

FLORA AND FAUNA
JOSHUA TREE NATIONAL MONUMENT

Joshua Tree National Monument straddles the transition zone between two desert types: the Mohave (or High Desert) and the Colorado (or Low Desert). The boundary lies at approximately 3000 feet elevation. The western portion of the Monument (Mohave desert) is characterized by the yucca and pinyon plant belts: Mohave yuccas, Joshua trees, blackbrush, various cacti, pinyon pines, junipers, scrub oaks, ephedras and various other shrubs. The eastern portion of the Monument (Colorado desert) includes the creosote bush belt: extensive stands of creosote bush, a large stand of jumping or teddybear cholla (Cholla Cactus Garden), ocotillo (Ocotillo Patch) with smoketrees, desert willow, mesquite, catclaw and palo verde in the washes. Also found in the Colorado desert are five palm oases, which include such water-loving plants as California fan palm, mesquite, scrub willows, and cottonwoods.

Plants

Total number of plant species: 608
Total number of cactus species: 16
Total number of endangered plant species: California - 10
Federal - 6

Including: Mohave prickly-pear, Alverson nipple cactus, and scaly-stemmed sand plant.

Research regarding flora of the Monument, planned or underway: 13 projects including studies concerned with fan palm oases, Joshua tree ecology, and a plant inventory (which will probably increase the number of species found here).

Most unusual plants (frequently commented on by visitors): Joshua tree, ocotillo (Fouquieria splendens), desert trumpet (Eriogonum inflatum), paper-bag bush (when in bloom) (Salazaria mexicana), and scaly-stemmed sand plant (Pholisma arenarium).

Joshua Tree information: Joshua tree (Yucca brevifolia)
Tallest Joshua tree in Monument: 41 feet - Queen Valley
Largest trunk circumference: 12.5 feet - Covington Flats

In the past, the Joshua tree was considered a member of the lily family. Since 1968 it has been placed in the Agave family (Munz, Flora of California, 1968). Next known member of the agave family is the century plant, which is not found in the Monument.

The Joshua tree was named by the Mormons, who saw in its upstretched arms the biblical figure of Joshua praying. It is found only in North America (not in the Holy Land as some people think), and its distribution coincides with the boundaries of the Mohave desert, including some portions of Nevada, Arizona and Utah as well as California.

The Joshua tree is a specific type of yucca, and as such, can be easily confused with two other members of the agave family which are found in the Monument: Mohave yucca (Yucca schidigera) and nolina (Nolina wolfii). A close look at the leaves will easily distinguish all three. (See chart on following page.)

It is impossible to "age" a Joshua tree. Annual growth rings, found in other trees, are absent; instead, the trunk of a Joshua tree is made up of woody fibers. Since 1946, annual measurements have been made of seven Joshua trees in Queen Valley. Unbranched young trees averaged 3 inches of growth per year, although growth varied from year to year. Branched, mature trees grow at much more sporadic rates.

	JOSHUA TREE	MOHAVE YUCCA	NOLINA
Length of Leaves	Av. 1.0 feet	Av. 3.0 feet	Av. 4.5 feet
Leaf Characteristics	Rigid; small sawtoothed edges. No fibers.	Rigid; sparse, white, curly fibers along edges.	Narrow, flexible; no fibers.
Blooming Season	Mar - May	Apr - May	Apr - June
Color of Blossoms	Cream to greenish-white	Cream	Cream to yellowish
Height of Flower Stalk	Av. 1.3 feet	Av. 3.0 feet	Av. 13 feet
Max. Height of Plant	45 feet	14.5 feet	6 feet without stalk
Elevation Range	2000-6000 feet	Sea level to 5000 feet	3500-6000 feet

Wildflower carpets appear in late February to March at the lower elevations (Cottonwood and the north Monument boundary near the 29 Palms entrance, also Indian Cove), progress upward and arrive at Queen and Lost Horse Valleys in April or May. The type of carpet and when it appears varies from year to year. It is believed that rainfall throughout the fall and winter months, and spring temperatures determine the wildflower bloom. At 29 Palms, 3.7 inches of rainfall has been recorded for the period September 1976 to February 1, 1977. This is twice the average for this period. Although impossible to predict, these figures may indicate a good flower season this spring. Joshua trees, Mohave yuccas, and nolinias bloomed extensively last spring, but do not always bloom every year.

Yellow flowers usually predominate in wildflower carpets. The most common carpet type is a mixture of desert dandelion, pincushion, white forget-me-nots, chia and brown-eyed primrose.

