

# SURVIVING IN A CHANGING WORLD

Stage 3: Science & Technology

ST3-4LW-S, ST3-11DI-T



Adaptations are the remarkable features that have evolved in animals over millions of years to help them survive in their environment but what happens when that environment starts to change? Plastic bag or jellyfish? It can be hard for animals to tell the difference! At the Zoo students will observe a range of animal adaptations and discuss the challenges facing our wildlife today.

## OUTLINE

### AT SCHOOL

Students identify, investigate and observe a native Australian animal that lives in or around their school. Students use creative thinking techniques to create a concept map and investigate waste in their school.

### AT THE ZOO

Students explore the Zoo and observe the behavioural and structural adaptations in a variety of animals. Taronga's scaffold is available to guide student learning.

### ZOO WORKSHOP

Up-close encounters with a range of native Australian animals help students understand how adaptations enable these animals to survive in a changing Australian environment. Students will learn about Taronga Zoo's Wildlife Hospital as a case study and consider how animal adaptations are challenged by the plastic predator!

### BACK AT SCHOOL

Review student concept maps by considering how the animals that live around their school can be assisted to grow and survive, using their adaptations. Design and create a mechanism of communication to engage the whole school in supporting the local wildlife.



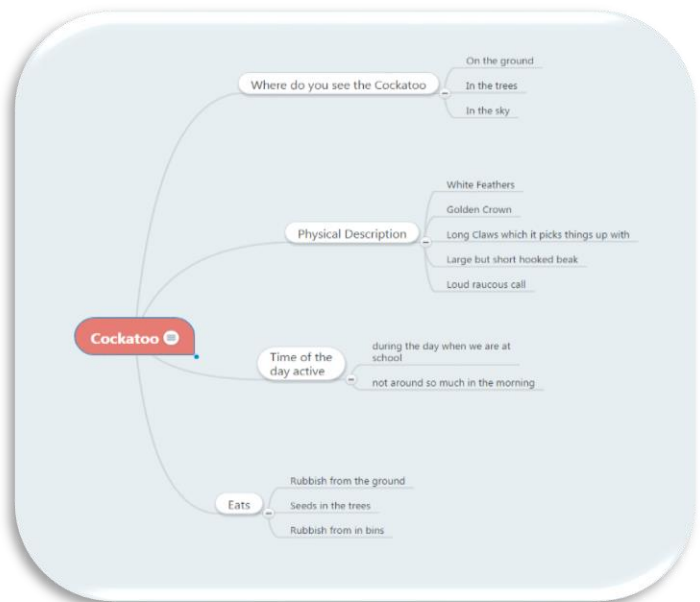
# AT SCHOOL – BEFORE THE ZOO

Observe and understand structural and behavioural adaptations of animals that survive in your school

## ANIMALS HAVE ADAPTATIONS TO SURVIVE!

Students select an animal that they can locate around their school grounds that they find fascinating!

1. Observe this animal and use these observations to develop a 'concept map' that demonstrates their current understanding about this animal's shelter, diet, predators, relationship with other living things and daily behavior (nocturnal, diurnal, crepuscular). Consider grouping observations into behavioural and structural adaptations.
2. Discuss how plastic rubbish may impact the animal given it has these adaptations (e.g. a skink that lives on the ground may mistake plastic for food and ingest it).
3. Carry out a **waste audit** of the school, for students to become aware of the scale and composition of their waste.
4. Investigate the **rate of decomposition** of each of the types of rubbish from the waste audit.



### CONCEPT MAP BUILDING!

Have you thought about using any of these excellent concept mapping resources....

<http://popplet.com/>

<https://bubbl.us/>

[www.mindmeister.com](http://www.mindmeister.com)

[www.mindmup.com](http://www.mindmup.com)





# AT THE ZOO

A guided (or self-guided) exploration

## SELF-GUIDED EXPLORATION

- Explore the Zoo and observe the behavioural and structural adaptations of a range of animals.
- Use the Taronga Zoo Adaptations scaffold (on page 5) to guide your learning.

