OL PEJETA CONSERVANCY

TOPIC 2: HOW ANIMALS FUNCTION

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TOPIC OUTLINE

We have now established that, as humans, we share the planet with many other living things. There are many different types of species and all of them are in some way connected to each other in the greater web of life.

Hence all living things, each with different requirements for survival, need to live together and share resources. For us to be able to coexist with other living things in the environment, it is important that we understand how they function and why they do the things they do.

In this topic, learners will understand how animals are: grouped for classification purposes; adapt to their

SUB-TOPICS:

Mammals

- Learners will study different types of mammals and look at their various adaptations and characteristics.

Birds

- Learners will be able to identify and name some common birds seen on Ol Pejeta and in their own environment. They will understand how various adaptations help different species of birds to cope with their environment
- Learners will learn how to observe bird species in the environment and about the role they play in their ecological community.

Please note: the activities below act as guidelines. You may wish to adapt them to suit the needs of your class (e.g. different age groups, abilities, grades, materials and time available).

ACTIVITY SHEETS: MAMMALS

BACKGROUND INFORMATION

It is estimated that there could be between 2 to 50 million different species on earth. Animals belonging to the same species are more like each other than they are like any other group of animals, and they can breed with each other but not with members of other species.

A way of sorting through all species is to organize them by similar characteristics. This process is called **classification**.

Now let us look at the different classes of animals, starting with mammals. Some general characteristics of mammals include:

- Vertebrate (which means they have a backbone or spine)
- Warm-blooded (animals that regulate their own body temperate which allows them to live in almost every climate on earth)
- Hair on their bodies
- Production of milk to feed their babies
- Give birth to live young

7+ YRS

OPC

ACTIVITY 1

'BONE' WILD

Objective:

- To help learners understand more about mammals, how they act and interact, and how they feed by looking at their bones, teeth, dung, and other anatomical artefacts found at Morani Information Centre.

Age group:

- 7+ years

Materials needed:

- Notebooks/paper
- Pencil or pen

FACT BOX

ANIMAL INTERACTION

Some animals live alone, and some in groups. Herbivores and prey, like gazelles, zebras, and impalas, often live in groups as a protection strategy against carnivores.

Several carnivore species, like hyenas and lions, also live in **packs** so that they can hunt for food together.

However, some animals, like black rhinos and leopards are **solitary**, meaning that they live alone.

Procedure:

1. After identifying some of the animal species with students on their field trip to Ol Pejeta, go to the Morani information centre to begin this activity.
2. Have the learners match some of the animals from their list to their respective:
    i. bones
    ii. horns
    iii. teeth
    iv. skulls
    v. dung
3. The learners should also add other characteristics of the animals that they have learnt and identified throughout the day.
4. Introduce the terms **herbivore**, **carnivore**, and **omnivore**. See if the students can guess what they might mean, and then confirm the respective definitions.
5. Have the learners go through their lists of the animals they have seen and identify which are herbivores, which are carnivores, and which are omnivores.
6. After looking at any mammal teeth at the information centre, explain to the learners that herbivores have smooth teeth for tearing and grinding plants, while carnivores have sharp teeth for catching, killing, and tearing prey.
7. Discuss the terms **predator** and **prey** with the learners.
8. Then discuss other ways different animals interact with each other: do they live alone or in groups? What is the reason for this? (Ask the students before you give them answers).

ACTIVITY 2

6-10 YRS OPC/HOME

Objective:

- For learners to be able to identify animals from their appearance/characteristics and learn interesting facts about certain animals in a creative and fun way.

Age group:

- 6-10 years

Materials needed:

- Printed slides (next page)

Procedure:

1. Show learners the first of each set of slides, and get them to guess what species is being shown.
2. The second slide in each set explains the first and gives some extra information.
3. If you and your students find these slides useful, you can work together to make your own ones (computer or hand-drawn) about different animals. Use them in presentation form (perhaps in pairs), or as revision flashcards.

