

Preserve Overview

MISSION AND HISTORY

Mojave National Preserve was created to protect the area's diverse natural and cultural resources and to perpetuate the sense of discovery, solitude, and adventure that has existed for generations. Established by Congress on October 31, 1994, the preserve is a vast expanse of the Mojave Desert that also encompasses elements of the High Desert Steppe and Sonoran Deserts. This combination allows visitors to experience a variety of historical and natural features that exist nowhere else in the United States in such proximity to one another.

The preserve showcases an incredibly diverse set of natural landscapes. Mountain ranges, dry river beds, great mesas, "singing" sand dunes, striking cinder cones, domes, and lava flows define Mojave. Ancient rocks that date back 2.5 billion years have been discovered in the Clark Mountains.

RESOURCES

Although deserts are often thought of as barren places, Mojave encompasses many features of natural and historic significance:

- Mojave National Preserve protects an extensive variety of habitats, species, and landforms unique to the Mojave Desert and is the best place to experience this ecosystem.
- Mojave National Preserve contains outstanding scenic resources rich in visual diversity containing a varied landscape of sand dunes, mountain ranges, dry lake beds, lava flows, cinder cones, Joshua tree forests, and far-reaching vistas.
- The Joshua tree forest of Cima Dome and Shadow Valley is the largest and densest population of Joshua trees in the world.
- The preserve is internationally known as a place to conduct desert research, and its lands are known for their geological features such as Cima Dome, the Cinder Cones, and the Kelso Dunes.
- Mojave National Preserve is a naturally quiet desert environment with very dark night skies that offers park visitors and researchers opportunities for natural quiet, solitude, and star gazing with few human-caused noise or light glare sources.
- The Mojave Desert has a long cultural history as a travel corridor across a harsh and foreboding desert, linking different areas in the Southwest.
- During the late nineteenth and early twentieth centuries, railroads were constructed in this historic transportation

corridor; more recently, modern interstate highways traverse the area.

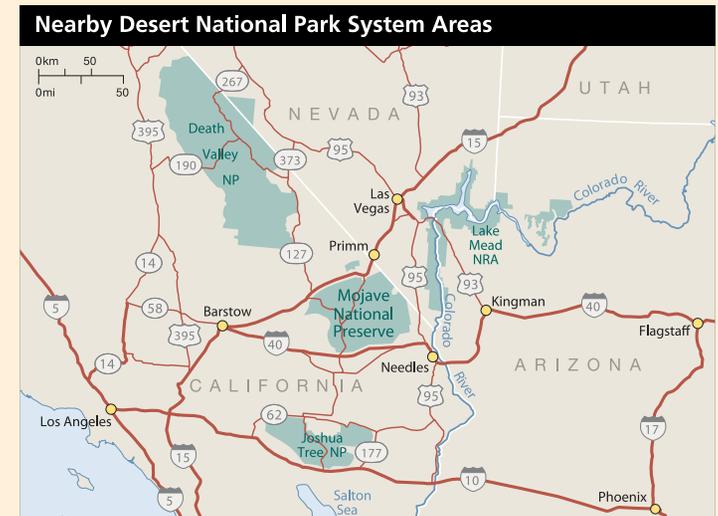
- Mojave National Preserve protects many significant rock art sites that provide evidence of early American Indian use of the Mojave Desert.
- Mojave National Preserve protects numerous historic sites of early mining, ranching, homesteading, and railroading endeavors that serve as reminders of the bold and tough people that opened the harsh and forbidding western frontier.
- Historic Kelso Depot is associated with the early twentieth century heyday of the great steam locomotives and the establishment of the final major rail crossings of the Mojave Desert. The Kelso Depot, built in 1924, is a rare surviving example of a combined depot, railroad restaurant, and employees' rooming house.

VISITATION

In Fiscal Year 2007 Mojave National Preserve had 540,000 visitors. Mojave is the third largest national park unit in the continental United States, so solitude can be easily found. The latest in-depth visitor survey in 2003 found that 83 percent of visitors felt "not at all crowded" and 69 percent said that "solitude/quiet" was an "extremely important" or "important" feature of the preserve.

Visitor Activities

Unlike many national parks, Mojave National Preserve receives fewer visitors during the summer than other times of year.



MOJAVE NATIONAL PRESERVE ENABLING LEGISLATION

On October 31, 1994, Congress passed the California Desert Protection Act, creating Mojave National Preserve and directing the new national park unit to:

Preserve unrivaled scenic, geologic and wildlife values associated with these unique natural landscapes;

Perpetuate in their natural state significant and diverse ecosystems of the California desert;

Protect and preserve the historical and cultural values of the California Desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching and railroading history of the Old West;

Provide opportunities for compatible public outdoor recreation, protect and interpret ecological and geological features and historic, paleontological, and archeological sites, maintain wilderness resource values, and promote public understanding and appreciation of the California desert; and

Retain and enhance opportunities for scientific research in undisturbed ecosystems.



Ox Ranch barn. NPS PHOTO

November, with mild temperatures and a hunting season, is the busiest month of the year, with 20 percent more visitors than an average month. Spring, when the desert is in full bloom, is also busy. This presents a few challenges for the preserve's management team, which must accelerate budget and personnel planning to accommodate the early spring visitors.

When Kelso Depot opened as a visitor center in 2005, it caused a dramatic rise in the number of people who used information centers in the preserve. Whereas only 20,000 people toured information centers in FY 2004, nearly 59,000 visited in FY 2007. Surveys conducted prior to the opening—in 1997 and 2003—indicated that between 30 and 50 percent of people drove through the park without spending much time outside of their car. Kelso Depot Visitor Center now provides these visitors an opportunity to learn more about desert ecosystems and history.

Historical Trends

In 1993, the year before Mojave was designated a national preserve, visitation to the area was estimated at 250,000. Fifteen years later, visitation has doubled and is now about the same as Kings Canyon National Park or Santa Monica Mountains National Recreation Area. The chart below shows visitation counts for the last 10 years. The number of visitors to Mojave

National Preserve has increased 42 percent over the past decade, with sharp increases from FY 1998 to FY 2003, followed by a leveling off in the past five years. Other national parks in the desert—such as Death Valley National Park, Joshua Tree National Park, and Lake Mead National Recreation Area—have seen similar flat visitation trends over the past five years.

Future Trends

While overall visitation has been flat recently, preserve staff is predicting an increase in visitation in the long term. Surrounding counties are expected to double in population between 2000 and 2030. A new Las Vegas, Nevada, airport is currently proposed for construction in the Ivanpah Valley; this would bring millions of people annually to within an hour of the preserve's borders. As is often the case, increased usage of Mojave's roads, visitor facilities, and campgrounds could require that more resources be dedicated to facility and visitor and resource protection activities.

RECREATION

Before being designated a national preserve, much of Mojave's land was managed by the Bureau of Land Management (BLM). Since its inception, the National Park Service has partnered with federal, state, and private entities to acquire and manage land within the preserve's boundaries. In keeping with its enabling





State-operated lands inside Mojave include Zzyzx, home to the Desert Studies Center, which is part of Mojave National Preserve, but managed cooperatively with California State University, Fullerton. The preserve also surrounds Providence Mountains State Recreation Area, Mitchell Caverns Natural Preserve, and the Granite Mountains Research Center, which is operated by the University of California Riverside. NPS PHOTO

Opposite: The Kelso Dune complex features some of the highest dunes (600 feet) in the region. NPS PHOTO BY TIM DUNCAN

legislation, the preserve seeks to provide the public with many of the same recreational opportunities available in the past, such as four-wheel drive roads, backcountry camping, wildflower viewing, and hunting. The preserve's vast size, unique ecosystems, and diverse user groups can create challenges for its staff. It is also becoming clear that planned development near its borders will increasingly affect two of the preserve's greatest resources: the dark night sky and the sense of solitude visitors can still experience. Mojave's management team is already working proactively with local and regional partners to meet these and other future challenges.

