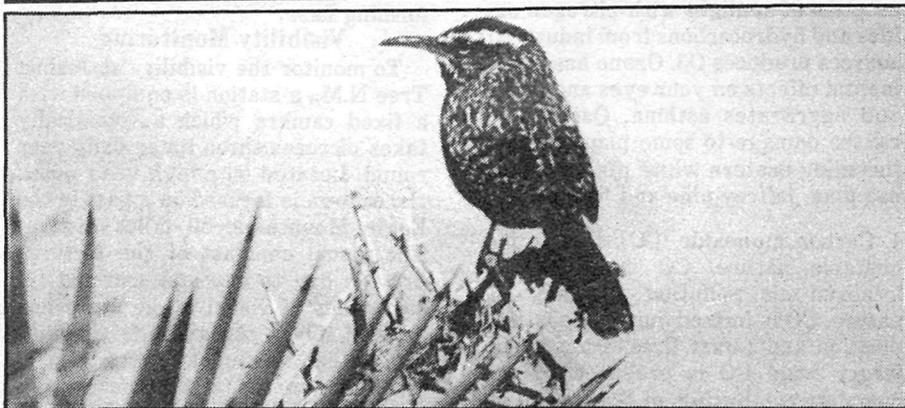


# JOSHUA TREE JOURNAL

Published by the Joshua Tree Natural History Association

SPRING/SUMMER, 1989



**CACTUS WREN:** A common year-round resident. Its call has been described as sounding like a rusty metal bucket that has been kicked down a rocky slope.

## CHRISTMAS BIRD COUNT AT JOSHUA TREE NATIONAL MONUMENT

Dennis Vasquez

On New Year's Day of this year, the San Bernardino Valley Chapter of the National Audubon Society conducted the Christmas Bird Count at Joshua Tree National Monument for the twentieth consecutive year. On this cool, breezy day, a total of 2031 individual birds of 51 species were observed. Brian Prescott, coordinator of the event, explained that the annual count consists of recording the number of birds of each species seen within a 15-mile diameter circle on a single day within two weeks of Christmas. These systematic bird counts, which take place throughout North America, Latin America and numerous Pacific Islands, provide valuable information about winter population trends of individual species and monitor changes in relative abundance of species over large geographic areas.

The local bird census is centered on Queen Mountain in the northern part of the monument and includes Lost Horse Valley, Queen Valley, Barker Dam, White Tank, Indian Cove, the Oasis of Mara, and the town of Twentynine Palms.

Over the twenty year history of the bird count, the most commonly seen birds have been the White-crowned sparrow and the House Finch, and they were abundant again this year.

Other common birds which visitors could expect to see during the winter season include: Red-tailed Hawks, Gambel's Quail, Horned Larks, Scrub Jays, Ravens, Cactus Wrens, Juncos, Black-throated Sparrows, Mockingbirds and Phainopeplas. Other species which are fairly common in proper habitat are Anna's Hummingbird, Ladder-backed Woodpecker, Verdin, Yellow-rumped Warbler and Ruby-crowned Kinglet.

One of the winter residents for which Joshua Tree has become well-known among birders is the LeConte's Thrasher. In fact, in the 1987 Bird Count, more LeConte's Thrashers were seen in Joshua Tree than anywhere else in the country.

The Christmas Bird Count, organized in 1900 by the National Audubon Society, is one of the oldest cooperative research projects with over 1500 counts having been conducted. The annual event at Joshua Tree is an example of two organizations, the National Park Service and the Audubon Society, cooperating functions of the National Park Service is to monitor animal populations in order to determine their status. With the data that has been collected of the past twenty years at Joshua Tree, we can analyze the status of local bird populations in their winter habitat.

## WILDFLOWERS WHEN AND WHERE

Richard Hadley  
Park Naturalist

The extent and timing of spring wildflower blooms may vary greatly from one year to the next in the California deserts. Blooms are dependent upon a multiplicity of inter-related environmental factors, amongst which winter precipitation and spring temperatures are key.

In general, spring flowering begins as temperatures rise — first at lower elevations in February and later at higher elevations in March and April. On mountain tops above 5,000 feet blooms are as late as June.

Spectacular desert blooms occur on an average about once every twenty years and are spread out evenly between December and March. The spring of 1988 was one of these years, with exceptional blooms occurring at all elevations throughout the Monument and the greater Mojave and Colorado Desert ecosystems.

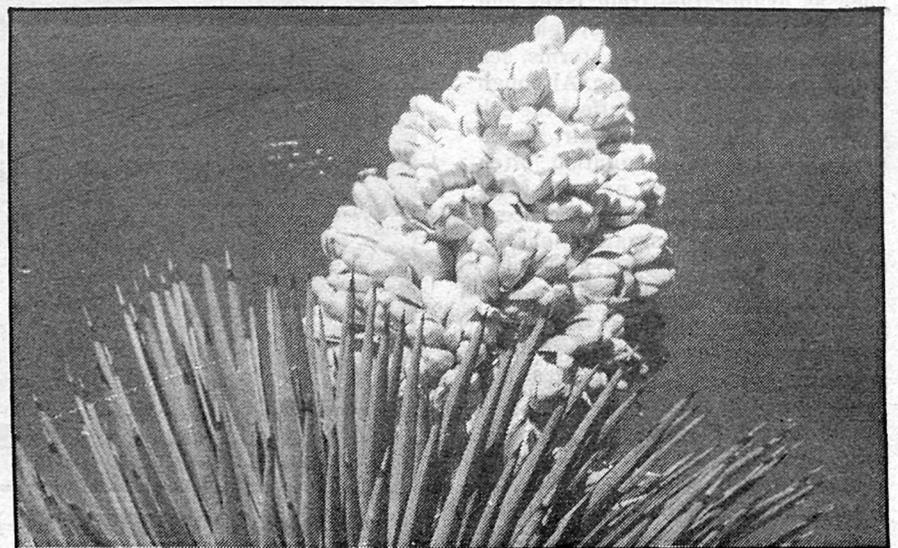
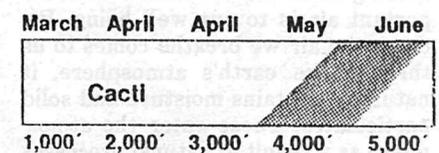
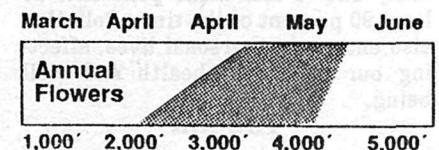
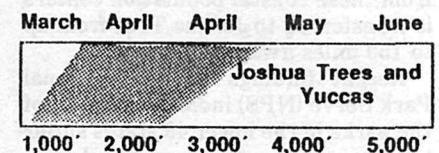
While it is not likely that such a bloom will occur in two consecutive years, it could happen. However, it is more likely that a moderate-to-low flowering will take place in 1989, since precipitation through the fall and early winter has been low.

For more definite predictions, we

suggest that you check with Joshua Tree National Monument by telephone for an updated forecast. (Call 619 367-7511).

