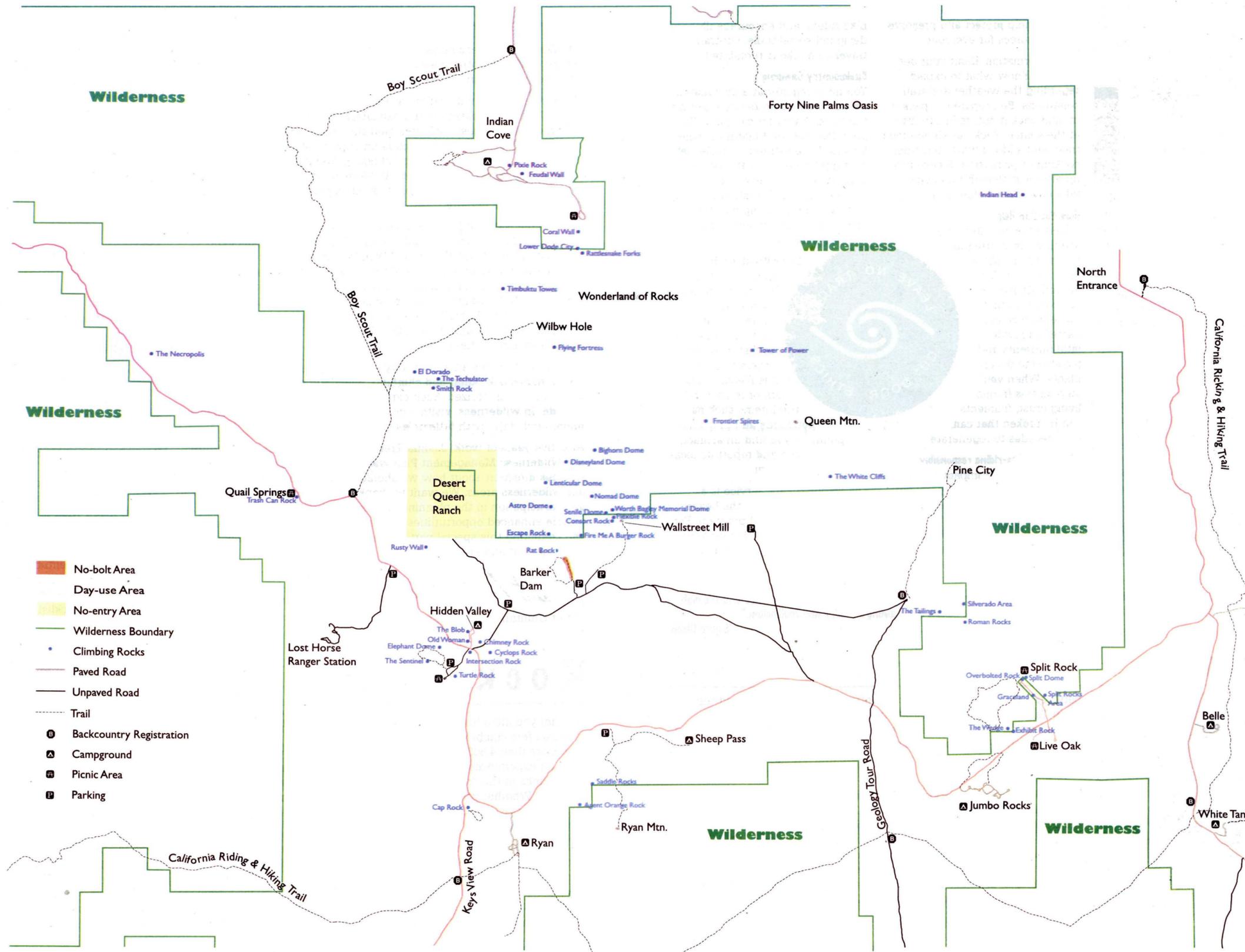
Wilderness Boundaries in Joshua Tree

Selected Wilderness Climbs

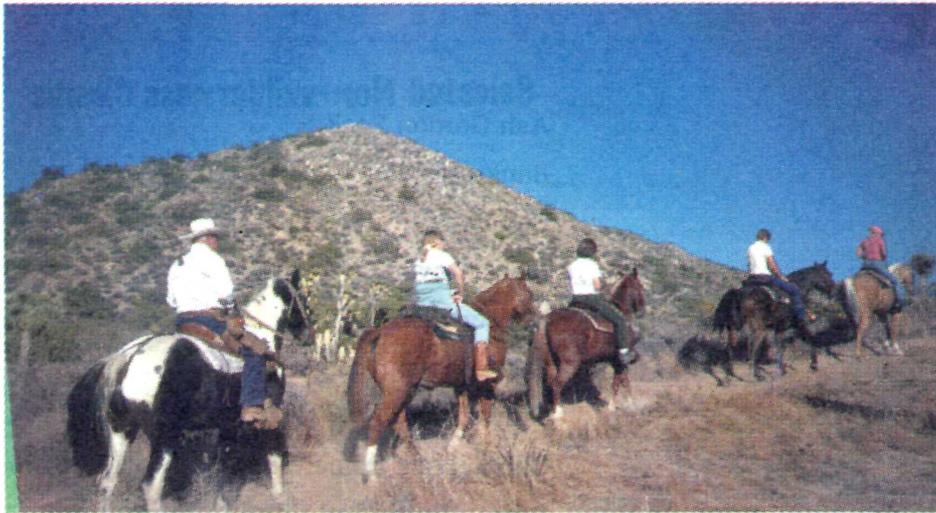
- Afro Awareness Week
- Agent Orange Rock
- Big Ass Boulder
- Conrad Rock
- Dorothy's Crag
- Double Cross Rocks
- El Dorado
- Endangered Species Dome
- Escape Rock
- False Moosedog Tower
- Fire Me A Burger Rock
- Gadget Dome
- Gossip Column, The
- Grain Central Station
- Grain Pile Rocks
- Grand Canyon - West Face
- Gravity Rock
- Indian Head
- Lava Dome
- Mini Mall, The
- Munchkinland Crag
- Perpetual Motion Wall
- Rattlesnake Forks
- Reef Rock
- Roman Rocks
- Saddle Rocks - South Face, Upper Summit
- Scarecrow Rock
- Scary Rock
- Scud Boulder
- Senile Dome
- Senile Dome - Nancy Reagan's Face
- Senile Dome - Northeast Face
- Split Dome
- Split Dome - East Face
- Split Personality Rock
- Split Rocks Area
- Techulator, The
- Toto Boulder
- Upper Dodge City
- Nane's Wall
- Nedge, The

Selected Non-wilderness Climbs

- Ash Gordon Rock
- Bankrupt Wall
- Bed Rock
- Black Tower
- Consort Rock
- Cove Canyon Dome
- Crows' Nest
- Cuddlebone Dome, The
- Demon Dome
- Dissatisfaction Rock
- Exhibit Rock
- Flexible Rock
- Graceland
- Grain Silo, The
- Group Camp Short Wall
- Ha! Karate Rock
- Heretic Boulder
- Jerry Fall Wall
- Laughter Rock
- Lower Dodge City
- Lower Tier, The
- Mighty Mouse Rock
- Negropolis, The
- Noodle Rock
- Overbolted Rock
- Oyster Bar, The
- Pet Cemetery, The
- Ponderosa Wall
- Queen Crimson Dome
- Rock Of Ages
- Saddle Rocks
- Saddle Rocks - South Face, Lower Summit
- Saddle Rocks - South Face, Middle Summit
- Shady Spot, The
- Silverado Area
- Smith Rock
- Star Wars Rock
- Target Rock
- Theoretical Boulder
- Towers, The
- Two Bolt Rock
- Valle De Duck
- Wedding Block



