



Mojave National Preserve

Jim André



Wildlife photographed at springs in Mojave National Preserve include mule deer, mountain lion, desert bighorn, and red-tailed hawk. To see more wildlife photos from motion-activated cameras mounted at springs, visit www.nps.gov/moja and click on PHOTOS & MULTIMEDIA.

Welcome to Mojave

As the superintendent of Mojave National Preserve I want to extend my personal welcome to you and my hope that your visit will be rewarding. Rangers here at Mojave are about the friendliest and most knowledgeable around, so be sure and stop by one of the two information centers to learn more about the park. The Kelso Depot Visitor Center is open every day except Christmas. In addition to speaking with a ranger, you can enjoy museum exhibits, view a short film and shop at the bookstore. Hole-in-the-Wall Information Center is open Wednesday through Sunday. Rangers are eager to help you plan your visit and share their excitement and knowledge of the area, so please ask them.

You will soon find that the Preserve protects a vast area of the Mojave Desert ecosystem and offers many opportunities to experience and enjoy a variety of unique desert environs, including: sand dunes, Joshua tree forests, cactus gardens, lava flows and cinder cones, quiet canyon hikes, backcountry road trips by four-wheel drive, and visits to old mines and military outposts. Stay at one of the campgrounds and you will experience the dark night sky and see the amazing number of stars that are visible here. Most of us don't get to see this anymore, so enjoy it while you're here.

Cooler fall temperatures make this a great time of year to drive out to the desert, and the Rings Loop Trail at Hole-in-the-Wall is a great destination for a day-trip. A volunteer group from the American Hiking Society recently improved and extended this trail into a one-mile loop. Learn more about this volunteer work project and other valuable work completed by volunteers on page four.

People around the region are interested and concerned about the Mojave Desert's mule deer population. This winter, preserve staff will be working with California Fish & Game and a researcher from the University of Nevada-Reno on a long-term study to learn more about the deer. The cover article of this newspaper explains the project, and new information is posted regularly on the website.

If you would like to learn more about park resources or management activities, visit our website (www.nps.gov/moja) or call the headquarters information desk listed on page two.

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Looking for Mule Deer...and Answers

By Anne Maasberg, Park Ranger

DO THE MULE DEER NEED MORE WATER?

It seems like a silly question. After all, it's a desert and doesn't everything here need more water? Scientists at Mojave National Preserve are working with California Department of Fish & Game and researchers at the University of Nevada-Reno to answer that question and a few others.

Many are surprised to learn that there are over 150 springs in the Preserve. However, the amount of water that is available to wildlife might be highly variable from year to year. One part of this project is to find out how annual rainfall affects the availability of water for wildlife at natural springs. Some springs, such as Piute Spring, run year-round, while others dry up after too

long a time without rain. Park Service employees and volunteers check these water sources each fall to find out which springs are producing water sufficient to provide a source for wildlife.

The second part of the project will be to find out more about mule deer in Mojave. For starters, no one knows for sure in how the population size is changing. Deer have been hunted here since 1958. Since Mojave National Preserve was established in 1994, the average annual buck harvest has increased 50 percent from 28 bucks per year to 42 bucks per year. However, buck harvest information alone is not a reliable indicator of mule deer population levels.

In addition to springs, there are also stock tanks fed by wells, principally

used for watering cattle. It's not known which of these water sources deer regularly use and depend upon. It's not certain whether it is the amount of water that limits the number of deer or something else, such as food availability or predators.

To find these answers, the National Park Service, California Fish & Game, the University of Nevada-Reno, and local hunting and wildlife conservation groups are beginning a long-term study of mule deer. The project involves ear tagging 120 deer and putting GPS collars on a sub-sample of these. The ear tags will allow researchers using wildlife cameras to see which deer go to which water sources and how often throughout the year. The GPS collars (continued on page 3)

3 What happens to baby tortoises?

Keeping more juvenile desert tortoises alive until they are old enough to breed may play a role in the survival of this threatened species.

3 Centennial Initiative

The National Park Service begins planning for its centennial in 2016.

4 Volunteers at Mojave

Working individually or as part of a volunteer work crew, dedicated people from across the country work side by side with park rangers.



National Park Service
U.S. Department of the Interior

Mojave National Preserve
Established in 1994, Mojave National Preserve encompasses 1.6 million acres ranging in elevation from 800 feet near Baker to 7,929 feet at Clark Mountain. Here, three of the four major North American deserts meet. Although most of the park lies in the Mojave Desert, the southeast section grades into Sonoran Desert, and elements of the Great Basin Desert are found at higher elevations east of the Granite, Providence and New York Mountains.

Superintendent
Dennis Schramm

Deputy Superintendent
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Chief Ranger
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Contact Information

Mailing Address
2701 Barstow Road
Barstow, CA 92311

E-mail
Click on "Contact Us" at nps.gov/moja

Park Headquarters
760 252-6100

Fax Number
760 252-6174



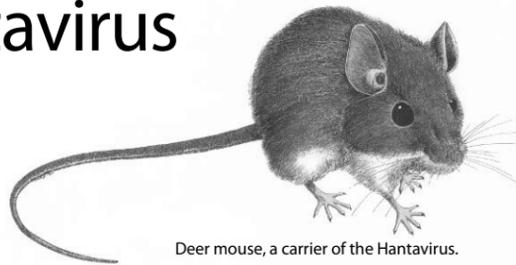
Kelso Depot Visitor Center

Built in 1924, the Kelso Depot was used as a train station, employee housing, and restaurant by the Union Pacific Railroad. The building shut down completely in 1985.

In 2005, the Depot re-opened as the new Visitor Center for Mojave National Preserve. The building now houses an information desk, bookstore, and exhibits describing the natural world of the desert and the people who have lived and worked here.

Kelso Depot Visitor Center is open from 9 a.m. to 5 p.m. daily except Christmas Day.

Hantavirus Alert



Deer mouse, a carrier of the Hantavirus.

Hantavirus pulmonary syndrome is a respiratory disease caused by a virus shed by deer mice and other rodents. The disease is extremely rare, but very serious: there is no cure, and nearly half of the known patients have died.

The risk of exposure is highest in rural areas, especially in abandoned cabins where rodents are present. Hantavirus has now been reported in 31 states.

The disease spreads to people when rodent urine, droppings, or nesting materials are stirred up. You may be infected by breath-

ing in the virus, touching your mouth or nose after handling contaminated materials, or from a rodent bite.

Symptoms include fatigue, fever and muscle aches, followed by coughing and shortness of breath as the lungs fill with fluid.

To avoid exposure to hantavirus, use extreme caution when exploring abandoned buildings. If you see droppings or nests, stay away. Don't camp in areas where rodent droppings are present.

Temperatures: Average high/low in degrees Fahrenheit

	Granite Mountain Elevation 4,200 feet	Zzyzx Elevation 930 feet
January	50/36	61/34
February	54/38	69/40
March	59/41	74/46
April	68/48	83/53
May	75/54	93/61
June	85/63	103/70
July	90/67	109/77
August	89/66	107/75
September	83/61	100/68
October	73/52	77/55
November	59/41	73/43
December	50/34	62/34
Average Annual Precipitation	8.5 inches	3.37 inches

Information

Entrance Fee

There is currently no entrance fee for Mojave National Preserve.