Other carpet compositions are:

- Coreopsis, eriophyllum - 29 Palms boundary area, Wilson Canyon
- Gold-poppy - Pleasant Valley, Cottonwood Canyon
- Woolly marigold - Lost Horse Valley
- Golden gilia - Lost Horse Valley, Queen Valley
- Chinchweed, amaranthus - summer carpets throughout the Monument

Common roadside flowers: western jimsonweed, scalebud, lupine, locoweed, various phacelias and primroses, coyote melon, various mustards, fiddleneck, desert mallow, desert dandelion

Conspicuous blooming shrubs: ocotillo, brittlebush, paperbag-bush, California sage, various goldenbushes, bladderpod, desert senna

Common "belly" plants: eriophyllum, sand mat, purple mat, desert star, filaree

Wildflowers common in sandy areas (Pinto Basin): sand verbena, dune and California primroses, desert lily.

Common in rocky areas: Mohave aster, desert paintbrush, sand blazing star, rock daisy, notch-leaved phacelia, campanulate phacelia, various rockbushes.

Animals

Most desert animals are well-concealed or underground during the daytime to avoid high temperatures. Some hibernate during the winter, others estivate (sleep) during the heat of summer. Generally, spring and fall are the best seasons to look for animal life. Quiet observation at dawn and dusk usually reward the visitor. Even better, adjust to a night-time schedule, when one can listen for coyotes and owls, watch for kangaroo rats and observe bats on their evening flights. Birds concentrate near oases and are most active morning and evening. Amphibians are found in the vicinity of springs. Lizards can be seen nearly everywhere in the Monument. Snakes generally are seen on road surfaces at night where they are because of the surface warmth; during the day, they rest under boulders and shrubs.

Total number of animal species: unknown

Total number of vertebrate animal species: 291

Mammals: 46

Reptiles: 36

Birds: 209

Lizards: 16

Amphibians: 2 (Red-spotted

Snakes: 19

toad, California treefrog)

Turtles: 1 (Desert tortoise)

Total number of endangered species:

Mammals: Federal - 0

California - 1 (Desert bighorn)

Birds: Federal - 3 (Yellow-billed cuckoo, peregrine falcon, Southern bald eagle - all rarely seen in the Monument)

California

Insects: 7 beetles (tentatively)

Most commonly seen mammals (especially in the vicinity of campgrounds):

During the day - antelope ground squirrel, Beechey ground squirrel, jackrabbit, cottontail rabbit, coyote

At night - Coyote, kangaroo rat, mice, jackrabbit, various bats

Most commonly seen reptiles:

During the day - all lizards, patch-nosed snake, coachwhip (red racer)

At night - gopher snake, glossy snake, sidewinder (horned rattlesnake), speckled rattlesnake (Mitchell's rattlesnake)

Most commonly seen birds: raven, scrub jay, junco, various sparrows, Gambel's quail, house finch, phainopepla, red-tailed hawk, various orioles and warblers (seasonally)

Research regarding fauna of the Monument, planned or underway: 8 projects

Including: vertebrate and invertebrate populations, bighorn ecology, coyote ecology, mule deer ecology.

Birding; Monument animals:

1. Turkey vultures - occur in large migratory flocks, spring and fall
2. Golden eagle - the largest and probably most spectacular resident bird
3. Gambel's quail - occur in large flocks near springs; when disturbed, are more likely to run along the ground than fly.
4. Roadrunner - occasionally seen as it chases lizards and small snakes, its primary food. Distinctive X-shaped tracks in washes indicate its presence.
5. Poorwill - common on road surfaces at night, where it rests after chasing insects. Unusual bird in that it hibernates during the winter for periods of a few hours to many days.
6. Hummingbirds (Costa's and Anna's are most common) - colorful, tiny, fast-flying birds; may aggressively dive on visitors wearing bright red or yellow clothing, which imitates the colors of their nectar-bearing food sources: chuparosa, bladderpod and brittlebush.
7. Scrub jay - excitedly mobs visitors in the campgrounds
8. Raven - conspicuous campground scavenger
9. Phainopepla - striking oasis resident - pure black with white wing patches. Feeds on mistletoe berries, excretes the seeds on mesquites, and may therefore be the prime dispersal agent for new mistletoe plants (which thus forms the basic food source for succeeding generations of birds).
10. Shrike - feeds upon large insects, small rodents, lizards and snakes; skewers food on plant spines, which habit has earned it the nickname "butcherbird"
11. Orioles - very colorful birds, feed on plant nectar. Build hanging nests among the palm fronds.