HORSEBACK RIDING



Horseback riding is a popular way to experience Joshua Tree National Park. Because of the special requirements for horses and other stock in this environment, care should be taken in planning your trip. Desert soils and vegetation are easily eroded and need your consideration. The lack of available drinking water is both a limitation and a challenge.

Equestrian Trails

The Backcountry and Wilderness Management Plan designates more than 200 miles of equestrian trails. Many riding trails are already open, clearly marked, and ready to be enjoyed. Other trails are in various states of development. Limited trail maps are available at the park.

Camping and Backcountry Use

Ryan and Black Rock campgrounds have designated areas for horses and stock animals. A \$10 per night fee is charged at Black Rock Horse Camp. Reservations may be made by calling 1-800-365-2267. Water is not available at Ryan Horse Camp and no charge is made for camping. Call 760-367-5541, Monday through Friday, 8 a.m. to 4 p.m., to make reservations. Reservations are not required for day use.

Grazing is not permitted in the park. While in the backcountry, stock animals are restricted to pellet feed. Manure must be removed from campgrounds and trailheads.

Travel Restrictions

Stock use is limited to horses and mules and is restricted to designated equestrian trails and corridors, open dirt roads, and shoulders of paved roads. Riders should travel single file to reduce damage to soil and vegetation. Stock animals are not permitted within 1/4 mile of any natural or manmade water source. Horses and other stock are not permitted on nature trails, in the Wonderland of Rocks, in campgrounds, in picnic areas, or at visitor centers.

