

Year 5

Biological Science Reading



Name: _____

Class: _____



1

Habitats &
Survival Challenges



2

Structural
Features



3

Behavioural
Features



4

Survival Patterns
& Relationships



5

Biomimicry
& Human Action

Lesson 1

Habitats & Survival Challenges

A LOOK AROUND OUR WORLD

Different Places, Different Challenges

A **habitat** is the place where a living thing lives. Every habitat has physical conditions that affect the plants and animals living there. These conditions include temperature, rainfall, available water and sunlight. When conditions are challenging, living things need ways to survive.

The **Australian Desert** is often hot and dry. Rainfall can be low and water may be difficult to find. During the day, temperatures can become extremely high. Plants and animals living there face challenges such as finding enough water and avoiding overheating.

A **Swedish boreal forest** presents very different challenges. Winters can be long and cold, and snow may cover the ground. During colder months, some food becomes harder to find. Living things must cope with low temperatures and seasonal changes.

A **Mexican tropical rainforest** is generally warm and receives high rainfall. Water is plentiful, and thick vegetation provides many places to live. However, this does not mean survival is easy. Dense plant growth can limit the light reaching the forest floor. Animals may also compete for food and need to avoid predators.

These habitats are very different, but each creates challenges. The physical conditions of an environment affect what living things need to do to survive.



Australian Desert



Swedish Boreal Forest



Mexican Tropical Rainforest

Key Vocabulary

habitat	the place where a living thing lives
environment	the natural conditions in a place
climate	the usual weather conditions in an area
rainfall	the amount of rain in a place
survival	continuing to live, especially in difficult conditions

1 What is the main idea of this text?

2 What two details from the text support this main idea?





STRUCTURAL FEATURES

Built for Survival



Living things have **structural features** that can help them survive. A **structural feature** is a physical part or characteristic of a plant or animal. Fur, feet, leaves, roots, spines and body shape are all examples.

In cold environments, an **Arctic fox** has thick fur that provides insulation. This reduces the amount of body heat lost to the cold surroundings. Its fur even covers the bottoms of its feet, helping protect them when it moves across snow and ice.

Plants also have useful structural features. **Spinifex** grows in dry parts of Australia where water can be limited. Its narrow, tough leaves reduce the surface area exposed to the hot, dry air. This helps the plant reduce water loss.

In tropical forests, a **ceiba tree** faces a different problem. Rainforest trees may grow very tall, but the soil near the surface can be relatively shallow. A ceiba tree can develop large buttress roots that spread around the base of its trunk. These help support the enormous tree.

The fox, spinifex and ceiba tree have very different structures because they face different challenges. However, the same scientific idea connects them: a physical feature can perform a useful function that improves an organism's chance of surviving in its habitat.



Key Vocabulary	
structural feature	a physical part that helps an organism survive
insulation	slows the loss of heat
buttress root	a large root that provides support
adaptation	a feature that helps survival
habitat	the place where a living thing lives

- 1 Summarise the important information from this text in 2–3 sentences.

- 2 How are an organism's structural features and its habitat connected? Use information from the text in your answer.



Lesson 3

Behavioural Features Smart Ways to Survive

DIFFERENT PLACES.
DIFFERENT BEHAVIOURS.

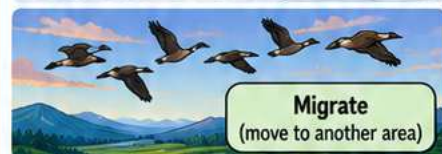
Survival does not depend only on what an animal has. It can also depend on what an animal does. A **behaviour** is an action or way of acting that can help a living thing survive.

In hot Australian environments, some animals are **nocturnal**. Instead of being active during the hottest part of the day, they become active at night when temperatures are lower. Other animals spend time in underground burrows, where conditions can be cooler than at the surface.

Cold environments create different problems. During winter, food may become scarce and temperatures can drop. Some animals **hibernate**, greatly reducing their activity for an extended period. Others **migrate**, moving to another area where conditions or food supplies are more suitable.

