

Junior Ranger

Review

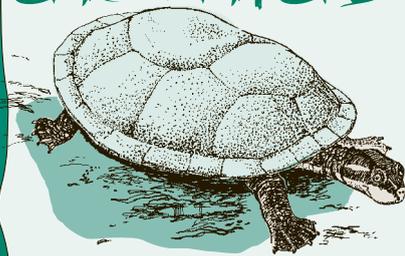
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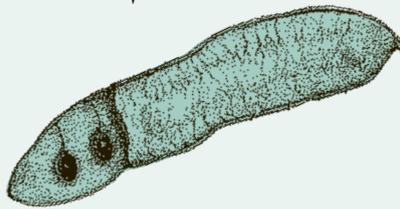


URBAN encounters



Freshwater Turtle

The Acacia peuce



on the

BRINK

PLANT profile



Red Bush Apple

CREATURE feature

The Magpie Goose

The Magpie Goose is one of our most conspicuous wetland birds. They are large, boldly coloured and noisy, and they can gather in enormous flocks.

A Goose by Name, not by Nature

The Magpie Goose *Anseranas semipalmata* is not closely related to other geese or ducks. They have hooked bills, relatively long legs and their feet have claws and a strong hind toe. This hind toe enables them to be the only night roosting goose in the world.

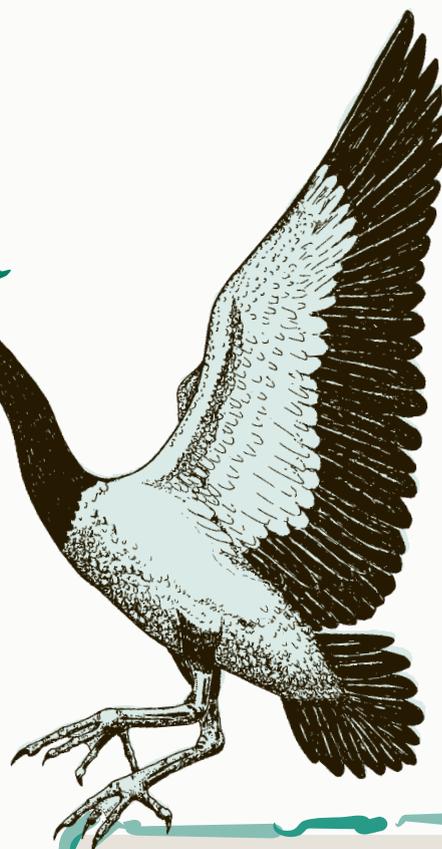
All other ducks and geese molt all of their flight feathers after breeding, but Magpie Geese lose them slowly, and therefore retain the ability to fly all year around. The prominent bump on their head gets bigger with age, but they get larger on male birds.

They range across North Australia from Broome to Brisbane, as well as parts of Indonesia and New Guinea. They used to be common in Southern Australia, but a combination of

extensive agriculture and the destruction of wetlands means they rarely visit there now.

Birds of a feather flock together

Between February and April, breeding colonies of up to 30,000 birds will congregate in our Top End wetlands. The majority will form into trios of one lucky male and two females, although they will also form pairs. These family groups are life long relationships. Every year they all help to build a new nest which both females will use. These nests will contain up to 16 eggs that take about 25 days to hatch. As far as birds go, male Magpie Geese are pretty good dads. All three parents will take turns incubating and protecting the eggs. A day or two after hatching, they lead the young off to a swamp to feed.



G'day from Ranger Bill

Hi, again, and welcome to the second issue of the revamped Junior Ranger Review for 2004. I hope you enjoyed the special first edition of the new-look Review and I'm sure you will find the information, puzzles and project page in this issue just as enjoyable.

All Junior Ranger programs throughout the Territory are now well underway. I hope all our members throughout the Territory have been enjoying their time in the bush with our energetic Junior Ranger Coordinators and I trust everyone is enjoying the fun activities.

Don't forget to drop in on the Parks & Wildlife show displays throughout June and July. Come and say hello.

Ranger Bill



*Protein packs: bulbs of native grasses

Fatten up while the going's good

With help from their parents, the hatchlings mainly eat the seed of Wild Rice *Oryza meridionalis*. This seed is so packed with energy and protein that the young geese grow at an astonishing rate. A gosling can multiply its weight by 20 times in its first 7 weeks. Imagine if we did that. A 3 kg baby would weigh 60 kg after 7 weeks!

As the swamps start to dry up, the Magpie Geese use their hooked bills to dig up the bulbs of the Water Chestnut *Eleocharis dulcis*. These are also very nutritious, and they allow the geese to fatten up before the end of the dry season when food becomes scarce.

Stewed Goose

Aboriginal people have been hunting Magpie Geese for thousands of years, and these days many people hunt them for food. The Parks and Wildlife Service manage this hunt to ensure that we still have plenty of Magpie Geese left. This is achieved by controlling things like the length of the hunting season and the number of geese that a person is allowed to take. It is determined each season according to how many geese there are. If the last breeding season was extremely successful, more hunting can be allowed. If it was a bad year for breeding, then little or no hunting will be allowed.



