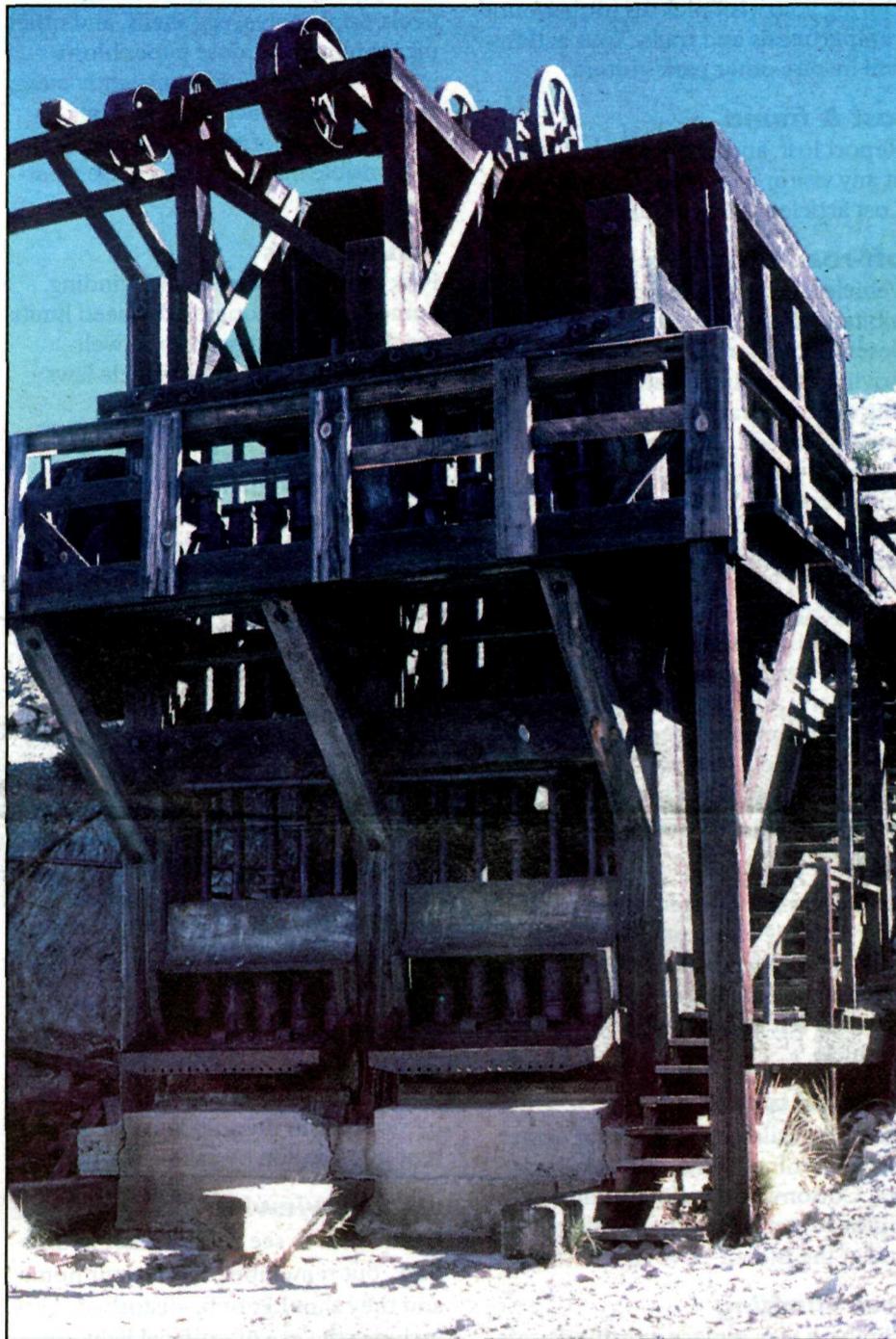




Joshua Tree Guide

A Planning Guide for Visitors
to Joshua Tree National Park

Fall, 2001



Lost Horse Mine

Even before the California Gold Rush of 1849, prospectors were finding gold in southern California. As the take from the mines in the Sierras petered out, miners fanned out into the deserts. Here hot summers, scarce water, limited wood sources, and the difficulty and high cost of transporting equipment and provisions created a challenging environment in which to operate a mine. But a few hardy adventurers persevered and about 300 mines were developed in what is now Joshua Tree National Park—although few were good producers.

An exception is the Lost Horse Mine, which produced 10,000 ounces of gold and 16,000 ounces of silver, (worth approximately \$5 million today) between 1894 and 1931. When the story of the Lost Horse Mine is told, it sounds like a western campfire tale: gun slinging cowboys, cattle rustlers, horse thieves, the lure of gold, and a sticky-fingered miner.

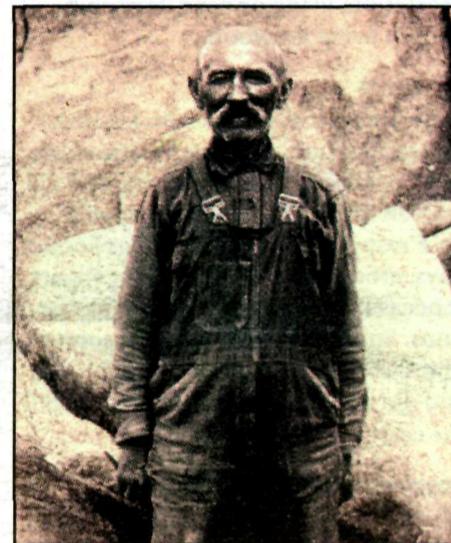
Johnny Lang

As long-time resident William F. Keys, developer of the Desert Queen Ranch and the Desert Queen Mine told the story, Johnny Lang and his father drove their herd of cattle into the Lost Horse Valley in 1890, when there was “nothing but cattle and Indians.” Johnny told Keys that they had moved west after his brother and six other cowboys were gunned down in New Mexico.

