



**Cotswold
Wildlife**
Park & Gardens

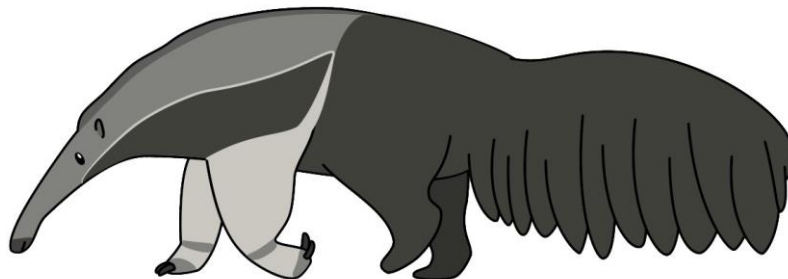
Habitats and Adaptations

Secondary Activity pack

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Key animals to see

In the walled garden:

- Humboldt Penguin
- Meerkat
- Otter
- Squirrel Monkey
- Sloth (Tropical House)
- Lemurs

In the Walkthrough:

- Giant Anteater
- Tapir
- Capybara
- Wallaby
- Cassowary

Other:

- Reptile House
- Binturong
- Siamang
- Clouded Leopard
- Lion
- Giraffe
- Rhino

Linne's Two-Toed Sloth

Suborder: Folivora



Amazing Adaptation: Living upside-down

Habitat: Tropical rainforests

Rainforest Layer: Canopy and understory

Distribution: Northern South America

Diet: Leaves, fruits, and occasional insects

Longevity: Over 30 years in captivity

Status: Varies by species



This unusual leaf-eating animal spends most of its solitary life hanging upside down in the forest canopy. It carries out the majority of its activities in this position such as eating, sleeping and even giving birth! It rarely comes down from the trees only to defecate (go to toilet). It only does this once a week, and digs a hole to bury it so that predators can't find the sloth by smell.

They have many adaptations that help them live upside down, including upside-down organs, long gripping claws, and backwards fur (that grows from their belly towards their back). Their fur also has special grooves in it that algae grows in. This helps camouflage the sloth by making them green in colour, and also provides a handy snack if they get hungry.

Sloths are one of the slowest animals in the world, moving at an average speed of 0.5km per hour, but they are capable of moving at about 1.6km per hour. Sloths are also remarkably good swimmers, this is an adaptation to deal with the annual flooding of the rainforest.

There are six different species of sloth. Some of them are widespread and others are critically endangered with very few left. Habitat loss is the biggest threat for all species of sloth. Some are also captured for the pet trade.

Meerkats

Suricata suricatta



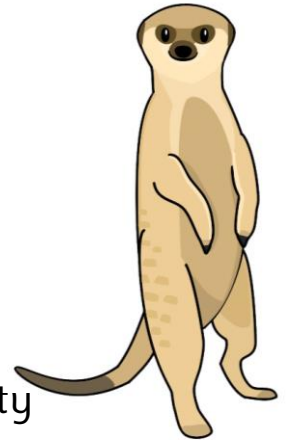
Habitat: Desert and savannahs

Distribution: Southern Africa, including Namibia and South Africa

Diet: Includes insects, scorpions, small mammals, Eggs and lizards

Longevity: About 10 years in wild, up to 17 in captivity

Status: Not threatened (IUCN Red List)



Meerkats are mainly tan colour to help them camouflage. They also have broken dark brown stripes across their back and sides, and a black tip to their tail. Their black eye rings help them reduce glare and see further when they are watching for predators. When fully grown they are about 50cm long from nose to tail tip and weigh only 0.9kg. Meerkats are a type of mongoose.

Meerkats live in social groups called mobs of up to 20 members. Living in mobs helps them survive in their harsh desert and savannah habitats. Each individual has clearly defined jobs (e.g. sentry, baby-sitter, hunter, or teacher). Sentries stand upright, usually at the highest point (look on top of the logs in their enclosure), and watch the skies and all around for danger. If danger threatens, they let out a loud warning bark and the whole group disappears to hide in their burrows underground.

Meerkats live in a female dominated society and the alpha female is in charge over the whole mob. She is the only female that is allowed to breed; she also chooses who the dominate male will be, and these two are they only ones to breed. The Meerkats are fed mealworms, chicks, eggs, fruit and vegetables which are scattered around the enclosures and hidden in crevices, so the meerkats have to search for them to encourage their natural foraging behaviour.

