# LEARN AT HOME ACTIVITY PACK (KS2)

BORN FREE

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## Maths & Science

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# Orca and oceans


## Background:

Born Free is convinced that the complex needs of cetaceans (whales, dolphins and porpoises) cannot be met in captivity. But what does the maths say?

## Curriculum links:

**Maths**

- **Number – addition and subtraction**
- **Number – number and place value**
- **Number – multiplication and division**
- **Measurement.**

**Science**

- **Working scientifically**
- **Living things and their habitats**
- **Animals, including humans**
- **Evolution and inheritance.**

# Activity:

Did you know that orcas, sometimes known as killer whales, are actually a member of the dolphin family?

## Without a calculator, let's compare the movement of an orca in a dolphinaria with that of an orca in the wild:

Key facts:

1. In the wild, orcas can swim at speeds of up to 40 miles per hour (just under **18 metres per second**).
2. In the US, orca tanks must be at least 14.6 metres in length. However, many are bigger, with the largest being around **108 metres long**.

Maths problem 1:

**How long will it take an orca to travel the full length of its tank at top speed?**

Remember that the tank is 108 metres and they can travel at 18 metres/second.

See the next slide for the solution.

# Activity:

Maths problem 1:

**How long will it take an orca to travel the full length of its tank at top speed?**

Remember that the tank is 108 metres and they can travel at 18 metres/second.

**Solution:**

- 108/18 = 6
- 108 metres /18 metres per second = **6 seconds**

18 times table:

| | |
|---|---|
| 1 x 18 = 18 | 7 x 18 = 126 |
| 2 x 18 = 36 | 8 x 18 = 144 |
| 3 x 18 = 54 | 9 x 18 = 162 |
| 4 x 18 = 72 | 10 x 18 = 180 |
| 5 x 18 = 90 | 11 x 18 = 198 |
| 6 x 18 = 108 | 12 x 18 = 216 |

# Activity:

Did you know that orcas can live for up to 80 years in the wild?

## Without a calculator, let's compare the movement of an orca in a dolphinaria with that of an orca in the wild:

Key facts:

1. In the wild, orcas can swim 100 miles per day (that is nearly **161,000 metres per day**).
2. To make it simpler, for this exercise let's assume that the tank is only **100 metres long.**

Maths problem 2:

**How many lengths will the orca need to do in order to travel 100 miles?**

Remember that they can travel 161,000 metres per day and the tank is 100 metres long.

See the next slide for the solution.

# Activity:

Maths problem 2:

**How many lengths will the orca need to do in order to travel 100 miles?**

Remember that they can travel 161,000 metres per day and the tank is 100 metres long.

**Solution:**

- 161,000/100 = 1,610
- 161,000 metres per day /100 metre long tank = **1,610 lengths**

Multiples of 10:

161,000/1 = 161,000 (removing no ‘0’s)
161,000/10 = 16,100 (removing 1 ‘0’)
161,000/100 = 1,610 (removing 2 ‘0’s)

# Living with Tigers

## Background:

Tigers are the largest cat on earth. Their distinctive markings blend in to the colours and shadows of their habitat. Tigers are generally solitary, living and hunting alone. As top predators, they are a keystone species and are critical to the ecosystems in which they live.

## Curriculum links:

**Science**

- **Working scientifically**
- **Living things and their habitats**
- **Animals, including humans**
- **Evolution and inheritance.**

# Activity 1:

## How much do you know about tigers?

**1. Tigers are the largest wild cats in the world, but how much can an adult weigh?**

**A.** 100kg **B.** 200kg **C.** 300kg

**2. Tigers hate the water…**

**A.** True **B.** False

**3. Tigers might be heavy, but how fast can they run?**

**A.** 25km/h **B.** 45km/h **C.** 65km/h

**4. What do you call a group of tigers?**

**A.** A troop **B.** An ambush **C.** A pride

**5. Tigers all have the same pattern of stripes on their fur**

A. True B. False

# Activity 1 (answers):

## How much do you know about tigers?

**1. Tigers are the largest wild cats in the world, but how much can an adult weigh?**

**C.** 300kg – That's about 66 times heavier than a domestic cat!

**2. Tigers hate the water…**

**B.** False – Tigers love to cool off in pools or streams, especially on hot days.

**3. Tigers might be heavy, but how fast can they run?**

**C.** 65km/h – That's twice as fast as an Olympic sprinter!

**4. What do you call a group of tigers?**

**B.** An ambush – Although tigers are usually solitary animals.

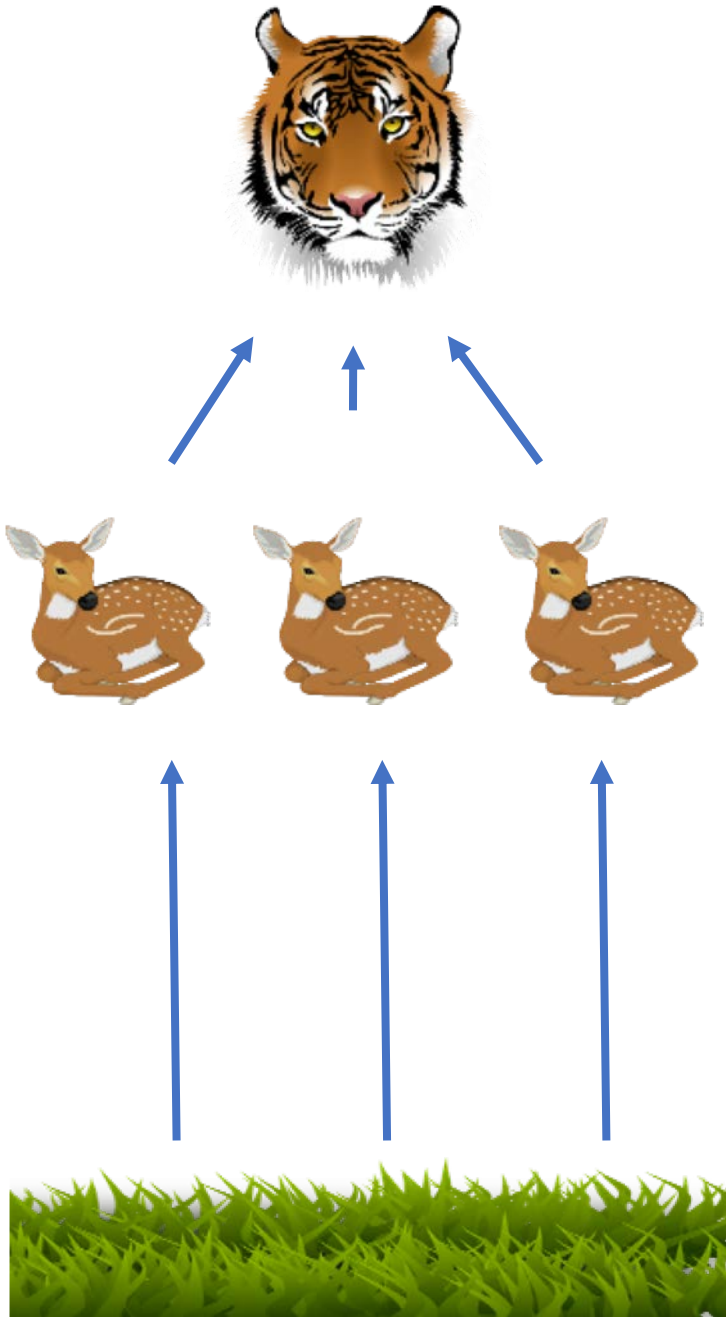
**5. Tigers all have the same pattern of stripes on their fur**

