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

all terrain vehicles ATVs may not be used in the park.

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

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°F and 50°F respectively. Winter brings cooler days, around 60°F, and freezing nights. It occasionally snows at higher elevations. Summers are hot, over—sometimes well over—100°F during the day and not cooling much below 75°F until the early hours of the morning.

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

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

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

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

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

entrance fees Admission to the park is $10 per vehicle and is good for seven consecutive days. A Joshua Tree Pass may be purchased for $25 and a National Parks Pass, which is good for all National Park Service sites, costs $20. Both are good for 12 months. A Golden Age Pass may be purchased by any U.S. citizen 62 or older for $10, and it is good for life.

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

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

getting to the park The park is located about 140 miles east of Los Angeles via I-10. Entrances to the park are located off CA HWY 62 (Twenty nine Palms Highway), at the towns of Joshua Tree and Twenty nine 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 weakens 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 please pick up trash around campgrounds and trails. Your actions will inspire other park visitors.

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

off-road driving Vehicles, including bicycles, are prohibited off established roads. The desert ecosystem is fragile. Off-road driving and riding creates rutts, 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 Twenty nine Palms, at Black Rock and Cottonwood campgrounds, at the entrance station south of Joshua Tree, and at the Indian Cove ranger station.

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

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

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

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

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

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

visitor centers The park’s main visitor center is located at the Oasis of Mara in Twenty nine 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”

Surrounded by twisted, spiky trees straight out of a Dr. Seuss book, you might begin to question your map. Where are we anyway? In wonder, the traveler pulls over for a snapshot of this prickly oddity; the naturalist reaches for a botanical guide to explain this vegetative spectacle; and the rock climber shouts “Yo-No!” when poked by dagger-like spines on the way to the 5.10 climbing route.

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 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 ch’i’a” or “humwichaw,” both names are used by a few elders fluent in the language.

By the mid-19th century, Mormon immigrants had made their way across the Colorado River. Legend has it that these pioneers named the tree after the biblical figure, Joshua, seeing the limbs of the tree as outstretched in supplication, guiding the travelers westward. Concurrent with Mormon settlers, ranchers and miners arrived in the high desert with high hopes of raising cattle and digging for gold. These homesteaders used the Joshua tree’s limbs and trunks for fencing and corral posts. Miners found a source of fuel for the steam engines used in processing ore.

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

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 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.

By Vegetation Specialist Jane Rodgers

CAMPGROUND ASTRONOMY

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

Find one of those star clouds and, without taking your gaze away from it, raise your binoculars to your eyes. The cloud will resolve into hundreds of stars, with perhaps smaller clumps and hazy patches in the field of view. Notice how the Milky Way seems to be very bright and dense to the south near the horizon? You are looking toward the center of our galaxy, where the stars are richest. The constellations Sagittarius and Scorpio lie in this direction.

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

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

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

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

Emergency: dial 909-383-5651

Joshua Tree Guide 3
Joshua Tree has gained international attention as a superb rock-climbing area. A guided walking tour is available, and the park offers an extensive network of dirt roads that make for less crowded nature trails. A ranger-led program will add enjoyment and understanding to your experience. There are 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 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. Mountain bikes and 4-wheel drive vehicles are welcome in the park. For your own safety and for the protection of natural features, stay on established roads. Tire tracks on the open desert can last for years and will spoil the wilderness experience of future hikers.

Paved roads in the park are narrow with soft shoulders. Curves, boulder piles, and Joshua trees restrict the vision of bikers and motorists. The unpaved roads in the park are safer for bikes and offer many opportunities to explore the area. Here is a sampling:

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

- **Black Eagle Mine Road**
  Beginning 6.5 miles (10.5 km) north of Cottonwood Visitor Center, this dead-end dirt road runs along the edge of Pinto Basin, crosses several dry washes, and winds through canyons in the Eagle Mountains. The first nine miles (14.5 km) are within the park boundary. Beyond that point is Bureau of Land Management land and a number of side roads. Several old mines are located near these roads 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 CA HWY 62, 15 miles (24.3 km) east of Twentynine Palms.

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

**Geology Tour Road**
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, Hiking, and Horseback Riding

Joshua Tree National Park is a backpacker's dream with its mild winter climate and interesting rock formations, plants, and wildlife. It embraces 794,000 acres of which 574,000 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 their boundaries.