IMPACT ON THE LOCAL ECONOMY

Whether it is a family buying supplies for a weekend of camping at Hole-in-the-Wall, a bird enthusiast staying in a local hotel, or a four-wheel drive vehicle owner buying gas for an excursion down the historic Mojave Road, visitors to Mojave National Preserve spend money in surrounding towns.

The National Park Service provides annual estimates of how this visitor spending impacts the communities around each national park. The latest update for Mojave National Preserve, in 2006, estimated that the 537,000 visitors to Mojave spent \$6.9 million in local businesses with non-local visitors accounting for over 90 percent of this total. Spending by non-locals supported an estimated 127 jobs, added \$2.5 million to the incomes of local employees, and provided an additional \$1.4 million in profits and sales taxes to the local economy.

Preserve operations also have an impact on the local economy. Mojave National Preserve employed 64 people on a full-time, part-time, or seasonal basis in FY 2006, totaling \$3 million in salary. In addition, the preserve approaches local businesses for contracting and purchases. As local consumers, the employees of Mojave National Preserve also spend part of their paychecks at local businesses. These direct and secondary effects of preserve operations accounted for 92 local jobs, \$4.7 million in payroll, and \$660,000 in additional benefits to the local economy.

Finally, it is important to note that visitor spending is only one way to estimate the value of Mojave National Preserve and does not include the intangible benefits, to local residents and the public at large, of preserving Mojave's cultural and natural resources.

PRESERVE INVENTORY

General

- 1,589,165 acres of total land area
- 695,000 acres of designated wilderness
- 7,929 ft. at the highest point (Clark Mountain)
- 800 ft. at the lowest point
- 60 employees, including wildland firefighters, permanent, term, temporary, and seasonal employees
- 107,871 total hours worked
- 96 volunteers (Fiscal Year 2007)
- 541,000 total visitors (Calendar Year 2007)
- 11 employee housing units
- 6 Recreational Vehicle sites
- 88 buildings
- 3 campgrounds, including 1 equestrian and group campground
- 61 formal campsites
- 1 visitor center and museum inside the preserve
- 1 information center inside the preserve
- 2 information centers outside the preserve

Natural Resources

- 3 distinct desert ecosystems (Mojave, Sonoran, and Sage Steppe)
- 783,000 acres of designated desert tortoise critical habitat
- 900 species of plants
- World's largest, densest Joshua Tree forest
- 40 mammal species, including bighorn sheep and mountain lions
- 115 bird species, including golden eagles
- 33 reptile species
- 1 threatened species (desert tortoise)
- 1 endangered species (Mohave tui chub) and possible habitat for two others (southwestern willow flycatcher and least Bell's vireo)

Cultural Resources

- 1,300 archeological sites up to 12,000 years old, representing Mojave, Chemehuevi, and other peoples
- 1,500 mining structures
- 3,500 open mine shafts
- Rock Springs Land & Cattle Company Historic District, encompassing 845,000 acres



Current Operations



In FY 2007 Mojave National Preserve operated with 51.5 full-time equivalent (FTE) employees, including seasonal employees and interagency fire personnel. An FTE is equal to 2,080 hours of work per year. The preserve was also supported by employees and resources shared among the desert network parks (Joshua Tree National Park, Death Valley National Park, and Lake Mead National Recreation Area) and members of the Desert Managers Group. The preserve spent \$3.6 million in FY 2007 for personnel salaries and benefits, and a total of \$5.9 million overall.

Mojave National Preserve's overall budget was composed primarily of its base budget appropriation (\$4.3 million), non-base funds dedicated to specific projects (\$910,000), and funding for the preserve's portion of shared wildland fire resources (\$610,000). Mojave's expenditures are grouped into seven areas: Resource Management, Interpretation and Education, Visitor and Resource Protection, Wildland Fire Management, Facility Operations and Maintenance, Management and Administration, and One-Time Charges/Non-Operations Activities.

Members of the Desert Managers Group meet in the field to discuss site-specific issues such as mine reclamation. NPS PHOTO BY DENNIS SCHRAMM

RESOURCE MANAGEMENT

The Resource Management program protects the natural ecosystems and physical landscapes of Mojave National Preserve through research, monitoring, and management of resources. In addition, this program preserves the prehistoric and historic cultural resources of the park. The broad scope of work in the program is reflected in the variety of its employees: Resource Management includes staff trained in archeology, geology, hydrology, environmental and cultural compliance, wildlife biology, geographical information systems, landscape architecture, and hazardous materials management.

In FY 2007 Mojave National Preserve spent a total of \$1,360,000 on management of cultural and natural resources. Of that total, \$1,165,000 came from park base funding, with the balance deriving from short-term project accounts. Uses of this funding were as diverse as is the Resource Program's scope of work. Like many of the other divisions of the preserve, much of this non-base funding was used on joint projects with other national parks, federal agen-

MINE SAFETY AND RECLAMATION

Until the creation of the preserve in 1994, mining companies and individuals were able to file and maintain mining claims, and numerous attempts at striking it rich were undertaken from the 1850s on. Most of these mines have been abandoned by companies that no longer exist, so it falls to the National Park Service to take action to preserve their historic value while also ensuring that they do not pose physical safety risks to the public. This is no small task, as there are roughly 1,500 mining structures and 3,500 prospects, mining shafts, and adits remaining in the preserve.

Depending on the site, Resource Management staff take one of three actions. For many of the small sites where visitor accidents are a primary concern, dangerous slopes need to be stabilized and/or holes closed with gates to keep people out, but allow the resident bat communities to survive. As another option, structures at a few major mining sites may be stabilized so that they can be safely used as interpretive sites. For example, in FY 2007, staff from Mojave National Preserve and an expert crew from Point Reyes National Seashore performed an emergency stabilization of the timber structure of the Evening Star Mine headframe.

In other cases, mining activity at some of the sites involved hazardous materials and some of these areas still need to be cleaned up. In particular, 250 acres near the Morning Star Mine were affected by the use of cyanide as a leaching agent in the mining process. Through remediation, the preserve hopes to turn this problem into an environmental benefit by using the surface mining pit as future habitat for the endangered Mohave tui chub.

cies, local communities, and outside researchers, as many of the resource challenges in the California desert cannot be solved by focusing solely within Mojave National Preserve's borders.

Biological Resources

Located at the intersection of three different desert ecosystems, Mojave National Preserve is home to over 350 species of animals. In FY 2007 the preserve introduced "critter cams"—motion activated digital cameras—to better understand how animals were using the available water sources of the park and to provide interesting pictures of desert animals to the public on the preserve's website.

