3D Botanical Models by Ken Gilliland

Hummingbird Garden

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Introduction

Hummingbirds are mainly attracted to flowers in the red spectrum, from light orange to deep purple, although they will frequent flowers with other colors. The reason they prefer red flowers is that most insects avoid red flowers thus there is more nectar in them for hummingbirds. The typical hummingbird flower is a long flared tube, which keeps out rival pollinators and invites the birds to lap up tasty nectar with their long bills and tongues. While they subsist primarily on insects during late fall and winter, in spring and summer the feisty birds also take advantage of the profusion of native blooms. The plants included in this set are hummingbird favorites and are drought-tolerant once established.

How to grow and tend your Garden

Horticultural techniques in Poser

1. Get the planting area ready by installing the product in Poser.
2. Load Poser and go to the Props section. Locate the “Hummingbird Garden” folder.
3. Select the plant you want to plant by clicking the icon.
4. The plants often look their best when given lots of sunlight (100-200% on the main light is recommended.

Horticultural techniques in DAZ Studio

1. Get the planting area ready by installing the product in DAZ Studio.
2. Load Studio and go to the “Runtime” folders’ Props section. Locate the “Hummingbird Garden” folder.
3. Select the plant you want to plant by clicking the icon.
4. The plants often look their best when given lots of sunlight (100-200% on the main light is recommended.

About the California Floristic Providence

As one of only five areas with a Mediterranean-type climate in the world -- all of which are on the Bio-diversity hotspot list -- the California Floristic Province is characterized by hot, dry summers and cool, wet winters. The region contains a wide variety of ecosystems, including sagebrush steppe, prickly pear shrubland, coastal sage scrub, chaparral, juniper-pine woodland, upper montane-subalpine forest, alpine forest, riparian forest, cypress forests, mixed evergreen forests, Douglas fir forests, sequoia forests, redwood forests, coastal dunes, and salt marshes. Today, about 80,000 square kilometers or 24.7 percent of the original vegetation, remains in more or less pristine condition.

Like other Mediterranean-type ecosystems, the California Floristic Province is distinguished more by the endemism of its plants than its animals. Of nearly 3,500 species of vascular plants in the hotspot, more than 2,120 (61 percent) are found nowhere else in the world. Around 52 plant genera are also endemic.

The high levels of plant species endemism in the California Floristic Province are due to its varied topography, climate zones, geology and soils. The number of vascular plant species found in the California Floristic Province is greater than the total number of species from the central and northeastern United States and adjacent parts of Canada, an area ten times larger than the California hotspot.

Four subregions within the hotspot are centers of exceptionally high plant diversity: the Sierra Nevada, the Transverse Ranges in southern California, the Klamath-Siskiyou region in the coastal mountain ranges of California and Oregon, and the Coast Ranges. The Transverse Ranges, represent a narrow strip that runs east to west in southern California, separating the Coast Ranges to the north from the Peninsular Ranges to the south. The Klamath-Siskiyou region bridges the coastal mountain ranges of California and Oregon, and is home to the most diverse temperate coniferous tree community in the world.

In addition, serpentine soil habitats occur along fault zones in the Central and North Coast and Cascade ranges, from sea level to an elevation of 2,900 meters. Due to specific chemical and physical characteristics of the soils, these habitats are nutrient-poor, and this has led to the establishment of a highly specialized and diverse flora. It has been estimated that serpentine endemic plant species represent 10 percent of the California Floristic Province's endemics.

The hotspot is also home to two spectacular endemic tree species, the giant sequoia (Sequoiadendron giganteum) and the coastal redwood (Sequoia sempervirens). The giant sequoia, which remains in 75 groves in the Sierra Nevada range, is the most massive species ever to live on Earth, reaching heights of 75 meters and circumferences of 30 meters in the oldest trees. The closely related redwood is often even taller (sometimes reaching 105 meters), although smaller in circumference.

