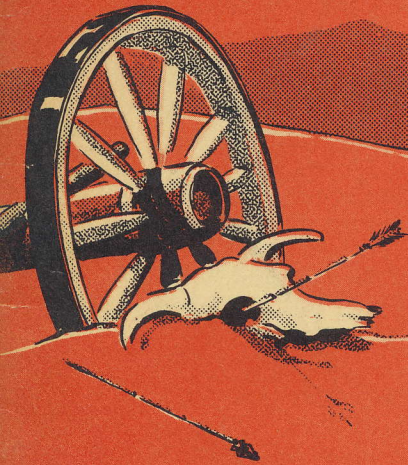


OASIS
TRAIL at

Twenty-
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JOSHUA TREE NATIONAL MONUMENT

NATIONAL PARKS AND MONUMENTS

The National Park Service was established as an agency of the U. S. Department of the Interior in 1916 to preserve the marvels of nature's handiwork in just such areas as Joshua Tree National Monument. Yellowstone National Park, created in 1872, was the first national park in the world to be dedicated to the principle of preservation for the enjoyment and inspiration of all the people of this and future generations. This continues today to be the guiding principle of the National Park Service, which administers more than 180 areas set aside for their scenic, scientific, historic and archeologic values. The National Parks and Monuments have been called the "crown jewels of America" and they are yours to protect and treasure for Americans of the future.

INTRODUCTION

The few minutes pleasantly spent on this easy walk will take you through two very different environments. In a short distance the trail leads from the sparseness of the desert into the abundance of the oasis.

An oasis is a spot of green in the vast open spaces where rainfall is scanty and uncertain. It is a place where water comes to the surface of the ground (forming springs) or rises to within a few feet of the surface, making conditions favorable for the growth of plants which could not survive on the surrounding desert.

We can only conjecture as to what people passed this way, lived and died here before the first recorded visit of white men in 1855. A few Indians were here then. Latter the oasis was important to the settlement of this country by the white people.

As you pass from the surrounding desert into the shade of the oasis, observe the change in vegetation. The birdlife will be more plentiful too. You should have no difficulty in spotting several different species.

This self-guiding trail starts just behind and to the right side of the covered patio. It is a loop trail over gentle terrain, and may be covered in from twenty to forty minutes depending on individual interests.

KEEP AMERICA BEAUTIFUL!



1. SPREADING CREOSOTE OR CREOSOTE BUSH (*Larrea divaricata*) is the most widespread and readily recognized desert plant of the hot, arid regions of North America. Its common companion is the grayish Cattle Saltbrush (No. 2).

If winter rains come, the creosote bush bursts into full yellow flower in April and May, followed by a crop of fuzzy white "seed balls". During rains the plant gives off a strong resinous odor suggestive of creosote. Mexicans call the plant Hediondillo, freely translated as "Little Stinker".

Leaves of the Creosote Bush are covered with varnish which often glistens in sunlight and helps reduce evaporative moisture loss thereby enabling the plant to resist the drying effect of hot winds. All desert plants have developed some means of surviving in an area of little rain. The rainfall here averages less than five inches a year.

Let us walk ahead now and see how another plant of the desert solves the problem of reducing water loss.

2. CATTLE SALTBRUSH OR CATTLE SPINACH (*Atriplex polycarpa*) is common in the Majave and Colorado Deserts, usually around alkaline areas. During the flowering period, which occurs from June to September, the abundant pollen is a cause for many people to have hay fever.

The name of the shrub comes from the fact that it is a very important browse plant for sheep and cattle.

To insure the preservation of this area for your pleasure and inspiration thoughtful visitors have refrained from picking flowers, molesting wildlife, and collecting specimens of any kind. Those who come after you will appreciate *your* consideration.

To decrease water loss this and many other desert plants have developed small inconspicuous leaves, thereby decreasing the actual area from which water can be lost.

Just ahead you will see how the plants of the oasis, where water is plentiful, differ from these of the desert.

3. WILLOW (*Salix sp.*) This is not native to the immediate area. According to the early history of the Twentynine Palms Oasis, a man by the name of Billy Neeves planted the tree in the form of a teamster whip brought from Crvington ranch in Morongo Valley.

The little cottontail rabbits and snakes or other reptiles which may occasionally be seen along the trail are native here. In the Monument they are protected from destruction by man.



