California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

Palm Oasis

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Vegetation

Structure-- All natural or naturalized plant assemblages that include California fan palms are recognized as Palm Oasis habitats, cultivated stands of California fan palm are not considered Palm Oasis habitats. Densities of California fan palms vary from sparse scattered trees to dense, closely packed individuals. The vertical structure is usually well storied with fan palms towering over a subcanopy of smaller trees and large shrubs. California fan palms reach a maximum height of 25 m (82 ft) (Cheatham and Haller 1975). Grasses and shrubs may be found under relatively open canopies, although large stands generally have a sparse understory (Cheatham and Haller 1975).

Composition-- California fan palm is the dominant species in the canopy. Occasionally, fan palms are associated with coyote willow (Cheatham and Haller 1975), velvet ash, California sycamore (Küchler 1977), and naturalized date palms. Fremont cottonwood, mesquite (Paysen et al. 1980), and tamarisk may also be present. Subcanopy plants include arrowweed (Burk 1977), squaw waterweed (Küchler 1977), alkali goldenbush (Burk 1977), and young individuals of species in the overstory. Forbs and grasses include alkali sacaton and wiregrass (Burk 1977). See Frazier (1977) for more detailed species lists.

Other Classifications-- Other names for this habitat are Palm Series (Paysen et al. 1980, Parker and Matyas 1981), Palm Oasis - 6.4 (Cheatham and Haller 1975), and Oasis Scrub Woodland 49 (Küchler 1977).

Habitat Stages

Vegetation Changes-- 1,2-3:S-D. California fan palms grow from seedling stage through young palm stage to mature trees. Only mature trees can reproduce. Most mature Palm Oasis habitats exhibit a relatively open canopy. Successful reproduction occurs after very wet winters. This response results in the "even aged" character of many palm oases. Reproduction may need to occur only once every 100 years in order to perpetuate Palm Oasis habitats (Vogl and McHargue 1966).

Duration of Stages-- The duration that a palm oasis persists as a particular successional stage is not clearly known, but seems to depend on the severity or frequency of fire. Fire is important for the reproduction and maintenance of Palm Oasis habitats

(Vogl and McHargue 1966). Fire opens up the understory, permitting fire-tolerant fan palms to become established (Burk 1977). In addition, fire kills intolerant plants, such as mesquite, enhancing the water supply (Burk 1977) and releasing established shade-intolerant fan palms (Vogl and McHargue 1966). As a result, palms grow very rapidly. Palm Oasis habitats are relatively long-lived; individuals may live for 200 years, though most probably die by year 150 (Vogl and McHargue 1966). Most oases exist as a mature stage often associated with a dense understory of younger palms.

Biological Setting

Habitat-- Palm Oasis habitats are found adjacent to a number of other desert habitats including Desert Riparian (DRI), Desert Succulent Shrub (DSS), and Desert Wash (DSW). In many cases, characteristic plant species from these habitats comprise the understory of palm oases.

Wildlife Considerations-- Many wildlife species (e.g., Gambel's quail, mourning dove, mountain sheep) are attracted to Palm Oasis habitats because of the permanent or nearly permanent water supply. Further, the additional foliage complexity of tall trees with broad-leafed, dense canopies provides habitat not normally found in the short, shrubby creosotebush assemblages that dominate southeastern California. Species such as hooded oriole are partial to palms for nesting (Garrett and Dunn 1981).

Physical Setting

Palms are restricted to areas with permanent water (Burk 1977) or a water table that approaches the ground surface. Thus, Palm Oasis habitats generally occupy sites with moist alkaline soils near seeps, springs, and streams (Munz 1974). The largest fan palm groves are along permanent streams or at large springs (Cheatham and Haller 1975). Palm Oasis habitats are also found on hillsides or in canyons, arroyos, or washes. Many sites are adjacent to faulting activity, especially along the San Andreas Fault, where underground water frequently emerges (Burk 1977). Hot, dry summers and cool, moist winters are characteristic. Summer temperatures are warm to hot. At Twentynine Palms, mean temperatures for June through September range from 28 to 32 C (82 to 90 F). On only 29 days of the year does the temperature drop below 0 C (32 F) (Huning 1978). Precipitation generally occurs in winter, though summer storms originating in the Gulf of California may result in precipitation (Jaeger 1957). Rainfall ranges from 8 to 15 cm (3 to 6 in per year. Potential evapotranspiration exceeds precipitation by 10 to 15 times (Rowlands et al. 1982, P. G. Rowlands pers. comm.).

Distribution

Palm Oasis habitats are found around the Salton Sea basin, especially along the San Andreas Fault, south into Sonora and Baja California, Mexico (Burk 1977) and western

Arizona (Munz 1974). This habitat exists at localized sites where soil and water requirements are met. Fan palms may be found at elevations of less than 1066 m (3500 ft) (Munz 1974) and generally below 914 m (3000 ft) Cheatham and Haller 1975).

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