**B.** False – Every tiger is unique – no two tigers have the same stripes!

# Group activity 2:

## Food chain game – Bengal tigers in a temperate rainforest

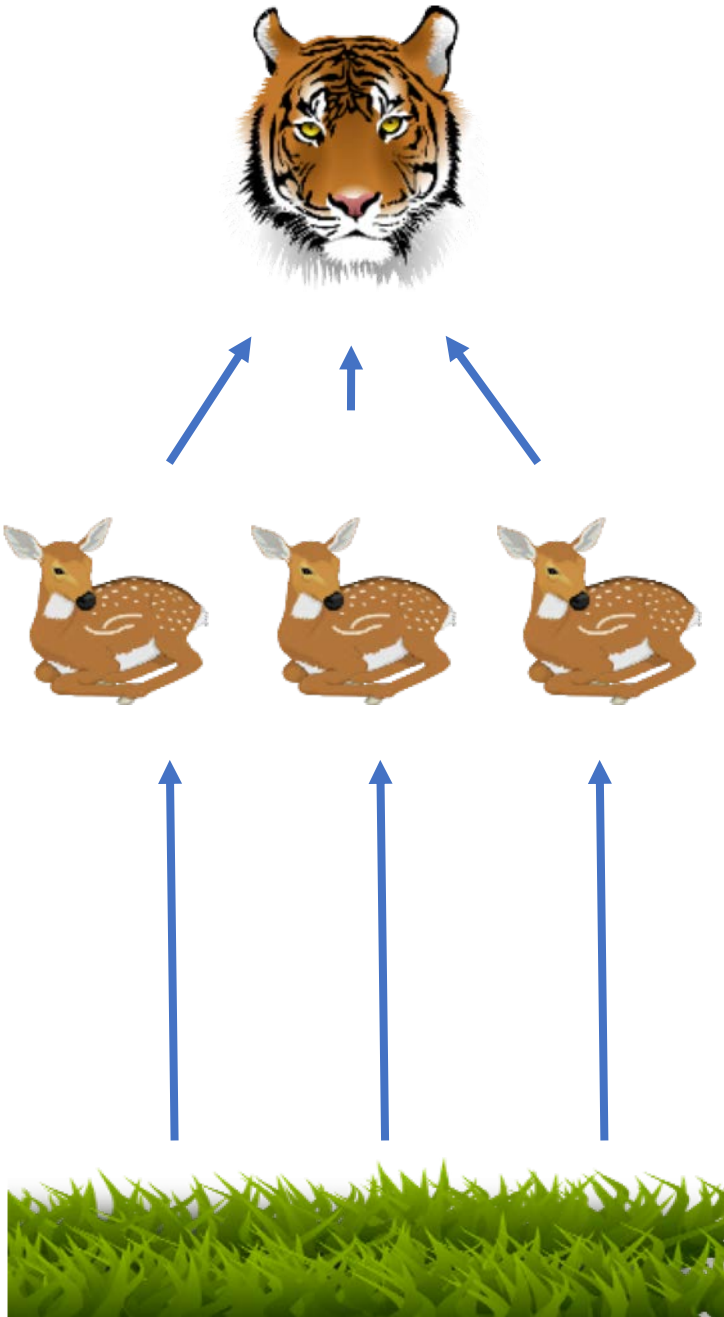
- The aim of this quick and easy game is to understand the role of a keystone species, such as a tiger, in a food chain. The three groups represented are:
  - Tigers (predator)
  - Deer (consumer/prey)
  - Grass (producer)
- You will need everyone in your house to get involved with this game (ideally five or more people)
- Assign each person to a part of the food chain by giving them a Post-it note or scrap of paper. There should be:
  - Two tigers
  - Three (or more) deer
  - The grass can be represented by cushions or other objects
- If you have a garden, this would the ideal place to play the game. If not, create as much space inside as possible.



# Group activity 2:

- **Rules:**
  - Predators (tigers) can ‘eat’ the prey (deer) by tapping them on the shoulder
  - Prey can run away from the predators
  - Prey can also ‘eat’ the grass by putting a sticker or other non-permanent marking on the object you are using to represent the grass
  - Deer must sit down if they have been eaten
  - Tigers can only eat one deer, but deer can eat a lot of grass
- Don’t forget – get into character and prowl, pounce and dash, and most importantly have fun!
- Why not play multiple rounds and see what happens.

- **Reflection after the game:**
  - What would happen if there were fewer tigers?
  - What would be different if there were no tigers?
  - What would happen if there was more vegetation (grass)?



# Activity 3:

## Can you identify the animal from its paw print?

I am a brilliant climber, and like to rest in the branches of trees during the day.



Many people choose to keep me as a pet!

My distinctive stripes blend in to the colours and shadows of my habitat.



I was a character called Bhalu in *The Jungle Book.*



# LEOPARD

The pugmark of a leopard has a paw pad and four toes, with no visible claw marks.
However, the pugmark of a leopard is smaller than that of a tiger.
It is also more compact, with the pad and toes much closer together.



## WILD AND DOMESTIC DOG

Dog pugmarks also have a paw pad and four toes.
However, unlike tigers and leopards, claw marks will be clearly visible in front of each toe.
Dog pugmarks are also smaller than both leopard and tiger.