Dates and Hours of Operation

Mojave National Preserve never closes. Two information centers offer orientation and maps.

Kelso Depot Visitor Center

Located 35 miles south of Baker on Kelbaker Road. Open daily 9 a.m. to 5 p.m., except Christmas Day. Phone 760 252-6108.

Hole-in-the-Wall Information Center

Located near Hole-in-the-Wall Campground. Winter hours (October through April) Wednesday through Sunday from 9:00 a.m. to 4:00 p.m. Summer hours (May through September) Friday through Sunday, 9:00 a.m. to 4:00 p.m. Phone 760 252-6104 or 760-928-2572.

Gasoline

There are no gas stations in the park, so be sure to fill up before entering. Gas is sold along I-40 at Needles, Fenner, and Ludlow, along I-15 at Baker, Cima Road, and Primm, and along U.S. 95 at Searchlight and at the Nevada 163 junction south of Cal Nev Ari.

Water

Always carry plenty of drinking water in your car and especially when hiking. The only drinking water available within the park is at Kelso Depot Visitor Center, Hole-in-the-Wall Information Center, Hole-in-the-Wall and Black Canyon Campgrounds, and at the Providence Mountains State Recreation Area (Mitchell Caverns) Campground.

Lodging

There are no motels within the park. Lodging can be found in Barstow, Nipton, Ludlow, Needles, Baker, and Twentynine Palms, California, and in Primm and Searchlight, Nevada.

Permits

Recreation Permit \$50.00

A Recreation Permit is required for all organized events, including school groups, hiking clubs, jeep tour groups and scouting groups, or for any group of more than 15 individuals or 7 vehicles. Proof of insurance may be required. For more information, call (760) 252 6107, or click on "Permits" at nps.gov/moja.

Special Use Permit \$200.00

A Special Use Permit is required for large, organized events and commercial activities such as filming. Proof of insurance and posting of a bond may also be required. For more information, call (760) 252-6107, or click on "Permits" at nps.gov/moja.

Weather

Expect wide fluctuations in day-night temperatures, seasonal strong winds, and bright, clear skies. At low elevations, temperatures above 100 degrees F. typically begin in May and can last into October. Annual precipitation ranges from 3.5 inches at low elevations to nearly ten inches in the mountains. Most rain falls between November and April; summer thunderstorms may bring sudden heavy rainfall and flash flooding. Strong winds occur in fall, late winter, and early spring.

Telephone & Web Directory

Emergency	911
Emergency: Interagency Communications Center	909-383-5651
San Bernardino County Sheriff - Baker	760-256-1796
- Needles	760-326-9200

Mojave National Preserve

Barstow Headquarters Office	760-252-6100
Hole-in-the-Wall Fire Center	760-928-2573
Hole-in-the-Wall Information Center	760 252-6104 or 760-928-2572
Kelso Depot Visitor Center	760-252-6108

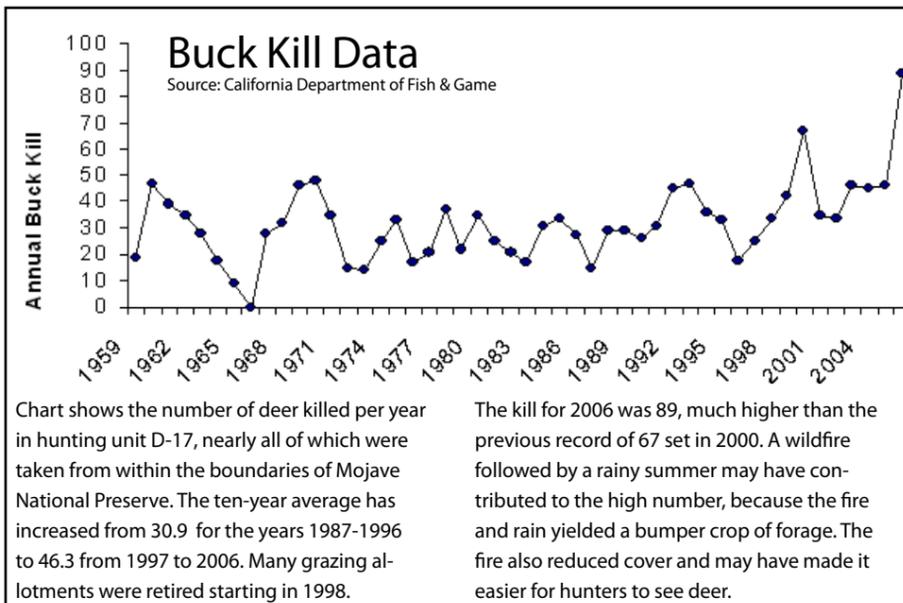
Nearby parks

Anza Borrego Desert State Park	760-767-4205
Calico Ghost Town	760-254-2122
Death Valley National Park	760-786-2331
Joshua Tree National Park	760-367-5500
Lake Mead National Recreation Area	702-293-8990
Mitchell Caverns/Providence Mountains State Park	760-928-2586

Mojave National Preserve

National Park Service	www.nps.gov
Bookstore (Western National Parks Association)	www.wnpa.org
CSU Desert Studies Center (Zzyzx)	http://biology.fullerton.edu/facilities/dsc/zzyzx.html
Bureau of Land Management	www.blm.gov
California Desert	www.californiadesert.gov
Leave No Trace	www.lnt.org
Mitchell Caverns/Providence Mtns. State Park	www.calparksmojave.com/providence
Wilderness System information	www.wilderness.net
Federal government jobs	www.usajobs.opm.gov
Desert USA wildflower reports	www.desertusa.com/wildflo/wildupdates
Desert Tortoise Information & Science	www.deserttortoise.gov

Mule deer in the Mojave



continued from page 1
will provide a continuous record of each animal's movements, so researchers can find out exactly where the mule deer range in relation to the springs and stock tanks. The information obtained will also contribute to knowledge about the importance of various habitat areas.

After all this is done, researchers will know the relative abundance of the deer population in the Preserve and how the availability of water effects the size and health of the population. This research will shed light on a topic of interest to hunters, scientists, and everyone who enjoys desert wildlife, and will guide managers as they make decisions affecting the mule deer of the Mojave.

What happens to baby tortoises?



Baby tortoise shells remain somewhat soft for the first five years.

Mine sites can harbor hidden dangers



Hazardous materials were found stored in the shed at Kelso School.

By David Burdette, Hazmat Specialist

OLD MINE SITES AND ABANDONED cabins are fun to explore. But be careful...there can be hidden dangers. Miners and other desert dwellers might have used hazardous chemicals that are still stored on the property, or they may have improperly dumped hazardous wastes at their work and home sites.

Hazardous wastes were recently removed from three locations inside Mojave National Preserve, including a tool shed at an abandoned mine site, an open area behind an abandoned ranch house, and in the storage shed of the old Kelso School.

