

Dombeya

Conservation & Development  
Association



LESSONS IN CONSERVATION

SERVING TO SAVE

# JUNIOR WORKBOOK

Becoming a conservationist

NAME: \_\_\_\_\_



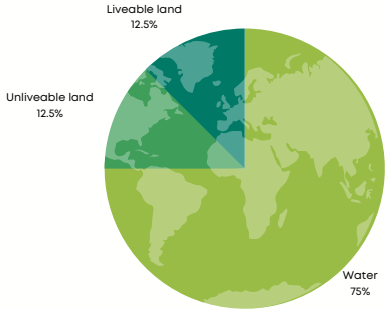
"REMEMBER, EACH ONE OF US  
HAS THE POWER TO CHANGE  
THE WORLD."

-Yoko Ono



# LESSON 1

## LEARN ALL ABOUT CONSERVATION



### CONSERVATION:

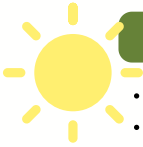


Protecting our Earth so that it is healthy for all of nature, making it a good home for all species, including humans

Most of the Earth is covered in water (75%) and other parts are too mountainous, too hot or too cold (12,5%) for humans to live on. We only have **12.5%** of the Earth that we can actually live on.

### EARTH PROVIDES US WITH SO MUCH:

- Food.
- Energy from the sun.
- Water.
- Air that we breathe.
- Raw materials like wood to build our houses.
- Plants that give us medicine and food.



### HOW CAN WE HELP TO PROTECT OUR EARTH

- Don't litter!
- Plant indigenous species.
- Reduce plastic use.
- Turn off water and lights when you don't need them.



### CONSERVATION IS IMPORTANT BECAUSE IT:

- It protects animals and plants.
- Creates jobs.
- Helps with tourism and brings in money.



### THERE ARE MANY JOBS IN CONSERVATION

- Wildlife photographer
- Vet
- Tracker
- Zoologist
- Chef
- Conservationist
- Field Guide
- Architects and builders





# QUESTIONS:

1. Why do we need to protect the Earth's resources?

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2. How do you think you can conserve at home?

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3. What do you think will happen if we don't look after the Earth?

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# FUN FACT

Warthogs travel in groups called sounders consisting of 1 or 2 sows and young offspring. Males usually travel alone.



# LESSON 2

## IT'S BETTER TO WORK TOGETHER

All around us we see nature working together.  
Teamwork is good because you can do more together!

### ANIMALS WORK TOGETHER FOR:



Food



Protection



Warmth



Saving energy

Animals from different species also work together.

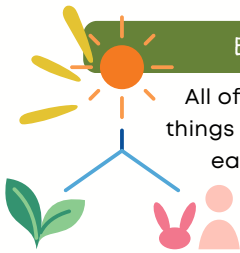
Ostriches have a poor sense of hearing and smell, while zebras have poor eyesight. They work together because the zebra can listen for danger while the ostrich looks out for danger.



Other animals that work together include, the crocodile and plover and the rhino and oxpecker.

### ECOSYSTEM

All of the living and non-living things in an area that depend on each other and interact.



### THREATS TO ECOSYSTEMS:



- Pollution
- Deforestation
- Poaching
- Overgrazing
- Climate change
- Human population growth

### WHY ARE ECOSYSTEMS IMPORTANT?

- Pollination, which gives us crops and fruit.
- Clean air to breathe.
- Clean water to drink and cook with.
- Raw materials to make everything we need.
- Medicine.
- Energy.
- Waste removal.

THESE ARE THE BUILDING BLOCKS OF LIFE.



"EVENTUALLY WE'LL  
REALISE THAT IF WE  
DESTROY THE ECOSYSTEM,  
WE'LL DESTROY OURSELVES."  
-Jonas Salk





THERE ARE ACTIONS WE CAN TAKE EVERY DAY TO HELP OUR ECOSYSTEMS AND PROTECT THE FOOD CHAINS.

- Educate and teach other about the importance of protecting and looking after our planet.
- Pick up litter and do not litter!
- Save water when possible- close all leaking taps!
- Save electricity when possible- turn off lights when you leave the room.
- Show respect to wildlife and their habitats.
- Recycle, reuse and reduce when you can.



ABIOTIC AND BIOTIC FACTORS:

**Abiotic factors:**

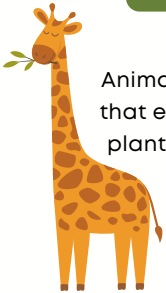
Things that are non-living.  
Like the atmosphere, wind and water.

