



# Junior Ranger

## Review

Issue 4 2007



Discovering  
**OUTDOORS**



**Wattle Watching**

**URBAN**  
encounter



**Luscious Lerps**

On the  
**BRINK**



**Mighty Mulgaras**





# creature feature

## Big Bad Buffalo

Water Buffaloes, *Bubalus bubalis*, are one of the Territory's most famous animals. However, many people don't even realise that they aren't native! A big control program that ran from 1978 to 1997 nearly removed them from Australia's North, but now they are making a comeback.



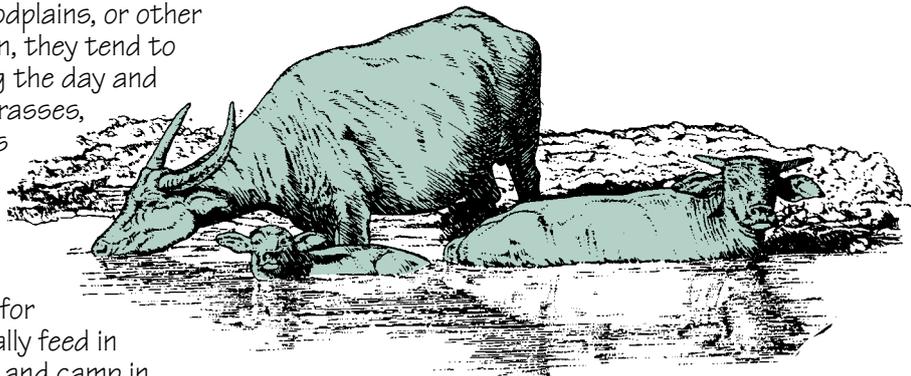
### outstaying their welcome

In the early 1800s, the first European settlers brought Water Buffaloes to the Territory from Indonesia. They were a good food source, handy for pulling carts, and handled the harsh weather better than their human masters! By 1849, everyone had left these first settlements, leaving the buffalo to fend for themselves. The buffaloes thrived and soon covered Australia's north. By the early 1980s there were thought to be around 350 000 of them!



Water Buffaloes prefer to live in swamps and floodplains, or other areas with plenty of water. During the dry season, they tend to laze around in the mud and water (wallow) during the day and eat at night. They like to eat water plants and grasses, as well as the leaves of shrubs and trees. At this time of year, the males (bulls) live apart from the females (cows).

When the rains start, the strongest bulls join the cow herd and beat up any young bulls that try to join. After mating, the cows are pregnant for about 10 months. At this time of year, they usually feed in the swamps in the morning and late afternoons, and camp in surrounding woodlands overnight. They spend the rest of the day lazing in the water.



Water Buffaloes enjoying a good wallow.

### G'day From Graham

Welcome to the final issue of the Junior Ranger Review for 2007. By now all Junior Rangers may have attended the various 'End of Year' Events and be looking forward to the school holidays and Christmas.

I do hope that everyone enjoyed the activities they were able to attend this year and are keen to re-join the Junior Ranger Program again in 2008. Keep an eye out for the new applications and advertising.

On behalf of the Community Education Rangers and Parks & Wildlife staff, I would like to wish you a Merry Christmas and happy holidays and we hope to see you back enjoying the environment with us again next year.

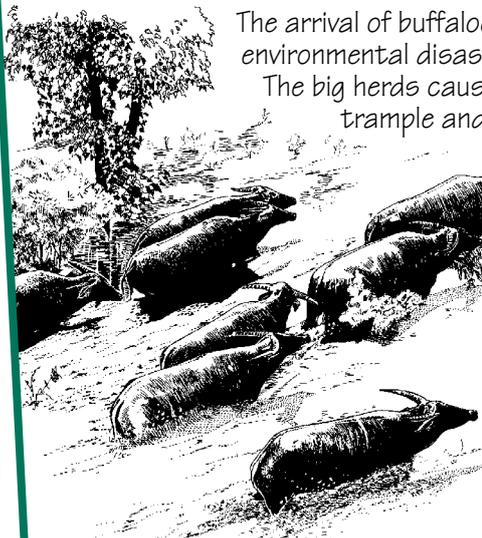
See you out in the Bush!

Graham

### Wrecking the joint

The arrival of buffaloes has been an environmental disaster in our Top End wetlands.

The big herds cause lots of damage. They trample and crush things, and adults eat around 30 kg of plant matter a day (that's lots!). They pollute water holes with mud and poo, and worst of all, create channels in the ground where they have walked and swum. In many cases, these channels have either drained wetlands or allowed salty seawater to enter. Both kill off most of the areas native plants and animals.



A herd of buffaloes moving through the water and creating a swim channel.

# Buffalo busting

By the 1970s, there were so many buffaloes causing so much damage, and carrying so much disease, that the government had to act. As part of the BTEC program, thousands of Buffalo were rounded up or shot. By 1997, they were all but wiped out from the wetlands. Arnhem Land still had a fairly large population, but it was considered disease free, and too hard to get at.

## They're back!

These days, buffalo farms are becoming quite popular. Buffaloes produce high quality meat and leather products. Even their milk makes rich, fancy cheese and yoghurt! Many animals are shipped to overseas markets, and people will also pay landowners lots of money to go 'safari hunting' for them.