WHO AM I?

Clues: I am a large herbivore, I like to live alone, and I am a browser.

THE BLACK RHINO

I am endangered (meaning that my species' existence is threatened) due to excessive illegal poaching of our horns.

WHO AM I?

Clues: We are endangered carnivores and very hard to spot, and the noises we make sound like birds!

AFRICAN WILD DOG

We live in our families in large groups. We are endangered mostly because our habitat has been destroyed.

SPOT THE DIFFERENCE

We are both gazelles, we live in the savannah, and cheetahs and leopards love to eat us. But how are we different?

THOMPSON'S GAZELLE VS. GRANT'S GAZELLE

- Distinct black line on the side of my body
- As an adult, my horns curve upwards
- My coat colour is a darker, richer brown

- Distinct white patch above my tail
- As an adult, my horns curve downwards
- My coat colour is light brown

ACTIVITY 3

6-10 YRS OPC/HOME

PREDATOR/PREY TAG

Objective:

- To demonstrate the concept of predator/prey relationships within the conservancy in a fun, engaging, and physical way.

Age group:

- 6-10 years

Materials needed:

- Four cones
- Hula hoops or more cones (3-5 depending on size of playing field)

Procedure:

1. Ask the learners to come up with one predator/prey pair they know about (e.g. lion/zebra, snake/secretary bird, etc.).
2. As a class, choose one of these pairs of animals for the game.
3. Set up four cones to be the general boundary, and set up a few sporadic cones or hula hoops (depending on the size of the playing field) within the middle section of the playing field to act as shelter/safety spots.
4. Out of the participants, choose two to three (again, depending on the size of the participating group) to be predators. The rest of the participants will be the prey.
5. One end zone will be the starting point – which is a shelter/safe zone for the prey – and the other end zone will be the food point that the prey must reach without being tagged by a predator.
6. The participants acting as prey must obtain two food items and make it back to the starting point to win the round.
7. Predators cannot tag prey while the prey is behind either of the end zones or when they are touching a cone/hula hoop in the centre. They also cannot tag prey that completely still or 'frozen', which signals that they are **camouflaged** in their environment.
8. Does any prey survive? Ask the students who is more successful – the predators or prey in your class?

ACTIVITY 4

8+ YRS

OPC

HAPPY HIPPOS

Objective:

- To learn more detailed scientific facts about and adaptations of hippos, while improving pair work and communication of learners.

Age group:

- 8+ years

Materials needed:

- Hippo labelling sheet (teacher sheet above; student sheet next page)
- Pens or pencils

Procedure:

1. Put learners into pairs and give them a hippo labelling sheet to share. (Only give them one per pair so it encourages them to work together – at the end they can have one each to take home).
2. Explain that hippos are mammals that can stay in the water for long periods of time only coming out at night to graze. Explain to the students that they will fill in these sheets by reading and listening, so that they can learn more about hippos.
3. The students can fill these in using the information at Hippo Hide, or by asking the guide questions as they take the river walk there (while trying to spot some hippos in the river as they walk).
4. Go through all the answers together as a class after you have been to hippo hide.
5. Give each pair one more sheet so that each student has one of their own, and get the pairs to fill in all the correct information in the empty sheet.

HIPPOPOTAMUS FACT SHEET

OL PEJETA CONSERVANCY

'Hippopotamus' is a Greek word meaning '_____'.

They secrete a reddish substance from their skin that acts as three things:

1. _____
2. _____
3. _____

Hippos can run up to

_____

An adult hippo needs to resurface every _____ to breathe

Hippo calves weigh about _____at birth and can suckle on land or underwater

Hippos consume up to _____of grass per night when they come up to graze.