The materials that were found included cans of old paint, solvents, pesticides, roofing tars, cleaning products, and used motor oil. Based on the condition of the containers and where they were discovered, it was estimated that the waste might have been abandoned in the desert as long as 30 years ago. All of the recently discovered wastes were taken to the San Bernardino County Fire Department's Household Hazardous Waste turn-in facility in San Bernardino, California, where the waste will be properly recycled or disposed of.

Hazardous waste and other potentially dangerous items are commonly found at old mine sites and cabins throughout the desert. Any containers that hold an unknown material should not be moved or disturbed. While many containers may be empty or contain only water, some contain flammable or toxic substances that could harm humans or the environment if not properly handled. If you find any suspicious containers, please tell a ranger.

Protect the desert tortoise

Do not pick up or harass a tortoise: observe it from a distance. Tortoises store water in their bladders and can re-absorb the liquid during a drought. When frightened, they frequently empty their bladders. Loss of this important water source can be fatal.

Check under your vehicle before driving away. Tortoises enjoy the shade under your car on a hot day.

Observe posted speed limits, and be especially watchful during and after rainstorms, when tortoises often enter roadways to drink from puddles.



Keep vehicles on established roads only. Vehicles will crush tortoise burrows, killing the tortoises and eggs within.

Do not release captive tortoises. They may carry diseases that can be transmitted to wild tortoises. Instead, turn them over to a licensed tortoise-rescue center. For information, call 760-252-6101.

Park Service Centennial: Preparing America's parks for the next 100 years

By Christine Schlegel, Park Ranger

THE NATIONAL PARK SERVICE IS ABOUT TO become everyone's favorite 100-year-old. In August 1916, Congress provided the birth certificate, by passing legislation that created the National Park Service, "... which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

With the 100th anniversary of the National Park Service just nine years away, President Bush, in partnership with Mary Bomar, Director of the National Park Service, and Secretary of the Interior Dirk Kempthorne, announced the Centennial Challenge in May of 2007. According to President Bush, "A vital goal for this country would be to prepare the parks, to guard the parks, to conserve the parks, and to make the parks relevant to the American people in honor of the 100th anniversary."

This ground-breaking initiative would do just that. The proposal includes hiring additional seasonal park rangers and funding improvement projects through a matching fund: 100 million federal dollars per year would be available when matched by an equal amount of non-federal funds. It is now up to Congress to shape the legislation and finalize details of the Centennial proposal.

During the spring of 2007, the National Park Service conducted 40 "listening sessions" and compiled over 6,000 comments from people across the country. These responses helped to inspire specific goals in the areas of stewardship, environmental leadership, recreational experience, education, and professional excellence. Twenty-one goals include stabilizing historic buildings, restoring native habitats, rehabilitating 2000 miles of trails, and encouraging children to be future conservationists through the Junior Ranger Program.

The first Centennial Challenge project planned for Mojave National Preserve is to expand the solar installation at the Desert Studies Center at Zzyzx. If this project is funded, Zzyzx will go totally solar. Installation of a new 9.6 kilowatt off-grid solar system will replace the current diesel powered system, greatly reducing fuel costs, greenhouse gases, noise, and air pollution. California State University at Fullerton manages the Desert Studies Center within the boundaries of Mojave National Preserve, and will be partners in funding this project.

The Centennial is less than a decade away. Track the planning and progress of the Centennial Initiative and learn about future opportunities to participate at www.nps.gov/2016. To find out about Mojave National Preserve's centennial planning, visit www.nps.gov/moja/.

WHEN THEY HATCH FROM EGGS, DESERT tortoises are about the size of half-dollars. They soon disappear into the vast desert, where they are generally not detected again until they are about the size of a half-cantaloupe, ten to fifteen years later. What happens during that interval? Tortoise shells remain somewhat soft for the first five years, making them more vulnerable to ravens, foxes, and other predators. Other causes of death include disease and getting run over by cars and off-highway vehicles. No one knows for sure which of these threats is most significant, nor do we know what percentage of the babies survive into adulthood and reproduce.

Studying baby tortoises is not easy. The hatchlings are so small that it is not possible to attach standard radio transmitters to their shells. Now, new technology is being adapted for use in tortoise monitoring: tiny radio frequency tags such as those used for inventory control in stores, can be glued onto shells to track baby tortoises.

This new technology will allow scientists from the U.S. Geological Survey in Henderson, Nevada, working with staff at Mojave National Preserve to study survivorship and mortality of juvenile desert tortoises in the Ivanpah Valley. To carry out the study, scientists will develop a headstarting facility for tortoises.

The theory behind "headstarting" is straightforward. Egg-carrying females are collected and relocated to sheltered enclosures where they lay the eggs. When the eggs hatch, the babies are similarly protected for the first five years until their shells harden completely, then released. In this way, it is hoped more hatchlings will survive to breeding age. The facility will also provide a pool of young tortoises that can be studied using the new miniature radio-tracking devices. Tracking these tagged animals will allow scientists to determine causes of mortality and the percentage of babies that survive to adulthood.

How can we protect baby tortoises so they survive to reproduce? Knowing the survival rates of hatchlings and identifying the prime causes of mortality are essential to making cost-effective choices that could contribute to saving this threatened species from extinction.

Volunteers make a difference

Clock club donates clocks...and time...to Kelso Depot Visitor Center



left: Members of the NAWCC install a clock behind the information desk at Kelso Depot. above: NAWCC members Ray Brown, Alan Bloore, and Don Stocker and Park Ranger Linda Slater with the antique clock in the ticket & telegraph office.

pert advice in using and maintaining the clock they had procured from the Union Pacific Railroad Museum, and that they were also searching for a second clock to display in the lobby. The NAWCC was able to assist on both counts.

Chapter 133 of NAWCC, which specializes in Western Electrics, is based in southern California. Brown and members Alan Bloore and Don Stocker were on hand at Kelso to install the clocks, while Tom Faragher was instrumental in preparing the clocks for installation.

In 1883, the railroads established Standard Time across the United States so that reliable train schedules could be maintained. Before then, every town kept its own time, which varied slightly from place to place. To ensure the uniformity of time across the country, the Self Winding Clock Company of New York manufactured these highly accurate, mechanically operated clocks with battery-powered self-winding mechanisms.

THE PENDULUM IS ONCE AGAIN swinging on a Standard Railroad Clock manufactured in the 1920s. It's one of two antique clocks recently installed at the Kelso Depot Visitor Center by Chapter 133 of the National Association of Watch and Clock Collectors (NAWCC). The club donated one of the clocks and cleaned and repaired the second, which was donated by the Union Pacific Railroad Museum in Council Bluffs, Iowa. The two historic clocks add to the Depot's early 20th century ambiance.

The project began when Ray Brown, Vice President of NAWCC Chapter 133 visited Kelso Depot and noticed that there was no clock in the historically furnished ticket and telegraph office. He soon learned that park staff needed some ex-

Trail work completed by youth and adult volunteer crews

VOLUNTEER WORK CREWS FROM TWO organizations extended and improved park trails in 2007. The Rings Trail was extended into a loop by a Volunteer Vacations work crew. The Mid Hills to Hole-in-the-Wall Trail was repaired by a Student Conservation Association High School crew.