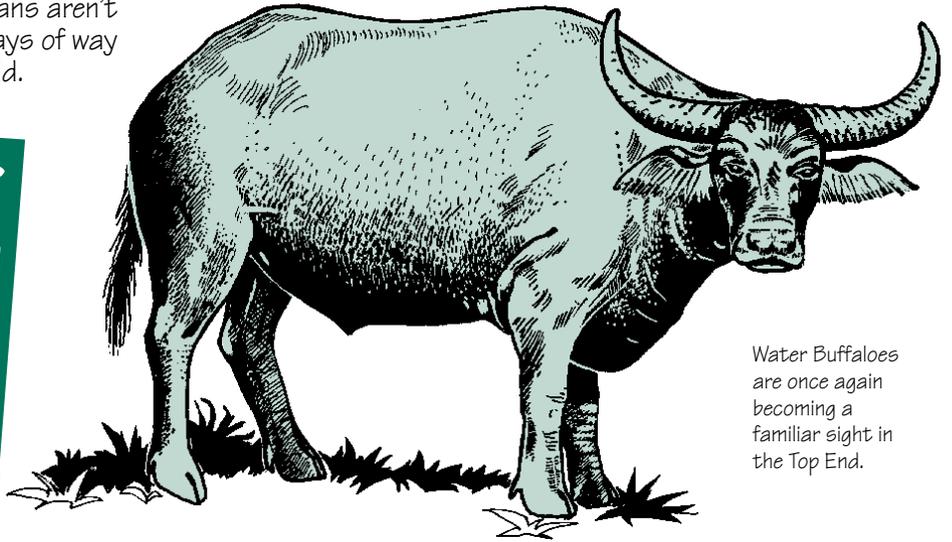
Unfortunately, in many areas of the Top End bush, feral buffaloes are starting to build up in numbers as well. If Territorians aren't careful, we could return to the bad old days of way too many buffalo causing havoc in the wild.

## Science Snippet

BTEC stands for Brucellosis and Tuberculosis Eradication Campaign. Buffaloes can pass these two diseases onto farm animals. The campaign was very successful, and Australia was declared free of these diseases in 1997.

## Did You Know?

Feral buffaloes can be very dangerous. Some people have even died from buffalo attacks! Watch out for them on roads, especially at night; hitting a 1200 kg adult buffalo isn't much fun!



Water Buffaloes are once again becoming a familiar sight in the Top End.

## Memorial to a star!

If you visit the Adelaide River Pub (about 112 km south of Darwin on the Stuart Highway), you can see the stuffed and mounted remains of one of the Territory's most famous movie stars. Work through this puzzle to reveal his name and what movie he was in.

- ★ Step 1 Cross out every box that contains one of these 7 letters: Z J W P Y S X
- ★ Step 2 Start at the arrow and twist your way through the letters that are left over to unravel the answer.
- ★ Step 3 Write the answer in the boxes below.

E	H	T	M	O	R	F	O	Y	S
M	X	S	Y	W	J	J	L	P	W
O	V	I	E	C	P	S	A	F	F
S	Y	Z	J	R	W	P	P	S	U
Z	S	W	P	O	Y	T	H	E	B
L	I	D	O	C	X	E	Z	S	P
E	P	S	Y	W	J	I	L	R	J
D	J	X	P	Z	S	X	Y	A	H
U	N	D	E	E	J	W	P	X	C

START ↗

# On the Brink

## Mighty mulgaras

In the desert country of Central Australia lives some tough little marsupial critters. The rat-sized, Brush-tailed Mulgara (or just Mulgara), *Dasycercus blythi*, and the Crest-tailed Mulgara (or Ampurta), *D. cristicauda*, are two marvellous examples. However, they are not common and we still know very little about them, so Territory scientists have identified them as being vulnerable to extinction.



### First there was one, and then there were two!

Until 2005, there was only one recognised mulgara species in Australia. However, new DNA technology and a closer study of body form differences (called morphology) have enabled scientists to determine that there are in fact two species. The only visible differences between the two are in the hairs on their tails, different numbers of teeth and the number of nipples on the girls. Otherwise, if you saw them in the bush you could hardly tell them apart!

### Did You Know?

Mulgaras store fat in their tails like camels do in their humps. This store can be used during hard times.

### Mulgara mugshot

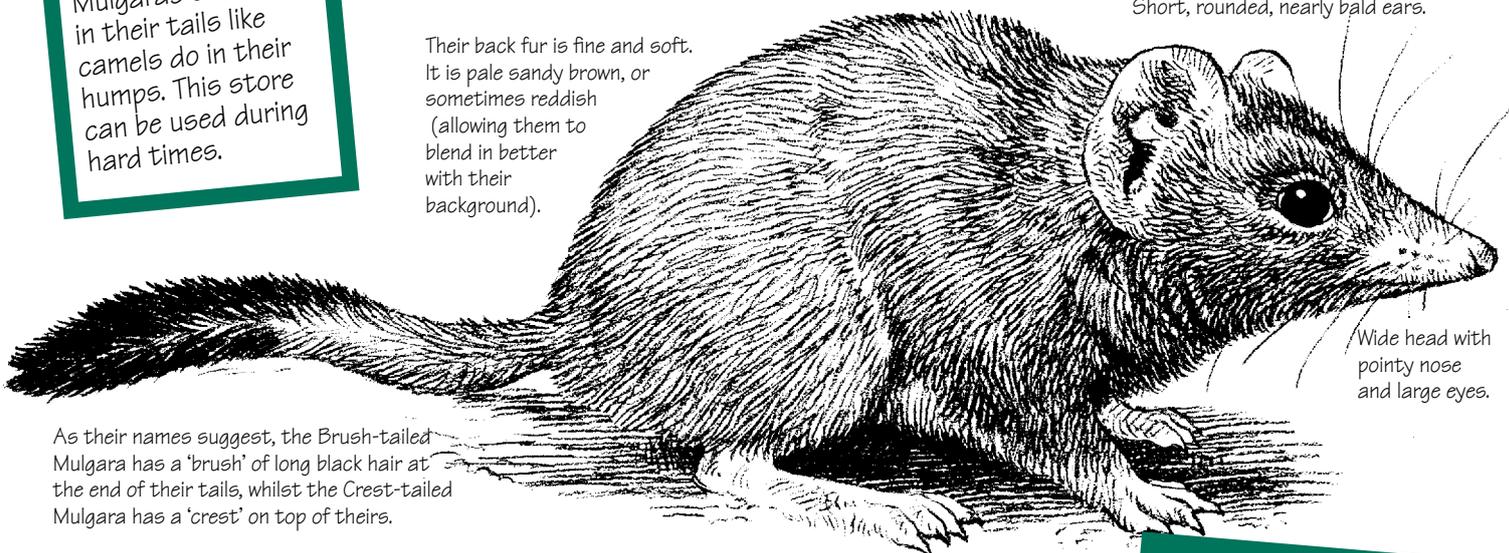
The Crest-tailed Mulgara has a body length of about 18cm (not including the tail). They weigh about 200g.

The Brush-tailed Mulgara is smaller at about 15cm. They weigh over 100g.