4. FREMONT COTTONWOOD (*Populus fremonti*) is a member of the Salicaceae or Willow family. *Populus* is the Latin name for "people" and alludes to the number and continued motion of the leaves like a populace. Captain John C. Fremont, 1813 - 1890, was an early western explorer, and once presidential candidate. He explored possible routes from the east to the Pacific Ocean.

The cottonwood frequently is the only sizeable tree, 50 to 100 feet tall, offering shade at desert springs. Where it occurs near alkaline springs, the low trunks are often encrusted with white salts and stained brownish by exuding sap.

Flowers grow in drooping catkins, blooming early in the spring before the leaves occur. Only the female trees produce seed, which are covered with silky, cottony hairs.

During migration, huge numbers of buzzards congregate in the trees; and in the morning, as soon as the sun is up, they spread their wings to fly aloft and soar in marvelous spirals.

5. THIS OLD WELL played a very important part in the early development of this area, since it was the only water for many miles.

It is believed that the well was dug about 1900 by employees of the Barker and Shay cattle outfit which grazed cattle in this area. It was dug to supply water for human consumption — livestock drank from the spring which was in the sumphole under the palms about fifty yards east.

At one time the well was about 16 feet deep and held about 600 gallons. When all the water was dipped from the well, about 12 hours were required for it to refill.



palms to the east is a small pond. Several dry years have caused the water level to lower.

6. PALELEAF GOLDENWEED or ALKALI GOLDENBUSH (*Haploappus acradenius*) is a yellow flowering perennial with resinous stems and leaves. This plant usually occurs on dry, sandy or gravelly sites. Some of the species of goldenweed are used medicinally by the Indians and Mexicans. While some are of slight forage value, a few are reputedly poisonous. Most are highly ornamental when in bloom.

7. AMERICAN LICORICE (*Glycyrrhiza lepidota*) is a perennial plant (i.e. a plant normally living three years or more). The flowers are a yellowish-white with seed pods bur-like, with many hooked prickles. Licorice, which is a good soil binder, but sometimes a bad weed on fertile soils, contains in its sweet roots practically as much crude glycyrrhizin as the imported licorice root, which is used in the manufacture of tobacco, confections, and fire-extinguisher compounds.

8. THESE MAJESTIC CALIFORNIA WASHINGTON PALMS OR DESERT PALMS (*Washingtonia filifera*) are native to the Colorado Desert, with a few groves in the Mojave Desert, and are not an introduction by the early Padres. This palm was named in honor of the first president of the United States. The Latin word "filifera" means thread-bearing and refers to the leaf edges.

In Joshua Tree National Monument there are several groups of these interesting plants, the largest group being in the Lost Palms Canyon, a four-mile hike from Cottonwood Spring. The Twentynine Palms Oasis is the farthest north these trees may be found.

Roots of palms must be in damp soil, so are usually found along fault lines where one wall of the fault provides an impervious wall to dam and force upward the flow of underground water. Some of the old palms reach a height of 60 to 70 feet. Since the trunks have no annual rings, there is no way to determine their exact age; some of the largest are probably more than 200 years old.



Under the leaf mantle of the trunks, Canyon Wrens find retreat, and from the copious loose threads hanging from the ends of the leaves; Arizona Hooded and Scott Orioles construct unique, pendant nests. Under the leafy fronds of palms bordering streams, numerous little hylas or tree frogs live, and all through the night make their distinctive music.

The seeds of the palms, as well as those of the mesquite and other plants, were ground in a mortar with a stone pestle by the Indians. A great many of the native plants were thus used for food.

9. ARROWWEED (*Pluchea sericea*) is a slender willow-like plant, forming low thickets about springs or river bottoms. The flower is pale roseate purple.



Arrowweed is browsed by deer, and sometimes by horses and cattle. The straight stems were used by Indians in making arrowshafts, and are still important as a construction material in the walls and roofs of mud huts. The stems are used, also,

by desert Indians in basketmaking, and in fabricating storage bins and animal cages. From the foliage of the stem tips, Pima Indians to the east brewed a tea which they used as an eye wash.

Bundles of arrow canes, frequently as many as 50 in a bundle, have been found in Indian caves in the Monument. The bundles, tied together with yucca fibre strings, were left on a flat stone or were wedged to prevent warping. The shafts were straightened by being slowly drawn through grooves in a heated stone arrow-straightener, frequently made of steatite or soapstone.

