It’s springtime in the Mojave and the spring roundup is near. The horses are brought in from pastures. They are grazed up and freshly shod for the next six weeks of work. The trucks are readied and greased. Each vehicle and trailer has many spare tires ready to go because the ranch roads are unforgiving as the stock trailers crawl along with their heavy loads. Saddles are oiled, knives sharpened, vaccines ordered, ropes stretched, and corrals repaired as the cowboys get ready for the weeks ahead. Though times have changed the details, the work has stayed the same. Local rancher and cowboy poet Rob Blair wrote a poem, at left, that describes those things that haven’t changed for him.

In 1994, when Congress passed the California Desert Protection Act, which created Mojave National Preserve, they recognized ranching as part of the cultural heritage that made the desert a unique and special place. Though most ranchers have left the Mojave, a hearty few remain to continue the tradition.

Today many of the ranching features you see in Mojave National Preserve are historical assets no longer in use, but are preserved as part of a bygone era. Mojave National Preserve is in the process of creating the largest Historical Ranching District recorded in the National Register of Historic Places. This designation would promote the preservation of some of the ranching relics for the pure enjoyment of providing a means of reliving those wild and wooly days, if only in our imaginations.

Ranching and mining were pervasive in the area during the late 1800s. Basically unregulated—whoever owned the water owned the grazing around it. The Rock Springs Land & Cattle Company (often called the 88 for its brand) controlled most of the range between Las Vegas, Needles, and Barstow for a time. Occasionally, small homesteaders tried to carve out pieces of range for themselves and were systematically discouraged. Ranchers, like homesteaders, were here to settle the west, and it was from these grassroots of westward cattle migration that the issues of grazing and the environment slowly began to take shape.

A greater demand on the public range outside of forests brought about a key piece of legislation, known as the Taylor Grazing Act of 1934. The act allowed public land management agencies to administer grazing districts on unreserved public land and on state and privately owned lands under cooperative agreements. Many laws followed that applied range conservation principles and established a regulated public lands grazing industry. Over time the 88 was broken up into many smaller ranches, such as the OK, Kessler Springs, and Valley View, the remnants of which can be seen in the Preserve today.

The desert’s extreme environment determines much of what happens on a present-day ranch. The searing heat of summer makes the provision of water to the far reaches of the range the priority for the rancher. Windmills pump water from scattered wells and deliver it through numerous miles of pipeline to thirsty cattle. Every day the water supplies have to be checked, because a leak could mean disaster if precious stored water gushes out onto the ground. Summer rains are celebrated because without them, nothing grows in those hot, dry months. As temperatures cool, the ranch readies itself for the fall gather. In the fall, the older calves are brought in to headquarters and weaned away from their mothers. This allows the cow to build up her strength for the cold winter months and to ready herself for her next calf. The winter months bring short days and freezing temperatures. It is the time to maintain the ranch’s extensive fleet of vehicles and equipment, repair corrals, and keep tabs on the herd.

When the worst of the cold fades and before the hot temperatures of summer, spring roundup begins. In the heart of every rancher lives the cowboy, and every cowboy lives for spring roundup. There is nothing like saddling up in the morning with the cool bite of morning frost, the smell of horses and leather, the soft murmur of the cowboys as they speak low to their horses, the jingling of spurs and the occasional snort from a horse. The anticipation of the day is like a tangible thing: sharp, vivid, and unspoken. The boss gives the order to load up or mount up, and the day begins. As the crew fans out in search of cattle, they stay alert and within long sight of each other. They know that if they are seen before they see, the cattle will be running hard to get away from the mounted threat and then it will be all-hands—come-a-runnin’ to help stop the stampede. Most cattle, even stampeding cattle, will give up the chase after they’re exhausted. But then there is always the exception...it is what the cowboys call a maverick; the one that got away. Over many campfires cowboy poems have glorified and vilified this creature.

Continued on page 3...
Welcome to Mojave

As you are about to discover, the Preserve encompasses a vast area including parts of three desert ecosystems: the Great Basin, Sonoran, and Mojave. Mojave National Preserve is unique in that it offers landscapes unlike any you might see elsewhere, including one of North America’s largest expanses of sand dunes and the most extensive Joshua tree forests in the world. Among these you will find opportunities for quiet canyon hikes, backcountry road trips, and visits to old mines, military outposts, and cattle ranches. Stay at one of the campgrounds or pick from hundreds of backcountry campsites, and you will experience a night sky that has made Mojave a destination for astronomers.

With mild temperatures and longer days, spring is a great time to visit the Mojave. Desert dwellers monitor winter rains carefully, hoping that enough precipitation falls at the right time to produce a good spring bloom. The season generally begins in March at the lower elevations, with the flower season continuing up to higher elevations through May.

