

MOON

Night-time around the world

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4Be1: Investigate how different animals are found in different habitats and are suited to the environment in which they are found

Adaptations of animals to their habitats as found in Moon

habitats

- Desert
- Ocean/Cold Climate
- Jungle/Rainforest
- Fields
- Mountains
- Grasslands

Desert

Scorpions' exoskeletons, hard body casing, and venomous stingers give them great protection.



Scorpions are arachnids that live in the desert and are nocturnal, meaning awake at night, to avoid the hot temperatures.

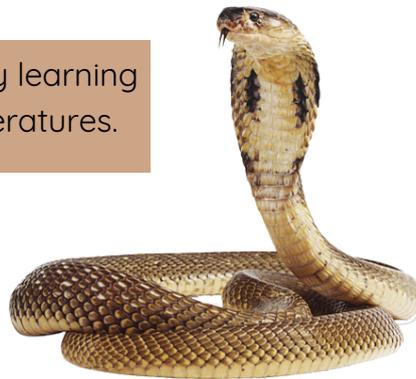
The **scorpions'** low food and water needs allow them to survive in the harshest environments.

<https://bit.ly/3L7nPSk>

This is a fun clip on scorpions (~2min) from National Geographic for Kids.

Snakes have adapted to the temperature by learning to burrow in dens to shelter from hot temperatures.

Snakes adapt to the desert by using light brown or grey camouflage to blend in with their surroundings.



Snakes also brumate (get sluggish) during the harsh and cold winter months.

<https://bit.ly/3GqZxiG> - This is a really interesting website with further, though more complex, adaptations, like snakes don't urinate in the way we do - it is more acidic, with less water, thereby conserving water. They have also been known to drink the water that collects on their scales!!

The barn owl's unusual facial disc helps them locate their prey. It captures and focusses sound into its ears which are positioned, one slightly above the other, next to the eyes. Their hearing is so acute that they can capture a mouse in total darkness.

The barn owl's feathers are adapted for silent flight. The edges of their flight feathers are hairy and their body feathers are downy soft, so there is no rustling of feathers when they move. The hairy edges slow down their flight. The ability to make a surprise attack is far more important than speed.

When surprised in its roost or nest, **barn owls** react by crouching, spreading wings, fluffing feathers and hissing. If approached by an intruder they will stand bolt upright and look as slender as possible (like a stick) eyes slightly open - "I'm watching you".



Desert

The characteristic large, round ears of the **African wild dog** have a double purpose. They have excellent hearing for hunting prey, and their large ears help cool the dog off in the hot African climate.

The bones on the **African wild dog's** lower front legs are fused together to prevent breaking their legs while running.

The **African wild dogs'** speckled fur is good for camouflage



<https://on.natgeo.com/3gs0VGZ>

This is an interesting page about the **African wild dogs**

<https://bit.ly/34fwGkf>

Another great site with videos from BBC Earth

Rabbits are generally known for their massive ears, but they actually do a lot more than just hear predators and friends. Rabbits ears are crucial for thermoregulation! Their large surface areas allow bunnies to release their heat and keep cool, that's why bunnies that live in hot areas tend to have the largest ears.

Water is essential for keeping cool when temperatures soar, and jackrabbits have developed ways of conserving water in a habitat where it is often a scarce resource. Along with getting most of their required water from the foods they eat (cacti, leaves, grasses and twigs), jackrabbits have also developed another water-retaining adaptation. After their food has been digested, jackrabbits will often eat their feces. In this way they are able to digest their food twice, getting as much moisture from it as possible with little extra effort.



While you might think that extra fur would make the **jackrabbit** warmer, it actually protects and insulates the delicate soles from the heat of the ground. ... The light silver-and-tan fur provides plenty of desert camouflage, in addition to absorbing less heat than dark fur would.

Ocean/Cold Climate

Puffins live most of the year on the open ocean

In winter the face of the **Puffin** is darker and the bill rather dull in colour, but they become more colourful in the spring in preparation for the mating season.

<https://bit.ly/3sdlplb>
A Good site on **Puffins**



The **puffin's** large beak and mouth has backward pointing spikes which enable it to catch as many as ten small fish one after the other, without swallowing them, and hold them crosswise.

To catch food, the **puffin** dives from the water's surface, using its wings like paddles to 'fly' down to great depths to catch sand eels or other fish.

Puffins are specially adapted to living on the open sea. Waterproof feathers allow them stay warm as they float at the ocean's surface or swim underwater. It keeps its feathers waterproof by applying oil, from a gland near its tail, as it preens.

Penguins have webbed feet for powerful swimming.