**Biotic factors:**

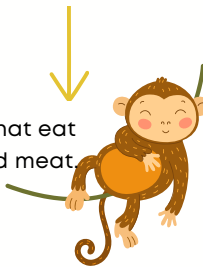
Things that are living.  
Like animals, fish and plants.



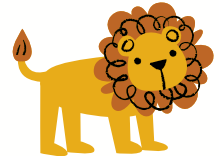
HERBIVORE, OMNIVORE, CARNIVORE:



Animals that eat plants.



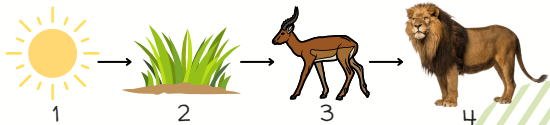
Animals that eat plants and meat.



Animals that eat meat.

FOOD CHAIN:

All animals depend on one another.  
If one animal disappears, the whole chain breaks.  
Food chains tell us about how energy and nutrients flow through the environment.



When organisms die, they decompose and return nutrients back to the ground. It's the circle of life!





# WORD SEARCH

Try to find all these words in the word search below.

food chain

herbivore

omnivore

producers

carnivore

organisms

consumers

habitat

animals

predators

prey

plants

i i i o r g a n i s m s  
s w s p r e y m p u a v  
h p r o d u c e r s u u  
c a r n i v o r e h m f  
k n u x d w w o p e g o  
y i c o n s u m e r s o  
t m a w w e h n r b p d  
h a b i t a t i x i l c  
j l r x g c j v g v a h  
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p r e d a t o r s r t i  
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# LESSON 3

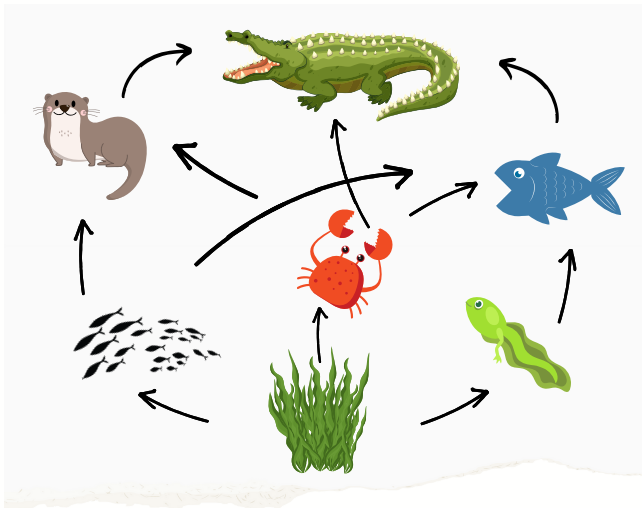
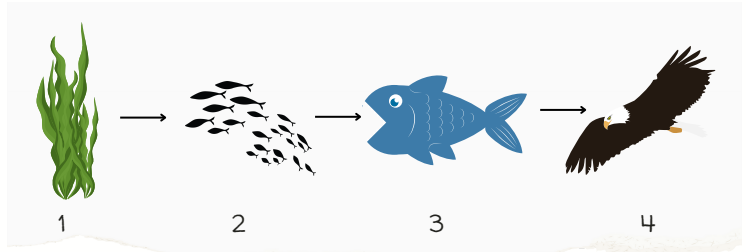
## BE A LINK IN THE CHAIN

### WHAT IS THE DIFFERENCE BETWEEN A FOOD CHAIN AND A FOOD WEB?

A food chain shows a single path of energy from organism to organism.

A food web is a complex network made up of many food chains, where the energy can follow many paths.