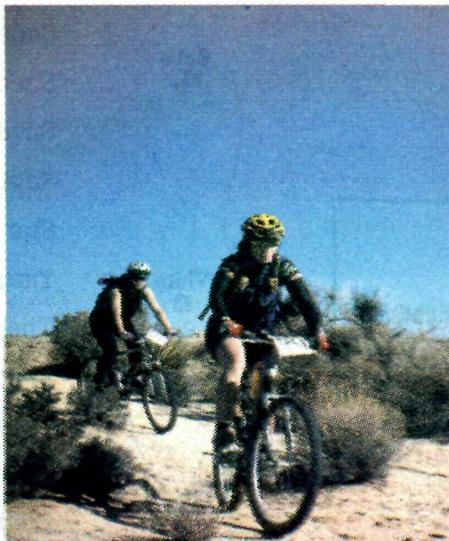
BICYCLE TRAILS

Previously, bike riding in the park was restricted to roads open to vehicles. (The park does not have bike paths.) The park's new Backcountry and Wilderness Management Plan designates approximately 29 miles of trails for non-motorized bike use.

The following trails are for use by bicyclists as well as hikers. Please ride responsibly and respect others who share the trail.

Riding and Hiking Trail

A seven-mile section of the California Riding and Hiking Trail,



Leave No Trace

When traveling in Joshua Tree National Park, be prepared to "leave no trace" of your visit. By following the suggestions below, you can help protect and preserve park resources for everyone.

Seek information about your destination. Know what to expect regarding the weather and trail conditions. Be prepared to pack it in, and pack it out, reducing litter at the source. Pack out all non-food trash and all food waste left from cooking or picnicking. Please pick up after less thoughtful people who have gone before you.

How You Can Help

Desert soils are alive! If you see tiny, black, irregular bumps on the soil surface, try to walk around. Known as cryptobiotic crust, these fungus and bacteria provide vital nutrients and moisture to desert plants. When you step on this fragile living crust, filaments can be broken that can take decades to regenerate.

Mountain bikes-riding responsibly

To minimize your impact on the area and maximize your personal safety and fun, be informed about bike trails and bring proper gear. Bicycles and mountain bikes are limited to roads open to vehicle traffic and designated trails. Stay

hydrated with enough water to drink 32 oz. for every hour of riding. Off-trail riding may damage plants, cause erosion, endanger bike riders, and encourage ill-designed social trails. Off-trail travel on a bike is prohibited.

Backcountry Camping

You must register at a designated backcountry board before entering the backcountry for camping. This provides an added margin of safety for you. Unregistered vehicles left overnight other than at a backcountry board or designated campsite are subject to citation and may be towed away. Camping in day-use areas or near water sources is prohibited.

Leave What You Find

Natural objects of beauty or interest such as rocks, antlers, or artifacts must be left undisturbed for others to enjoy.

It is illegal to disturb or remove cultural items such as potsherds and projectile points. If you find an artifact, leave it in place and report its location to a park ranger.

The National Park Service is a cooperating agency in the Leave No Trace educational program. For more information on this program, or to obtain educational materials, call 1-800-332-4100.



"Wilderness to the people of America is a spiritual necessity, an antidote to the high pressure of modern life, a means of regaining serenity and equilibrium."

Sigurd Olson

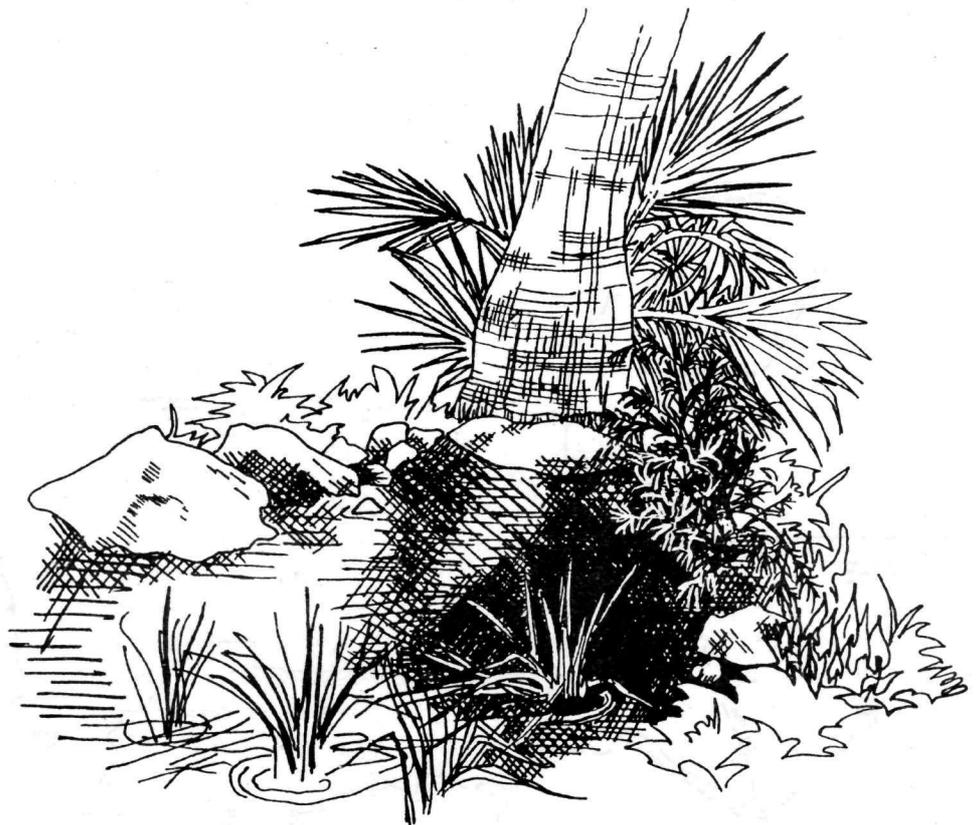
The Desert Fan Palm: A California Native

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, other 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.

