

Ecosystems / Endangered Species: Outcomes and activities

God is Creator Year 4

Spiritual Awareness: *God is Creator*

- God's original creation was perfect. When God had finished the creation he stated that it was 'good'. A good and perfect creation cannot include killing and death. This means that in the Garden of Eden, the original perfect ecosystem, all animals ate plants, (Gen 1:29).
- The Fall brought about new types of ecosystems where some animals ate plants, but other animals ate animals for survival. The ecosystems in our world today are a result of a curse that came into the world because of man's sin. One day God will restore ecosystems to perfection, where the lion and lamb will graze peacefully together.
- We have been given a mandate to care for the creation, (Gen 1:28). Caring for the creation involves protecting the plant and animal species on our planet. Taking responsibility for environmental protection is a response to 'God is Protector'. We protect the creation on God's behalf. Protection of the environment involves wisdom and responsibility.

Values: Our response to 'God is a Powerful Creator'

- **Faith** in God's ability to supernaturally create and trust that He is in control of all He has made.
- **Environmental sustainability:** Care for and protect the living things that He has created.

Bible stories and passages

- Genesis 1 - The creation
- Genesis 2:19 – Adam named the animals
- Isaiah 11:6-9 – the restoration of the perfect Creation – the wolf and lamb will live peacefully together.
- Psalm 65:6 -13 – God is in charge of nature.

Bible verses

- Genesis 1:28 – God said, "I am putting you in charge of the fish, the birds and all the wild animals". (GNB)
- Psalm 150:6 - Praise the Lord, all living creatures!
- Psalm 148:9-10 – Praise Him, hills and mountains, fruit-trees and forests; all animals, tame and wild, reptiles and birds.
- 1 Chronicles 29:11 – You are great and powerful, glorious, splendid and majestic. You are king, supreme ruler over all. (GNB)

Key Questions

About God

What did animals eat in God's original creation?

How do we know that there was no killing?

How did the creation change after Adam and Eve sinned?

Today animals eat other animals. Is this part of God's perfect plan?

Will there be animals in Heaven? What are we told about these animals?

Who is responsible for caring for the creation?

About ecosystems

What is an ecosystem?

What do the animals eat?

Where do they live?

What is the name of where they live? (habitat)

How do they depend on the plants and other animals around them?

What would happen to these animals if their main food source no longer existed?

In what ways have people changed and destroyed the environment in which many animals live?

What is the result of destroying the places where animals live?

Which animals are endangered?

How can we help to protect God's creation?

Outcomes: Students will

- understand that plants and animals depend upon each other and their environment for survival
- be able to define producers, (plants that make their own food), herbivores, (animals that eat plants), and carnivores, (animals that eat other animals), consumers, predators, (animals that hunt for other animals)
- be able to list the requirements for animal and plant life within an ecosystem
- be aware of ways in which people have changed or damaged many of the environments in which animals live
- understand the balance of nature
- suggest ways of preventing the extinction of animal species
- classify organisms using key words
- draw food webs

Activities

ECOSYSTEMS

Beacon Media research cards: Ecosystems; Desert animals

- Select an example of an ecosystem and draw up a flow chart showing chains of dependence within the ecosystem e.g. forest, sea life, pond, lake, African savanna
- List and classify plants and animals within the chosen ecosystem.
- Draw the chain of dependence. Draw and cut out drawings of items in a food chain, e.g. grass, insects, birds, bears. Then each item is glued to a large paper strip. Make an actual "chain" out of the strips by looping them together in a paper chain.
- Work in groups, giving each group 4 animal pictures or animal word cards. Ask students to decide the order of the animals in the food chain.
- Students can make up some food chains, e.g. a food chain that could be found in the sea, a rock pool or in the bush. Remind them that all food chains must start with plants. Create "thinking maps" to show the different levels of a food chain.
- Make a mobile with cut out labeled shapes as follows: the sun at the top, plants next, herbivores next, and predators at the bottom.
- Give the students about 8 different word/picture cards, e.g. grass, eagle, caterpillar, rabbit, cat, mouse, lettuce, pigeon. Ask them to see how many different food chains they can make.

ENDANGERED SPECIES / ENVIRONMENTAL CONSERVATION

- Look for signs of man's intervention, e.g. pollution
- Discuss the problems caused by humans upsetting the balance, or damaging the homes of plants and animals.
- Discuss ways in which introduced species have upset the balance of nature in certain areas.

