Key Stage 2 Adaptation
Resource Pack

Marwell Wildlife, Colden Common, Winchester, Hampshire SO21 1JH. Registered charity number 275433.
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Introduction

This resource has been produced to support the teaching and learning of the Key Stage 2 Adaptations topic. It contains a number of activities that can be used in a variety of ways:

- In school as part of your Scheme of Work
- During an independent park visit to Marwell Wildlife
- As part of a visit to Marwell Wildlife that also involves the KS2 Adaptation session run by the Science and Learning Centre.

The resource contains:

- an Adaptation Trail around Marwell
- two activities that can be used at specific sites in the park (Cold-blooded Corner and Tropical World)
- an Animal Passport for your favourite animal
- an interactive game: Marwell Dominoes.

National Curriculum links:
Sc2.5b: Know about the different plants and animals found in different habitats.
Sc2.5c: Know how animals and plants in two different habitats are suited to their environment.

Summary of Resources

Adaptation Trail - for use on a visit
The Adaptation Trail is a journey of discovery through Marwell which allows students to develop and apply their knowledge and understanding of ‘adaptation’. It follows the main route around the park, taking in twelve species from a range of habitats; this provides students with the opportunity to see and consider a range of adaptations. The route of the trail will pass toilet blocks and there is a picnic site and café approximately half way round to allow for a break or for lunch.

Cold-blooded Corner Mini-trail - for use on a visit
This can be added on to the main trail or done as a stand-alone sheet. It focuses upon some of the reptiles found in Cold-Blooded Corner at Encounter Village. The students link together the picture of the reptile, its name and its adaptations by looking at the animals and finding the correct information, clues for which should be available on the information signs.

Tropical World Activity - Who am I? - for use on a visit
This clue-based activity is designed for the Tropical House. Students have to look at the different species within the tropical house and determine which species is the answer to the clues. There are different versions of this sheet within the pack to reduce overcrowding. Please note that there is a one-way
route around the Tropical House and that students should be forewarned not to touch the plants as some of them are poisonous.

**Animal Passport - for use on a visit or in the classroom**
This is a worksheet that provides a framework for students to use in order to discover more about their favourite animal’s adaptations. This can be used while visiting Marwell wildlife or as part of an internet-based research project.

**Adaptation Dominoes - classroom based**
This consists of 15 domino cards to print out; each one with an animal photo on one half and the adaptations of a different animal on the other half, which need to be matched in turn. This could be played in groups and could be used as a starter or a plenary activity.

**Before your Visit**
It may be useful to familiarise yourself and the students with the variety of animals that we have here at Marwell Wildlife. Our website (www.marwell.org.uk) might be helpful and there are other links at the end of this document.

If you are doing a trail round the park, students can use the information provided on signs, some picture clues on trail sheets and their own observations to complete their worksheets. A word card is included at the end of the pack to assist less able students.

Please note that crested porcupines and black and white colobus monkeys are currently in the same enclosure. Giraffes have an indoor enclosure, where they will be in winter and wet weather, and two outdoor paddocks, in both of which there should be giraffes in good summer weather. The other animal which moves its location regularly is the camel, which has a winter and a summer paddock – the summer one is near the playground. These are all marked on the map in the Adaptation Trail Booklet.

This booklet (and the Animal Passport) can be printed out either on A4 sheets or in booklet format. The Adaptation Trail Booklet includes a map.
Welcome to Marwell Wildlife!

You are about to go on a journey of discovery around the park to find out more about how different animals are suited to their environment. First, let's make sure that you know what these words mean: match up the word and what it means using a line.

<table>
<thead>
<tr>
<th>camouflaged</th>
<th>This is the environment (place) where an animal or plant lives.</th>
</tr>
</thead>
<tbody>
<tr>
<td>predator</td>
<td>This means that the animal can blend into its surroundings.</td>
</tr>
<tr>
<td>prey</td>
<td>This means that the animal/plant has features that allow it to live in its habitat.</td>
</tr>
<tr>
<td>habitat</td>
<td>These are animals that are eaten by other animals.</td>
</tr>
<tr>
<td>adapted</td>
<td>These animals eat other animals.</td>
</tr>
</tbody>
</table>

On your journey around the park, you will meet some amazing animals and have some challenges to complete on your way.
Some of the information you will need is on signs on the enclosure; sometimes you have to watch the animal and look at the photos and picture clues to work out the answers.