Animals in tropical rainforests also use behaviours to survive. Some predators hunt at night, while other animals spend much of their time high in the tree canopy. Where and when an animal is active can affect its ability to find food and avoid danger.

These behaviours are different, but they have something important in common. Animals do not all respond to survival challenges in the same way. Their behaviours can help them cope with the particular conditions and challenges they experience.



Key Vocabulary

behaviour	an action or way of acting
nocturnal	active at night
hibernate	to spend a long time with reduced activity
migrate	to move to another area
survival	continuing to live, especially in difficult conditions

1 What can you infer about why the same behaviour would not be equally useful in every habitat?

2 What evidence from the text supports your inference?



Lesson 4

Survival Patterns & Relationships

Same Problem, Different Solution

DIFFERENT CHALLENGES. DIFFERENT SOLUTIONS. SAME AMAZING SURVIVAL!

Scientists often compare living things to find **patterns** and **relationships**. A pattern is **something** that appears more than once in the evidence. A **relationship** is a connection between two or more things.

Consider animals living in places with extreme temperatures. An animal in a cold boreal forest might have thick fur that reduces heat loss. Another animal may change its behaviour during winter by migrating or becoming less active. These are different survival strategies, but both are connected to the challenge of low temperatures.

Animals in hot environments may face the opposite temperature problem. Some avoid the heat by resting in burrows during the day. Others are nocturnal and become active during the cooler night. Again, different behaviours help solve a similar problem: reducing exposure to extreme temperatures.

Plants show patterns too. Plants growing where water is limited may have structures that reduce water loss, store water or help them collect it. Plants in wetter habitats may have different features because conserving every drop of water is not the same challenge.

When scientists compare these examples, a relationship becomes clear. **Environmental conditions** and **useful survival features** are connected. Different organisms may use different structures or behaviours, but similar environmental challenges can lead to survival strategies that perform similar functions.



Cold environment
– thick fur



Cold environment
– migrate



Hot environment
– rest in burrows



Hot environment
– nocturnal



Dry environment
– reduce water loss



Wet environment
– different features

Key Vocabulary

pattern

something that appears more than once

relationship

a connection between two or more things

environment

the natural conditions in a place

adaptation

a feature or behaviour that helps survival

survival

continuing to live, especially in difficult conditions

1 What relationship between environmental conditions and survival features is described in the text?

2 Use evidence from the text to explain this relationship.



Lesson 5

Biomimicry & Human Action

When Nature Inspires Solutions

NATURE
IDEAS
A BRIGHTER
TOMORROW

For millions of years, living things have survived challenges such as collecting water, moving efficiently and staying safe. Scientists and engineers can study these biological features and use what they learn to solve human problems. This approach is called **biomimicry**.

The **thorny devil**, an Australian desert lizard, provides one example. Tiny channels between the scales on its skin can help move water across its body towards its mouth. Scientists can study how this system works when developing ideas for collecting and moving small amounts of water in dry environments.

The shape of a **kingfisher's beak** has also influenced human design. Kingfishers can enter water quickly with relatively little splash. Engineers studying Japan's high-speed trains used the bird's streamlined beak as inspiration when redesigning the front of some trains. The new shape helped the trains move through the air more efficiently and reduced the loud noise created when leaving tunnels.

Biomimicry begins with scientific knowledge. Scientists investigate a living thing's **feature** and determine how it functions. Engineers and designers can then consider whether the same idea could help solve a human challenge.

Nature does not provide a finished invention. Instead, understanding how living things function can provide ideas that people can develop into useful solutions for individuals and communities.

Thorny devil



Tiny channels
help move water

Kingfisher



Inspired the design
of high-speed trains

Key Vocabulary

biomimicry	using ideas from living things to solve human problems
adaptation	a feature or behaviour that helps survival
engineer	a person who designs and builds solutions
feature	a special part or characteristic
solution	a way to solve a problem

1 What conclusion can you make about the usefulness of studying living things when solving human problems?

2 Explain your conclusion using evidence from the text.