## ZOO WORKSHOP

- Participate in an interactive workshop which explicitly teaches the concepts of adaptations.
- Meet Australian animals and learn about the behavioural and structural adaptations they have which allow them to survive in the Australian environment.
- Explore how human impacts can challenge these animals ability to survive in the wild.
- Students will examine closely the work of the Taronga Wildlife Hospital to understand how the growth and survival of living things is affected by plastic in the environment.



## CONSIDER

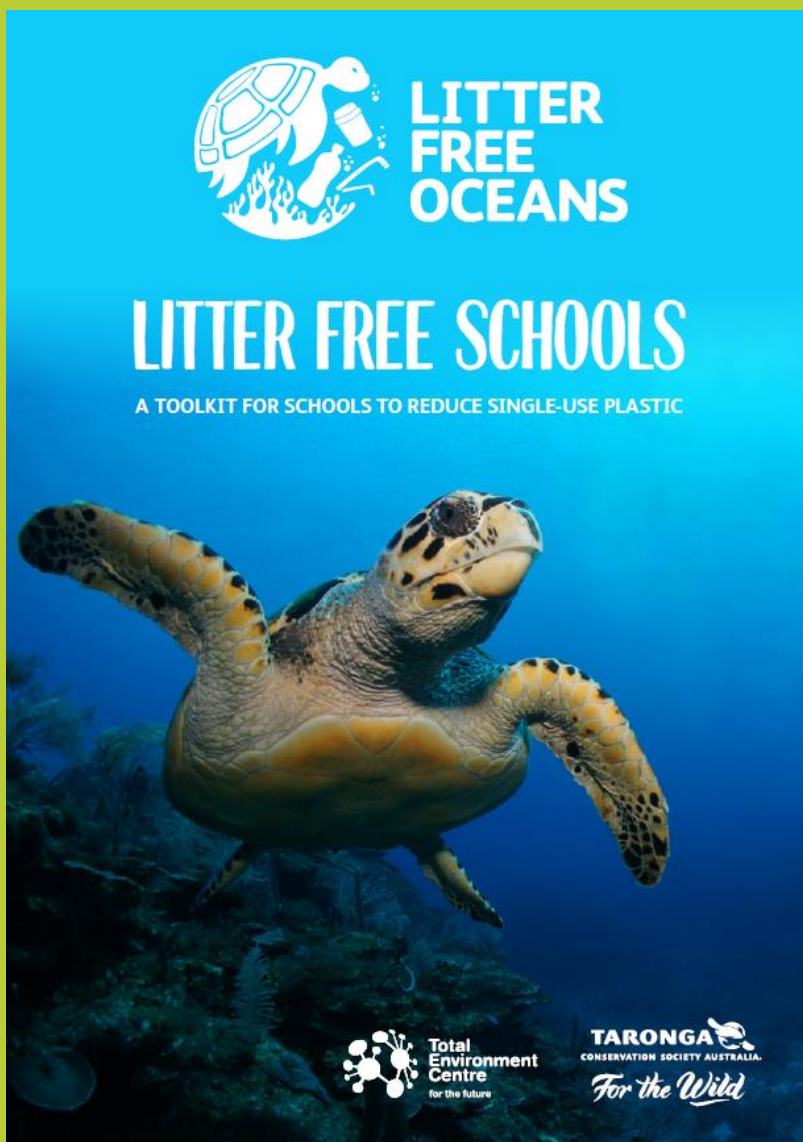
- Ways to apply your knowledge of adaptations when considering how you can play a part in reducing the impact of plastic on Australian native animals that live in your community.

*Reduce, Re-Use, Recycle*

# BACK AT SCHOOL – AFTER THE ZOO

## TAKE ACTION!

Visit <https://taronga.org.au/litter-free-oceans/> and register for your Schools Toolkit for some great Litter Free Oceans resources and ideas!