Goosey words

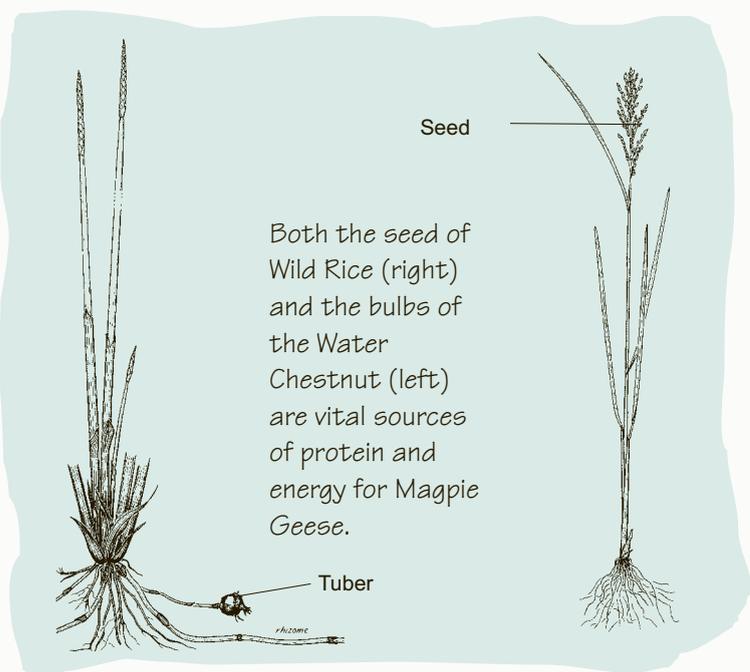
Can you find these words in the puzzle? They go in all directions, even backwards! Starting from the top, take the first 10 letters that are left over and place them in the statement below to discover what other characteristic makes Magpie Geese different to other ducks and geese.

WORD FIND

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

- | | | |
|-----------|---------|------------|
| BREEDING | GEESE | NUTRITIOUS |
| BULBS | GOSLING | PROTEIN |
| CHESTNUT | GRASS | RAINFALL |
| DRYSEASON | HATCH | RICE |
| EGG | HONKING | SWAMP |
| FEATHERS | HUNTING | WATERFOWL |
| FOOD | NEST | WETLANDS |

The Magpie Goose's scientific name, *semipalmata* means semi (or partially)



Both the seed of Wild Rice (right) and the bulbs of the Water Chestnut (left) are vital sources of protein and energy for Magpie Geese.



On the BRINK

Acacia peuce: lonely old giants of the desert

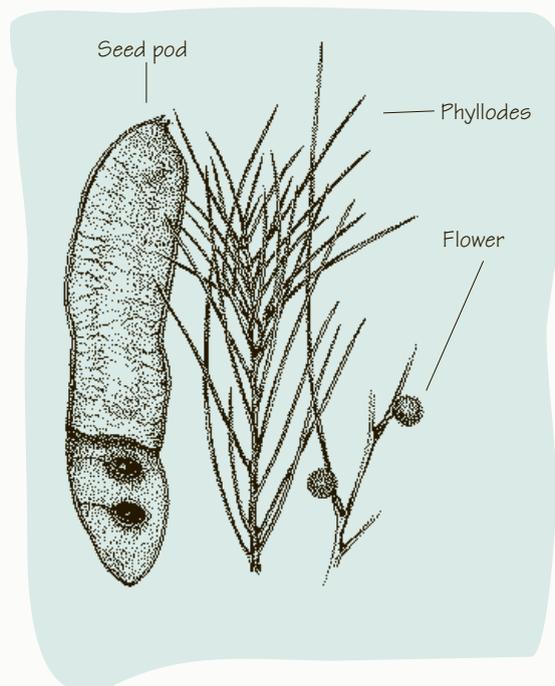
Acacia peuce, or Waddy-wood is one of the rarest and most striking trees of the Australian arid zone. It only grows in one location in the Northern Territory, on a stony wind swept plain in one of the driest places in Australia.

Acacia peuce is a member of the wattle family. Most wattles only live a few years but these wonders of the wattle world may live for up to 700 years! They're also pretty big for a wattle. Growing to a height of 18 metres, they tower over their arid surrounding landscape.

Tall poppy syndrome?

In the early 1900s many of these big old trees were cut down to build stockyards and shelters, even though the wood is so hard that it's almost impossible to drive a nail into it! Rabbits used to be a big problem. For decades they ate most of the young seedlings, but thankfully there has been a big effort to control rabbits. More recently, cattle would trample seedlings, erode the soil and damage larger trees. Fences now protect most of the NT population.

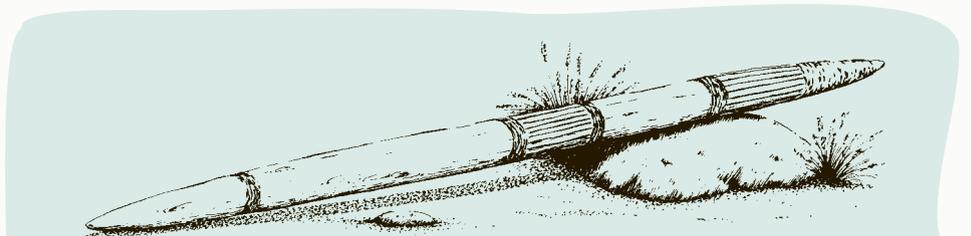
These days, lightning strikes are one of the biggest dangers the trees face. They are the tallest thing for miles around and have proved an easy target for lightning. Parks and Wildlife are currently looking at ways of protecting them from these deadly bolts from the blue.