Mojave National Preserve's enabling legislation, the California Desert Protection Act of 1994, was not universally embraced by all parties and thus represented a compromise in its final form. As a result, the act established hunting as part of the basis for the preserve's creation. The State of California issues hunting permits for game species such as mule deer, game birds, and desert bighorn sheep. In FY 2007 Mojave began work with university researchers to understand how the ranching water systems in the preserve affect mule deer populations. A long-term study of mule deer populations and surface water availability in Mojave National Preserve has started in FY 2008 and is expected to generate data over the next 10 years. Mojave National Preserve and state agencies also relocated 13 ewes from the Old Dad Peak bighorn sheep population to Eagle Crag on the China Lake Naval Air Weapons Station.

Mojave National Preserve is also actively trying to restore the populations of threatened and endangered species found within its boundaries and elsewhere in the California desert. For instance, partnering with the U.S. Forest Service, the State of California, and outside researchers, the preserve hopes to establish additional viable communities of the endangered Mohave tui chub, which currently is naturally occurring only in MC Spring near Zzyzx in the northwest corner of the preserve. Critical habitat for the threatened desert tortoise makes up about one half of the preserve's 1.6 million acres. The habitat also extends outside of the preserve's boundaries; as a result, recovery depends on cooperation and coordination between the many members of the Desert Managers Group. The preserve's specific actions regarding resource management are outlined in the Priorities section of this business plan.

Physical Resources

As mentioned in the Park Overview section, Congress also directed the national parks in the California desert to protect the "unrivaled" scenic and geologic values of the landscape. In Mojave National Preserve, this involves monitoring ambient air quality and paying close attention to neighboring developments in hopes of limiting their impacts on the park's viewsheds. Other scenic values are found in the silent solitude of the desert; Mojave staff measure ambient sound levels throughout the park and reach out to local communities to seek their help in maintaining the dark night sky.

Because water is so limited, understanding the hydrology of the preserve is essential to understanding how the desert ecosystem functions, particularly in light of ever increasing regional development pressure. With the help of several volunteer groups, the preserve is monitoring water sources to identify water quality and quantity in various seasons and will continue to develop an inventory of water sources and their flow and chemical characteristics.

Cultural Resources

From examples of prehistoric rock art to photos of homesteaders in the 1920s, the interpretive exhibits at Kelso Depot illustrate how people have lived in the area over the years, but evidence can also be found throughout the preserve. In FY 2007 staff located and assessed 395 archeological sites and finished cataloging all of the museum objects stored in the Barstow curation facility and displayed at the Kelso Depot. The Resource Management staff has also nominated a large historic ranching district to the National Register of Historic Places that will facilitate preservation of the park's remaining historic ranching infrastructure and interpretation of desert ranching to the public.

INTERPRETATION AND EDUCATION

People visit Mojave National Preserve for a variety of reasons, from hiking and camping to stargazing and hunting. Due to its location adjacent to the major freeway route between Los Angeles, California, and Las Vegas, Nevada, some visitors also enter the preserve or stop in at headquarters out of curiosity or to simply take a break from driving. Helping these diverse groups understand that the preserve is much more than desolate scrubland is critical to fostering appreciation and stewardship. Through exhibits, ranger-led programs, classroom presentations,



Kelso Depot Visitor Center, a beautifully restored 1920s-era train depot and water station, is Mojave National Preserve's cultural centerpiece. Opened in March 2006, the depot has been extremely popular with visitors. Most of the former dormitory rooms contain exhibits describing various aspects of the surrounding desert, from tortoises to sand dunes to desert mining and ranching. The old baggage room, ticket office, and two dormitory rooms have been historically furnished to illustrate life in the depot in the first half of the twentieth century.
NPS PHOTO BY CHRISTINE SCHLEGEL

and a range of informational media, Mojave's Interpretation and Education program serves diverse visitor groups, as well as nearby communities.

In FY 2007 Mojave National Preserve spent a total of \$527,000 on interpretation and education activities. Of that total, \$490,000 came from park base funding, with the balance coming from short-term project accounts. Among other things, project funds supported the design and fabrication of informational exhibits at the Barstow headquarters building, Kelso Depot Visitor Center, and Piute Springs, as well as outdoor exhibits at various locations throughout the preserve.

Visitor Center Operations

There is one visitor center (VC) and two information centers (ICs) in and around Mojave National Preserve that serve as primary points of contact between visitors and staff. Kelso Depot Visitor Center and Hole-in-the-Wall Information Center are located inside the preserve. The lobby of the headquarters office, located in Barstow, serves as the third information center, open during regular business hours. All three facilities contain bookstores operated by Western National Parks Association and stocked with Mojave and NPS-related materials. Combined, these three centers served nearly 60,000 visitors in FY 2007. In addition, a seasonal employee is stationed part time at a Bureau of Land Management information center in Needles, California, near the southeast corner of the preserve, to provide information during peak visitation seasons.

Mojave's principal visitor center, Kelso Depot VC, is open 9 a.m. to 5 p.m. every day except Christmas. Serving primarily campers and hunters, Hole-in-the-Wall IC is open five days a week during the spring and fall (traditionally the peak visitation periods) and three days a week during the summer. Both paid staff and volunteers operate these centers. Kelso Depot's large size and complex layout require at least two people to operate the center.

Interpretation

Mojave's Interpretation program encompasses the development of exhibits, publications such as brochures, and a website. Rangers offer talks and guided hikes during peak seasons to help visitors understand Mojave's natural and historical significance. Although surveys show that visitors view the information centers, exhibits, brochures, and programs very positively, their under-

standing of the preserve's significance is below the national park average. Part of this may be due to the fact that several important cultural features in the preserve, such as abandoned mine sites, ranches, and ancient petroglyphs, lack field interpretive materials such as outdoor exhibits or descriptive brochures. Mojave's Interpretation staff plans to increase visitor understanding by developing interpretive materials that address these themes, and by increasing the quality and quantity of ranger programs.

Education

Interpretive rangers provide educational programming for schools and organized groups in communities near the preserve. Although rangers present classroom programs in the Barstow-Victorville and Needles-Bullhead City areas, most education programming is delivered through the Desert Discovery Center (DDC) in Barstow. The DDC is jointly supported by the National Park Service, the Bureau of Land Management, the City of Barstow, Barstow College, the Barstow Unified School District, and two local nonprofit organizations. The opening of Kelso Depot in March of 2006 created a new educational opportunity within the preserve. Baker schools now visit the Depot each year for education programs. Overall, Mojave's education programs reached 1,900 students in FY 2007.

Mojave staff are members of the Desert Manager Group's Desert Tortoise Education Committee, along with staff from other desert parks, military bases, and non-governmental organizations representing off-road recreation and conservation interests. This group has developed "desert tortoise traveling trunks," which contain all of the necessary resources for a teacher-led program on the desert tortoise. Trunks have been introduced to teachers through workshops and are now being field-tested in anticipation of a desert-wide launch.

There are approximately 85,000 students within an hour's drive of Mojave National Preserve or the headquarters office in Barstow. Hiring an education specialist would allow Mojave's Interpretation staff to reach many more students through development of new curriculum-based programming. In addition to expanding Mojave's education programs, an education specialist would allow the preserve to contribute more to the efforts of the Desert Tortoise Education Committee. A base funding increase proposal addressing this need currently ranks second on the preserve's priority list.



The defining feature of Mojave National Preserve—and one of the main challenges facing its staff—is the preserve's immense size and remoteness. At 1.6 million acres, Mojave National Preserve is the third largest national park unit outside Alaska. This view is of the New York Mountains from Teutonia Peak.

