

YELLAGONGA WETLAND ECOLOGY EDUCATION RESOURCE

ACSS U043 Biological Sciences, Science Understanding: Living things have structural features and adaptations that help them to survive in their environment.

**Elaborations**

- Explaining **how particular adaptations help survival** such as nocturnal behaviour, silvery coloured leaves of dune plants.
- Describing and **listing adaptations of living things** suited for particular Australian environments.

Teaching Points

- Definition of adaptation.
- Types of adaptations; structural and behavioural.
- Common Australian animal adaptations (use Yellagonga Regional Park examples).
- Common Australian plant adaptations (use Yellagonga Regional Park examples).

Pre-excursion

- Discuss and define the term adaptation.
- Look at some examples e.g. frogs have long hind legs for leaping.
- Watch an appropriate DVD on the subject.
- Find out some of the main plants and animals that live at Yellagonga.

During the excursion

- Bird Adaptations – Beaks, Feet and Feathers Activity Sheet.
 - Bird identification book or leaflet dec.wa.gov.au, joondalup.wa.gov.au or birdlife.org.au
 - Binoculars will assist in this activity.
- Fire Adaptations – **Fire – Friend or Foe? Activity Sheet.**
- **Adaptations of the Flora and Fauna of Yellagonga Activity Sheet.**
- **Adaptations – Teacher Information.**

Post-excursion

- Investigate seed adaptations:
- Different ways seeds are distributed.
- Is heat needed to germinate Australian seeds? Wattle seeds vs tomato seeds. Boil the seeds for 15 minutes then try to germinate. Set up a second group of seeds that have not been boiled.
- Research and discuss wetland animals and plants and how they have adapted to their environment and seasonal changes (e.g. different water levels).

YEAR FIVE SCIENCE TEACHER INFORMATION

ADAPTATIONS



Definitions

- An **adaptation** is a structure or behaviour or a function that helps an organism survive in its environment.
- A **structural** adaptation is one relating to the way a plant or animal is made e.g. a kangaroo's hind legs are large to help them hop fast. A eucalypt leaf is covered in a waxy coating to help prevent water loss.
- A **behavioural** adaptation is one where the plant or animal does something to help it survive e.g. a kangaroo will lay down in the shade in the middle of the day when it is hottest, this helps to conserve water.
- A **functional** adaptation is the way a plant or animal function has been adapted to assist survival e.g. a female kangaroo can suspend embryo development if there is not enough feed or water available to meet her nutritional needs.

Year Five's do not need to cover Functional Adaptations.

Flora/Plant	Adaptation	Type	How it helps the plant survive
Eucalypt Trees	waxy leaves	structural	conserves water
	leaves hang downwards	structural	less direct sunlight on the leaves – conserves water
	fragrant scent	functional	attracts insects and birds to flowers which pollinates the flowers
	thick rough bark e.g. Tuart	structural	offers protection from fire
Hakea (shrub)	nectar	functional	Attracts birds to help pollinate the flowers
Balga Tree (Grass Tree)	trunk made of fire resistant segments	structural	protection from fire
Zamia Palm	brightly coloured seeds	structural	attracts animals to eat them which help to distribute the seeds



Fauna/Animal	Adaptation	Type	How it helps it to survive
Oblong Turtle	webbed feet	structural	swimming
	hard carapace (shell)	structural	protection
	can retract head and feet into shell	behavioural	protection
	able to aestivate (similar to hibernation) in dry conditions	behavioural/ functional	conserves energy, protects from dry climate
	sunbaking	behavioural	absorbs the sun's energy. (reptiles are cold blooded-exothermic and need the heat energy from the sun to move)
Western Grey Kangaroo	large strong hind legs	structural	fast hopping to run away from predators
	resting during heat of the day	behavioural	conserves energy and water
	long, strong tail	structural	balance
Moaning Frog	slimy skin	structural	helps frog to absorb oxygen from the air
	large hind legs	structural	helps frog to leap large distances
	burrows into soil during dry weather	behavioural	conserves energy and water until better weather arrives
Duck	webbed feet	structural	swimming
	oily feathers	structural	waterproofing
	flat beak	structural	for sieving through mud and silt for crustaceans (small prawns)
	nesting in trees	behavioural	protects eggs and ducklings from predators
Honeyeater (bird)	longer thin beak	structural	for putting into flowers to retrieve nectar
Spoonbill (waterbird)	spoon shaped beak	structural	for moving through water to feel for and scoop their food e.g. insects and crustaceans
Galah/ Cockatoo	sharp, downward pointing beak	structural	made for cracking open hard seed pods e.g. banksia cones or gum nuts
	screeching noises when predators are near	behavioural	warning for other birds, dissuades predator
	nests in hollow tree trunks	behavioural	protection of eggs and fledglings
Grey Butcher Bird	sharp pincer beak	structural	used to stab at prey and break it apart