Many adventures await you at Mojave National Preserve. I encourage you to enhance your experience by taking short walks in various habitats. Suggested hikes are listed on page 5. If you prefer to stay in your car, a scenic drive throughout the park can also afford memorable vistas and precious solitude. For trip-planning advice, talk to a ranger, visit online, or call one of the telephone numbers listed on page 2 of this guide.

Larry Whalon
Acting Superintendent

Managing the Desert’s Most Valuable Resource

Mojave National Preserve is in the process of developing a Water Resources Management Plan (WRMP) to identify and assess potential impacts of management approaches to water resources. The Preserve’s General Management Plan identifies the need to develop an adaptive, comprehensive ecosystem-scale WRMP for springs, seeps, water diversions, and artificial water sources to maintain healthy wildlife communities and groundwater flow conditions at safe yields; this planning effort seeks to fulfill that objective. Desired future condition goals will be developed through a public process involving hunting groups, environmental organizations, park visitors, and state and federal agencies in keeping with existing laws, regulations, and NPS management policies. Visit www.nps.gov for news on how you can participate.

Essential Information

Dates and Hours of Operation
The Preserve is always open. Information centers maintain regular hours of operation.

Fees and Reservations
There are no entrance fees. See page 7 for information about campground reservations and fees.

Information Centers
Three information centers provide orientation, information, and trip-planning advice. Park rangers are on duty. Western National Parks Association (WNPA) bookstores offer books, maps, and more.

Kelso Depot Visitor Center
Located 34 miles south of Baker, Calif., on Kelbaker Road. Open daily, 9 a.m. – 5 p.m.

Hole-in-the-Wall Information Center
Located 20 miles north of I-15 on Kelbaker Road. Open daily, 9 a.m. – 5 p.m.

Keyser Depot Visitor Center
Located 2701 Barstow Road, Barstow, Calif. Open Monday through Friday, 8 a.m. – 4:30 p.m. Closed on federal holidays.

Food: The Beanyery at Kelso
The lunchroom concession offers hot and cold beverages, hot dogs, chili, salads, sandwiches, snacks, and desserts. Located at Kelso Depot Visitor Center. Open daily from 9 a.m. – 5:00 p.m.

Water
Drinking water is available only at Kelso Depot Visitor Center. Hole-in-the-Wall Visitor Center, and the following campgrounds: Hole-in-the-Wall, Black Canyon, and Mil Hill.

Gasoline
There are no gasoline stations within Mojave National Preserve. Gasoline can be purchased along I-15 at Needles, Fenner, Ludow, and Barstow, Calif., and along I-15 at Baker, the Cima Road exit, and Primm, Nev., and along U.S. 95 at Searchlight, and the 163 junction at Palm Gardens, Nev.

Lodging
There are no motels in Mojave National Preserve. Lodging is available in Barstow, Baker, Nipton, Ludow, and Needles, Calif., and in Primm, Cal Nevi, and Searchlight, Nev.

Bicycles
Bicycles are allowed in parking areas, on paved roads, and on existing open dirt roads. Bicycles are not allowed in wilderness areas, on hiking trails, or for cross-country travel.

Pets
Pets are welcome in Mojave National Preserve, though they are not allowed inside information centers. They must be leashed and never left unattended. Dogs used during hunting activities must be under the owner’s control at all times. Please collect and dispose of pet waste in garbage receptacles.

Collecting and Vandalism
Disturbing, defacing, or collecting plants, animals, rocks, historic or archeological objects is prohibited. Leave these resources as you find them for everyone to enjoy. Metal detectors are not allowed.

Permits
Permits are required for all organized events, group events (more than 15 individuals or seven vehicles), and commercial activities, such as filming. Fees apply. Proof of insurance and posting of a bond may also be required. Call 760-252-6107 or visit www.nps.gov/moja for more information.

Hunting
Hunting is permitted in accordance with state regulations. All hunting activities require a license; requirements for additional permits and tags may apply. Visit the California Department of Fish & Game website at http://www.dfg.ca.gov for more information.

Target shooting or “plinking” is prohibited. Firearms use and travel within the Preserve must be in accordance with state and federal law. No shooting is permitted within a 1/2-mile of developed areas, including campgrounds, information centers, Kelso Dunes, Fort Piute, Sweeney Granite Mountains Desert Research Center, and Desert Studies Center at Zzyzx.

Groundbreaking News

The National Park Service has contracted with the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS) to map the soils of Mojave National Preserve. Soil mapping is just one part of twelve natural resource inventories currently being conducted as part of the National Park Service Inventory and Monitoring program. Other inventories already completed include plants, mammals, reptiles, and birds.

The goal of the Inventory and Monitoring program is to document status and trends in biodiversity and other natural resources. This information is essential to fulfilling the mission of the National Park Service of maintaining park lands unimpaired for future generations.