Activities: Caring for God's World

Make a copy the following scenarios and cut them up. Divide the class into eight groups. Give each group one scenario. Ask the group to act out the scene using mime. Each group is to choose a leader as well as one person who will explain to the class what is happening.

Scenario 1

A family went to Suva point for a picnic. They finished eating and swimming and left their lunch papers, plastic bags and empty drink cans and glass bottles lying on the beach. The tide came up and carried the rubbish out to sea. Next weekend they went to the beach at Deuba, and there they found rubbish washed up by tide and lying on the beach. The sea had broken the bottle on the rocks and buried the glass just under the sand. One of the children stepped on the glass, cut his foot badly, and had to go to Navua Hospital to have stitches and a tetanus injection. The wound hurt very badly. The family was sorry they hadn't carefully put their rubbish into the bin.

Scenario 2

A passenger threw a glass drink bottle out of a bus window. It hit the windscreen of the car following, and the glass from the bottle cut people.

Scenario 3

A child threw a glass bottle out of a window of the car. It smashed on the road, cut someone's car tyre and their vehicle went out of control. It was a bad accident and the mother of the family died.

Scenario 4

A family went to the beach for a picnic. They put all their rubbish in a plastic bag and threw it all, including the plastic bag, into the sea. A beautiful dolphin saw the plastic bag floating way out to sea and thought it was a jelly fish. It swallowed the plastic bag and died a very slow, painful death.

Scenario 5

A bus company didn't fix their bus properly, and as it went up the hill it blew huge clouds of black smoke out of the exhaust pipe. The smoke drifted into homes of the people living on each side of the road, and soon a little child was sick with asthma.

Scenario 6

A sugar mill was not careful and let a lot of waste material spill into the river. Soon all the fish were dead and people couldn't gather and eat shell fish from the river.

Scenario 7

A ship on the harbour pumped oily waste into the harbour, and people fishing along the sea wall got sick when they ate the fish they caught.

Scenario 8

Some families didn't pack their rubbish carefully into plastic bags, and dogs came and pulled the rubbish all over the footpath. The children had to step over the rubbish to go to school. Mosquitoes were attracted to the rubbish and some children caught dengue fever.

Values education Year 4

God is Creator

Care for the environment

God tells us that we are to care for His creation and the resources He has given us.

Caring for God's world means ...

- looking after the plants, animals, soil and water in the environment
- thinking about the future and doing things that will keep the environment safe from destruction in the future
- acting responsibly when we use plants, animals, soil and water in our environment
- showing wisdom in using and preserving our nation's resources
- being wise stewards
- making wise use of the resources that God has provided
- recycling

What does the Bible say about caring for the environment?

Genesis 1:28-31 God said, "Be fruitful, fill the earth and subdue it."

Genesis 1:29 "God said, Look I have given you all the plants that have grain for seeds in them. They will be food for you."

Genesis 2:15 God put man in charge of the creation

1 Cor 4:2 Stewards should be trustworthy

Proverbs 4:7 The beginning of wisdom is this: Get wisdom, and whatever you get, get insight.

Psalms 96:11-12 Let the heavens be glad and the earth rejoice, the sea and all that is in it...

Art Year 4

God is Creator

Topic: Ecosystems

Biblical connection: God created living things to live together. Living things are part of God's creation and depend on each other.

Bible art as a wall display: Make a large mural of an ecosystem.

Bible verse: Genesis 1:28 I am putting you in charge of the fish, the birds, and all the wild animals.
(Good News Bible)

1. Collage

Draw, cut out and paste living things in a particular ecosystem.