NPS PHOTO BY ANNE MAASBERG

VISITOR AND RESOURCE PROTECTION

Mojave National Preserve's Protection staff is responsible for providing for the safety and protection of visitors and resources throughout the preserve. While visitor safety and resource protection are the program's primary goals, the preserve's Protection staff supports operations in a number of other ways. In FY 2007 Mojave National Preserve spent a total of \$896,000 on visitor and resource protection, not including fire management funds. Of that total, \$844,000 came from base funding, with the balance composed of short-term project funds. In addition to base and project funds, the preserve spent \$600,000 supporting fire management activities in the region. Fire management funding is not considered part of the preserve's base budget.

Fire Management

With an arid climate and scrub vegetation, the California desert is prone to frequent wildfires. At Mojave National Preserve, employees work on the prevention and suppression of wildland fires as well as the rehabilitation of burned areas. The preserve is

also home to a NPS/BLM interagency fire center; the fire crew based here participated in fire management activities not only inside the preserve's 1.6 million acres, but also in many other areas of the Southern California desert.

Resource Protection

Both Protection rangers and Fire Management staff participate in and conduct a wide variety of resource management projects, including protecting endangered species and cultural resources, monitoring grazing, and managing wilderness areas. They monitor and inventory resource conditions, coordinate the cleanup and minor restoration of parklands, and manage trespass issues and closures.

Visitor Safety and Emergency Services

Managed visitor safety programs include law enforcement, emergency medical services, structural and wildland fire, search and rescue (SAR), and hazardous materials spill response. Law enforcement functions include frontcountry and backcountry

patrols, criminal investigations, case management, and wildlife enforcement. Patrol activities include the protection of the natural and cultural resources, visitor assistance, and resource education.

Visitor Services

Due to the remote nature of the preserve, NPS personnel are often the only staff available to respond to incidents in and around the preserve. In addition to handling routine questions, employees assist visitors with mechanical breakdowns, trip planning, directions, and other inquiries. Protection rangers at Mojave aim to provide the visitor with safe and enjoyable experience.

FACILITY OPERATIONS AND MAINTENANCE

The Facility Operations and Maintenance program (O&M) encompasses all of the activities that are necessary to safely operate Mojave National Preserve's buildings, roads, trails, campgrounds and utility systems. Operations and maintenance activities include janitorial services, cyclic maintenance, and asset rehabilitation. Mojave's Facility Operations and Maintenance program is currently composed of eight full-time employees, including the chief, as well as one seasonal employee. All employees contribute to both operations and maintenance activities. The preserve spent \$1.5 million on operations and maintenance activities in FY 2007, of which \$500,000 came from non-base project funds.

The preserve's vast size and the geographic disbursement of its assets directly impact the capacity of its Operations and Maintenance program. Work activities in the preserve simply take longer to complete than would similar tasks in a smaller park because of the time required to reach work sites and to pick up supplies. In addition, Mojave's remote location makes contracting difficult since work is relatively abundant in the cities where contractors are located. Jobs that would normally be contracted out in less remote parks are often completed by Mojave staff when contractors submit unreasonably high bids. A recently completed park asset management plan quantified the negative impacts of these challenges, estimating Mojave's maintenance backlog at over \$6.9 million. This asset management plan, which prioritizes park assets, will guide Operations and Maintenance program decisions in the coming years.

The O&M program has been proactive in addressing contracting and location issues by working extensively with the other

Desert Network parks and implementing systems, such as solar electric and microwave communications, to make the preserve's structures less dependent on infrastructure that is costly to extend into remote areas.

Buildings

Mojave National Preserve includes 88 buildings, although most activity is centered on a handful of major buildings—Kelso Depot Visitor Center, Hole-in-the-Wall Information Center, Hole-in-the-Wall Fire Center, Barstow Headquarters, Baker maintenance facility, and the Zzyzx Desert Studies Center—the preserve's 15 comfort stations and 18 residential structures (5 houses, 2 duplexes, 1 trailer, 3 double-wide trailers, a 16-room dorm in the fire center, and 6 recreational vehicle pads with utility hookups).

The preserve's Operations and Maintenance program is responsible for all of the systems related to the buildings detailed above. From an operations standpoint, O&M employees must change light bulbs, clean each building regularly, and care for the grounds around them. Custodial activities are carried out daily at Kelso Depot VC and weekly at Hole-in-the-Wall IC. The Preserve's 15 comfort stations are cleaned weekly.

Maintenance activities include pumping vault toilets, rehabilitating historic structures, repairing building damage, housing repairs, and transitioning buildings acquired with land into employee housing. In FY 2007 Mojave's O&M program completed two duplexes and two houses in Baker that are now being used for employee housing.

Roads

Mojave's O&M program is responsible for all aspects of 28 miles of park roads, including grading/gravel surfacing, stabilizing, cleaning the roadsides and repairing damaged culverts. An additional 180 miles of paved roads are maintained by San Bernardino County, although the preserve carries out roadside cleanup and emergency repair activities as necessary. The O&M program is responsible for directional signs on all paved roads within the preserve.

Facility Operations and Maintenance must also perform repairs on washed out portions of the Mojave's 1800-mile network of backcountry, dirt roads. Although these roads are naturally rough, major washouts must be filled so the area can be safely navigated



FACILITY OPERATIONS AND MAINTENANCE LEADS THE CHARGE TOWARD A GREENER MOJAVE

Mojave National Preserve has been proactive in developing and implementing comprehensive plans aimed at making all aspects of the preserve's operations more energy efficient and environmentally friendly. In recent years, the preserve's Facility Operations and Maintenance program has installed solar arrays at nine buildings and residences, replaced all incandescent light bulbs with energy-efficient compact fluorescent lights, and developed a new solid waste plan. The Operations and Maintenance program is also in the process of developing an energy conservation plan, transitioning to environmentally friendly cleaning supplies, replacing hydraulic fluid in park equipment with biobased products, and starting a recycling program.

The preserve is hoping to secure funding to expand the off-grid solar system at Zzyzx (*above photo*) by 100 percent, completely eliminating the need for a diesel generator. Mojave National Preserve's Chief of Facility Operations and Maintenance foresees a future in which the desert parks are nearly energy independent, drawing power from a large-scale, shared solar array.



THE DESERT MANAGERS GROUP

The National Park Service is one of many agencies that manage public lands in the California desert. From California State Parks to the Bureau of Land Management to the Department of Defense, the desert is a patchwork of jurisdictions that all cooperate under the auspices of the Desert Managers Group (DMG).

While each agency has a unique mission and management philosophy, there are certain issues that transcend lines on a map. Recovery of the desert tortoise is one of the foremost issues on the agenda. The various agencies provide more than habitat for the tortoise, they are active participants in the recovery effort. The effort includes tasks such as monitoring, public outreach, raven management, landfill oversight, and the operation of "head start" facilities where tortoises are raised in captivity until they can be safely released back into the wild. The DMG's five-year work plan also includes riparian zone restoration, cultural resource preservation, abandoned mine safety, and other common issues.

by visitors. Failing to perform these repairs can result in dangerous conditions for visitors as well as major resource damage when visitors leave the road to bypass washed out sections. Mojave does not have a designated road crew, as is the norm in most large parks, but hosts road crews from Death Valley and Joshua Tree National Parks two to three times each year.

Campgrounds and Backcountry Campsites

Mojave's two established campgrounds are located in the Mid Hills and Hole-in-the-Wall areas of the preserve. Together they contain 61 campsites as well as toilet facilities. In addition, the Black Canyon Equestrian and Group Campground, located near Hole-in-the-Wall, offers corrals as well as picnic and camping space for large groups. Mojave's O&M program regularly cleans the bathrooms, removes trash, and cleans the fire rings at each of the campgrounds.