A FOOD CHAIN IN ESWATINI



A FOOD WEB IN ESWATINI

### WHAT HAPPENS IF THE LINKS ARE BROKEN?

- Extinction
- Diseases
- Overpopulation
- Loss of indigenous species



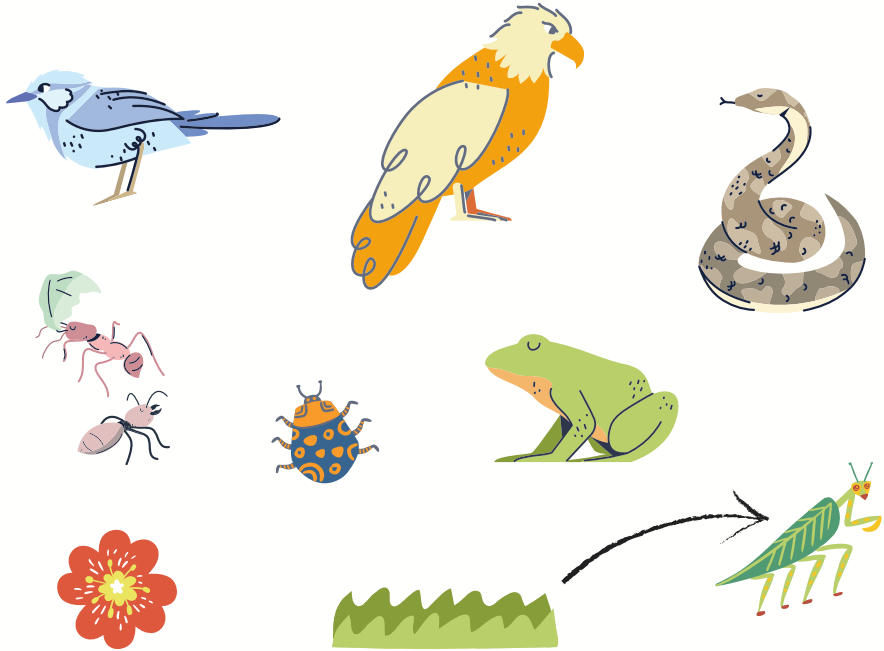
# NOTES:

Lined writing area with 20 horizontal lines.



# A FOOD WEB

Animals in an ecosystem form a food web. In the illustration below, use arrows to map out the energy transfer between organisms. The first one has been added as an example.



Name two producers in the food web above.

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Name three consumers in the food web above.

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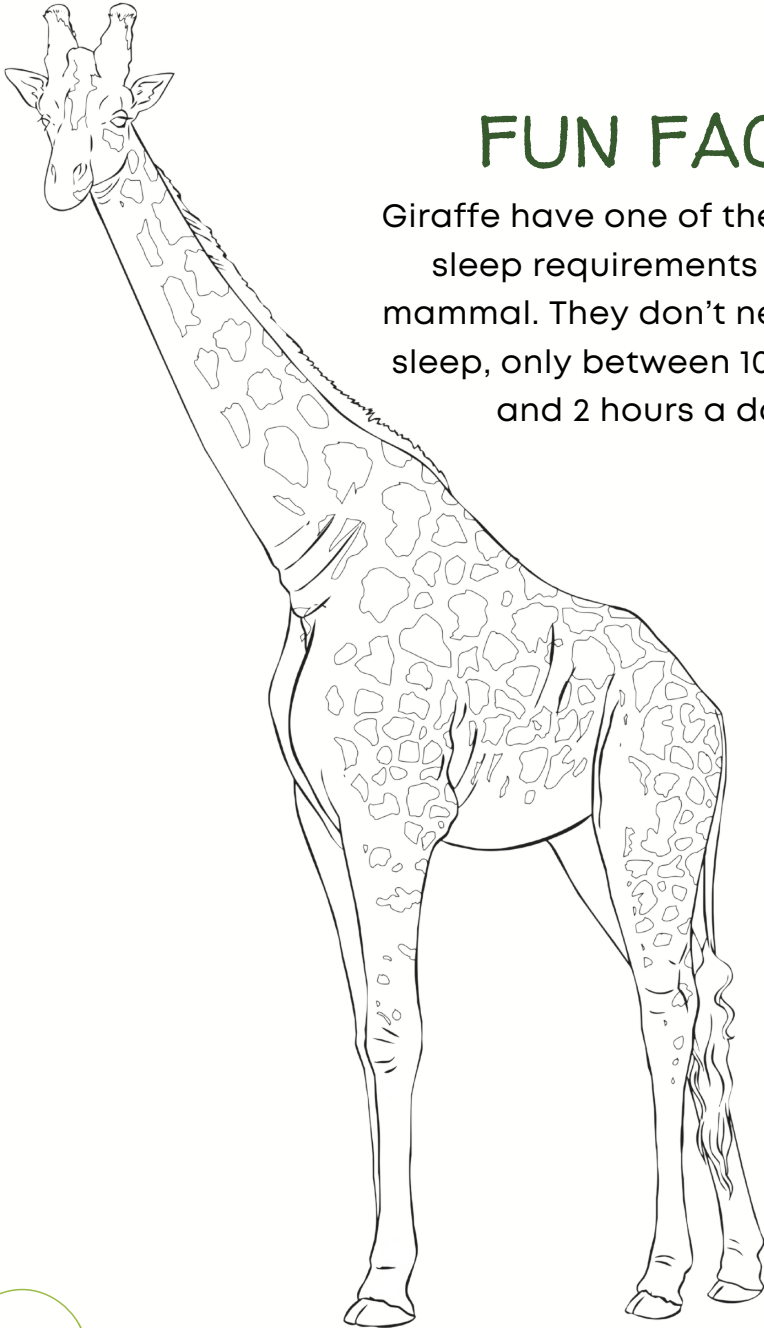
What is the difference between food chains and food webs?