Did you know that Australia's national flower is also a wattle?

It's the Golden Wattle - *Acacia pycnantha*.

The name *peuce* comes from the Latin word 'peuke' which means 'pine-like'. This refers to the trees needle-like 'leaves' or phyllodes. These small spiky phyllodes stop the plant from losing too much water and help it to survive in an area that only averages 150mm of rain a year.

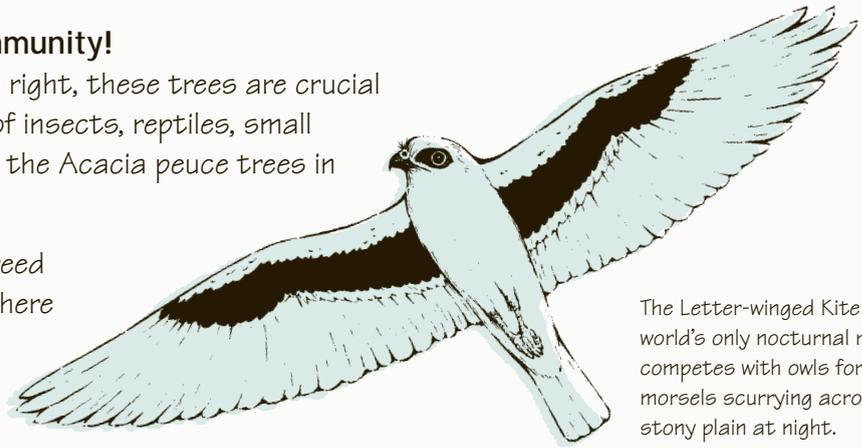


The wood of these old giants is extremely dense. In the past Aboriginal people made waddies (fighting clubs) from the incredibly hard wood. This gives us its common name, Waddy-wood.

An upstanding member of the community!

As well as being significant in their own right, these trees are crucial to the survival of a unique community of insects, reptiles, small mammals and birds. They all depend on the *Acacia peuce* trees in some way.

Letter-winged Kites *Elanus scriptus* breed prolifically here in good seasons when there are plagues of Plains Rats *Pseudomys australis*. The kite population crashes when the good times end.



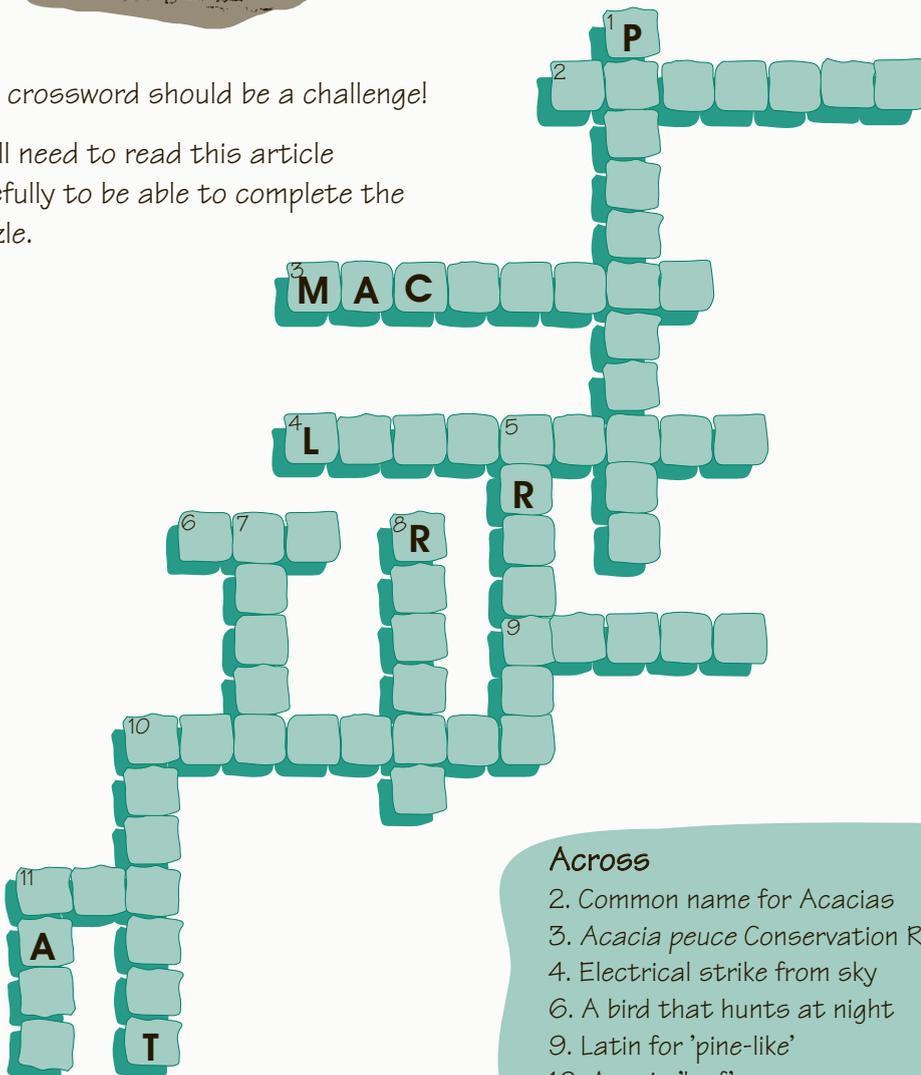
The Letter-winged Kite is the world's only nocturnal raptor. It competes with owls for tasty morsels scurrying across the stony plain at night.