One night, while camped in the Lost Horse Valley, the Lang’s horses disappeared. Next morning Johnny tracked them to the McHaney brothers’ camp near today’s Desert Queen Ranch.

According to local legend, the McHaney Gang were cattle rustlers. Keys said they told Johnny his horses weren’t there and to leave the area.

Keys goes on to say that Johnny met up with a man named “Dutch” Frank who told of also being threatened by the McHaney Gang. Frank said that he had discovered a rich mine but was afraid to develop it. Johnny and his father bought the rights to the mine for \$1000 and called it the Lost Horse. To reduce the chances of being killed by the McHaney Gang or having his claim jumped,



Johnny Lang
Historical Photo

story continues on page 12

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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 site 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 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 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.

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.

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

Surrounded by twisted, spiky trees straight out of a Dr. Suess 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 polked by dagger-like spines on the way to the 5.10 climbing route.



Joshua Tree

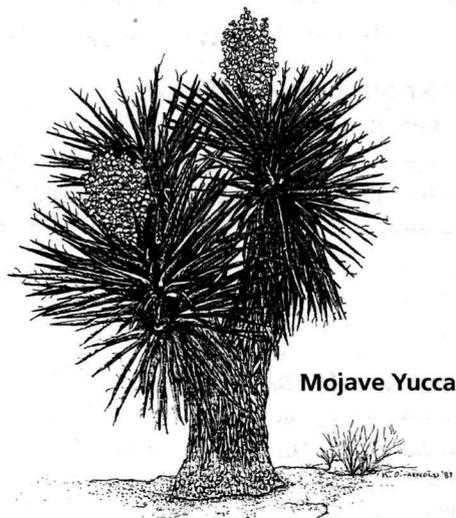
Known as the park namesake, the Joshua tree, *Yucca brevifolia*, is a giant member of the lily family. Like the California fan palm, *Washingtonia filifera*, the Joshua tree is a monocot, in the subgroup of flowering plants that also includes grasses and orchids. Don't confuse the Joshua tree with the 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 now rest with a few elders still fluent in the language.

By the mid-19th century, Mormon

migrants had made their way across the Colorado River. Legend has it that these pioneers named the tree after the prophet Joshua, seeing the Joshua tree limbs 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



Mojave Yucca

the average annual growth of one-half inch to get a rough estimate.

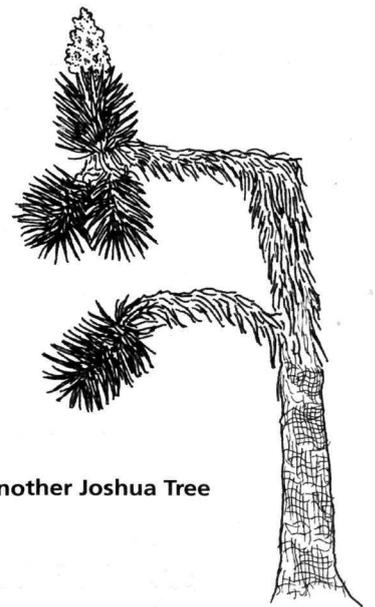
Spring rains may bring clusters of white-green flowers on long stalks at branch tips. Like all desert blooms, Joshua trees depend on just the perfect conditions: well-timed rains, and for the Joshua tree, a crisp winter freeze. Researchers believe that below freezing temperatures may damage the growing 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 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



Another Joshua Tree

Mojave Desert ecosystem, providing habitat for numerous birds, mammals, insects, and 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.

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 lay 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 Scorpion lie in this direction.

Just west of Sagittarius is Scorpion, one of the few constellations that look like its name. Scorpion is noted 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.

Campgrounds

Campgrounds	Elevation	Sites	Group Fee	Group Sites	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 Iro.

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.

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.

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 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 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.

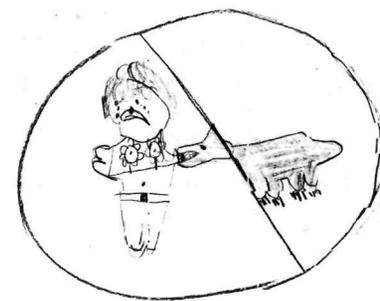
Although rain is relatively rare in the desert, when it does come it can really pour down. Even when it isn't raining where you are, rain in the mountains can run off so fast as to cause flash floods. Stay alert.

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, then 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 take the opportunity to 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 any concerns or recommendations for improving the management of 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

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 road-runners. A serious birder might be rewarded with a glimpse of a Scott's Oriole 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.

