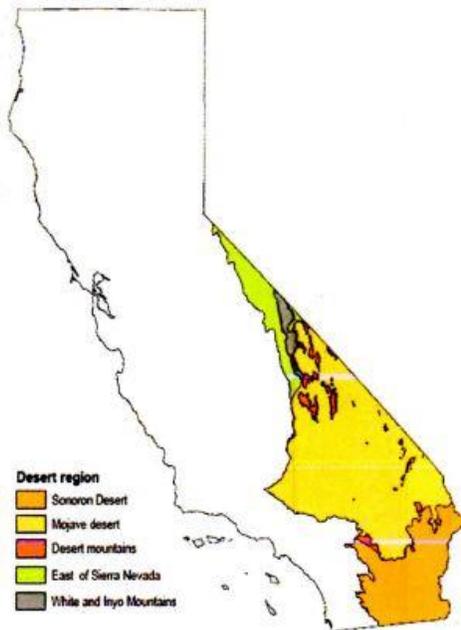


# California Desert Biodiversity: The Numbers Tell the Story

## The California Desert is many things - except empty and simple.

FIGURE 1. THE CALIFORNIA DESERT REGION AND ITS MAJOR COMPONENTS.



Source: Patrick McIntyre, UC Berkeley, 2013, modified from *The Jepson Manual*, 2nd edition.

The California Desert makes up 28% of the State of California's land area and contain 38% of the native plant species within the state. The California Desert is the largest intact ecosystem in the continental United States.

The following gives the numbers of things - the mountains and basins, and the plants and animals making up the desert ecosystems.

### The California Desert is 3 deserts

**Sonoran-Colorado** (orange) – the hot 'low desert' (Palm Springs) with elevations generally under 1000 feet and precipitation from winter storms and summer monsoons.

**Mojave Desert** (yellow) – the hot 'high desert' (29 Palms) with elevations generally above 2,000 feet and rain during the winter months with occasional summer monsoon events.

**Great Basin Desert** (purple and green) – a cold desert of basins and ranges receiving winter rain and snow.

All 3 deserts are **climatologically, topographically and geologically diverse**. Across the skin of the desert there are "more than **100** major mountain ranges, myriad canyons, playas, alkali meadows, badlands, and sprawling sand dune complexes."<sup>1</sup>

Currently in the California Desert there are **2,450 native plant species** (25% are endemic to the desert) and the number is growing with continued exploration. **5% of the CA desert flora** is represented by invasive non-native species, compared to an average of 20% for the rest of the California flora. If the California Desert region were a state it would rank **#18/50** in total vascular plant diversity. And the state of **California is a Biodiversity Hotspot of global significance**.<sup>2</sup>

### Consider what the green plants nourish as they travel up the desert food chain<sup>3</sup>



**Insects and spiders and microbes:** too many to count. Example **Native Bee pollinators** in Joshua Tree NP: **500-600 species** representing **40 genera in 6 families**

There are **15 species** of the genus *Anthophora*. Photo: *Anthophora urbana*  
Bees love the desert and its variety of wildflowers.<sup>4</sup>



**Native Fish: 16 species** (6 families)



**Native Amphibians: 16 species** (5 families)  
(salamanders and toads)



<sup>1</sup> Quote and following statistics are from the two articles on plant diversity by James M. Andre, and Kara A. Moore and James A. Andre in *FREMONTIA* Vol. 42, No. 1, January 2014. California Deserts, Part 1 Biology and Ecology.

<sup>2</sup> <http://www.calacademy.org/explore-science/biodiversity-hotspot-case-study-california>

<sup>3</sup> The California Desert: An Introduction to Natural Resources and Man's Impact. Editors June Latting and Peter Rowlands. 1995.

<sup>4</sup> Michael C. Orr, PhD. Joshua Tree Science <https://www.nps.gov/jotr/learn/nature/jtnp-science.htm>



**Native Reptiles: 56 species** (15 families)  
(snakes, lizards, and desert tortoise)



**Birds 425 species** (59 families)  
(year-around, breeding, and migratory species)



**Native Mammals: 93 species**



**Insectivores: 7 species** (2 families)  
(moles and shrews)



**Bats: 20 species** (3 families)



**Lagomorphs: 4 species** (2 families)  
(rabbits and hares)



**Rodents: 48 species** (6 families)



**Carnivores: 12 species** (5 families)  
(foxes, bears, raccoons, cats, and dogs)



**Even-toed mammals: 2 species** (2 families)  
(deer and sheep):



Non-native mammals: **4 species** (3 families) Virginia opossum, Rocky Mountain mule deer, horses, burros

### **How come, if there are so many plants and animals in the desert you do not see them?**

This scarcity is more than learning how to look beyond preconceived notions. Or even learning how to move quietly and slowly.

Although there are lots of species in many different families of plants and animals, there may not be many of any one kind. For instance, there should be at least 10 times more prey than predators in a functioning ecosystem.

Predator species and numbers are rare. Or there may be so many of one thing, such as fields of blooming wildflowers, you are blinded to all else.

Plant and animal species are not spaced uniformly over the landscape. Recall the 100 + mountain ranges, canyons, playas, meadows, badlands, and sand dunes which include different soils, microclimates, and niches – the variation and extremes are great.

There are many ways to evolve and live in the desert - to stay cool (or warm), hydrated, fed, and reproducing – to be above ground or below, in the daytime or in the night, or out for long periods or short. Dress can be neutral and hiding or bright and warning. Is it time to be out courting, or raising young, or resting until the next round?

**Suggested reading:** Bruce M. Pavlick. *The California Deserts – An Ecological Rediscovery*. University of California Press 2008