1. HUMBOLDT PENGUIN

What habitat does it live in? ____________________________

________________________________________________________________

What are their wings like? ____________________________

What other features help these birds to live?

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

2. PORCUPINE

The habitats it lives in are ____________________________

________________________________________________________________

Its most obvious adaptation is its _______________________

These help it to survive because _______________________

________________________________________________________________
3. BLACK AND WHITE COLOBUS MONKEY

What type of habitat do they live in? ____________________________
________________________________________________________________

These monkeys have long arms and a long tail. How do these adaptations help them to survive in the forests where they live?
________________________________________________________________
________________________________________________________________

4. GIRAFFE

This is the tallest land animal in the world.

What habitat does this animal live in? ____________________________
________________________________________________________________

What adaptations does it have that make it into the tallest animal?
________________________________________________________________
________________________________________________________________

Give two reasons why being so tall is useful for a giraffe.

1. ______________________________________________________________________

2. ______________________________________________________________________

A giraffe’s tongue is 46-50cms long. How does this help it?
________________________________________________________________
________________________________________________________________
5. SAND CAT

Which habitat does it live in? ________________________________

Using the information board, answer these questions to discover more about this animal’s special fur:

How hot does it get during the day in the Sahara? ____________ºC

How cold does it get at night in the Sahara? ________________ºC

What is special about the fur? ________________________________

What does this animal do to help it survive these harsh temperatures?
________________________________________________________________
________________________________________________________________

6. SERVAL

What habitat does it live in? ________________________________

Have a close look at this wild cat. Do you think it would be camouflaged in its natural environment? ________________

Write down two other adaptations and how you think they help the serval survive.

1. ______________________________________________________
   It helps because _________________________________

2. ______________________________________________________
   It helps because _________________________________
7. COATI

What type of habitat does it live in? _____________________________

Name 2 features that help it to live there:

______________________________________________________________

______________________________________________________________

What special feature does this animal have that allows it to walk down trees head first?

________________________________________________________________

8. CAMEL  This species has two possible locations on the map, depending on the season. It is near Encounter Village in winter.

Which habitat is the camel adapted for? _______________________

Look at this animal’s feet. Describe what they look like and how they help it to survive.

______________________________________________________________

______________________________________________________________

The camel is able to use a special area of its body to store fat, which it can change into water when it needs it. What is this called?

________________________________________________________________

Have a look at this animal’s face. How could the eyelashes and nostrils help to protect it in a sand storm?

Eyelashes: ________________________________________________

Nostrils: _________________________________________________

________________________________________________________________
9. SULAWESI CRESTED MACAQUE

What habitat do they live in? ____________________________________

What special features do the macaques have? Choose two features and see if you can work out how these features might help the macaques in the wild.

1. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. ____________________________________________________________
   ____________________________________________________________

10. SIAMANG GIBBON

In which type of habitat can it be found? ________________________

What adaptations does it have to help it move through the trees easily?

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
11. SNOW LEOPARD

What type of habitat does it live in?

Look at this animal. What three adaptations help it to live in its habitat?

1. ____________________________
   It helps to ____________________________

2. ____________________________
   They help it to ____________________________

3. ____________________________
   This helps it to balance.

12. GIANT ANTEATER

What habitat does this animal live in: ____________________________

What type of food does this animal eat: ____________________________

What two adaptations can you see that would help it to feed?

1. ____________________________
   It helps because ____________________________

2. ____________________________
   These help because ____________________________
**Cold-blooded Corner Mini-trail:** Look at the amazing reptiles in the exhibit and see if you can match up the picture, name and adaptations. Use four different lines (e.g. - - - - - or __________ or a wavy line or zig-zag line) or four different colours to match them up. Look at the signs to see where in the world each one lives and what it eats, to help you choose the matching boxes.

