

Everything you need to know about Desert Ecosystems

Dry sands stretching for several thousands of miles. Try to hold it in the palm of your hand and it flies away with the hot wind. There's nothing in the skies except the blazing sun. The environment is so harsh for humans that our minds play games with us showing us mirages. Doesn't it seem impossible that hundreds of animal and plant species could exist and thrive in such a harsh environment.

About 17% of the earth's surface is covered by the Desert ecosystem. Desert ecosystems develop in areas with very low annual rainfall with high or low temperatures. The initial productivity of the desert ecosystem is very low. The desert receives less than 50 cm of rain each year. It can be both hot and cold and is a large barren abandoned and dry sand-covered area with an average daytime temperature of 100 degrees Fahrenheit and less than less than 250 mm of rainfall per year.



Types of Desert Ecosystems

1. Warm desert ecosystem

The climate of this ecosystem is hot and dry in nature. The amount of annual rainfall here is very low. Sahara of North Africa, the Kalahari of South Africa, the Thar of India, the desert of Mexico, the Australian desert, California and the Arizona desert, etc. are examples of hot desert ecosystems. In this ecosystem, extreme changes in temperature occur and the soil becomes rough in nature.

2. Semi-arid desert ecosystem

This ecosystem has small sand dunes, hard rocks, etc. The climate of this ecosystem is different from that of the hot desert ecosystem. The amount of rainfall is higher in this desert ecosystem than in a normal desert ecosystem. The Great Basin of North America is an example of a semi-arid desert ecosystem.

3. Cold desert ecosystem

The climate of this desert ecosystem is very cool in nature. This ecosystem receives rainfall in winter. The amount of rainfall here is very low in summer. It has large snow mounds. Greenland and the Antarctica region desert are examples of cold desert ecosystems.

Oceans and coastal lines are also having ecosystems. These ecosystems are also having extreme conditions and thus are the type of desert ecosystem, therefore, are called coastal desert ecosystems. The diversity of plants and animals in this ecosystem is higher than in other ecosystems. The Atacama is an example of a coastal desert ecosystem.

Components of Desert Ecosystems

1. Producers

Grasses, thorny bushes, some species of trees like zizyphus, acacia, etc. are the producers of the desert ecosystem. And many species of succulents like euphorbia, agave, asparagus, etc. also grows in this ecosystem known as xerophytes. All of these plants can adapt to low rainfall and high temperature.

2. Consumers

Rats, goats, rabbits, camels, and many species of birds are the primary consumers of the desert ecosystem. The secondary consumer in the desert ecosystems are many species of reptiles, insects, owls, etc. And other prey animals are tertiary consumers of the desert ecosystems. The primary consumers survive by taking the producers as food. And the secondary consumer survives by eating the primary consumer. The tertiary consumer takes primary and secondary consumers as food. In this way, the food chain is maintained in the desert ecosystem.

3. Decomposers

The number of decomposers in the desert ecosystems is very low. Some fungi, bacteria, etc. are the decomposers of the ecosystem. They decompose dead plants and consumers in desert ecosystems into simple chemicals.

Small leaves mean less evaporative surface per leaf. In addition, a small leaf in the sun doesn't reach as high a temperature as a large leaf in the sun.

Some plants, such as Mormon tea and cacti, carry out most or all of their photosynthesis in their green stems. (Cactus pads are stems, botanically speaking.) Some desert plants grow leaves during the rainy season and then shed them when it becomes dry again. These plants, including blackbrush, photosynthesize in their leaves during wet periods.

Other desert adaptations shared by a number of plants include shallow widespread roots to absorb a maximum of rainfall moisture and spines or hairs to shade plants and break up drying winds across the leaf surface.



Stomata are the holes in plant leaves through which they transpire water. Many desert plants have very small stomata and fewer stomata than those of other plants. The stomata of many cacti lie deep in the plants' tissues. This adaptation helps cacti reduce water loss by keeping the hot, dry wind from blowing directly across the stomata.



The leaves and stems of many desert plants have a thick, waxy covering. This waxy substance does not cover the stomata, but it covers most of the leaves, keeping the plants cooler and reducing evaporative loss. Small leaves on desert plants also help reduce moisture loss during transpiration.