Penguin's wings, shaped like flippers, also help them "fly" underwater at speeds up to 15 mph

Penguins' bodies are streamlined to reduce drag in water.

The dark coloured feathers of a **penguin's** back surface absorb heat from the sun, so helping them to warm up too.



Jungle/Rainforest

Parrots use their beaks to cover their feathers with a powdery substance, produced by their down feathers. This powdery substance is waxy and makes feathers flexible and waterproof.

The evenly distributed powder keeps them warm. It also makes them strong enough to withstand flight. Grooming is the most essential process for parrots besides eating.

Many of the bones in a bird's body are hollow, making **parrots** lightweight and better adapted to flying.



Flocking behavior makes it difficult for enemies to attack, as the **parrots** draw strength from their numbers while also making it possible for one to spot a predator and alert the rest before it is too late.

The strong beak of the **parrots** is ideal for breaking hard nuts and enhancing the bird's grip when climbing trees. With their thick beaks and big feet and claws, they can open up the thousands of tropical nuts and seed pods found in the Rain Forests.

Wouldn't it be cool to be able to see all around you without even moving your head? **Frogs** have bulging eyes or large, round eyes that sit on top of their head. They can see in front of them, to the sides, and even partly behind them just by moving their eyes! Having their eyes on top of their head also lets them keep their body under water and stay mostly hidden. This is important because it makes it easier for frogs to keep a look out for predators and sneak up on their prey. Two important things needed to stay alive!

The earliest known **frog** appeared on Earth about 200 million years ago. Since they are still around today, you have to say they are doing a good job of surviving! Frogs have certain adaptations that have allowed them to be around for such a long time. Adaptations are behaviors or characteristics a plant or animal has that makes it better able to live in a certain place or situation.



Many **frogs** that live in forests and rainforests have sticky toe discs that help them climb and keep them in place when resting on leaves and branches.

Over time, **frogs** have adapted their eyes, legs, and skin to be able to survive in their environment. Not all frogs have the same adaptations though; there are over 6,000 different types of frogs that live in many different environments. Some frogs spend more time in water, while others have adapted to living on land better.

Fields

The back feet of the **field mouse** (also known as a wood mouse) are large which give it a good spring for leaping.

Field mice also have a good sense of smell and whiskers which they use to feel surface textures and air movements.



Field mice are equipped with large, cup shaped ears to help sense sound vibrations.



How are field **frogs** different to rainforest frogs? Why?

Frogs are especially adapted for the places they live in and their colouring is often dependent on their habitat.

Frogs that live in arid areas have tough tubercles (nodules) on their back feet to help them dig into the earth when burrowing.

Glow-worms contain a poison (called lucibufagin) which protects them from predators like toads, and the larva uses its light and its distinctive markings to warn the predators to leave it alone.

Deception: Female Photuris fireflies (**glow worms**) mimic the mating flashes of other “lightning bugs” to attract them, whereupon they are pounced on and eaten.

Each adult female lives for only a few weeks until she mates, and dies soon after laying her 75-100 eggs in the ground. The eggs hatch into larvae after a few weeks, and remain as larvae for 1 or 2 summers, feeding on slugs and snails they paralyze before sucking them empty. There can be a 2-3 year gap between mating and the appearance of adult **glow worms**.

The common **glow worm** reproduces in the following way. The female finds a plant stalk to climb. When she is clear of most of the vegetation, she bends her abdomen upwards showing her glowing organs to attract males, which fly about a meter above her.



Mountains

Mountains often have extreme climates, and the animals that live there have some amazing adaptations.

Grizzly bears living in the mountains of North America survive the cold winters by hibernating—hiding out in dens and resting—to conserve energy when food is hard to find.

When **grizzly bears** hibernate, their body temperature drops by about 12 degrees, and they take a breath only once about every 45 seconds.

Animals living in the mountains have also developed thick coats of fur that protect them from the cold as they travel higher in elevation.