Below are charts which will further assist you in understanding flowering seasons for the California deserts and Joshua Tree National Monuments.

### Flowering seasons within altitude range



**JOSHUA TREE FLOWER:** Can be seen in March and April.

# AIR QUALITY IN JOSHUA TREE NATIONAL MONUMENT

Mark Hevston  
Physical Science Technician

National Park! The words conjure up images of blue skies, clear water, green foliage, healthy wildlife and unique cultural resources. Indeed, national parks are national treasures. Visitors to the national parks should expect pristine, scenic vistas during their visit to these national treasures.

In recent years, however, the scenic vistas and natural and cultural resources in Joshua Tree National Monument have been disturbed by air pollution. The permanent residents of Joshua Tree N.M., plants and animals, are showing signs of stress directly resulting from air pollution.

Since air pollution monitoring began at Joshua Tree about seven years ago, subsequent biological monitoring is producing increasing evidence of injury to certain native plants found here.

Air pollution problems are not limited to parks near urban sources. Joshua Tree's location downwind of Southern California population centers subjects it to unacceptably high levels of airborne pollutants, particularly in summer months. Air pollution from these coastal population centers is transferred to Joshua Tree from up to 150 miles away.

Recent findings by the National Park Service (NPS) indicates that all of the parks in the lower 48 states suffer to some degree from reduced visibility due to man-made pollutants at least 90 percent of the time. Pollution also enters our personal lives, affecting our individual health and well being.

## THE AIR

Anyone who has played the game of holding their breath knows how important air is to our well being. Because the air we breathe comes to us through the earth's atmosphere, it naturally contains moisture and solid particulates. These enter the atmosphere as a result of natural processes such as evaporation from lakes and streams, volcanic eruptions, lightning strikes, forest fires, dust storms, sea spray and release of pollen. Although these natural pollutants affect the color, taste, and smell of our air, the effects of man-made pollution often overwhelm those of nature. Man-made pollutants are of great concern to many people and organizations, including the National Park Service. The NPS is concerned about the following air pollutants which are linked to effects on park resources. These pollutants, their sources, and their effect are described below.

1. Sulfur Dioxide (SO<sub>2</sub>): Sulfur dioxide is one of the most significant pollutants in the atmosphere. Released naturally into the environment by biological decay and volcanic activity, its man-made sources include coal-fired

power generation, coal and oil furnaces and lead and copper smelting. Seventy million tons of sulfur are estimated to be released annually into the atmosphere from man-made sources. 60 percent from coal-fired power generation.

Sulfur dioxide is very corrosive to stone, paint, and metals. Sulfur dioxide also aggravates existing respiratory diseases and contributes to the development of these conditions in humans. Plant species sensitive to atmospheric SO<sub>2</sub> include Douglas fir, ponderosa pine, white pine, and forest shrubs. Various crops are also affected, including alfalfa, grains, squash, cotton, grapes, and apples.

Sulfur dioxide ultimately transforms in the atmosphere into sulfates which are very fine particles measuring less than 2.5 millionths of a meter in diameter. Due to this small size, sulfates can be transported over very long distances in the atmosphere and are most effective at scattering light in the atmosphere. The light scattering ability of sulfates causes visibility reduction.

2. Nitrogen Dioxide (NO<sub>2</sub>): The large amounts of energy released during lightning strikes oxidize atmospheric nitrogen resulting in nitrogen oxide (NO). The man-made sources of NO are vehicle emissions, as well as coal-fired power generation. In sunlight,

NO readily oxidizes to nitrogen dioxide. Like sulfates, oxides of nitrogen can be transported long distances and they also interact with sunlight producing yellow-brown haze over large cities. Nitrogen oxides can irritate your eyes, nose and throat and are injurious to plant structure and growth.

3. Ozone (O<sub>3</sub>): In the atmosphere, the reaction of sunlight with nitrogen oxides and hydrocarbons from industrial sources produces O<sub>3</sub>. Ozone has detrimental effects on your eyes and lungs and aggravates asthma. Ozone also causes damage to some plant species including eastern white pine, ponderosa pine, jeffrey pine and hardwoods.

4. Carbon monoxide (CO): Due to its unstable nature, CO is usually a localized air pollution problem. In nature, CO is formed during plant respiration and forest fires. On a much larger scale CO is produced by incomplete combustion of the carbon in fuels used in vehicles, coal and oil furnaces, and in smelters and steel production. CO is toxic to all animals, which includes humans, starving the body of needed oxygen.

5. Particulate matter: This can be defined as minute solid particles found in the atmosphere. Particles larger than 2.5 micrometers (millionths of a meter) are general soil related dust.

Because of their large size, they are not transported great distances and tend to have composition of the local soils.

Particulates less than 2.5 micrometers are capable of traveling greater distances by wind. Most of these enter the atmosphere as industrial smoke stack effluents. Particulates interfere with the wavelengths of sunlight, severely reducing visibility by forming haze.

## Visibility Monitoring

To monitor the visibility at Joshua Tree N.M., a station is equipped with a fixed camera which automatically takes pictures three times daily year round. Located on a high vista point, the camera is focused on a pass in the Eagle Mountains, 30 miles distant. The visual contrast of the pictures provide day to day and seasonal observations of visual range at Joshua Tree N.M. On the average visibility across the Monument ranges from 71 miles in summer to 162 miles in winter.