Humboldt Penguin

Spheniscus humboldti



Amazing Adaptation: Thick feathers and flippers

Habitat: Cold coastal waters and sandy/scrubby shorelines

Distribution: Peru, Chiles and islands off the west of South America

Diet: Crustaceans, krill, squid, and fish

Longevity: About 30 years



Humboldt penguins are a medium sized penguin, about 65cm tall and weight about 4.2kg. The feathers are black on the upper parts, light on the lower section and have a black stripe across their chest. Like all penguins they are flightless, since their wings have lost the flexibility at the elbows and become more like flippers. These 'flippers' allow them to swim up to 25 km/h 'flying' underwater, essential for catching fish and escaping predators.

Humboldt penguins live in a climate much like that of the U.K. however the seas they fish in are cold and thus they have a layer of insulating fat to protect them from the cold when swimming, they also have waterproof tips to their feathers which keeps their skin and fluffy under feathers dry. Humboldt penguins have shorter plumage than other penguin species. Humboldt penguins excavate burrows to nest in, usually about 3 metres in length. At the end is a small chamber which they line with sticks, mosses and lichen. Incubation of the two eggs is shared between both sexes, they often pair for life and stay with their mate.

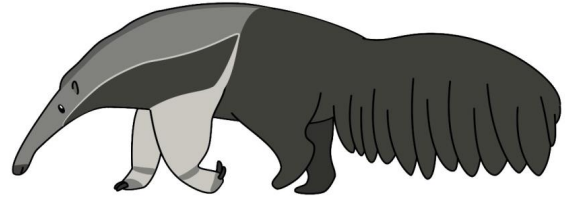
The primary threats for this species is accidental capture in fishing nets (resulting in drowning), illegal hunting for food, and illegal capture for the pet trade. Historically, populations declined due to over-exploitation of guano (which the penguins require for their nests). It is still harvested in some parts of their range, but no longer a major threat.

Giant Anteater

Myrmecophaga tridactyla



Amazing Adaptation: Long tongue,
strong claws



Habitat: Grasslands, woodlands and rainforest

Distribution: Southern Mexico to Uruguay and Argentina

Diet: Ants, termites and occasionally other insects

Longevity: Unknown in the wild and up to 26 years in
captivity

Status: Vulnerable (IUCN red list)

The giant anteater's large body is covered in long, coarse fur. Their head is long and has a tube-like mouth and nose. Giant anteaters do not have teeth, instead they have a very long tongue covered in tiny backwards pointing spines. Their tongues can be longer than 60cm (2foot). They stick this tongue into ant/termite nests to fish out their food.

One giant anteater can eat up to 35,000 ants and termites in one day! As well as their tongue, they are also armed with huge claws on their front feet, which are used to rip open termite mounds. While walking, these claws are folded back into the anteater's palms to stop them from breaking, forcing the anteater to walk on its knuckles.

Giant anteaters also have large, thick tails. They use this thick tail for balance when they stand up on their hind feet (like a kangaroo), to reach the higher parts of the termite mounds.

Habitats and Adaptations



Pre-visit activities

Below are some ideas for classroom activities linked to habitats and adaptations and classification.

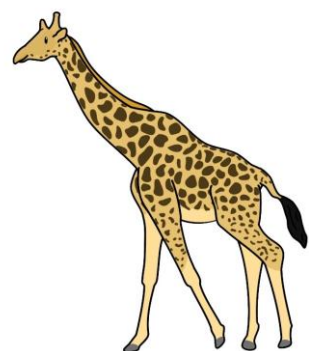
1. Learn the vocabulary words from the list on the next page.

Make it fun and interesting, you could create word clouds, use sticky notes, vocabulary spirals, hangman or pictionary!

2. Research one of the animals from the previous fact pages (Sloth, Meerkat, Penguin, Giant Anteater) to find out more and create your own Fact File.

3. Imagine life without an important human adaptation (e.g. opposable thumbs). Discuss as a class how you would make up for this loss. Can you then research the reasons and ways humans needed to adapt.

4. Before the trip, choose a specific animal and create a list of questions to ask whilst at the Park.



Vocabulary

Adaptation	A feature of an animal (or plant) that helps it survive in a specific habitat or lifestyle (predator, scavenger etc.)
Behavioural Adaptation	A behaviour that helps an animal survive (eg: penguins huddle together for warmth)
Camouflage	Colours and patterns that help an animal blend into its surroundings
Carnivore	An animal that mainly eats meat
Community	All of the plants and animals that live in a specific area
Consumer	Any animal (because they must all eat food to get energy)
Ecosystem	The complex community of interacting plants and animals in a specific habitat
Habitat	The type of place an animal lives (rainforest, desert etc.)
Herbivore	An animal that mainly eats plants
Niche	The specific role or 'job' of an organism within a community
Omnivore	An animal that eats plants and meat
Physiological Adaptation	An internal change that helps an animal survive (eg: a giraffe's specialised veins and arteries to get blood to their head)
Predator	An animal that hunts and eats other animals
Prey	An animal that is eaten by other animals
Producer	Most of the green plants (because they can produce their own food)
Scavenger	An animal that feeds on dead animals
Species	A group of animals that have similar characteristics and can produce offspring
Structural Adaptation	A physical external change that helps an animal survive (eg: spines on a hedgehog)

Pre-visit Activities: Animal Mixer

How do animals communicate with each other? What makes animals unique and different from other animals? Pupils will think about this when they work to communicate without speaking.