The Rings Trail is one of the most popular in the Preserve, descending into Ban-shee Canyon via metal rings bolted in the rock walls. Many visitors continue their hike by walking around the base of a nearby hill. Unfortunately, there was no trail, and hikers were sometimes unsure of the route. A Volunteer Vacations crew organized through the American Hiking Society created a real trail, leveling and raking the route, constructing drainage features, and building two gates through a fence. Volunteer Vacation crew members serve for one week at their own expense on federal land projects. Crew members camped out and cooked their own meals. Park rangers oriented them and oversaw the work.

The second trail project involved repairing the Mid Hills to Hole-in-the-Wall Trail from the effects of the damaging fire and floods of 2005. A grant from the National Park Foundation and Nature Valley covered the costs of sponsoring



The Volunteer Vacations crew pounds in trail marker posts along the Rings Loop Trail.

a Student Conservation Association (SCA) High School volunteer trail crew for a month-long project over the summer. SCA recruits and organizes crews of high school students to work on backcountry projects across America. Two experienced leaders oversaw the six student volunteers, teaching them teamwork, camping, and trail construction techniques.

Volunteers at Mojave can work individually or in groups. For more information about volunteer opportunities at Mojave National Preserve, please contact the Volunteer Coordinator at 760-252-6123.

A Train Runs Past It: Volunteering at Kelso

By Miriam Morgan, Volunteer-in-Parks

"WHAT IS THIS AMAZING PLACE IN THE middle of nowhere?" is a question often asked at the Kelso Depot Visitor Center. As a volunteer at Kelso, it is not difficult to appreciate their amazement, as the depot is both beautifully restored and many miles from anywhere.

Working at the Visitor Center is an opportunity to help everyone who comes through the door. Visitors' needs range from finding out about camping, hiking, and road conditions on the old Mojave Road, to learning about mining claims and the Union Pacific Railroad. At Kelso they can also buy a book about desert plants, find out the weather forecast, get directions ("How far to Las Vegas?" wins the contest in this category), or get help calling for a tow truck.

Many visitors will have tales to tell of their own experiences at Mojave: seeing countless stars from a campsite at the Kelso Dunes, walking in the Joshua tree forest, negotiating the Rings Trail at Hole-in-the-Wall, watching a turkey vulture soar in the bright sky, climbing down the lava tube ladder, and the unexpected gift of finding a cactus in full bloom.



Volunteers-in-Parks Maribeth and Ray Collum assist a traveler at Kelso Depot Visitor Center.

If we are lucky, a Kelso old timer comes in with stories of early life at Kelso, when a father or grandfather worked for the railroad here, while "railroad buffs," appreciate Kelso Depot for its history... and for the trains! When they hear the sound of that train whistle, visitors flock to the trackside fence to watch them pass, often with the depot's history now fresh in their minds.

Volunteers work with national park rangers to provide visitors with the best possible experience in the Preserve, and the variety and complexity of questions that we are asked every day provides a welcome challenge to learn more about this unique place.

Dirt Road Driving Tips

Rules of the Road

All vehicles operating within Mojave National Preserve must be street-legal in accordance with California DMV requirements. This includes current registration and tags, lights and turn signals, and valid insurance. California "Green Sticker" and "Red Sticker" programs are not recognized within the park.

Road Conditions

Road conditions vary widely. Dirt roads may be rough. Sandy or muddy roads can be impassable, trapping the unprepared motorist many miles from help. Watch for cattle, burros, and other wildlife on roadways.

Not all roads are shown on all maps; traces and illegal shortcuts add to the confusion. Carry a good map and ask a park ranger for current road conditions.

Traveling off pavement within the park is allowed only on existing, open dirt roads. Do not travel cross-country or create new routes. This rule is strictly enforced; citations are issued for violators. Watch for and respect Wilderness Boundary signs; motorized vehicles (and bicycles) are not allowed in Wilderness Areas. Driving in washes is not permitted.

Your Vehicle

Ensure that your vehicle is in good condition. Check your tires, oil, and gas gauge before you leave.

Be prepared for an emergency. Carry a tire jack, tools, towrope, and extra water and fluids for your vehicle.



Driving tips for sand and mud

- Use low gearing and just enough throttle to maintain forward movement.
- Engage 4-wheel drive before entering deep sand or mud.
- Turn the steering wheel rapidly from side-to-side if you sense a loss of traction. This can help to generate traction.
- Don't gun the engine. This will spin the tires and dig you down, not forward, and could bury you to the frame. Smooth, easy power is better than too much power.
- If your vehicle gets stuck, put solid material such as floor mats under tires to gain traction.
- If you are really stuck, it's best to stay with your vehicle since it is much easier to find than someone traveling on foot. Avoid strenuous activity during the heat of the day. Stay in the shade of your vehicle.

Exploring Mojave

Kelbaker Road

"At Kelso, we took on supplies and found that Baker lay just across another small range. There was no road or trail, but once we gained the summit, Baker could be seen in the white alkali sink below. Thirty-six miles away, just twelve merciless hours of walking; and on Armistice Day 1936 we stumbled wearily into Baker."

—Edna Calkins Price, Burro Bill and Me

Today, Kelso and Baker are connected by Kelbaker Road, a paved road that extends south of Kelso to I-40. The 57 mile drive from I-15 at Baker to I-40 east of Ludlow winds past cinder cones, lava flows, the Kelso Depot, the Kelso Dunes, and the Granite Mountains.

Cinder Cones & Lava Flows – 14 miles south-east of Baker. No signs or services.

Kelbaker Road cuts through an area of thick lava flows intermixed with more than 30 volcanic cinder cones covering an area of 25,600 acres, creating an eerie red-black moonscape. These cones and lava flows are thought to range in age from 10,000 to 7 million years.

In 1973, the area was designated as Cinder Cones National Natural Landmark because of its scenic beauty and exceptional geological value.

Aiken Mine Road (19.5 miles southeast of Baker) offers an interesting side trip through the heart of the area. High clearance and/or 4x4 vehicles recommended.

Kelso Depot – 34 miles southeast of Baker. Information Center, exhibits, restrooms, water, picnic tables. Hours listed on page 2.

Built in 1924, the Kelso Depot served as train station, restaurant, and employee housing on the Los Angeles and Salt Lake route of the Union Pacific Railroad. The building is now the park's principal information center and museum. Extensive exhibits describe desert ecosystems, places, people, and history. Historically furnished rooms provide a glimpse into Kelso's past. Rangers show a 12 minute orientation film in the theater.

Kelso Dunes – 42 miles south of Baker, then 3 miles west on a graded dirt road. The dunes are closed to vehicles, but are open to foot traffic. Trailhead, vault toilets, no water.

Kelso Dunes were created by winds carrying sand grains from the dried Soda Lake and Mojave River Sink located to the northwest. In the path of these winds are the Providence and Granite Mountains, barriers that trapped the blowing sand. The entire dune system was created over a 25,000 year time period. The dunes are nearly 700 feet high and cover a 45 square mile area. Most of the sand grains are made of light-colored quartz and feldspar, which give the dunes an overall golden appearance.

The Kelso Dunes are "booming dunes." They produce a low rumbling sound when sand grains slide down the steep slopes. Sand must have the right moisture content to "boom." Try running downhill to initiate the booming sound.