The preserve also contains approximately 120 mapped backcountry campsites. The O&M program cleans backcountry campsites at least once per year, although this is difficult to track since the preserve is still in the process of mapping all existing backcountry camp sites. As more campsites are discovered, the number of sites that must be cleaned each year rises. The maintenance activities associated with both established and backcountry campsites include repairing or replacing fire rings, kiosks, and signage as necessary.

Trails

Mojave maintains a limited number of developed trails, totaling approximately 12 miles, most of which are used only lightly by visitors. Trail maintenance work is primarily performed by volunteers through programs organized by the Student Conservation Association, Youth Conservation Corps, and California Conservation Corps.

Utility Systems

The O&M program is responsible for testing, maintaining, and repairing the preserve's electrical, solar, water, and waste systems. Since the preserve is so isolated, most visitor centers and residential buildings have their own water and electrical systems, each of which must be monitored on a daily basis.

In total, nine preserve buildings receive all or part of their electricity from solar systems. Kelso Depot is also heated and

cooled through an underground exchange system. Installing and maintaining these systems require a diverse set of skills and technical expertise. Batteries and backup generators for all solar systems are checked daily, as are water systems. Deep wells with chlorination systems supply preserve buildings with water. Water quality at each of the preserve's residences and visitor centers must be tested monthly and chlorination components are inspected at least once a week (every day at Kelso Depot and Hole-in-the-Wall), in accordance with NPS regulations. Solid waste is managed by sewage lift systems at Kelso Depot and Zzyzx Desert Studies Center, and through septic systems at other preserve buildings.

In addition to the daily monitoring activities required by all of these utility systems, O&M personnel must carry out recurring maintenance and repairs. The solar systems and their backup generators require quite a bit of attention. Beginning in 2009, the oldest solar systems will require component replacement. Emergency repairs requiring overtime, often on utility systems, are a concern for the program.

MANAGEMENT AND ADMINISTRATION

The preceding pages have documented the diversity of work that goes on at Mojave National Preserve. Supporting these various functions are the Management and Administration offices of the Preserve. The Preserve spent \$620,000 in FY 2007 on activities ranging from contracting and budget management to coordinating research with graduate students.

Administrative Support

The employees of the Administration program perform many of the supporting activities that are found in most nonprofit and private organizations: budgeting, human resources, contracting and procurement, computer and telephone maintenance, and vehicle fleet coordination. Unlike many organizations, however, the Administration program must provide these services across 1.6 million acres of desert landscape. Innovative solutions have arisen in response; for example, the preserve uses satellite dishes to beam internet, phone, and networking connections to remote ranger stations and the Kelso Depot.

Several staff members at Mojave National Preserve spend a portion of their time working for neighboring national parks such as Death Valley National Park, Joshua Tree National Park,

Right: The long-eared owl is one of over 350 species of animals in Mojave. PHOTO BY TODD ESQUE

Opposite: Joshua trees bloom at the New York Mountains. NPS PHOTO BY DENNIS SCHRAMM



and Lake Mead National Recreation Area. By forming a network of parks, specialized services and training opportunities can be shared and overall costs are reduced. For example, the contracting officer at Mojave National Preserve works on large and complex projects for other parks that do not have staff with the same level of expertise.

Park Management

The superintendent's office oversees and coordinates planning and management activities for the preserve. This office also coordinates external activities such as interagency communications and community affairs. Annual goals for Mojave National Preserve are drafted by senior staff; accomplishments are then tracked at both the preserve level and for individual staff.

The Management program also includes a science advisor. The various managers in the park—from Facilities to Resource Management—have a source of objective scientific information

while making decisions. The science advisor also works on projects within the park (such as the “critter cam”) and coordinates the various outside researchers who study the cultural and ecological resources of the preserve.

External Relations

In addition to managing the internal operations of the preserve, the superintendent also collaborates with outside partners and neighbors. The preserve works with other federal agencies through regular meetings with the Desert Managers Group (*see sidebar on previous page*). The superintendent conducts community meetings every six months to meet with people who live inside or near preserve boundaries. In FY 2007 the preserve also worked closely with the City of Barstow and the County of San Bernardino to establish bus service to Kelso Depot with the hope of starting eventual train service. Many of the actions listed in the Priorities section of this plan will require Mojave National Preserve to forge even stronger ties with these important partners.



Operational Priorities



Established in October 1994, Mojave National Preserve is a relatively new national park unit. The early years were devoted to understanding resources, developing programs and policies, and drafting a long-term general management plan. Guided by its general management plan, the preserve is now transitioning from start-up to routine operations.

This section details Mojave National Preserve's operational priorities for the next five years. The work outlined in the Current Operations section will continue; it is central to keeping Mojave open to visitors and protecting natural and cultural ecosystems. The priorities presented here have been identified as areas where the preserve wants to focus new funds or reallocate resources. These priorities are intended to be achievable action items; along with its priorities, each program identified success measures that will allow the preserve to track its progress over the next five years.

Mojave National Preserve management has identified five overarching goals for the preserve's operations over the next

five years. Each functional program will contribute to these overarching goals. The operational priorities from each program have been aligned with a corresponding preserve goal to provide a comprehensive picture of Mojave's integrated approach to planning and operations.

The lead program and planned implementation time frame is listed along with each priority. Initiatives designated with a black diamond (◆) require no additional funding or are expected to receive federal funding in the next two years. Initiatives with a hollow circle (○) are dependent on future funds that have not been secured.

1. ENGAGE THE PUBLIC IN PARK STEWARDSHIP AND FOSTER AN APPRECIATION FOR THE ECOSYSTEMS AND HUMAN HISTORY OF THE MOJAVE DESERT.

Continuing development along the Los Angeles-to-Las Vegas corridor will increase pressure on Mojave's desert ecosystems.



Above: Western National Parks Association operates three bookstores within Mojave National Preserve that provide site-specific information for learning more about area resources. NPS PHOTO

Opposite: Interagency efforts are underway to reintroduce desert bighorn sheep with a life span of 10 to 15 years, to their previous ranges. Estimates put the current population in and near Mojave Preserve between 680 and 1075. NPS PHOTO

Even so, these conditions also represent an opportunity to enhance the preserve's outreach programs. Over the next five years, the preserve will take specific actions to expand partnerships, encourage stewardship, and openly provide information regarding controversial issues to help foster understanding among stakeholders.

The preserve currently participates in several partnerships through which it develops and implements educational, recreational, resource protection, and endangered species recovery projects and programs. These cooperative arrangements are critical to daily operations and help foster stewardship by engaging regional stakeholders. Mojave's biannual newspaper has served as a primary communication tool to help achieve this objective. In the coming years, Mojave plans to become more proactive in communicating its accomplishments, events, and concerns through jointly developed public service announcements, a greater emphasis on website content, and news releases for local newspapers.