The seed-eating Plains Rat live in large communal burrows. Their numbers increase dramatically after good rains.



This crossword should be a challenge!

You'll need to read this article carefully to be able to complete the puzzle.



Across

2. Common name for Acacias
3. *Acacia peuce* Conservation Reserve
4. Electrical strike from sky
6. A bird that hunts at night
9. Latin for 'pine-like'
10. *Acacia* 'leaf'
11. A rodent

Down

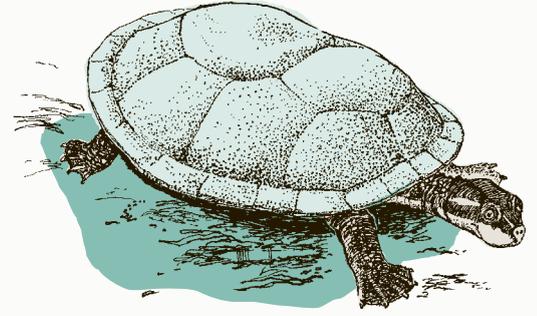
1. Sheep or cattle farmer
5. Stand on or walk all over
7. Aboriginal fighting club
8. Bird of prey
10. Look after or care for
11. Uncommon or scarce



There are only three populations of *Acacia peuce* in Australia. The NT population is the smallest of them, but it is protected within the Mac Clark Conservation Reserve. Mac Clark was a former pastoralist whose interest in the trees led to the declaration of the Reserve.

URBAN encounters

Freshwater Turtles

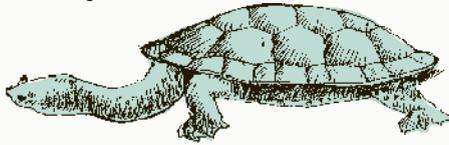


Australia does not have any tortoises. Tortoises live on the land and have club-like feet, making them slow moving and not very good in the water. Instead we have freshwater turtles which are a common sight in our rivers, creeks and billabongs of the Top End. These shy and secretive animals are viewed as clumsy and cumbersome on land, yet having webbed feet make them excellent swimmers.

Homes on their back

The most obvious feature of turtles is their shell. This exists in two main parts, the carapace on top and the plastron below. The shell is made of bony plates that are joined by toughened skin and these plates carry many blood vessels which help to warm the turtle when basking in the sun. These plates are also very important to help scientists to identify the different species.

Long-necked turtle



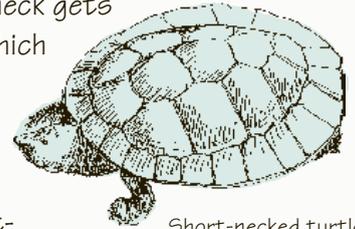
The long and the short of it!

There are two main types of turtle that you may encounter in waterways close to Top End towns. A good place to get a look is Howard Springs Nature Park. One is the Northern Long-necked Turtle *Chelodonia rugosa*. The Long-neck gets

its name from the obvious snake-like neck which is useful in quickly ambushing prey.

The other is the Short-necked Turtle

Emydura spp. Turtles may be toothless, having a horned beak instead, but the Short-necked species in particular can inflict a painful bite with their powerful jaws. All freshwater turtles have excellent eyesight and hearing and the slightest movement whilst basking will send them scurrying into the water.



Short-necked turtle

Did you know....

Fresh-water Turtles cannot pull their heads into their shells. They actually pull them sideways and under for protection.

Some turtles can give off a strong stinky odour when threatened much like a skunk.

Turtles breathe air like we do but can also absorb oxygen through their skin enabling them to stay underwater for long periods.

Turtles have good hearing despite no obvious ears. Instead they have skin covering the tympanum (ear canal) which vibrates sending sound waves to the inner ear.

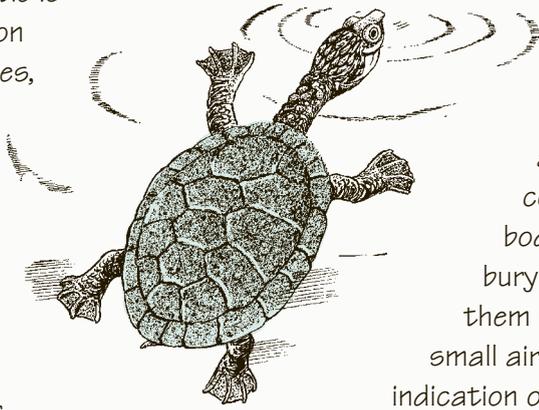
Underwater eggs?

Nesting in the wild occurs from March through to September. All known reptiles including turtles lay their eggs on land. An exception is the Northern Long-necked Turtle where some individuals lay their eggs underwater. The submerged eggs remain dormant (not growing) until the shallow water dries up and then they develop normally.