Their back fur is fine and soft. It is pale sandy brown, or sometimes reddish (allowing them to blend in better with their background).

Short, rounded, nearly bald ears.

Wide head with pointy nose and large eyes.



As their names suggest, the Brush-tailed Mulgara has a 'brush' of long black hair at the end of their tails, whilst the Crest-tailed Mulgara has a 'crest' on top of theirs.

Both species have a short tail which is fatter near their bums, narrowing quickly to a point, a bit like a carrot.

Their bellies are greyish-white in colour.

### Where can you see a mulgara?

You have to be pretty lucky to see a mulgara in the wild! For you will only find them in one National Park in the NT, Uluru-Kata Tjuta. If you are adventurous and travel in the Western, Simpson or Tanami deserts, you may be fortunate enough to spot one. A safer bet is to visit their display at the Desert Wildlife Park, in Alice Springs.

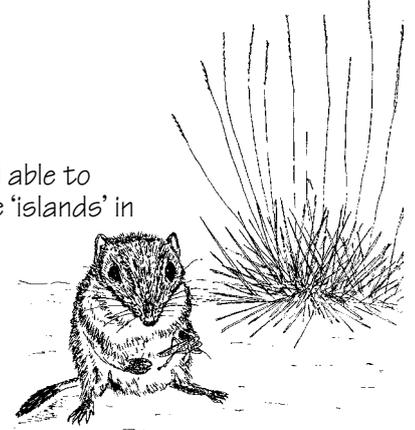
### Science Snippet

Mulgaras belong to a group scientists call Dasyurids. These are the carnivorous marsupials. Others you may know include the quolls and the Tasmanian Devil.

# 'My island home'

Mulgaras live in areas of 'good' country, where the soil and plants are relatively rich and able to support the creepy crawlies that they love to eat. These 'good' country patches are like 'islands' in a sandy 'sea' of less fertile desert.

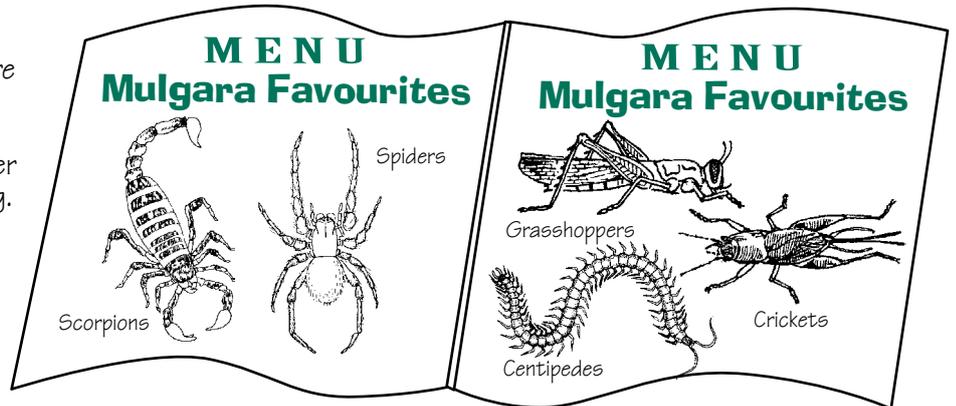
Their maze-like burrows are dug about half a metre deep. There may be more than one entrance. They escape to their burrows during the heat of the day, before emerging in the cool of the night to hunt. Sometimes, on cold winter mornings they may come out during the daytime to 'sunbake' and defrost! Their toilet is outside, where they poo under a nearby bush!



When eating, or if frightened or disturbed, mulgaras will sit upright on their hind legs before bounding away.

## Fine 'skin-free' dining

Mulgaras are nocturnal hunters. Their favourite foods are invertebrates. They are ferocious for one so small, not afraid to tackle larger foods like lizards, small mice or rats and other small marsupials. Larger prey is first skilfully skinned, before eating.



### Science Snippet

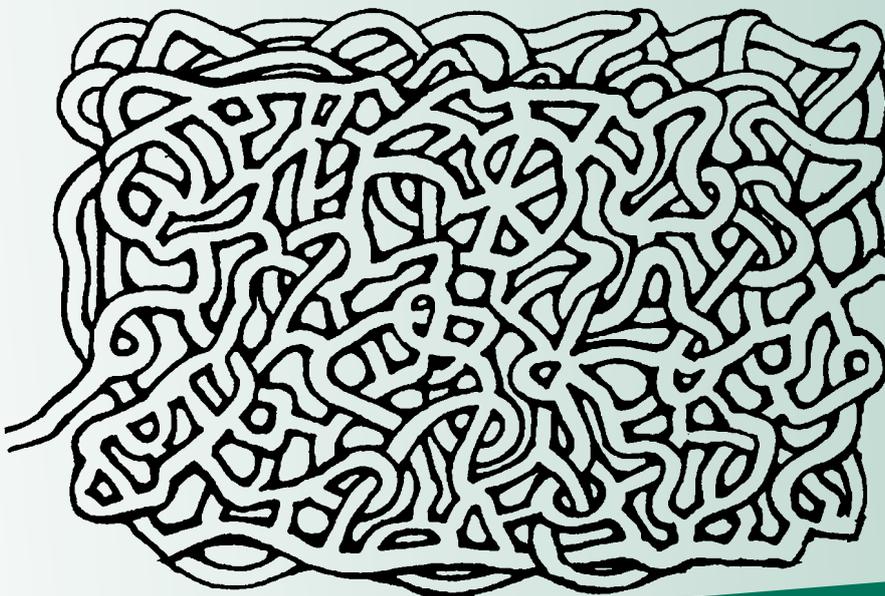
Like most desert marsupials of Australia, mulgaras have very concentrated pee which helps them to conserve water. In fact, they can mostly live without drinking, getting all their water needs from their food.

## Ferals & Fire threats

Museum records tell us that mulgaras were once relatively common and much more widespread. Now they have disappeared from many places where they once lived and only live in small, isolated patches. We are not sure just what has caused this decline. However, scientists think that the story is probably much the same for many of our native desert mammals. Introduced grazing animals, like rabbits, camels and cattle eat the grasses where they live or trample their burrows. Introduced predators, like foxes and cats eat them. In addition, changes in fire, which burns and destroys their homes, has no doubt played a role. More research and monitoring are necessary to help us find some answers.