MAMMALS:

1. Antelope ground squirrel - perky, chipmunk-like squirrel with a white tail held upright over its back to reflect sunlight. Active during the day, summer and winter, despite the temperature.
2. Pocket gopher - spends much time underground in conspicuous burrows marked by freshly heaped soil, feeds on roots and stems which it pulls into its burrow.
3. Kangaroo rat - common everywhere throughout the Monument, probably the best-adapted desert mammal. Survives on metabolic water, eats dry seeds. Doesn't need to drink.
4. Wood rats - nests are conspicuous mounds of cholla cactus burrs, sticks, yucca leaves, or anything handy to deter predators.
5. Coyote - best known for its song, which may occur day or night, most frequently around dawn. Tracks, 2.25-2.50 inches long, are best seen in washes and on game trails. Most tracks seen in areas where people frequent are domestic dog tracks. May dig nearly four feet for water.
6. Gray fox - probably as abundant as coyotes but not as frequently seen. Reddish legs and flanks lead many people to mistake it for red fox, which is not found here. Can climb trees to escape. Tracks are 1.25-1.75 inches long.
7. Mountain lions (cougar, puma) - seen very rarely (last sighting was by a Monument staff member on January 30, 1977). Large cat which preys on mule deer. Track is 3 to 4 inches in diameter, lacks claw indentations.
8. Bobcat - resembles large, spotted housecat with bobbed tail. Occasionally seen on roadways at night. Tracks 1.75-2.25 inches long, lack claw marks.
9. Desert bighorn sheep - population estimated to be 125 animals. Very rarely seen, requires areas with no human disturbance. Population is apparently limited by water sources rather than by food; therefore ~~four~~⁵ watering devices (guzzlers) have been installed to supplement the water supply where springs have dried up in the past few decades.

- Desert tortoise - California state reptile, protected throughout the state. Most common near dunes and washes, sometimes seen on roads. Dens up for the winter, active during the day spring and fall, and at night during the summer. Easy to miss because of its "stone-like" appearance.
2. Side-blotched lizard - small (1.75-2.0 inches) lizard, the most commonly seen lizard as it skitters from place to place.
 3. Chuckwalla - large, heavily-built lizard, dark gray in color. May be 8 inches long (excluding tail). Found among rocky areas where creosote bush, its staple food, grows. When disturbed, it disappears into rock crack and inflates its body to avoid extrication.
 4. Horned lizard - typically found in Low Desert areas, very well camouflaged. Occasionally will squirt blood from the eyes when disturbed.
 5. Coachwhip (red racer) - usually 3.0-4.0 feet (maximum 8.5 feet). Common daytime snake, feeds on lizards, birds, other snakes and rodents. A good climber - may bask in shrubs. When cornered, fights (and bites) aggressively.
 6. Gopher snake - usually 2.5-5.0 feet (maximum 8.3 feet). Sometimes mistaken for a rattlesnake because of coloration and habit of vibrating tail (though rattleless) when alarmed; also may hiss exceptionally loudly. Feeds on small mammals, birds, lizards.
 7. Common kingsnake - usually 3.0-4.0 feet (maximum 6.8 feet). Spectacularly banded dark brown and white, eats other snakes (including rattlesnakes) as well as rodents, lizards and amphibians.
 8. Rattlesnakes - five occur in the Monument, only two are commonly seen. Western rattlesnake, Mohave rattlesnake, and Western diamondback - rarely seen. Western diamondback is the largest western rattlesnake (maximum 7.4 feet). It is generally considered the most dangerous because of its large size, aggressiveness when cornered, boldness, and potency and amount of venom. Speckled rattlesnake (Mitchell's) - usually 2.0-4.0 feet (maximum 4.3 feet). A well-camouflaged rattlesnake often found among the rocks at high elevations. Sidewinder (horned rattlesnake) - usually 1.5-2.0 feet (maximum 2.5 feet). Usually found in fine sand, where it burrows during the day. Common throughout Pinto Basin and in the low elevations. Leaves distinctive J-shaped marks in the sand (hook of the J indicates direction of travel), feeds on kangaroo rats, mice, lizards and birds.
- NOTE: Only two rattlesnake bites have been recorded in the Monument since 1936; neither were fatal. Monument personnel very rarely kill rattlers; if they are found on roadways or in campgrounds, the snakes are generally moved to a more isolated area.

INVERTEBRATES:

1. Circus beetle (stinkbug) - common scavenger throughout the Monument. When disturbed, balances forward on front legs and raises tip of abdomen, emitting odor generally considered noxious to predators.
2. Scorpions - despite popular belief, scorpions in the Monument are relatively harmless. Deadly species are confined to southern Arizona and the bottom of the Grand Canyon. Although the 5-inch long giant desert hairy scorpion looks menacing, it uses its claws for capturing and holding its insect prey. Sting is similar to a bee sting and is dangerous only to persons allergic to it. Rarely seen in the Monument, although scorpions regularly show up on the menu of owl.
3. Tarantulas - often seen crossing the roadways during the fall, secretive at other times during the year. They are very docile and will usually withstand handling without biting. Although all spiders inject venom to quiet their prey (in this case, large insects), the venom of the native species of tarantula is painful, but harmless to human beings.