

## Desert Biomes: Facts, Climate & Locations

### Lesson Transcript

This lesson will explore the unique characteristics of a land where water is scarce, the desert biome. In addition, the plants and animals that have adapted to survive in this environment will also be examined.

## Desert Biome

Did you know that one-third of the land on Earth is so dry and harsh that only specific plants and animals can survive there? Although this statistic may seem unreal, it is true that one-third of the land on Earth is an extremely dry environment, known as the **desert biome**.

## Location of Deserts

The location of deserts is dependent on two factors: latitude and global wind patterns. Most deserts are located between 15° and 35° latitude, both north and south of the equator. In terms of global wind patterns, most deserts are located within the Southeastern and Northeastern trade winds belt. Due to the direction of the wind movement in these regions, the land receives dry air because the moisture is removed before the air gets to the region.



*Typical Desert*

Most deserts are formed because the moisture is removed from the air over the tropical rainforests before traveling to these regions. Deserts can also be created when the air they receive passes over a mountain range first. When the air rises to move over the mountain range, it cools, and the moisture in the air is lost as rain. As a result, when the air gets over the mountain range, it is very dry.

The largest desert on Earth is the Sahara Desert in Africa. This desert stretches over more than ten African countries. In the United States, the largest desert is the Great Basin Desert. The Great Basin Desert is not the type of desert you would normally picture - it's unique because it receives most of its precipitation as snow!

## Precipitation & Temperature

Generally, a desert is defined as an area that receives less than 10 inches, or 25 centimeters, of precipitation a year. Although most of us think of deserts as places that do not get much rain, the precipitation received in deserts can be in the form of either rain or snow. Deserts that receive rain as their main form of precipitation are referred to as **'hot' deserts**, while deserts that receive snow as their main form of precipitation are **'cold' deserts**.

The temperature of a desert is also a defining and unique characteristic. Most deserts are warmer during the day than they are at night, and the difference in temperature is quite drastic. The average daytime temperature is 100°F, while at night the average temperature is 25°F. This large temperature difference is due to low amount of moisture in the desert air. Normally, moisture in the air retains heat and helps regulate temperature. Due to the fact that there is very little moisture in the air, there is nothing to retain the heat created during the day by the sun. As a result, when the sun sets, the heat escapes and the temperature drops.

## Desert Plants

The limited amount of rain and the extreme daily fluctuations in temperature make life in the desert very difficult for plants. Despite the challenges plants face in this biome, there are many different types of plants that grow in deserts. Common plant types that are found include cacti, succulents, small shrubs, and grasses.

To tolerate the conditions and increase chances for survival, desert plants have developed special adaptations. Some of the most common adaptations include storing water in the leaves or stems, having few leaves or waxy coverings on the leaves to reduce water loss, and having long tap roots that can penetrate the deep water table. Some plants even go dormant for over half the year and only grow when water becomes available.

One interesting plant that grows in the desert is the giant saguaro cactus. This cactus is unique because it has adapted so well to the desert conditions that it can grow to reach over 20 feet and live for more than 200 years. These cacti are able to survive for so long because of several well-developed adaptations. Giant saguaro cacti have shallow roots, which allow them to soak up rain and dew before it evaporates, and a spongy interior, which can expand to hold more water. They also save energy by growing slowly.



*Giant Saguaro Cactus*

The mulga tree has a unique adaptation that enables it to grow in the desert biome. This tree has small leaves that grow upward and act as funnels when it rains. The water moves down the leaves and falls to the base of the tree, where it can be soaked up by the shallow root system. This adaptation helps the plant ensure that it will get as much water as possible when it rains.

## Desert Animals

In spite of the harsh conditions found in the desert, there are many different types of animals that call this environment home. Amphibians, such as toads, and reptiles, including rattlesnakes and lizards, are commonly seen scurrying around the desert floor. The desert is also home to some large birds, such as the roadrunner and the ostrich. The mammals that are found in the desert are often small and quick and include foxes, mice, rabbits, and

hyenas.

Similar to desert plants, animals that live in the desert have also developed special adaptations to increase survival. Unlike the plants, these animals are able to get most of their water through the food they eat. The large temperature fluctuations between the hot days and cold nights are the major problem faced by desert animals. They have developed a wide variety of adaptations to help them deal with these temperature changes and regulate their body temperatures.

Many desert animals are light in color, which allows them to absorb less heat from the sun. Other animals make burrows underground to escape the direct heat from the sun. Deserts often seem barren and void of animal life during the day because many animals avoid the heat by being dormant during the day and active at night. During the colder nights, animals forage and travel in more manageable temperatures. Some animals are referred to as **crepuscular feeders** because they have adapted to be active and feed only during the cool dawn and dusk of each desert day.

The Great Basin spadefoot toad has adapted to deal with limited water and heat by burrowing into the ground and staying there until it rains. When it rains, hundreds of these toads emerge and use the shallow pools of water created by the rain for mating.

The gray fox has adapted a very unique skill to help increase its survival in an environment where food is scarce. It has developed the ability to climb trees to forage for fruits and small mammals. It is the only North American **canid**, or carnivorous mammal in the dog family, that has developed this specific skill.



*Lizard After Emerging from Burrow*

## Lesson Summary

Although water is the foundation of life and all life depends on water, the lack of water and extreme fluctuations in temperature are what make the desert biome a unique environment. Due to the harsh environment, desert plants and animals have developed specific adaptations to survive and thrive in this habitat.

## Learning Outcomes

You'll have the ability to do the following after this lesson:

- Explain the two factors that determine the location of deserts
- Describe the precipitation and temperature of desert biomes
- Identify common desert plants and animals and the specific adaptations that allow them to live in deserts