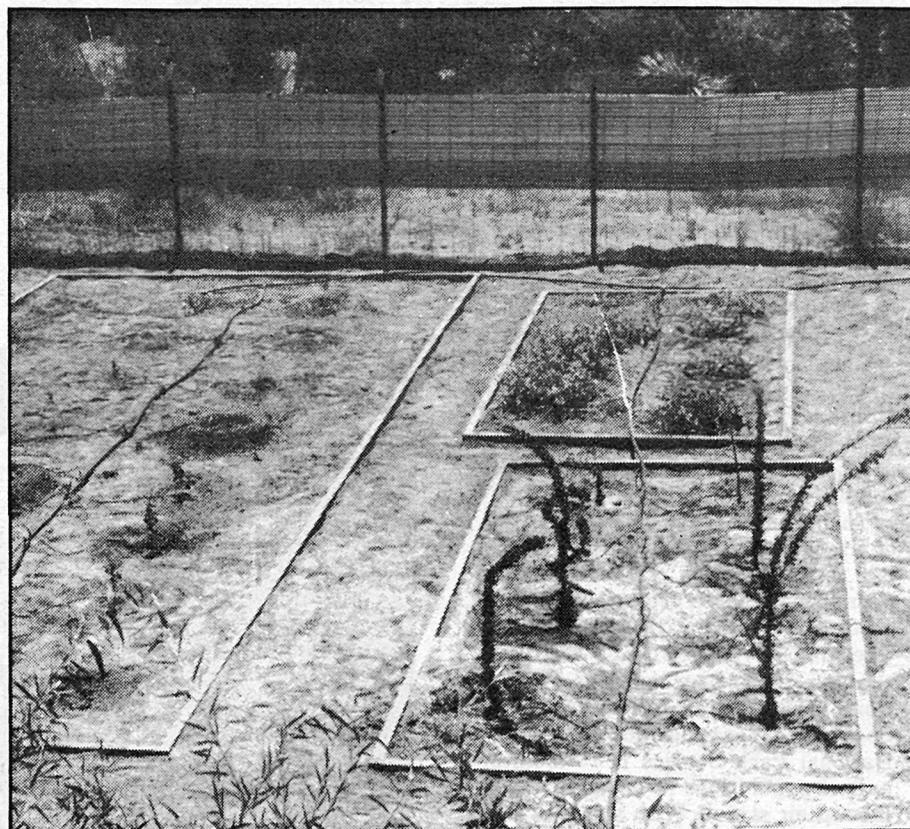
## Ozone Monitoring

Ozone monitoring is accomplished by the use of an automated monitoring station located within the Monument. Utilizing an ultra-violet absorption technique, this system can detect ozone content in the air at levels in the parts per hundred million range. This station monitors continuously around the clock, 365 days a year. Ozone episodes at levels known to be harmful to certain plants, animals and humans occur all too frequently during summer months. Levels as high as .170 parts per million have been observed here, while ambient ozone levels seem to run in the .040 to .080 range.

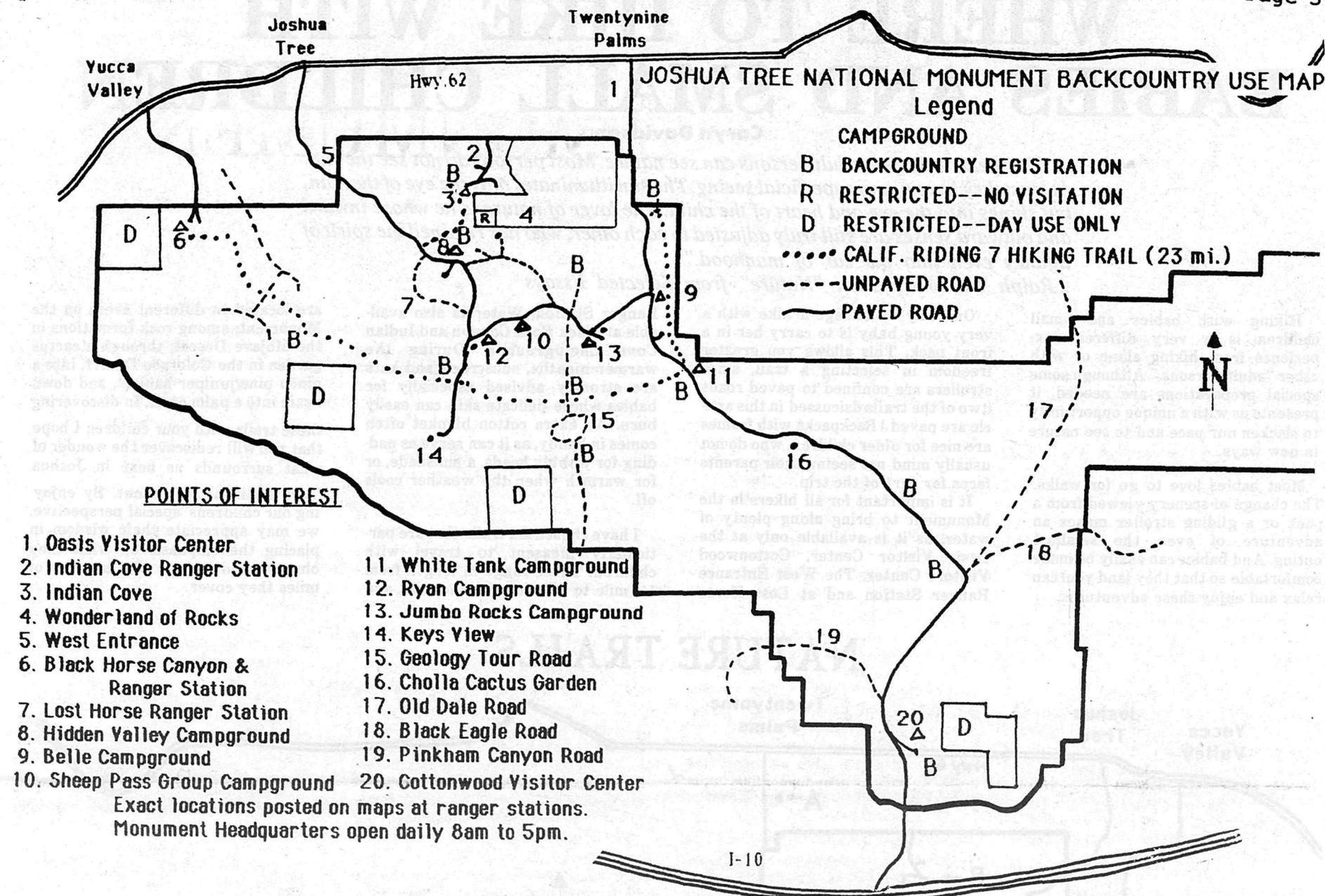
## Biological Effects Monitoring

Located adjacent to the zone monitoring station is a large garden (biomonitoring plot) planted with a variety of plants native to the Monument. Many of these plants have a proven susceptibility to ozone injury and are closely monitored during periods of high ozone for symptoms of injury. If symptoms are observed, field observations of the same plant type are made to see if injury is occurring in situ.

Observed injury to Monument plant life is documented with photographs, notes and plant tissue samples. Symptoms of ozone injury to *Rhus trilobata* (squawbush) have been observed in the Monument, both in the biomonitoring plot and in the field. It is hoped that continued study of this and other air pollution effects will lead to a clearer understanding of the risk air pollution poses to Joshua Tree National Monument and its resources.



**THE BIO-MONITORING PLOT:** Where symptoms of possible ozone injury to native plants can be observed.



**JOSHUA TREE WEATHER**  
Bob Raver

Weather patterns around Joshua Tree National Monument usually differ from those experienced on the California Coast; however, they are closely related. We often get calls from people living in the Los Angeles area inquiring about the status of the weather in Joshua Tree National Monument. Usually, these calls are made during periods of stormy weather when people are looking for a place to escape to drier conditions.

Lying just a few miles west of Joshua Tree National Monument is the San Bernardino Mountain Range. This 11,000 foot range (located just east of San Bernardino) effectively reduces the amount of moisture that passes east of its peaks. Precipitation west of the San Bernardinos averages 13 inches per year, but east of the range is reduced to 4 inches.

The weather experienced in the Los Angeles area can be used to predict the weather at Joshua Tree National Monument. If Los Angeles receives a light to moderate storm, most likely Joshua Tree National Monument will remain dry. Whereas, if Los Angeles experiences a heavy or prolonged storm system, the Monument will get rain or possibly snow in the winter.