Time: 15 minutes

Subjects: Drama, P.E, Science

Materials Required: Animal pictures, one per pupil

Start with a discussion of how animals communicate, and how the pupils would communicate if they were animals. For younger pupils it's a good idea to give examples (e.g. elephants trumpet, lions roar, etc.). They discuss how animals that don't make noise communicate. Do they twitch their whiskers, or stand in funny positions, or swish their tail?

Once the students have all thought about how animals communicate, explain that they are going to become animals. Many animals live in groups (can tie this into a discussion of hunting in packs or herd of zebra, etc.).

Once they have all assumed their animal identities, the pupils need to find the rest of their animal group. However, they can't speak, so to find each other they must communicate like animals! Explain that they will be given a picture of an animal they need to act like. When the pictures are handed out they should look at it, but they need to keep it secret and not tell anyone what it is.

After everyone has a picture, have them get started and try to find the other pupils in their group by making the appropriate animal action/sound. Once they find someone in their group, stay with them and try and find more. Continue until all the animals are in their group.

As a conclusion go through the groups and have each demonstrate how they managed to find each other. * To make it easier, hand out the same number of pictures of each animal, e.g. in a class of 30 hand out 6 pictures of 5 different types of animals (6 elephants, 6 giraffes, etc.). To make it harder, have uneven groups of animals, e.g. 3 elephants, 9 rhinos, etc. Ensure you tell the pupils if the groups are uneven or they may be confused.

At the Park

Below are some ideas for things you can do or be looking for during your visit.

1. Attend the public talks and have your students take notes. Often the keepers are available after to answer questions if you want to learn more.

(We currently have two public talks: Penguins and Lemurs)

2. Split off into smaller groups and go to a particular area to find out about the habitat and adaptations of an animal – can they then share what they found with someone in a different group over lunch or when they get back to school?
(use the template on the next slide)

3. Look at the enclosures of animals from contrasting habitats and make notes on what materials/set up is included – how might this support the adaptations of certain animals?



Habitats and Adaptations



Animal Observation

Observing Animal Behaviour

Species I am observing:

.....

Observe your animal for 10 minutes and make a mark every time it does one of the following:

Walks/runs	Eats	Drinks	Lies down
Sleeps	Yawns	Looks at people	Plays

How can you identify your animal from others in their group?

.....
.....

Is there a group leader? How can you tell?

.....
.....

What do you think the animal's behaviour is showing you – is it hungry, tired, bored etc? Why do you think that?

.....
.....

Is there anything in the enclosure to keep your animal active? Either physically, mentally or both?

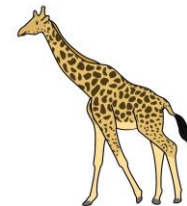
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Post-visit activities

Below are some ideas for classroom activities that will support the students' learning around habitats and adaptations.

1. Choose an animal you found out about whilst on the visit and research the habitat they come from – finding out more about ecosystems and how that animal might play its part alongside other species.
Make a poster to demonstrate what you have found out.

2. Design enclosures for animals you saw. Include features suitable for the animal's adaptations (e.g. sloths need climbing structures, Prairie Dogs need burrows, Giraffes need tall feeding posts etc.)



3. In groups, write and present a report detailing the adaptations of a particular animal you saw and how this supports them to survive in their habitat.



Genetic Diversity

To explore the concept of genetic diversity and how it relates to adaptations.