(They spend most of the day in the water)

Adult male hippos can weigh up to a whopping _____

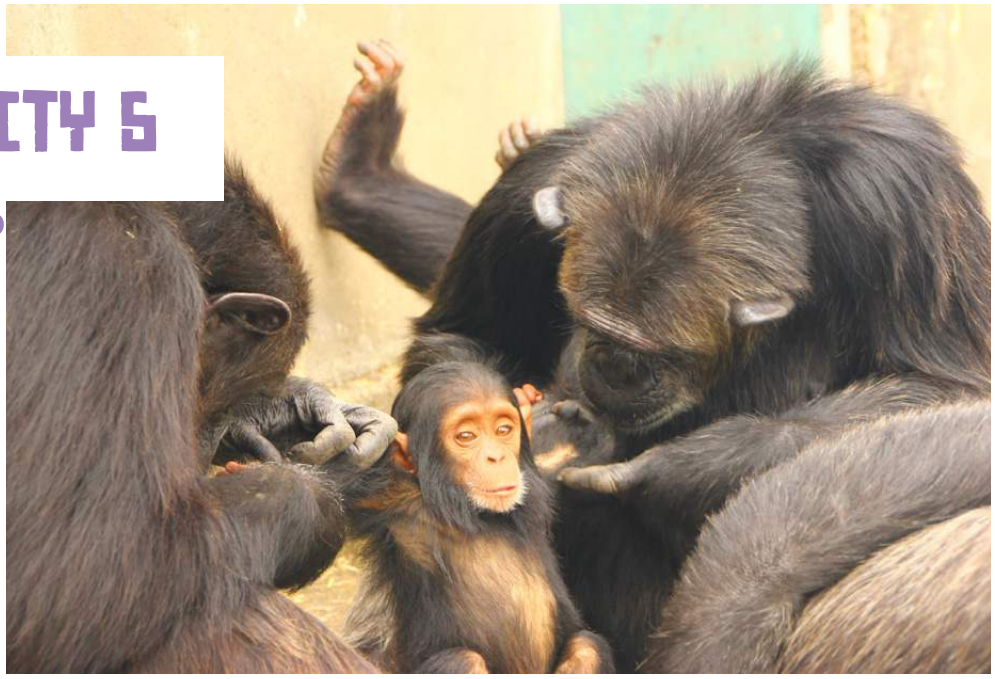
The hippo is the _____largest mammal on earth

ACTIVITY 5

98% CHIMP

ALL AGES

OPC/HOME



Objective:

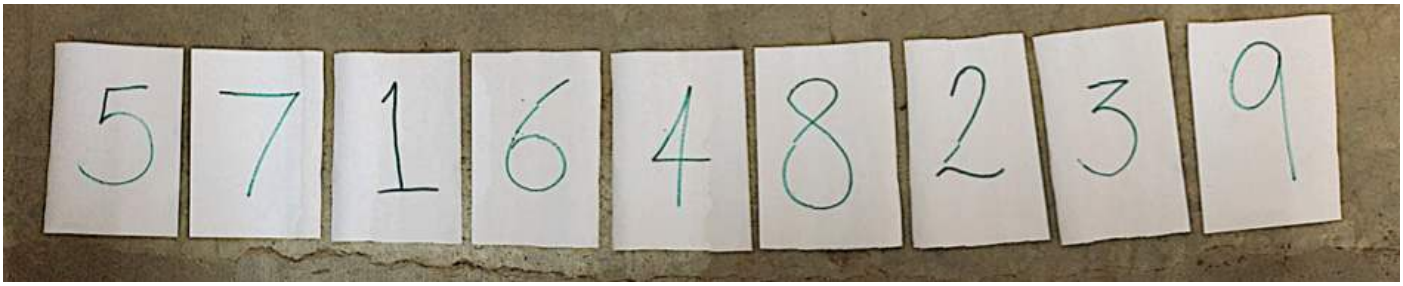
- To improve learners' awareness of and appreciation for chimpanzees, while testing their working memory and problem solving skills. This activity also has extra options to develop research and presentation skills.