Grasslands



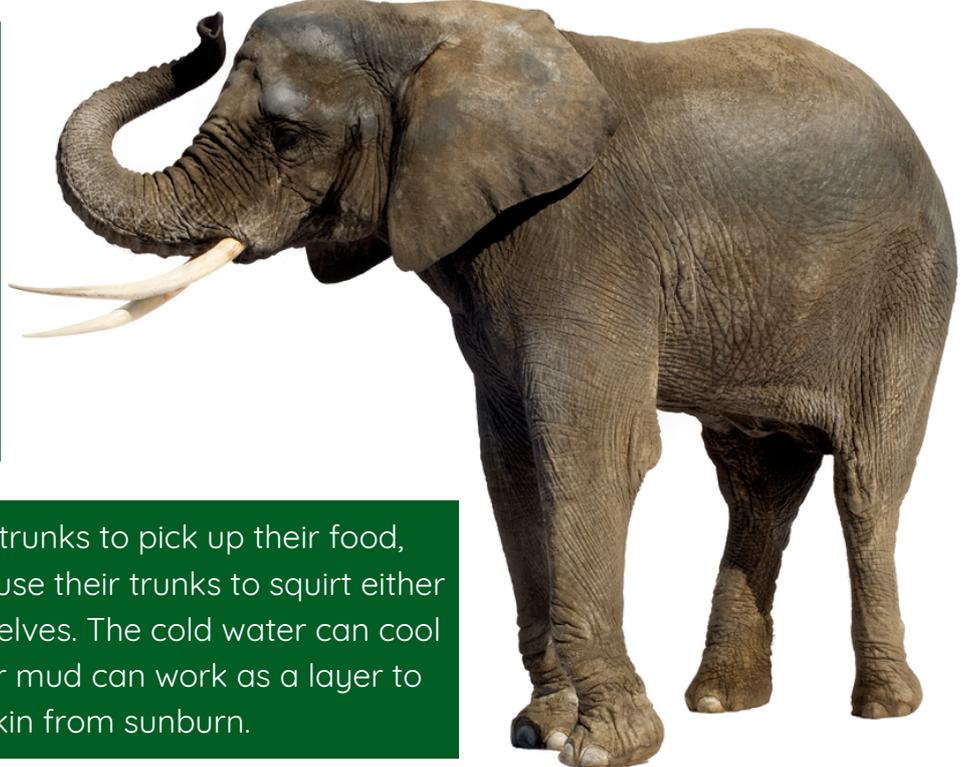
Giraffes also have a dark, thick prehensile tongue, meaning it can twist and wrap around, and grab things.

Giraffes' famously long necks allow them to browse leaves off the tops of grassland trees, helping them avoid food competition from other herbivores.

Their long necks also provide a height advantage for spotting predators, so other grassland prey species look to **giraffes** as sentinels for danger.

The skin patterns of **giraffes** may help camouflage them from predators.

As they move, **elephants** push over trees to get to their branches and roots, helping maintain the grasslands, and they use their tusks and trunks to dig for water, creating pools that many other animals need to survive.



In addition to using their trunks to pick up their food, **elephants** have learned to use their trunks to squirt either cold water or dirt on themselves. The cold water can cool them down, and the dirt or mud can work as a layer to protect their skin from sunburn.

Elephants have tusks made of ivory that can help them eat and protect themselves.

Grasslands

Open land without dense vegetation is advantageous to the **cheetah** because these big cats rely on speed for successful hunting. The cheetah, as a carnivorous animal, must survive by feeding on other animals. Its body features enable it to survive on the few prey in the savanna. It has a long and slim body, muscular legs and a small head, compared to its body, streamlining it to run after prey. Cheetahs can reach a speed of 70 miles per hour and can cover 115 feet in just about two seconds. This makes it the fastest animal on earth. Few of its prey, except perhaps the gazelle, can keep up with this speed.



The **cheetah** has fur that is golden yellow to pale orange in color. This allows the cheetah to camouflage easily in the brown grasslands of the savanna while stalking its prey. ... Their brown spots also keep them camouflaged while stalking prey.

The **cheetah** has very narrow and fully retractable claws that can come out of its paws and go back in whenever it needs to use them. This adaptation is useful for sprinting as the claws dig deep into the earth for better grip while the cheetah runs after its prey. The claws are also slightly curved so that when it catches up with the fleeing prey, the cheetah can easily dig its claws into the hind of the animal, bringing it to the ground. It then grasps the prey's neck with its strong jaws, causing the animal to suffocate.

Additional Ideas

Double page spread of 'hundreds of turtles swim to land, To lay their eggs in soft white sand.'

Students could learn about the way that turtles return the SAME BEACH they hatched at, to lay their eggs!! Also might want to learn about how the moon plays a role when the turtles hatch:

The hatchlings begin their climb out of the nest in a coordinated effort. Once near the surface, they will often remain there until the temperature of the sand cools, usually indicating nighttime, when they are less likely to be eaten by predators or overheat. Once the baby turtles emerge from the nest, they use cues to find the water including the slope of the beach, the white crests of the waves, and the natural light of the ocean horizon.

Double page spread of birds flying:

Students could learn about why some birds fly at night
Students could learn about the Northern lights (same page as Puffins)

Double page spread of the ocean:

'Waves roll gently to and fro... The moon commands their ebb and flow.'
<https://bit.ly/3rrRyNY> - really interesting!

Dreaming:

The last page is about dreaming - students could talk about their dreams / something they have dreamed etc.

