



Video/ Slide show

You will watch a film about the kangaroo rat, which has adapted perfectly to living in the desert.

As they evolve animals adapt to the conditions prevailing in their environment. Thanks to these **adaptations** they are able to survive in their environment and cope with every kind of adversity. In desert conditions, animals often limit water loss to a minimum, for example, by changing their body colour to a lighter shade, which helps deflect the sun's rays, or by changing the time they are active, for example to night time or during rainier periods. They may also begin looking for special hiding places – a burrow or a cave. Furthermore, they can change the way their body functions: produce less urine, avoid sweating etc.



Get ready for Qs

Discussion

Discuss the following topic: could a polar bear survive in the Sahara Desert?

Read - Could a polar bear survive in the Sahara Desert?

<http://polarbearsinthedesert.weebly.com/final-answer.html>



### Observing

Go for a walk in a meadow, a park or a forest and find or observe the animals that live there. Analyze those characteristics that help them adapt to their environment.

## Animal characteristics

### Body coloration

- **mimetic** (e.g. a fly pretending to be a bee) – animals resemble other animals in terms of their color so as to protect themselves against potential enemies or make themselves invisible to their prey. For some species this is the only passive defense mechanism they have against predators, while others are helped by additional protective methods, e.g. skin venom glands, retreat and escape

See more:

<https://www.youtube.com/watch?v=XpdoDBYuHIA>

- **protective** (e.g. a leaf insect pretending to be a leaf, a stick insect pretending to be a stick) – the color of the creature resembles its surroundings. Thanks to this it can avoid being detected by predators and can also conceal itself from any potential prey and is able to creep up very close on its victims.

Protective colors are often so perfectly adapted to the surrounding environment, not only in terms of tone and shade, but also patterns, that it is very difficult to distinguish an animal from the ground, a rock, a leaf or, say, a branch.

- **warning** (e.g. a ladybird) – intense colors on a body are usually taken as a signal that its owner is poisonous. It brings mutual benefits, for an animal equipped with such a poisonous weapon will not be attacked, while other creatures will not risk their lives unnecessarily in pursuit of such a venomous prey. A juxtaposition of contrasting colors: yellow, orange or red with black, is a clear signal to potential predators that it is best not to attack. Such colors are commonly found on, among other creatures, reptiles (e.g. snakes) and insects. Body color can also be useful in deceiving an opponent – many harmless creatures with intense coloration only “pretend” to be poisonous and venomous.

### Wings

Insects can possess one or two pairs of wings. Usually their wings are thin and membranous, reinforced with “veins” that resemble the skeletal frames of kites. Such wings can be observed on, for example, flies and mosquitoes. In the case of insects with two pairs of wings (e.g. beetles), the first pair of wings is usually hardened. These are called forewings or wing cases, as they provide a protective, case-like covering for the second pair of membranous wings concealed underneath.

### Legs

- ambulatory (walking) legs – the classic limb type possessed by the majority of insects, e.g. most beetles, bugs, flies, ladybirds etc. They help the insect walk normally on different surfaces.

- saltatorial (jumping) legs – a quite popular limb type seen in different insects. We find them on, among others, grasshoppers, crickets and fleas. Because of their fairly thick thighs and long limbs these legs are much stronger than other types and are suitable for making long jumps.

- natatorial (swimming) legs – in most cases only the final pair of legs have transformed into this type of limb. The insects equipped with these legs live on the water and are active swimmers. They include various kinds of beetles, frogs and diving beetles.

### Mode of feeding

Insects are equipped with different kinds of mouth parts and depending on their structure employ different modes of feeding: solid or liquid.

- chewing (consuming solid foods, e.g. beetles)
- biting-sucking (liquid foods, e.g. mosquitoes, fleas)
- sucking (liquid food, e.g. butterflies)
- biting-licking (liquid food, e.g. bees, wasps)
- licking (liquid food, e.g. flies)

**Abdomen** – the end section of the body of arthropods (i.e. insects, arachnids and crustaceans) is connected to the trunk. The ambulatory legs may be attached to the abdomen.





#### Conclusions

Present the results of your observations, discuss them with everyone and draw conclusions.

There is an enormous variety of species in the world around us. Every creature occupies a specific place in the environment. It adapts to that environment through its structure, behavior, color and other features. A creature that does not adapt in any way cannot exist. Different environments with highly contrasting features (e.g. a meadow, a body of water) are very often settled by different creatures, even when located very close together. Sometimes creatures resemble one another. Sometimes it is their way of protecting themselves (resembling species that are dangerous). Sometimes, animals look similar to one another because they are closely related to each other or live in almost identical environments.



Writing

The students write a one-minute essay on the following subject: Can a living creature exist, which doesn't have any adaptations?

**Can a living creature exist, which doesn't have any adaptations?**

This is impossible. Such a creature would not know how to survive in any environment. Every creature must learn how to adapt. It must adapt not only to the surrounding environment (to the temperature, to the availability of water etc.), but also to other creatures. Thorns, camouflage, poisonous substances in the body, developing resistance to parasites - these are also examples of adaptation.