

What is an Ecosystem?

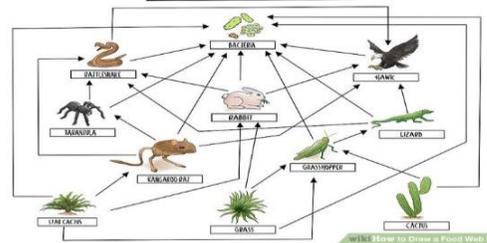
An ecosystem is a system in which organisms interact with each other and with their environment.

Food Web and Chains	Desert Interdependence
Simple food chains are useful in explaining the basic principles behind ecosystems. They show only one species at a particular trophic level. Food webs however consists of a network of many food chains interconnected together.	Different parts of the hot desert ecosystem are closely linked together and depend on each other , especially in a such a harsh environment.

Biome's climate and plants

Biome	Location	Temperature	Rainfall	Flora	Fauna
Tropical rainforest	Centred along the Equator.	Hot all year (25-30°C)	Very high (over 200mm/year)	Tall trees forming a canopy; wide variety of species.	Greatest range of different animal species. Most live in canopy layer
Tropical grasslands	Between latitudes 5°- 30° north & south of Equator.	Warm all year (20-30°C)	Wet + dry season (500-1500mm/year)	Grasslands with widely spaced trees.	Large hooved herbivores and carnivores dominate.
Hot desert	Found along the tropics of Cancer and Capricorn.	Hot by day (over 30°C) Cold by night	Very low (below 300mm/year)	Lack of plants and few species; adapted to drought.	Many animals are small and nocturnal: except for the camel.
Temperate forest	Between latitudes 40°- 60° north of Equator.	Warm summers + mild winters (5-20°C)	Variable rainfall (500-1500m /year)	Mainly deciduous trees; a variety of species.	Animals adapt to colder and warmer climates. Some migrate.
Tundra	Far Latitudes of 65° north and south of Equator	Cold winter + cool summers (below 10°C)	Low rainfall (below 500mm/ year)	Small plants grow close to the ground and only in summer.	Low number of species. Most animals found along coast.
Coral Reefs	Found within 30° north – south of Equator in tropical waters.	Warm water all year round with temperatures of 18°C	Wet + dry seasons. Rainfall varies greatly due to location.	Small range of plant life which includes algae and sea grasses that shelters reef animals.	Dominated by polyps and a diverse range of fish species.

DESERT BIOME FOOD WEB



Causes of Desertification

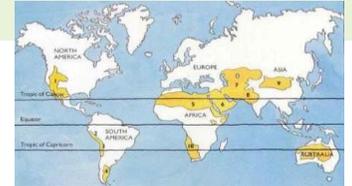
Desertification means the turning of semi-arid areas (or drylands) into deserts.	Climate Change Reduce rainfall and rising temperatures have meant less water for plants.
Fuel Wood People rely on wood for fuel. This removal of trees causes the soil to be exposed.	Overgrazing Too many animals mean plants are eaten faster than they can grow back. Causing soil erosion.
Over-Cultivation If crops are grown in the same areas too often, nutrients in the soil will be used up causing soil erosion.	Population Growth A growing population puts pressure on the land leading to more deforestation, overgrazing and over-cultivation.

Strategies to reduce Desertification

- Water management** - growing crops that don't need much water.
- Tree Planting** - trees can act as windbreakers to protect the soil from wind and soil erosion.
- Soil Management** - leaving areas of land to rest and recover lost nutrients.
- Technology** - using less expensive, sustainable materials for people to maintain. i.e. sand fences, terraces to stabilise soil and solar cookers to reduce deforestation.

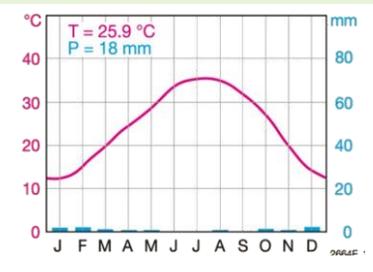
Distribution of the world's hot deserts

Most of the world's hot deserts are found in the **subtropics** between **20 degrees and 30 degrees north & south** of the Equator. The **Tropics of Cancer and Capricorn** run through most of the worlds major deserts.



Climate of Hot Deserts

- Very little rainfall** with less than **250 mm per year**.
- It might only **rain once every two to three years**.
- Temperate are **hot in the day** (45 °C) but are **cold at night** due to little cloud cover (5 °C).
- In winter, deserts can sometimes receive occasional frost and snow.



Major characteristics of hot deserts -

- Aridity** – hot deserts are extremely dry, with annual rainfall below **250 mm**.
 - Heat** – hot deserts rise over **40 degrees**.
 - Landscapes** – Some places have dunes, but most are **rocky** with **thorny bushes**.
- Strategies to overcome these characteristics are vital for desert survival
- Plants, animals and people must be able to:**
 - Live off very little water or be able to **conserve water**
 - Cope with a high diurnal temperature range** (high daytime temperatures and low night time temperatures)
 - Be able to flourish in a **rocky landscape with poor quality soils**.

Adaptations to the desert

Cactus	<ul style="list-style-type: none"> Large roots to absorb water soon after rainfall. Needles instead of leaves to reduce surface area and therefore transpiration. 	
Camel	<ul style="list-style-type: none"> Hump for storing fat (NOT water). Wide feet for walking on sand. Long eyelashes to protect from sand. 	

Opportunities and challenges in the Hot desert Thar Desert – India/Pakistan

Opportunities	Challenges
<ul style="list-style-type: none"> There are valuable minerals for industries and construction. Energy resources such as coal and oil can be found in the Thar desert. Great opportunities for renewable energy such as solar power at Bhaleri. Thar desert has attracted tourists, especially during festivals. 	<ul style="list-style-type: none"> The extreme heat makes it difficult to work outside for very long. High evaporation rates from irrigation canals and farmland. Water supplies are limited, creating problems for the increasing number of people moving into area. Access through the desert is tricky as roads are difficult to build and maintain.