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

Domestic issues
Water sources in the park are not potable and are reserved for wildlife, so you will have to carry in an adequate supply for drinking, cooking, and hygiene. You will want to give some thought to the trade-off between the water required to hydrate dried foods and the heavier 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 sun-blocking lotion liberally.

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

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

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

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

Black Rock Canyon Offers Good Hiking and More

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

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

Campsites range 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.

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, pinyon jay, or LeConte's thrasher. More elusive species such as bobcat, bighorn sheep, mountain lions, desert tortoises, and mule deer have all been seen in the area. As the sun sets, listen for the "singing" of coyotes living on the outskirts of the campground.

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

**Trail**
- Arch Rock: 3-mile loop (2.6 km) White Tank Campground, opposite site II
- Bajaea All-Access: 8.25-mile loop (13.3 km) South of Cottonwood, one-half mile from the southern entrance to the park
- Barker Dam: 1-mile loop (1.6 km) Barker Dam parking area
- Cap Rock: 4-mile loop (6.4 km) Cap Rock parking area, at the junction of Park Blvd. and Keys View Road
- Cholla Cactus Garden: 2.86-mile loop (4.6 km) 10 miles north of Cottonwood Visitor Center
- Cottonwood Spring: 1-mile (1.6 km) Cottonwood Spring parking area
- Hidden Valley: 1-mile loop (1.6 km) Hidden Valley picnic area
- Hi-View: 1.2-mile loop (1.9 km) Northwest of Black Rock Campground
- Indian Cove: 1-mile loop (1.6 km) West end of Indian Cove Campground
- Keys View: 2-mile loop (3.2 km) Keys View
- Oasis of Mara: 2 mile loop (3.2 km) Oasis Visitor Center, Twentynine Palms
- Old soak Rock: 2.8 mile loop (4.5 km) Jumbo Rocks Campground, just beyond loop F

**Scenic Trail**
- Jumbo Rocks: 6.25-mile loop (10 km) White Tank Campground, opposite site II
- Keys View: 1.2-mile loop (1.9 km) Northwest of Black Rock Campground
- Indian Cove: 1-mile loop (1.6 km) West end of Indian Cove Campground
- Keys View: 2-mile loop (3.2 km) Keys View
- Oasis of Mara: 2 mile loop (3.2 km) Oasis Visitor Center, Twentynine Palms
- Old soak Rock: 2.8 mile loop (4.5 km) Jumbo Rocks Campground, just beyond loop F

**Hiking Trails**

**Trail**
- Arch Rock Trail: 10 mile (20.1 km) Indian Cove backcountry board or Key West backcountry board 0.5 mile (0.8 km) east of Quail Springs picnic area
- Barker Dam Trail: 1 mile (1.6 km) Barker Dam parking area
- Cottonwood Spring: 1 mile (1.6 km) Cottonwood Spring parking area
- Keys View: 2 mile (3.2 km) Keys View
- Oasis of Mara: 2 mile (3.2 km) Oasis Visitor Center, Twentynine Palms
- Old soak Rock: 2.8 mile (4.5 km) Jumbo Rocks Campground, just beyond loop F

**Description**
- Arch Rock Trail: A 20.1 km (12.5 miles) round trip trail that begins at Barker Dam Picnic Area. It is the longest trail in the park. The trail is well-marked and is suitable for all skill levels. The trail is moderately strenuous, with some steep sections.
- Barker Dam Trail: A 1.6 km (1 mile) round trip trail that begins at Barker Dam Picnic Area. It is a gentle trail with some steep sections. The trail is suitable for all skill levels.
- Cottonwood Spring: A 1.6 km (1 mile) round trip trail that begins at Cottonwood Spring Picnic Area. It is a moderate trail with some steep sections. The trail is suitable for all skill levels.
- Keys View: A 3.2 km (2 mile) round trip trail that begins at Keys View Picnic Area. It is a moderate trail with some steep sections. The trail is suitable for all skill levels.
- Oasis of Mara: A 3.2 km (2 mile) round trip trail that begins at Oasis Visitor Center, Twentynine Palms. It is a moderate trail with some steep sections. The trail is suitable for all skill levels.
- Old soak Rock: A 4.5 km (2.8 mile) round trip trail that begins at Jumbo Rocks Campground, just beyond loop F. It is a moderate trail with some steep sections. The trail is suitable for all skill levels.