A clever scientist from the Top End had been told by Aboriginal people about this nesting and proved it by placing an egg-sized transmitter inside a pregnant female turtle. He later followed the signal to find the submerged nest. It is thought that this nesting behaviour may protect the eggs from land predators.

A varied diet.

The Northern Long-necked Turtle is generally carnivorous, feeding on things like prawns, fish, tadpoles, frogs and water insects. The Short-necks eat a similar diet but include more vegetables in the form of plant material.



Good tucker for many.

Turtles are good tucker for predators like crocodiles. Their eggs are delicacies for Water rats, goannas and dingoes as well as feral animals such as dogs and pigs. Hatchlings are tasty morsels for snakes, fish and birds.

Additionally both species, particularly the Long-necks are a favourite traditional food for Aboriginal people. They may be dug up during the dry and even stored in holes in the ground to be eaten later, when collecting is more difficult during the wet season.

A time for rest when all the water is gone.

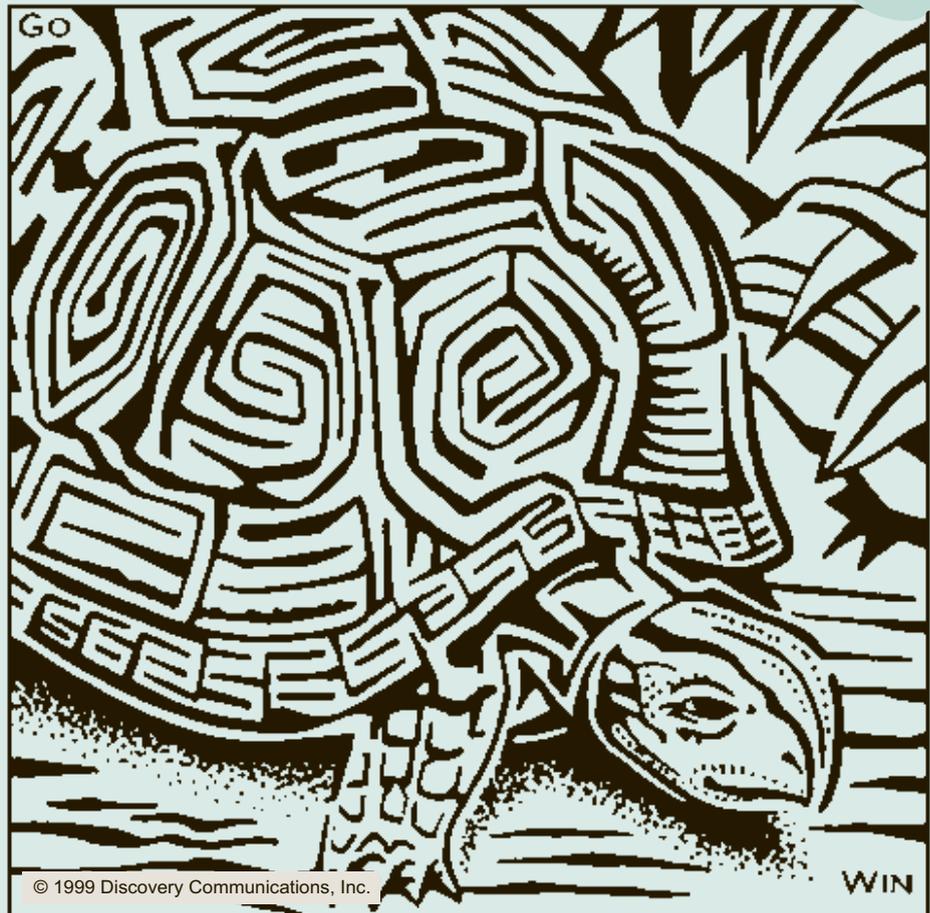
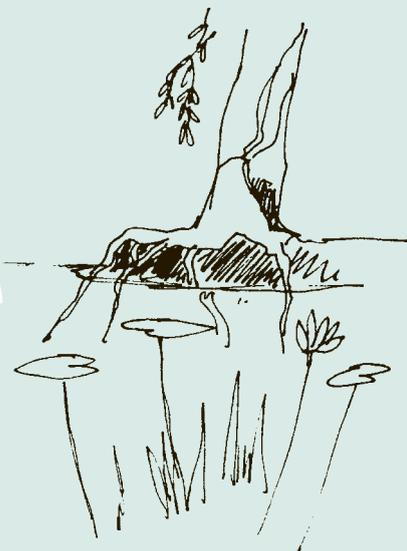
During the dry season when many of our waterways have low or no water, Northern Long-necked Turtles adopt a clever method of survival called aestivation. This is a time of rest and conserving energy in order to maintain body fluids and fats. The turtle may even bury itself in mud which hardens and traps them until new rains of the wet season. A small air-breathing hole may be the only indication of a turtle below sitting out the dry.

For Short-necked Turtles this method is not so successful and they must move to a different more permanent water source.



A-maze-ing turtles!

Have a go and see if you, can navigate your way through, the costal scales on this carapace, slow and steady at a turtle's pace, get it right it's not a race!