# TIGER

The pugmark of a tiger is large and widespread.
The mark has a paw pad and four toes, with no visible claw marks.
The pugmark of a female tiger is more elongated than a male tiger’s.



## SLOTH BEAR

The pugmark of a sloth bear has a paw pad, but – unlike tigers, leopards and dogs – has five toes.

A claw mark will be visible in front of each toe.

The pugmark of a sloth bear's front paws have a smaller pad mark than that of its hind paws. The pad mark of a hind paw is also elongated.

# Activity 4:

## Adaptations are special features or behaviours that make a plant or animal particularly suited to its habitat

- A habitat is a place where a plant or animal lives. Examples include the desert, rainforest, woodland or the sea
- Adaptations are a part of the evolutionary process
- Examples:
  - A tiger's stripes aren't just for looking good! They are an adaptation that helps them blend into the colours and shadows of their habitat, making them really hard to see

- **Using a piece of paper, first draw a tiger in the middle – then annotate it with the other adaptions that help tigers to survive in their habitats**
- See the next slide for a few answers
- Challenge: Can you colour code your adaptations into categories?
  - Physical
  - Social and
  - Behavioural adaptations.

I have an incredible sense of hearing and my roar can be heard as far as three kilometres away!

My distinctive markings blend in to the colours and shadows of my habitat. I have a reddish-orange coat with a white belly and black stripes.


I use scent to communicate. I spray urine and rub scent on trees and bushes to inform other cats of my whereabouts and mark my territory.

I normally hunt alone but I am awesome at it! I have retractable claws, powerful jaws, sharp teeth and acute senses.

I am able to expand my throat. This allows me to swallow food in large pieces, or even whole.

I have soft pads on my feet that allow me to walk on my toes and sneak up on unsuspecting prey.

# Precious primates

## Background:

Only around 6% of Earth's land surface is rainforest – but it holds about half of all animal and plant species.

The Upper and Lower Guinea rainforests of West Africa have the greatest diversity of primates in the world (60 species and sub-species, 46 of which are endemic – meaning that they are found nowhere else on Earth).

## Curriculum links:

**Science**

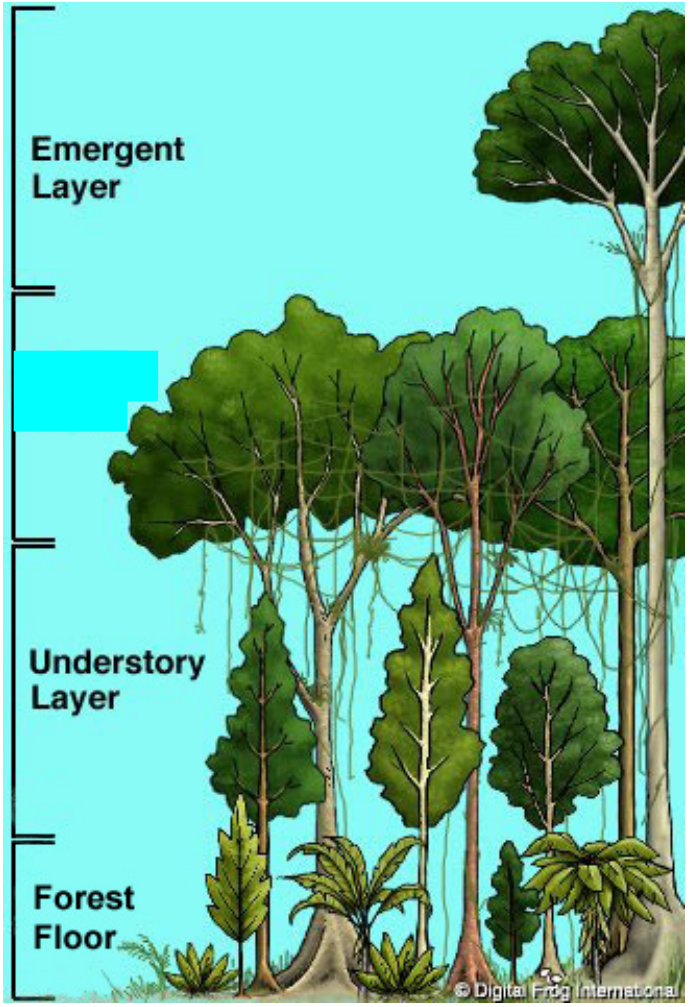
- **Working scientifically**
- **Living things and their habitats**
- **Animals, including humans**
- **Evolution and inheritance.**

# Activity 1:

## Characteristics of the rainforest:

Fill in the blanks (answers on the next slide):

- Rainforests are mainly situated around the Earth's _____
- They have four main vegetation layers: emergent, _____, understory and forest floor
- And they are warm and _____.




## Did you know?

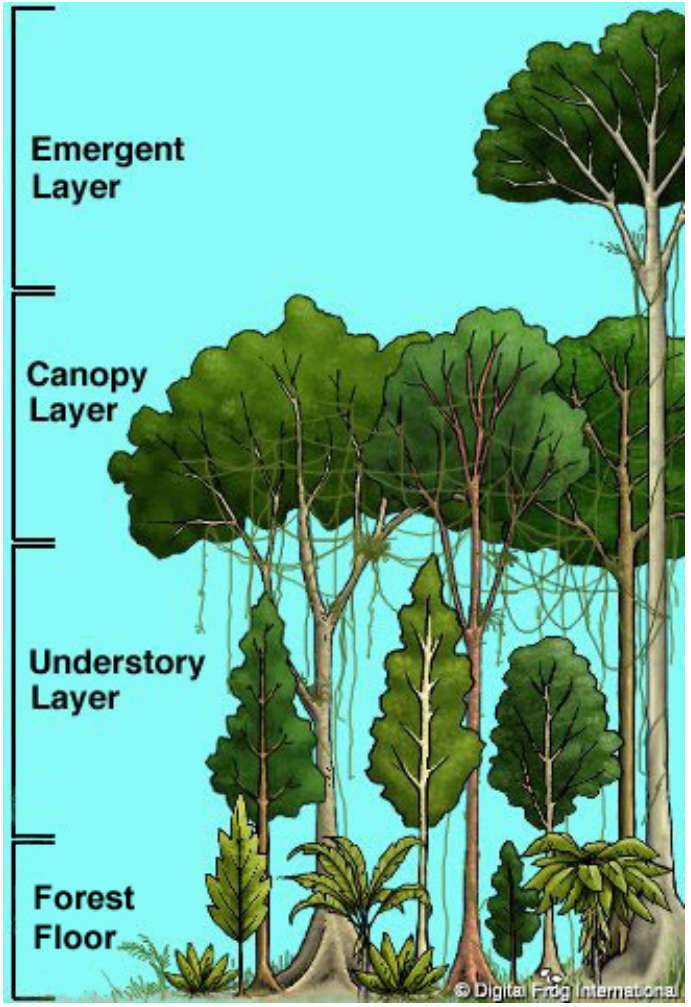
Only around ____% of Earth's land surface is rainforest – but about **half of all animal and plant species live there**.