<table>
<thead>
<tr>
<th>What am I?</th>
<th>What adaptations (special features) do I have?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of Gila monster]</td>
<td>- Gila monster: I have a hard shell to protect against predators.</td>
</tr>
<tr>
<td>[Image of Madagascan tree boa]</td>
<td>- Madagascan tree boa: My long tongue with a sticky tip shoots out very fast to catch insects.</td>
</tr>
<tr>
<td>[Image of Panther chameleon]</td>
<td>- Panther chameleon: I kill my prey by tightening my powerful coils round the victim’s.</td>
</tr>
<tr>
<td></td>
<td>- Small round size helps me to heat up quickly in the sun, after a cold night in the desert.</td>
</tr>
<tr>
<td></td>
<td>- I eat small mammals and birds, opening my jaw wide to swallow animals whole.</td>
</tr>
<tr>
<td></td>
<td>- My red, green and white skin colour changes for camouflage or to show my moods.</td>
</tr>
<tr>
<td></td>
<td>- My short back legs with long claws help to dig up a meal or make a burrow.</td>
</tr>
<tr>
<td></td>
<td>- Each of my eyes can look round on its own, which helps me find.</td>
</tr>
<tr>
<td></td>
<td>- I am green, grey and black – good camouflage to live in forests!</td>
</tr>
<tr>
<td></td>
<td>- My striking green and black colouring warns that I am venomous.</td>
</tr>
<tr>
<td></td>
<td>- My claws are good for digging and burying my eggs in the sand in North Africa.</td>
</tr>
</tbody>
</table>
|                             | - My st
triking green and black colouring warns that I am venomous.                                          |
Tropical World - Who am I?

Read the clues and track down these amazing plants and animals found in the Tropical World whilst discovering more about how they are adapted (suited) to where they live (their habitat).

Name ________________________________

1
- I have 6 stalk-like legs
- I am green/grey and small
- I am very well camouflaged
- My head looks similar to that of a horse

I am a........................................
........................................
........................................

2
- I have 4 legs
- I have a long tail
- I have claws that I can use to climb trees
- I have a special flaps of skin behind my head that I can open into a fan to scare off attackers and to lose heat.

I am a........................................
........................................
........................................

3
- I am green and black
- I am not well camouflaged
- My colour warns predators that I am poisonous
- My skin is smooth and moist

I am a........................................
........................................
........................................

4
- I am very small
- I have six legs
- I don’t live alone
- I have a special job that helps my colony to survive

I am a........................................
........................................
........................................

5
- I have four legs
- I have rough scaly skin
- When I float in the water, I leave only my nostrils, eyes, and ears above the surface.
- I have a powerful tail to help me swim, and many sharp teeth.

I am a........................................
........................................
........................................

6
- I am a climbing plant
- I have small extra roots to attach to tree trunks
- My leaves get bigger nearer the top, to use the available light
- I have thick, waxy leaves so that I don’t lose too much water

I am a........................................
........................................
........................................
My favourite animal at Marwell Wildlife is:

________________________________________________________________

Draw your animal in here

My name is: ____________________________________________________

My school is: ____________________________________________________
Animal Details

Fill in this passport by looking at your animal and using the information sign.

Where in the world does your animal come from?

______________________________________________________________

In the questions below, circle the best answer or answers for your chosen animal.

Animal Group

My animal has:

FUR/HAIR  SMOOTH WET SKIN

FEATHERS  SLIMY SCALES

DRY SCALES

This means that my animal is a:

AMPHIBIAN  REPTILE  MAMMAL

BIRD  FISH

Habitat

What kind of place does your animal live in?

WARM  COLD

HOT  DRY  WET
Size:

My animal is:

LARGE  MEDIUM  SMALL

How might this help your animal live in its habitat?

________________________________________________________________

________________________________________________________________

Camouflage

Many animals are able to blend in with their home due to their colour. This is called camouflage.

What colour is your animal? ________________________________

Is it camouflaged?    Yes     No

Why do you think would this be helpful? _________________________

________________________________________________________________

________________________________________________________________

Other Adaptations:

Special features, like the type of fur, claws or teeth, for example, can help an animal live in its habitat. These are known as adaptations.

What adaptations does your animal have to help it live there?

________________________________________________________________

________________________________________________________________

________________________________________________________________
Write down one more special thing about your favourite animal; maybe what makes you like it best?

________________________________________________________________
________________________________________________________________
________________________________________________________________

What else would you like to know about your animal?

________________________________________________________________
________________________________________________________________
________________________________________________________________

We hope that you have had a lovely time visiting us and the animals here at Marwell Wildlife.

What else have you discovered during your visit?

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
Adaptation Dominoes

There are 15 dominoes in the pack. The picture on one domino links to the information on another. They should end up as a loop at the end when they are all matched up.

You may wish to print out 2 sets, divide your class into two groups and let them compete to finish the dominoes in the quickest time.

17

- I have small spots to camouflage in savannah grasses.
- My long, slim legs help me run very fast.
- I have a small head which helps me to be streamlined for speed.
- My long tail helps me to change direction, when I am chasing my prey.

