

Habitats and adaptations



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What is a habitat ?

- A habitat is the place where living things live.
- It is more than just a home it includes the whole surrounding area.
- The habitat provides the animal or plant with food or shelter.

People and their habitats

People can live all over the world.





We can do this
because we are able
to build homes for
different conditions.

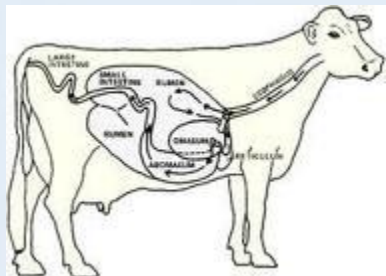
Also we can change our clothes to best suit the temperature around us.



White clothes reflect the heat



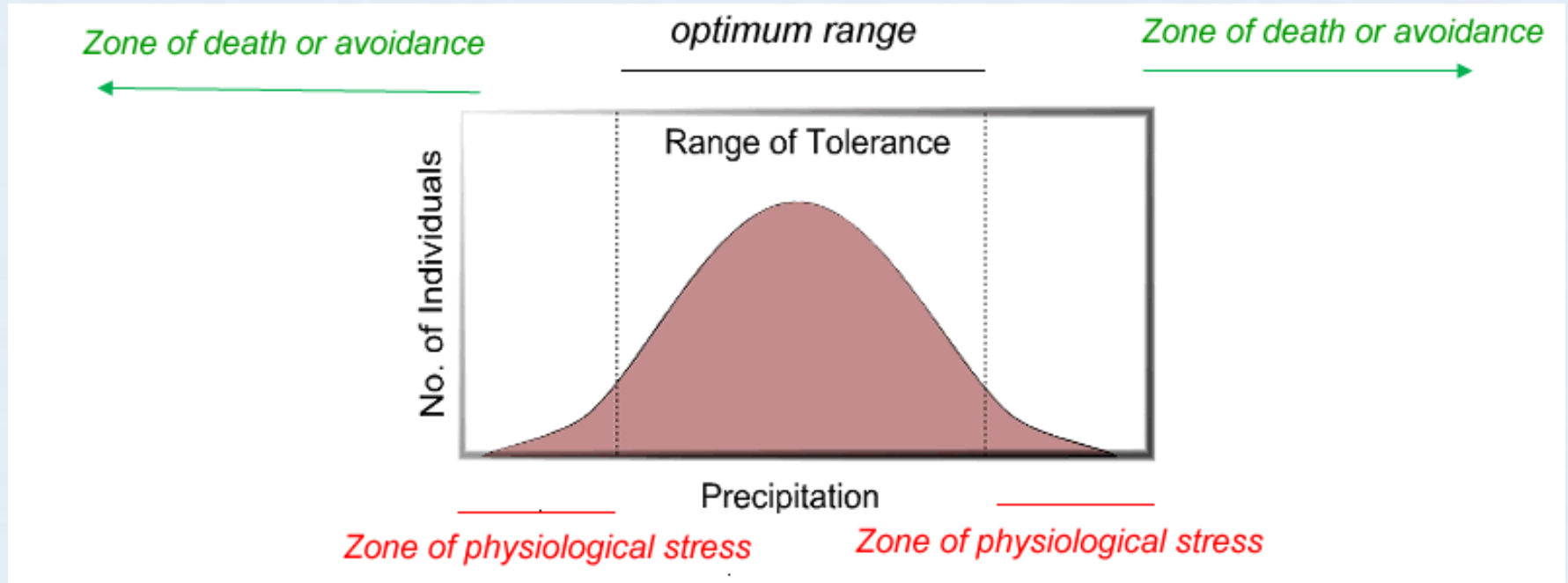
Animal skin and fur act as insulators and keep heat in.



Habitats



Tolerance range – the range a population thrives in an optimal range of abiotic factors. Beyond this range, one finds less and less numbers of these organisms. Often the range is shown for each factor, see diagram below.



Biozone, page 243, Habitat

Limiting Factor – one factor that affects the population and limits its growth. Can be too much or too little. E.g. The limiting factor for a plant population near a chemical factory may be the soil pH.

Organisms interact with the environment which has both biotic (living) components and abiotic (non-living) components.