## PLASTIC PREDATOR FILM

Consider and discuss the '[Plastic Predator](#)' film as it moves through many different ecosystems.

## EXTENSION: CREATE AN ANIMAL!

Design an animal that has adaptations to survive in your playground!

- Think about the body parts and body coverings it would need to survive.
- What would its camouflage be?
- What is its diet and what sort of teeth would it have?
- How would it move and what sort of legs and feet would it have?
- What time of the day is this animal active, and why?
- What adaptations does your animal have that helps it survive plastic waste in its habitat?

# TARONGA ZOO ADAPTATIONS SCAFFOLD

Adaptations are the behavioural or structural features of an animal that assist it to survive in its habitat. They include such things as body parts, body coverings and time of the day the animal is active. Observe and analyse 1 or 2 of the animals at Taronga Zoo to understand their amazing animal adaptations.

Name of Animal:	
In which habitat(s) can this animal be found in the wild? e.g. tropical rainforest, ocean, alpine	
What sort of climate (temperature/weather) is typical of this habitat?	
Where in the habitat does this animal live? e.g. in the trees, on the ground	
Draw and name a structural adaptation this animal has to assist their survival in this habitat.	
Name a behavioural adaptation this animal has to assist their survival in their habitat.	
Describe the physical conditions that Taronga has included in the enclosure to accommodate this animal's structural and behavioural adaptations.	

# SYLLABUS LINKS

# RESOURCES

## Science and Technology

### Living World Outcomes

#### A Student:

- examines how the environment affects the growth, survival and adaptation of living things ST3-4LW-S

#### Content Focus

**Growth and survival of living things Inquiry question:** How do physical conditions affect the survival of living things?

#### Students:

- describe how changing physical conditions in the environment affect the growth and survival of living things
- understand that scientific and technological knowledge is used to solve problems and inform personal and community decisions

**Adaptations of living things Inquiry question:** How do the structural and behavioural features of living things support survival?

#### Students:

- describe adaptations as existing structures or behaviours that enable living things to survive in their environment
- describe the structural and/or behavioural features of some native Australian animals and plants and why they are considered to be adaptations

**Sustainably managing environments to source food and fibre Focus question:** Why is it important for food and/or fibre to be produced sustainably?

#### Students:

- investigate how people in design and technological occupations address considerations, including sustainability, in the design of products, services and environments for current and future use

### Design and Production

#### Identifying and defining

- examine and critique needs, opportunities or modifications using a range of criteria to define a project
- define a need or opportunity according to functional and aesthetic criteria for an audience
- consider availability and sustainability of resources when defining design needs and opportunities
- investigate materials, components, tools, techniques and processes required to achieve intended design solutions

### Taronga Zoo's Litter Free Oceans School Toolkit

<https://taronga.org.au/litter-free-oceans/>

### School Recycling and Waste Audit Booklet

<http://www.sita.com.au/community-education/site-tours-education/>

### Waste and Recycling

<http://www.environment.nsw.gov.au/households/waste-recycling.htm>

An investigation into the rate of decomposition and the properties of different materials can be found in the Primary Connections unit: Material World

### Kimbriki Eco House and Garden

<http://www.ecohouseandgarden.com.au/content/resources>

### Marine Debris Education Kit

<http://www.tangaroablue.org/resources/education-kit.html>

### Take 3

<http://www.take3.org/>

### Plastic Predator Film

<http://www.upworthy.com/at-first-you-think-theyre-just-playing-around-then-the-end-happens?g=2>

### Concept Map resources

[www.mindmup.com](http://www.mindmup.com)

<http://popplet.com/>

[www.mindmeister.com](http://www.mindmeister.com)

<https://bubbl.us/>

### Animal Adaptations

<https://www.youtube.com/watch?v=fRX2JtKFUzk>

### Adaptations National Geographic

[http://education.nationalgeographic.com/education/encyclopedia/adaptation/?ar\\_a=1](http://education.nationalgeographic.com/education/encyclopedia/adaptation/?ar_a=1)