Birds

Although there are less than 10 endemic bird species found in the California Floristic Province, out of a total of more than 340 recorded, more species of birds breed in this region than anywhere else in the United States. There are two Endemic Bird Areas (EBAs), as defined by BirdLife International, in the hotspot. One of these EBAs, Guadalupe Island, is the native range of the Guadalupe junco (Junco insularis, CR) and the now extinct Guadalupe caracara (Polyborus lutosus) and Guadalupe storm-petrel, the latter last recorded in 1912. The California condor (Gymnogyps californianus, CR), the largest North American bird, once ranged across most of the continent; its main stronghold is in this hotspot. Although there were only about 25-35 condors remaining in the 1970s, captive breeding programs have increased the population to more than 100.

Mammals

Of the more than 150 native mammal species in the California Floristic Province, about 20 are endemic to the region. Several large mammal species once found in the hotspot have been extirpated from California since the arrival of European settlers. These include the grizzly bear (Ursus arctos), grey wolf (Canis lupus), jaguar (Panthera onca), and bison (Bison bison). Ironically, the grizzly bear appears on the state flag of California and has been the state symbol for more than 150 years. A hunter shot California's last grizzly in 1920. Although there are occasional jaguar sightings reported from southern Arizona, this cat has been driven from most of its U.S. range. The last jaguar in California was shot in Palm Springs in 1860.

Other flagship mammal species occurring in the California Floristic Province are the kit fox (Vulpes macrotis), the island fox (Urocyon littorialis, CR), the latter with six subspecies confined to the six largest of the eight Channel Islands, the widespread Roosevelt's elk (Cervus elaphus roosevelti), and the tule elk (Cervus elaphus nannodes), the largest and smallest of the North American subspecies, respectively. The tule elk was on the verge of extinction at the close of the 1800s. Today, habitat protection and breeding programs have helped establish a wild population of more than 1,000 animals.

Reptiles

Four of the hotspot's nearly 70 reptiles are endemic, including two that are found only on Cedros Island, off the Baja California Peninsula: the Cedros Island diamond rattlesnake (Crotalus exsul) and Cedros Island horned lizard (Phrynosoma cerroense). A number of species have fragmented populations or low population numbers, including the coast-patched nose snake (Salvadora hexalepis virgultea), the venomous red-diamond rattlesnake (Crotalus ruber), and the western ringneck snake (Diadophis punctatus).

Amphibians

The highest levels of endemism in the California Floristic Province are found among amphibians, with over half of the nearly 50 species occurring found only in this hotspot. In general, the area is notable for its high endemism of salamander species. The most diverse genus of salamanders is Batrachoseps (nearly endemic to this hotspot), which includes the San Gabriel slender salamander (B. gabrieli), recently discovered in mountains in the Los Angeles metropolitan area. Two representatives of the salamander genus Hydromantes are endemic to this region. This genus is interesting in that it has an unusually disjunct distribution; its only other members are found within the Mediterranean region of southern Italy and France. Other noteworthy salamander species are the arboreal members of the Aneides genus, which ascend to the top of the tallest redwoods, and the endemic California tiger salamander (Ambystoma californiense, VU), which has emerged as a major point of contention between conservationists and developers in rapidly growing Sonoma and Santa Barbara counties. The rare arroyo southwestern toad (Bufo californicus, EN), a stocky upland toad found in the hotspot, is protected under the U.S. Endangered Species Act.

Freshwater Fishes

The California Floristic Province has a relatively small number of inland fishes (just over 70 species), because of its isolation from the large eastern North American fish fauna by the western mountains and deserts. One of the most interesting groups is a collection of lamprey species, including a cluster of localized landlocked species in the northern mountains.

Invertebrates

The hotspot also has impressive invertebrate diversity. The state of California is home to an estimated 28,000 species of insects, about 9,000 of which are endemic (32 percent). These species represent about 30 percent of all known insects in the United States and Canada.