Abiotic factors – The factors that effect the non-living parts of the environment. Include physical and chemical factors that effect the:

- *Atmosphere* e.g. Wind speed and direction, light intensity, humidity and air temperature
- *Water* – dissolved nutrients, pH, salinity, dissolved oxygen, temperature
- *Soil* – nutrients available, soil moisture, pH, composition and temperature.

Biotic factors - The factors that effect the living parts of the environment. Include:

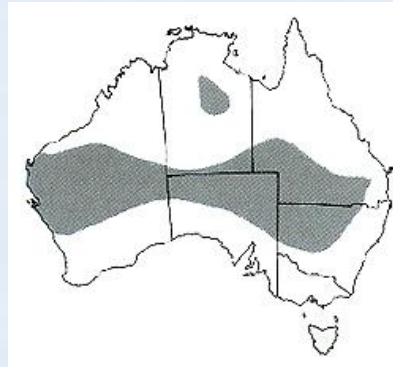
- *Feeding relationships* (Food web) – producers, herbivores, carnivores...
- *Community relationships* – competitors, parasites, pathogens, symbionts, predators and herbivores.

Environmental Conditions

Abiotic (physical) factors

What are some abiotic factors that affect the survival of organisms?

- Rainfall
- pH
- Temperature
- Salinity
- Soil
- Nest sites
- light



Example of how rainfall may effect a population- The water holding frog emerges after rain in the desert

Biotic Conditions- living factors.

- **What are some biotic factors?**
- Availability of mates
- Impact of predators
- Impact of parasites
- Competition between members of one species

Animals and plants

- Most plants and animals are specially adapted to survive in a particular habitat.
- They have developed special features to suit the demands of their environment.
- This is called adaption.
- Adaptations are inherited characteristics that increase the likelihood of survival and reproduction of individual organisms.

Some examples of
adaption

All birds have similar characteristics.

But many water birds have features that are different from those birds live on land.



Long legs are good for wading



Webbed feet for swimming



These wings act as flippers

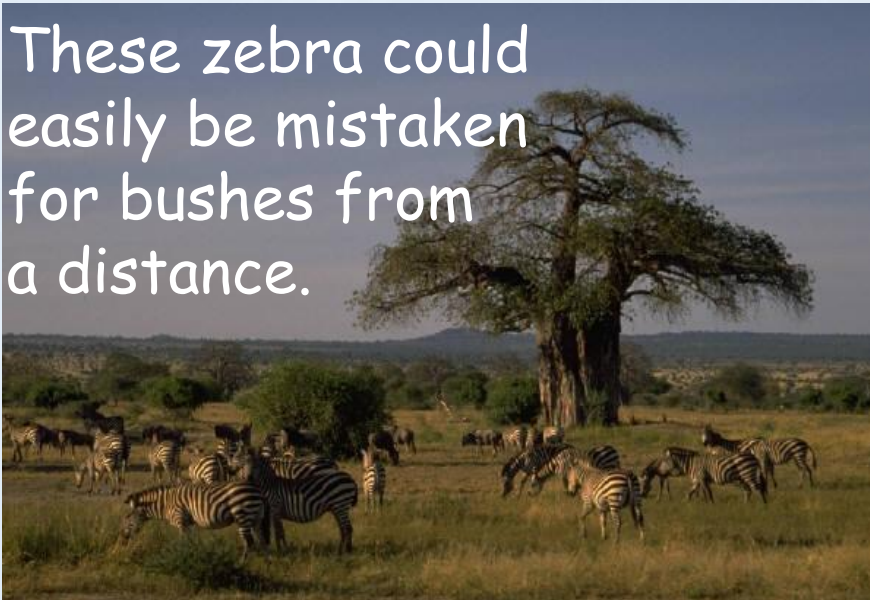
Some animals are camouflaged to blend in with their surroundings.

This keeps them safe as it is more difficult for other animals to see them or catch them for food.