Age group:

- All ages

Materials needed:

- Notebooks
- Pens/pencils
- A4 paper



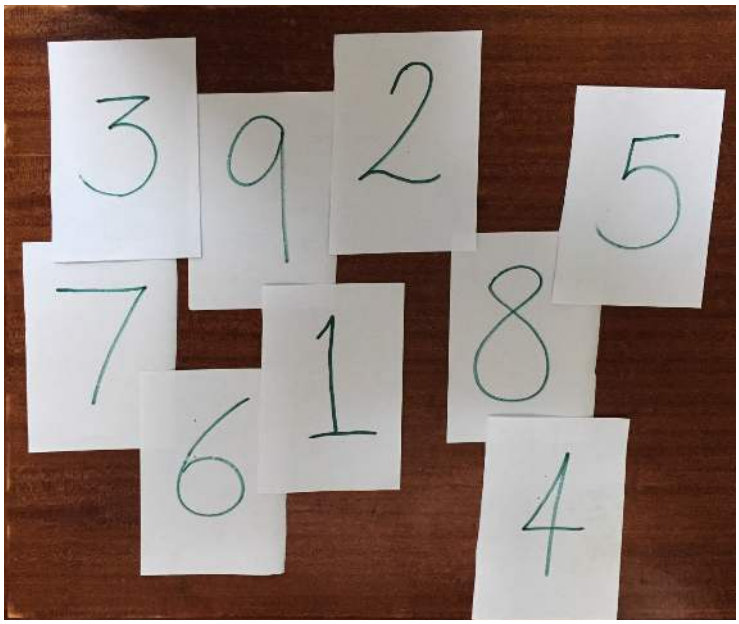
Procedure:

1. If possible, show your students this video: www.youtube.com/watch?v=zsXP8qeFF6A. If you cannot access the video, explain to your students what happens:
    i. Researchers in a Japanese scientific institute designed a game which tests working memory.
    ii. The game tests your ability to see and memorise a random sequence of numbers, and then recite them without looking.
    iii. When a university-educated volunteer took the test, he got 1 out of 30 sequences correct.
    iv. Ask your students: how well do you think a chimpanzee did in comparison?
    v. Answer: the chimp got 27 out of 30 sequences correct, meaning he was correct 90% of the time.
    vi. The chimps averagely performed better than all of the human participants.

vii. Ask your students: does this mean that chimps are smarter than humans?

viii. Answer: No, it just means that humans are better at human things, and chimps are better at chimp things – and sometimes those chimp things are mental skills.

2. Explain to your learners that humans share 98% of their DNA with chimpanzees.
3. Ask your students: do you think you are smarter than chimps? Could you beat a chimp at a memory game?
4. Explain to your students that you are going to play a game to test their memory skills:
   a. Write the numbers 1-9 (or the letters A-I) on individual pieces of paper.
   b. Lay them out in a random order in front of the class.
   c. Explain that they have 30 seconds to memorise the order – without writing it down!
   d. Take away the numbers or cover them up (taking note of the order for yourself), and let the students try to write down what they remember.
   e. Did anyone get it right?
   f. Reveal the answer.



   g. You may want to repeat this a few times if the students enjoy it. You can make it more difficult by reducing the memorising time or putting the numbers/letters into a random formation (as in the picture).
5. Explain to students that there are some games and tests in Ol Pejeta's Chimpanzee Sanctuary that also test problem solving and working memory.
6. Allow learners to try out the games in the chimp sanctuary and see how well they do. (With a larger group you may want to keep half outside continuing to play the numbers game before swapping over, so the research centre doesn't get too crowded).
7. When the learners have had a chance to experiment with the games, explain to them that Pejeta's very own chimps have played the same games. If they look at each game, they can s the chimp that did the best at the task on Ol Pejeta.
8. Tell the learners to choose their favourite game at the Sanctuary and find out which chimp is their competitor! (i.e. the chimp that did the best at that game).
9. Tell the learners they can ask the guides there to help them find their chimp so they can see it.