The cottonwoods that give their name to the spring are not native to this area. They were planted around the turn of the century by some early resident, and the palms were planted in the 1920s.

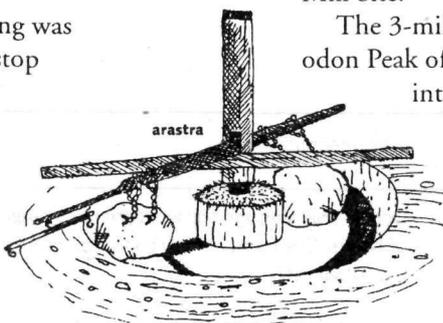
A number of hikes begin at Cottonwood Spring. A short, easy walk down Cottonwood Wash leads past a second oasis to a dry falls. In wet years, the falls

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 Site.

The 3-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 restrooms, is located one-half mile from Cottonwood Spring via a signed nature 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.

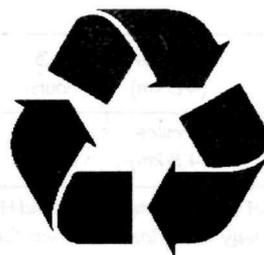


Water is a necessity. Desert fan palms suck up water using a mass of pencil-wide rootlets so dense that the roots of other plant species cannot penetrate. This mass may extend as far as 20 feet from the trunk in all directions. But water, in the form of flash floods, is also the most common cause of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

Water also draws animals to oases: bighorn sheep, Gambel's quail, coyotes. 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, who roosts only in palms. During the day, a flash of yellow-orange might be a hooded oriole, who prefers to build its woven sack-like nest under the large green leaves of the 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 spends about five years chewing tunnels within the trunk of a desert fan palm. The chewing is so loud that flickers use the noise to locate the larvae. Successful larvae 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 over 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.



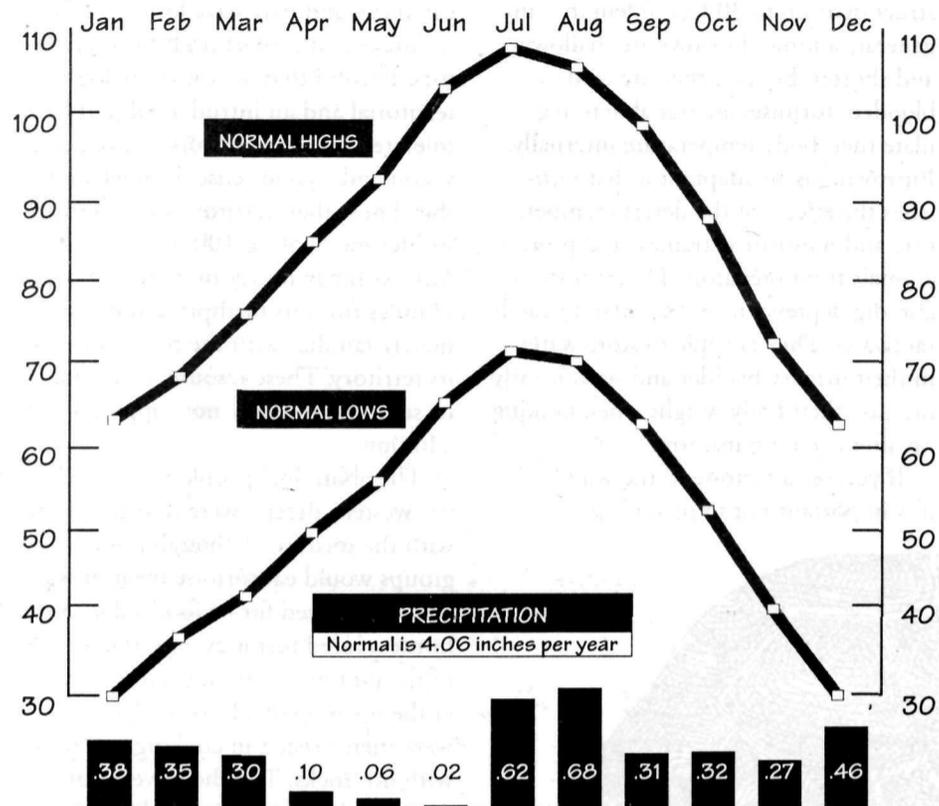
Think Globally, Act Locally

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.

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.

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?

