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Physical Adaptations – Case Studies

Introduction

Adaptations¹ are traits of animals and plants that allow them to survive in their habitats. The two main types of adaptations are **physical** and **behavioral**. Physical adaptations² are physical features, like coat color, paw size, leaf types, or roots. Behavioral adaptations³ are the things plants and animals do, either learned or by instinct, like digging burrows, growling, and dropping seeds. Here, we will look at some physical adaptations of animals and plants for three very different types of habitat: the arctic, the desert, and the rainforest.



Plants and animals, like this grass and these zebras, have many adaptations that allow them to survive.

Animal Physical Adaptations in Extreme Places

Two animals that are adapted to extreme places are the Arctic fox, which lives in a very cold area, and the greater bilby, which lives in the desert.

Arctic foxes live in the Arctic Tundra. Their short legs, short necks, and small ears mean that they have smaller parts of the body that they lose heat from. Their furry feet also keep them from losing heat to the ground and slipping on the ice. Their fur is very thick and protects them from the cold. Their coats keep them

Did You Know?

Arctic foxes can survive temperatures as low as -58°F (-50°C)!



The Arctic fox is well adapted to its frigid home.

from being seen by predators or prey in any season. In the summer, Arctic fox coats are dark grey to brown. In the winter, they turn white to blend into the snow. They wrap their thick, furry tails around their bodies when they sleep. Arctic foxes also have thick body fat for extra warmth and to keep them from starving when it is hard to find food. Arctic foxes have very good hearing, so they can hear their prey moving in tunnels under the snow.

Ecobottle Sample



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¹ **Adaptations:** traits of animals and plants that allow them to survive in their habitats.

² **Physical adaptations:** physical features that allow plants and animals to survive in their habitats.

³ **Behavioral adaptations:** things that plants and animals do that allow them to survive in their habitats.

Plant Physical Adaptations in Extreme Places

Different plant species are also adapted to survive in extreme places. Two of them are the Arctic poppy and the desert cactus.

The Arctic poppy lives in the same place as the Arctic fox, but survives in different ways. Arctic poppies grow their leaves in the summer, and these leaves stay green all through the winter. This lets them start **photosynthesis**⁴ as soon as the weather gets warm and sunny again. The cup shape of the Arctic poppy flower helps focus the sun's rays to the center of the flower. This makes the inside of the flower warmer than the air around it. Arctic poppy flowers move to always face the sun during the day. This helps speed up seed growth. Arctic poppies **self-pollinate**⁵, meaning that the seeds they create are already fertilized. This means that they don't have to wait for a **pollinator**⁶ (like a bee or a butterfly) before they can make new baby plants.



The Arctic poppy is adapted to cold environments.

Ecobottle Sample



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Animal and Plant Adaptations in Tropical Rainforests

Animals and plants also need special adaptations to live in tropical rainforests. Rainforests are both hot and wet, which is very different from the arctic and deserts. Tigers and rainforest trees have many adaptations for this type of place.

Tigers have a striped coat, which helps them blend in with the forest floor. The stripes look like the shadow patterns made by trees. The dark stripes also break up the tiger's body, making it hard to see through the trees. Their eyesight and sense of smell are very good, and they can see in the dark. Tigers also have very good hearing; they can even hear sound that is lower than most other animals can hear, called **infrasound**⁷. Infrasound can pass through trees, so tigers can communicate with each other through dense forest and over long distances. This excellent hearing makes them very good predators, able to hear even small movements of their prey. The tiger's body is flexible, making it an agile runner, jumper, and climber, ideal for life in a forest. Their short, strong front legs are excellent



Tigers' striped coats help them blend in with the forest when light filters through the trees.

⁴ **Photosynthesis:** how plants make food by using sunlight, water, and carbon dioxide to make sugar and oxygen.

⁵ **Self-pollination:** a way to produce fertilized seeds so that plants don't need pollinators like bees to make new plants.

⁶ **Pollinator:** an animal that carries pollen from one plant to another.

⁷ **Infrasound:** sound below what most animals can hear.

Ecobottle Sample



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Buttress roots and stilt roots both let trees get enough nutrients from the thin soil of the rainforest floor.