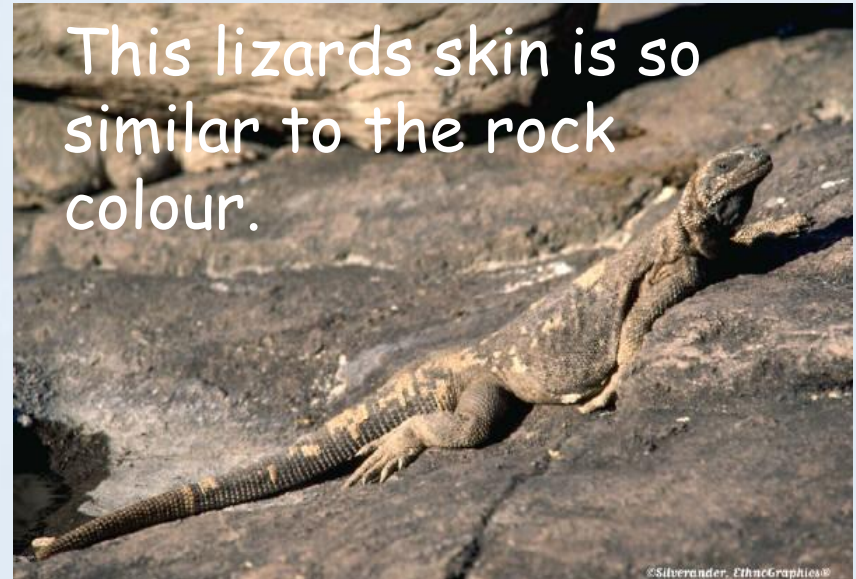
This lion blends in well with the grassy background.



These zebra could easily be mistaken for bushes from a distance.



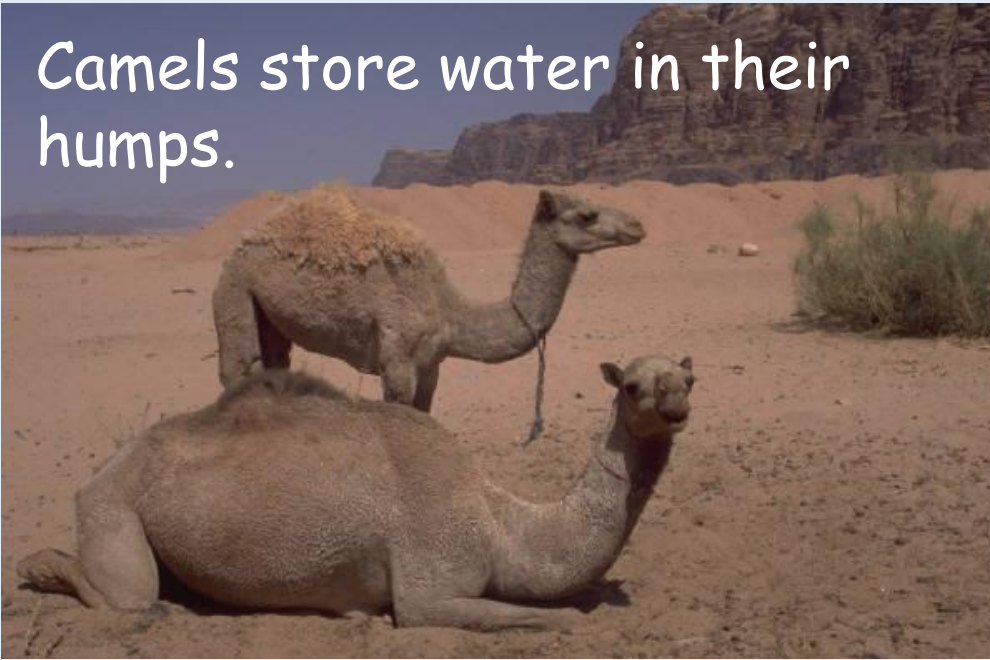
This lizard's skin is so similar to the rock colour.