Humboldt Penguin

- My wings are like flippers and help me swim.
- I have waterproof feathers.
- My body is a streamlined shape to help me swim through the water.
- I have black and white feathers so that predators cannot see me from above and below.
- My beak has special teeth to hold the fish that I catch for food.

Serval

- My light brown coat with black spots helps me to blend in with my habitat.
- I live in grasslands or savannahs.
- My long legs help me to jump into the air to catch birds and to run fast.
- I have very large ears so that I can hear my prey.

Crested Porcupine
**Black and white colobus monkey**
- I have very long quills that are very sharp.
- My quills are hollow so when I am scared I can shake them to make a loud rattle sound.
- If I am being attacked, I run backwards at my attacker and stick my quills in them.

**Giraffe**
- I am mostly black with a very long white tail.
- I use my long tail to help me move through the trees.
- My long arms help me to swing from tree to tree.
- I have long fingers that I use to grip onto branches.

**Ring-tailed coati**
- I have strong legs and claws to help me move around woodland areas.
- I use my tail to help me to balance as I walk along branches.
- My snout (nose) is very flexible.
- My ankles can move 180º so that I can see below me when I am walking down trees.

**Bactrian camel**
- I am light brown with darker patches that look like crazy paving.
- My tongue is very long to help me reach food and it is blue.
- My lips are very tough as I like to eat leaves off very prickly trees.
- I am very tall as I have very long legs and a very long neck.
<table>
<thead>
<tr>
<th>Tokay gecko</th>
</tr>
</thead>
</table>
| • I can have a thick coat in winter to keep me warm and a thin coat in the summer to help me to stay cool.  
  • My nostrils can be closed during dust storms.  
  • I can drink up to 57 litres of water in one go.  
  • I have two humps where I store my fat. |

<table>
<thead>
<tr>
<th>Panther chameleon</th>
</tr>
</thead>
</table>
| • I have special hairs on my toes that help my feet stick to any surface, even glass.  
  • If I feel threatened I can drop my tail which will act as a distraction whilst I escape. |

<table>
<thead>
<tr>
<th>Sand cat</th>
</tr>
</thead>
</table>
| • My eyes work separately to each other so I can see all around me.  
  • I have a special long tongue that I use to stun and grab my prey.  
  • My toes allow me to grip onto small branches.  
  • I can change my colour to make me camouflaged or to show my mood. |

<table>
<thead>
<tr>
<th>Horse-headed grasshopper</th>
</tr>
</thead>
</table>
| • I live in sandy deserts.  
  • My fur is very special as it is so thick that it protects me from freezing temperatures at night and very hot temperatures during the day.  
  • I have strong legs so I can dig out prey and make burrows for me to shelter in. |
• I am not a mammal.
• I am small and live in the tropical rainforests.
• My colouring means that I am not well camouflaged.
• My black and green colour tells predators that they shouldn’t eat me as I am poisonous.

• I spend most of my time up in the canopy of the forest.
• My legs are much shorter than my arms, which helps me to move from branch to branch.
• When I am on the ground I walk with my arms above my head to help me balance.
• I have black hair.

• I am light brown so that I am camouflaged.
• I am very small.
• I look like the twigs on which I live.
• I am an insect.

• I am camouflaged against the mountain where I live.
• My feet are very wide which helps me to move through the snow and across rocks.
• I have a very long and fluffy tail that I use for balance and to keep my face warm when I am asleep.

• I am not a mammal.
• I am small and live in the tropical rainforests.
• My colouring means that I am not well camouflaged.
• My black and green colour tells predators that they shouldn’t eat me as I am poisonous.
Activity Answers

Adaptation Trail - Answers

1. **Humboldt penguin**: Habitat: Rocky coasts and cool waters. 
   Wings: Act as flippers to help them swim. 
   Other features: Beak has small teeth to keep hold of fish; waterproof feathers; streamlined body; camouflage.

2. **Crested porcupine**: Habitat: Many habitats from forest to desert 
   Obvious adaptation: Quills 
   Reason: defend against predators, can shake them to make them rattle or run at attacker and stick quills into them.

3. **Black and white colobus monkey**: Habitat: Tropical rainforest 
   Long arms and tail: Swing between trees, move along branches, tail acts as brake or used for balance; reach food.

4. **Giraffe**: Habitat: Savanna or dry, open country and woodland 
   Features to make it tall: Long legs and long neck. 
   Two reasons: Help it to reach food; can see danger. 
   Tongue: Can grab and pick leaves to eat.