The _____ rainforest is the **largest rainforest in the world.**

# Activity 1 (answers):

## Characteristics of the rainforest:

- Rainforests are mainly situated around the Earth's equator
- They have four main vegetation layers: emergent, canopy, understory and forest floor
- And they are warm and wet.




## Did you know?

Only around 6% of Earth's land surface is rainforest – but about **half of all animal and plant species live there**.

The Amazon rainforest is the **largest rainforest in the world.**

# Group activity 2:

## Let's play bingo:

- This game will introduce you to 18 of the 60 species and sub-species of primates found in the Upper and Lower Guinea rainforests of West Africa
- Can you also spot their conservation status?

What you will need:

- Bingo sheets and pens for everyone playing the game (you can download the cards here https://myfreebingocards.com/bingo-card-generator/free/u5y587)
- This slide show.

How to play:

- The next 18 slides each contain a picture and the name of a West African primate
- Each time you change slides, everyone should check their sheets
- If the primate on screen is also listed on your sheet you should cross it out
- The first to cross out all the names on their sheet wins
- Don't forget to think about a prize!

# Campbell's Monkey

LEAST CONCERN
LC

# Spot-nosed Monkey

LEAST CONCERN
LC

# Diana Monkey

VULNERABLE
VU

© Brent Huffman / UltimateUngulate

# Upper Guinea Red Colobus

RED LIST
ENDANGERED
EN

# White-thighed Colobus

RED LIST

VULNERABLE

VU

# Sooty Mangabey

NEAR THREATENED
NT

# West African Chimpanzee

© Katheljne Koops

CRITICALLY ENDANGERED
CR

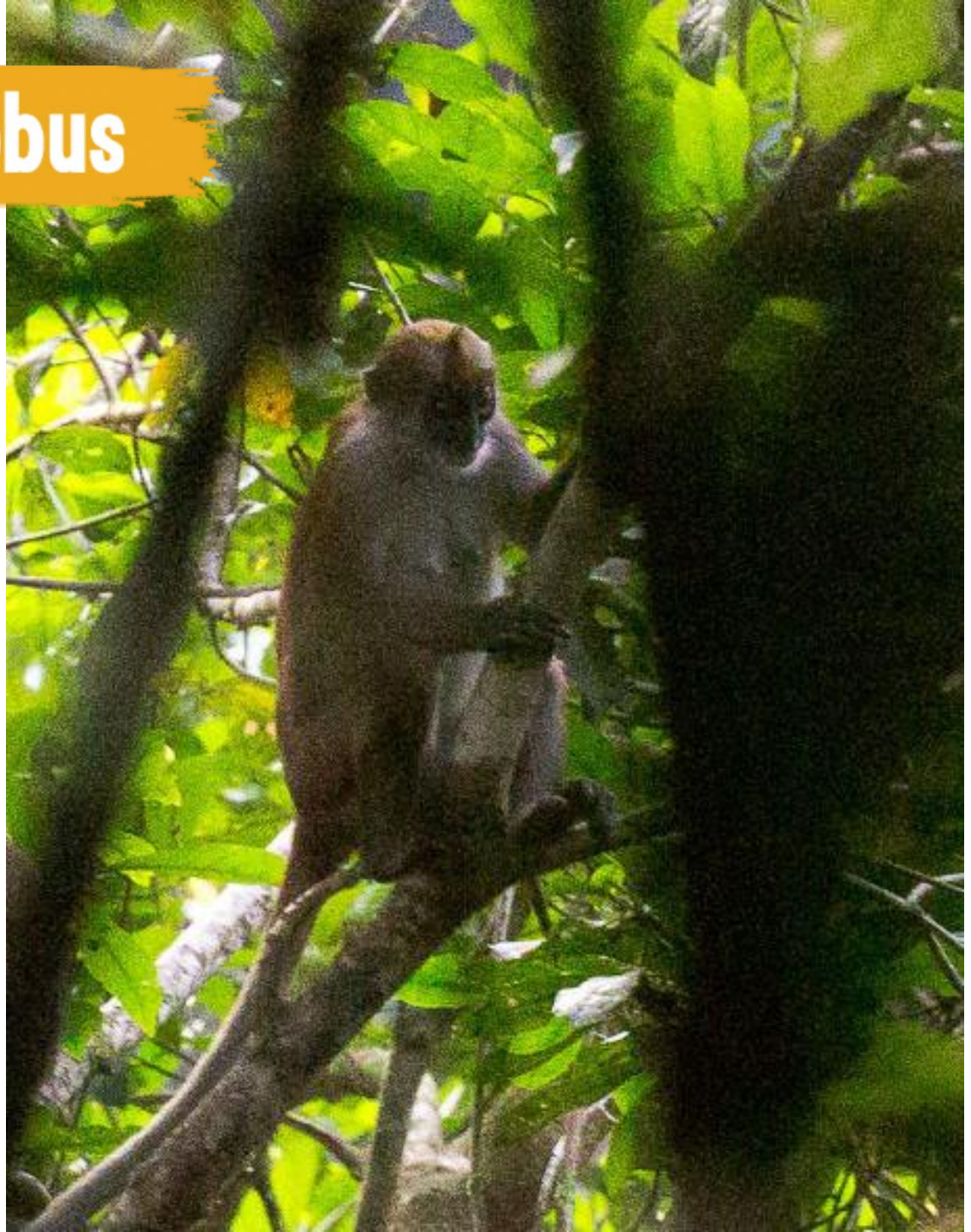
# King Colobus

RED LIST

< VULNERABLE >

VU

# Olive Colobus



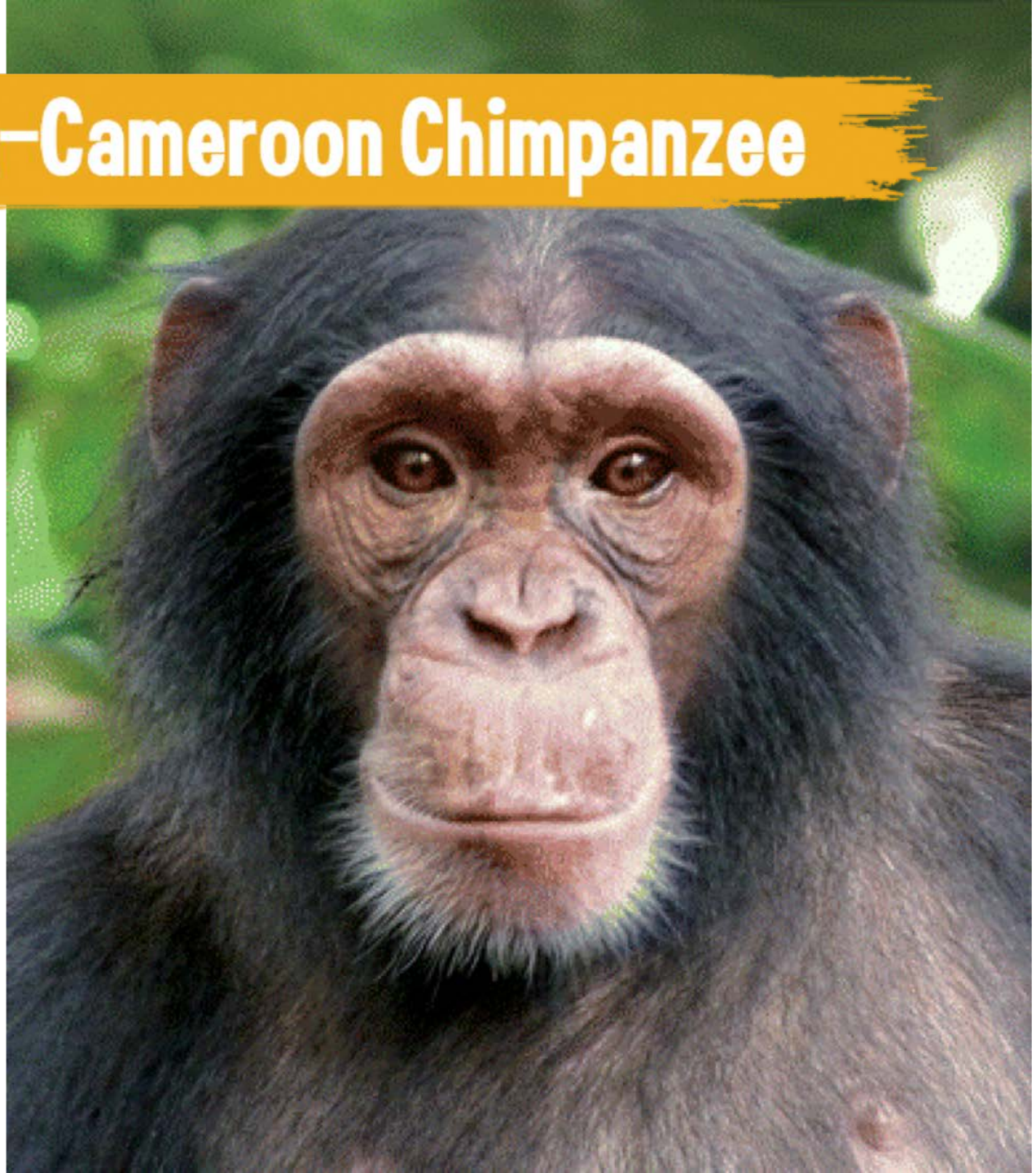
NEAR THREATENED
NT

# Cross River Gorilla

CRITICALLY ENDANGERED
CR

© Wildlife Conservation Society

# Nigeria–Cameroon Chimpanzee



RED LIST
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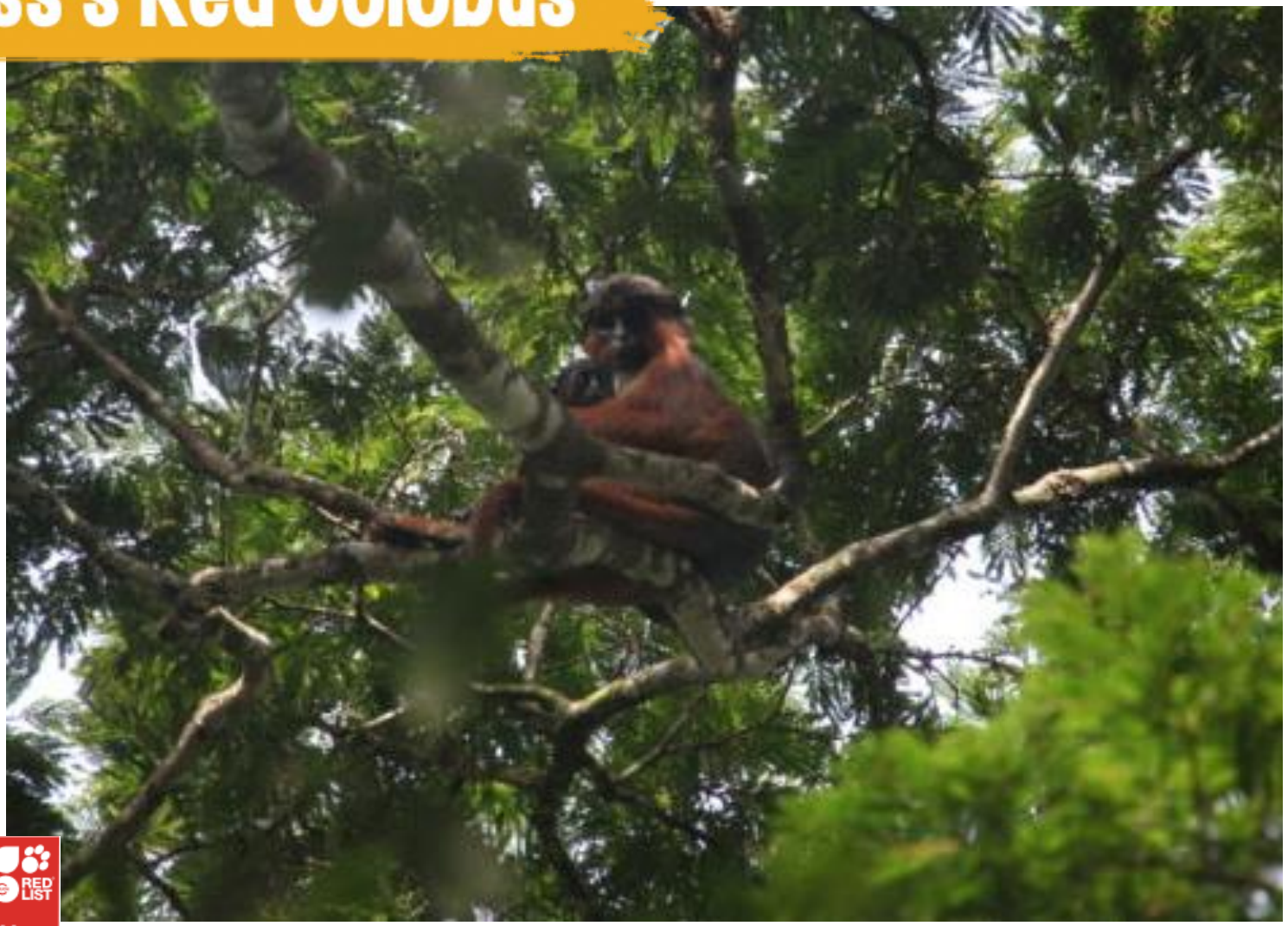
http://www.sbwire.com/multimedia/photos/nigeria-cameroon-chimpanzee-10691.htm