## Mulgara Maze

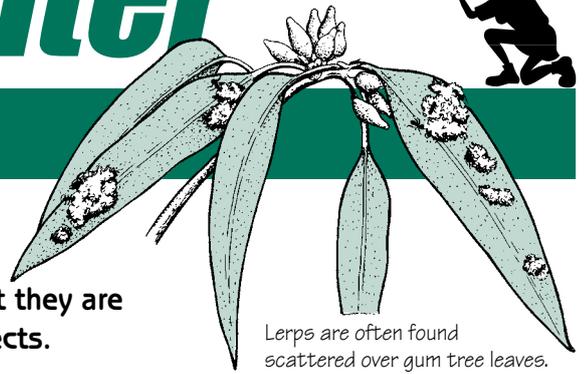
Help our little mulgara escape the clutches of the approaching feral cat. Guide him through the desert sands to his burrow beneath some Spinifex grass.



# Urban Encounter

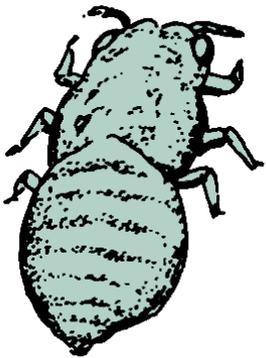
## Luscious Lerps!

When visiting parks, gardens or even roadsides, you may have noticed that some trees have lots of strange growths on their leaves or branches. They look like fuzzy pieces of cotton wool, but they are actually protective coverings, called lerps, which protect lerp insects.



Lerps are often found scattered over gum tree leaves.

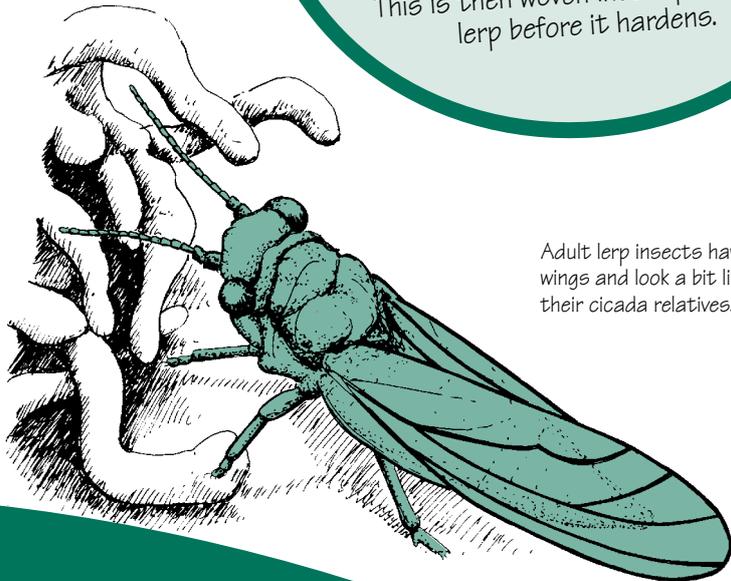
## It's a lerp's life



A lerp nymph. They are oval, flattened, and don't have wings.

Mothers first lay their eggs on the leaves. When these hatch, each baby insect (called a nymph) starts to build its own lerp. They will stay in this until they become adults. So it doesn't get squashed as it grows, each nymph adds more fluid to the lerp, so that it gets bigger as well!

Some adult lerp insects are even known to make sounds! They do this by rubbing one rough surface against another. This is called 'stridulation'. Grasshoppers and crickets communicate in the same way.



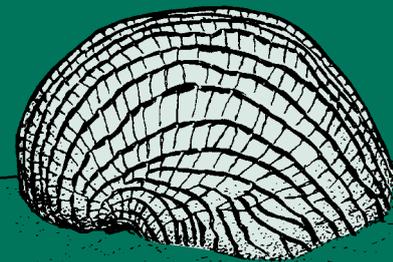
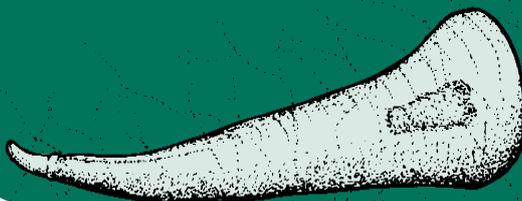
Adult lerp insects have wings and look a bit like their cicada relatives.

## S'lerp'ing up sap

Lerp insects belong to a group of sap-suckers that Scientists called Psyllids (pronounced sill-ids). They insert their mouthparts into plants and suck up the sugar-rich sap. Any leftovers are excreted as a rich, sweet fluid. This is then woven into a protective lerp before it hardens.

## A lot of lerps

There are over 300 species of lerp insects in Australia that we know about. There are many more that have been found but have not yet been named or described. Different species make different lerp covers. Some look like shells, others look like scales, cones, horns, fans and some even look like beautiful woven baskets. They are usually seen on native Australian plants like gum trees and wattles. Many lerp insects are fussy about which trees they live on. Some only live on one particular kind of tree.