Time: 20 minutes

Subjects: Science

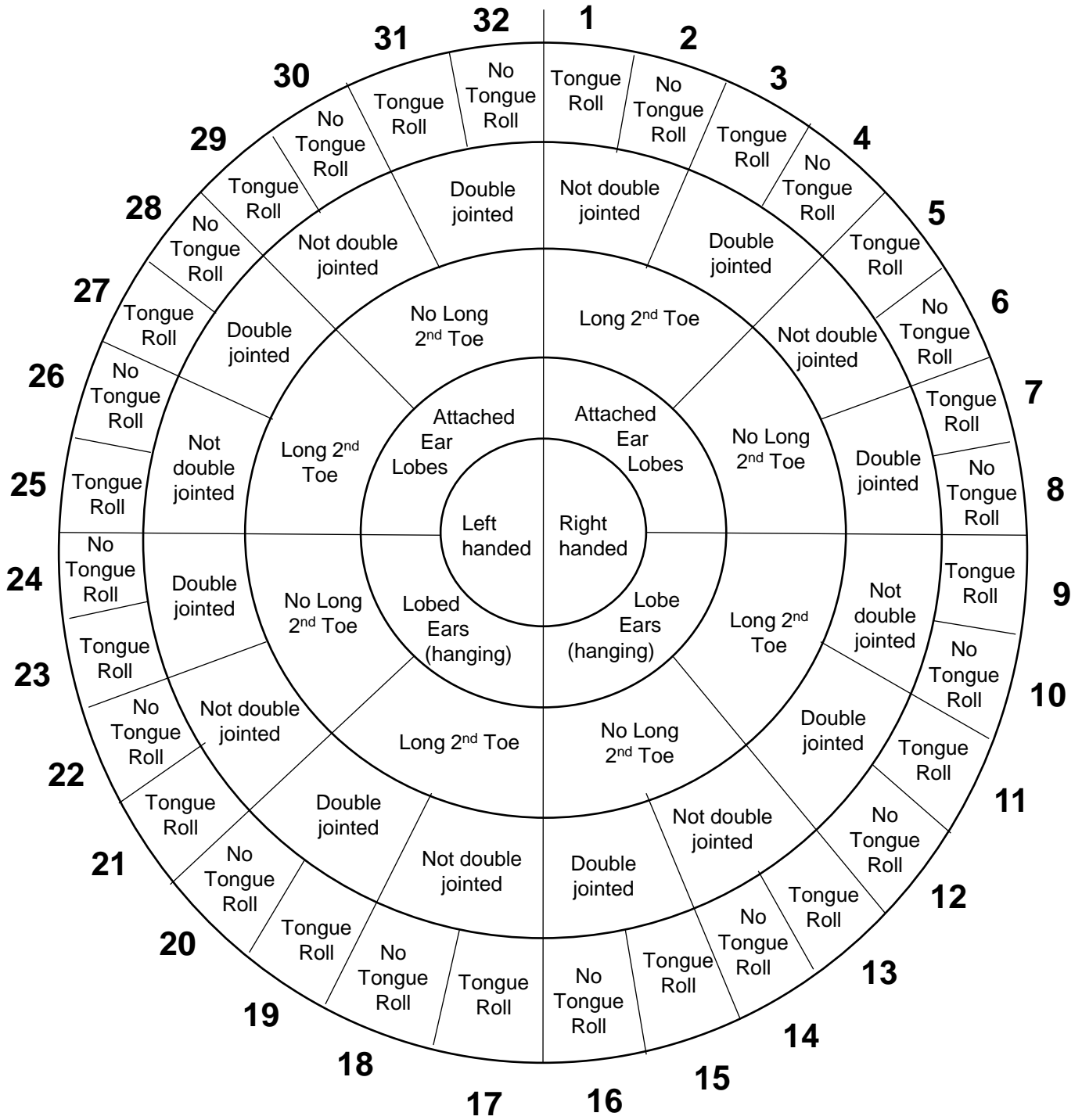
Materials Required: Copies of the genetic wheel for each student

Variation in animals is caused by genetic or environmental diversity. This variation might be beneficial to the animals survival. If the variation is beneficial, then over the course of many generations of animals, they might evolve so that this variation becomes a new adaptations that makes them better suited to their environment.

Have students fill in their genetic wheels. They should colour in each characteristics as it applies to them. Move circle by circle from the centre to the outside. They should record the number when they reach the edge of the circle. This is a very simplified study of genetics. Most of these traits are controlled by many genes, and are measured on a scale (not simply presence or absence). For the purposes of this study, it is assumed that the traits are genetically controlled by one gene which is recessive and the trait is present or absent.

Have students compare their numbers to others. How many of them had the same number? Find out where their numbers branches off. Have students take copies home and create genetic wheels for their parents to investigate how their genetic inheritance works. Discuss if they think any of this variation might have adaptive benefits. Is it useful for survival to be right or left handed? Does having a tongue that rolls up provide any adaptive benefits? This can be tied into a discussion about the difference between variation/mutation and adaptations and why some adaptations evolve.

Genetic Diversity Wheel



Habitats and Adaptations



We hope you enjoy your visit to Cotswold Wildlife Park and that you find some of these activities useful for your class.

We always enjoy seeing examples of students using the resources we have provided and the learning evident, so if you would like to send us some photos of their finished work, please email activities@cotswoldwildlifepark.co.uk

Thank you

