

How do animals survive? -Camouflage

Teacher Notes/ Activity/Worksheets

What can we offer

At Hamilton Zoo we can provide educational opportunities for students of all levels. This programme gives students the opportunity to

- be able to explain why predators and prey use camouflage.
- be able to demonstrate their understanding of camouflage by designing a butterfly that blends into a classroom "habitat."

Key Competencies

Participating and Contributing – *students are* given the opportunity to see how zoos contribute to the conservation of animals.

Using Language, Symbols and Text - *students will* explore animal behaviour and habitat through visual, oral and written text and communicate findings in a variety of formats.

Relating to others – *students will* be able to listen actively to each other, recognise different points of view and share ideas in relation to the way animals camouflage to survive.

Thinking – *students will* use creative and critical thinking to make sense of observations, information and ideas, which will allow them to understand how camouflage is a tool for survival.

Managing Self – *students will* be self-motivated, follow instructions and complete tasks.

Values

Innovation, Inquiry and Curiosity *by thinking critically, creatively, and reflectively.*

Participation in the wider community

Respect for themselves, others and animals.

Possible Learning Areas / Achievement Objectives

(main focus Science with links to other areas)

Science

Level 1/2

Living World - Ecology

- Recognise that living things are suited to their particular habitat.

Living World – Life Processes

- Recognise that all living things have certain requirements so they can stay alive.

Level 3/4

Living World - Ecology

- Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.

Living World – Life Processes

- Recognise that there are life processes common to all living things and that these occur in different ways.

English

Listening, Reading and Viewing
Speaking, writing and Presenting

Mathematics

Statistics, Number, Pattern

The Arts

Visual Arts

Health and Physical Education

Movement Concepts and Motor Skills – can you creep like a tiger? Strut like a giraffe? Hide like a tuatara?

Learning Intentions

- Respect self, others and the environment
- Communicate effectively
- Solve problems efficiently

Key Concepts / Big Picture

- By the use of camouflage prey animals protect themselves from predators
- By the use of camouflage, predator animals hide to better catch their prey

Vocabulary

Habitat, camouflage, colouration, disguises, mimicry, predators, resemblance, adaptation, prey, savannah, wetlands, desert, rainforest, mammals, reptiles, amphibians

Pre-visit Learning

- Discuss with students about how animals survive in the wild. (see discussion points)
- How do animals hide? - look at different types of camouflage. (see teacher notes)
- Activity - Is camouflage effective? (see activity details)
- Show students pictures or videos of animals that display different colours and patterns. Get students to use descriptive language to describe what they see.

Learning at the Zoo

- Educator can reinforce camouflage by looking at the habitat in which they come from, the food chain of different animals we have in the zoo.
- Worksheet – Match the animal with a habitat.
- Worksheet - Spot the pattern
- Choose animals to sketch the patterns and their fur, skin etc.
- Scavenger Hunt – Who am I? (see website)

Post-visit Learning

- Focus on one animal at the zoo and look at how they camouflage themselves and what they are camouflaging from. Design a visual food chain for this animal.
- Worksheet – Where can I hide?
- Worksheet – Going Spotty
- Design a butterfly to camouflage into an area in the classroom
- Looking at animal coverings may continue students learning onto classification of animals and different habitats.

Discussion Points about camouflage

- Animals can use camouflage to help them remain hidden from predators, particularly those who primarily hunt using vision instead of smell to hunt.
- Some animals are born with similar markings to leaves or stones that are always present in their environment. Walking sticks with their dark skinny bodies and swollen joints escape predators due to their resemblance they have to twigs. Other animals change their appearance as their surroundings change: an octopus can change the colour and texture of its skin extremely quickly in order to hide in the changing terrain of the ocean floor
- An arctic fox will change the colour of its fur based on the season. In the warmer months the arctic fox will grow brown fur to hide in the trees and in the winter it will grow white fur to hide in the snow
- Some animals change colours not to camouflage themselves but express their mood.
- For e.g. zebras use their stripes to confuse their main predator lions. Zebra stripes prevent lions from focusing on one animal. Some animals use mimicry to confuse and avoid predators.
- Mimicry is a form of camouflage in which an animal resembles another animal. Some harmless snakes and even some caterpillars- mimic rattlesnakes in appearance and behavior in order to be left alone. The robber fly's resemblance to a bumblebee makes predators give it a wide berth.

Teacher Notes

The coverings of animals vary in colour, pattern (stripes, spots etc.) and type (fur, feathers, skin or scales etc.). Coverings help to camouflage the animal and are suited to the habitat the animal lives in.

There are different types of camouflage:

Cryptic colouration

- This is when the natural colour of an animal matches the habitat they live in.
- For example lizards and skinks are green which blends in with the green leaves. Another example is lions that are light brown matching the soil and grasses of the savannah habitat.