The flowers are reported to furnish considerable nectar gathered by honeybees. The blossoms are inconspicuous and develop into tawny-tufted seed-heads.

The green foliage gives off an agreeable odor, but when the plant dries, this becomes rank and unpleasant.

10. COMMON REED or RIVERCANE (*Phragmites communis*) grows in cane-like thickets in wet places of the Colorado and Mojave deserts and throughout the temperate regions of the world. Although it belongs to the Graminae (Grass) family, it sometimes grows eight to twelve feet tall.



The jointed stems resemble bamboo to which it is related.

The hollow stems were used by the Indians for making arrow shafts, prayer sticks, pipe stems and loom rods. Mats, screens, nets and cordage as well as thatching, are made from the leaves.

11. THE STORY THAT THIS OLD WASHINGTON-PALM STUMP TELLS US could

not be told half so clearly in a dozen pages of botany text. The palms belong to the same division of the flowering plants as grasses, rushes, lillies, iris and orchids. A number of characteristics distinguishing these monocotyledons can easily be seen here.

Look at the leaves of the Common Reed (Post No. 10) or of the palms and you will see that they are parallel veined rather than net veined as is the case with the dicotyledonous plants. The many slender protrusions on top of this stump are called *vascular bundles* or *conducting tissue*. See how these are scattered throughout the trunk rather than arranged in a single ring. The vascular bundles are used to conduct water, mineral salts, and other food between the roots and the leaves and to add strength to the stem. These tough vascular bundles are much more resistant to weathering than is the main mass of tissue in the trunk.

The cambium layer (which forms annual tree rings) is absent in monocotyledonous stems so the stems do not increase much in thickness as they increase in age. The restricted development of the leafy crown of the palm is due to the limited water-conducting power of the stem. It is impossible for the plant to increase the number of vascular bundles or add to the size of bundles already existing.

12. COMMON MESQUITE (*Prosopis juliflora torreyana*) is a member of the pea family and is a native of both the Colorado and Mojave deserts. It is a water indicating plant of the highest value, its long roots penetrating at times 50 - 60 feet to moisture. The flowers appear from April to June and are much visited by bees. The sweet-meated pods are eaten by numerous mammals including domestic livestock. Among many Indians and Mexicans, they still provide a staple food.

The larva of the mesquite girdler (*Oncideres pustulatus*), a small gray beetle, burrows beneath the bark, often killing the trees. A powder beetle (*Megacyllene antennatus*) works in the dry wood, soon reducing it to worthless sponge and powder.

The wood of the mesquite was very valuable firewood and building material to the Indians and the early settlers.



By this time you may have had the good fortune to spot a small black colored bird with a slender crest sitting in one of these mesquites. This is the Phainopepla, or Silky Flycatcher. Besides the insects which he catches in mid-air, this bird also lives on the berries of the mistletoe which is found so abundantly on the mesquite.

13. LIFE ON THE DESERT for man, beast and plants is difficult, and unique means of survival must be developed. For example, the dipodomys (Kangaroo Rat) can and does survive long periods without water—his diet consists of dry seeds which are chemically broken down internally, followed by a recombination or reshuffling of atoms to form water. Man has learned to consume more salt, and to

keep himself covered from the direct rays of the sun to prevent excessive evaporation. Desert plants have developed many methods of survival.

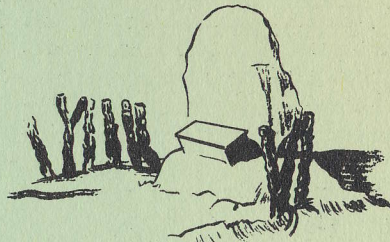
In front of you is a typical semi-arid desert. Note that the plants are more widely spaced than in more humid regions. This spacing results from the limited amount of moisture. That part of a desert plant below ground is far more extensive than the plant above ground. The roots of most desert plants are shallow and of a fleshy type to enable them to absorb large amounts of water quickly during the occasional desert showers.

Note the almost complete absence of leaves. Where leaves are in evidence, they are small and waxy or hairy. Except for brief periods, the majority of cacti lack leaves; the green cells of the stems take over the food manufacturing process normally carried on by the leaves. The stems, or trunks, are filled with storage cells that act as reservoirs to retain water for use during dry spells.

