Animal Survivor

BIOLOGICAL SCIENCES

QGC | FUTUREMAKERS | QUEENSLAND MUSEUM NETWORK | Queensland Government

Introduction

Queensland is the most biodiverse state of Australia, with 70% of Australia's mammal species, 80% of Australia's birds and 50% of Australia's reptiles and frogs. Queensland Museum has been a vital authority on the investigation, documentation and conservation of Queensland's faunal biodiversity for over 150 years. In fact, Queensland Museum scientists have played a role in discovering over 4000 new species since 1862!

The *Wild State* Exhibition at the Queensland Museum explores why Queensland has such a high diversity of animals, and has been presented to increase our understanding and appreciation of Queensland's unique animals and environments.

This activity can be used in conjunction with the *Wild State* exhibition and teacher resources. Alternatively, loans kits can be borrowed from Queensland Museum loans with sets of animal specimens for students to examine, or you may get students to choose a local environment that they are familiar with.

This resource can be used individually, or following the Queensland Museum online resource *On the wing: Exploring aspect ratio*. The Queensland Museum also has many other resources online that cover our natural environment and an app for identifying local species, the *Queensland Museum Network Field Guide to Queensland Fauna*.

Future Makers is an innovative partnership between Queensland Museum Network and Shell's QGC project aiming to increase awareness and understanding of the value of science, technology, engineering and maths (STEM) education and skills in Queensland.

This partnership aims to engage and inspire people with the wonder of science, and increase the participation and performance of students in STEM-related subjects and careers — creating a highly capable workforce for the future.

Activity Overview
Animal Survivor

In this activity you will analyse an animal and relate its features to its survival success in one of the five major habitats in Queensland: Arid Outback, Open Forest, Rainforest, Coastal and Marine.

You will then conduct the animal design challenge – engineering new features for your animal to increase its chance of survival and future success.

To finish this activity you will make predictions about how the animal may survive if conditions were to change.

Teacher Tips

- Get students working in groups of 3 – 4 for collaborative learning and communication.
- Model how the table can be completed as a class, using the skills of a scientist including observation, inference and hypothesising.
- Allow students to view and choose a specimen that they are interested in.
- Have students present their animal design to the class (and/or results from part 1 and 3), and the class can share ideas and evaluate each design.
- Define the scientific meaning of words and keep a word bank of new words.
- Use Figure 1 to predict how climate change will affect each habitat shown in *Wild State*, and discuss these results collaboratively.
- Students may present their findings about the impact of climate change on their species as a multimedia presentation. You could also get students to debate what should be done to protect their species from human impact. For the debate you may want to assign roles to each student in a group e.g. Queensland Museum scientist, politician, energy company, mining company, local resident. You could also use De Bono's 6 Thinking Hats as a model.

Australian Curriculum Links

Year 5

Science Understanding (SU)

Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)

Science as a Human Endeavour (SHE)

Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)

Science Inquiry Skills (SIS)

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS093)

With guidance, pose clarifying questions and make predictions about scientific investigations (ACSIS231)

Year 6

Science Understanding (SU)

The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)

Science as a Human Endeavour (SHE)

Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)

Science Inquiry Skills (SIS)

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS110)

With guidance, pose clarifying questions and make predictions about scientific investigations (ACSIS232)

Year 9

Science Understanding (SU)

Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)

Ecosystems consist of communities of interdependent organisms and abiotic components of the environment, matter and energy flow through these systems (ACSSU176)

Science as a Human Endeavour (SHE)

Values and needs of contemporary society can influence the focus of scientific research (ACSHE228)

Science Inquiry Skills (SIS)

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)

Activity 1
Animal Survivor – A Queensland Animal

Specimen: | **Habitat:**

What conditions do I need to be able to survive?

- Temperature (hot or cold)
- Water (moist or dry)
- Protection from exposure (sun, shade, wind)

What my group thinks:

What is the evidence?

How do I survive in my environment?

- **Structural and functional adaptations** (how is my body built, and how does my body work to help me survive?)
- **Behavioural adaptations** (what do I do to survive?)

What my group thinks:

What is the evidence?

What do I eat?

- **Body features** (look at my teeth, feet, beak or mouth)
- **Habitat** (what might live in the same habitat as me?)

What my group thinks:

What is the evidence?

How do I catch and eat my food?

- **Body features** (look at my feet, mouth, and other features to identify special abilities)
- **Behaviour** (how do I capture food?)

What my group thinks:

What is the evidence?

What eats me?

- **Native predators** (do any animals in my natural habitat eat me? Think of my size and where I live)
- **Introduced predators** (do any introduced animals such as dogs, cats, foxes or cane toads eat me?)

What my group thinks:

What is the evidence?

How do I avoid being eaten?