# Preuss's Red Colobus



© Alexandra Hofner

CRITICALLY ENDANGERED
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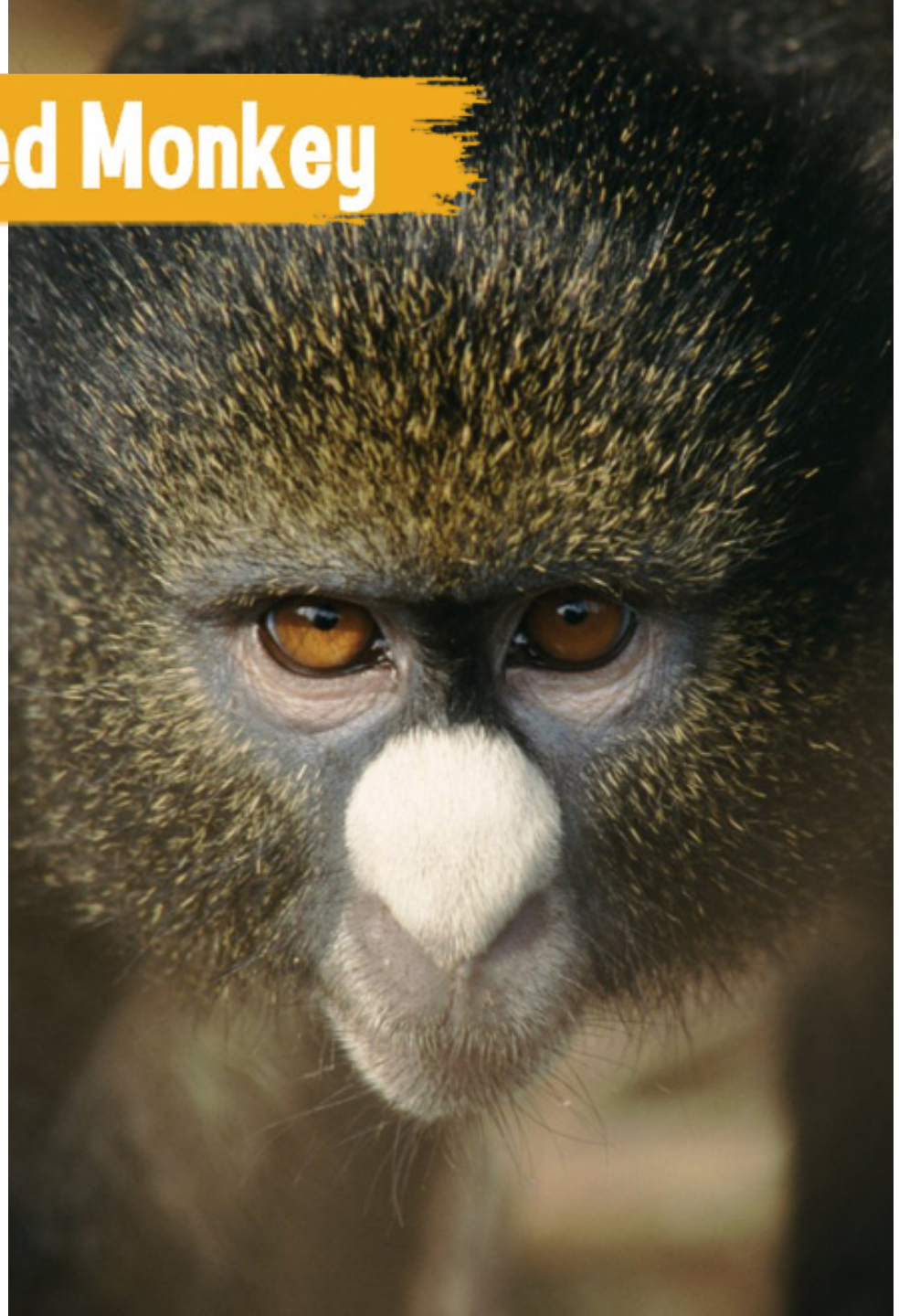
# Putty-nosed Monkey