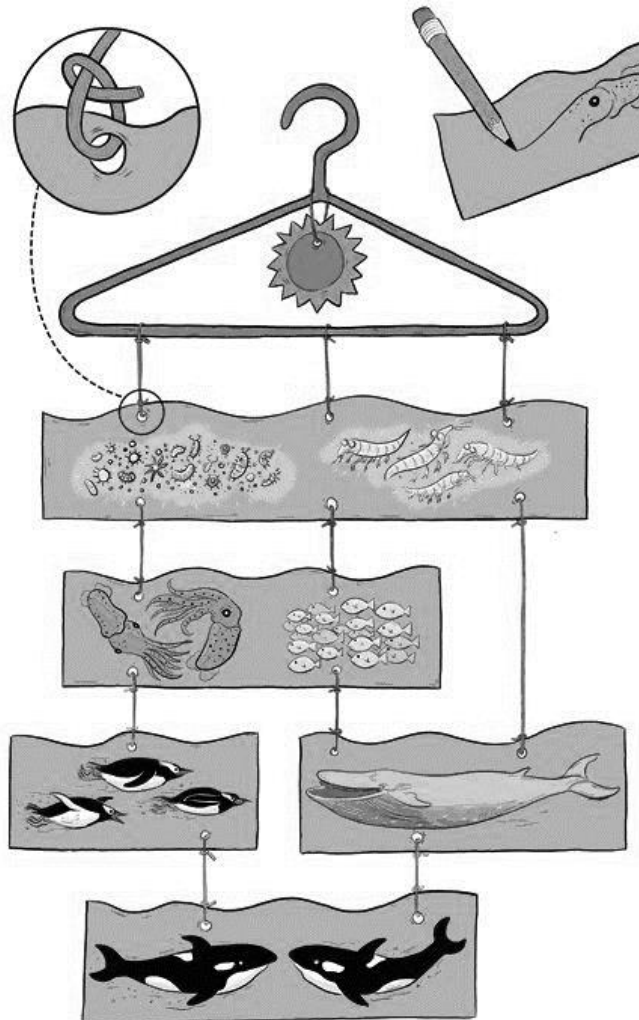
2. construction

Make a model of an ecosystem. This could be inside a cardboard box.




3. Mobiles

Make mobiles of an ecosystem with the sun at the top and the order of dependence of living things underneath. Example:



Thinking Skills Creator Yr 4

<p>Pets 1</p> <p>A pet bird has escaped from its cage into a nearby tree.</p> <p>How many different ways can you think of to get it back?</p>	<p>Pets 2</p> <p>Build a house for a pet.</p>
<p>Pets 3</p> <p>Draw a pet by adding to this shape.</p> <p style="text-align: center;"></p>	<p>Pets 4</p> <p>Find some things that are the same about:</p> <p style="text-align: center;">a dog and a gold fish</p>
<p>Pets 5</p> <p>A friend wants to give you a pet dinosaur.</p> <p>Make a list of all the things your parents might not like about this.</p>	<p>Pets 6</p> <p>Cats should have bells around their necks.</p> <p>Make a list of some good and bad reasons for this.</p>

Ecosystems 1

Food chains

Student activities

Plants make their own food. They are called producers.
Animals that eat plants are called herbivores.
Animals that eat other animals are called carnivores

Here is a list of animals and the foods they eat:

Grass

A leaf

An eagle

A small bird that eats insects

A caterpillar

A cat

A mouse

A vegetable

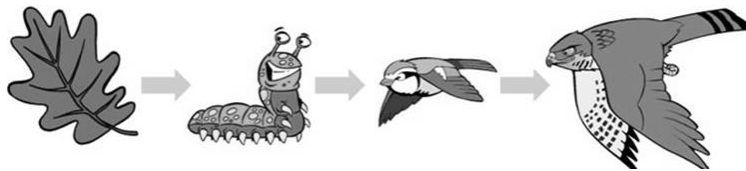
A cow

Write the list and next to each write “P” for producer, “H” for herbivore and “C” for carnivore.

We can show what eats what by drawing a food chain.

For example:

A LEAF → (is eaten by) A CATERPILLAR → A BIRD



Now make up different food chains using the above list of animals and their foods.
Use drawings and arrows. Start all your food chains with a plant.

Ecosystems 2

Food chains and food webs

A food chain tells us what animal eats what.
All food chains begin with plants.

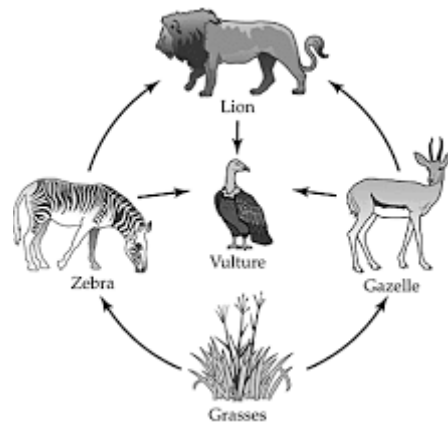
1. PLANTS get energy from the sun to make their own food. (They are the PRODUCERS)
2. HERBIVORE animals eat the plants.
3. CARNOVORE animals eat the herbivores.

But there are also OMNIVORES. They eat both plants and animals.

And last of all there are the DECOMPOSERS which are the bacteria which break down the dead plant and animal material so that it goes back to the soil.