Optional tasks:

10. Research task: by reading the information on the walls and by asking the guides, the learners should find out as much as possible about their chimp and write it down in their notebook.
11. Discussion: which game did you find the hardest in the Chimpanzee Sanctuary? Which Ol Pejeta chimpanzee do you think is the most impressive?

Extra activity: As a follow-up to the above steps, you can get your students to design memory tests for each other. For a more skills-based activity, students could show their findings from the Chimpanzee Sanctuary to the class in presentation form.

ACTIVITY SHEETS: BIRDS

BACKGROUND INFORMATION

The next class of animals we will look at is birds. Birds display the same diversity of species and lifestyles as do mammals, but they also show some unique adaptations.

Most birds fly, while it is only bats from the mammal class that do. Some birds use highly detailed **camouflage** to protect themselves against predators, while others have impressive colouration to attract mates. Birds also have a wide variety of shaped beaks to eat different kinds of food, while their differently shaped feet also accommodate for different lifestyles – from wading in water to perching on tree branches to scratching the ground for worms and insects. Birds also build different kinds of nests in various places with a wide variety of materials.

ACTIVITY 1

8+ YRS OPC

BIRD IDENTIFICATION WALK

Objective:

- To learn how to identify various species of birds by their feathers, bird calls, nests and eggshells, while learning how to record and revise information.

Age group:

- 8+ years

Materials needed:

- Ol Pejeta birds checklist (available in the shops around Ol Pejeta) **or** any bird guide book that has information on the birds of Laikipia/Kenya
- Notebooks
- Pens/pencils
- Binoculars, if possible

Procedure:

1. This activity should be carried out at the Chimpanzee Sanctuary forest walk.
2. Explain to learners that birds are a good indicator of a healthy ecosystem.
3. Using an Ol Pejeta birds checklist/bird book and the help of a guide, help the learners identify and tick off all the birds that they are able to identify during the walk.
4. The learners should write down the names of the identified birds in their notebooks, with as many of the birds' characteristics as possible.
5. When a bird is spotted, encourage the learners to also discuss and note down what the bird is doing, what sound it makes, and the difference in plumage between the male and female birds.
6. At the end of the walk, collect all the information from the learners in a group discussion, and have individual learners volunteer their favourite bird and give their reasoning.

FACT BOX

MALE VS FEMALE PLUMAGE

In many species of birds, males are more brightly coloured than females.

In some species, like the long-tailed widowbird, the male's tail feathers are much longer than the female's.

The males use this **adaptation** of bright colours and long feather to attract females in their courtship displays.

ADDITIONAL ACTIVITY

8+ YRS

OPC

Materials needed:

- Brown paper bags

Procedure:

1. In addition to the above tasks, look out for feathers on the Chimpanzee Sanctuary walk that may have fallen on the ground. Try to take as little as possible, and collect them in a brown paper bag.
2. With the help of a guide, try to identify which bird each feather belongs to.
3. Look out for birds' nests and egg shells on the trees and on the ground and, with the help of a guide, try to identify which birds the nests/shells belong to. You may want to collect some of the egg shells in the brown paper bags too.
4. Listen out for bird calls as you walk along and have the learners ask a guide to help them identify which calls belong to which birds.
5. Discussion: why do birds make different sounds? What do the different calls mean?
6. Discussion: what different kinds of foods do birds eat? What role do they play in the **pollination** of different plants (including food crops)?
    a. If learners do not know the answer, prompt them with examples like insects, seeds, nectar, other birds' eggs, worms, etc.
2. After the activity, have learners stick the feathers/shells in their notebooks and write a few notes about each bird (including bird calls, nests, diet, etc.).

FACT BOX

THE ROLE OF BIRDS IN POLLINATION

Birds often help with the moving of pollen – whether through feeding on the plant's nectar or when the sticky substance clings to their feet.

This helps the pollen grains transfer to the ovule, an essential step of plant reproduction.

Note: At the Morani Information Centre, the learners will also be able see and touch the bone structure of an ostrich – the biggest bird – as well as touch its egg shell to be able to understand the concept of a 'hard shell'.

