TERM 1

Natural Sciences: Life and living
Technology: Structures

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- **TOPIC 1:** Plants and animals on Earth
- **TOPIC 2:** Animal skeletons
- **TOPIC 3:** Skeletons as structures
- **TOPIC 4:** Food chains
- **TOPIC 5:** Life cycles

Topic 1 Plants and animals on Earth

$8\frac{3}{4}$ hours

Unit 1.1 Many different plants and animals

Many different plants and animals live in different habitats on Earth

A coral reef in the ocean

A heron catching a fish

A lion in the veld

There are many different plants and animals living in different habitats on Earth. Animals and plants that originally come from South Africa, are said to be indigenous species. South Africa has a wide variety of **indigenous** plants and animals. Indigenous means that these are the plants and animals that naturally exist or occur in a specific environment.

Keywords

indigenous
adapt
biodiversity

These plants and animals are indigenous to South Africa, because they are well suited and **adapted** to South Africa's environment and climate. Plants and animals in many different types of habitats make up the total **biodiversity** of the Earth.

WHAT DO YOU ALREADY KNOW?

In Grade 4, you learnt about living things and that all living things need a habitat.

1. Can you remember what a habitat is? You distinguished between different types of habitats, for example land habitats and water habitats.
2. Give two examples of land habitats.
3. Give two examples of freshwater habitats.
4. Give one example of a salt water or marine habitat.
5. Why do plants and animals need a habitat?

In Grade 5, the focus is on the indigenous plants and animals we find in the various habitats that make up the biodiversity of South Africa.

Many different plants and animals in South Africa

Keyword
lianas

South Africa has many different habitats, each with its own typical types of plants and animals.

Forest habitat

This is the smallest habitat in South Africa. It contains dense stands of trees with thick undergrowth like ferns and lianas. **Lianas** are plants that grow up against the trees to get to sunlight. The trees are also covered by thick masses of mosses and lichens that depend on the trees for their food and water.

Do you still remember what plants need sunlight for?

Lianas creeping up the trees in a forest habitat

Typical animals found in forest habitats include parrots, elephants, baboons and monkeys.

Stinkwood and yellowwood trees are indigenous to forests in South Africa.

Parrot

Monkey

A mother baboon and her baby

Grassland habitat

Grasslands are vast stretches of land covered with grass. Some grasslands have a few scattered trees. Typical grasses found in South Africa include sweet grass and sour grass. Sweet grass is good for herbivores to eat, while sour grass has little nutritional value.

An elephant roaming the grasslands

South Africa is well known for the Big Five (lion, rhinoceros, African elephant, leopard and buffalo) that roam its grasslands. These animals are sought after by **trophy hunters** and are under constant threat of extinction.

Keyword
trophy hunters

FLASH FACTS >>

Rhino poaching has reached critical levels, reducing the rhino population substantially in South Africa.

Semi-desert habitat

South Africa does not have a true desert, but it has a semi-desert region called the Kalahari in the Northern Cape and the Karoo around Oudtshoorn. This habitat is dry with low rainfall and warm temperatures. Plants in these areas show special adaptations to survive the climatic conditions.

Succulents such as vygies and aloes, as well as other hardy plants such as kankerbossies and the cotton-woolly white kapokbossies, can survive dry periods. They have short life cycles and sprout immediately after light rainfall. Namaqualand in the Northern Cape becomes covered with 'flower carpets' of daisies after the first rains.

Examples of flowers and plants that grow in desert habitats

FLASH FACTS >>

A Halfmens tree

The 'halfmens', which are found in the Kalahari Desert, is the common name given to this plant because it looks like a human being from a distance.

Halfmens grow in groups that, from a distance, look like people frozen into one position. They always lean northwards, with crinkled leaves at the top, like mops of hair.

Animals that are well adapted to the warm, dry conditions in the Kalahari and the Karoo include jackals, eagles, black rhinoceroses, buck, mountain zebra, wild ostriches and tortoises.

Cape floral kingdom

The Cape floral kingdom is famous for its more than 6 000 different plant species, many of which you will only find along the southern parts of the Western Cape coastline. Three major groups of plants occur in the Cape floral kingdom: ericas, restios and proteas. The Cape floral kingdom has some indigenous animals like the Cape sugarbirds, geometric tortoises and dassies.

Cape sugarbird

Dassie

King protea

FLASH FACTS >>

The King protea is South Africa's national flower.

Water habitat

Freshwater habitats in rivers and dams have many different types of fish that anglers like to catch, such as carp, barber and bass. The ocean fishing industry plays a very important part in the South African economy.

Crayfish are a popular form of seafood. In many foreign countries crayfish is considered to be a **delicacy**.