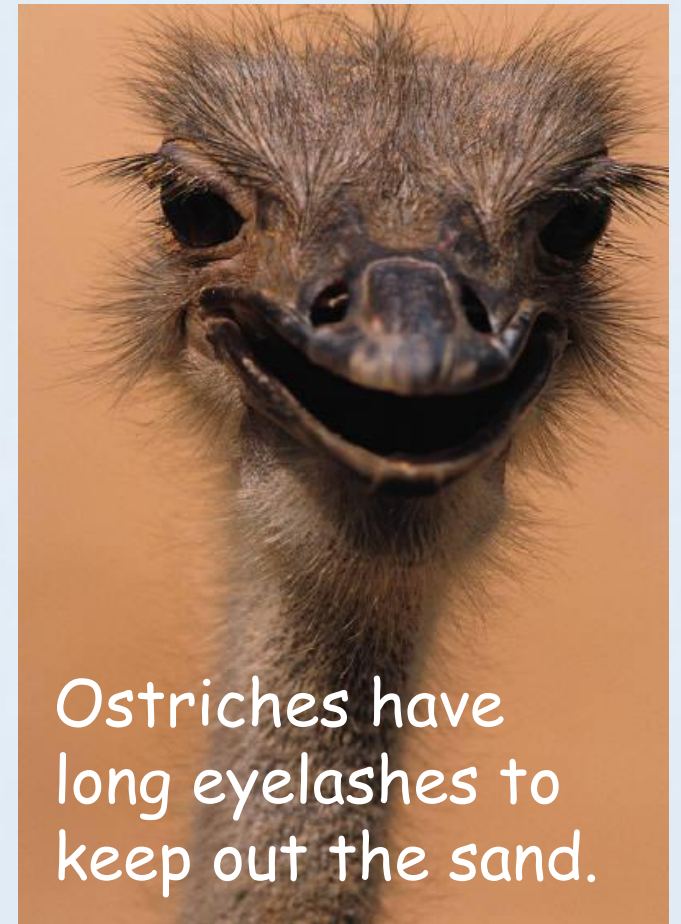


Aquatic animals have streamlined bodies to move more easily in the water.

Camels store water in their humps.



These animals have adapted to live in the hot climate of the desert.

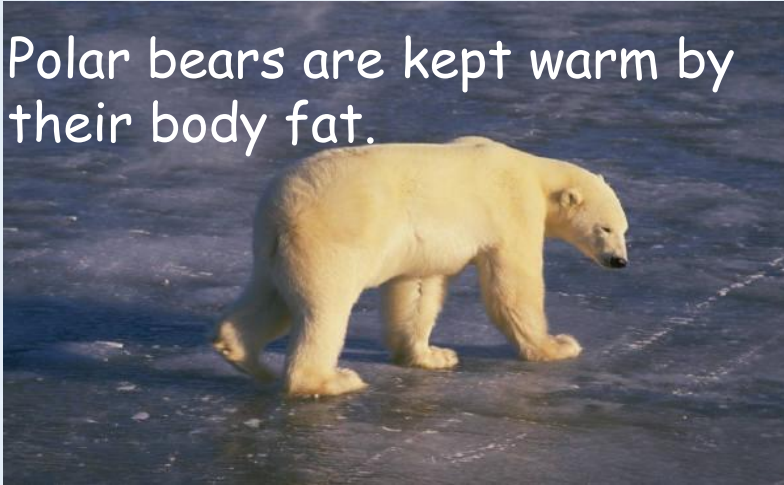


Snakes glide across the hot sands and can shed their skin



These animals have adapted to be more suited to cold temperatures.

Polar bears are kept warm by their body fat.



Deer have a warm layer of fur.



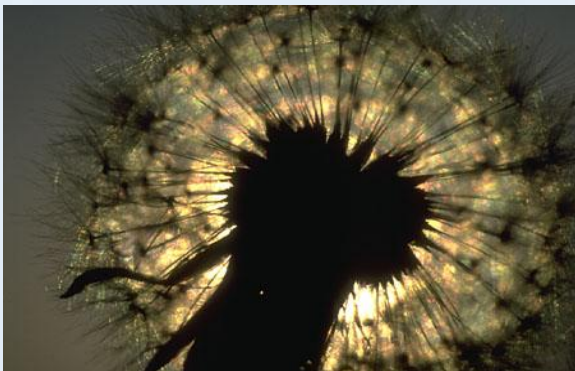
Layers of fat keep the seals body warm, and small ears stop heat loss.



Even plants have adapted to their habitats.



Dandelions seeds are easily dispersed.



The cactus has fleshy stems that store water.



The water provides support for this lily as it has less developed roots to hold it in place.

Animals and plants help each other

Plants and animals depend on each other for a wide variety of things.



Shelter



Nests to reproduce



Food



Protection



Gas exchange

Adaptations aid an organism in its interaction with the environment

Organisms (plant and animal) have structural, functional and behavioural features that are adaptations to living in their particular environment.

- -physiological or functional (how the body operates)
- -structural (features you can see)
- -behavioural (what an animal does)

Answer following questions

1.
 - A) List the abiotic factors that could have an effect on fish living in a pond.
 - B) Suggest the consequences to the fish if one or several of these factors were in short supply.
 - C) With your answer to part b) in mind, explain the meaning of the term 'Limiting factor'
2. Write a definition for the word adaptation and explain how it is different to the term adapt to (or acclimatisation).