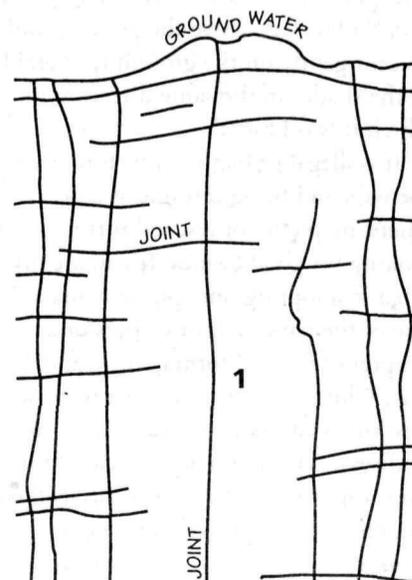
Geologists believe the face of our modern landscape was born more than 100 million years ago. Molten liquid, heated by the continuous movement of Earth's crust, oozed upward and cooled while still below the surface. These plutonic intrusions are a granitic rock called monzogranite.

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,



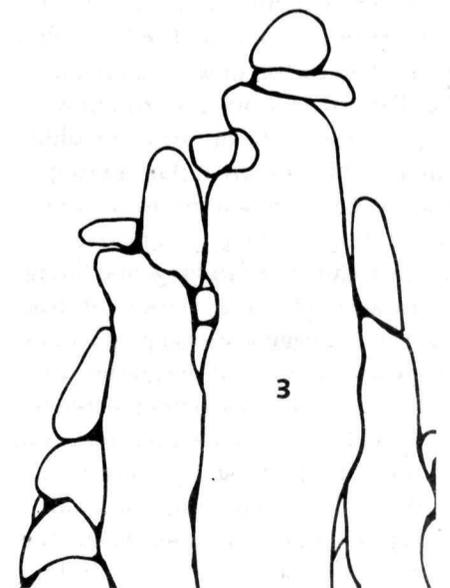
creating those impressive rock piles we see today. (figure 3)

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 the long-range effects of wind are small compared to the action of water.

The erosional and weathering 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 relict features inherited from earlier times of higher rainfall and lower temperatures.



The Desert Institute

The Desert Institute is the educational branch of the nonprofit Joshua Tree National Park Association. We are proud to offer outdoor classes in science, history and the arts of Joshua Tree National Park and the Mojave Desert. Classes are taught by experts in their field and are offered on weekends, varying in length from one to three days. Optional college credit offered through UC Riverside*. Course fees vary from \$45 to \$150.

Spring Classes

Map & Compass Skills	Feb. 9 - 10
Lander's Earthquake Fault Tour	Mar. 3, or May 19
Native American Basket Weaving Skills	Mar. 3 - 4
Nature Sketchbook	Mar. 9 - 11
Trees & Shrubs of Joshua Tree NP*	Mar. 16 - 18
Desert Survival	Mar. 24
Flora of Joshua Tree NP*	Apr. 6 - 8
Exploring Joshua Tree NP Backcountry	Apr. 13 - 15
Uses of Native Desert Plants	Apr. 21
The Desert Tortoise Day	Apr. 28
Venomous Animals of Joshua Tree NP*	May 4 - 6
Birds of Joshua Tree NP*	May 11 - 13
Reptiles & Amphibians of Joshua Tree NP*	May 18 - 20

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@zipnet.net

JUST HOW FAST IS A TORTOISE ANYWAY?

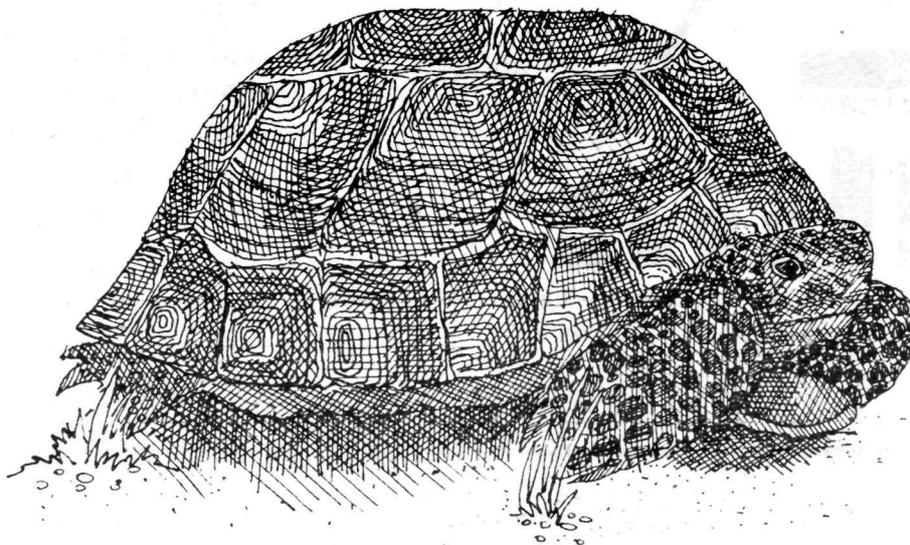
Crunch, crackle. Crunch, crackle. What's going on under that creosote bush? Push aside the branches, peer into the shade, and you may catch a glimpse of the animal I observed while hiking in the park last spring: a desert tortoise, *Gopherus agassizii*, California's state reptile. These unhurried creatures make their home throughout the park, except in the steepest areas. Just how fast does a tortoise walk? (Answer at the end of this article). If you see one you are fortunate: these animals spend almost 95 percent of their time underground!