**THE WEATHER**

Month	Average Maximum Temperature	Average Minimum Temperature	Average Precipitation	Average Humidity
JANUARY	62.0	35.1	.49	30.7
FEBRUARY	67.2	38.3	.31	25.0
MARCH	72.5	42.0	.35	21.2
APRIL	80.7	48.9	.10	17.8
MAY	89.9	56.6	.07	14.6
JUNE	99.1	64.2	.02	13.2
JULY	104.7	71.5	.66	17.9
AUGUST	102.8	70.2	.73	20.0
SEPTEMBER	96.7	63.4	.46	17.2
OCTOBER	84.5	52.7	.36	19.9
NOVEMBER	71.2	41.5	.31	29.9
DECEMBER	63.1L	36.0	.51	35.8

This information has been compiled from records maintained during the 50-year period from 1936 through 1985.

The readings are taken at Twentynine Palms Oasis at an elevation of 1960 feet, at the higher elevations in Joshua Tree National Monument, temperatures will average approximately eleven degrees lower. Higher altitudes average about 3.5 inches more of precipitation annually.

# WHERE TO HIKE WITH BABIES AND SMALL CHILDREN

Caryn Davidson

*"To speak truly, few adult persons can see nature. Most persons do not see the sun. At least they have a very superficial seeing. The sun illuminates only the eye of the man, but shines into the eye and heart of the child. The lover of nature is he whose inward and outward senses are still truly adjusted to each other, who has retained the spirit of infancy even into the ear of manhood."*

*...Ralph Waldo Emerson "Nature" from Selected Essays*

Hiking with babies and small children is a very different experience from hiking alone or with other "adult persons." Although some special preparations are needed, it presents us with a unique opportunity to slacken our pace and to see nature in new ways.

Most babies love to go for walks. The change of scenery viewed from a pack or a gliding stroller makes an adventure of even the smallest outing. And babies can easily be made comfortable so that they (and you) can relax and enjoy these adventures.

One way to manage a hike with a very young baby is to carry her in a front pack. This allows you greater freedom in selecting a trail, since strollers are confined to paved roads (two of the trails discussed in this article are paved.) Backpacks with frames are nice for older children, who do not usually mind not seeing their parents faces for part of the trip.

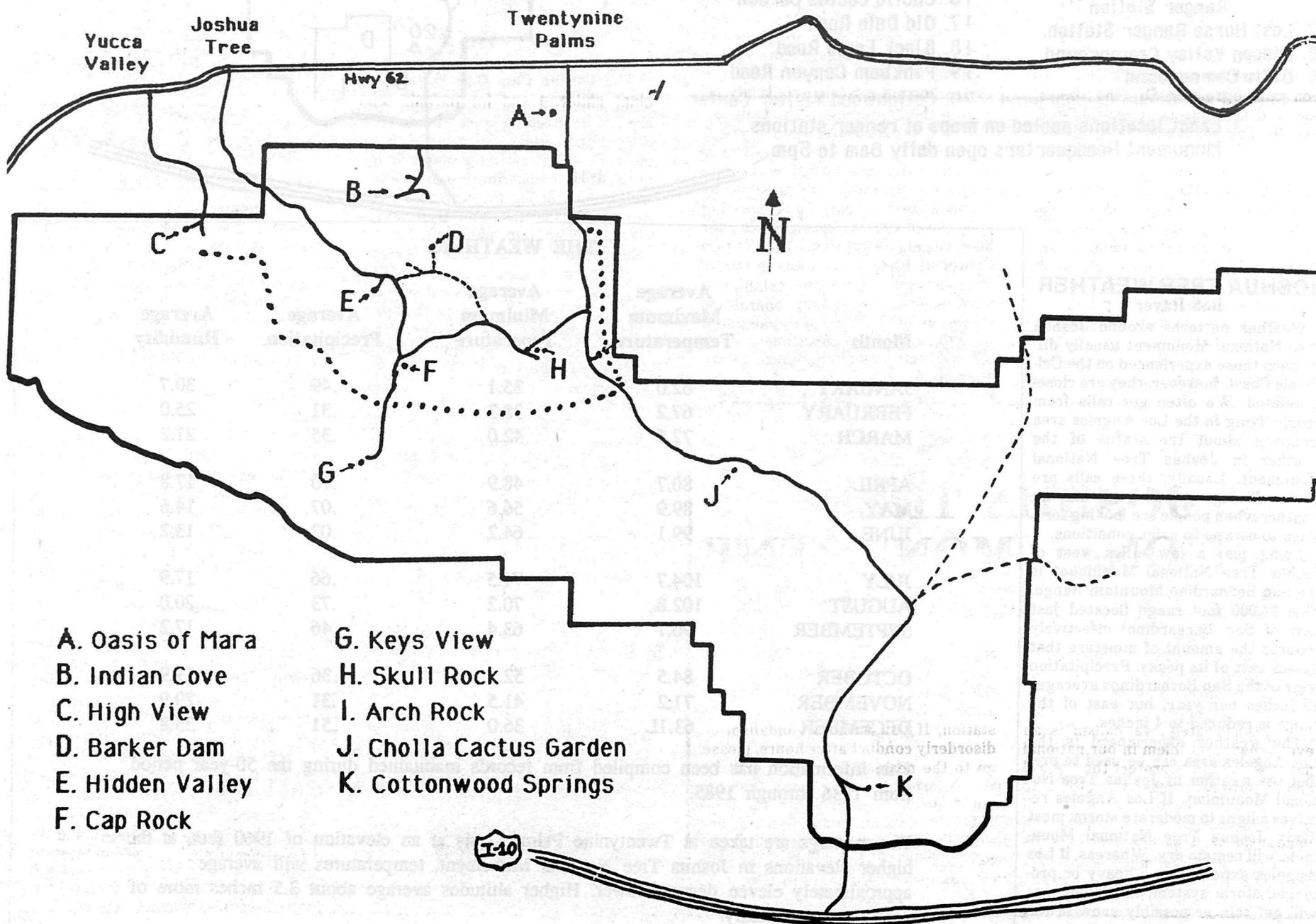
It is important for all hikers in the Monument to bring along plenty of water, as it is available only at the Oasis Visitor Center, Cottonwood Visitors Center, The West Entrance Ranger Station and at Lost Horse

Ranger Station. Water is also available at Black Rock Canyon and Indian Cove Campgrounds. During the warmer months, sunscreen and hats are strongly advised especially for babies whose delicate skin can easily burn. An extra cotton blanket often comes in handy, as it can serve as padding for wobbly heads, a sunshade, or for warmth when the weather cools off.

I have chosen six trails that are particularly pleasant to travel with children. These range in length from 1/4 mile to a little over one mile, and

are located in different areas on the Monument; among rock formations in the Mojave Desert, through a cactus garden in the Colorado Desert, into a pinon pine/juniper habitat, and down again into a palm oasis. In discovering these trails with your children I hope that you will rediscover the wonder of what surrounds us here in Joshua Tree National Monument. By enjoying our childrens' special perspective, we may appreciate their wisdom in placing the emphasis on what they observe and not on the number of miles they cover.