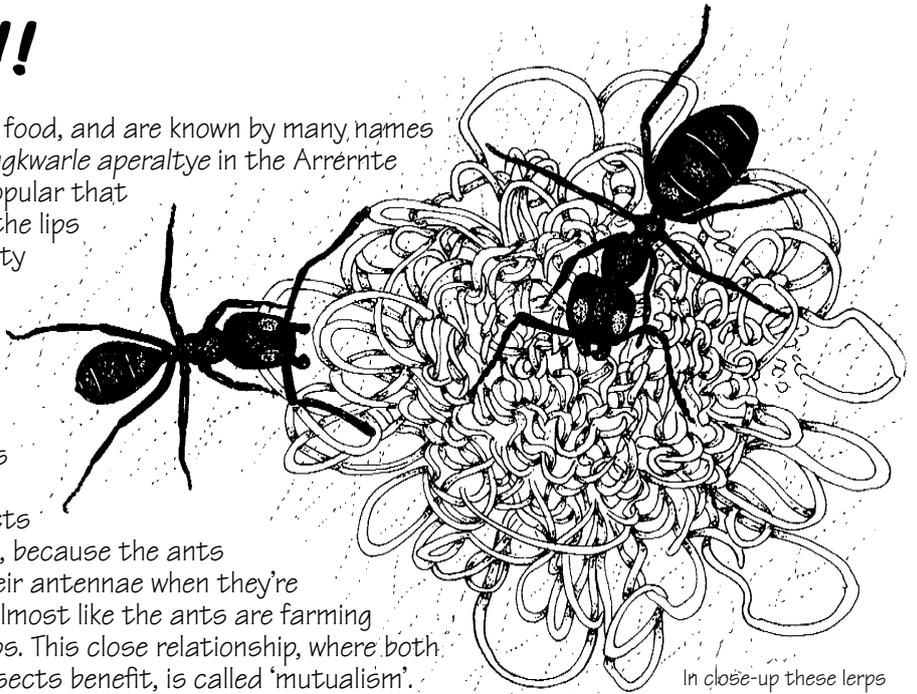
Some more examples of lerp protective covers.

# Sweet success!!

Sugary lerps are a traditional Aboriginal bush food, and are known by many names in different parts of Australia. They're called *ngkwarle aperalye* in the Arrernte languages of Central Australia. They are so popular that twigs with lerps on them are brushed across the lips and tongue, regardless of injury. If there's plenty of lerps, they may be cleaned and rolled into balls to eat later. Or they may be put into water to make a refreshing drink.

Ants have also 'got in on the act'. Many species look after lerp insects and protect them from predators. In exchange, lerp insects excrete a sweet reward (called honeydew), for the ants to feed on. Sometimes the lerp insects

know exactly when to do this, because the ants tap them with their antennae when they're ready! It is almost like the ants are farming the lerps. This close relationship, where both insects benefit, is called 'mutualism'.



In close-up these lerps look like they're covered in noodles!



Ants tend lerp insects in exchange for honeydew. Both creatures benefit from this arrangement.

**Did You Know?**  
The word 'lerp' actually comes from *lerep*, in the Wemba Wemba Aboriginal language of northern Victoria and southern New South Wales.

## Lerp lovers

Psyllid insects and their lerp houses also make a great snack for another group of animals. Complete this puzzle and place the leftover letters in the spaces provided to reveal the name of these lerp lovers.

- |            |            |        |
|------------|------------|--------|
| Aboriginal | Insect     | Road   |
| Adults     | Lay        | Sap    |
| Ants       | Leaf       | Sugary |
| Ball       | Lerp       | Sweet  |
| Egg        | Mutualism  | Tree   |
| Food       | Nymph      | Wings  |
| Growth     | Predators  | Woven  |
| Honeydew   | Protection |        |

H	W	L	S	F	H	Y	B	M	E	I
O	I	A	W	A	T	R	R	U	G	D
N	N	N	E	E	W	A	D	T	G	W
E	G	I	E	L	O	G	O	U	P	O
Y	S	G	T	A	R	U	O	A	A	V
D	P	I	S	N	G	S	F	L	S	E
E	P	R	O	T	E	C	T	I	O	N
W	T	O	E	S	T	C	E	S	N	I
Y	R	B	A	L	L	N	Y	M	P	H
A	E	A	S	T	L	U	D	A	O	R
L	E	P	R	E	D	A	T	O	R	S

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# Plant Profile

## Well Travelled Tamarind

The Tamarind tree, *Tamarindus indica*, has been extremely popular with humans for thousands of years. We have spread it from one end of the world to the other. Scientists aren't even sure where it originally came from! Its arrival in Australia can be traced back to some of the earliest visitors to our northern shores.

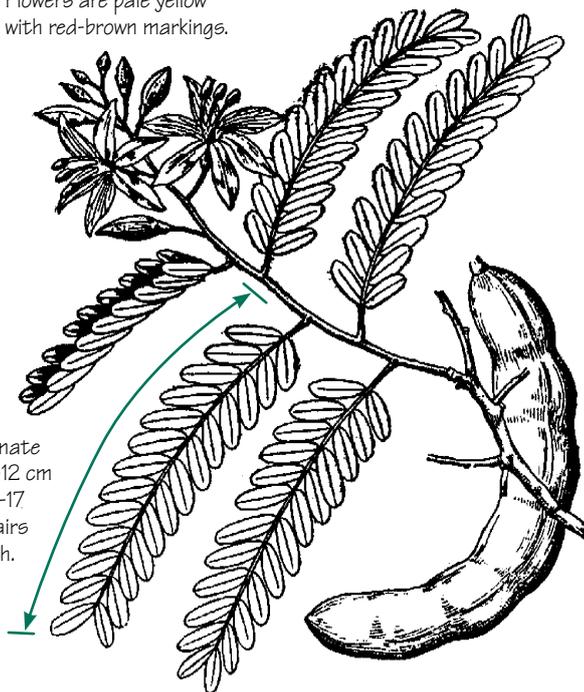


### Tamarinds at a glance



Tamarinds are a good-looking tree. They have a thick, rounded, crown that stays covered in dark green leaves all year round. They grow to about 25 metres tall.

Flowers are pale yellow with red-brown markings.



This is one pinnate leaf that is 6-12 cm long. It has 10-17 little leaflet pairs down its length.

Seed capsules are 6-9 cm long. They contain several hard, shiny brown seeds surrounded by reddish-brown pulp.

### Shady origins

Although the species name, *indica*, suggests that Tamarinds come from India, most scientists disagree. They are probably originally from tropical Africa. Now they occur in the wild and in gardens all over the world. This is because humans have deliberately taken Tamarinds with them as they travelled and explored. For example, evidence suggests that the ancient Egyptians and the Greeks of the 4th Century both knew the fruit well.

### Terrifically useful Tamarind trees

Tamarinds are very useful plants. No wonder humans have planted them all over the world! The fruit is the most important part. It can be both sweet and sour, as it contains both sugars and acids. It is an important ingredient in preserves, jams, lollies and many dishes and drinks, from Egypt to India, and Asia to the Americas. The acids in the pulp have even seen it used in Asia as a brass polish!