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

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



FALL RANGER PROGRAMS

- Desert Queen Ranch Tours
- Call 760-367-5555 for reservations
- 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

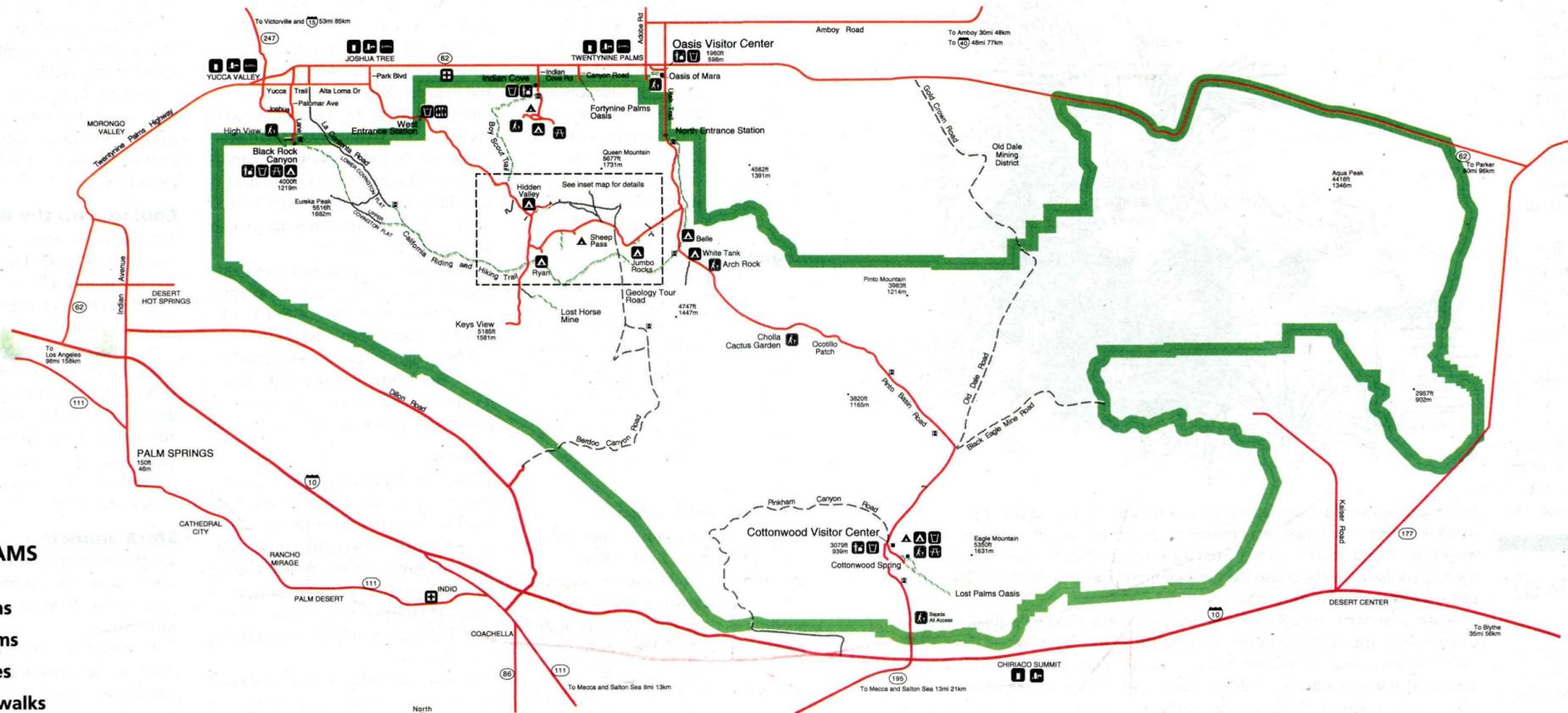
Pick up a current schedule at a visitor center or look on campground bulletin boards. We also publish program schedules on our website: www.nps.gov/jotr.

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

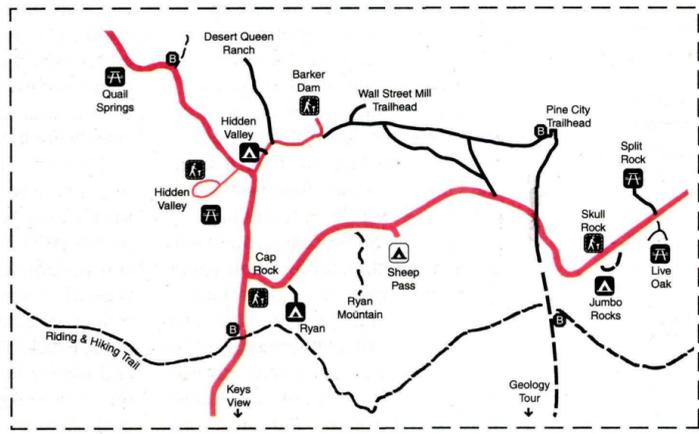
- PSChamber@worldnet.att.net
<http://www.pschamber.org>
- Twentynine Palms**
6455 Mesquite Ave. Unit A
Twentynine Palms, CA 92277
(760) 367-3445
<http://www.29chamber.com>
- Yucca Valley**
56300 29 Palms Hwy.
Yucca Valley, CA 92284
(760) 365-6323
chamber@yuccavalley.org
<http://www.yuccavalley.org>



North

0 5 Kilometers
0 5 Miles

	Unpaved road		Ranger station		Interpretive trail		Restrooms
	4-wheel-drive road		Picnic area		Campground		Backcountry board
	Hiking trail		Medical facility		Group campground (reservations required)		Drinking water



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
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 (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, just beyond loop E

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

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.