Arguably the most-studied animal in the park, the tortoise was placed on both the California and Federal Endangered Species Lists in 1989 and 1990, respectively. Its status is "threatened," just one notch below "endangered." Several factors conspired to diminish the population of the desert tortoise. As more people moved into the western deserts, the resultant loss of habitat made a serious dent in the number of tortoises. With more people came more ravens, large black birds with a keen appetite for hatchling tortoises. The number of ravens has exploded in recent years, due in large part to their ability to thrive in developed areas. The factors contributing to their dramatic increase include more roads, thus more roadkill; landfills; powerline poles, an ideal lookout post for hungry ravens; and littering. Litter in the park attracts ravens, so please dispose of your garbage responsibly.

Perhaps because of the release into the wild of former pet tortoises during the past several decades, a deadly bacterial infection began to appear more and more frequently among wild tortoises. Upper Respiratory Tract Disease attacks the tortoise's respiratory system and can be transmitted through sharing of burrows, or through human handling of tortoises. This can occur when a person handles a sick tortoise and then unwittingly transmits the disease to a healthy animal. Other means of transmission may include common tortoise behavior such as head-bobbing, circling one another, chin gland sniffing, and biting. These are the tortoise's versions of shaking hands, hugging, exchanging pleasantries, and courting. If the greeters are both males, they sometimes proceed to more rough-and-tumble behavior. Using the extended portion of the underside of the shell, or gular horn, males will engage in a form of jousting where the purpose is to flip the opponent. If this

happens the overturned tortoise must right itself soon, or it will die from suffocation, exposure to the sun, or freezing.

Females generally behave less aggressively than males, and may spend more time underground since it is their task to nest and produce clutches of eggs. Females have, however, been observed aggressively defending their nests from the unwelcome presence of other reptiles and even park biologists! Tortoises may mate at any time of year, with the peak season from March through early October. A female may retain viable sperm for up to eight years after mating and still



lay fertile eggs at that point. The average number of eggs per clutch is five, and they are usually laid from May through July. Several clutches may be laid annually, depending upon the availability of food and water. Eggs hatch anywhere from 70 to 120 days later. The chromosomes do not determine the sex of the offspring. Rather, the incubation temperature produces males or females.

It is estimated that desert tortoises have existed for 15 to 20 million years. Perhaps this long stint on Earth has given them plenty of time to consider wise living strategies, such as careful, slow-paced locomotion; a healthy diet full of greens; resting during winter and summer, the desert's most challenging seasons; and water conservation. The typical tortoise diet consists of grasses, wildflowers, cactus pads, and wild fruit. Occasionally a tortoise will eat bone material scavenged from mammal scat as a means of obtaining calcium. Its stumpy, elephantine legs end in sharp claws, which are adapted to walking in sand and to digging dens or burrows used for both hibernation and estivation (summer "hibernation"). Tortoises con-

struct dens up to 30 feet in length—in general, summer burrows are shallower and shorter. Because they are cold-blooded, tortoises are not able to regulate their body temperature internally. Burrowing is an adaptation that mitigates the effects of the desert's temperature and moisture extremes, and protects animals from predators. Desert tortoises also dig depressions in the earth to catch rainwater. They are able to store water in their urinary bladder and significantly increase their body weight when tanking up after a good rainstorm.

If you see a tortoise in the wild, it is important not to pick it up.

Like a young child who may wet his pants when afraid, a tortoise will "void" its bladder if frightened. This could have life-threatening consequences for the animal if it is not able to replenish its water supply. Handling wild tortoises is illegal under the Endangered Species Act. The only reason for picking one up is when the tortoise is on or near a road and is in imminent danger of being struck by a vehicle. If you must move one, grasp it firmly with two hands, keep it just a few feet above the ground, and place it gently on the ground (preferably in the shade) in the same direction in which it was headed.

It is illegal to remove a tortoise from the wild and bring it home as a pet. There are plenty of rescued tortoises looking for good homes. If you are interested in adopting one, please contact one of the park's visitor centers or a chapter of the California Turtle and Tortoise Club. Do not release pet tortoises into the wild; they may carry a number of diseases. Even if a domesticated tortoise appears healthy it probably will not be able to fend for itself after being dumped in the desert. It is used to being

cared for, and may have lost its instincts to forage and protect itself from predators. Beyond that, tortoises are highly territorial and an intruder will not be tolerated for long. Tortoises have good vision and a good sense of smell, and they know their territory well. During its lifetime of 50 to 100 years, a wild tortoise rarely moves more than a couple of miles from its birthplace and is intimately familiar with the resources within its territory. These resources are vital to its survival, and may not support a new addition.