NAME

STUDENT ACTIVITY

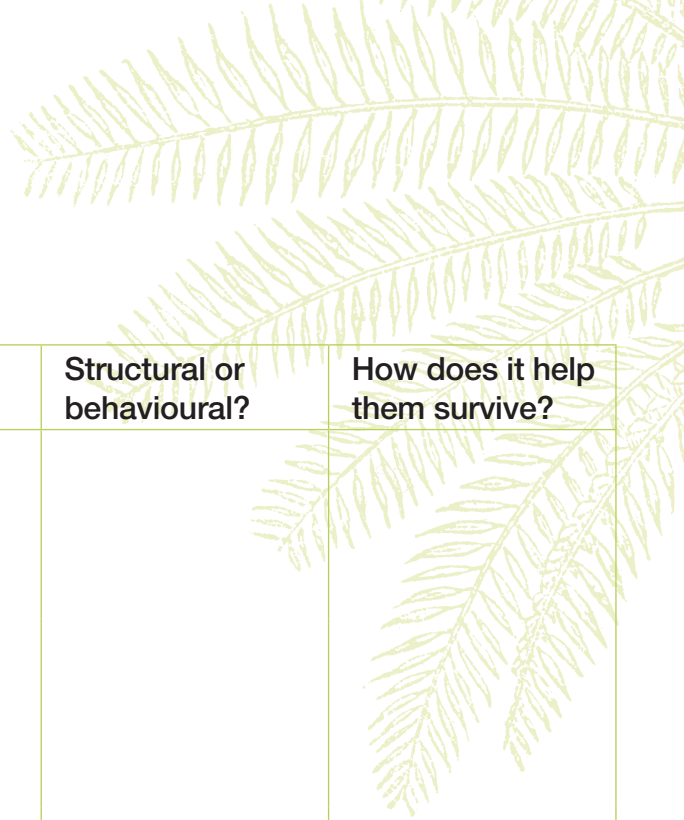
YELLAGONGA FLORA AND FAUNA ADAPTATIONS



Plants and animals have structures and behaviours that help them to survive in their environment. These are called adaptations. Using observations, photos on the colourful signs around Neil Hawkins Park and information provided by your teacher, complete the following.

Oblong or Long-necked Turtle	Adaptation	Structural or behavioural?	How does it help them survive?
(insert a drawing or photo of the Long-necked Turtle)			

Western Grey Kangaroo	Adaptation	Structural or behavioural?	How does it help them survive?
(insert a drawing or photo of the Western Grey Kangaroo)			



Zamia Palm	Adaptation	Structural or behavioural?	How does it help them survive?
(insert a drawing or photo of the Zamia)			

Eucalyptus Trees	Adaptation	Structural or behavioural?	How does it help them survive?
(insert a drawing or photo of a Eucalyptus tree)			

Moaning Frog	Adaptation	Structural or behavioural?	How does it help them survive?
(insert a drawing or photo of the Moaning Frog)			



NAME

STUDENT ACTIVITY

BEAK, FEET AND FEATHERS



Yellagonga is home to many types of birds – over 120 different bird species have been seen. Not all of them live at Yellagonga permanently some are just passing through on their annual migration. Some live on and around the water while others live in the trees and shrubs. Carefully observe the birds found at Neil Hawkins. Complete the observation sheet below.

Bird	Where did you see it?	Type of feet – webbed, clawed or talons?	Shape of beak
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

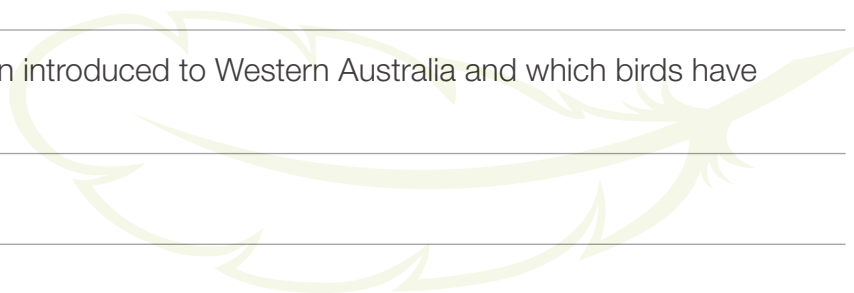


The table below is a list of mostly common birds that may be seen around Neil Hawkins Park. Each time you see one place a tick next to it.