- **Body features** (how can I defend myself and/or hide?)
- **Behaviour** (how can I make it harder for predators to find me or avoid predators?)

What my group thinks:

What is the evidence?

Activity 2
Animal Design Challenge

What are the main threats to your animal's survival?

What would you do to improve your animal's chance of survival?

Some ideas for your design:

Find alternative food sources

Try new methods of defence

Blend in with the crowd more

Source: Queensland Museum Network

Design Challenge

Design – Draw a diagram of your new and improved animal.

Communicate – Explain why your changes will help your animal survive.

Create – Use everyday materials to construct your improved animal.

Activity 3

The Changing Environment

One of the biggest environmental challenges to face Queensland (and the world) is the impact of climate change.

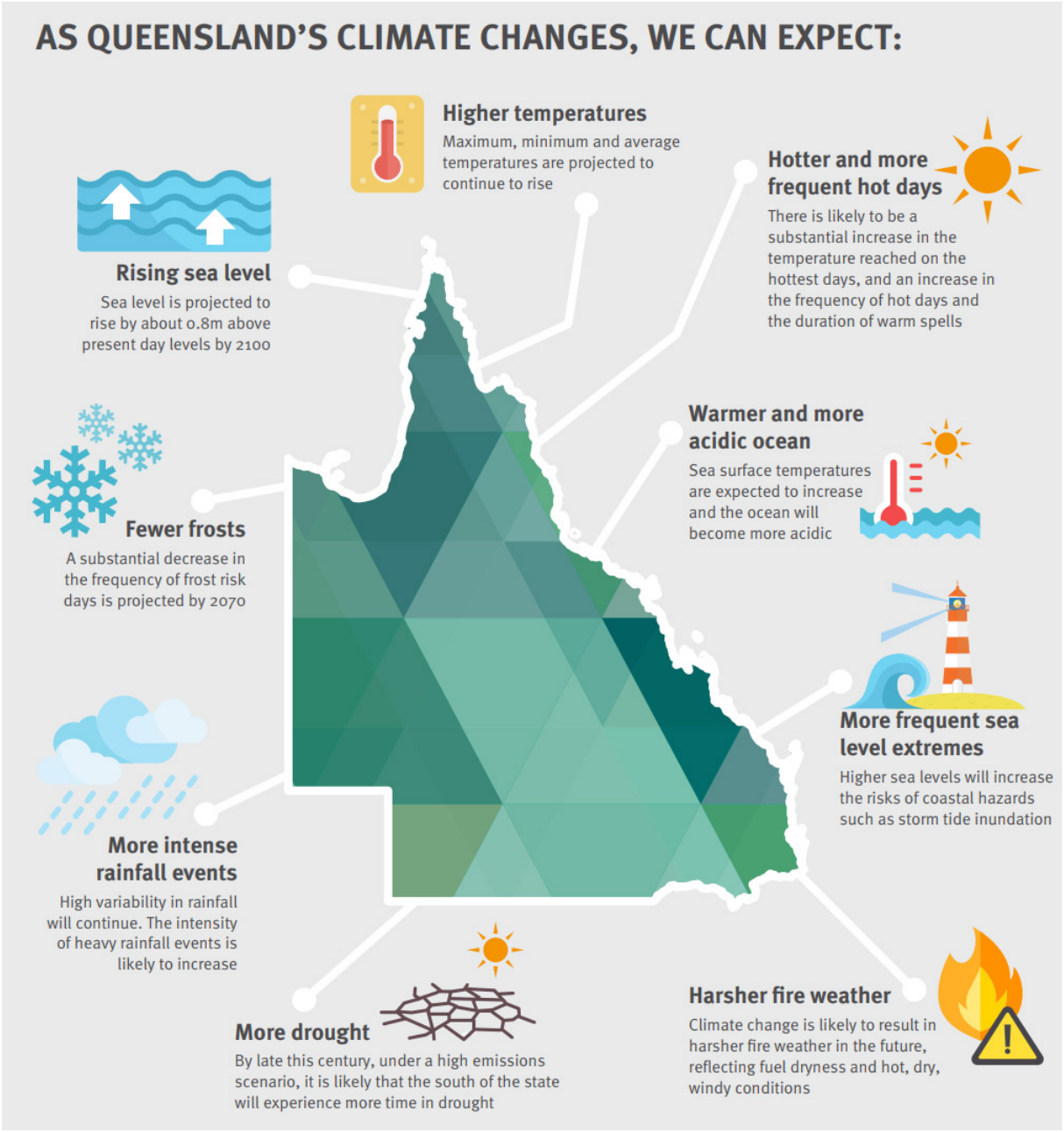

Figure 1: How Queensland's environment is predicted to change with climate change. *Image: The State of Queensland 2017*

Use Figure 1 on page 10 to predict how climate change may affect your animal, and its habitat.