Disruptive colouration

- Many animals cannot see colour, just shades of black and white. Animals that have striped and blotchy patterns break up the outline shape of the animal making it harder to see them, particularly when there are many in a large group. Many predators hunt during dusk and dawn. At this time the position of the sun creates long shadows so animals with stripes are harder to see as they can appear to blend into the surrounding environment/shadows.

Counter shading

- Some animals have the upper parts of their bodies' one colour and the bottom a different colour. This can be seen in fish where their upper colour blends in to the surrounding water. When predators look down on the fish it makes them harder to see. Likewise when predators are below a fish and look up and see the silver under belly. The fish under belly looks like water with the sun shining on it – making them harder to see.

Disguises and mimicry

- Parts of the animals' bodies that resemble parts of the habitat they live in for examples stick insects appear to blend into the branches.

Activity –Paperclip camouflage

- Begin the lesson by presenting the students with a box of toothpicks or paper clips in assorted colours. (be sure to have green toothpicks in your box)
- Count how many toothpicks or paper clips there are of each colour. Write the total of each on the blackboard.
- Spread the coloured items randomly over a large area of green grass. (If you don't have a grassy area at your school, use a patch of bare earth with some tan toothpicks. OR, use a large piece of fabric that matches the colour of the toothpicks.)
- Give the students 10 seconds to collect as many coloured items as they can find. This could be done individually or as a group.
- Count the number of each coloured item that the students retrieved. Compare this to your original count. Which colour items were the easiest to spot and collect? Which were less obvious? Why?

Introduce the concept of camouflage as an animal adaptation. Explain that many animals have colours or markings on their fur, feathers, scales, or skin that enable them to blend into their habitat (the place where the animal lives). Ask the students, "How might camouflage help an animal to survive?" Can they think of any examples? (A motionless green frog at the edge of a pond is almost impossible for predators and prey to spot. The drab feathers of most female birds help them go unnoticed as they sit on their eggs. The snowshoe hare changes colour with the season, becoming white in winter and brown in summer.)



References and Resources - Websites

K5 Computer Lab - <http://oakdome.com/k5/lesson-plans/powerpoint/animal-camouflage-pictures-and-information.php>

This webpage gives photo examples of each of the different types of camouflage.

Enchanted Learning -

<http://www.enchantedlearning.com/coloring/camouflage.shtml>

This website has over 40 colouring pages, teaching kids about animal camouflage.

References and Resources - Books

Perfectly Hidden: The Animal Kingdom's Fascinating Camouflage

- Schlitt Christine

[Interactive Book]

Perfectly Hidden, children will learn about the Earth's thirty-five best natural masters of disguise! You'll discover surprising images and fascinating facts about many types of animals and insects who have incredible camouflage

3D Animal Camouflage – Daniel Gilpin

[Non Fiction - 5-9years]

3-D Close Up: Animal Camouflage." Filled with amazing close-up photographs, dramatic artwork and engaging, insightful text, this book also includes four spectacular 3-D pop-up cross sections starring amazing animals in and out of disguise!

Books in the Young Explorer: Creature Camouflage series

– Deborah Underwood

[Young Reader – 5-7years]

There are 10 books in this series. Introduces the reader to animal camouflage, looking at habitats from around the world. These books explain what camouflage is, how it functions in animal survival, and how it can appear.

National Library of NZ and local libraries will have books to help with this topic.

Where can I hide?

Can you put animals you see at the zoo into the right habitat?
Look at the animal signs for your answers or their colourings/markings of their fur or skin may give you a clue.

<p><u>Savannah – Grasslands</u></p>	<p><u>Rainforest</u></p>
<p><u>Bush</u></p>	<p><u>Wetlands</u></p>

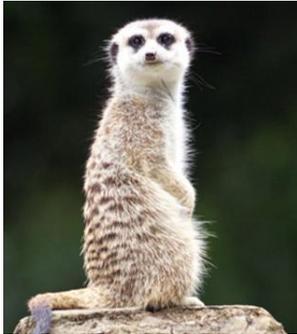
*answers can also be found on our website under each individual animal

Where do I live? - Habitats

Circle the habitat in which each of these animals can be found.

Use the animal signs around the zoo to help you

Meerkat



grasslands wetlands
rainforest

Sumatran Tiger



savannah rainforest
wetlands

Kaka



savannah bush
ocean

White Rhino



savannah rainforest
desert

Tuatara



bush rainforest
wetlands

Painted Hunting Dog



savannah rainforest
bush

Brazilian Tapir



savannah rainforest
bush

Capuchin



rainforest bush
savannah

New Zealand Falcon



rainforest savannah
bush

Chimpanzee

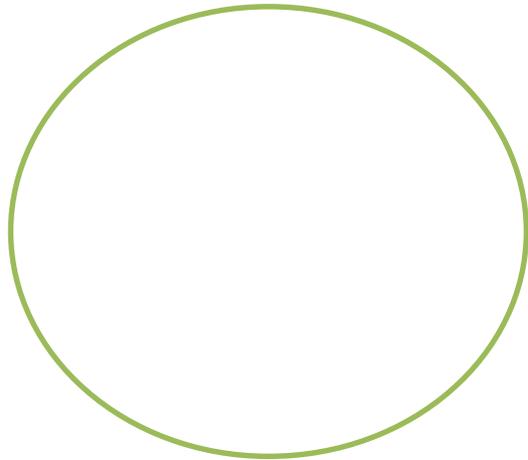


rainforest wetlands
savannah

**answers can be found under each individual animal on our website.*

Spot the pattern

Can you find each of these zoo animals and draw its pattern?
Remember! It has good camouflage and may be very hard to find!