Granite Mountains – 50 miles southeast of Baker on Kelbaker Road.

An imposing jumble of granite marks the south entrance to the Preserve on Kelbaker Road. Portions of the Granite Mountains lie within the University of California's Desert Research Center; respect the fencing that marks the boundary.



Enticing to children of all ages, granite rock piles abound across Mojave National Preserve.

Zzyzx

Zzyzx/Soda Springs – 6 miles southwest of Baker on I-15, then 5 miles south on Zzyzx Road (gravel). Vault toilets, non-potable water, picnicking, nature walk.

Historically known as Soda Springs and later renamed Zzyzx (pronounced Zye-Zix), this oasis is home to the California State University Desert Studies Center. The buildings and pond were developed in the 1940s by Curtis Springer, who operated a health resort at the site. Zzyzx is open to the public—stroll around Lake Tuendae and along the shore of Soda Dry Lake. If classes are in session, be courteous and do not disturb participants.

Cima Road

Cima Dome & Joshua Tree Forest— Along Cima Road between I-15 and Cima. Teutonia Peak Trailhead, exhibits, 12 miles south of I-15 on Cima Road.

A near-perfectly symmetrical dome rises 1,500 feet above the surrounding desert. Although the top of the dome is located west of Cima Road near the Teutonia Peak Trailhead, this unusual geologic feature is best seen from a distance: try the view looking northwest from 2.5 miles east of Kelso Cima Road on Cedar Canyon Road.

Cedar Canyon & Black Canyon Roads

Rock Springs – 5.2 miles east of Black Canyon Road on Cedar Canyon Road, then 0.25 mile south on an unmarked dirt road. 4x4 vehicle recommended, or walk in from Cedar Canyon Road. Roadside exhibits.

The spring, nestled in a rocky alcove, was a well-known waterhole for early travelers. Camp Rock Springs, a military "redoubt" established in 1866 to protect travelers and the mail, was one of the most isolated and comfortless army posts in the West.

Mid Hills – 2 miles west of Black Canyon Road on the north end of Wild Horse Canyon Road. Campground, water, vault toilets, trailhead. Not recommended for RVs.

The effects of a fire which swept through here in June, 2005, are still evident. The fire burned through pinyon pine, juniper, and sagebrush.

Hole-in-the-Wall – Just north of the junction of Black Canyon and the south end of Wild Horse Canyon Roads. Information Center (hours listed on page 2), campgrounds, trailhead, restrooms, water, telephone.

Rhyolite cliffs riddled with holes and hollows are the backdrop for Hole-in-the-Wall.

Clark Mountain

No signs or services. Check detailed maps or ask a ranger for access information. 4x4 vehicles recommended.

The only section of the park north of I-15 is also its highest point at 7,929 feet. A relict white fir grove near the top is one of only three in the Mojave Desert. Rock climbing on existing routes is permitted.

Nipton, Ivanpah, & Lanfair Roads

Hotel Niption – 11 miles east of I-15 on Niption Road. Hotel and store are privately operated; call 760 856-2335 for information.

Built in 1910, this charming hotel on the park boundary reflects the railroad, ranching, and mining history of the small community at Niption.

Caruthers Canyon – 5.5 miles west of Ivanpah Road on New York Mountains Road, then 2.7 miles north on an unsigned road. Primitive camp area, hiking; no signs or services. 4x4 vehicle recommended.

Caruthers Canyon is located in the rugged New York Mountains which rise above 7,500 feet. Chaparral plants grow here in a botanical "island" left over from wetter times.

Lanfair Valley – Located south of the New York Mountains along Ivanpah and Lanfair Roads. No signs or services. Respect the rights of private property owners.

This high valley shelters an impressive Joshua tree forest and was an early ranching and homesteading center. From 1893 until 1923, the Nevada Southern Railway ran up the valley from Goffs, providing services to homesteaders and ranchers in the valley and the miners in the mountains beyond. Little evidence remains of homesteads that once dotted the valley.

Piute Springs

6.1 miles west of U.S. 95 on the unmarked Mojave Road, then 3.1 miles west on an extremely rough unmarked dirt road. Trail; no signs or services. 4x4 vehicle recommended.



Wagon ruts from the historic Mojave Road are visible near Piute Springs.

A narrow ribbon of willows, cottonwoods, and rushes thrive along a half-mile section of Piute Creek. Fort Piute, one of a string of military outposts built along the Mojave Road, was located at this water source.

The recently stabilized ruins of Fort Piute are visible. Please respect these ruins. Don't climb on the foundations; don't remove rocks or anything else from the area.

Mojave Road 4 x 4 Route



View from Beale Mountains along the Mojave Road.

"The country, as a whole, seemed a vast volcanic desert—of mountains, canyons, and mesas—and what it was ever made for, except to excite wonder and astonishment, is a mystery to the passing traveler....Water was found only at distances of ten and twenty miles apart..."

—J.F. Rusling describes his 1866 trip on the Mojave Road in Across America.

Originally a foot trail used by Mojave and other Indians to transport goods from the southwest to trade with coastal tribes such as the Chumash, this route later served the cause of westward expansion. Military forts were established along the route to protect key water sources and provide assistance for travelers. Today it is a popular four-wheel drive road.

The Mojave Road is an east-west route that enters the park near Piute Spring on the east side and on Soda Dry Lake near Zzyzx on the west. Some sections are rough and sandy; 4 x 4 recommended. Roads can become slick, muddy, and impassable after rains. Be sure to inquire about road conditions, especially if you plan to cross Soda Dry Lake.

The Mojave Road Guide by Dennis Casebier provides in-depth history and mile-by-mile descriptions of the road. It is available for purchase at park information centers.

Camping

Campgrounds

Two family campgrounds have vault toilets, trashcans, and potable water. There are no hookups, but there is a dump station at Hole-in-the-Wall. Each campsite has a picnic table and a fire ring. No reservations; \$12 per site per night, \$6 for Senior Pass and Access Pass holders. The group campground does accept reservations—see below.

HOLE-IN-THE-WALL CAMPGROUND

Located at 4,400 feet in elevation and surrounded by sculptured volcanic rock walls; there are 35 campsites for RVs and tents, and two walk-in tent sites.

MID HILLS CAMPGROUND

A fire swept through here in June, 2005, burning over much of the area. Unburned campsites are surrounded by pinyon pine and juniper trees. At 5,600 feet in elevation, Mid Hills is much cooler than the desert floor below. The access road is not paved and is not recommended for motorhomes or trailers; 26 campsites, about 1/2 in unburned areas.

BLACK CANYON EQUESTRIAN & GROUP CAMPGROUND

Located across the road from Hole-in-the-Wall Information Center, this campground has vault toilets, water, a picnic shelter with tables, fire ring, and corrals. Fee is \$25 per night; call 760-928-2572 for reservations.



above: Mojave yucca and cholla cactus grow near campsites at Hole-in-the-Wall. right: Wildfire in spring, 2005, burned pinyon and juniper at Mid Hills Campground.

Nearby Camping Areas

Providence Mountains State Recreation Area (Mitchell Caverns), 16 miles north of I-40 on Essex Road, has six campsites with tables and fire rings available on a first-come basis for \$12 per night.