Although strict laws have been put into place to protect our fish populations, many fish species are still under threat from over-fishing by individuals and companies, especially fishing trawlers from other countries that fish illegally in South African waters. Typical fish and other sea animals found in South Africa's oceans include snoek, hake, kabeljou, steenbras and crayfish.

Keyword
delicacy

Different plants have also adapted to living in fresh water or in oceans. For example, *waterblommetjies* grow on dams and rivers in the Western Cape. Some alien water plants that are not indigenous to South Africa, especially the water hyacinth, cause major problems. Along our coast, ocean plants such as seaweed are collected to use for making fertilisers.

Activity 1: Match plants and animals to their habitats

Work on your own.

Redraw this table in your exercise books. Match each of the habitats in Column A with a plant or plants in Column B, and a corresponding animal or animals in Column C.

A: Habitat	B: Plants	C: Animals
Forest	Halfmens, vygies	Elephant, leopard, lion, buffalo, rhinoceros
Grassland	Water hyacinths, seaweed	Hake, snoek, kabeljou, crayfish
Semi-desert	Proteas, ericas, restios	Monkey, baboon, parrot
Cape floral kingdom	Stinkwood, yellowwood	Snake, jackal, eagle
Water habitat	Sour grass, sweet grass	Geometric tortoise, Cape sugarbird, dassie

Activity 2: Count and distinguish plants in your school grounds

Work as a class.

Now that you have learnt about some of the many different plants and animals and habitats in South Africa, you will be challenged to do your own diversity study in the area where you live. Your teacher will take you to an area in your school or community where there are plants.

You will need

- exercise books
- pencils
- pencil crayons

Work in groups of four.

1. Listen carefully to your teacher when she or he explains where to look. Do not pick the plants.
2. Look carefully at the plants in the area your teacher has pointed out. Count the number of different plants. Record the totals in your exercise books.
3. Then, take turns to describe the different types of plants. Your descriptions should include things like shape, size, colour of leaves and flowers and fruit. Write down all your descriptions.
4. Each person in your group must draw one of the plants you have studied.
5. When you return to class, work in the same groups. In a table, write your description of each plant. Cut out and paste your pictures beneath your description.
6. Present your tables to the class.

Unit 1.2 Inter-dependence

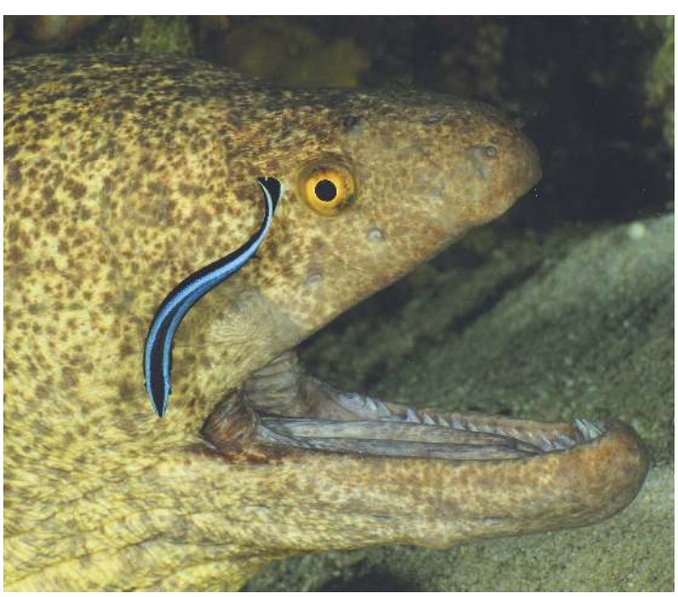
Keywords
inter-dependence
fynbos
parasite

The word **inter-dependence** means to depend on each other. In this unit you will learn that plants and animals depend on each other for their existence.

Plants and animals depend on each other

All plants and animals are inter-dependent. This means that they depend on something other than themselves for certain things. Let's look at an example of this.

Baboons love to eat **fynbos**. Fynbos is the natural shrubby, hardy plants that occur in the Western Cape. This type of vegetation is found mainly in winter rainfall coastal areas or mountainous regions. One of the ways that the seeds of fynbos plants are dispersed (spread out) is through baboon faeces. Therefore baboons and plants are inter-dependent. Fynbos provides a source of food for baboons, and baboons help to spread the fynbos seeds, and therefore help to ensure the continued survival of the fynbos plants.



The thin blue and black cleaner fish is cleaning a Moray eel.

Some animals also depend on other animals. For example, there are little fish that clean other bigger fish. They remove dead skin and **parasites** (tiny animals that live on the skin of the fish) from the big fish. In the example of inter-dependence in this photograph, the little fish receive their food from the skin of the bigger fish, and the bigger fish is kept clean and safe from disease by the cleaner fish.

