by Susan Durr Nix

IS THERE A pool or golf course in the southwestern deserts that doesn't boast at least one palm tree, gaudy with red or yellow Malibu lights? Neatly trimmed of dead fronds (at $15 or more per tree), palms declare our rapidly multiplying artificial oases as clearly as they do the natural ones. Palms, along with roses and rye grass, now thrive in Palm Springs and Phoenix, but a natural oasis is a genuine and greater miracle — a fertile, green haven supporting a profusion of life in the desert.

Ancient Egypt gave us the word oasis, a compound of "to dwell" (*oeuh*) and "to drink" *(saa)*. The world's largest, the Nile Valley, stretches 1,600 miles through absolute desert, fed by the great Nile River. Smaller ones occur wherever springs or artesian wells bring underground water to the surface, or where local elevation causes extraordinary rainfall. Classic Saharan communities of date palms and people in the middle of nowhere are not orthodox oases, botanically speaking. Date palms were introduced by people long ago and eventually supplanted the natural vegetation, thought to be oleander and tamarisk. Only in their comparative isolation from plant disease and pests are North African oases "typical."

Nowadays we must look to our own deserts, particularly the Colorado Desert in Southern California, for a "true" oasis. From Palm Springs to the Salton Sea, there are more than 100 natural fan palm oases, holdouts from a moister age when the desert floor was a swampy sea surrounded by tropical plants. Only a few of the water-loving palms *(Washingtonia)* survived later climatic and geologic changes, not in stream-fed canyons where they now flourish, but along the lines of the San Andreas fault, where clayey soil dammed up underground water.

According to the late Randall Henderson, a desert pioneer who made a life-long study of these oases, the palms were later carried into the canyons as seeds by men and animals. In particular, Henderson credits coyotes, who love the small, sweet, date-like berries of the fan palm, with the creation of the beautiful stands of this tree in California's Palm Canyon (the largest grove in the world) and dozens of other canyons in the Coachella Valley. Randall Henderson founded *Desert Magazine* and was deeply interested in the establishment of the Living Desert Reserve. The Reserve's fan palm oasis is named for him.

The Pushawalla Oasis near Palm Springs, California.

This fan palm is the only palm native to the western United States. It is restricted to the Colorado Desert and to one stand in the Kofa Mountains of Arizona. It also ranges briefly into Baja California. It is the rarest of palms in its natural habitat but the most common elsewhere, for it has long been cultivated as an ornamental tree. *Washingtonia* is the gift of the southwest desert to the streets of Beverly Hills and Miami and to the lush gardens of the Riviera and Hawaii, prized for its rapid growth and tropical associations.

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Plants that share oases with palms vary significantly from place. There is no fixed plan munity and therefore no pre oasis ecology, or interaction plants and animals, primarily the palms are at home in bot and non-alkaline soils. Most plants are not so adaptable. weed and honey mesquite ar the few conspicuous in both according to Jan Zabriskie, d the Deep Canyon Research One study found an average eleven species of plants per these ranged from maidenha and stream orchids to salt gr ocotillo.

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Palms are broadly divided into feather-leafed and fan-leafed varieties, date palms being typical of the former. Independent leaflets grow out on both sides of the long mid-rib of each frond, like a feather. The connected leaflets of a fan palm radiate from a central point on the rib, so the frond spreads out, hand-like. Both kinds grow topsy-turvy compared to other trees. They have no branches, no bark, no annual growth rings and no woody cylinder. Their trunks are porous, spongy bundles of fiber with a topknot of tough evergreen leaves, in the center of which is the terminal bud where all growth takes place. (Know that when you eat the heart of palm served in fine restaurants, harvesting it kills the tree.) Moreover, palms don't drop their leaves like other trees. The dead fronds hang down the trunk, so much like a grass skirt that in Hawaii, *Washingtonias* are called hula palms.

Hundreds of pencil-thick rootlets anchor desert palms and absorb the water that enables them to reach a height of 40 to 100 feet and to live for 100 to 200 years. Palm trunks taper very little, being uniformly thick or thin depending on how close together they grow. Since they like to have their heads in the sun, they will shoot up, sacrificing girth for height.

Plants that share oases with fan palms vary significantly from place to place. There is no fixed plant community and therefore no predictable oasis ecology, or interaction between plants and animals, primarily because the palms are at home in both alkaline and non-alkaline soils. Most other plants are not so adaptable. Arrowweed and honey mesquite are among the few conspicuous in both soil types, according to Jan Zabriskie, director of the Deep Canyon Research Center. One study found an average of only eleven species of plants per oasis, but these ranged from maidenhair ferns and stream orchids to salt grass and ocotillo.

Regardless of the soil type, fire seems to play an important role in oasis ecology. It clears the ground of

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palms intact,
minus their sha
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other trees takes plac
and lacking bark (they
rind instead), palms are all
vious to fire. The rind may b
to a crisp and the green fronds
wilt and die, but in a few weeks ne
growth appears. Meanwhile, young
palm seedlings germinate and develop
freely because competition from other
plants has been eliminated. Fire
prevents the underbrush from growing
unchecked and choking out the palms
entirely.

Numerous animals are associated with oases. Bighorn sheep and mule deer visit, as do many birds, reptiles and rodents. It is a humid microhabitat that supports many insects and insect-eating creatures like bats, frogs and fish. Some animals are drawn to fan palms, among them hooded orioles, that build hanging nests in the fronds with loose threads pulled from sur-rounding leaflets, and western yellow bats that roost in the green crown. Liz-ards and rodents hide in the thatch; canyon wrens nest there, too. Despite the profusion of life, there appears to be only one creature that lives nowhere but in fan palm oases: the giant palm-boring beetle (*Dinapate wrighti*). This elusive and destructive beetle spends all but its adult life in the trunk of desert palms, gnawing labyrinthine tunnels that crisscross one another up and down the trunk. It takes three to five years from the time females lay eggs in a communal chamber, filled with grub-nourishing sap, chewed fibers and fecal material, for the new adults to emerge. Adults are preyed upon by bats. Mating occurs inside the tree, but not until males have fought over the females. They make an audible clicking sound in combat, which may be the origin of the Indian belief that evil spirits lurked in palm fronds.

As the grubs bore, they masticate the fibers with small blunt "teeth" in their stomachs. Digestion leaves behind tun-nels tightly packed with frass, which fuses with the tree fibers like Plastic Wood. This strengthens the tree and keeps it standing long after the grubs have killed it. Some palms are more completely infested than others; a few of beetles can be tolerated with-much harm to the host. ir omnipresence, the beetles ot present a grave threat palm oases.

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