When several animals eat the one type of food it gets complicated. This is called a food web. For example, zebra, giraffe and deer all eat grass. But lions and cheetahs both eat zebras, giraffe and deer.

Draw a diagram of a different food web.



Ecosystems 3

What is an ecosystem?

An ecosystem is a community of plants and animals living together in the same environment.

There are two parts to the community:

The non-living part:

Rain, sunlight, temperature, soil

The living part:

Plants, animals, bacteria

In the living part there are producers and consumers.

The plants produce food. The animals consume food.

The living part can only survive when the non-living part provides the right conditions for survival.

If one part of the food chain gets taken away, then it affects the whole ecosystem.

1. Why would rainforest animals die if their trees were taken away?
2. Why is the non-living part of an ecosystem important?



Ecosystems 4 Dependence

Dependence in an ecosystem means that the living things in that environment are dependent on one another. That means that they all need one another.

Living things are also dependent on the non-living part of the environment staying the same.

This is called the balance of nature.

Changes to ecosystems can be caused by:

- Humans
- Climatic changes

What would happen if:

1. *Hunters shot most of the herbivores?*
2. *There were too many frogs on one pond?*
3. *Floods, drought, oil spills, pollution, overgrazing, hunting and cutting down trees can upset the balance of nature. Chose two of these and explain how.*



Ecosystems 5

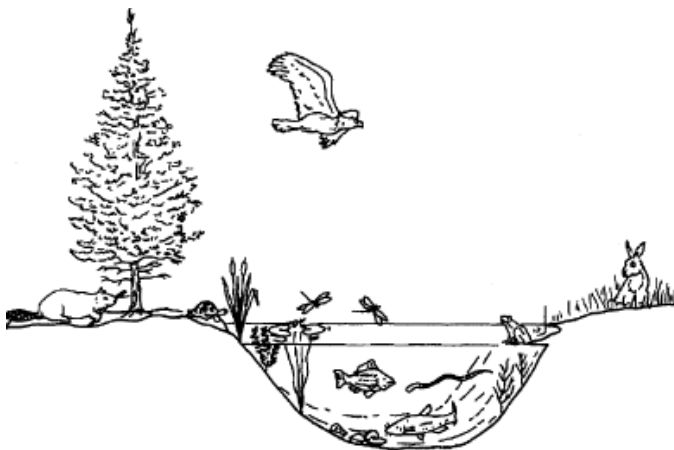
Types of ecosystems

Deserts
Oceans
Savannah grasslands (e.g. Africa)
Rainforests
Lakes and ponds
Rivers

Choose one of the ecosystems above and write down all the living and non-living things that you will find in that ecosystem. Now explain:

- *What the animals eat*
- *Where the animals live*
- *Why they need the living and non-living things in their ecosystem*

Now draw your ecosystem.



Ecosystems 6

Climate

Climate is the usual pattern of weather for a particular place. In some places, it is hot all of the year. In some places, it is cold all of the year. In some places, it is hot in the summer and cold in the winter. Some places have lots of rain and some don't.

- Hot and wet places are called **tropical**.
- Places that are not too hot and not too cold are called **temperate**.
- Places that are very dry are called **deserts**.

The climate affects the type of ecosystem.

Where in the world would you find:

1. *A tropical rainforest?*
2. *A temperate climate?*
3. *A desert?*
4. *A place that is cold all year round?*



Ecosystems 7

Rainforest animals

Tropical rainforests grow around the equator where it is hot and rainy all year round. They are homes to millions of animals. Animals find plenty of food to eat and places of shelter among the trees.

Jungle hunters

The hunters are called predators. Jaguars stalk food such as deer and tapirs. Their spotted coats hide them among the trees. Then they pounce and kill their prey with a single bite. Their teeth are so sharp that they can even crack open hard turtle shells.

Other animals

The rainforest is also home to many insects, reptiles and birds. Large snakes such as boa constrictors kill their prey by wrapping around it and squeezing it to death. Colourful birds and monkeys feed on the fruit that grows on the forest trees.

1. Name a country where you would find jungle hunters such as the jaguar.
2. What do jaguars eat?
3. What other animals live in a tropical rainforest?



Ecosystems 8

The North and South Pole

It is freezing cold and windy at the poles. Ice covers large parts of the land and sea, and yet animals still live here. They have special ways of keeping warm, dry and safe.