Preserve staff plans to implement the following actions in addition to current operational activities:

- ◆ **Continue desert tortoise outreach initiatives and education programs.** (*Interpretation and Education; beginning FY 2008*) – The Desert Managers Group (DMG) Desert Tortoise Outreach group has funds available for regional education and outreach initiatives. Mojave's Interpretation and Education (I&E) staff will continue working with this group to develop outreach initiatives, including television public service announcements, the Desert Tortoise Emergence Contest for students in eight counties, and teacher workshops on the use of the desert tortoise traveling trunks.
- ◆ **Support the Barstow-Kelso Railroad (BKRR) initiative.** (*Interpretation and Education; beginning FY 2008-2012*) – This external initiative to develop excursion train service from Barstow to Kelso is in the early planning stages; the superintendent and I&E chief will attend planning meetings and provide support to the community group as needed. The BKRR committee plans to continue operating a weekly excursion bus tour between Barstow and Kelso in spring, 2008.
- ◆ **Build volunteer program.** (*Interpretation and Education; FY 2008*) – Mojave's volunteer program has grown dramatically since FY 2000. The volunteer coordinator hopes to continue this trend by increasing efforts to recruit volunteers and by

providing positive work experiences for volunteer work groups, including the Youth Conservation Corps, the Student Conservation Association, and Volunteer Vacations.

- ◆ **Create informational website on deer-water issues.** (*Interpretation and Education; beginning FY 2008*) – Mojave's I&E staff will create an informational web page on deer-water issues designed for the general public. The page will present information relevant to the controversial issue of maintaining artificial water sources for deer.
 - ◆ **Publish educational articles.** (*Interpretation and Education; FY 2008-2012*) – I&E staff will publish interpretive and informational articles on resource management activities in the biannual preserve newspaper.
 - ◆ **Provide news releases.** (*Interpretation and Education; beginning FY 2008*) – Preserve staff will develop news releases and opinion pieces for placement in local and regional newspapers.
 - ◆ **Close abandoned mine shafts.** (*Resource Management; beginning FY 2008*) – In FY 2008 staff at Mojave National Preserve hopes to oversee the construction of safety devices at abandoned mine sites throughout the desert. As part of this effort, Mojave will not only keep the public informed of its progress, but also publicize the dangers created by abandoned mines.
 - **Introduce urban youth to Mojave.** (*Resource Management; beginning FY 2008*) – Preserve staff would like to develop long-term partnerships with groups such as the California Conservation Corps to employ disadvantaged youth and college students in resource stewardship projects.
 - **Develop website for tortoise facility.** (*Interpretation and Education; tentatively beginning FY 2010*) – Mojave plans to develop a desert tortoise "head start" facility to protect and study young tortoises if funding from a hazardous materials settlement becomes available. Once the facility has been created, staff will develop a web page on the program with information on research into the causes of the desert tortoise's population decline.
- 2. PROVIDE VISITOR EXPERIENCES THAT CARRY OUT THE NPS MISSION, "TO CONSERVE THE SCENERY AND THE NATURAL AND HISTORIC OBJECTS AND THE WILDLIFE THEREIN AND TO PROVIDE FOR ENJOYMENT OF THE SAME IN SUCH MANNER AND BY SUCH MEANS AS WILL LEAVE THEM UNIMPAIRED FOR THE ENJOYMENT OF FUTURE GENERATIONS." (ORGANIC ACT OF 1916, 16 USC 1)**

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Developing additional wayside exhibits throughout the preserve is a priority for Mojave management. NPS PHOTO

Mojave National Preserve's unique blend of diverse terrain and ecosystems, wilderness character, and historical significance provides countless recreational and educational opportunities. As the preserve continues its transition from startup activities to routine operations, the management team is committed to identifying, planning, and developing facilities that will promote high-quality recreational experiences, along with new media products that will assist visitors in understanding significant park resources

Although Mojave National Preserve already offers a variety of activities for visitors, these recreational opportunities will be expanded and formalized over the next five years. Connecting equestrian and motor vehicle trails in the preserve to trails on adjacent public lands, for instance, will increase opportunities for visitors to experience the desert for a relatively low cost. Likewise, broadening the range of available interpretive materials and media, including outdoor wayside exhibits, brochures, and podcasts, will help visitors make intellectual and emotional connections to Mojave's rich history and diverse ecology. Ensuring that all of Mojave's compelling themes and resources are interpreted, and that as many facilities as possible are physically accessible to visitors, will improve the overall visitor experience.

Preserve staff plans to implement the following actions in addition to current operational activities:

- ◆ **Develop site plans.** (*Cross-functional planning team; FY 2008*) – Beginning in FY 2008 Mojave staff will be selected for a site planning team. Site planning involves assessing and prioritizing future restoration and development of sites in the preserve to address important themes that are not adequately interpreted. Subsequently, site plans will be created for all remaining development in the preserve, such as stabilization and restoration of historic mining sites and structures on Kessler Spring ranch for interpretive use.
- ◆ **Develop wayside interpretive planning framework.** (*Interpretation and Education; FY 2008*) – The development of outdoor wayside exhibits helps visitors connect directly to park features, and is a cost-effective way to reach out to the large number of visitors who drive through Mojave. Guided by themes identified in Mojave's long-range interpretive plan, I&E staff will develop a preserve-wide wayside interpretive planning framework to prioritize current and future project funding requests for wayside exhibits.

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- ◆ **Develop a self-guided tour booklet of mine sites.** (*Interpretation and Education; FY 2012*) – A cluster of mine sites in the Standard Mining District, not far off Cima Road, tell the story of mining in the east Mojave. Interpretive rangers will develop a booklet to be used as a road guide for this trip. Other media, such as downloadable audio files for portable media players, may also be developed for this tour.
- ◆ **Conduct a comprehensive accessibility survey of all park facilities.** (*Facility Operations and Maintenance; FY 2008*) – The Facility Operations and Maintenance chief will work with volunteers to conduct a thorough review of accessibility issues within the preserve.
- ◆ **Develop employee housing and fleet management plans.** (*Administration; FY 2008*) – As the number of staff in Mojave increase, the preserve is working to make sure that there is adequate infrastructure to accommodate this increase without adversely impacting the natural environment. Administrative staff will complete an employee housing plan and a vehicle fleet management plan to address both current and future needs.
- ◆ **Provide programming at Desert Discovery Center (DDC).** (*Interpretation and Education; continuing FY 2008*) – Mojave's participation in the DDC partnership is an important part of the preserve's educational activities. Interpretation staff will continue to offer existing programs at the DDC, but does not currently have the capacity to develop new programming without an education specialist on staff.
- ◆ **Develop scheduled programs at Information Centers.** (*Interpretation and Education; beginning FY 2008*) – Expand ranger contacts with visitors by developing regularly scheduled programming at Kelso Depot and evaluating ranger-led programs at Hole-in-the-Wall.
- ◆ **Develop orientation film.** (*Interpretation and Education; FY 2009-2010*) – Pending receipt of proposed project funding in FY 2009, the I&E division will develop a new orientation film to be shown at the Kelso Depot Visitor Center, as well as a longer version that provides broader and deeper coverage of themes.
- ◆ **Fabricate exhibits being planned for HQ office.** (*Interpretation and Education; FY 2008-2009*) – I&E will design exhibits and execute a fabrication contract, although actual fabrication and installation may continue into FY 2009.
- ◆ **Complete build-out of website.** (*Interpretation and Education; FY 2008*) – When complete, the website will include more



The Zzyzx Desert Studies Center provides opportunities for research on species such as the Mohave tui chub. NPS PHOTO

comprehensive information on the history, nature and science, and management of Mojave National Preserve.