## NATURE TRAILS



- A. Oasis of Mara
- B. Indian Cove
- C. High View
- D. Barker Dam
- E. Hidden Valley
- F. Cap Rock
- G. Keys View
- H. Skull Rock
- I. Arch Rock
- J. Cholla Cactus Garden
- K. Cottonwood Springs

## INDIAN COVE NATURE TRAIL (0.6 mi)

Towards the east end of the Indian Cove Campground loop is the trailhead for the Indian Cove Nature Trail. This easy trail follows a desert wash for much of the walk — trail markers point the way when the wash seems to fan out in all directions. Identification plaques describe the vegetation, which includes beavertail and hedgehog cactus. These plants are spectacular when in bloom, which is approximately from April through June. Springtime brings out many wildflowers, and the recent displays in Indian Cove have been dazzling. Look for: Arizona lupine, Chia, desert mallow and the paper-bag bush.

Along the trail, keep an eye out for

desert tortoises, who seem to like Indian Cove. If you do spot one, please observe it quietly from a distance. You may be surprised by how fast these desert tortoises can move when out looking for food, and especially by how fast they may eat when they find a clump of delectable wildflowers. Remember not to disturb these animals — they are protected by state law.

There are good bouldering areas along the trail, but, as with any off-trail hike in the Monument, it is a good idea not to wander too far into new territory without stopping frequently to orient oneself by noting landmarks and any prominent features in the landscape.

## OASIS OF MARA NATURE TRAIL (0.53 mi)

The Oasis of Mara (also known as Twentynine Palms Oasis, from which the town of Twentynine Palms received its name) was once a popular gathering place for several tribes of Indians including the Serrano and Chemehuevi tribes.

The nature trail that goes through the oasis is paved. It is an easy excursion from town and a fine introduction to the rest of the Monument. It is also a good complement to a trip to the Visitors Center, which houses a number of displays including a five-minute slide show describing the natural history of the Monument, and many specimens of the area's wildlife.

A pamphlet, available at the beginning of the trail, describes the natural and cultural histories of the oasis. It is not uncommon to sight a roadrunner, desert cottontail or family of quail along this trail. The abundant wildlife is something all children can enjoy, and the pavement make it accessible to babies in strollers as well as strolling toddlers.

## CAP ROCK NATURE TRAIL (0.325 mi)

If the Michelin Guide rated nature trails then the Cap rock trail would certainly be a four-star attraction. As far as suitability for infants and toddlers is concerned, it is a near perfect place. Built as a wheelchair-accessible nature trail, it is one of the few paved trails in the Monument, making it accessible both to strollers and to wheelchairs.

The trail loops through an outcrop of quartz monzonite rock, making it a fun spot for older children who may want to try their hand at rock scrambling. An enjoyable game that can be played throughout the northern area of the Monument is "Name That Rock." The Monument is loaded with dramatic and bizarre rock formations that can be imaginatively described, much as one might do while gazing at cloud formations. There are lots of rocks, beyond Cap Rock, Skull Rock, etc. that have yet to be named.

Cap Rock Nature trail offers some rock-provided shade during the summer, but is more pleasant during the fall and spring. There are plaques along the trail identifying the vegetation and describing the geology of the area. For ease, accessibility and beauty, this trail caps my list of favorites to explore with infants or toddling hikers-to-be.

## HI VIEW NATURE TRAIL (1.3 mi)

Black Rock Canyon Campground, once known as "Jellystone Park" before its acquisition by the National Park Service, is situated among pinon pines and junipers that grow side-by-side with Joshua Trees. The Hi View Nature Trail begins from the parking lot to the northwest of Black Rock Canyon Campground. Of the hikes described this one is at the highest elevation and consequently gives one the feeling of being up in the mountains.

The chilly weather during the months of December through February requires a bit of bundling up, but the view from the top, near Summit Peak (elevation 4500 ft.) makes this hike well worth the trek up the mountain.

This is a moderately steep hike, with a climb in elevation of 300 feet. A backpack may be more comfortable than a front pack for carrying small passengers. Carrying babies up this

trail in one's arms is not recommended as it is somewhat strenuous because of the sharp ascent in some parts. At the top, you will find benches and a register where you can record your conquest of a desert mountain. The descent is more gentle, winding through a small canyon and then following a wash, eventually rejoining the beginning of the trail.

This is probably the most physically challenging of the six trails I have described and care should be taken to prepare in advance (as on all hikes) by bringing water, hats, and wearing good closed walking shoes. After your hike, you may want to see the Visitors Center at Black Rock Canyon Campground where there are exhibits of wildflowers, local mining operations and wildlife of the area. A pamphlet, describing the flora and scenery along the trail, can be obtained here before your hike.

## BARKER DAM (1.1 mi)

The Barker Dam trail is good for older children and for parents who are not daunted by some simple rock scrambling while sporting a baby pack. There is no danger involved, only a little redistribution of baby's weight as you jog through some narrow rock passages. The trail brings you to Barker Dam, which was built to collect water for the cattle of the early ranchers. It is a good spot for bird-watching, and junior birders may see many species found only in that part of the Monument. The dam lies within the area known as the Wonderland or Rocks, and more good rock scrambling can be found here — but please caution inexperienced scramblers against venturing too far into the jumbles of look-alike rocks.

If you take the loop trail to get back to the parking lot, you will pass a group of Indian pictographs. These prehistoric rock paintings, although authentic, were "enhanced" by a film crew some years ago. Children can be made aware of the Indian history of the area if these pictographs, as well as other evidence of pre-European culture (such as mortar holes in the bed-rock near these pictographs) are pointed out to them.

## CHOLLA CACTUS GARDEN (0.25 mi)

This nature trail is a short, level dirt path that loops through a natural patch of Bigelow cholla or "Teddy Bear" cactus. Although its nickname may conjure up images of Care Bears, the Teddy Bear (or "jumping") cholla is to be treated with the utmost caution and respect. It may look cuddly from afar, but once its needles attach themselves, it is a delicate and often painful task to try to remove them. Therefore children should be supervised closely while they are out on this trail, which is an otherwise wonderful place to explore with them.

There is a brochure available in the information box at the start of the trail that will help you pick out the well-camouflaged homes of the many packrats that inhabit the garden, as well as other wildlife and vegetation that characterize the Colorado Desert. See how many bird's nests you can find, of the many that are carefully constructed among the prickly branches of the cholla cactus. This is the only walk mentioned in this article located in the low desert portion of the Monument. Here, the rock formations and Joshua Trees of the high desert have given way to the large open expanses and ocotillo of the Colorado Desert. The Cholla Cactus Garden nature Trail is a fine place for exploring the low desert and for experiencing the unique contrasts it provides to the Mojave Desert portion of the Monument to the north.

## HELP PROTECT JOSHUA TREE NATIONAL MONUMENT AGAINST VANDALISM

Joshua Tree National Monument is a superb natural area with numerous historic resources and plenty of recreational opportunities for all to enjoy. Unfortunately, vandalism is an ever-growing problem in our national parks. Please help protect the natural and cultural resources by reporting to any visitor center or ranger station if you observe damage. If you observe vandalism as it occurs, please write down the license number of vehicles near the scene, descriptions of the

people involved, the location and the nature of the vandalism and report immediately to the nearest ranger station, visitor center, or entrance station. If you witness vandalism or disorderly conduct after hours, please go to the nearest phone and call the San Bernardino Dispatch Center (collect for emergencies) at (714) 383-5651 and a Ranger will be sent out immediately. You can also dial 911 in emergencies. Thank you for your help in protecting the national parks.