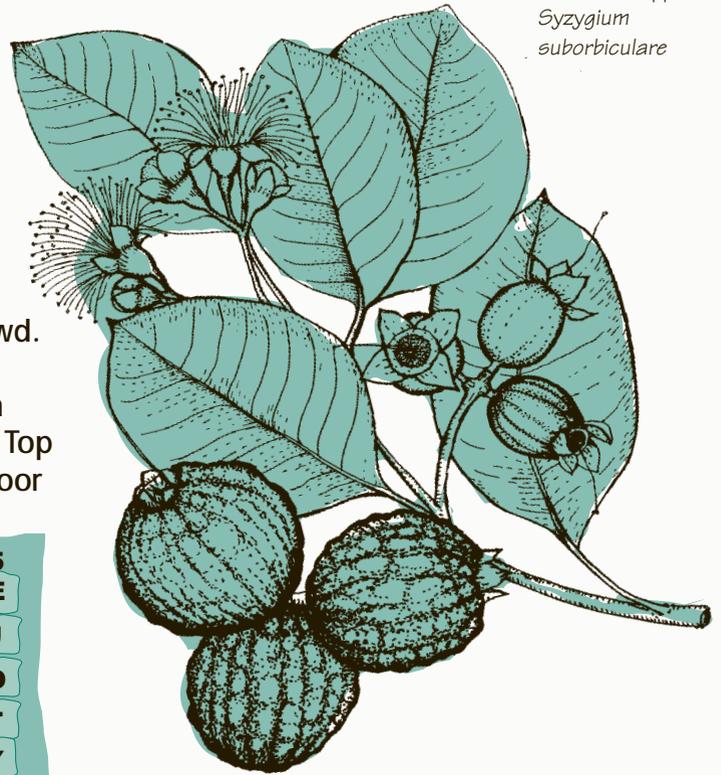


PLANT profile

The *Syzygium* story...

The Top End's *Syzygium*s stand out from the crowd. Some are large and beautiful to look at, and are great shade trees. They produce the well known 'bush tucker' foods known as 'bush apples'. Our Top End species survive fires, floods, termites and poor soils.

Just how have *Syzygium*s managed to survive for so long? Discover the answer by completing the puzzle below.



Red Bush Apple
Syzygium
suborbiculare

*Syzygium*s produce large sweet and fleshy .

These attract wildlife such as flying foxes, possums and birds. These animals help pollinate flowers and spread the seeds. They also have deep to support them when submerged in strong flowing water, and to reach deep underground water during the dry times.

Most larger species live in a fire . This is an area that fires cannot easily burn, such as along rivers and streams and within monsoon forests. Eucalypt forest dwelling

*Syzygium*s are able to grow just like their fire adapted Eucalypt cousins. This regrowth from an underground woody

part of the stem allows *Syzygium*s to recover after they are burnt in hot bush fires.



Syzygium eucalyptoides

This tree is often pounded by strong currents where it lives in river beds. When its regrowth is 'mallee-like' or clumped with many stems, it is because it has regrown many times after losing limbs during floods.

Our own species

The Northern Territory has its own endemic species of *Syzygium*. It is called *Syzygium minutiflorum*. When a species is endemic it isn't found anywhere else in the world.

Long term survivors

So what is a Myrtaceae?

Syzygiums belong to the family of plants called Myrtaceae. Myrtaceae forms a large group of Australian plants which includes the Eucalypts, Bloodwoods and Paperbarks.

Australian Myrtaceae have characteristics which are common to each other. These characteristics include similar flowers, fruit and leaves, even though there have been vast changes in their exact appearance and size.

These changes have allowed the Myrtaceae family to become the dominant upper canopy plants, found in most habitat types in Australia.

A large family

There are nine species of Syzygium found in the Top End. Some have evolved to live in permanently wet habitats, while others can survive amongst Eucalypts (Gum trees) in dry woodland forests. However even

these species are generally never too far from water. Mature trees usually live where there is a shallow water table.

The Top Ends Syzygiums thirst for water has restricted their southern distribution to the land north of Mataranka.

Getting it good

Plant species that live along the banks of rivers and streams are generally protected from the effects of fire. Fires are prevented from taking hold in these forests because the ground is wetter. The denser tree canopy reduces sunlight to the forest floor and limits the growth of grasses which provide fuel for fires.

Species that live in these wet areas often avoid termite attack, because the termites drown.

Wet fruit and dry fruit.

Syzygiums have wet fruit containing moisture. Many other Myrtaceae, such as Eucalypts have dry woody nuts instead.

Did you know...

Syzygiums belong to the Myrtaceae family. If you crush their leaves they release a strong scent. This is one of the identifying characteristics of this family.

How did the Syzygium get its name?

From the Greek word "syzygos" (joined) which refers to its paired leaves. Syzygium is pronounced 'siz-zy-gee-um'.

Only one seed?

Syzygiums produce one large woody seed within each fruit. The seed does not last long. It needs to sprout during the same wet season that it formed. Eucalypts have many flaky seeds in each gum-nut and they can last for years.

Syzygium forte

The White Apple is a forest giant. It can grow to 45m, and its height is often matched by the spread of its branches.