ACTIVITY 2

10- YRS

OPC/HOME

FEATHERED FRIENDS

Objective:

- To involve younger learners in bird identification using feathers collected on Ol Pejeta.

Age group:

- 10 and under

Materials needed:

- Feathers (from the walk)
- White paper
- Glue or double sided tape
- Pencils and colouring pencils

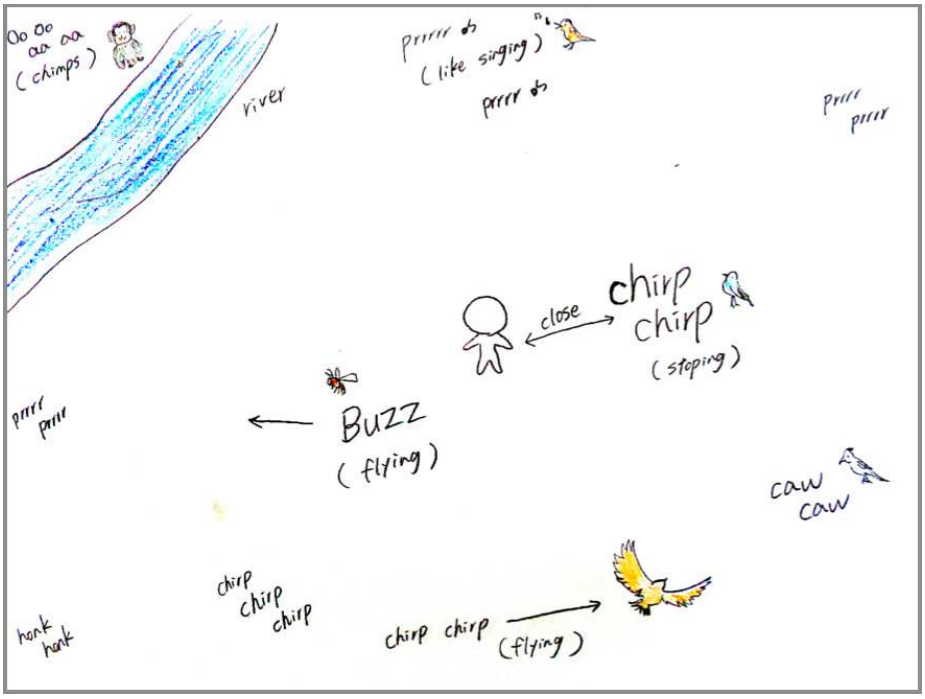
Procedure:

1. While on the Chimpanzee Sanctuary walk (if you have done the above activity), or on any other location on Ol Pejeta, collect feathers into a brown paper bag.
2. Have learners draw pictures of birds at the picnic tables and decorate them with the real feathers collected.
3. Help learners identify and label the bird feathers they have used.
4. They can take these pictures home so that they can remember the birds.

BONUS ACTIVITIES: ANIMAL SENSES

ACTIVITY 1
SOUND

10- | OPC/HOME



Objective:

- To remind learners that our environment is not only inhabited by humans, but lots of environmental components and animals that share it with us – even when we cannot see them.
- To engage learners in 'feeling' and sensing the nature around them so that they realise how important hearing is for wild animals to be able to survive and find their food.

Age group:

- 10 and under

Materials needed:

- Plain paper
- Drawing materials

Procedure:

1. Give each student a piece of paper and materials to draw with.
2. They should draw themselves in the middle of the page, and then stand still for 10 seconds and listen to the sounds around them.
3. After 10 seconds have passed, they should keep listening but now write/draw each sound they hear and the direction that it comes from. When the sound is close by, they should write it in big letters, and when the sound is far away they should write it in small letters…
4. They should then imagine and draw the animal, object, or structure that is making the noise.
5. Remind the learners that wild animals use their hearing to protect themselves from predators and other threats, but also to find their food.
6. Discussion: do you think you could survive just using your hearing in the wild?
7. Humans have five senses – ask learners to name all five.
8. Tell the learners that even though we have five senses, we get 80-90% of our information from eyesight.
9. Explain that wild animals must rely more on other senses (especially hearing and smelling), as predators are often camouflaged.