**Area Information**

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

**Indio**
- 82303 29 Palms Hwy (760) 664-6676
- Indio Chamber of Commerce

**Joshua Tree**
- 35 532 E Palm Canyon Dr (760) 367-6880
- Joshua Tree Chamber of Commerce

**Palm Springs**
- 53 2970 E Palm Canyon Dr (760) 325-5577
- Palm Springs Chamber of Commerce

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

Joshua Tree Guide 7
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.

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

A number of hikes begin at Cottonwood Spring. A short, easy walk down Cottonwood Wash leads past a second oasis to a dry falls. In wet years, the falls can become a scene of rushing water and red-spotted toads. Bighorn sheep often come up the wash for water in the early hours. An old teamster road drops down past the falls to the lower wash. A short hike leads through palo verde and desert willow trees to the remains of Moorten's Mill 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 rest rooms, is located one-half mile from Cottonwood Spring via a signed trail; there are also shaded picnic tables in the campground. To learn more about the plants, animals, and history of this fascinating place, join a ranger-led hike, walk, or campfire program, offered most weekends.

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

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

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

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

Think Globally, Act Locally

Bring your aluminum and metal cans, glass, and plastic to a campground recycling center. Share or recycle this Joshua Tree Guide when you have finished reading it. Participate in recycling in your community.

Emergency: dial 909-383-5651
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 relic features inherited from earlier times of higher rainfall and lower temperatures.
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, the tortoise 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 geeters 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 hit 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 chromosomas 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 construct 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 every inch of 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)
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 $12.95

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

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

Joshua Tree, The Story Behind the Scenery, Vuncannon. Full of color photos and fascinating text, the perfect introduction to the park. 48 pages PB $8.95; $9.95 for French or German.

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

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

On the Road in California

California 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

Life in the Desert

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

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

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

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

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, Bowers. An easy-to-use guide full of descriptions and line drawings of over 100 desert shrubs and trees. 140 pages PB $14.95

70 Common Cacti, Fischer. Colorful photographs and easy-to-read descriptions demonstrate the unique beauty of the common cacti of the Southwest. 70 pages PB $8.95

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 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, two, and three day field classes on weekends from September to May. Each class examines a natural or cultural feature of the Mojave Desert and is geared to 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 $10 discount on each Desert Institute class, as well as discounts on 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 on-line class catalogue is available 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.

By mail, enclose check or credit card number and expiration date. CA residents include 7.75% sales tax.

Prices are subject to change without notice.

Postage & Handling Rates

U.S. & Canada: $7.00 for first item, each add’l. item $0.50.

Foreign airmail: $11.00 for first item, each add’l. item $2.00.

Joshua Tree Guide 11
THE DESERT FOX

You could be walking back from the Pinto Dunes at dusk when you spy a little dog trotting through the creosote bushes. Then you realize it has awfully long ears. You have just seen the smallest and rarest member of the dog family in Joshua Tree National Park — the desert kit fox, Vulpes macrotis arisipus. It would seem that the kit fox would be easily recognizable with its long ears, long legs, and delicate body form, but most park visitors confuse it with its larger and more conspicuous cousin, the desert gray fox, Urocyon cinereoargenteus scotti.

The face of the kit fox has a typical “foxy” appearance, except for the ears which are much longer relatively than those of any other North American canid. Another unique feature of their anatomy is the fur on the soles of their feet, forming a kind of “sand shoe.”

Male foxes are about 15 percent heavier than females (2.2 kilograms versus 1.9 kilograms). The kit fox lives on the open desert, on creosote bush flats, and amongst the sand dunes. There is a significant population of this mammal in the Pinto Basin. Seventy-five percent of sightings are in areas with less than 20 percent vegetation cover. Kit foxes are almost exclusively carnivorous. They seldom need to drink, getting all their water in the food they eat and by having a digestive tract that is super-efficient at absorbing every last milliliter.

Undoubtedly the primary item in the diet of our kit foxes is Merriam’s Kangaroo Rat, Dipodomys merriami — another creature of the night. They also dine frequently on both Black-tailed Jackrabbits Lepus californicus and Desert Cottontails, Sylvilagus audubonii. In addition to nocturnal rodents, Kit foxes eat birds, reptiles, and even insects.