The wood is a bold red colour and is very strong. It makes great furniture and wood flooring. Many parts of the plant also have bush medicine uses. For example, in the Philippines, the leaves have been used in herbal tea for reducing malaria fever. Some Aboriginal people also believe it is useful for treating coughs, colds and diarrhoea.

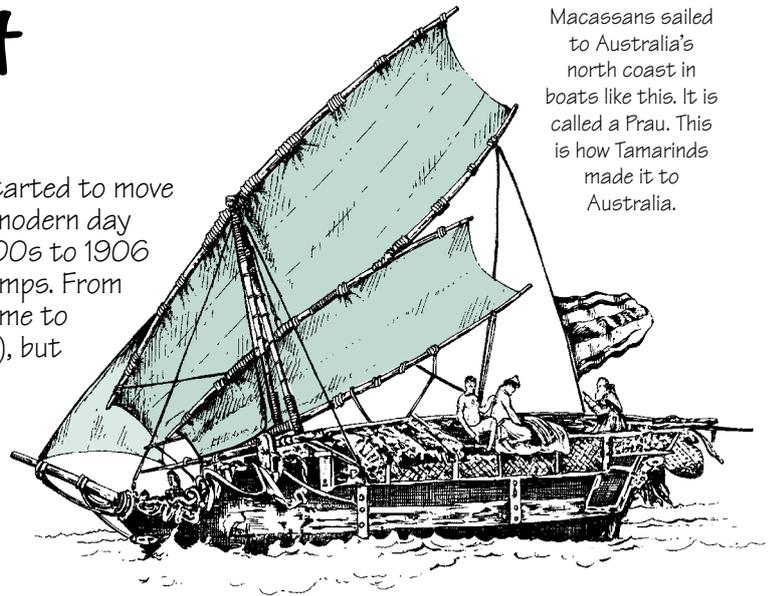
Last but not least, it's a very good-looking tree that provides great shade. People plant them in parks, gardens, behind beaches, and along roadsides.

# Journey to the Great Southern Land

Aboriginal people arrived in Australia well before humans started to move Tamarinds around the world. It was the Macassans, from modern day Indonesia who brought us the Tamarind. From the early 1600s to 1906 they sailed to our northern shores and set up seasonal camps. From here they would collect and process goods to take back home to use or sell. The most prized item was Trepanng, (or sea slug), but they also collected turtle shell, pearls and timber.

The Macassans either deliberately or accidentally left Tamarind seeds at many of these camps. The tree now grows wild at many spots along the WA and NT coast. More recently, people have planted them all over the place.

Macassans sailed to Australia's north coast in boats like this. It is called a Prau. This is how Tamarinds made it to Australia.



## Did You Know?

Tamarind fruit is an important ingredient of two traditional English sauces; HP Sauce and Worcestershire sauce. The English came across Tamarinds during their colonial days in India. Have a look for these sauces in your pantry or at the grocery store.

## Native or Feral?

Some people consider Tamarinds native to Australia, as they were here before Europeans arrived. However, scientists generally classify them as introduced, because people did bring them here, even if it was a long time ago.

Other people would even argue that they are weeds. While many introduced plants do become weeds that either harm the environment, or cost farmers lots of money to control, Tamarinds don't. So far, they seem to be acting like perfect guests!

## When Creatures Come to Stay

There is a big word that scientists often use to describe plants or animals that were introduced by man, and now live by themselves in the wild. Complete this quiz and this name will be revealed in the boxes.

- The Tamarind scientific name suggests they come from what country?
- The name of the people that brought Tamarinds to Australia.
- The special name for the Tamarind leaf shape.
- Tamarind wood makes great what?
- Tamarinds probably originally come from what continent?
- Tamarind fruit has been used to polish what metal?
- The fleshy part of the fruit.
- The scientific species name of the Tamarind.
- Macassans are from which modern day country?
- What part of the Tamarind is yellow with red-brown markings?
- What do Tamarinds grow from?

	1	<input type="text"/>
2		<input type="text"/>
3	P	<input type="text"/>
4	F	<input type="text"/>
	5	<input type="text"/>
	6	<input type="text"/>
	7	P <input type="text"/>
	8	<input type="text"/>
9		<input type="text"/>
	10	<input type="text"/>
	11	S <input type="text"/>

# Discovering Outdoors

## Wattle Watching

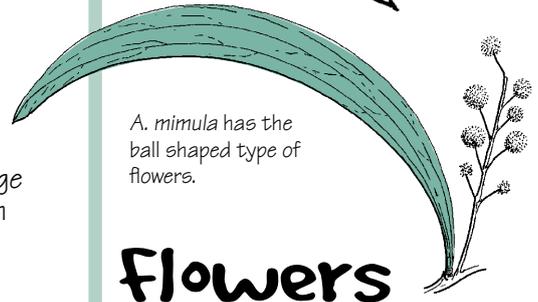
The wattles (or Acacias) are one of Australia's most common and interesting group of plants. With nearly 1000 species in Australia, and over 200 in the Territory alone, most Australians would either have them in their backyard, or in nearby parkland. So let's get out there and look at some of their amazing features, and even grow some from seed.

### Wattle you need to find an Acacia?

Wattles are easy to spot. Some species are tiny shrubs, others are huge trees, but they usually have the following features. So arm yourself with this information, and get out there and have a look!



Witchetty Bush, *Acacia kempeana*, has the finger shaped type of flowers.



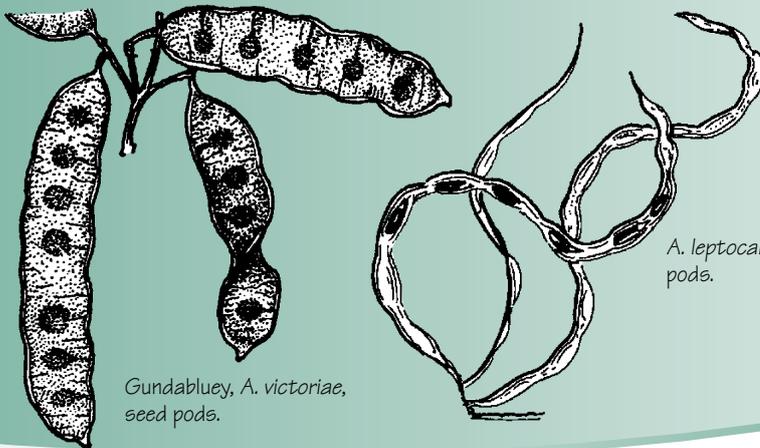
*A. mimula* has the ball shaped type of flowers.