LEAST CONCERN
LC

# Red-eared Monkey

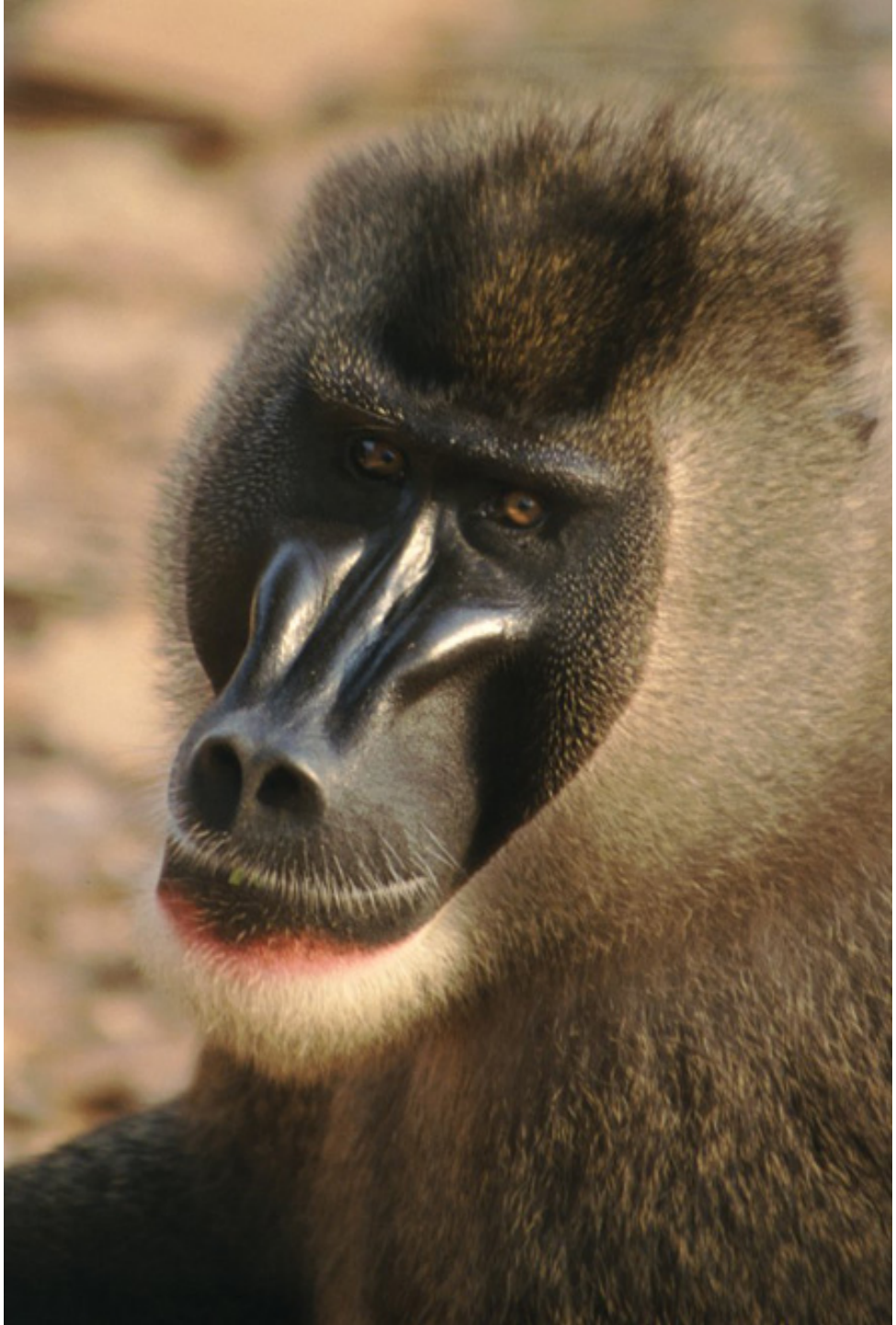
VULNERABLE
VU

# Golden-bellied Crowned Monkey

© Tim Laman

RED LIST
VULNERABLE
VU

# Drill



© Brent Huffman / UltimateUngulate

RED LIST
ENDANGERED
EN

# Red-capped Mangabey

RED LIST

VULNERABLE

VU

# Mona Monkey

LEAST CONCERN
LC

# Amazing elephants

## Background:

African elephants play a crucial role in maintaining diverse and varied ecosystems. Known as ‘gardeners of the forest’, elephants disperse plant species by depositing undigested seeds in their dung, and modify landscapes by uprooting trees and digging for water during the dry season. These natural foraging behaviours help other animals survive in harsh environmental conditions.

## Curriculum links:

**Science**

- **Working scientifically**
- **Living things and their habitats**
- **Animals, including humans**
- **Evolution and inheritance.**

# Activity 1:

## How much do you know about elephants?

**1. What are the three distinct species of elephant?**

**A.** Asian, African savannah and African forest.

**B.** European, African savannah and African.

**C.** Asian and African savannah and Australian forest.

**2. How long can elephants live for?**

**A.** 40-50 years **B.** 50-60 years **C.** 60-70 years

**3. The African savannah elephant is the largest and heaviest land animal on Earth, but how much can one weigh?**

**A.** 60kg **B.** 6,000kg **C.** 60,000kg

**4. How fast can an elephant charge?**

**A.** 10mph **B.** 25mph **C.** 40mph

# Activity 1:

## How much do you know about elephants?

**5. What is a female elephant called?**

**A.** A cow **B.** A bull **C.** An elephantess

**6. How many muscles are there in an elephant's trunk?**

**A.** 100 **B.** 10,000 **C.** 100,000

**7. How much water does an adult elephant need to drink every day?**

**A.** 2 litres **B.** 20 litres **C.** 200 litres

**8. Can elephants swim?**

**A.** Yes **B.** No

**9. Can elephants get sunburnt?**

**A.** Yes **B.** No

# Activity 1 (answers):

## How much do you know about elephants?

**1. What are the three distinct species of elephant?**

**A.** Asian, African savannah and African forest – Both species of African elephants have larger ears shaped like a map of Africa, whereas Asian elephants have smaller ears like the shape of India.