The aboriginal peoples who lived in the western deserts were well acquainted with the tortoise. Although not all groups would eat tortoise meat, it was generally prized for its food value. Some hunters lured tortoises onto the surface of the ground by placing a dish of water at the opening of a burrow. Tortoises were then roasted in cooking pits lined with hot rocks. The shells were put to a variety of uses: they served as bowls, scoops, spoons, ladles, and were sometimes ground into powder for medicinal purposes. They were also used to make ceremonial rattles: the carapace, or upper dome-shaped half of the shell, and the plastron, or flat underside of the shell, were joined together after being filled with small stones or seeds. The openings at either end were plugged with pitch. Tortoise motifs appear in desert rock art and in basketry and pottery. Several creation stories feature a tortoise shell, whose shape evokes the dome of the sky above the earth.

Biologists are currently studying the desert tortoise living within Joshua Tree National Park. Using measurements collected by such sophisticated equipment as radio telemetry and GPS (Global Positioning System), they are gathering information that allows us to increase our understanding of this threatened desert reptile.

Spring is a good time to spot a desert tortoise because the warm temperatures trigger an impulse to emerge from the burrow, forage, and look for mates. If you see one, please fill out a wildlife observation card, available at visitor centers and entrance stations. By slowing your pace, you will increase your chances of catching a glimpse into the unassuming world of the desert tortoise.

(Answer: average speed is 0.2 mph)

by Park Ranger Caryn Davidson

Publications to help you plan your 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 from Joshua Tree National Park Association.

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. Equally 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

The Joshua Tree, Gossard. An easy-to-read book filled with fascinating facts and stories about the symbol of the Mojave Desert. 112 pages PB \$9.95

Joshua Tree Video. Excellent introduction to Joshua Tree National Park. 30 minutes VHS \$12.95; PAL \$15.95

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 tear-proof. \$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 \$7.95; \$8.95 for French or German.

Wildflowers of Joshua Tree. Pocket guide to the common flowering plants of Joshua Tree National Park. Includes a map and over 50 color photographs to help with identification in the field. 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 Deserts, Schad. Color photographs of the California Desert Conservation Area, Mojave National Preserve, Joshua Tree National Park, Death Valley National Park, and Anza-Borrego Desert State Park. 103 pages PB \$14.95

California Historical Landmarks. Lists the location and significance of each of the 43 historical parks and 1,000 historical landmarks established by the State of California. 318 pages PB \$14.95

The Complete Guide to America's National Parks, Fodor's. Up-to-date guide to all 376 National Park Service sites. 448 pages PB \$14.95

California Roadmap. Includes a list of public recreational areas and places of interest. \$2.95

The Living Desert, a musical journey exploring national parks and monuments through natural sounds. Excellent mood-setter for your driving tour of the Southwest's desert areas. Tape \$10.95, CD \$15.95.

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

Indian Uses of 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. 38 pages PB \$7.95

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 a 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 \$8.95

Desert Palm Oasis, Cornett. An exploration of the lush, water-loving fan palms that are such a wonderful surprise in harsh desert environments. 47 pages PB \$9.95

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 \$8.95

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 \$11.95

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

Mojave Desert Wildflowers, Stewart. Presents a condensed view of the nearly 2,000 species of plants known to occur throughout the Mojave Desert Region. 210 pages PB \$14.95

Poisonous Dwellers of the Desert, Dodge. This classic provides accurate, useful information and debunks the many superstitions about poisonous desert critters. 40 pages PB \$6.95

Education to enhance your visit to Joshua Tree National Park

THE DESERT INSTITUTE OF JOSHUA TREE NATIONAL PARK, the education program of the Joshua Tree National Park Association, sponsors one and two day field classes on weekends from September to July. Each class examines a natural or cultural feature of the Mojave Desert and is focused for teachers, volunteer interpreters, park visitors, and others interested in learning about the park and the Mojave Desert. College credit is available through University of California Riverside Extension.

MEMBERS OF THE JOSHUA TREE NATIONAL PARK ASSOCIATION are automatically enrolled in Partners in Nature Education (PINE), which qualifies them to receive a 20 percent discount on all Desert Institute classes, as well as, University of California Riverside Extension Outdoor Study courses. For information on becoming a Joshua Tree National Park Association member, call 760-367-5535.

A CATALOGUE OF DESERT INSTITUTE CLASSES is available at park visitor centers, or you may call 760-367-5535 and request one by mail. An electronic copy has been published on our website: www.joshuatree.org.

Ordering Information

Telephone orders are encouraged to ensure that you are ordering the publications best suited to your needs or order from our website at www.joshuatree.org.