### Flowers

The flowers are usually quite small and a shade of golden yellow or cream in colour. They are either ball shaped, or finger shaped.

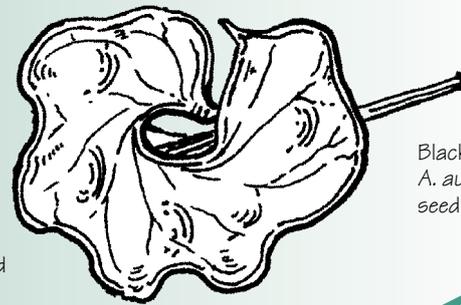
### Like peas in a pod

The seedpods are quite woody, and they contain the small, tough, usually black seeds. They come in all shapes and sizes, but they all have a typical 'peas in a pod' layout.



Gundabluey, *A. victoriae*, seed pods.

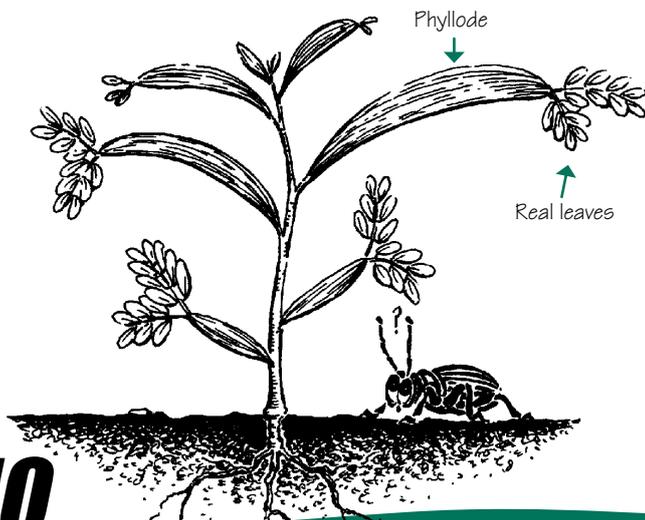
*A. leptocarpa* seed pods.



Black Wattle, *A. auriculiformis*, seed pod.

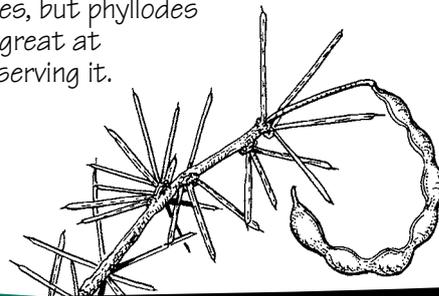
### Fake leaves!

Most Australian Acacias only have real leaves when they are tiny seedlings. After that they rely on their special leaf stems (phyllodes) to act as leaves. Phyllodes can be flattened to look like normal leaves, or they might look like needles. Either way, they work better than real leaves in hot, dry conditions (which is most of Australia!). A plant loses lots of water through its leaves, but phyllodes are great at conserving it.



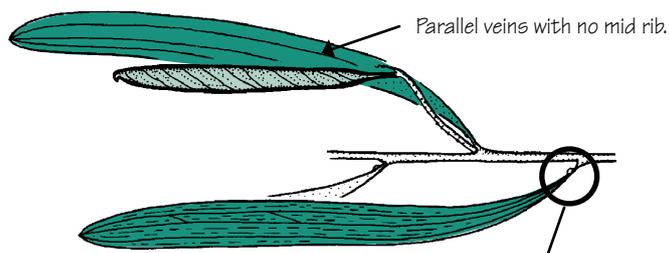
Phyllode

Real leaves



The phyllodes on this Dead Finish Wattle, *A. tetragonophylla*, are needle-like, and actually very sharp!

Here are two clues when looking for fake leaves. Many phyllodes have an obvious nectar gland at the base of them. They often give off nectar for insects and birds. The other telltale sign is that phyllodes lack a central vein. They tend to have numerous veins running side by side down their length.



Many phyllodes will have a lump of a nectar gland somewhere here, like on this *Acacia oligoneura*.

## Wattle you do now you've found one?

Hopefully you've found a local wattle by now, so let's collect some seeds and grow them. Wattle seeds may have to survive fire, baking hot droughts, or passing through the guts of a bird, so they need a bit of tough love before they'll actually sprout.

1. The easiest way to do this is to put them into a jar of boiling water and leave them soaking overnight.
2. Discard the duds that are floating, and place the others in a tray of potting mix or seed raising mix.
3. Cover them with a very thin layer of mix, and place the tray in a spot that gets filtered sunlight.
4. Water it every morning.



They should sprout after a couple of weeks. The seedling will look very different from the parent plant, because they'll have real leaves, not 'fake' phyllodes. Once they are 3-4 cm tall, you can use a spoon to scoop them out of the tray (be careful of the roots) and place them in a larger pot. After 3 or 4 months, you could even plant them in your garden, but ask mum or dad first.

## A patriotic plant

Most Australian sporting teams wear green and gold uniforms. This is due to the colours of our National floral emblem, the Golden Wattle, *Acacia pycnantha*. September 1 is now 'National Wattle Day' each year.



The Golden Wattle, *A. pycnantha*, from eastern Australia.

# Pollinator puzzle

Insects are probably the most important animals for spreading Acacia pollen from one flower to another (pollination). Birds are also good at it, and one group of them is particularly important. Complete this puzzle by changing one letter at a time to come up with a word that fits. Then rearrange the 11 highlighted letters in the numbered boxes below to reveal the name of this group of birds.