This is the first year of a multi-year project. Each year, scientists will survey a different section of the Preserve. The first survey will cover Lanfair Valley, parts of the New York Mountains, and the Castle Peak Area. About fourteen of the ninety-nine sample sites fall on private in-holdings in the Lanfair Valley. Scientists will contact private property owners to request permission before entering or sampling soils on private in-holdings.

Sample crews dig holes of various sizes. Most are small samples taken with shovels. A few larger samples examined soil profiles will be taken using soil augers, and a small, truck-mounted backhoe. The crews will ensure that holes are filled and the sites are restored to a natural appearance.

New Firearms Law
As of February 22, 2010, people who can legally possess firearms under federal, state of California, and local laws are allowed to possess firearms in Mojave National Preserve. It is the visitor’s responsibility to understand and comply with all applicable state, local, and federal firearms laws.

Federal law prohibits firearms in certain facilities in this park; signs are posted at public entrances at those locations. If you have any questions, please contact Chief Ranger Mark Peapenburg at 760-252-6130.

Private Property
Private in-holdings are found throughout this park. Please respect the rights of our neighbors. It is your responsibility to obtain permission before entering private property, including to hunt or hike.

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.

Firewood and 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 and other established sites. To minimize your impact, use a firepan and pack out the ashes. Please do not leave fires smoldering or unattended.

Shovel, soil auger, and a track-mounted backhoe will be used to obtain soil samples.

Mojave National Preserve
Established in 1994, Mojave National Preserve encompasses 1.6 million acres ranging in elevation from 800’ near Baker to 7,937’ at Clark Mountain. Although most of the park lies in the Mojave Desert, the southeastern section goes into the Sonoran Desert, and elements of the Great Basin Desert are found at higher elevations east of the Granite, Providence, and New York mountains.

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Acting Superintendent

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The Legend Lives on in the Mojave

Continued from page 1

The Mojave has bred its own cowboy folk heroes. Men like Dick Taylor, Joe Kennedy, and Matt Burch all have many lies and legends told and retold about their schemes, talents, and grit. “Dodger,” a poem inspired by one of these cowboys, is about an old, old man who was known to Rob Blair as a young boy growing up in the Mojave.

A cowboy values his horse as he does his cattle. Seeing the cattle out on the range visitors often ask, “What do they eat?” The local ranchers would walk you out into the brush and point to every third plant and explain what time of year or under which conditions a cow would browse on that plant. Perhaps the springtime when the new growth makes it tender, or after a frost when the bitter sap is driven down into the roots, or in the fall when the seed pods are ripe. The high desert is a plethora of edible forage if there is rain. Based on average rainfall and range conditions, the ratio of acres per cow in the high deserts of California is 1:1,000, or one cow per 1,000 acres. Because annual grasses are short-lived in the desert, the ratio is based on the perennial forage. But when there is rain and the grass seed germinates, the desert erupts into a sea of fine grasses and flowers that cover the desert floor. Then life is good for the range cattle and all living things in the desert.

All too often, the skies stay clear and the plants wait for moisture that doesn’t come. The brush turns brittle and the seeds stay fallow, the cattle grow thin and ranchers guard their herd from getting weak. Whether it is supplementing with protein, bringing the herd in and feeding them at headquarters, or sending them to pasture elsewhere in the state, work is nonstop until it rains again. Life becomes a battle of survival and faith. It is during these times that desert ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination. There are still cowboys here on this desert land, just as there were 150 years ago, not because ranchers become known for their tenacity and determination.
Mojave National Preserve is vast. At 1.6 million acres, it is the third-largest unit of the National Park System in the contiguous United States. Some of Mojave’s wild and historic splendor can be seen from the primary roads of the Preserve (see map on page 8), while even more awaits those who travel its trails and unmaintained roads.

Black Canyon Road
Black Canyon Road (unpaved north of Hole-in-the-Wall) connects Cedar Canyon Road with Essex Road, 20 miles to the south.

Mid Hills
Campground, trailhead, pit toilets, water. Not recommended for RVs.
About 2 miles west of Black Canyon Road at the north end of Black Horse Canyon Road. Mid Hills supports pinyon-juniper woodland habitat. The effects of a fire that swept through the area in June 2005 are evident, although several campgrounds in the popular canyons still contain shadily stands of pinyon and juniper.

Hole-in-the-Wall
Information center, bookstores, campgrounds, picnic area, trailhead, restroom, water, telephone, amphitheater.
Just north of the junction of Black Canyon and the south end of Wild Horse Canyon roads, rhyolitic cliffs riddled with holes and hollows are the backdrop for Hole-in-the-Wall.

Cedar Canyon Road
Mostly unpaved, the 20-mile Cedar Canyon Road connects Kelso-Cima Road in the west with Ivanpah Road in the east, paralleling (and sometimes joining) the historic Mojave Road.