Unlike the gray fox, kit foxes are creatures of the night. They avoid heat stress during the day by remaining inactive in underground dens. Night-time foraging seldom takes a fox more than three kilometers from its den. Kit fox dens have several entrances, and a fox usually has several dens within its home range. The burrow entrance is a little higher than wide and too narrow for a coyote to enter. Tunnels extend for three to six meters. Several different dens are used during the year.

Once out of the den, the fox appears to move with a rapid trot — “fox trot.” One was reliably clocked at 40 km/hr for a short distance when pursued. Kit foxes use smell much like other dog-family members. They mark their dens and trails with urine. They most probably orient themselves at night chieflly by smell. Outside of the breeding season, kit foxes lead a solitary life. They are not territorial, but avoid areas where another fox is present.

Although they are generally silent, kit foxes do have a few vocalizations. Females bark to recall errant pups. They also bark at humans when a den with pups is approached. They growl when approached by a strange fox. And they have a high pitched yowl that they use to indicate location when separated from family members.

The vixen begins searching for a birthing den in September and October. She engages in some “fall house cleaning” by visiting most of the dens in her home range and cleaning them out before she decides which to use. She usually wants one that is three to four kilometers from the nearest neighbor to ensure a good hunting territory. After a pregnancy of six or seven weeks the litter of four or five pups is born in February or March. They are covered with tiny, soft hairs and their eyes are still shut. They weigh about 40 grams. By one month of age their gray-blue eyes are open and they are little woolly puppies.

The vixen rarely leaves the den during the period of nursing. It is up to the father to do all the hunting for the pair, although he may not spend the daylight hours at the family den. He brings the food back whole, carried in his jaws.

Soon the pups are coming out of the den to play for several hours each day. By June they are weaned and both parents are bringing home the meat.

Den changes are frequent during the summer when puppies are being fed. These moves may be necessary because of a buildup of fleas. At three to four months the pups begin to forage with the parents. At about five months they have attained adult weight and begin to develop the adult summer fur. The long glossy fur of winter develops in late summer and most foxes have a full winter coat by the end of October.

In October the pups head out away from their parents’ home range. Young foxes may travel long distances (30+ km) before settling down. They usually do not mate until they are 18 months old. Kit foxes have lived as long as 12 years in captivity, but probably no more than eight years in the wild. It is usually their teeth that give out first in old foxes.

In drought years, like 2002, most vixens do not breed. Those that do, produce fewer pups. If the drought continues for several years, the fox population declines. When years of good rains return, the rodent and rabbit population increases and the following year the foxes start having babies again.

The only predator known is the Desert Coyote, Canis latrans mearnsii, and such predation is apparently rare. Probably more foxes die as road kills. So, in order to protect the desert fox and other wildlife, drive slowly through the park — you’ll also see a lot more.

Where’s the Bark?

During the past 12 months, the park weather station near Hidden Valley has recorded less than one-half inch of moisture! Dry times are not new to the park — it is a desert park after all — but we normally expect five to six inches of rain each year at that elevation.

During particularly dry years, plants may fail to produce seed and ephemeral wildflowers to germinate, disappointing visitors who come to see the wildflowers and, more importantly, reducing the food supply for insects and wildlife. Desert animals are adapted to survive on relatively little drinking water, filling most of their need for moisture from the plants that they eat. However, when there isn’t much plant growth, animals may go to extremes to get the moisture they need to survive.

As you drive through the park, you will notice that many Joshua trees have large patches of bark missing from their trunks and branches. The culprits are antelope ground squirrels! Desperate for water, the squirrels are punching the bark away to access the juicy cambium layer underneath, leaving piles of discarded bark pieces at the base of trees. You’ll notice that these trees aren’t looking too good. The air sucks the moisture from the exposed layers, which results in some very dry trees — some already dead.

What is the park doing to protect our namesake? Having determined that the damage to the Joshua trees was not caused by human activities but is the result of a drought cycle, park biologists will not intervene. It is highly likely that rodents preyed upon trees during past droughts, as evidenced by scarring on some older trees. Droughts come and go, and some individual trees and animals do not survive. Our desert ecosystem, however, is generally healthy and able to survive this current cycle of drought.

by Dr. Harold De Lisle, herpetologist