Activity 3: Give an example of inter-dependence in nature

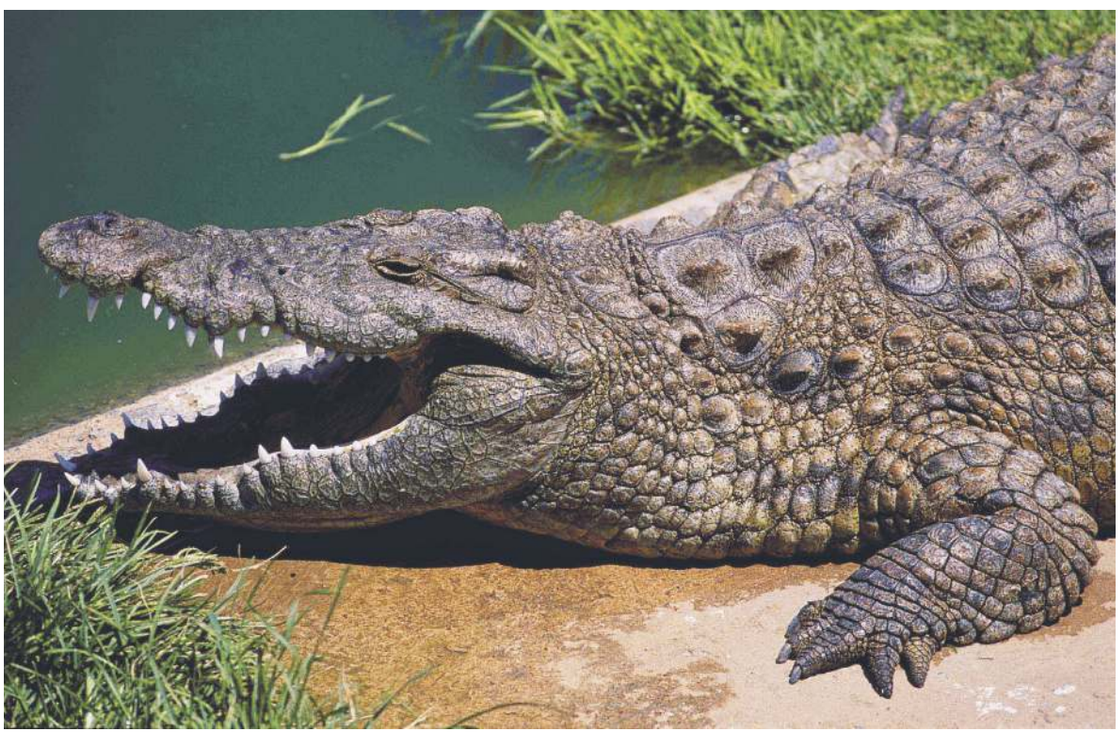
Work with another learner.

Think of another example of inter-dependence in nature. Explain how each animal or plant benefits from the relationship.

Plants and animals depend on the resources available in their own habitats

Plants and animals also depend on the resources (such as air, water, soil, food and shelter) in their own environment. Think about what a plant needs to survive. It needs soil to grow in, water, air and sunlight.

Animals cannot survive without air, water, food and shelter. Moles burrow in the soil and are dependent on the environment for a place to live and hide. Crocodiles live in water and on land. They prey on animals that are drawn to watering holes. They also lay their eggs in the banks of rivers. Which other examples of how plants and animals are dependent on the resources in their habitat can you think of?



Crocodiles depend on their habitat for food, shelter and protection.

Unit 1.3 Animal types

Keywords

shell
invertebrates
vertebrates
backbone
sense organs
limbs
skeleton

There are many different types of animals. Some animals do not have bones. They may have soft bodies covered by hard outer 'skins' or **shells**. We call these animals **invertebrates**. Animals that have bones are called **vertebrates**. You will learn more about each type of animal in this unit.

Invertebrates

Worms, millipedes, insects, spiders, crabs and scorpions all have one thing in common – they do not have a backbone. Animals that do not have a **backbone** are called invertebrates. Some of these animals, like the grasshopper on the left, have a hard shell for protection on the outside of their bodies.

A grasshopper does not have a backbone but has a hard shell for protection.

The head is connected to the main part of the body. The head houses the animal's **sense organs**, such as eyes, that enable the animal to sense its environment. In some cases, the main part of the body is divided into two parts. **Limbs** such as legs and wings are attached to the body.

Dogs are vertebrates. They have a head that is connected to the main part of the body by a neck. They have four limbs and a tail.

Vertebrates

Examples of vertebrates are animals such as fish, frogs, birds and dogs. Vertebrates have a backbone inside their body. Other bones are attached to the backbone and to each other to form a **skeleton**.

These animals have a head that is connected to the main part of the body by a neck. The sense organs (nose, mouth, eyes and ears) are situated on the head. Limbs such as legs or wings are attached to the body. They also sometimes have a tail.