Human Impacts

The natural ecosystems of the California Floristic Province face serious threats from human activities and development. California's economy would rank it among the top seven countries in the world, and it is the most populated (estimated at 35 million people in 2002) and fastest growing state in the United States. California supplies one-half of all the agricultural products consumed in the United States each year. Direct pressures on ecosystems include urbanization, pollution, and habitat encroachment; expansion of large-scale agriculture; strip mining and oil extraction; invasive alien species; road construction; livestock grazing; logging; increasing use of off-road vehicles; and suppression of natural fires.

Human population pressures have rendered California one of the four most ecologically degraded states in the country, with all or part of the nation's eight most threatened ecosystems represented: beach and

coastal strands, southern California coastal sage scrub, large streams and rivers, California riparian forests and wetlands, California native grasslands, old-growth ponderosa pine forests, cave and karst systems, and the ancient forests of the Pacific Northwest, which include the coastal redwoods.

Native grasslands and vernal pool habitats in the hotspot have been reduced to about one percent of their original extent by the conversion of natural lands to agricultural fields and livestock pasture, urban development, and the invasion of exotic grasses. The magnificent redwood forests, which once occupied 8,000 km along the California coast, have been reduced by intensive logging operations to 15 percent of their original standing area during the last 150 years (although many of these stands have regenerated).

Other seriously threatened ecosystems include wetlands, riparian woodlands and southern maritime sage scrub, which have all been reduced to 10 percent or less of their original area. Wetlands are destroyed by land filling and the diversion of water for agricultural, industrial, and residential development. The reduction in wetlands has been accompanied by a subsequent decline in shellfish, fish, and waterfowl populations that depend on these habitats. Riparian forests face threats from logging, grazing, and development (having been reduced by about 90 percent), while coastal sage scrublands are threatened by housing development, commercial development, and the increasing use of off-road vehicles.

Theodore Payne, Nurseryman

Theodore Payne was born in North Hamptonshire, England and served an apprenticeship in horticulture. He came to Los Angeles in 1893 and fell in love with the California flora, dedicating his life to its preservation.

Even in the early years of this century, native vegetation was being lost to agriculture and housing at an alarming rate. He urged the use of California native plants and lectured across the state on preserving the wild flowers and landscapes native to California.

In his own nursery and seed business, which he started in 1903, native wildflowers and landscapes were his specialty. In 1915, he laid out and planted 262 species in a five-acre wild garden in Los Angeles' Exposition Park. He later helped to establish the Blaksley Botanic Garden in Santa Barbara, planted 178 native species in the California Institute of Technology Botanic Garden in Pasadena, helped create the native plant garden at Los Angeles' Descanso Gardens, and advised the Rancho Santa Ana Botanic Garden in Orange County.

By the time he retired in 1958, Payne had made over 400 species of native plants available to the public. The Theodore Payne Foundation (theodorepayne.org) carries on his legacy by propagating and selling California native plants and seeds and teaching classes about the importance of the California Floristic Providence.

Species Name: *Justicia californica*
Common Name: *Chuparosa or Hummingbird Bush*

Great shrub for desert gardens. Beautiful, multi-stemmed shrub with numerous red flowers. Plant is usually leafless while in bloom. Hummingbirds love it. This plant was introduced into cultivation by Theodore Payne.

Plant Family: Acanthaceae

Plant Type: Shrub

Height by Width: 6' H x 6' W

Growth Habit: Mounding

Deciduous/Evergreen: Semi-deciduous

Growth Rate: Fast

Sun Exposure: Full sun

Soil Preference: Well-draining, rocky

Water Requirements: Drought-tolerant to infrequent

Cold Hardy to: Frost tender

Flower Season: Spring/Summer

Flower Color: Red

Endangered?: Not listed

Distribution: Western Peninsular Range (San Diego River east of Wildcat Canyon), Sonoran Desert

Natural Habitat: Dry sandy or rocky soils, especially washes below 2,400'

Species Name: *Penstemon spectabilis*
Common Name: *Showy or Royal Penstemon*

The most spectacular of the penstemons. A must for any drought tolerant garden. Occasional water lengthens bloom season but may shorten the plant's lifespan. Prune after blooms to promote new growth. This plant was introduced into cultivation by Theodore Payne.