5. **Sand cat**: Habitat: Sandy desert 
   How hot?: 58°C 
   How cold?: -5°C or -25°C (winter) 
   Special fur: Solid, dense fur that insulates them. 
   Other survival strategy: Digs burrows to get shade, using strong legs.

6. **Serval**: Habitat: Savanna 
   Camouflage: Yes 
   Possible adaptations: Large ears - to hear prey/lose heat; long legs - to run fast/to jump; claws/sharp teeth - to catch/eat prey.

7. **Coati**: Habitat: Forests and woods 
   Features: Strong short legs and claws to help it climb; narrow nose to search for food; thick fur to keep it warm; long tail to help with balance. 
   Special feature: (found on information board) they can turn their ankles 180°.

8. **Camel**: Habitat: Semi-arid to arid plains, grasslands and desert 
   Feet: Wide toes, spread out weight to stop sinking in sand. 
   Fat store: Hump 
   Facial features: Long eye-lashes keep sand out of eyes; nostrils are like slits that can open and close.

9. **Sulawesi crested macaque**: Habitat: Tropical forest 
   Special features: Crest on head, for communication - raises when anxious or alarmed; pink bottom: on male and female, perhaps helps them see each other in forest - on female becomes bigger when she is ready to breed; cheek pouches: can hold as much food as stomach, to eat later in safety.

10. **Siamang gibbon**: Habitat: Tropical rainforest 
    Features: Long arms for swinging; long fingers to grip branches; forward facing eyes to judge distances.

11. **Snow Leopard**: Habitat: Cold mountains 
    Adaptations: Thick fur to protect against the cold; large paws to move easily through snow; strong legs/paws to catch prey and move easily through rocky...
areas; long tail to help with moving through rocky areas; furry tail can be wrapped over the face to keep it warm when resting; large teeth for killing and eating prey.

12. Giant Anteater:
   Habitat: Grasslands and forests
   Diet: Ants, beetles, termites and fruit.
   Adaptation and reasons: Strong legs and claws to reach ants/termites; long nose to sense ants/termites.

Cold-blooded Corner Mini-trail - Answers

Panther chameleon:
- My long tongue with a sticky tip shoots out very fast to catch insects.
- My red, green and white skin colour changes for camouflage or to show my moods.
- Each of my eyes can look round on its own, which helps me find insect food.

Egyptian tortoise:
- I have a hard shell to protect against predators.
- Small round size helps me to heat up quickly in the sun after a cold night in the desert.
- My claws are good for digging and burying eggs in the sand in North Africa.

Gila monster:
- I store fat in my tail for use in winter months, in western U.S. deserts.
- My short black legs with long claws help to dig up a meal or make a burrow.
- My striking pink and black colouring warns that I am venomous.

Madagascar tree boa:
- I kill my prey by tightening my powerful coils round the victim’s body.
- I eat small mammals and birds, opening my jaw wide to swallow animals whole.
- I am green, grey and black – good camouflage to live in forests!

Tropical World Activity - Who Am I? - Answers
1. Horse-headed grasshopper
2. Frilled lizard
3. Poison arrow frog
4. Leaf-cutter ant
5. West African dwarf crocodile
Adaptation Word Card

ankles  beak  bottom  cheek  claws  ears  feet  fingers  flippers  fur  eyes  hump  legs  neck  paws  pouches  quills  snout  stomach  tail  ant  leaves  rocks  prey  predator  termite  trees  alarmed  anxious  bushy  fat  forward-facing  large  long  raised  small  streamlined  strong  thick  thin  visible  webbed  attack  balance  camouflage  catch  defend  keep  warm  pick  reach  swing  swim  spread  weight

Habitats (where they live)

desert  savannah  tropical rainforest  grassland  arid/semi-arid plains  mountains  woodlands
References:

General species information for animals at Marwell
http://www.marwell.org.uk/zoo_guide/encyclopaedia.asp?css=1
http://www.bbc.co.uk/nature/wildfacts/animals_a_z.shtml
http://www.bbc.co.uk/nature/animals/
http://www.arkive.org/

Evaluation

Please let us have some feedback when you have used this resource, so that we can improve our resources in the future.

We would like to know:

How helpful have you found it?
Which were the best parts or activities?
Which were the least useful?
Did you have any problems with it?
If so, what were they?
Have you any more comments or suggestions?

Please e-mail any feedback to education@marwell.org.uk.

Thank you very much for your help.