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## FUN FACT

Giraffe have one of the shortest sleep requirements of any mammal. They don't need much sleep, only between 10 minutes and 2 hours a day!



# LESSON 4

## DISCOVER THE SMALLER THINGS

The smaller animals in life are just as important as the bigger animals and are also crucial within the ecosystem and food chains/webs.

### BIODIVERSITY:

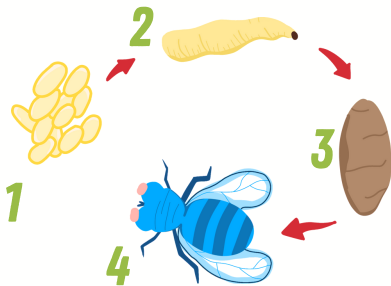
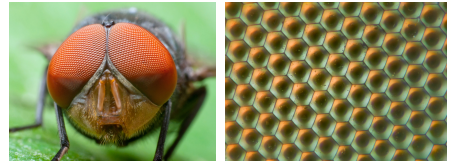
The variety of plant and animal life in the world or in a particular habitat. Biodiversity is important because it keeps ecosystems and food chains/webs working all the different species are essential for the ecosystem to work.



### INSECTS ARE REALLY COOL!

- Insects make up 52% of all living things on the planet.
- Insects help to pollinate plants. Humans need plants to eat and to give us oxygen to breathe so without insects we are in trouble.

### INSECTS HAVE COMPOUND EYES:



### METAMORPHOSIS:

Metamorphosis is the process of change an insect goes through as it grows.

1. They start as **eggs**.
2. They grow a little bigger into a **larvae**.
3. The larvae grow bigger into a **pupae**.
4. The pupae grow into a big **colourful insect!**

### DIFFERENCES BETWEEN BUTTERFLIES AND MOTHS

- Day time
- Smooth wings that rest together and upright
- Brightly coloured
- Thin body

- Night time
- Fluffy wings that rest at their sides
- Dull colours
- Thick body





# NOTES:

Lined area for writing notes, consisting of 20 horizontal green lines.



# QUESTIONS:

1. Which species makes up the most living things on Earth?

- a. Mammals (including humans)
- b. Insects
- c. Plants

2. What would happen if we didn't have insects?

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3. What is your favourite insect and why?

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4. Draw your favourite insect:



# I SPY INSECTS

Count the number of each type of insect and write it in the box.



Grasshopper



Fly



Mosquito



Ant



Ladybug



Cockroach



# LESSON 5

## FLUFF YOUR FEATHERS



### WHAT DO BIRDS USE THEIR FEATHERS FOR?

- Feathers help birds to fly.
- They help to control the wind when flying through the air.
- They also help birds stay warm in winter.
- Birds also use their feathers to show off



Bird are oviparous = they lay eggs.

Birds don't have teeth! They have an organ called a **gizzard** which grinds up their food.

Birds also use their feathers to attract mates. Male birds are often brightly coloured to attract females. Female birds are often duller.



### FUN FACTS!

- The Bee Hummingbird is the smallest bird on the planet. It can grow from 5 to 6.1 centimetres.
- Ostriches are the biggest birds in the world and they have the largest eggs.
- The Peregrine Falcon is the world's fastest animal.

Beaks are specialised dependent on what the bird eats and its specific needs.

### MIGRATION:

Seasonal movement between breeding grounds and feeding grounds. Most birds migrate in big groups called **flocks**.



Breeding grounds



Feeding grounds



# HOW TO IDENTIFY A BIRD

## SIZE AND SHAPE:

How the bird looks, the size of its head, body and what shape it is.

## BEHAVIOUR:

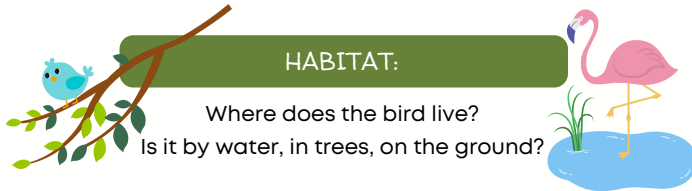
- How does the bird act?
- What actions does it do?
- How does it fly, sit, move?
- What noises does it make?