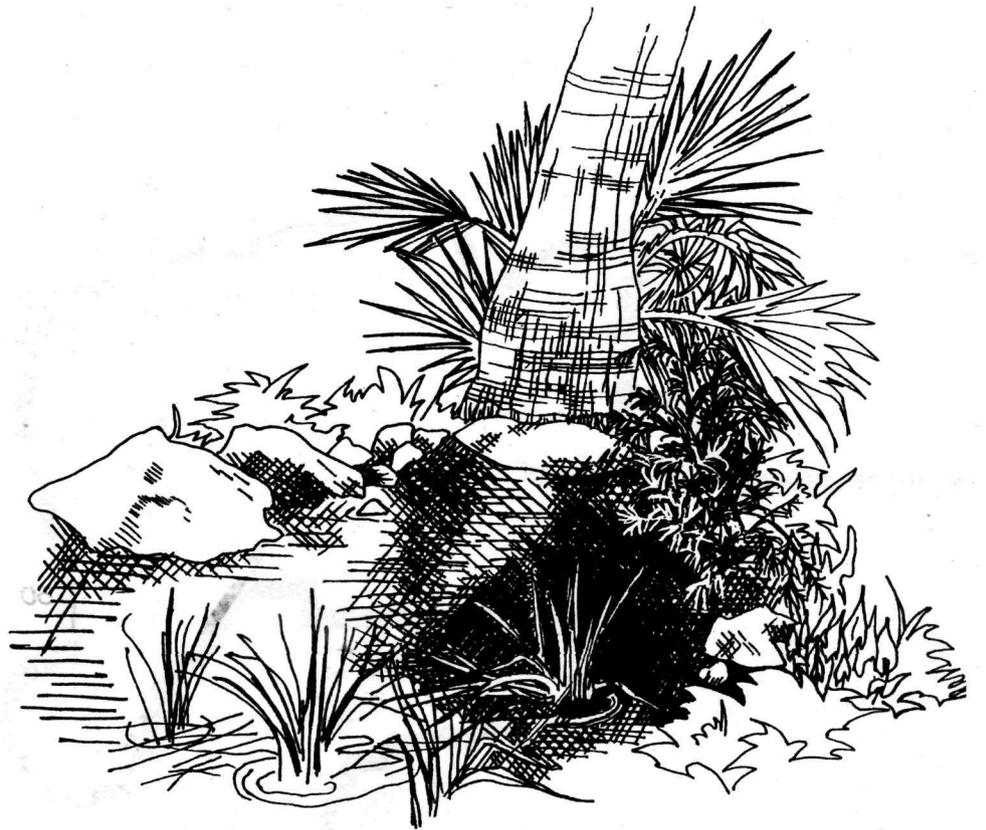
The Desert Fan Palm: A California Native

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.



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.

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.

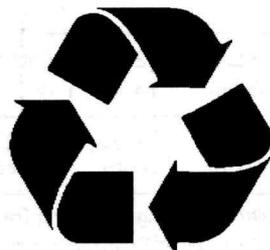
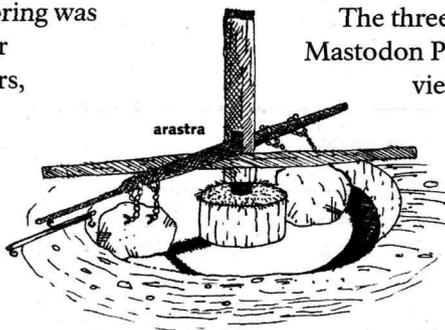
A number of hikes begin at Cottonwood Spring. A short, easy walk down Cottonwood Wash leads past a second oasis to a dry falls. In wet years, the

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 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 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.



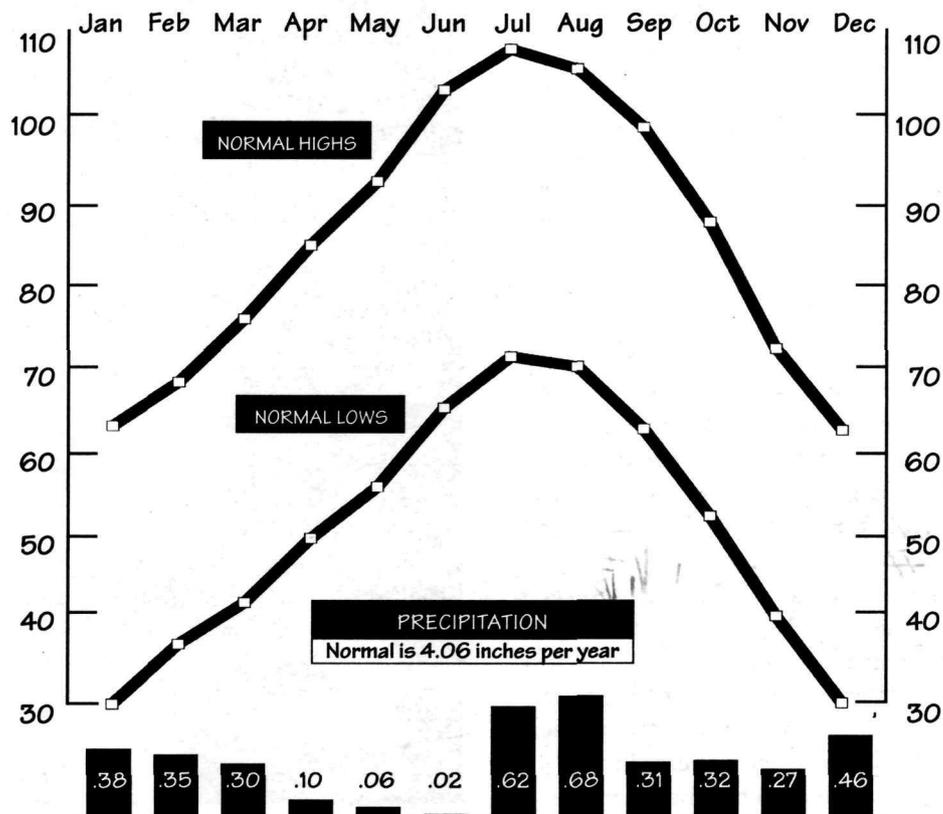
Think Globally, Act Locally

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?