Syzygium suborbiculare

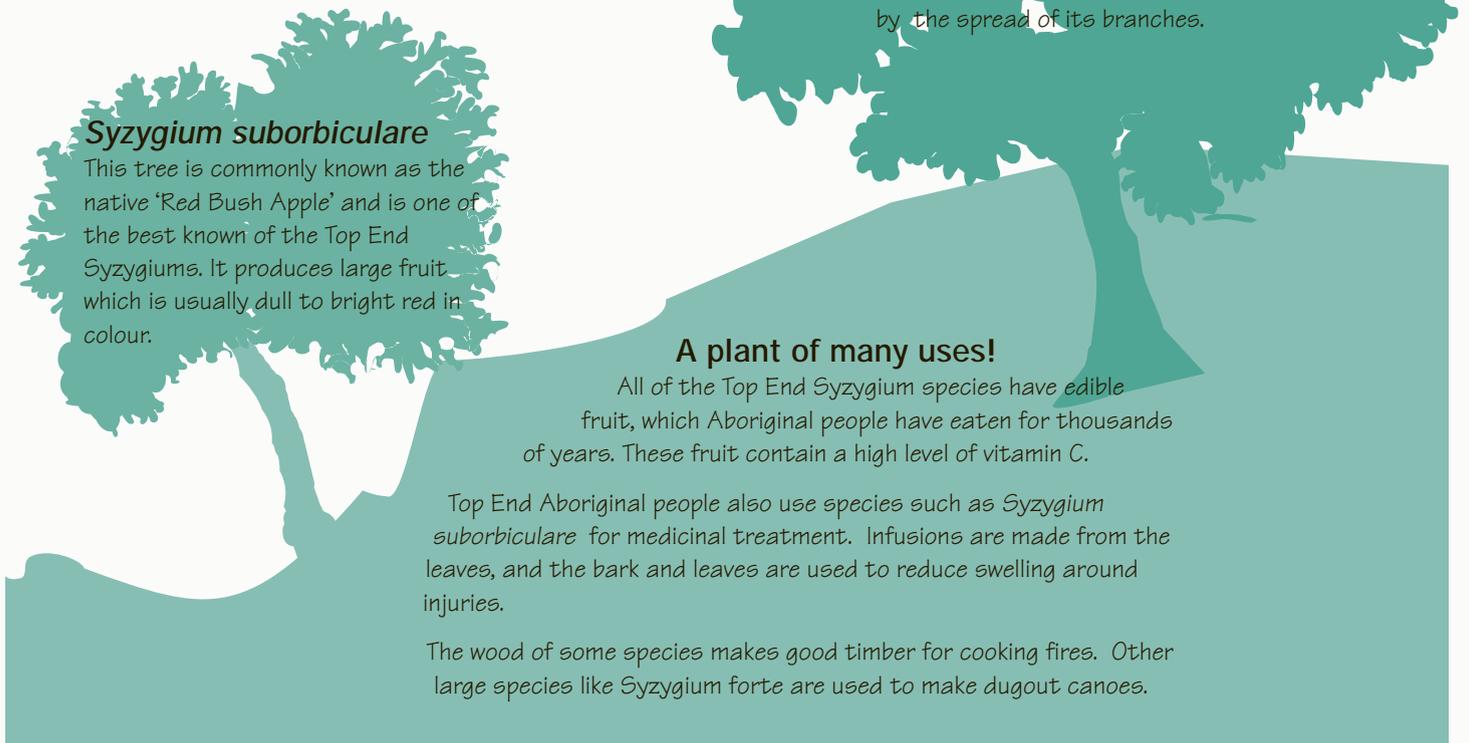
This tree is commonly known as the native 'Red Bush Apple' and is one of the best known of the Top End Syzygiums. It produces large fruit which is usually dull to bright red in colour.

A plant of many uses!

All of the Top End Syzygium species have edible fruit, which Aboriginal people have eaten for thousands of years. These fruit contain a high level of vitamin C.

Top End Aboriginal people also use species such as *Syzygium suborbiculare* for medicinal treatment. Infusions are made from the leaves, and the bark and leaves are used to reduce swelling around injuries.

The wood of some species makes good timber for cooking fires. Other large species like *Syzygium forte* are used to make dugout canoes.



PROJECT *page*

Backyard farming with Composter Worms

You can breed your own prize worms and turn your food scraps into the choicest compost.

What you will need

- 4 foam boxes from a fruit and vegie shop
- some scraps of shadecloth and hessian
- peat moss
- composter worms (from a plant nursery)

Making Your Worm Farm

1. Cut the bottoms out of 3 of your 4 foam boxes and line the inside of each with a layer of shadecloth.
2. Stack the boxes on top of each other and label them 1, 2, 3 and 4 with a permanent marker pen. Box 4 will be the one whose bottom was not cut out. It's there to catch liquids that trickle down from the 3 above it. You can tip its contents onto the garden (or into pot plants) from time to time.
3. Put a layer of hessian (or several sheets of newspaper) over the shadecloth in boxes 1, 2 and 3. Add damp peat moss to each of them to a depth of 8-10cm.
4. Next add your worms to the top box. They must be composter worms, not earthworms. You will need to purchase 250 grams of them (about 1,000 worms) from a nursery.
5. Cover the worms with another layer of wet hessian. Leave them for a day to settle in and then add a few handfuls of food scraps. You can feed your worms just about any vegetable matter (including grass cuttings and leaves). But don't put in meat or let the hessian dry out. Regulate how many food scraps you add so that you just keep ahead of the worms' eating rate.