Plant Family: Scrophulariaceae

Plant Type: Perennial

Height by Width: 4' H x 4' W

Growth Habit: Upright, sometimes sprawling

Deciduous/Evergreen: Evergreen

Growth Rate: Fast

Sun Exposure: Full sun

Soil Preference: Well-draining, rocky

Water Requirements: Drought-tolerant to occasional

Cold Hardy to: 7,500'

Flower Season: Spring/Summer

Flower Color: Blue/violet

Endangered?: Not listed

Distribution: Transverse and Peninsular Ranges of Southern California; Mexico

Natural Habitat: Gravelly and sandy slopes, Banks of washes, Coastal Sage Scrub, Chaparral, Oak Woodland below 7500'

Species Name: *Salvia spathacea*
Common Name: *Hummingbird Sage*

Very fragrant foliage. Slowly spreads to form a colony. Hummingbirds love the flowers! Recommended under the shade of oaks. This plant was introduced into cultivation by Theodore Payne.

Plant Family: Lamiaceae

Plant Type: Perennial

Height by Width: 2' H, spreading

Growth Habit: Clumping, spreading

Deciduous/Evergreen: Semi-evergreen

Growth Rate: Slow to moderate

Sun Exposure: Full sun to part shade

Soil Preference: Adaptable

Water Requirements: Drought-tolerant to occasional

Cold Hardy to: 20 degrees F

Flower Season: Spring/Summer

Flower Color: Magenta

Endangered?: Not listed

Distribution: Southern Sacramento Valley (Solano Co.), Central Western CA, South Coast, Transverse Range

Natural Habitat: Oak Woodland, chaparral, coastal sage scrub, open or shady places to 2,400'

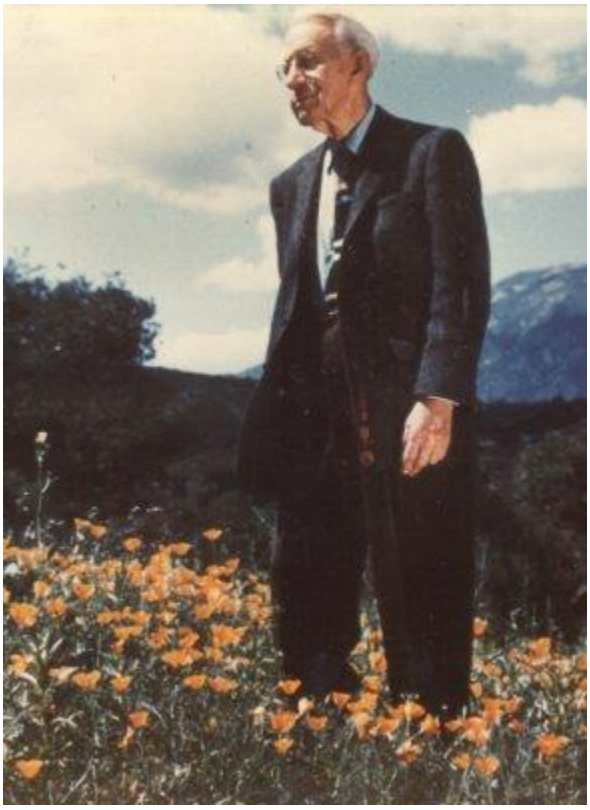
Special Thanks to…

….my beta team (FlintHawk, Linda, Jan, Kelvin, Rhonda and Sandra) , Kat and DAZ3D

Sources

Conservation International (http://www.biodiversityhotspots.org)
Theodore Payne Foundation for California Native Plants & Wildflowers (http://www.theodorepayne.org)
Quail Hollow (Home of Ken and Rhonda Gilliland) (http://www.songbirdremix.com)

'The rapidity with which the wildflowers are decreasing is most damning. If we do not begin to preserve them, the time will come when they will become extinct and live only in history. -Theodore Payne, 1916



Theodore Payne (1872-1963)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