- ◆ **Initiate Backcountry Asset Inventory.** (*Visitor and Resource Protection; beginning FY 2008*) – To aid in planning the protection staff will identify, inventory, and map all backcountry and wilderness planning assets.
- ◆ **Secure a concessioner to operate the Kelso Depot lunch counter.** (*Management and Administration; beginning FY 2008*) – Mojave hopes to add to the visitor experience by opening the Kelso Depot lunch counter. There are very few food options in or near the preserve, and offering some food service would allow visitors to spend more time at the historic visitor center. The concession contract was open to bidders in the beginning of Fiscal Year 2008.
- **Develop Mohave tui chub education activities.** (*Interpretation and Education; tentatively beginning FY 2008*) – In conjunction with other partners, I&E staff will develop learning activities centered around tui chub fish tanks at the Desert Discovery Center.
- **Develop partnership with Nipton.** (*Interpretation and Education; tentatively beginning FY 2011-2012*) – I&E hopes to develop multi-day desert learning activities based in Nipton, a privately-owned gateway community on the preserve's northern border. This long-term priority will depend on funding for initial program development and ongoing operations. Such a partnership would provide an unparalleled educational opportunity for student groups in the region to experience the desert night sky and natural soundscape.
- **Develop education programs for desert tortoise facility.** (*Interpretation and Education; tentatively beginning FY 2010*) – When the desert tortoise facility is built, an education specialist will develop learning activities centered on the “head start” facility.
- **Facility Operations and Maintenance is Mojave's top priority among its base budget increase requests.** The request is not ranked highly at the regional level, so the preserve will not receive this requested increase before FY 2011. If the base budget increase does come through, it will be used to address the following priorities:
 - **Take proactive measures to maintain and repair facilities.** (*Facility Operations and Maintenance; after FY 2011*) – Mojave National Preserve recently completed an asset management plan which identified the assets that can benefit most from preventive maintenance. Spending

funds on preventive maintenance can help avoid much more costly repairs and replacement in the future, ultimately saving taxpayer dollars.

- **Increase the frequency of cleanings for all restroom facilities.** (*Facility Operations and Maintenance; after FY 2011*) – Currently, only 58 percent of visitors rated Mojave's restrooms as “very good.” More frequent cleanings should result in higher visitor satisfaction with preserve facilities.
- **Develop utility preventive maintenance program.** (*Facility Operations and Maintenance; after FY 2011*) – To reduce the impact of emergency repair calls for solar electricity and water systems on the preserve's budget, Facility Operations and Maintenance will develop a preventive maintenance program for park utility systems. Currently O&M is more reactive than the division chief prefers, due to a shortage of qualified technicians.
- **Increase frequency of water system inspections.** (*Facility Operations and Maintenance; after FY 2011*) – Many of Mojave's buildings and housing units rely on deep wells for water. While the preserve is able to meet state and federal health requirements, Mojave's *Public Health Inspection Report*, completed in 2007, noted several deficiencies in the preserve's water systems that can be corrected by hiring a full-time Water Treatment Operator.

3. PROMOTE SAFETY FOR BOTH PARK STAFF AND THE VISITING PUBLIC.

Mojave National Preserve strives to be a leader in safety and accessibility. This goal includes creating a culture of safety among preserve staff, implementing preventive safety measures on primary roads, improving the ability of park staff to respond to incidents throughout the preserve, and providing safe access to the preserve's natural and historical resources. As the preserve develops, these ideas shape all planning and programming decisions.

Several characteristics of Mojave National Preserve present challenges to visitor and staff safety. Decades of mining and ranching have left thousands of open mine shafts and wells throughout the preserve. The preserve's sheer size and extensive wilderness areas make incident response and SAR operations both difficult and time consuming. The preserve's proximity to the Los Angeles and Las Vegas metropolitan areas also presents law enforcement challenges.

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Mojave National Preserve employees complete fire extinguisher training in an effort to reduce the number of employee and visitor safety incidents.
NPS PHOTO BY DENNIS SCHRAMM

Although Mojave’s staff has demonstrated a strong safety record, the preserve plans to take the following actions to address remaining safety challenges:

- ◆ **Promote and enforce visitor and employee safety.** (*Visitor and Resource Protection; beginning FY 2008*) – In an effort to reduce the number of visitor and employee incidents, protection employees will take a lead in reducing and preventing incidents through incident analysis and resource deployment, implementing “Operational Risk Management” practices.
- ◆ **Professionalize Emergency Services.** (*Visitor and Resource Protection; beginning FY 2008*) – In order to meet readiness requirements and provide exceptional services, all protection employees will obtain national certifications at a standard response level (e.g. EMT), in addition to their current certifications.
- ◆ **Implement a long-range employee development and training plan for Visitor and Resource Protection staff.** (*Visitor and Resource Protection; beginning FY 2008*) – Develop a long-range division employee development and training plan, and commit the resources necessary to achieve plan goals.
- **Stabilize mining structures for interpretive use.** (*Resource Management; beginning FY 2008*) – In FY 2008 the preserve will begin fencing off the Standard #1 Mine and will install safety devices in a number of nearby mines as part of an ongoing effort to mitigate physical safety hazards at these sites. Completing the process of stabilizing mine structures within the Standard Mining District and making them safe to the public, and thus available for interpretive use, will depend on future project funding.
- **Rehabilitate historic ranching structures.** (*Resource Management; FY 2008-2011*) – Currently planned for historic protection, the Kessler Springs Ranch Headquarters compound has been identified as an I&E priority. Rehabilitating the ranching infrastructure is a first step to allowing visitors to safely explore and learn about this unique cultural resource.

4. PROTECT THE RESOURCES OF THE PRESERVE.

Mojave National Preserve is tasked not only with a variety of recreational opportunities, but also preserving fragile ecosystems and historical sites. In order to carry out this complex mission, staff must first thoroughly understand the locations, origins, and significance of the preserve’s natural and cultural resources.

Ongoing survey, mapping, and research projects contribute to this baseline information. Mojave staff must also study natural processes within the preserve, such as fire hazard areas and wildlife population disbursement, so they can understand the preserve’s natural conditions.

Once a natural and historical baseline has been established, preserve staff can progress to restoration and monitoring activities. Protecting cultural sites from vandalism, helping to recover the endangered Mohave tui chub and threatened Mojave population of desert tortoise, removing invasive species, and managing wildfires in a consistent manner all fall into this last category.

In addition to current activities, Mojave’s staff plans to implement the following actions to help them further understand and protect preserve resources:

- ◆ **Begin to study the link between wildlife and human-made water sources.** (*Resource Management; FY 2008-2009*) – When ranchers relocated from Mojave National Preserve to other lands, they took many of their windmills and abandoned other artificial water sources. Understanding how the installation and removal of these manufactured features impact wildlife will help staff to preserve the natural ecosystem. Resource Management staff, in conjunction with the California Department of Fish and Game and the University of Nevada, Reno, will carry out a long-term study of the effects of water supplies on the number and distribution of mule deer within the preserve.
- ◆ **Ongoing Land Acquisition.** (*Preserve-wide, coordinated through Superintendent’s office; ongoing*) – The preserve has placed a high priority on land acquisition to meet preservation needs and restrict development within the park boundary. Land acquisition helps to preserve habitat including wildlife corridors, and conserve the scenic values and solitude.
- ◆ **Expand “critter cam” program.** (*Resource Management; beginning FY 2008*) – Mojave’s Resource Management staff members have placed motion-triggered cameras at several water sources throughout the preserve to learn more about the types of animals that use the water sources. Resource Management will continue and expand this “critter cam” program to include other sites throughout the preserve.
- ◆ **Assess and stabilize archeological sites.** (*Resource Management; beginning FY 2008*) – Mojave National Preserve remains in the process of mapping the locations and assessing

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Motion-activated cameras have been set up at springs across Mojave National Preserve to monitor wildlife activity such as this mountain lion drinking at a watering station. NPS PHOTO

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the conditions of cultural sites throughout the preserve. Continuing work begun in past years, Resource Management staff members will complete condition assessments of all known archeological sites within the preserve and plan for their stabilization as needed. The preserve will also put this field work into perspective, by undertaking an archeological overview and research design to assemble previous research on the prehistory of the area.