ACTIVITY 2

LOOK AT THAT SOUND!

8- YRS OPC/HOME

Objective:

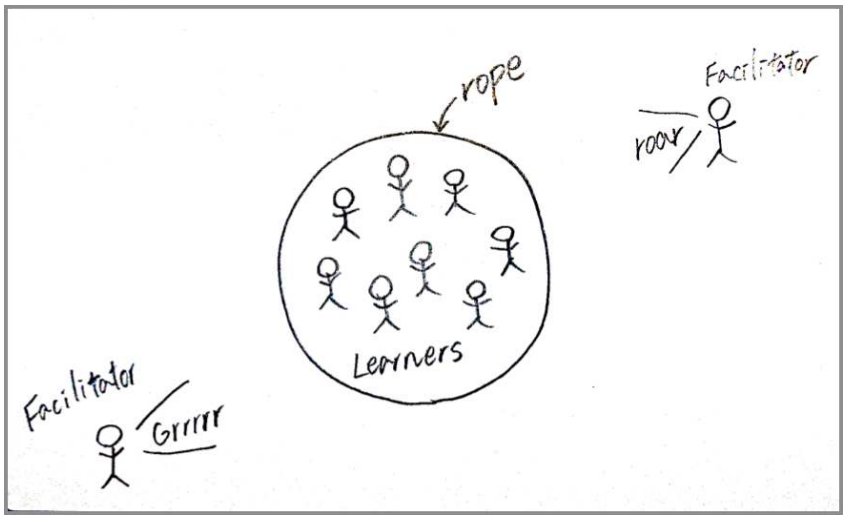
- To help learners imagine how herbivores live in the wild by having a very good sense of hearing.

Age group:

- 8 and under

Materials needed:

- Long piece of rope
- CD player or some kind of speaker



Procedure:

1. Lay a circular rope on the ground and have all the learners stand inside it.
2. Tell the learners that you are going to play a sound, and that they should turn their bodies towards that sound.
3. Tell them to close their eyes – no peeking!
4. Play the recorded noise of a carnivore around the learners.
5. When you say 'Open your eyes', let the learners check if they were correct with their judgement.
6. Explain that herbivores do not have good eyesight, but that it is really important for them to use hearing to survive.
7. Ask them: who would survive as a herbivore from our class?!

8- YRS OPC/HOME

ACTIVITY 3

BAT AND MOTH TAG

FACT BOX

ULTRASONIC BATS

Ultrasonic is sound waves with frequencies higher than humans can hear.

Bats use ultrasonic sound waves to **echolocate** – meaning that they send out sound and listen to where it echoes back from to find their way.

Objective:

• To help learners understand that different animals have different abilities and adaptations that help them survive.

Age group:

• 8 and under

Materials needed:

• Piece of cloth (to use as blindfold)

Procedure:

1. Explain to learners that bats live in caves so they do not use eyesight – but they have incredible hearing. They use ultrasonic to find their way!

2. Select one volunteer to be a bat, and another to be a moth.
3. The rest of the learners should form the ‘cave’ by joining their hands and making a circle.
4. The ‘bat’ must put a cloth around his/her eyes so s/he cannot see anything. Explain that this is to mimic a bat’s poor eyesight.
5. Explain that moths react to light, so the moth is allowed to keep his/her eyesight!
6. Explain that the task involves the bat and the moth playing tag inside the makeshift cave – the bat has one minute to catch the moth. Although the bat has no sight, s/he can use sound to find the moth by shouting ‘BAT!’ – to which the moth must reply ‘MOTH’.
7. If the bat catches the moth in one minute, s/he has won!
8. You may wish to swap the learners around so that other students have a go at being the bat/moth.