## COLOUR AND PATTERN:

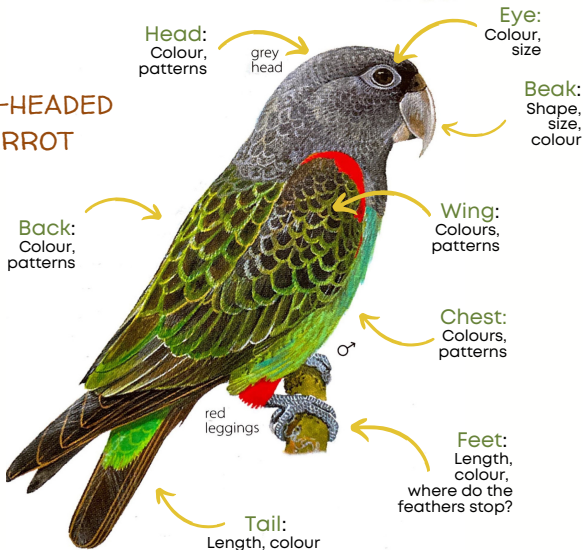
What colour is the bird, does it have any patterns? Look on the stomach, back, head and wings.

## HABITAT:

Where does the bird live?  
Is it by water, in trees, on the ground?

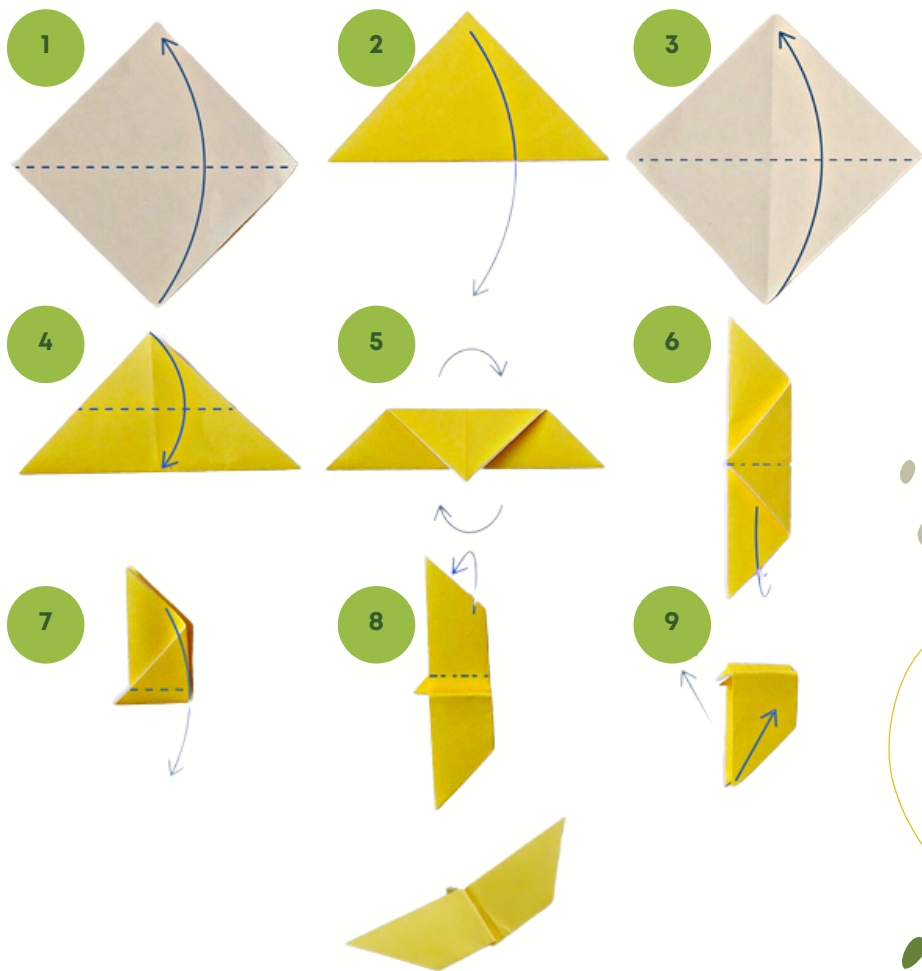


## GREY-HEADED PARROT





# HOW TO FOLD AN ORIGAMI TWIRLING BIRD:



## LESSON 6

# SPIN LIKE A SPIDER AND SLITHER LIKE A SNAKE

### FUN FACTS ABOUT SPIDERS:



SPIDERS ARE **ARACHNIDS**  
AND NOT INSECTS.