- ◆ **Restore disturbed lands.** (*Resource Management; FY 2008-2010*) – Mojave National Preserve is scheduled to receive funding to restore disturbed lands impacted by a variety of past land uses. Six projects will be coordinated by Resource Management personnel to restore a total of 133 acres, including part of the Morningstar Mine.

- ◆ **Develop and implement a resource monitoring and protection program.** (*Visitor and Resource Protection; beginning FY 2008*) – The Protection staff will develop more structured backcountry patrolling and reporting procedures, based on the backcountry asset inventory currently being developed. These procedures will help Protection staff to more carefully monitor the preserve’s natural and cultural resources.
- ◆ **Enhance fire prevention and education programs.** (*Visitor and Resource Protection; beginning FY 2008*) – Visitor centers exhibits will feature fire prevention information. Current community outreach will be expanded with “Smokey Bear” programs to address more people. The preserve will also educate inholders about creating defensible space around homes and their responsibilities for preventing wildland fire.



Sustainability efforts include solar panels to power facilities at Kessler Spring Ranch. NPS PHOTO

- ◆ **Identify potential fire hazard areas.** (*Visitor and Resource Protection; beginning FY 2008*) – The Fire Management program will use GIS (Geographic Information System) computer programs to better understand the fire history of preserve lands and to identify hazard areas.
- **Create a desert tortoise “head-start” facility.** (*Resource Management; tentatively beginning in FY 2008 or 2009*) – The scientific community has little information on what is causing the population decline of young desert tortoises. Pending funding from a hazardous materials settlement, Mojave National Preserve will develop a desert tortoise “head start” facility in conjunction with the U.S. Geological Survey and private donors. The facility will provide research on juvenile desert tortoise mortality that will help multiple land management agencies as they work towards recovering the desert tortoise. The facility can also be used by the preserve's Interpretation and Education staff to educate the public as part of a broader effort within the Desert Managers Group to increase awareness and education about the desert tortoise.

5. PROMOTE ENERGY EFFICIENCY AND SUSTAINABLE “GREEN” PRACTICES IN PRESERVE FACILITIES AND MANAGEMENT.

The National Park Service has committed to being a leader in environmental sustainability. Mojave’s management team has integrated this commitment into its core operational priorities.

The preserve has already made visible progress in energy conservation and plans to build on its momentum in the coming years. Nine preserve buildings have already been converted to solar electrical systems. In the past year, all incandescent light bulbs in preserve facilities were replaced with energy-efficient, compact fluorescent bulbs and the Facility Operations and Maintenance staff began the process of switching to 100 percent “green” cleaning supplies and biobased hydraulic fluids. In the next year, Mojave will develop comprehensive plans for reducing its reliance on carbon-emitting power generation and lowering the amount of solid waste the preserve sends to the landfill each year. The preserve will actively seek out new partners and leverage existing relationships to help implement its environmental initiatives.

Preserve staff plans to implement the following actions in addition to current operational activities:

- ◆ **Conduct parkwide energy audit.** (*Facility Operations and Maintenance; FY 2008*) – One of Mojave’s first actions this year will be to work with Southern California Edison to complete a parkwide energy audit. This is a free service offered by Southern California Edison. Facility Operations and Maintenance staff will assess and prioritize the audit recommendations for future implementation.
- ◆ **Create and implement parkwide energy conservation plan.** (*Facility Operations and Maintenance; beginning FY 2008*) – Energy conservation efforts in Mojave National Preserve have largely been ad-hoc activities. Following the Southern California Edison energy audit, Mojave’s Facility Operations and Maintenance program will develop a parkwide energy conservation plan. Although much of the plan will likely consist of staff and visitor education, it should also provide a more comprehensive view of current and future conservation efforts.
- ◆ **Purchase environmentally preferable products.** (*Administration; FY 2008*) – The preserve’s Administration staff will be trained in how to maneuver through the federal procurement system to purchase environmentally preferable products.
- ◆ **Require contractors to be environmentally minded.** (*Facility Operations and Maintenance; beginning FY 2008*) – All future project contracts will require contractors to recycle and reuse waste materials where appropriate and feasible.
- ◆ **Incorporate sustainability into construction.** (*Facility Operations and Maintenance; beginning FY 2008*) – All future projects will incorporate sustainable practices and products, as mandated by the preserve’s environmental management plan. For example, building designs will minimize each building’s visual impact on the desert surroundings and incorporate only sustainable building materials such as certified wood products. This policy will slightly increase the overall cost of future projects.
- ◆ **Reduce vehicle miles driven.** (*Administration; FY 2008–2012*) – The preserve will decrease the number of miles driven by its employees by increasing the number of positions that are housed closer to the preserve and by encouraging employees to carpool to the extent possible.
- ◆ **Increase recycling.** (*Facility Operations and Maintenance; beginning FY 2008*) – Pending expected funding for a recycling trailer from the environmental management program and Centennial Commitment funding for seasonal employees,

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Mojave National Preserve includes 1,800 miles of backcountry roads for visitors to explore. NPS PHOTO

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Mojave National Preserve’s Facility Operations and Maintenance division will implement a recycling program for all park facilities, campground, and public use areas.

- ◆ **Use only environmentally friendly cleaning supplies.** (*Facility Operations and Maintenance; FY 2008*) – Mojave will complete the transition to 100 percent usage of environmentally preferable cleaning supplies.
- ◆ **Use biobased fluids in equipment.** (*Facility Operations and Maintenance; FY 2008*) – Pending passage of the FY 2008 budget, the preserve’s Facility Operations and Maintenance staff expects to receive project funding to complete the transition from traditional hydraulic fluids to biobased fluids in all preserve equipment.
- **Work with partners to install a solar energy system at the Zzyxx Desert Studies Center.** (*Facility Operations and*

Maintenance; tentatively beginning FY 2008) – Under the NPS Centennial Challenge, parks and park partners can submit projects for federal matching funds. One project that has been submitted for funding through this potential fund source would convert the Zzyxx Desert Studies Center to a 100 percent solar energy system. Whether through Centennial Challenge funding or traditional project funding, Mojave National Preserve plans to work toward its goal of obtaining all of its power from sustainable solar energy systems.

- **Reduce gasoline consumption by park vehicles.** (*Administration; FY 2008–FY 2012*) – As federal policy, funding, and alternative fuel availability allows, Mojave will add hybrid vehicles and alternative fuel vehicles to the preserve fleet. This may increase the operating costs of the fleet, but would also result in a reduction in the preserve’s environmental footprint.



Over half of the preserve is critical habitat for the Mojave desert tortoise. The primary reasons for listing the Mojave population of the desert tortoise as a "threatened" species include deterioration and loss of habitat, collection for pets or other purposes, elevated levels of predation, disease, and the inadequacy of existing regulatory mechanisms to protect desert tortoises and their habitat. NPS PHOTO