Polar bears

Polar bears live in the Arctic. They hunt for seals on the sea ice. They also eat fish. To keep warm, they have thick fur and a layer of fat underneath their skin. Small bumps and long hairs on their feet help them to grip the slippery ice.

The Arctic fox

In summer, Arctic foxes grow a greyish-brown coat so they can hide from enemies among the rocks. In winter, they grow white coats so they can hide among the ice and snow. The Arctic fox hunts small animals like Arctic rabbits, which are also white.

Penguins

Penguins live in Antarctica. The females lay eggs, then go off to sea to feed on fish. The males look after the eggs, carrying the egg on their feet, covered by a flap of skin.

Seals

The Weddell seal lives in Antarctica. It dives underwater to feed on fish and squid.

Whales including Killer Whales also live in Antarctica.

1. *Draw a globe and show both the Arctic circle and Antarctica.*
2. *Name and draw the animals that live in the Arctic.*
3. *Name and draw the animals that live in Antarctica. (Don't forget about the animals living in the sea.)*

Ecosystems 9

Grasslands

Grasslands are huge plains where the climate is dry much of the year. Only tough grasses grow there and a few trees.

In Africa, huge herds of zebras, giraffes and antelopes graze on the grasslands. Elephants and giraffes eat from the trees. They have to keep a good look out for hungry predators who hunt them. These are the lions, leopards and cheetahs, (the big cats), and the wild dogs and hyenas.

Giraffes, zebra and antelope stay together and help each other look out for the hungry predators.

The adult male African elephant stands about three metres tall and weighs as much as eight cars. It is the largest land mammal. Giraffes are the tallest land mammal. They are more than five metres tall. They use their long necks to reach the leaves high up in the trees. Monkeys also eat food from the trees.

The rhinoceros is another large mammal that lives on the African plains. Hippopotamuses (hippos), live in and by the rivers and waterholes. Both of these large mammals are plant eaters.

Towards the end of the dry season the water holes start to dry up and animals are on the move looking for water. The big cats often catch animals drinking at waterholes. They also catch the slower, weaker animals running at the back of the herd.

Make two lists: the plants eaters and the meat eaters.

Ecosystems 10

The coral reef

Coral reefs are made by tiny sea creatures called coral polyps. They build hard cases around their bodies. When they die, the cases are left behind. Reefs provide plenty of food and shelter for thousands of amazing animals.

Thousands of fish live on the coral. Many, such as the butterfly fish, swim in large groups called shoals. This helps to keep them safe from enemies who find a group hard to attack. Fish of the coral reef are brightly coloured with strong patterns.

Small fish keep the reef clean. They pick dead skin and dirt off big fish like moray eels. The eels even let the small fish into their mouths to clean bits of food from their sharp teeth.

Parrot fish get their name from their sharp, beak-like teeth. During the day, they feed on the coral. During the night, they keep themselves safe by making bubbles of jelly around their body.

Giant clams are the biggest shells in the world. They can measure one metre wide. They live on the Pacific and Indian oceans.

1. *Why do fish swim together in groups?*
2. *Describe some of the fish of the coral reef.*
3. *How do they help one another?*
4. *How do you think the bubbles of jelly keep the parrot fish safe at night?*
5. *Draw an underwater scene from a coral reef.*



Desert animals 1

The Camel

What do I eat?

When I'm hungry, I'll eat almost anything

- a leather bridle or a pair of shoes
- a piece of rope
- my master's tent
- thorny cactus
- grass and other desert plants
- hay

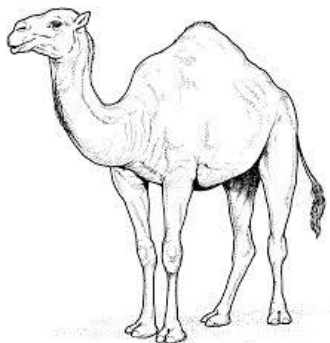
What is my hump for?

I'm a dromedary camel, the one-hump kind that lives on hot deserts in the Middle East.

- My hump weighs 36 kg (80 pounds)
- It is filled with fat which provides fuel for my body

My Mighty Maker gave it to me because He knew I wouldn't always be able to find food in the desert.

When I don't find any food, my body uses fat from the hump, to feed my body. This is my emergency food supply.



Desert animals 2

The Camel

How much water can I drink?

I've been known to drink 100 litres of water in ten minutes.

Where does the water go?