- They have 8 legs
- They make webs from silk

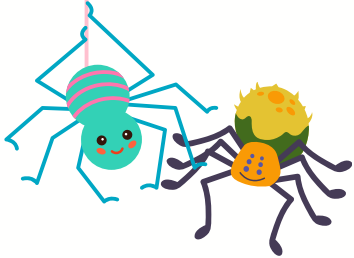
### SPIDERS' HUNTING STRATEGIES:

1. Webs to catch prey.
2. Wolf spiders seek their prey out on the ground.
3. Trap door spiders dig holes, cover them up with dirt doors, and lie in wait for passing prey.
4. Crab spiders hide inside flowers to catch feeding insects by surprise.



### WHY ARE SPIDERS IMPORTANT?

- They are a link in the food chain, they are predators and prey and keep the ecosystem healthy.
- They eat pests which eat our crops and therefore control insect populations which helps us.
- They are food for other animals like birds.



### FUN FACTS ABOUT CROCODILES:

- Crocodiles don't sweat, to cool down they open their mouths known as mouth gaping.
- They can hold their breath underwater for more than an hour.
- Temperature of their nest controls the sex of the babies.
- If the temperature is cool, the hatchlings are all female.
- Warmer temperatures hatch all males.
- Crocodiles go through 2,000 to 4,000 teeth over their lifetime.

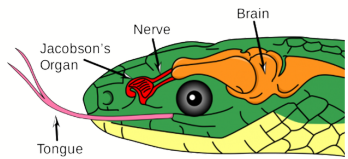
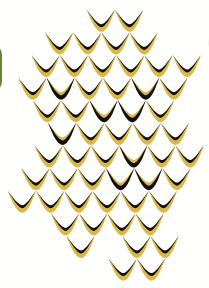






## SNAKES HAVE SCALES WHICH:

- Protect them.
- Help with the snakes' movement.
- Help retain moisture.
- Help with camouflage.
- Help with hunting.



Snakes smell through the Jacobson's organ.



## SNAKES HUNT THROUGH:

1. Smell
2. Vibrations
3. Sight

- **Venom** – They use their 2 fangs to bite or inject venom into their prey.



- **Constriction** – They use their strong bodies to squeeze their prey till it stops breathing.

## WHY ARE SNAKES IMPORTANT?



- Link in the food chain, they are predator and prey and keep the ecosystem healthy.
- They keep rats, mice and frogs under control.
- They are food for other animals like birds.
- We use their venom to make medicine which helps us.

## WHAT TO DO IF YOU GET BITTEN?



- ✓ Keep calm
- ✓ Take a picture of the snake if you can
- ✓ Call an adult and go to the nearest clinic

- ✗ DO NOT cut and suck the wound!
- ✗ DO NOT use ice or very hot water!
- ✗ DO NOT tie something around the wound!



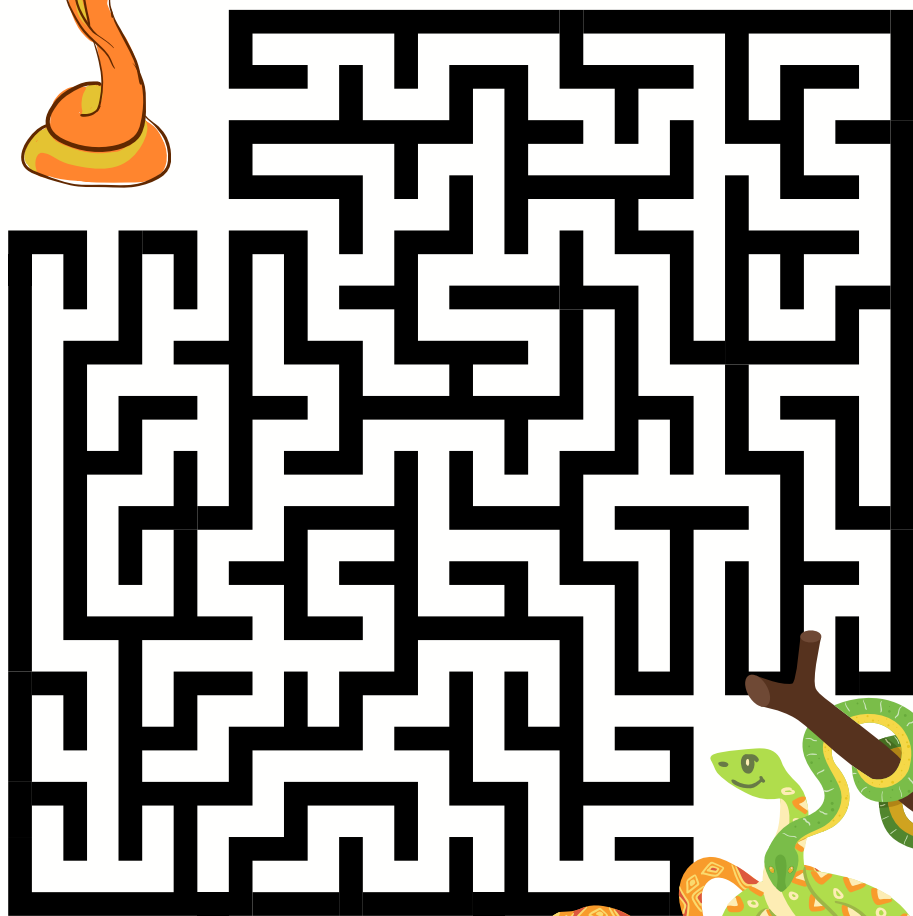
# NOTES:

Handwriting practice lines consisting of 20 horizontal lines.



# HELP THE LOST SNAKE GET TO HIS FRIENDS:

Can you help the snake by guiding him  
through the maze?



# LESSON 7

## END ENDANGERMENT

**Species** are groups of similar living things that can reproduce with each other, and their offspring can also reproduce. Humans are a species; dogs are a species; and there are over 17,000 different species of butterflies!

THERE ARE 3 CATEGORIES OF ENDANGERED SPECIES:

CRITICALLY  
ENDANGERED

ENDANGERED

VULNERABLE

Experts decide when a species is endangered or not. They look at: (1) Is the species' habitat disappearing? (2) How many of the species are left? and (3) How quickly are the number of species getting less?



### EXTINCTION:

Extinction is the complete disappearance of a species from Earth.



### CHAMELEONS:

- Chameleons can focus their eyes very well; this helps them catch prey and escape predators.
- Many species are endemic meaning they live only in specific areas.
- They are very important for food chains because they are predators and prey, and help humans by eating insects.



### OWLS:

- Owls are carnivores.
- Not all owls hoot.
- Owls have 3 eyelids- one for blinking, one for sleeping and one for keeping their eyes clean.
- They are very important for food chains and help humans control populations of species like rats and mice and help prevent spread of diseases.



### VULTURES:

- They have almost bare heads and necks so that they stay clean while feasting on meat.
- They have strong immune systems so they don't get sick if they eat rotten meat.
- They are decomposers and are very important for food chains.
- They also clean carcasses and stop the spread of diseases.



Up to one million plant and animal species face extinction because of humans and our actions.



# NOTES:

Lined writing area with horizontal lines and decorative elements on the left and right sides.



# QUESTIONS:

1. How do chameleons help humans?

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2. How do owls help humans?

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3. How do vultures help humans?

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4. Which is your favourite, the owl, chameleon or vulture, and why?

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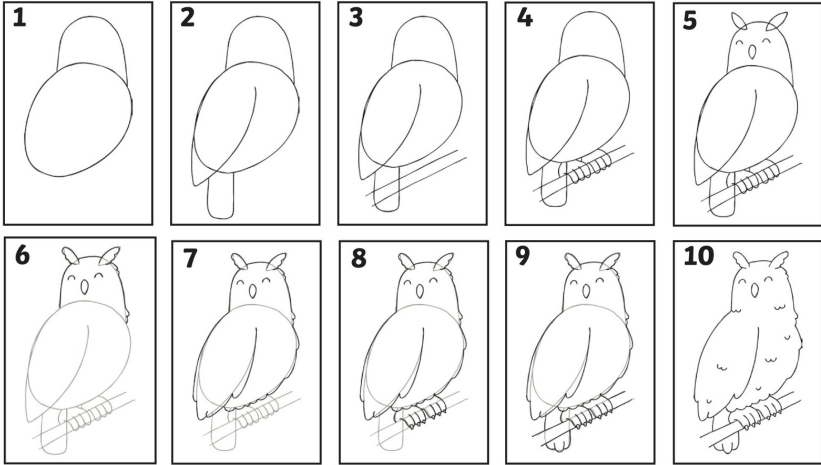
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# HOW TO DRAW AN OWL:



# LESSON 8

## JOIN THE PRIDE

Africa is full of diversity!  
Different kinds of animals = tourism = money = economic growth

### LITTLE 5: ELEPHANT SHREW

#### ELEPHANT:

- Elephants are the largest land animal.
- They live in herds led by a matriarch (female).
- Elephants are in danger and are being killed for their tusks.
- Elephant tusks are made out of ivory and are their teeth.