Rock Spring
Wayside exhibits, self-guiding trail, pit toilet, picnic area, no drinking water.
A well-known waterhole for early travelers, Rock Spring is located 5.2 miles east of Black Canyon Road on Cedar Canyon Road, then 1.5 miles south on a sandy road marked with a small hiking sign. Camp Rock Spring, a military outpost established in 1866, was one of the most isolated and formidable army posts in the West.

Sand & Mud Driving Tips
• Be sure to carry plenty of drinking water and emergency supplies.
• Engage four-wheel drive before entering deep sand or mud.
• Don’t gun the engine—this will spin the tires, dig a hole, and could capsize your vehicle to the frame. Smooth, easy power is better than too much power, use low gearing and just enough throttle to maintain forward movement.
• If you detect a loss of traction, turn the steering wheel rapidly from side-to-side—this might help to generate traction.
• If your vehicle gets stuck, place solid materials (such as floor mats) under the tires to provide traction.
• If you’re really stuck, its best to stay with your vehicle. A stationary, stranded vehicle is much easier to locate than a person traveling on foot. Avoid strenuous activity during the heat of the day, stay in the shade of your vehicle.

Cima Road
About 26 miles east of Baker, Calif., the paved section of Cima Road connects I-15 with Cima, Calif., 16 miles to the southeast.

Cima Dome & Joshua Tree Forest
Self-guiding trail, wayside exhibits, no water.
The near-perfect symmetry of Cima Dome rises 1,500 feet above the surrounding desert and provides ideal habitat for the world’s largest concentration of Joshua trees. 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 viewing lookout northwest from Cedar Canyon Road, 2.5 miles east of Kelso Cima Road.

Clark Mountain
No signs or services.
The only portion of Mojave National Preserve north of I-15, Clark Mountain is also its highest point at 7,929 feet. A relic white fir grove sometimes joins the historic Mojave road.

Ivanpah & Lanfair Roads
Eleven miles south of Pinn, Nev., Nipton Road begins at I-15 and passes through Nipton, Calif., 11 miles east. Ivanpah Road (only the north–eastmost paved miles) heads southeast of Nipton Road, through the Ivanpah and Lanfair Valleys, eventually connecting with the paved Lanfair Road and the Fennerv Valley. Together stretching 46 miles, Ivanpah and Lanfair Roads connect the northern Preserve boundary (bordering Nipton Road) with the southern near Goffs, Calif.

Caruthers Canyon
Primitive camping, hiking, no signs or services.
About 5.5 miles west of Ivanpah Road on New York Mountains, then 2 miles north on an unsigned road, Caruthers Canyon is located in the rugged New York Mountains. Surrounded by mountains rising over 7,500 feet, a botanically “island” of chapparal plants remains from wetter times of the past. High clearance and four-wheel drive recommended.

Lanfair Valley
No signs or services.
South of the New York Mountains along Ivanpah and Lanfair roads, this high-valley shelter an impressive Joshua tree forest and was an early ranching and homesteading center. From 1885 until 1923, the Nevada Southern Railway ran up the valley from Goffs, providing services to homesteaders and ranchers in the valley and to miners in the mountains beyond. While little evidence remains of homesteads that once dotted the valley, tracts of private property still exist. Please respect the rights of landowners.

Kelbaker Road
A 56-mile paved road stretching from I-15 at Baker, Calif., to I-10 to the south of Luddlow, Calif. In the south, Kelbaker Road winds past cinder cones, lava flows, Kelso Depot, Kelso Dunes, and the Granite Mountains.

Cinder Cones & Lava Flows
No signs or services.
About 14 miles southeast of Baker, Kelbaker Road traverses a 25,600-acre area of lava flows and volcanic cinder cones thought to range in age from 10,000 to 7 million years old. In 1973, the area was designated as Cinder Cone National Natural Landmark due to its scenic beauty and exceptional geological value. Aiken Mine Road (19 miles southeast of Baker, Calif.) offers an interesting side trip through the heart of the area and access to a lava tube. High clearance and four-wheel drive recommended.

Kelso Depot Visitor Center
Information, three floors of exhibits, orientation film, art gallery, bookstore, lunch counter, restrooms, water, picnic area, wayside exhibits.
Located 34 miles southeast of Baker, Kelso Depot began operation in 1924 and served as train station, restaurant and employee housing on the Los Angeles and Salt Lake route of the Union Pacific Railroad. Now Mojave National Preserve's principal information center and museum, extensive exhibits describe the cultural and natural history of the Preserve. Historically furnished rooms offer a glimpse into Kelso's past.