Bird	Sightings	Bird	Sightings
Australian Magpie		Australian Shelduck	
Australian Raven		Eurasian Coot	
Australian White Ibis		Australasian Shoveler	
Carnaby's Black Cockatoo		Australian Wood Duck	
Eastern Long-billed Corella		Musk Duck	
Galah (pink and grey)		Pacific Black Duck	
Grey Butcherbird		Silver Gull (seagull)	
Grey Fantail		Australian Pelican	
Grey Butcherbird		Yellow-billed Spoonbill	
Laughing Kookaburra		Little Pied Cormorant	
Silvereeye		Singing Honeyeater	
Magpie Lark		Willie Wagtail	
Rainbow Lorikeet		Red Wattlebird	
Black Swan		Australian Ringneck parrot (Twenty-eight)	

Other Bird Observations:

Find out which birds have been introduced to Western Australia and which birds have overcrowded local habitats:





Insert picture of webbed birds foot e.g. duck

What types of birds have these feet?

What is their main type of locomotion?

Webbed feet are adapted for?



Insert picture of taloned bird feet e.g. an eagle

What types of birds have these feet?

Where in Yellagonga would you look for these birds?

Taloned feet are adapted for

Insert picture of a duck bill

What type of bird has this beak?

What do they eat?

A flat beak is adapted for

Insert picture of an eagle beak (hooked beak)

What type of bird has a hooked beak?

What do they eat?

A hooked beak is adapted for

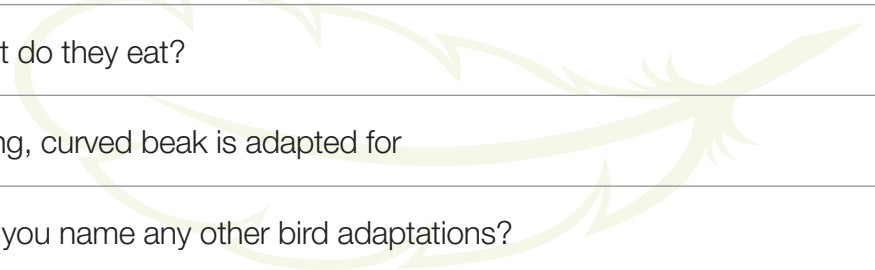
Insert picture of a Honeyeater beak (long, curved)

What type of bird has a long beak?

What do they eat?

A long, curved beak is adapted for

Can you name any other bird adaptations?





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STUDENT ACTIVITY

FIRE - FRIEND OR A FOE?



Fire is a regular occurrence in the Australian bush. It can be devastating to an area; however most bushlands can also recover from fire. How have Australian plants adapted to fires?



The rough bark on this eucalypt tree has protected the living part of the tree. How do you think it has done this?

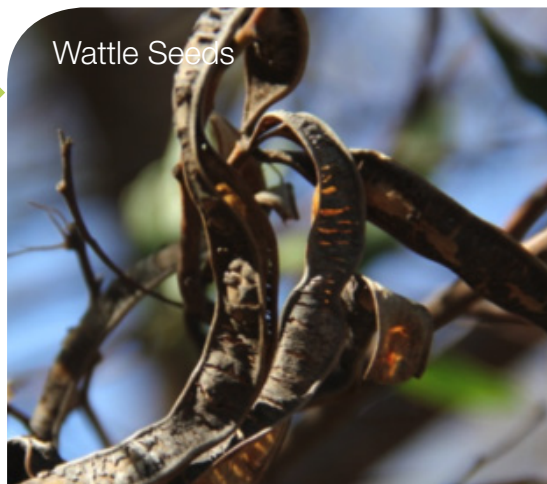
Have a look at the plants in the bush at either end of Neil Hawkins Park. Can you find another type of plant whose bark or outside layer has protected the inside living layers? Draw a sketch of it below.

A large, empty rectangular box with rounded corners, outlined in green, intended for a student to draw a sketch of a plant with fire-protective bark.



Fire is useful for seed germination. Many Australian plants have adapted to fire by having seed pods that will only open in high temperatures. Some seeds of native plants will only germinate after a fire. Scientists have different ideas about this, some say the seeds need the heat, others think it is the ash and then others think it is the smoky water that is needed, or a combination of all three.

These are wattle and banksia seeds which both need fire for different reasons. Wattle seeds need heat in order to germinate and banksias need the heat for the seed pods to open and release the seeds.



This part of the bushland is recovering from fire. Find an area like this close to the Neil Hawkins Park. Write down all your observations about how the bush is regrowing e.g. Which plants are most abundant? Which part of the plants are regrowing? Can you see any special structures that have protected the plants from fire?