Heat to 100°C	B	O	I	L
Dirt	S <sup>11</sup>	O	I	L
Spiral shape				
Metal money				
Lamb chop				3
Lend		2		
Groan				
Nasty		4		
Bend over				
Drip out			7	
Birds jaw				
Panda		6		
Ray of light				
Group of players	8			
Rip apart				10
52 weeks	5			
Listen	1			
Expensive		9		



1 2 3 4 5 6 7 8 9 10 11

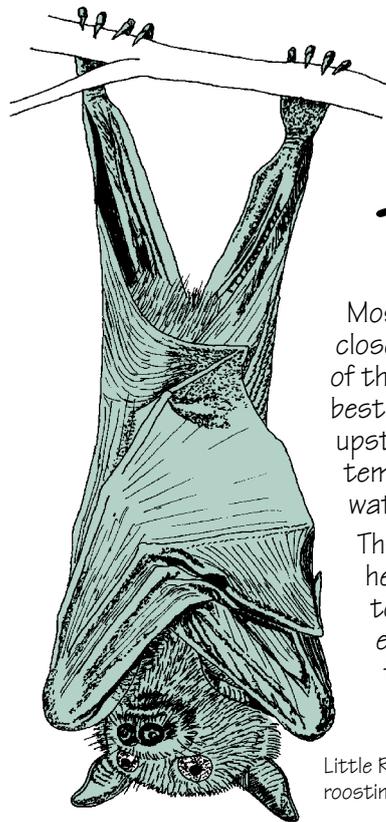
# Discover a Territory Park

## Tjuwaliyn (Douglas) Hot Springs Park

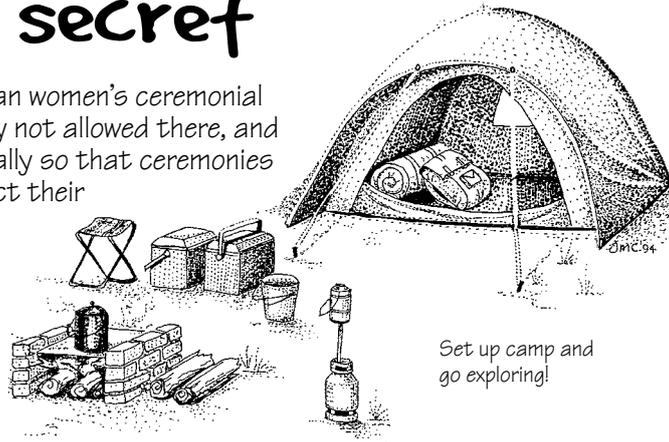
Tjuwaliyn (Douglas) Hot Springs Park protects part of the Douglas River. The Park is owned by the Wagiman people who jointly manage it with the Parks and Wildlife Service of the Northern Territory. It is a very popular spot to have a swim in one of the rivers thermal springs, and it also contains several sacred sites.

### Sacred and secret

The area is an important Wagiman women's ceremonial place. Wagiman men are generally not allowed there, and the park can be closed occasionally so that ceremonies can be carried out. Please respect their sacred places during your stay.



Little Red Flying Foxes can be seen roosting in the big trees along the river.



Set up camp and go exploring!

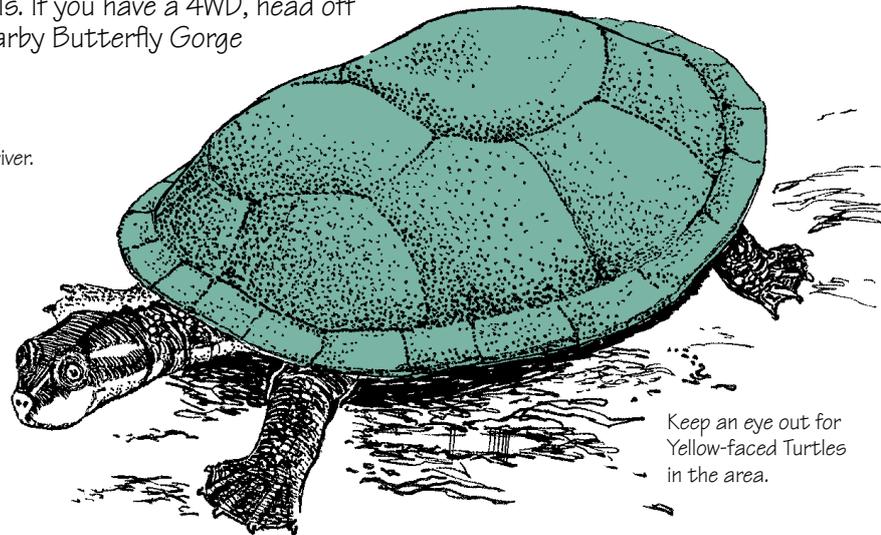
### That's hot!

Most of the actual hot spring is a sacred site and is closed to public access. Besides, the water coming out of the spring can be dangerously hot; 60°C or more! The best places to swim are a couple of hundred metres upstream or downstream, where the water is a nice warm temperature. Always be sure that an adult tests the water temperature before entering.

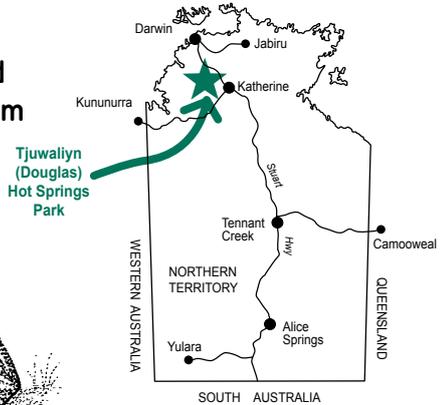
The Park is a great place to go exploring. You can set up camp (camping fees apply) and head off on day trips to see what you can discover. Most of the riverbed is shallow enough to walk along. The water is so clear that you can see the sandy bottom all the way, even in the deeper pools. If you have a 4WD, head off for a days visit to nearby Butterfly Gorge

### Getting there

The Park is located about 130 km from Katherine and 200 km from Darwin. The last 7 km is dirt road, but it is suitable for cars. The Park is closed during the wet season (approximately December to April) and can be closed to swimming at other times due to high bacteria levels in the water. Check with Parks and Wildlife before you head out there.



Keep an eye out for Yellow-faced Turtles in the area.



### Puzzle Answers

#### Creature Feature:

Charlie the buffalo from the movie Crocodile Dundee.

#### Urban Encounter:

Birds

#### Plant Profile:

Naturalised

#### Discovering Outdoors:

Honeyeaters

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