Afton Canyon, 25 miles southwest of Baker on I-15, has a BLM campground with tables and fire rings for \$6 per night.

Commerical camping is available at Baker, Barstow, Needles, and Nipton, Califor-



Roadside Camping

Roadside car camping is permitted in areas that have been traditionally used for this purpose. Camping tramples vegetation; by picking sites that have already been used for camping, you help protect the desert from further damage. Not all sites can accommodate multiple vehicles; please don't enlarge sites. Do not camp along paved roads or in day-use areas, and stay at least 200 yards from all water sources.



Campfires are allowed in existing fire rings only; or bring a fire pan and pack out your ashes.

Selected Roadside Camping Areas

Near Kelbaker Road:

Rainy Day Mine Site

15.2 miles southeast of Baker on Kelbaker Road, then 0.3 miles northeast on the road to the Rainy Day Mine. 4x4 vehicle recommended; no RVs.

Granite Pass

6.1 miles north of I-40 on Kelbaker Road, just north of Granite Pass, then west on one of several access roads. Campsites are located just north of the granite spires. High clearance vehicle recommended; no RVs.

Kelso Dunes Mine

4 miles west of Kelbaker Road on Kelso Dunes Road, an unpaved road. Many campsites are available 1 mile beyond the marked trailhead near a clump of trees. Roadside camping is not allowed at the Kelso Dunes parking area or anywhere else along the Kelso Dunes Road, except at this site.

Near Cima Road:

Sunrise Rock

12 miles south of I-15 on the east side of Cima Road. Trailhead for Teutonia Peak Trail is nearby on the opposite side of Cima Road.

Near Black Canyon Road:

Black Canyon Road

5.2 miles south of Hole-in-the-Wall Information Center on the east side of Black Canyon Road, near rock piles.

Near Ivanpah and Cedar Canyon Roads:

Caruthers Canyon

5.5 miles west of Ivanpah Road on New York Mountains Road, then 1.5

Guidelines for Explorers

Private Property

Private property inholdings are found throughout the Preserve. Please respect the rights of our neighbors. It is your responsibility to receive permission before hunting, hiking, or entering private property.

Cattle and Fences

Most grazing within Mojave National Preserve occurs on public land. This land is open to you to explore, but please don't disturb cattle, fences, or water tanks. Leave gates as you find them.

Pets

Pets are welcome on trails and in campgrounds. They must be confined to a leash no longer than six feet at all times, with the exception of dogs used while hunting. Hunting dogs must be under the owner's control at all times. Do not leave pets unattended inside or outside of vehicles.

Bicycles

Bicycles are allowed on dirt and paved roads, but are not allowed on hiking trails unless they are former roads. Bicycles are not allowed in Wilderness Areas or for cross-country travel.

Collecting and Vandalism

Disturbing, defacing, or collecting plants, animals, rocks, historic or archaeological objects is prohibited. These are part of our national heritage, and should be left as you found them for all to enjoy. Metal detectors are not allowed.

Firewood & Campfires

Wood is scarce in the desert. Cutting or collecting any wood, including downed wood, is prohibited. All firewood, including kindling, must be brought in.

Campfires are allowed in fire rings in campgrounds and other established sites. To minimize your impact even more, use a firepan and pack out the ashes. Please do not leave fires smoldering or unattended.

Firearms

Target-shooting or "plinking" is not allowed within Mojave National Preserve.

Possession or use of firearms is prohibited, except during lawful hunting activities. A valid hunting license and appropriate tags are required. Do not shoot within 150 yards of any development (campgrounds, visitor centers, residences, etc.). Please remove all spent shells.

Firearms must be unloaded and cased within campgrounds and vehicles at all times.

Possession and use of fireworks or model rockets is not allowed.

Safety

Let someone know your trip route, destination, and return date, vehicle make and license plate. Cell phone coverage is sporadic.

Take a minimum of one gallon of water per person per day (two gallons if you are hiking), and drink it freely. Carry extra drinking water for emergencies.

Carry plenty of food, sunscreen, proper clothing, and a first aid kit with you at all times. Hikers should wear a hat and sturdy shoes and carry a good map, sunscreen, plenty of water, extra clothing and a flashlight for after sunset.

Familiarize yourself with the area and learn about desert travel and survival before you begin your exploration. Carry a good map and know how to use it.

Wilderness

Nearly 50% of Preserve lands have been designated by Congress as Wilderness. These special places offer the chance to escape the sights and sounds of civilization. Exploration on foot or horseback is encouraged; cars and other mechanized vehicles are not allowed. Please watch for and respect Wilderness boundary signs.