To order by mail, enclose check or credit card number and expiration date. CA residents include 7.5% sales tax.

Prices are subject to change without notice.

Postage & Handling Rates

U.S. & Canada: \$6.00 for first item, each add'l item \$0.50.
Foreign airmail: \$8.00 for first item, each add'l item \$2.00.

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SAVING THE PLANTS

Joshua Tree National Park is embarking on a major, multi-year road construction project (see article on page three). This project will provide greater safety and convenience to visitors, but it will also disrupt the landscape and result in the loss of plants. In order to lessen the effects of the roadwork, Joshua Tree staff are using both low- and high-technology methods to save the plants.



Filling behind the backhoe after relocating a Mojave yucca.

While it is standard practice for national parks to incorporate habitat restoration into their development projects, the scale of the Joshua Tree effort is immense. Our attitude is "we want to save everything!..." and with good reason. Desert plants don't just spring up overnight; they take years to mature and are an essential component of the environment, providing food and shelter for animals, holding the fine soil in place, and, of course, providing pleasure to visitors.

Two years ago, restoration specialists began surveying, inventorying, and mapping the construction area. They found several thousand plants growing within this area! Botanists painstakingly tagged each plant to be saved, selecting those species that would have the greatest likelihood for survival and those that are the most



Removing a Joshua tree with a treespade.



Joshua tree boxed up to await replanting.

difficult to grow. Each tagged plant was identified by species name, height, diameter, and exact location (using global positioning system technology) then the information was logged into a computer database. This allowed us to locate spe-

cific plants some eight months later when we began the salvage work and to determine what kinds of resources we would need: personnel, shovels, pots, watering cans, and traffic cones.

After the Environmental Assessment was completed in June 2000, staff went to work scraping off valuable soil surface organisms with flat shovels and five-gallon buckets. Although tedious, these organisms will help heal the soil's surface after construction, providing an important barrier to wind erosion and a trap for moisture and windblown seeds. We then proceeded to remove the small stuff: little cacti, foot high Joshua trees, and bunch grasses. But how do you move a 25-foot tree? a yucca with an eight-foot diameter? We quickly realized that the huge specimens would require something more than a sharp shovel. Our research turned up a contractor in California with a 94-inch tree spade and experience relocating mature trees. Combined with a backhoe, large trees and yucca clumps are easily moved into new



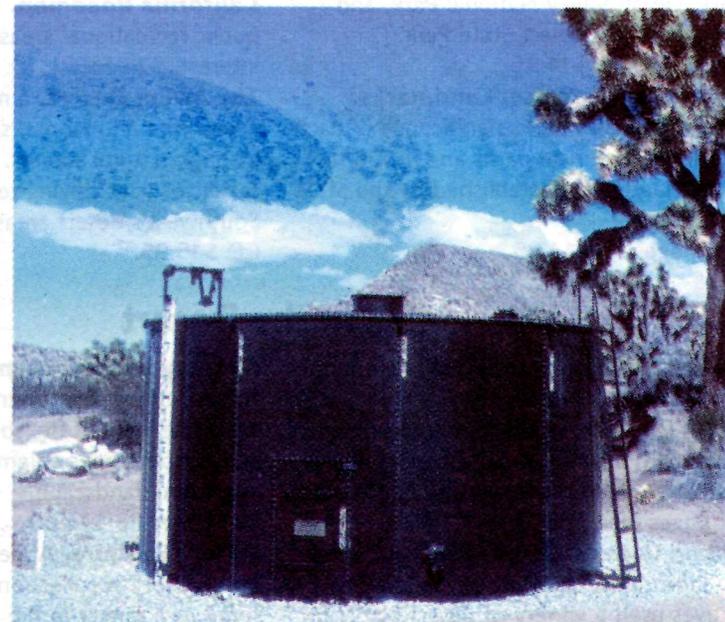
Preparing a yucca for boxing by shaving the root ball.

locations. This heavy equipment has been working dawn to dusk since last October, operated by skilled contractors and park staff sensitive to both plant biology and diesel machinery. In addition, volunteers from Americorps, Outward Bound, and the Boy Scouts have been helping with the digging.

As of December 2000, we had

potted or boxed about 1,000 mature plants for storage, and 450 large Joshua trees and Mojave yuccas have been relocated adjacent to the project site. The stored Joshua trees, Mojave yuccas, cacti, native grasses, and valuable topsoil will be used to restore the construction areas after the roadwork is complete. In fact the vegetation crew will be replanting right behind the construction crew. Extra plants will be used to restore trampled areas in campgrounds, around abandoned mines, and on closed roadbeds.

The park will be monitoring the transplants for survivability. Based on the information gathered from this project, we hope to continue to improve restoration techniques in Joshua Tree and share our methods with other desert lands agencies.



12,000 gallon water tank for watering salvaged plants.

by Vegetation Specialist Jane Rodgers