

# CHAPARRAL ECOSYSTEM

An ecosystem describes an environment of any size where living and nonliving things interact. Ecosystems are characterized by the amount of light, air, water, and soil they have. For instance, an area is defined as a desert if it receives less than 26 centimeters (10 inches) of rain per year; an estuary describes a body of water that consists of both fresh and salt water. Ecologists study ecosystems to learn about the living organisms, nonliving factors, and how they interact.

The chaparral ecosystem is a biological community of plants and animals that exists in the five areas of the world with a Mediterranean climate. These areas are located in continents that are between 30° and 45° North latitudes and include California, central Chile, the Cape region of South Africa, southwestern Australia, and the Mediterranean area itself. The Mediterranean climate is characterized by hot, dry summers, and mild, rainy winters. These areas usually receive between 36 and 64 centimeters (14 and 25 inches) of rain per year. Day time temperatures during the summer can reach 43° Celsius (115° F). During the winter, temperatures can drop below freezing.

The lower elevation chaparral plant community is usually found between elevations of 1,200 and 3,000 feet and may grow alongside or into the coastal sage scrub ecosystem. The plants in both the coastal sage scrub and chaparral ecosystems are adapted to surviving in hot, dry conditions. Whereas coastal sage plants are drought deciduous and therefore lose their large, soft leaves in the summer, chaparral plants keep their leaves all year. During the hot, dry summers, many of the chaparral plants have hard, waxy leaves, which help the plants conserve moisture. In the winter, soft leaves replace the drought-adapted summer leaves.

Common plants of the chaparral ecosystem include toyon, sugarbush, yucca, coffeeberry, California buckwheat, scrub oak, mountain mahogany, and chamise. Higher elevation chaparral is dominated by manzanita.

Historically, fire swept through chaparral areas approximately every 20 to 30 years. Not only are most of the chaparral plants well adapted to resisting fire, but some of the species, such as laurel sumac, rely on fire for their persistence or rejuvenation. Some of the plants, such as toyon, chamise, and laurel sumac, have basal burls or root crowns from which branches resprout after a fire.

Other chaparral plants have a seed bank underground in which seeds are deposited during non-fire years. After a fire, the parent plant is burned which results in the seeds receiving the water, space, light, and nutrients that they need in order to germinate and grow. Laurel sumac seeds are thought to germinate only after being exposed to the heat from a fire.

There are many animals that depend on chaparral for food and shelter. These include the California quail, scrub jay, California thrasher, bushtit, wrentit, Anna's hummingbird, brown towhee, turkey vulture, and raven. Hawks circle above looking for prey such as the dusky-footed woodrat, deer mice, lizards, gopher snakes and red diamondback rattlesnakes.

The chaparral ecosystem in southern California is becoming rare due to development of the land. These changes affect not only the plants that grow in this specialized climate, but also the animals that rely on the chaparral plants and animals. This ecosystem needs to be studied thoroughly in order to assess the impact of development on the species that depend on it for their survival.