Kelso Dunes
Self-guiding trail, vault toilets, wayside exhibits, no water.
About 41 miles southeast of Baker (7 miles south of Kelso Depot), then 3 miles west on a graded dirt road, Kelso Dunes were created by winds carrying sand grains from the dried Soda Lake and Mojave River Sink located to the northwest. The Providence and Granite Mountains served as barriers that trapped the blowing sand. Created over the course of 25,000 years, the dunes are nearly 700 feet high and cover a 45-square-mile area. The Kelso Dunes produce a "booming" or "singing" sound when sand with the right moisture content slides down the steep slopes. Try it for yourself—run down a dune slope (but don't trample vegetation!) to initiate the sound.

Granite Mountains
No signs or services.
An imposing jumble of granite marks the south entrance to the Preserve, 50 miles southeast of Baker on Kelbaker Road. Portions of the Granite Mountains lie within the University of California Desert Research Center; please respect the signs that mark the boundary. High clearance and four-wheel drive recommended.

Check Road Conditions
Road conditions vary widely. Dirt roads might be rough, sandy, or muddy, rendering impassable and the unpaved motorist could be trapped many miles from help. Watch for cattle, burros, and other wildlife on roadways.

Dirt Road Driving
Prepare Your Vehicle
Ensure that your vehicle is in good condition: check tires, oil, and gas gauge.
For emergencies, carry tools, tire jack, tow rope, extra water, and fluids for your vehicle.

Know the Rules of the Road
All vehicles operating within Mojave National Preserve must be street-legal in accordance with California DMV requirements, including current registration and tags, lights and turn signals, and valid insurance. California “Green Sticker” and “Red Sticker” programs are not recognized within the Preserve.

Check off-pavement travel is allowed on existing open dirt roads. Do not travel cross-country or create new routes. This rule is strictly enforced; violators will receive citations. Driving in washes is not permitted. Watch for and respect Wilderness Boundary signs; motorized vehicles and bicycles are not allowed in designated Wilderness Areas.

Piute Spring
About 7.4 miles west of U.S. 95 on the unpaved road near Zzyzx Road, then 3.1 miles west on a extremely rough unmapped dirt road. High clearance and four-wheel drive recommended.

Fort Piute and Piute Spring
Trail, wayside exhibits, no signs or services.
Willows, cottonwoods, and rushes thrive along a half-mile stretch of Piute Creek. Fort Piute (still visible) was one in a string of military outposts built along the Mojave Road. Please don’t climb on the foundations or remove anything.

Zzyzx Road
Six miles southwest of Baker on I-15, Zzyzx Road leads 6 miles south into the Preserve along the western shore of Soda Dry Lake.

Zzyzx/Soda Springs
Self-guiding trail, wayside exhibits, vault toilets, non-potable water, picnic area.
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. Please do not disturb participants when classes are in session.

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Check Road Conditions
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No all roads are shown on all maps, trails and legal shortcuts add to the confusion. Carry a good map, and ask a park ranger for current road conditions.

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Hiking

Hikers at Mojave National Preserve can enjoy a variety of challenges, with sweeping views, solitude and over 800,000 acres of designated wilderness.

Although there are few established hiking trails in Mojave National Preserve, abandoned dirt roads, washes, and ridge lines offer an abundance of cross-country hiking opportunities.

All trails and routes listed below are shown on the National Geographic Trails Illustrated topographic map for Mojave National Preserve. This and other maps are available for purchase at all information centers (see page 2 for locations and other information).