## SOME HIKING TRAILS IN JOSHUA TREE NATIONAL MONUMENT

TRAIL	ROUND STARTING POINT	ESTIMATED TRIP DISTANCE	HIKING TIME	TRAIL DESCRIPTION
49 Palms Oasis	Parking area on Canyon Road, 4 miles west of 29 Palms off Highway 62	2.8 miles	2-3 hours	Several stands of fan palms, evidence of past fires, and pools of water are found at the Oasis. Moderately strenuous.
Ryan Mountain	Ryan Mountain Parking Area or Sheep Pass Campground	3.0 miles	2-3 hours	Elev. 5470 feet. View of Lost Horse, Queen and Pleasant Valleys. Strenuous.
Lost Horse Mine/ Mountain	Parking area 1.2 miles east of Keys View Rd.	3.5 miles	3-4 hours	Elev. 5178 feet. Ten stamp mill and foundations. Moderately strenuous.
Lost Palms	Cottonwood Spring or Campground	7.5 miles 8.5 miles	4-6 hours	A canyon with many groups of palms. A side trip to Victory Palms and Munsen Canyon involves boulder scrambling. Strenuous.
Mastodon Peak	Cottonwood Spring or Campground	3.0 miles 4.0 miles	2 hours	Elev. 3371 feet. Fine views of Hexie Mts., Pinto Basin and Salton Sea. Moderately strenuous.
Scout Trail	Indian Cove area or 1/2 mi. east of Quail Springs Picnic Area	13 miles	1-2 days	Scenic trail through the western-most edge of the Wonderland of Rocks. Strenuous.

Thirty-five miles of the California Riding and Hiking Trail pass through the Monument. Access to the trail is available at its junction with Covington Flat, Key's View, and Squaw Tank (Geology Tour) Roads, at two places along Park Route NO. 1, and at Ryan Campground. This allows for shorter hikes of 4, 6.7 or 11 miles. Two to three days are required to hike the entire length of the trail.

### JOIN THE JOSHUA TREE NATURAL HISTORY ASSOCIATION

You will receive

A membership card

A 15% discount on all publications sold by the Association.

Clip and mail with a check or money order for \$8.00

TO: JOSHUA TREE NATURAL HISTORY ASSOCIATION

74485 National Monument Drive

Twentynine Palms, CA 92277

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

### BOOKS FOR SALE

- |  | Price  |
|--|--------|
| <input type="checkbox"/> Joshua Tree National Monument, a Visitor's Guide .....        | \$5.00 |
| <input type="checkbox"/> An Archaeological Survey of the Twentynine Palms Region ..... | \$5.00 |
| <input type="checkbox"/> Joshua Tree: Desert Reflections .....                         | \$2.00 |

Natural and human history with many color photos

Association members deduct 15%

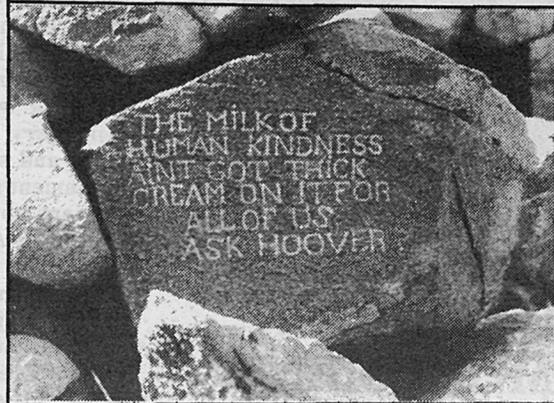
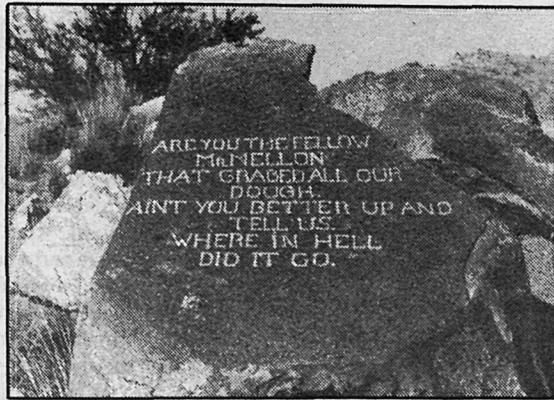
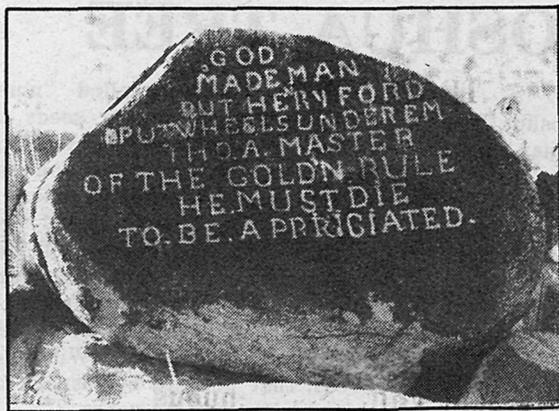
To order:

Joshua Tree Natural History Association  
74485 National Monument Drive  
Twentynine Palms, CA 92277

Make Checks or money orders payable to Joshua Tree Natural History Association.

Include 6% sales tax and \$2.00 for shipping and handling.

# SAMUELSON'S ROCKS



**JOHN SAMUELSON:** homesteaded near Quail Spring around 1927. With these inscriptions chiseled on boulders he expressed his bitterness at the hard times of the Great Depression.

## SPRING SEASON GUIDED ACTIVITIES

The Park Visitor Centers are open from 8:00 a.m. until 4:30 p.m. throughout the season. Beginning February 16, a limited schedule of ranger guided activities will be offered on weekends throughout the Spring, including naturalist walks and campfire programs. Consult campground bulletin boards and visitor centers for current schedules.

The guided tours of the Desert Queen Ranch will be offered on Saturdays and Sundays at 9 a.m., 11 a.m., and 1 p.m. beginning February 18. The tours are offered by the Joshua Tree Natural History Association at a charge of \$2.00 for adults and \$1.00 for children ages 6 to 15. Tours meet at the gate to Keys' Ranch, a short distance from the Hidden Valley Campground.

Astronomy programs featuring telescopic viewing of the desert night skies will be held at Cottonwood Springs and the Hidden Valley Picnic Area on the nights of April 8, April 29 and May 27.

For program times and topics, contact the Oasis Visitor Center or Check campground bulletin boards.

## HIKING IN THE BLACKROCK AREA

Hiking in Joshua Tree National Monument is often by following a wash in the general direction you want to go or just by going cross-country, not necessarily by established trails as many of us are accustomed to.

### Black Rock Canyon

From the trailhead sign at the campground entrance, go south-east a short distance, then south along Black Rock Canyon Wash. Or, start at the upper south end of the campground. Take the path 30 yards to the left of the water tank. It is 1 and 1/2 miles (one-way — to Black Rock Spring (now dry) and is an easy hike. Elevation difference 400 feet. The canyon continues on.