Buttress roots⁸ are large and spread out, giving a bigger surface to suck in nutrients. Buttress roots are also thick and grow above the ground (up to 15 feet), which keeps tall trees stable. Because the soil is so thin, trees can't grow underground root systems with enough support to keep them standing. Buttress roots provide this support. **Stilt roots**⁹ are thinner than buttress roots. They branch off from the trunk above the ground and grow down to anchor in the soil. The roots form a cage, trapping soil around the bottom of the tree for extra support. The bark of rainforest trees is thin because there is no need to have thick bark to prevent water loss. There's plenty of water in the rainforest! When rainforest trees are young, some species grow red leaves. This color works like sunscreen, protecting the leaves from harsh sunlight while they are growing and developing the parts used for photosynthesis. As trees get older, some grow leaves that point away from each other so that they don't shade their own leaves. This makes it easier to absorb light through as many surfaces as possible. Most rainforest leaves are also waxy and have pointed tips so that water runs off easily and doesn't pool, which keeps algae from growing on them.



Buttress roots are one plant adaptation for life in the rainforest.

Reading Comprehension Questions:

1. What are the two main types of adaptations?
2. Give three
3. Give three
4. Give
5. Give three
6. Give three
7. Give three adaptations of rainforest trees.

Extension Questions:

8. Choose an animal native to the environment of your local area. List four adaptations that animal has and how they help it to survive in its habitat.
9. Choose an

⁸ **Buttress roots:** large roots that are spread widely around the bottom of a tree.

⁹ **Stilt roots:** thin roots that branch out from a tree and grow down to the soil.

Ecobottle Sample



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References

- Amsel, Sheri. (n.d.) "Adaptation in the Arctic Fox." *Exploring Nature*. Retrieved from https://www.exploringnature.org/graphics/adaptation_jpgs/arctic_fox_adaptations.pdf.
- "Arctic Poppy." (n.d.) *Wildscreen Arkive*. Retrieved from <http://www.arkive.org/arctic-poppy/papaver-laestadianum/>.
- BBC. (2014). "Adaptations – hot climates." *Evolution*. Retrieved from http://www.bbc.co.uk/schools/gcsebitesize/science/edexcel_pre_2011/environment/evolutionrev2.shtml.
- Burrell, Sue. (2015). "Greater Bilby." *Australian Museum*. Retrieved from <https://australianmuseum.net.au/greater-bilby>.
- "Cacti Adaptations." (2013). *Biocircuits Life Sciences*. Retrieved from <http://biocircuits.ucsd.edu/outreach/wp-content/uploads/2013/08/Cacti-Adaptation-10-6-11.pdf>.
- IAC Publishing, LLC. (2017). "What is an adaptation of the tiger?" *Reference.com*. Retrieved from <https://www.reference.com/pets-animals/adaptation-tiger-c67f51cbb550cef#>.
- Lopez, Laura J. (n.d.) "Physical and Behavioral Adaptations." *Teaching with Technology*. Retrieved from http://bookbuilder.cast.org/view_print.php?book=40909.
- Marwell Zoo. (n.d.) "How are Plants Adapted to the Rainforest?" *Marwell Wildlife*. Retrieved from <https://www.marwell.org.uk/downloads/rainforestplantadaptations.pdf>.
- National Geographic Society. (n.d.) "Arctic Fox." *Animals*. Retrieved from <http://www.nationalgeographic.com/animals/mammals/a/arctic-fox/>.
- New Hampshire Public Television. (2017). "Structural and Behavioral Adaptations." *NatureWorks*. Retrieved from <http://www.nhptv.org/natureworks/nwep1.htm>.
- "Plants of the Rainforest." (n.d.) *Learning About Rainforests*. Retrieved from <http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/plants.html>.
- Sea World Parks & Entertainment. (2017). "Tigers: Adaptations." *Animal InfoBooks*. Retrieved from <https://seaworld.org/en/animal-info/animal-infobooks/tiger/adaptations>.
- The Editors of Encyclopædia Britannica. (2005) "Marsupial." *Mammal*. Retrieved from <https://www.britannica.com/animal/marsupial>.
- "Tiger Facts." (n.d.) *Born Free*. Retrieved from <http://www.bornfree.org.uk/animals/tigers/facts/>.
- Ward, Paul. (2001). "Arctic Fox Facts and Adaptations." *Cool Antarctica*. Retrieved from http://www.coolantarctica.com/Antarctica%20fact%20file/wildlife/Arctic_animals/arctic_fox.php.
- Wheeling Jesuit University. (2005). "Tropical Savannah: Plants." *Biomes*. Retrieved from <http://www.cotf.edu/ete/modules/msese/earthsysflr/savannahP.html>.