<table>
<thead>
<tr>
<th>Trailhead Location</th>
<th>Description</th>
<th>Time</th>
<th>Total Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Tuendae Nature Trail</td>
<td>Enjoy an easy, self-guided stroll around Lake Tuendae. Wayside exhibits reveal the rich cultural and natural history of this area.</td>
<td>15 minutes</td>
<td>0.25 miles (0.4 km)</td>
</tr>
<tr>
<td>Hole-in-the-Wall Nature Trail</td>
<td>Learn to identify desert plants on this 0.5 mile round-trip hike. Brochure available at trailhead.</td>
<td>20 minutes</td>
<td>0.5 miles (0.8 km)</td>
</tr>
<tr>
<td>Kelso Dunes</td>
<td>Hikers at sunrise and sunset are treated to both cooler temperatures and the rose-colored glow of the dunes.</td>
<td>3 hours</td>
<td>3 miles (4.8 km)</td>
</tr>
<tr>
<td>Piute Creek</td>
<td>Explore the runs of Fort Piute, built in the 1860s and the perennial spring that runs nearby.</td>
<td>4 hours</td>
<td>6.5 miles (10.4 km)</td>
</tr>
<tr>
<td>Plutus Peak Trail</td>
<td>Quail Basin</td>
<td>4 hours</td>
<td>6.5 miles (10.4 km)</td>
</tr>
<tr>
<td>Teutonia Peak Trail</td>
<td>Explore the world’s densest Joshua tree forest en route to a rocky peak with expansive views of Cima Dome and beyond.</td>
<td>2 hours</td>
<td>3 miles (4.8 km)</td>
</tr>
<tr>
<td>Rings Loop Trail</td>
<td>Discover how Hole-in-the-Wall got its name and ascend narrow Banshee Canyon with the help of metal rings mounted in the rock.</td>
<td>45 minutes</td>
<td>1 mile (1.6 km)</td>
</tr>
<tr>
<td>Mid Hills to Hole-in-the-Wall</td>
<td>Hike through a maze of washes with barrel and cholla cacti, and evidence of the 2005 Hackberry Fire. Watch for trail route markers.</td>
<td>4.5 hours</td>
<td>8 miles one-way (12.8 km)</td>
</tr>
<tr>
<td>Castle Peaks Corridor</td>
<td>Walk up the closed road to the ridgetop. Continue into a small canyon for excellent views of the Castle Peak spires.</td>
<td>5 hours</td>
<td>8 miles (12.8 km)</td>
</tr>
<tr>
<td>Caruthers Canyon</td>
<td>Hike to an old gold-mining area. Do not enter mine shafts or climb on structures; they are unstable and extremely dangerous.</td>
<td>4 hours</td>
<td>6 miles (9.6 km)</td>
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<td>Mitchell Caverns: A State Park Within a National Preserve</td>
<td>Although located within the boundaries of the 1.6-million acre Mojave National Preserve, Providence Mountains Recreation Area is operated and maintained by the California State Park System. Mojave National Preserve is open to the public, but the recreation area is CLOSED for repairs and renovations. This includes the caverns and all trails, campsites, and related facilities. They are scheduled to reopen in October of 2011.</td>
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Phenology and the Mojave Desert

HAVE YOU EVER FOUND YOURSELF THINKING ABOUT THE BIRDS AND THE BEES? THE reproduc-tion and life cycle of plants has fascinated United States Geological Survey Scientist Kathryn Thomas for many years. Thomas, an ecologist with the USGS, has become increasingly interested in phenology, the timing of life history events in plants and animals. In plants, it’s when flowers germinate, pollinators arrive, and fruit appears. For the herbivores that eat these plants, it’s the time of year to put on some pounds.

“The people have been paying attention to phenology since the cave man,” says Thomas, who points out that scientists, naturalists and even farmers have recorded this type of data for centuries. But like so many natural phenomena, a seemingly simple question like “What time of year do plants flower and produce fruit?” has a complex answer. For example, many plants in the Mojave Desert flower in response to temperature and precipitation, and some plants depend on insect pollinators for successful reproduction. Thomas and other scientists are wondering, “How will climate change affect the phenology of plants in the Mojave Desert?”

“We need to have lots of people looking at phenology—not just scientists, farmers and professional naturalists—in order to understand how our world is changing.”

Many scientists believe that climate change has the potential to significantly disrupt ancient natural relationships like the one between flowering plant and pollinator. The changes in temperature and precipitation associated with climate change could cause plants to bloom earlier or later and miss the adult phase of a crucial bee or the pollinator. Such an ecological mismatch would result in failed reproduction—no fruit or seeds—for the plant.

A change in the phenology of plants due to climate change will affect many animal species. Along the Colorado River corridor, changes to the timing of mesquite flowering might impact migrating birds, who fatten up on juicy insects that the flowering mesquite sustains. “If the birds arrive and the insects aren’t there, you have a mismatch in the food web,” says Thomas. Here in the Mojave, a change in the life cycle of plants could affect the desert tortoise, a threatened herbivore that dines each spring on annual wildflowers. No single tortoise, a threatened herbivore that dines each spring on annual wildflowers. No single

Tips for a night under the sky:

1. Check the weather before heading out. Clear, calm weather when atmospheric moisture is low offers the best visibility. (Current weather conditions can be found on the park website at www.nps.gov/mojave.
2. Dress appropriately. Spring and fall months can bring cold temperatures to the desert. Conditions are usually quite dry. Be sure to bring and drink plenty of water.
3. Find a spot away from the glow of urban areas, traffic, and other artificial light sources.
4. Turn off all artificial light sources such as flashlights, car headlights, etc. Allow your eyes to adjust to the dark conditions. This usually takes about 20 minutes.
5. Consult a star chart to find out what will be in the night sky during your visit. One of the most exciting aspects of night sky viewing is that it is constantly changing. Witnessing a meteor shower or a passing comet can be a memorable experience.

The Night Sky — An Endangered Resource

Mojave National Preserve is well-known for its Joshua tree forest, singing sand dunes, and bighorn sheep. But Mojave has a lesser-known treasure as well: the opportunity to enjoy an incredible night sky. Nestled between Los Angeles and Las Vegas, the Preserve is easily accessible to millions, but difficult to retain some of the most spectacular night skies in the country. In urban areas, where artificial light sources are more numerous, light pollution diminishes the ability to view the cosmos. As light pollution becomes more prevalent, it becomes increasingly important to protect and treasure dark sky refuges such as Mojave National Preserve.