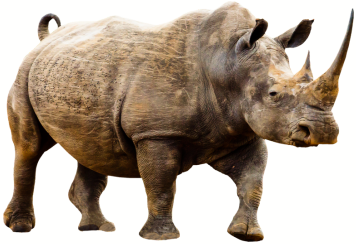


**Elephant co-existence:** why are elephants important for the environment and why should we try to live with them?

- Seed transporter: can disperse seeds over more than 60kms.
- Provide lots of food for dung beetles.
- Help keep soil fertile, and helps plant grow.
- Dig wells to access water underground for themselves and other animals.

### LITTLE 5: RHINO BEETLE

#### RHINO:



- White Rhinos have a wide mouth, they are grazers (eat grass). "W" for White and "W" for wide mouth.
- Black Rhinos have a pointed lip, they are browsers (eat leaves), this helps them pick leaves. "B" for Black and "B" for browser.
- Rhinos are endangered- They are poached for their horn.

### LITTLE 5: BUFFALO WEAVER

#### BUFFALO:

- They live in huge herds, sometimes up to 1000 animals.
- Buffalo feed on grass mainly and are called grazers.
- Buffalo are often seen with birds called oxpeckers that feed on ticks that are on them.





## LITTLE 5: ANTLION

### LIONS:



- They live in a group that is called a Pride.
- They are very social cats.
- Males have a magnificent mane while females do not.
- They are carnivores, feeding on other animals of various sizes that they catch and kill.
- Their roars may travel as far as 8 km.
- Lions are in trouble; they are poached by humans for their bones and skins, which are sold to make money.
- They are often poisoned by people who want to protect themselves or their livestock from them.

## LITTLE 5: LEOPARD TORTOISE

### LEOPARD:

- They are solitary hunters (hunting alone).
- Because they are quite small, they often take prey up into trees so that larger predators like lions and hyenas do not steal the kill.
- Leopards are nocturnal, hunting mainly at night.
- Leopards are also in danger, they are hunted for their beautiful skin.



## LEOPARD VS CHEETAH



Leopard: Stronger, Nocturnal, Rosettes, Heavier.  
Cheetah: Faster, Diurnal, Spots, lighter, have "tear" marks



# NOTES:

A series of horizontal lines for writing notes, spanning the width of the page.



# FUN FACT

A group of lions is also called 'a pride'.  
Lions are the only known cat species that roar together, even young cubs join in. They often roar together to mark their territory - these roars can be heard from far away.



# LESSON 9

## PROMISE TO PROTECT THE PLANET

**Pollution:** When humans put substances or materials into the environment that are harmful or poisonous to all living things.

### AIR POLLUTION:

The release of harmful contaminants (chemicals, toxic gases, biological molecules) into the earth's atmosphere.

### LIGHT POLLUTION:

The artificial light at night; this is the excessive or poor use of artificial outdoor light, and it disrupts the natural patterns of wildlife.

### NOISE POLLUTION:

The excessive amount of noise in an environment that disrupts the natural balance of sounds.

### WATER POLLUTION:

The contamination of dams, rivers and bodies of water by litter or chemicals/sewage.

**LITTER:** Rubbish and trash that is discarded where it is not meant to be. Litter is not natural and should not be in nature!

### WHY IS LITTERING BAD?

- Ugly, and a form of pollution.
- It takes a long time to decompose, so it's around for a long time (up to 1,000 years for a plastic bag in a landfill)
- Expensive to clean up.
- Rivers can become blocked and cannot flow.
- Animals can choke, get trapped and tangled (die); this can also be a loss for humans when animals die.
- Takes a long time to decompose, so it's always around.

### RIVERS IN ESWATINI:

Eswatini has 5 main river systems

1. The Lomati
2. The Komati
3. The Mbuluzi
4. The Usutu
5. The Ngwavuma

### RIVERS PROVIDE US WITH IMPORTANT RESOURCES:

Rivers provide us with important resources like water and food, like fish.

Rivers serve as a home for many animals, as we saw with the food chains and ecosystems.



# QUESTIONS:

1. What is pollution?

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2. What is litter?

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3. Why are litter and pollution bad and harmful?

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4. How can we stop litter and pollution?

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# POLLUTION:

Match the picture to the type of pollution!



Noise Pollution



Air Pollution



Water Pollution



Light Pollution



*Dombeya* Conservation & Development  
Association

This conservation education project was implemented by the Dombeya Conservation and Development Association, Eswatini, with generous funding from the United Nation Development Programme and GEF Small Grants Programme.



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