**2. How long can elephants live for?**

**C.** 60-70 years – The average life expectancy for humans across the world is 72.

**3. The African savannah elephant is the largest and heaviest land animal on Earth, but how much can one weigh?**

**B.** 6,000kg – That's about nine times as heavy as a cow!

**4. How fast can an elephant charge?**

**B.** 25mph – An Olympic sprinter can reach a top speed of 27mph.

# Activity 1 (answers):

## How much do you know about elephants?

**5. What is a female elephant called?**

**A.** A cow – A male elephant is called a bull.

**6. How many muscles are there in an elephants trunk?**

**C.** 100,000 – The entire human body only has around 650 to 840 muscles!

**7. How much water does an adult elephant need to drink every day?**

**C.** 200 litres – That's nearly three baths full of water!

**8. Can elephants swim?**

**A.** Yes – They use their trunk to breathe like a snorkel in deep water!

**9. Can elephants get sunburnt?**

**A.** Yes – They protect themselves by throwing sand on their backs and their head.

# Plastic: Whose responsibility?

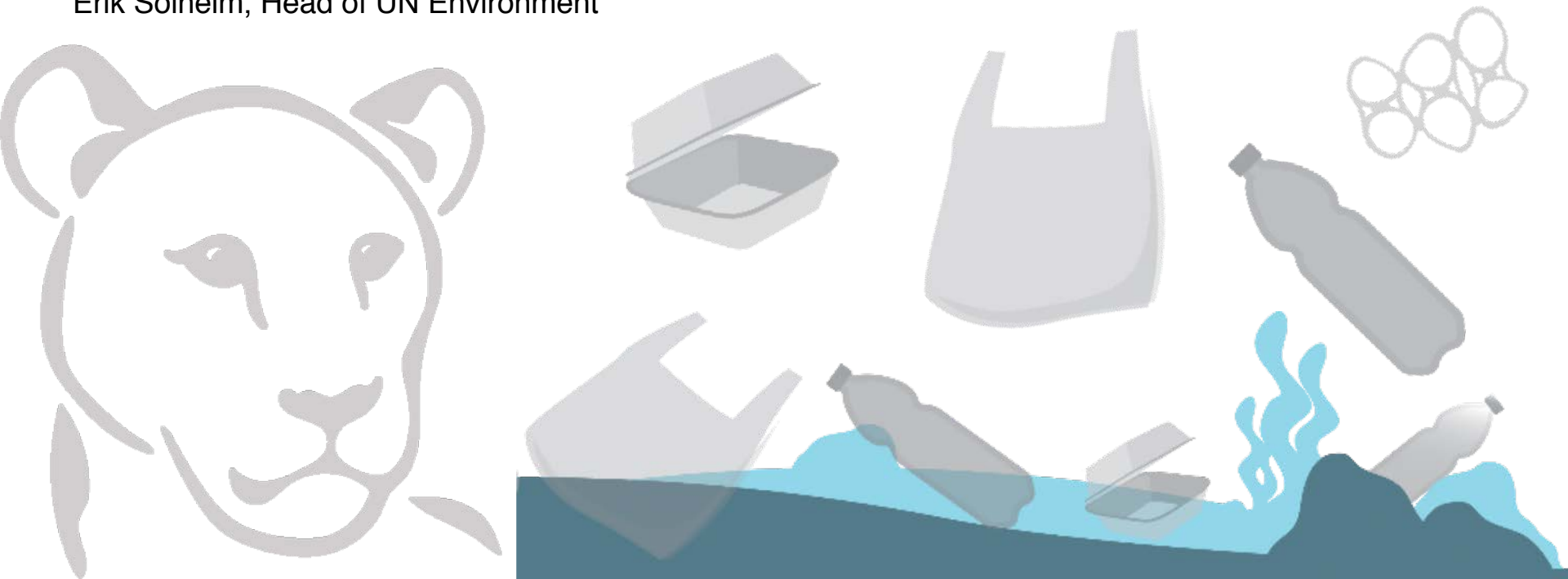
## Background:

'*The benefits of plastic are undeniable. The material is cheap, lightweight and easy to make. These qualities have led to a boom in the production of plastic over the past century. But, we are already unable to cope with the amount of plastic waste we generate, we must rethink the way we manufacture, use and manage plastics*.'
Erik Solheim, Head of UN Environment

## Curriculum links:

**Science**

- **Working scientifically**
- **Living things and their habitats**
- **Animals, including humans**
- **Evolution and inheritance**
- **States of matter**
- **Properties and changes to materials.**



# What's the problem with plastic?

**Isn't plastic great?! The problems start when we throw our plastic away. Fill in the blanks using the words below:**

1. An estimated _____ tonnes of plastic has been produced since the 1950s – that's the same weight as 800,000 Eiffel Towers!

2. _____ plastic bottles are bought around the world every minute.

3. Up to _____ plastic bags are used worldwide every year. That's about two million plastic bags used every minute!

4. _____ of the plastic we use is used just once and then thrown away.

5. Less than _____ of all plastic is recycled globally.

6. Most ends up in _____, dumps, or in the environment.

7. Since most plastics do not biodegrade, they tend to last a really long time, breaking down into _____.

8. Plastic bags can take up to _____ years to decompose.

| | | | |
|---|---|---|---|
| **half** | **one million** | **a fifth** | **one trillion** |
| **landfills** | **8.3 billion** | **1,000** | **microplastics** |

# What's the problem with plastic?

**All animals, whether they live on land or in the sea, can be hurt by plastic. This may be through ingestion, entanglement or damage to their habitats.**

1. On land, animals may become tangled in plastic, or may mistake it for _____.

2. As plastic begins to break down, it can release harmful _____.

3. Plastic on the land may eventually find its way into the _____.

4. Did you know that a truck load of plastic enters the ocean every minute of every day? That's approximately _____ pieces of plastic pollution!

5. Plastic pollution can now be found on every _____ in the world.

6. By _____, the amount of plastic in the ocean will weigh more than the amount of fish in the ocean.

7. _____ have been found in the airways and stomachs of hundreds of species who mistake them for food.

8. _____sea mammals and turtles, and one million sea birds are killed by plastic pollution each year.

| | | | |
|---|---|---|---|
| sea | 2050 | chemicals | plastic bags |
| eight million | food | 100,000 | beach |

# Answers: What's the problem with plastic?

**Isn't plastic great?! The big problems start when we throw our plastic away.**

1. An estimated **8.3 billion** tons of plastic has been produced since the 1950s – that's the same weight as 800,000 Eiffel Towers!

2. **One million** plastic bottles are bought around the world every minute.

3. Up to **one trillion** plastic bags are used worldwide every year. That's about two million plastic bags used every minute!

4. **Half** of the plastic we use is used just once and then thrown away.

5. Less than **a fifth** of all plastic is recycled globally.

6. Most ends up in **landfills**, dumps, or in the environment.

7. Since most plastics do not biodegrade, they tend to last a really long time, breaking down into **microplastics.**

8. Plastic bags can take up to **1,000** years to decompose.

# Answers: What's the problem with plastic?

**All animals, whether they live on land or in the sea, can be hurt by plastic. This may be through ingestion, entanglement or damage to their habitats.**

1. On land, animals may become tangled in plastic, or may mistake it for **food**.

2. As plastic begins to break down, it can release harmful **chemicals**.

3. Plastic on the land may eventually find its way into the **sea**.

4. Did you know that a truck load of plastic enters the ocean every minute of every day? That's approximately **eight million** pieces of plastic pollution!

5. Plastic pollution can now be found on every **beach** in the world.

6. By **2050** the amount of plastic in the ocean will weigh more than the amount of fish in the ocean.

7. **Plastic bags** have been found in the airways and stomachs of hundreds of species who mistake them for food.

8. **100,000** sea mammals and turtles, and one million sea birds are killed by plastic pollution every year.


www.bornfree.org.uk

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Charity No 1070906