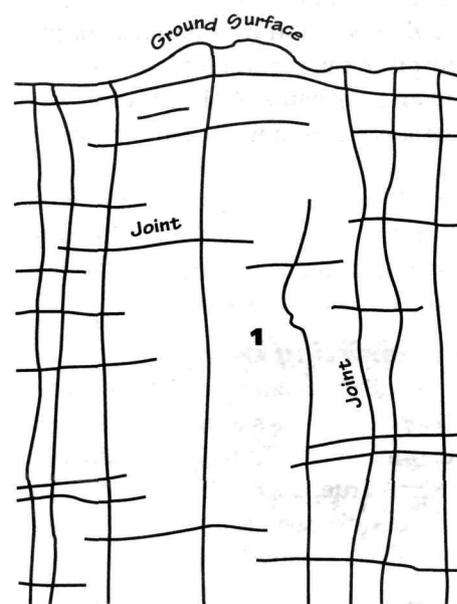
Geologists believe the face of our modern landscape was born more than 100 million years ago. Molten liquid, heated by the continuous movement of Earth's crust, oozed upward and cooled while still below the surface. These plutonic intrusions are a granitic rock called monzogranite.

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. Rectangu-

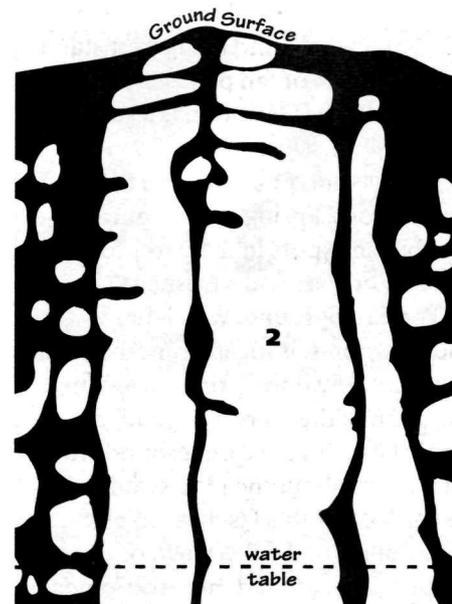
lar stones slowly weathered to spheres of hard rock surrounded by soft clay containing loose mineral grains. Imagine holding an ice cube under the faucet. The cube rounds away at the corners first, because that is the part most exposed to the force of the water. A similar thing happened here, but over 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



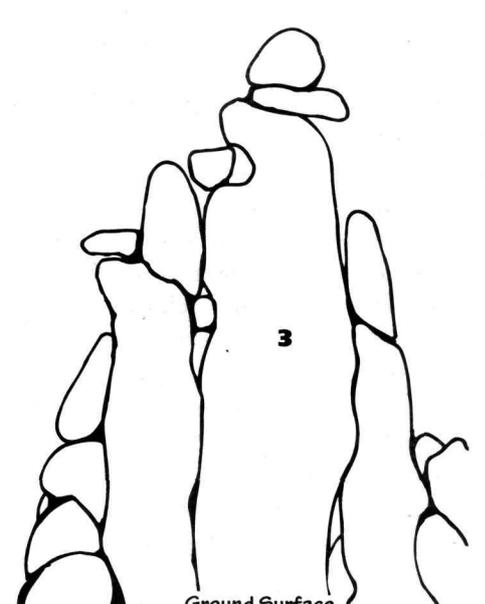
top of another, creating those impressive rock piles we see today. (figure 3)

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 relic 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.

Fall Classes

Basic Desert Survival: Don't Leave Camp Without It	Sept. 14, 15
Survival Skills: Desert Tracking—Lost Proofing	Sept. 15, 16
Sketching the Desert Landscape and Its Flora	Sept. 28, 29, 30
Native Skills Workshop—Plant Cordage	Sept. 29
Reptiles and Amphibians of Joshua Tree NP*	Oct. 5, 6, 7
Fall Desert Flora: Botanizing the Mojave Desert	Oct. 27
Ancient Surfaces and Lakes of the Mojave Desert	Oct. 27, Nov 3
Uses of Native Desert Plants	Oct 28
Ranchers and Miners of Joshua Tree NP	Nov 3
The Landers Earthquake Fault Tour	Nov. 10
Plein Air Poetry	Nov. 10
Geology: Creation of the Joshua Tree Landscape*	Nov. 16, 17, 18
Map and Compass Skills I: Staying Unlost	Dec. 7, 8

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

Where Do Snakes Go in Winter?

A frequently asked question at park visitor centers is: "What about snakes?" From November through March, park rangers can answer pretty confidently, "There are no snakes around in winter." If that is true, where do they go? They can't very well fly south like the birds.

More important than not being able to fly, snakes are not able to maintain their body heat by internal mechanisms. Birds and mammals, on the other hand, maintain a more or less constant body temperature, which allows the chemical reactions that sustain life to proceed at an optimum rate. Ectotherms, like snakes, also must provide heat for these same chemical reactions, but they must get the heat from the outside environment. When there is no warm place in the environment, i.e. in winter, ectotherms (all reptiles) become dormant. Their heart rate and movement slows so that they lack the energy to catch food, and their metabolism is too slow to digest it. This has the advantage of not requiring a continuing food supply at a time of year when food is scarce.