### Warren Peak

Go through Black Rock Canyon. Where the canyon wash forks, keep right. When the canyon fades out, the conical peak will be in view to the west. The hike is 3 miles one way, with the last half mile being a steep scramble. Elevation change of 1,023 feet.

### Eureka Peak

From campground entrance, follow the California Riding & Hiking Trail southeast for 1 and 1/2 miles, then take the south fork of the wash. One half mile up this wash take a smaller wash to the right. The trail is marked by orange posts. Five miles (one way) — and moderately strenuous hiking,

this trail takes 3-4 hours. Return by the same route, by the Riding and Hiking Trail from Covington Flat Road, or drive to Eureka Peak parking area for pick up, or drive up and hike back. elevation change of 1,518 feet.

### Covington Flats

From trailhead at the campground entrance, follow the California Riding & Hiking Trail to Upper Covington Flats Road near Eureka Peak parking area. Follow it for about 5 miles, then follow the road southeast for 2 and 1/2 miles to the Covington Flats trail-board at the end of the road. Trail is marked by white posts. The California Riding & Hiking Trail continues on to Ryan, 18 miles, and 29 Palms, 35 miles from Black Rock Canyon Campground. This moderate hike has an elevation change of 1,180 feet. Average hiking time is 3-4 hours.

### For Variety

Hike up any wash that crosses your path, or scramble up any peak you see. Some excellent views of the countryside and perhaps wildlife will be your reward.

## INFORMATION FOR CAMPERS

The campgrounds are maintained for your enjoyment. With your cooperation, we can keep them clean and attractive. In order to keep this area in its natural condition, all vegetation, even that which is down and dead, is protected. Bring your own water and firewood or fuel. If you run out of water, it can be obtained at the Twentynine Palms Visitor Center, Indian Cove Ranger Station, or at the Cottonwood Campground.

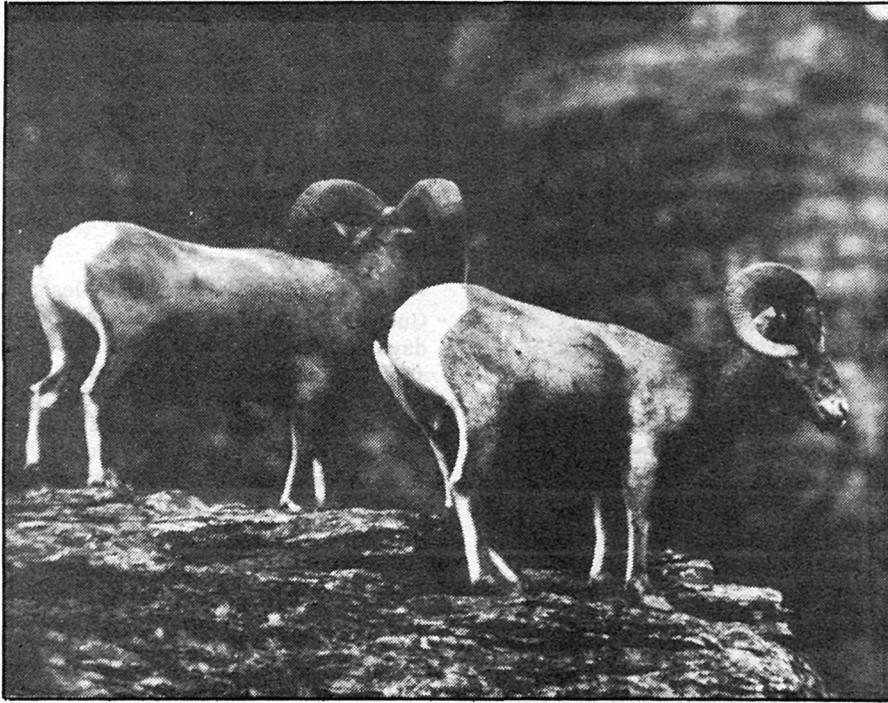
All campgrounds contain tables, fireplaces, and pit-type toilets, except Cottonwood and Black Rock Canyon, which have flush toilets. There are no light, water, or sewer connections for trailers. Camping is limited to 14 days between October 1st and June 1st. During the summer months, camping is limited to 30 days. Some of the rules and regulations of most particular concern to campers are listed on another sheet. A list of campgrounds follows (see informational folder for locations):

NAME	No. of SITES	ELEV.	DESCRIPTION
Belle Campground	20	3800'	Sites among rock formations.
White Tank Campground	20	3800'	Sites among rock formations.
Jumbo Rocks Campground	130	4400'	Sites among large rock formations.
Ryan Campground	27	4300'	One of 2 campgrounds in which horses are permitted.
Hidden Valley Campground	62	4200'	Magnificent rock formations in the Wonderland of Rocks.
Indian Cove Campground	110	3200'	North edge of the Wonderland of rocks.
Indian Cove Group Camp	13	3200'	Group sites may be reserved for organized groups by Ticketron.
Sheep Pass Group Camp	6	4500'	Same as above.
Cottonwood Group Camp	3	3000'	Same as above.
Black Rock Canyon	100	4000'	\$10.00/night/site. Flush toilets and running water. Horses permitted at no extra cost.
Cottonwood Campground	62	3000'	\$6.00/night/site. Flush toilets and running water.

Developed sites designated for picnicking are located at Indian Cove and Cottonwood. Undeveloped picnic sites are located throughout the Monument. **PLEASE REMEMBER TO LEAVE YOUR CAMPSITE AS YOU WOULD LIKE TO FIND IT!** Trailer dump stations available at Black Rock and Cottonwood Campgrounds.

**HIKE SAFELY AND TELL SOMEONE WHERE YOU ARE GOING**

## DESERT BIGHORN SHEEP



### SHEEP SURVEY IN JOSHUA TREE NATIONAL MONUMENT

Alice Turner  
Resources Management Ranger

Fortunate is the visitor that sees the magnificent Desert bighorn sheep. It is hard to convince many people that these creatures even exist, much less in large numbers. The rugged terrain of the Monument and the far reaching back country is a favorite playground of this elusive animal but it also limits sightings by the casual visitor. Many of us who have lived in the desert for years can claim to have seen only one or two on rare occasions.

The division of Natural Resources here at Joshua Tree National Monument is given the responsibility for monitoring the sheep herd. How many are there? Are they healthy? These are the questions we must answer.

"But," you may ask, "How do you count sheep in an area of 560,000 acres and as rugged as any around?" "Well," I answer in a less than serious mood? "You count their legs and divide by four." But seriously folks...

One way of monitoring the sheep is to send a person into a known watering hole or guzzler (manmade), have him sit in a blind for several hours and count the sheep that come in to water. The problem here is that only one watering hole will have been checked and half a day, minimum, is gone. Since there are six to eight known watering holes not to mention all the ephemeral potholes that fill with water after rain, you can begin to see the problem.