14. BUSH SEEPWEED or INKWEED (*Suaeda torreyana ramosissima*) grows abundantly in front of you. It thrives only in soils containing both salt and alkali, and generally occurs around the edges of wet type dry lakes in which moisture is near the surface. The sooty-green and brown plants are very noticeable against the gray-green of the Cattle Saltbush (Post No 2). Although it is strong in tannic acid, which acts as an astringent, the plant produces dysentery in animals occasionally feeding upon it.

15. IN 1903, MRS WHALLEN started to Dale mining district to accept employment. She was accompanied by her 18 year old daughter, Maria Eleanor Whallen who was in poor health. It was hoped that living on the desert would restore her health.

The hard wearisome trip was being made in a horse-drawn freight wagon. Upon arrival at this Oasis, the daughter passed away and was buried at this spot. The Mexican freighter prepared the grave. Afterward, Mrs. Whallen often remarked that "the Mexican teamster was truly a friend in need, comforting and caring for her, and digging the grave".



At that time only a few miners and Indians inhabited this district.

Many years later the headstone was erected, and the fence of Ocotillo was placed around the grave for protection, and memorial services were held.

PLEASE RETURN THIS BOOKLET TO THE EXHIBIT ROOM BEFORE YOU GO, OR YOU CAN PURCHASE IT THERE FOR 10¢

Any questions or suggestions you may have concerning this or other parts of the Monument will receive courteous attention from the National Park Service employee on duty in the Exhibit Room.

There are other self-guiding nature trails in the Monument exhibiting unusual and varied examples of desert plants, and other features of the area. They are for your use and will bring a deeper meaning to your experience here.

The National Park System is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

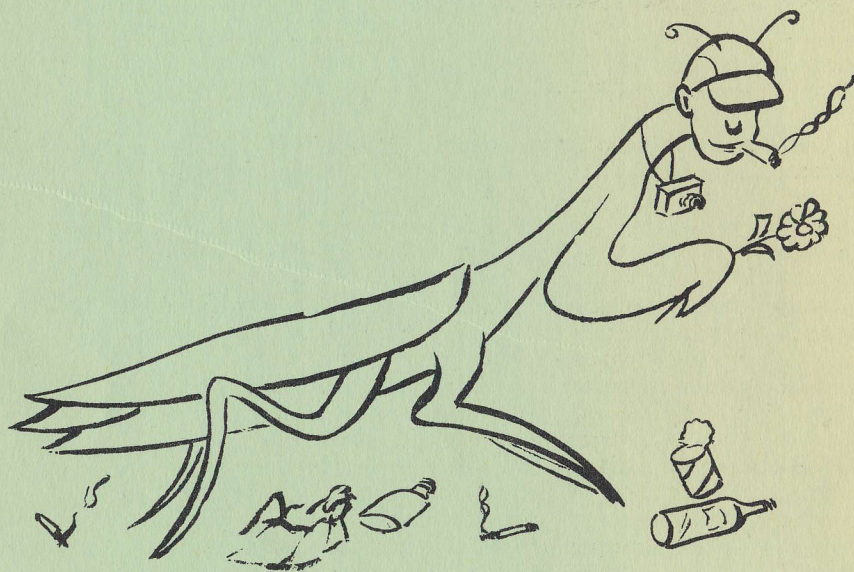
CONSERVATION — CAN A LAYMAN HELP?

The question is sometimes heard, "What is the value of a National Park?" Answering such a question is like providing an answer to questions such as "What is the value of a sunset?" or "What is the value of freedom?" The value is there, but it is intangible, to reduce it to dollars and cents is an impossibility. Men have always drawn spiritual sustenance from the contemplation of natural beauty and natural forces at work as in Joshua Tree National Monument. Nature is even more essential today than in the past to give us comfort away from the pressures of modern life and to give us perspective in orienting ourselves with the scheme of things about us. Through conservation of the land and its wilderness values we are actually conserving, in many ways, the people who live upon it.

If you are interested in the work the National Park Service is doing, and the cause of conservation in general, you can give active expression of this interest, and lend support by aligning yourself with one of the numerous conservation organizations which act as spokesmen for those who wish our scenic heritage to be kept unimpaired for the enjoyment of future generations.

Names and addresses of Conservation organizations may be obtained from the ranger.

DON'T BE A LITTERBUG
Beware of the Preying Menace!



LET NO ONE SAY
AND SAY IT TO YOUR SHAME!
THAT ALL WAS CLEANLINESS HERE
UNTIL YOU CAME.

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