In order to keep from freezing where temperatures get that cold, and to keep from becoming easy pickings for an endothermic predator, such as a hawk or coyote, snakes seek refuge in deep holes or rock crevices. Because a sudden cold snap could leave a snake unable to move at all, and therefore highly vulnerable, natural selection has programmed snakes to seek a winter refuge as soon as fall temperatures begin to drop. Fortunately for the snakes of Joshua Tree National Park, holes and crevices are in abundant supply. So, by the end of October almost all the snakes have retired deep out of sight and remain there until the consistently warm days of mid-spring arrive.

Sometimes baby snakes, who often take refuge in shallow rock crevices, come to the edge of their refuge to bask in the sun on warm winter days. But using such shallow refuges comes at great risk. If there is a sudden decrease in the temperature, the little snakes may freeze to death. Studies have shown that during the winter months freezing is a significant cause of mortality in baby snakes in the colder parts of California.

by Dr. Harold De Lisle, herpetologist

Alien invaders!... Exotic pests!... Noxious weeds!...

"One year's seeding, seven years weeding"

— Old Gardener's Adage

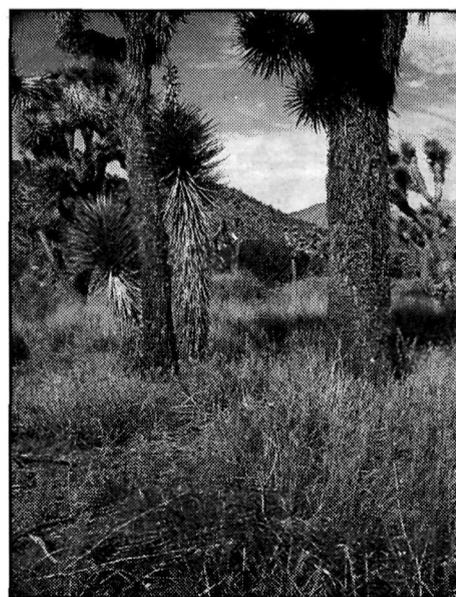
No, I'm not talking about visitors from other planets or even brussel sprouts. I reserve these pejorative labels for those plants that grow where I don't want them to grow, namely inside the boundaries of Joshua Tree National Park. Land agencies and farmers nationwide spend millions of dollars each year getting rid of unwanted plants. To understand the effect this has on Joshua Tree, let's take a trip from your backyard to your park's....

tamarisk

In the 1940s, folks in southern California discovered the amazing resilience of Eurasian salt cedar, or tamarisk, in the hottest of desert ecosystems. Ranchers and homesteaders, as well as a number of government agencies, planted these trees in yards and along steep slopes. The trees grew quickly, made good windbreaks along highways, and produced shade; they also produced millions of tiny seeds that have blown to remote locations miles away, such as Joshua Tree National Park. Why all the fuss? Don't we use elms from China to shade our yards? Mulberry trees in our city parks? European roses to please our noses?

Here is why: Located within remote wilderness areas of the park are a few small springs that emit a thin trickle of water. This water is critical!... vital!... priceless!... to the survival of park wildlife. Yet, a few tamarisk seeds blow in, land in the moist sand, and before you know it this alien invader!... exotic pest!... noxious weed!... has sucked the water deep below the surface and left the area dry.

Cheatgrass and red brome at Covington Flats



cheatgrass and red brome

Perhaps you have heard of those hearty little grasses that now carpet 17.5 million acres in Idaho and Utah: cheatgrass and red brome. During the moist El Nino years of the 1990s, these grasses made a major assault on the park, and have now firmly established themselves in the Covington Flats area. Formerly when lightning struck a Joshua tree or juniper, it would consume that plant then burn out. Now the grasses covering the ground carry the fire from the ignited plant on to others.

Desert plants are not adapted to fire; plant seeds do not require fire to break dormancy, nor do many of the plants resprout after fire. We believe that larger fires do occur in deserts, but historically only every century or so. Due to exotic grasses, we are now seeing large fires, such as the Juniper Complex fire that burned 14,000 acres in 1999, every 5 to 30 years in the Mojave. This is a big change in our ecosystem!



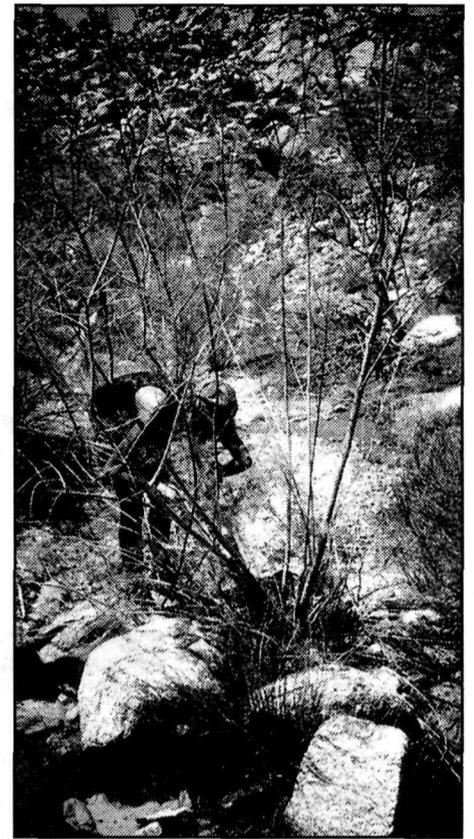
Local landscape with fountaingrass

fountaingrass

Fountaingrass is a beautiful perennial bunch grass that looks great in your yard... but not in your national park! Unfortunately, fountaingrass seeds get blown from residential and commercial landscapes into the park. Fountaingrass became established in Fortynine Palms Canyon in the 1990s and competes for water and nutrients with the native bunch grasses that provide food for native animals.