When drought sets in and the plants lose their leaves, some of these plants can photosynthesize in their stems.

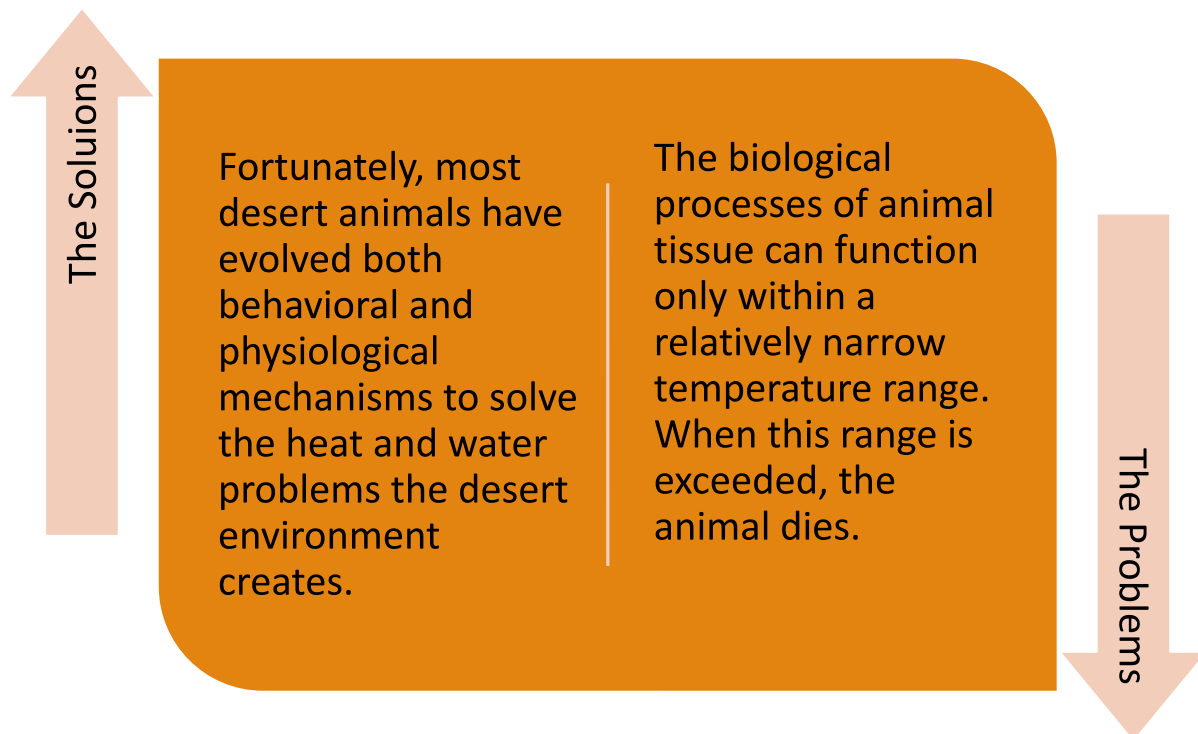
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How do animals survive in the desert?

A surprising piece of information:

Lack of water creates a survival problem for all desert organisms, animals, and plants alike. But animals have an additional problem -- they are more susceptible to extremes of temperature than are plants. Animals receive heat directly by radiation from the sun, and indirectly, by conduction from the substrate (rocks and soil) and convection from the air.



The Fantastic ways in which animals have adapted



Avoiding Heat

- Many animals (especially mammals and reptiles) are crepuscular, that is, they are active only at dusk and again at dawn.
- Some smaller desert animals burrow below the surface of the soil or sand to escape the high temperatures at the desert surface.



Dissipating Heat

- Many desert mammals have evolved long appendages to dissipate body heat into their environment.
- Owls, poorwills and nighthawks gape open-mouthed while rapidly fluttering their throat region to evaporate water from their mouth cavities.



Retaining Water

Some retain water by burrowing into moist soil during the dry daylight hours (all desert toads). Some predatory and scavenging animals can obtain their entire moisture needs from the food they eat (e.g., turkey vulture) but still may drink when water is available. Reptiles and birds excrete metabolic wastes in the form of uric acid, an insoluble white compound, wasting very little water in the process.



Acquiring Water

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