Visitors can travel a short distance from cities and see endless night sky against a backdrop of creosote and cholla cactus. An abundance of clear, dry weather combined with a location remote enough from bright city lights creates excellent conditions to enjoy the vast cosmos. One method of rating the quality of night sky is the 2.5M (zenith limiting magnitude), which measures the number of distant stars visible with the naked eye. Pristine skies generally rate 6.5 and above on a scale of 0 to 7+. Amazingly, Mojave received a rating of 6.9 according to a National Park Service night sky quality monitoring report in 2004. To learn more visit www.nature.nps.gov/air/lightscapes.

The International Dark Sky Association has listed the Preserve as a favorite member-recommended site. The Mojave National Preserve Conservancy and the Old Town Astronomers Club hold annual events inviting the public to view the celestial world through large telescopes, while learning about planets, nebulae, and distant galaxies from astronomers. These stargazing events are held in fall and spring. The next star party is April 23, 2011. Details can be found at the Conservancy’s website www.preservephenome.org.

Even without massive telescopes, opportunities abound for those who are interested. Stargazing is excellent throughout much of the Preserve, but some of the best viewing can be experienced at locations such as Hole-in-the-Wall and Mid Hills campgrounds. For the adventurous, Mojave National Preserve also offers several dispersed campsites ideal for secluded night sky viewing opportunities.

Astronomers and hobbyists alike consider Mojave National Preserve a premier night sky viewing location.

Many celestial bodies, including stars and constellations, planets, comets, meteors and even the Milky Way are easily viewed with the naked eye. Views improve with binoculars, and if you do happen to have a telescope, spring is a great time to bring it. The coming months bring exciting opportunities to view a variety of celestial events. Saturn will be at its most visible on April 3, and the soft glowing band of the Milky Way can be seen throughout the summer months. Notable meteor showers include the Lyrids Shower, peaking on April 21 and 22, and the spectacular Perseids on August 12 and 13. These are excellent opportunities to enjoy “shooting stars” with your family.

Rana Knighten
Park Ranger

One such program is collaboration between the National Phenology Network (NPN) and the National Park Service. The NPN has a website http://www.usanpn.org/ that allows citizen scientists to submit data about the phenology of certain plants. The National Park Service believes that this information can be used to understand how climate change is altering the life cycle of certain plants on the landscape level.

“When selecting these species, we are looking for plants that are widespread, can be easily identified, and if they have some sort of economic or social importance. We want to include species that more than one person will monitor,” says Thomas. One of the target species for the California Desert is Larrea tridentata, the creosote bush. Creosote bush is a widespread shrub at lower elevations in the Mojave, is important shelter to a variety of animals, has distinctive leaves and smell, and is an allergen.

The National Park Service plans to increase the number of desert plant species on which it will collect data through the NPN website, train volunteers to identify the different phenophases (leaves, flowers, fruit) of these plants, and collect data. Monitoring phenology will help scientists better understand the effects of climate change on the Mojave Desert. For scientist Kathryn Thomas, using citizen science to gather data in the national parks will help answer key questions related to the timing of natural life cycles.

Seth Sitzer is California desert field representative for the National Parks Conservation Association in Joshua Tree, California.
Backcountry travel and camping—backpacking, dispersed camping, and horsepacking—require careful planning in order to ensure a safe and rewarding experience. Visitors should adhere to National Park Service regulations and are further encouraged to follow Leave No Trace guidelines to minimize their impact on the fragile desert environment. Additional regulations apply for roadside camping (see below) and horsepacking (talk with a park ranger or visit us online for more information: www.nps.gov/mojave).

Leave No Trace principles are rooted in scientific studies and common sense. The message is framed under seven Leave No Trace guidelines to minimize their impact on the fragile desert and are further encouraged to follow Leave No Trace Center for Outdoor Ethics. For more information or to make a reservation call: 951-789-2572 or 760-252-6104.

Backcountry Guidelines & Regulations

1. Plan Ahead and Prepare
   - There is no permit or registration system for backcountry camping at Mojave National Preserve; be sure to notify others of your travel itinerary.
   - Few established trails exist; carry a good map and familiarize yourself with desert travel and survival skills before beginning your trip.

2. Travel and Camp on Durable Surfaces
   - Reuse existing campsites (required for dispersed camping)—see below.
   - Do not make camp in a dry wash—flash floods develop quickly in the desert.
   - Camp is limited to a maximum of 14 consecutive days per visit/day and 30 total days per year.
   - Campsites must be more than 200 yards from any water source.
   - Camp is not permitted: within 1/4-mile of any paved road, within 1/2-mile of Fort Irwin or Kelso Depot, within 1 mile north of the Kelso Dunes (i.e., the crest of the dunes) or 1/4-mile south of the Kelso Dunes access road.