transporting change

Is this all doom and gloom? Haven't ecosystems always been changing and adapting to new situations? Well, yes and no. True, the home range of a plant species does change over time, usually following climate change such as the recent ice age. What is not "natural,"



Removing tamarisk from a seep in the park

however, is the massive, global transportation of plant species on boats and planes by people like you and me. Over the last century, hundreds of new species have been introduced into the United States from every continent in the world. While many species are what we call "non-invasive," that is, you plant a rose in your garden and in general it doesn't move on to your neighbors garden, many others are invasive. Kudzu, for example, was brought to the states in 1876 as an ornamental vine from Asia. By 1998, kudzu had spread throughout the southeastern United States, covering over 7 million acres, and posing a serious threat to timberland and wild areas.

pursuing the invaders

Joshua Tree staff actively pursue invasive exotic species. Since the 1970s, we've removed over 6,700 tamarisk plants, 15,000 Asian mustard plants, 1,000 tumbleweeds, and 1,200 bunches of fountaingrass. That's a lot of sweat! As a result, our springs are clean of tamarisk and fountaingrass and water is available for animals. We continue efforts with mustard and fountaingrass, and remain vigilant in monitoring all of our weed sites. If you see any of these weeds in the park, please send me an email: jane_rodgers@nps.gov or give me a call: 760-367-5564. Let's work together to protect the biodiversity of our park, and the wildlife within.

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 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 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

\$8.95; \$9.95 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's Wilderness Areas

Wuerthner. Seventy-four wilderness areas were created by the 1994 Desert Protection Act. Provides the information visitors need to explore these places. 320 pages PB \$27.95

The Complete Guide to Amer-

ica'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

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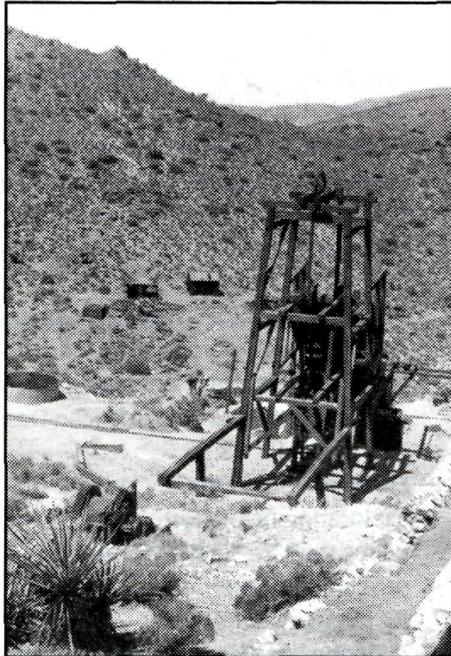
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Johnny took on three partners. After filing their claim, they set up a two-stamp mill, and began processing gold.

J.D. Ryan

A wealthy rancher from Montana, J.D. Ryan, bought out Johnny's partners in 1895. The next year he found a steam-powered, ten-stamp mill somewhere near the Colorado River, had it dismantled and hauled to the mine site.

To provide steam for the mill, Ryan ran a two-inch pipeline from wells at his ranch the 3.5 miles to an earth and stone reservoir near the mill. Steam engines fueled by trees from nearby mountains were used to push the water up the 750 foot elevation gain where it was boiled to power the stamp mill. Heating the water at both the ranch and the mill required a lot of wood, and the results of the timbering can be seen today in the sparsely vegetated hillsides at both sites.

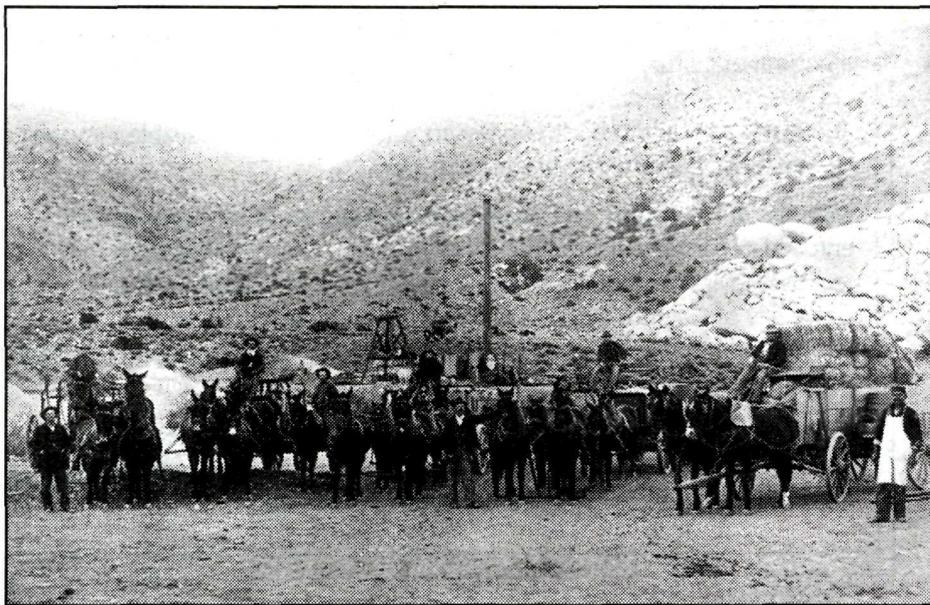


Lost Horse Mill Site, 1967
NPS Photo

Getting to the Gold

The booming of the ten 850-pound stamps could be heard echoing across the valley 24 hours a day as the ore was crushed. Water added to the crushed rock made a slurry, which washed over copper plates covered with a thin film of mercury. The gold particles attached to the mercury and the debris washed away.