Bobcat



Cheetah



Sumatran Tiger



Hunting Dog



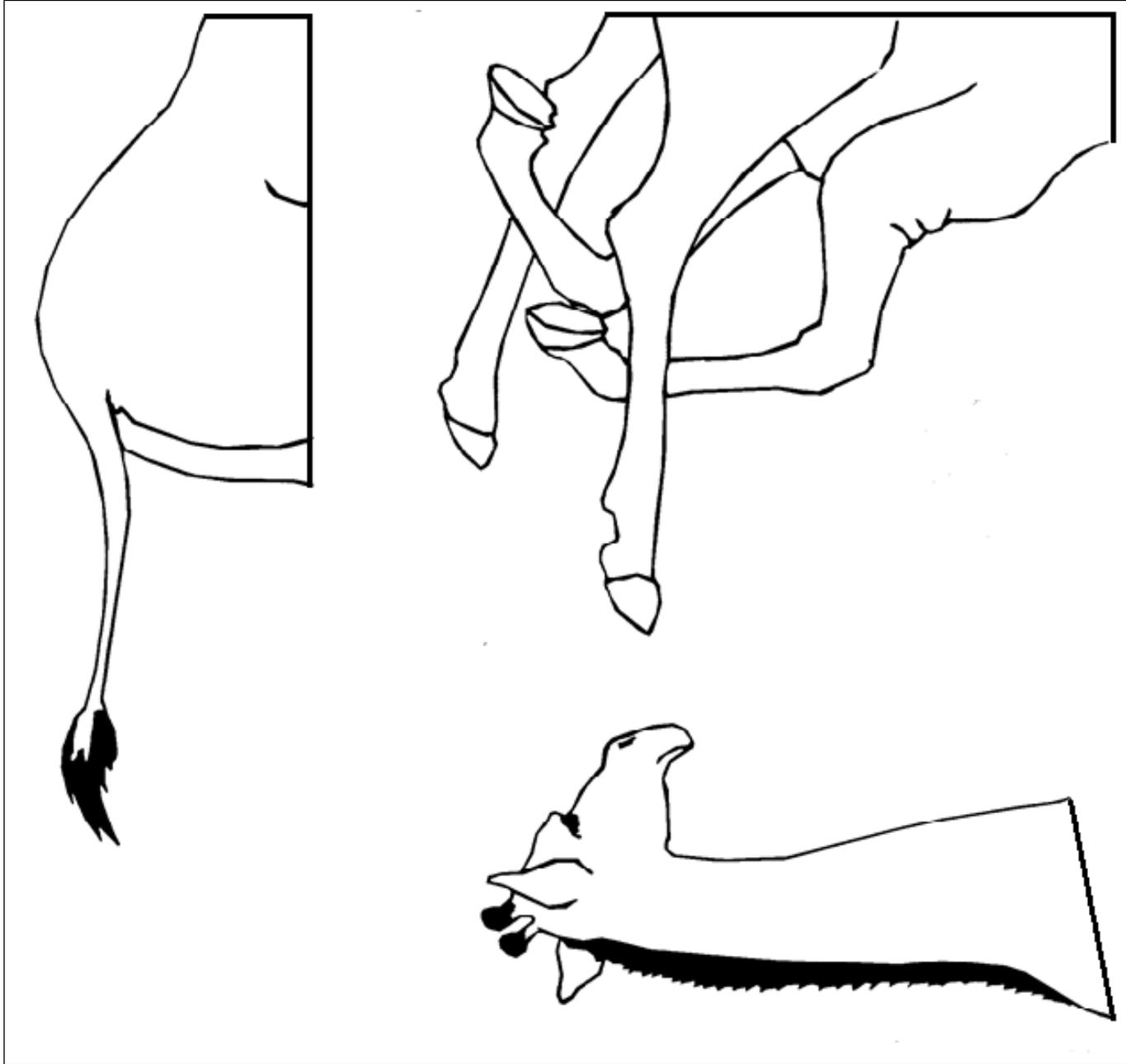
Giraffe



Zebra

*if you cannot find the animal at the zoo look on our website for clues

Going spotty



Can you draw the pattern on the giraffe?

The picture is in three pieces so you can cut it out and glue it together after you have put the pattern on.

Why not get the whole class to glue onto a very big piece of paper to make a herd of giraffe.

Giraffe live in savannah so don't forget to draw lots of dry grass and some trees around them after you glue them on to the paper. Why not add some other savannah animals.