Backcountry Camping Guidelines

Including Roadside Camping, Backpacking, and Horse Camping

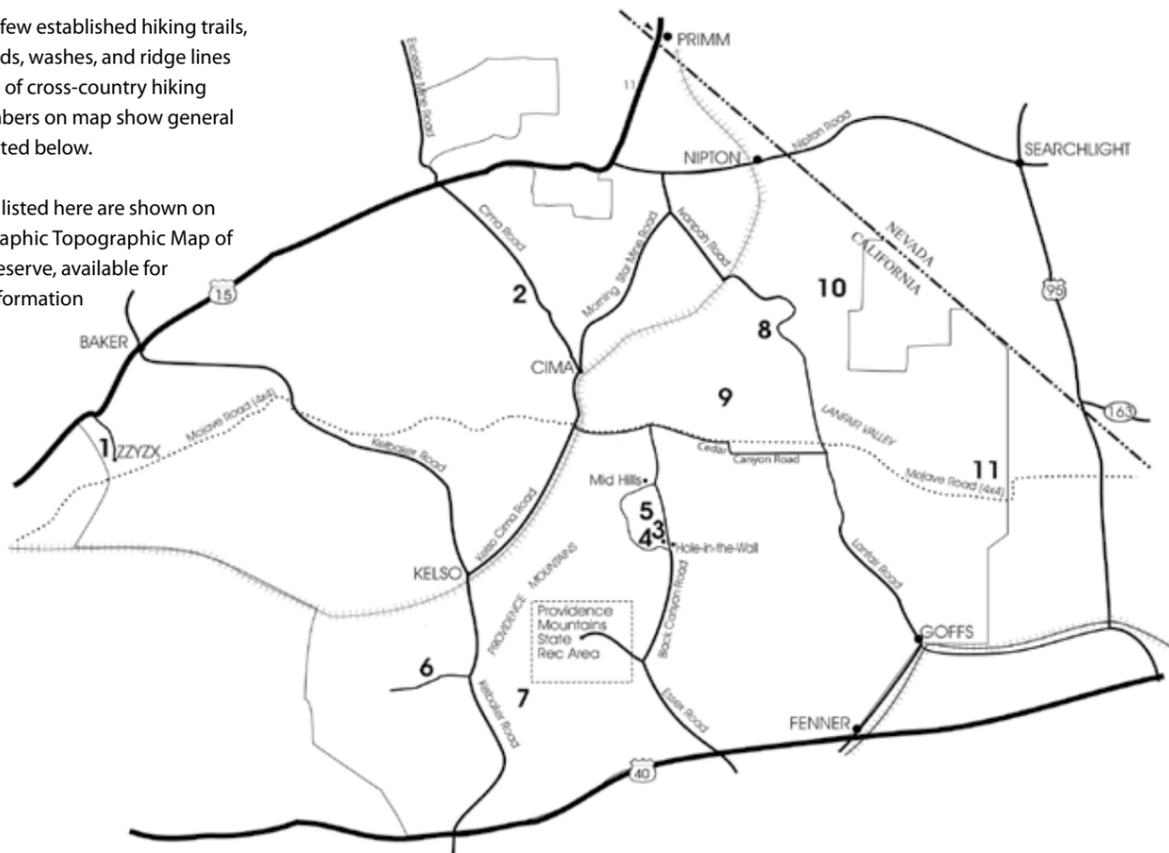


- There is no registration system, so be sure to let someone know where you are going and when you plan to return.
- Backcountry camping is limited to a 14-day stay.
- There are few trails; take a good map and become familiar with the area you are hiking through.
- In the summer, do not set up in a dry wash as flash floods can develop quickly in the desert.
- Carry plastic bags and pack out all of your trash.
- Bury human waste in "cat" holes six inches deep. Don't bury your toilet paper; put it in a plastic bag and pack it out.

Hiking

Although there are few established hiking trails, abandoned dirt roads, washes, and ridge lines offer an abundance of cross-country hiking opportunities. Numbers on map show general locations of trails listed below.

All trails and routes listed here are shown on the National Geographic Topographic Map of Mojave National Preserve, available for purchase at park information centers.



Developed Trails

1) Lake Tuendae Nature Trail – 0.25 miles round trip. Trailhead at Zzyzx parking area, 4 miles south of I-15 on Zzyzx Road.

Stroll around Lake Tuendae and learn about its importance to the natural and cultural history of the area.

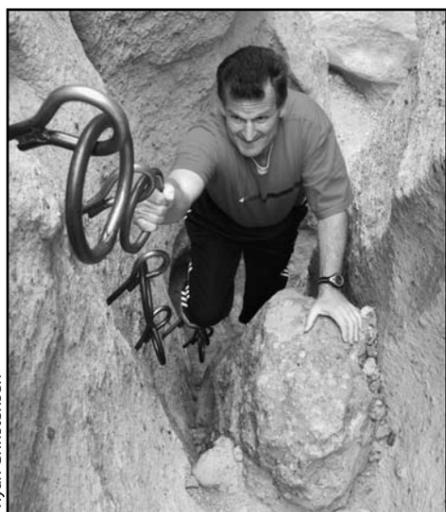
2) Teutonia Peak Trail – 4 miles round trip. Trailhead 12 miles south of I-15 or 5 miles north of Cima on Cima Road.

Explore the dense Joshua tree forest on the way to a rocky outcropping on Cima Dome.

3) Hole-in-the-Wall Nature Trail – 0.5 mile round trip. Trailheads at Hole-in-the-Wall Information Center and Campground.

Learn to identify desert plants as you walk between the campground and information center.

4) Rings Loop Trail – 1 mile round trip. Trailhead at picnic area 0.2 mile northwest of Hole-in-the-Wall Information Center. Trail connects to the Mid-Hills to Hole-in-the-Wall Trail.



Ryan Christensen

Descend through Banshee Canyon with the help of metal rings mounted in the rock, and discover the holes of Hole-in-the-Wall.

5) Mid Hills to Hole-in-the-Wall Trail – 8 miles one way. Trailheads at entrance to Mid Hills Campground and about 1 mile west of Black Canyon Road on the south end of Wild Horse Canyon Road.

Hike through a maze of washes decorated with barrel and cholla cacti, then through the Hackberry Fire burned area. Watch carefully for trail route markers. Total elevation gain is 1,200 feet.

Recommended Routes

Warning: these routes are not established trails. Check a detailed map or consult a park ranger for route information. Maps and guidebooks are available at park information centers.

6) Kelso Dunes – Hike is 3 miles roundtrip. Trailhead is 3 miles west of Kelbaker Road on the well graded but unpaved Kelso Dunes Road. Road is rough with “washboard” in places.

Early morning and late afternoon climbers will appreciate both the rose-colored glow of the dunes and cooler temperatures. The hike may take several hours as you slog through the sand, then slide down the slopes.

7) Quail Basin – Hike is 6.5 round trip. No marked trailhead. Begin hike 12.5 miles north of I-40 on Kelbaker Road, then 1 mile east of Kelbaker Road on an unmarked dirt road. Park at junction with closed dirt road heading south. 4X4 vehicle recommended.

Follow the route to the south to a road that loops around a small valley. After walking the loop, return on via the same route. The route leads past jumble rocks into a small valley of Mojave Yucca and juniper surrounded by granite outcroppings.

8) Keystone Canyon – Hike is 3 miles one way. No marked trailhead. Route begins 18 miles south of Nipton Road on Ivanpah Road, then travel 2.5 miles west on an unmarked dirt road, bearing right at two forks. Bear left at 2.5 miles, then travel a short distance downhill to a parking area. 4X4 vehicle recommended.

Hike the deteriorating closed road into Keystone Canyon up to near the top of the New York Mountains. Continue cross-country to the top of the ridge for views to the west.

9) Caruthers Canyon – Hike is 3 miles one way. No marked trailhead. Route begins at primitive campsites in Caruthers Canyon, 5.5 miles west of Ivanpah Road on New York Mountains Road, then 2.7 miles north on unsigned road. 4x4 vehicle recommended.

Hike through a rocky basin to an abandoned gold mining area. Do not enter mine shafts or climb on abandoned structures; they are unstable and extremely dangerous.

10) Castle Peaks Corridor - Hike is 4 miles one way. No marked trailhead. Isolated area; requires 15 miles of rough dirt road driving. Hike begins 4.9 miles east of Ivanpah Road on signed Hart Mine Road; left at fork, then 0.9 miles, left at fork, then 3.4 miles, crossing an earthen berm; left at fork, then 1 mile more to where road ends. 4x4 vehicle recommended.

Walk up the closed road to the ridgetop and beyond into a small canyon. Excellent views of Castle Peak spires. The hiking route is not marked.

11) Piute Creek – Hike is about 5 miles round trip. Hike begins on a hill 9.5 miles east of the junction of Lanfair Valley and Cedar Canyon Roads on a dirt utility road, then 0.5 miles north. 4x4 vehicle recommended.

Hike 6.5 miles roundtrip through colorful Piute Gorge and explore the ruins of Fort Piute, one of several military redoubts built and manned in the 1860s to protect mail and travelers on the Mojave Road. Return to your vehicle by following a now-unused trace of the Mojave Road. A perennial stream near Fort Piute, rare in the Mojave, supports riparian plants and animals. You will see stream-side plants recovering after a fire swept through in August, 2004.