The amalgam of mercury and gold was smelted to separate the two metals. The mercury could be reused and the gold was formed into bricks. These 200 pound bricks were carried to Banning every week, concealed in a 16-horse freight wagon. The 130-mile trip to deliver the gold and return with supplies took five days.



Freight wagons at the Lost Horse wells
Historical Photo

As the story goes, the day shift was producing an amalgam the size of a baseball while the night shift, supervised by Lang, recovered a mere golf ball. Ryan hired a detective to investigate and discovered that when Johnny removed the amalgam from the copper plates, he kept half for himself. Ryan gave Lang a choice: sell out or go to jail. Lang sold, then moved into a nearby canyon where he continued to prospect.

The Lost Horse Mine continued producing until 1905, when the miners hit a fault line and forever lost the ore-bearing vein. The mine was leased to others or left dormant until 1931, when rising gold prices prompted the processing of 600 tons of tailings (unprocessed chunks of leftover ore) with cyanide, producing a few hundred ounces of gold.

During one of the mine's dormant phases, Lang returned and set up residence in the cookhouse. According to Keys, Lang had hidden his stolen amalgam at the mill site and, unable to get to it before Ryan ran him off, had returned to retrieve

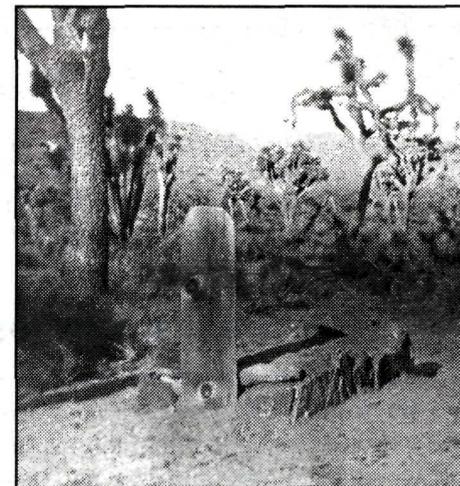
his stash. Lang sold what Keys called "pure gold bullion" on several occasions during this time. In the winter of 1925, sickly and unable to walk out for help, Johnny Lang died of exposure along Keys View Road. Two months later, Keys found his body and buried him across from the access road to the mine.

National Park Service

With the creation of Joshua Tree National Monument in 1936, Lost Horse Mine came under the protection of the National Park Service. With time, the wooden portions of the cabins and the headframe of the mill collapsed. (The latter was removed for safety reasons.) During the last 15 years, the 500 foot mine shaft, with horizontal tunnels at each 100 foot level, began to collapse. The combination of unstable mine workings and earthquakes caused a sink hole near the mill that eventually threatened the entire structure. Even the cable netting and concrete caps, that were installed to protect visitors, were consumed by the ever expanding hole.

"Puffing" the Mine

In 1996 a new technique for capping mineshafts was tried. A plastic foam product called PUF (polyurethane foam), similar to the material used for home insulating, was injected into the hole to provide a stabilizing plug. The plug was then covered with fill to protect it from UV damage and a wooden replica of

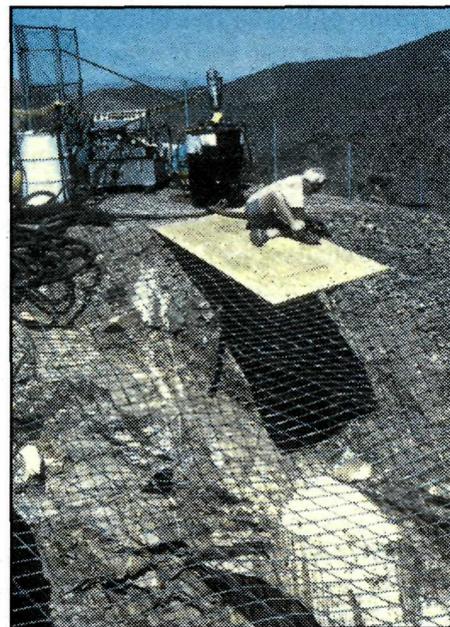


Johnny Lang's Grave
Historical Photo

the shaft collar was constructed. Today Lost Horse Mill is considered one of the best preserved mills of its kind in a National Park Service unit.

Lost Horse is one of the most popular destinations for visitors looking for a moderate hike. The trailhead is located off Keys View Road. The trail, which is a four-mile round-trip, follows the road developed by the Ryans to haul ore and supplies.

Mine shafts are dangerous, and historic structures are easily damaged. While the Lost Horse site has been stabilized, it is still not safe to walk on. Please stay behind the fencing.



above: Injecting foam into the sink hole;
below: Foam plugged mine shaft at Lost Horse

by Museum Curator Melanie Spoo