The most effective method of "counting sheep" is from a helicopter. A Jet Ranger helicopter with pilot, navigator and two observers can, in about four hours, fly 500 foot contours around several mountains that are known sheep habitat. The noise of the chopper will get the sheep moving and they are easily seen as they run up the mountainside. This method was put to use this August over a

period of three days.

The first survey area was the Stubbe Springs unit. It lies along the Little San Bernardino Mountains near the Monument's western boundary. The survey was restricted to the primary ridges and canyons along the south facing slopes. Easterly, the area includes Inspiration Peak. During the morning of August 29th the crew counted 5 rams, 8 ewes, 1 yearling and 4 lambs.

On the 30th of August, a second crew flew Quail Mountain and Queen Mountain areas. On Quail Mountain, 4 rams, and 7 ewes were spotted. Additionally, 16 deer were counted. Queen Mountain and the adjacent Wonderland of Rocks produced 2 rams, 2 ewes, 2 yearlings and one lamb.

The final area surveyed was the Coxcomb Mountain range at the far east end of the Monument. During the four hour flight only three large rams were seen, bringing the three day survey total to 39 sheep.

These data, when compared to past census results indicate a stable population for the Monument overall. Estimates of total population size are based on the assumption that helicopter surveys find approximately 40 percent of sheep in any area. We were unable to survey the Eagle Mountains in the southwest corner of the Monument. If we add in the 1986 count of 36 sheep for the Eagles, this places the Monument's heard size at close to 200 animals. Additionally, sex ratios and age class distributions indicate a healthy population.

The imposing Desert bighorn sheep are out there. Hopefully, as you enjoy our unique desert landscape you may catch a glimpse of one. If you do, we would appreciate having you fill out an observation card or at least notify a ranger. It will help us in the Resources Management Division to keep track of these beautiful animals.

## THE REVEGETATION OF JOSHUA TREE

Melanie Spoo

As you drive through Joshua Tree National Monument you may notice roads and pullouts from the 29 Palms entrance to Geology Tour and Cottonwood that have been realigned, widened and made more safe. In an effort to reduce the visual impact of the new construction the Park has been involved in a roadside revegetation project.

The Mojave yucca (*Yucca shidegera*) and Joshua Trees (*Yucca brevifolia*) that have been replanted in the Queen Valley areas were salvaged from the construction zones before the road work began and held in a temporary holding nursery. Smaller trees and shrubs were grown in the Monument's nursery from seeds or cuttings obtained from plants within the Park. All plantings were put in during the winters of 1987 and 1988.

Due to the fragile nature of the desert any major disturbance to the flora or soil could take a hundred years or more to return to its natural state. With a little help from Monument personnel that time span may be shortened considerably.

Should a few of the plants die, they are still doing a necessary job. They

become what are called "nurse" plants, catching blowing seeds and protecting tiny, emerging seedlings, to some degree, for rodents and other herbivores and providing shade.

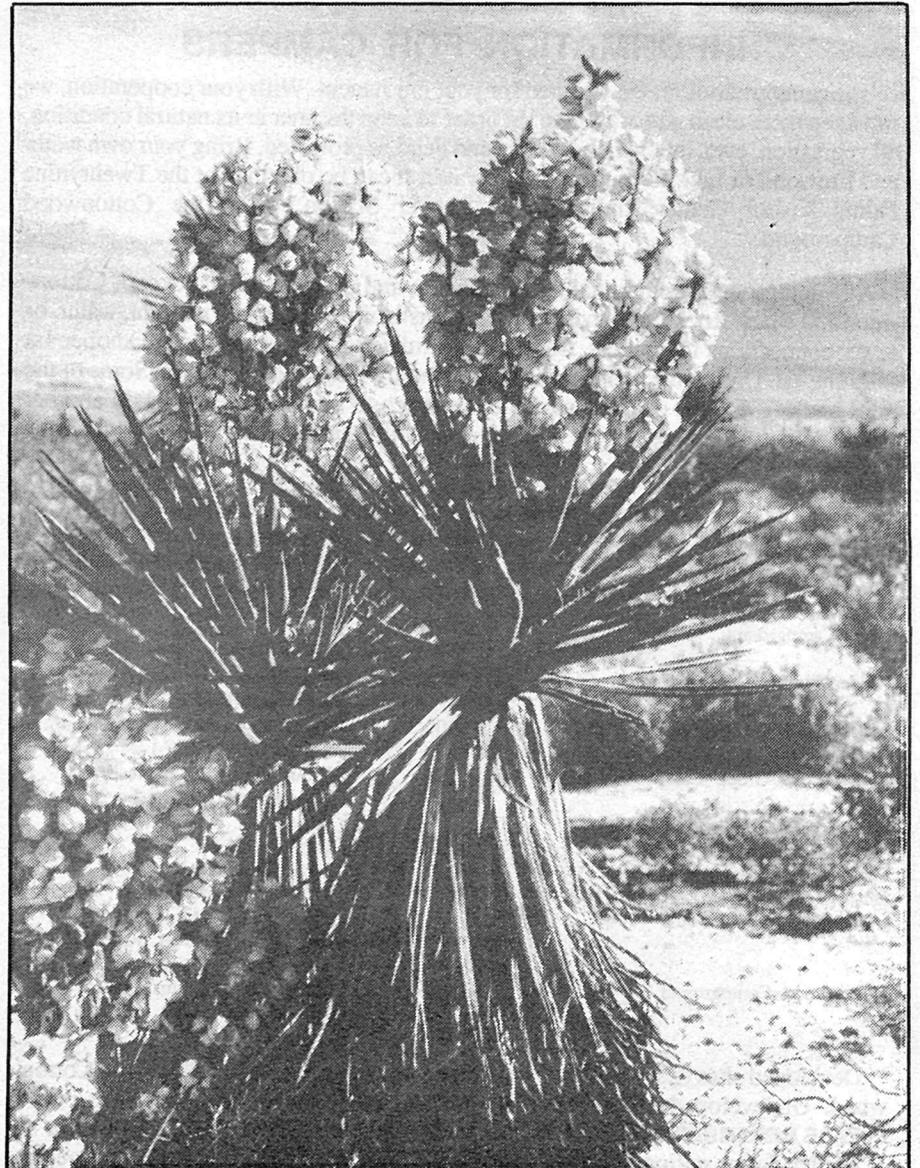
Other projects, such as old roads and the Oasis of Mara, will keep Monument staff busy for many years.

In addition to the paved road construction are 200 miles of old dirt roads, now in designated Wilderness Areas, that need to be visually disguised in the coming years.

The Oasis of Mara, at the Visitor Center, is unique among fan palm oases in that it is located on an alluvial fan fault zone in contrast to the usual canyon configurations. Surrounded by desert and the extensive pressure of its position in an increasingly urban setting, it was decided that rehabilitation and ecosystem management efforts be made to return the area to a more historically characteristic form by using fire and plantings to improve its appearance.

So, as you drive through the Monument today, or walk around the Oasis, take a few pictures of the revegetation. Then, come back in a few years and see how successful the project has been.

## MOHAVE YUCCA



The flowers appear in March and April.