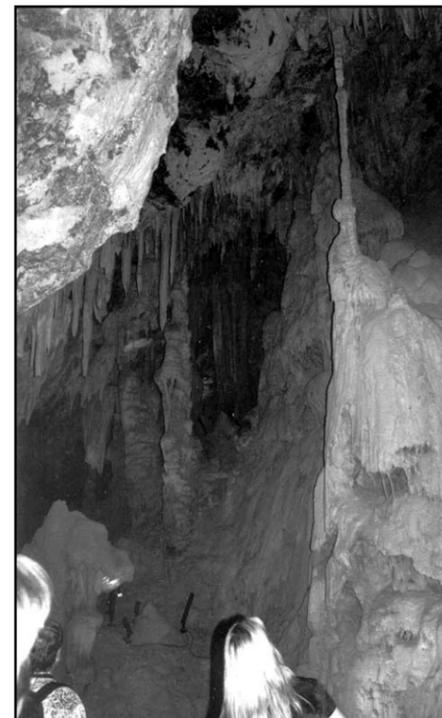
Providence Mountains State Recreation Area Trails

All trails begin near Mitchell Caverns headquarters, 6 miles west of Black Canyon Road on Essex Road.

Nina Mora Trail – 0.5 miles round trip. Path begins at east end of campground, travels over a ridge dotted with cactus and yucca, and past the grave of Nina Mora, a Mexican silver miner's daughter who died near here, and on to a viewpoint.

Crystal Spring Trail – 2 miles round trip. Steep trail passes through Crystal Canyon, a limestone and rhyolite rock gorge with castle-like formations. Cross slopes of pinyon and juniper mixed with barrel and prickly pear cactus, with excellent views of Providence Mountain Peaks nearby and the Clipper Valley below.

Mary Beal Nature Study Trail – 0.5 mile round trip. Booklet keyed to trail offers an introduction to high desert flora. The trail honors Mary Beal, an early desert botanist.



State park rangers conduct regularly scheduled tours of Mitchell Caverns.

Mitchell Caverns: A State Park within Mojave National Preserve

STALACTITES, STALAGMITES, HELICTITES, shields, and draperies are but a few of the formations inside Mitchell Caverns at Providence Mountains State Recreation Area. Located south of Hole-in-the-Wall in Mojave National Preserve, this 5,900 acre California State Park offers cave tours, camping, and hiking in the spectacular Providence Mountains.

TOURS

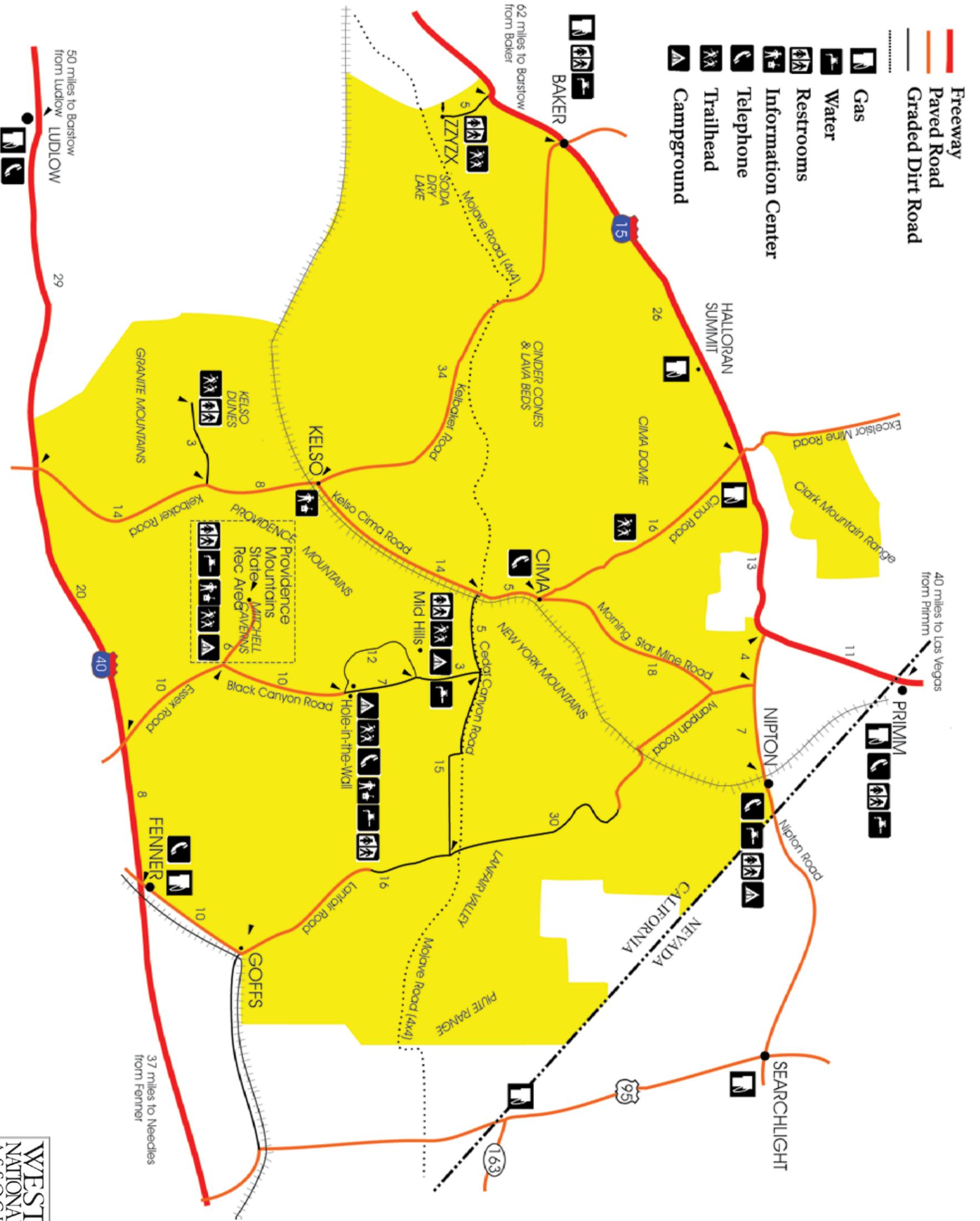
Guided tours of Mitchell Caverns require a 1½ mile walk and last about 1½ hours. Tour size is limited to 25 people. From Labor Day Weekend through Memorial Day, weekday tours start at 1:30 p.m.; weekend and holiday tours start at 10:00 a.m., 1:30 p.m., and 3:00 p.m. Summer tours, from Memorial Day through Labor Day, are offered at 1:30 p.m. daily. The cost is \$4 for adults, and \$2 for children ages 16 to six. No charge for children five and under. Reservations can be made by calling at least three weeks in advance. Groups of ten or more are by reservation only. Reservations are optional for groups smaller than ten. The temperature inside the cave is a comfortable 65°F, so dress for the outside weather. Wear sturdy shoes.

CAMPING AND HIKING

At 4,300 feet in elevation, the campground offers superb views of the surrounding desert. Six campsites with tables and fire rings are available on a first come, first served basis for \$12 per night. Water and flush toilets are provided. The Mary Beale Nature Trail, near the Visitor Center, features desert plants and animals along a moderate walk; a trail guide is available. There are two other short trails. Cross-country hikers can reach the peaks of the Providence Mountains. Groups planning to hike cross-country require a free permit from the Visitor Center.

For reservations and additional information, call 760-928-2586.

Mojave National Preserve



WESTERN NATIONAL PARKS ASSOCIATION