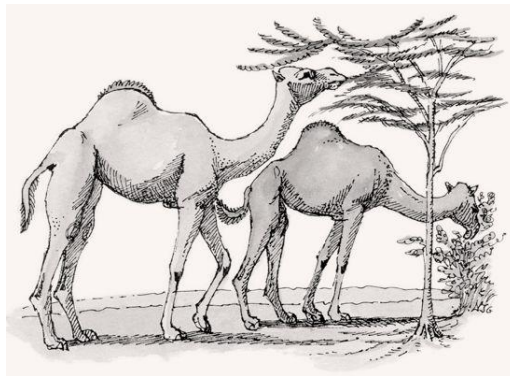
My Master Designer made me in such a fantastic way that in a matter of minutes all the water I've swallowed gets straight into the cells of my body.

The water I swallow first goes into my stomach.

Then my blood vessels carry it to every part of my body.

My stomach is found it empty ten minutes after I've drunk 100 litres of water.

After going all day without a drink I lose a lot of water from my body. I look really skinny. When I find a water hole, I'll drink for about ten minutes and my skinny body starts to change. The water goes to all parts of my body and I don't look skinny anymore.



Desert animals 3

A camel's nose and eyes

My nose

My nose is very special because it helps my body save water.

God has made my nose so that when I breathe out, I don't lose much water.

My nose traps that warm, moist air from my lungs and the water stays in the cells around my nose.

This makes my nose feel cool.

I have special muscles in my nostrils that can close when there is a sand storm. The sand doesn't get in, but I can still breathe.

My eyes

My eyelashes come down over my eyes like screens, keeping the sand and sun out but still letting me see clearly.

If a grain of sand slips through and gets in my eye, the Creator took care of that too. He gave me an inner eyelid that wipes the sand off my eyeball just like a windshield wiper.

My eyebrows are so thick and bushy. I have to hold my head high to peek out from underneath them. I'm glad I have them though. They shade my eyes from the bright sun.

What is special about a camel's nose?

What is special about a camel's eyes?



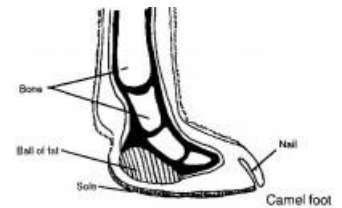
Desert animals 4

A camel's legs and feet

My feet

In the desert I walk on sand. My Creator gave me special sand shoes for feet. My hooves are wide, and they get even wider when I step on them.

Each foot has two long, bony toes with tough, leathery skin between my soles. My feet are a little like webbed-feet. They won't let me sink into the soft, drifting sand.



My knees

When I was six months old, special knee pads started to grow on my front legs. They are very tough. My Creator knew I had to have them.

They help me lower my heavy load to the ground. I can fall on my knees without my knees getting hurt.

If I didn't have them, my knees would soon become sore and infected, and I could never lie down. I'd die because I would never be able to rest.

My legs

When I walk I sway from side to side.

Some of my riders get seasick.

I sway from side to side because of the way my legs work.

Both legs on one side move forward at the same time.

What kind of feet does a camel have?

Why are they good for the desert?

What are the camel's knee pads for?

How does a camel walk?

Desert animals 5

How the camel helps desert people

Desert people depend on me for many things.

They need me for:

- Transport
- Milk, which is made into cheese and butter
- My fur

I shed my thick fur coat once a year and that can be woven into cloth.

Make a chart with drawings showing of how desert people make use of the camel.

Camels in the Bible

How did people of the Bible use camels to help them? Write about some Bible people who rode on camels.



Desert Animals 6

The Desert Scorpion

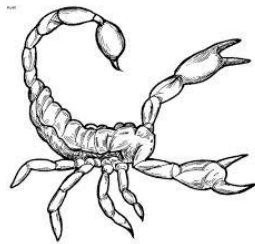
The desert scorpion spends much time on the sand.

This exposes it to harsh sandstorms that could cause damage to its outer skeleton (called an exo-skeleton).

But the scorpion is protected by rough coat of armour.

The bumps on the armour protect it.

- found in Africa and Middle East
- yellow in colour
- have a very poisonous sting in their tail.
- eat insects, spiders, other scorpions and lizards. They also eat small mammals, such as mice.
- must have water to drink, but they can survive for months without food.
- use their pincers to capture and crush prey.
- have eight legs but not a spider and not an insect



How is the scorpion protected from sand storms?

Where would you find a desert scorpion?

Why is it dangerous?

What do they eat?

How do they catch food?

What happens if it does not get water?