3. Dispose of Waste Properly
   - Store all food and garbage in a manner that will prevent access by wildlife. Carry plastic bags and pack out all trash.
   - Pack out all toilet paper and hygiene products.
   - Pet excrement must be collected and disposed of in garbage receptacles.

4. Leave What You Find
   - Disturbing, defacing, or collecting plants, animals, rocks, and historic or archeological objects is prohibited. As part of our national heritage, these resources should be left as they are found for all to enjoy. Metal detectors are not allowed.

5. Minimize Campfire Impacts
   - Campfires are allowed in established fire rings only, or with use of a portable firepan (be sure to pack out ashes). Do not leave fires smoldering or unattended.
   - Cutting or collecting any wood, including downed wood, is prohibited. All firewood must be brought into the Preserve.

6. Respect Wildlife

7. Be Considerate of Other Visitors

Friends and family enjoy the spectacular setting of Hole-in-the-Wall campground.

Roadside Camping (refers to designated sites near paved, graded, and two-track roads)

Roadside camping is permitted in areas that have been traditionally used for this purpose. By reusing existing sites, you help protect the desert from further damage. Sites with existing fire rings should be considered disturbed and suitable for roadside camping. Do not camp along paved roads or in day-use areas, and stay at least 200 yards from all water sources. The National Park Service encourages roadside campers to use the following selected sites:

Near Kelbaker Road:
- Rainy Day Mine Site
  - 15.2 miles southeast of Baker on Kelbaker Road, then 0.3 miles northeast on the unsigned and very sandy road to the Rainy Day Mine. Four-wheel drive 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 the unpaved Kelso Dunes Road. One campsite is located south of the road, 1/4-mile past the marked trailhead. Several others are available 1/4-mile beyond, near a dump of trees. Except at these sites, roadside camping is prohibited along Kelso Dunes Road (including at the trailhead).

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 west side of Cima Road.

Near Black Canyon Road (East)
- Black Canyon Road (East)
  - 4 miles south of Hole-in-the-Wall Information Center on the east side of Black Canyon Road, above a wash and near a hill with views of the Providence Mountains. Another site is located about 4 miles further south, 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 to 2.7 miles north to campsite. High clearance and four-wheel drive recommended; no RVs.

Campgrounds

Hole-in-the-Wall Campground
- Facilities: pit toilets, trash receptacles, portable water, fire rings, picnic tables, dump station; no utility hookups.
- Fees: $12 per site per night; $6 for America the Beautiful Senior/Access Pass holders.
- Reservations: not accepted; campsites available on a first-come, first-served basis.
  - At 4,400 feet in elevation, Hole-in-the-Wall Campground is surrounded by sculptured volcanic rock walls and makes a great base camp for hikers (see p.5). Thirty-five campsites accommodate RVs and tents; two walk-in sites are also available.

Mid Hills Campground
- Facilities: pit toilets, trash receptacles, portable water, fire rings, picnic tables; no dump station or utility hookups.
- Fees: $12 per site per night; $6 for America the Beautiful Senior/Access Pass holders.
- Reservations: not accepted; campsites available on a first-come, first-served basis.
  - The Hackberry Fire swept through the Mid Hills area in June 2005, burning much of the vegetation; however, about half of the 26 campsites were left unharmed and remain 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 unpaved and is not recommended for motorhomes or trailers.

Black Canyon Equestrian & Group Campground
- Facilities: corrals, pit toilets, trash receptacles, portable water, fire ring, grill, picnic shelter with tables.
- Fees: $23 per group per night.
- Reservations: required; call 760-389-2572 or 760-252-6104.
  - Located across the road from Hole-in-the-Wall Information Center. Horses and riders are welcome at Mojave National Preserve! Permits required for large groups (see p.2 for permit information).

Nearby Camping Areas

Providence Mountains State Recreation Area (Mitchell Caverns)
- CLOSED for repairs and renovations. No pedestrian or vehicle traffic is permitted at this time.

Afton Canyon
- 25 miles southwest of Baker on I-15, has a BLM campground with tables and fire rings for $6 per night. Commercial camping within the Preserve:
  - Mojave Desert Outpost - Located at 49448 Ivanpah Road, I/2 mile north of Cedar Canyon Road. This privately owned campground offers basic dry camping to large or small groups by reservation only. For more information or to make a reservation call: 951-760-3179 or check their website at mojavedesertoutpost.com
  - Commercial camping outside of the Preserve is available at Baker, Barstow, Needles, and Nipton, Calif.

Camping & Backcountry Travel