When Box 1 is full...

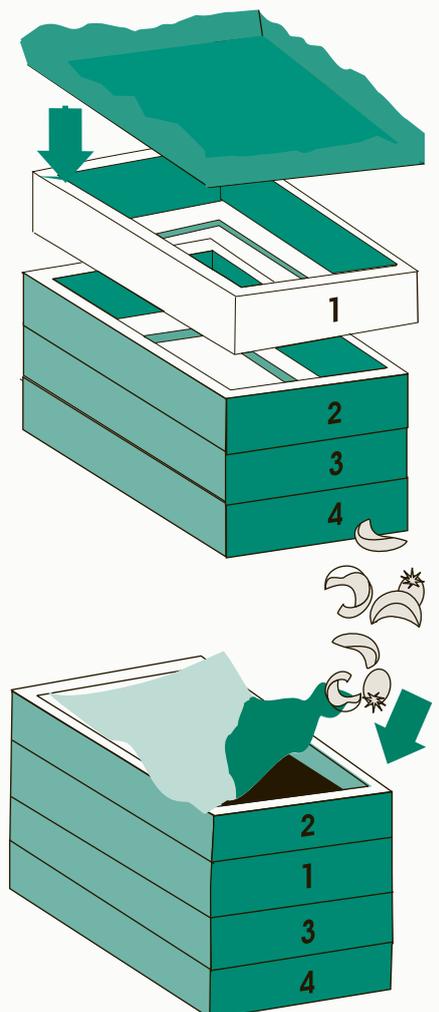
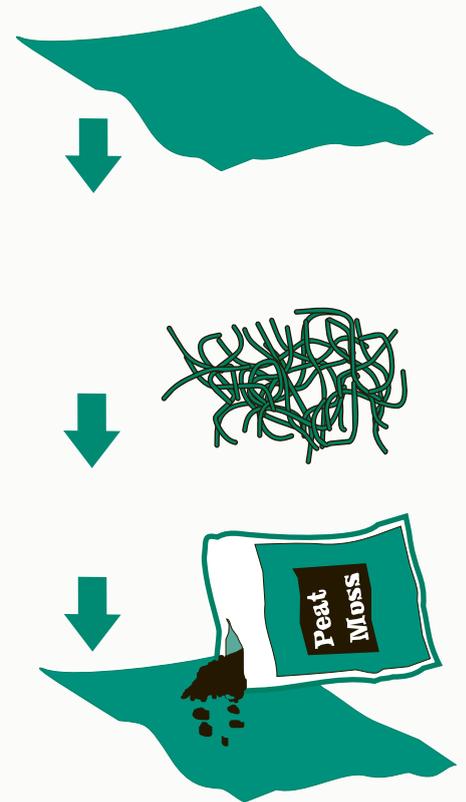
It will probably take a number of weeks before the box is full. When it is, swap it with box 2. The worms will work their way up into it, provided the shadecloth is touching the compost below.

When this second box is full...

Box 3 is then moved up to become the top box.

When this third box is full...

Empty the contents of the original box 1 into the garden (except for the shadecloth and hessian). It will now become the top box once more. Happy worm farming! Excess worms can be given to other people so they can start their own farms. (Composter worms don't survive very well in the garden, unless it is kept very moist and well stocked with decaying material.)



NATURE

quiz

Wormwords

These hidden words go in all directions and some are written backwards.

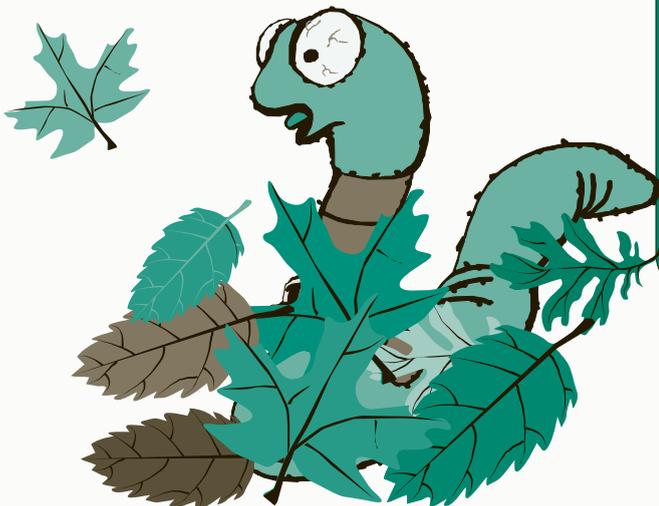
Colour the boxes as you find each letter.

- | | |
|---------------|-----------|
| Annelid | Leech |
| Anus | Log |
| Bait | Mucus |
| Bristle | Oil |
| Burrow | Open |
| Cast | Parasite |
| Clitellum | Planarian |
| Compost | Segments |
| Cool | Septa |
| Crop | Skin |
| Cyst | Slimy |
| Eat | Speck |
| Egg | Squirm |
| Flatworm | Swallow |
| Gizzard | Tapeworms |
| Hermaphrodite | Wriggle |
| Invertebrate | |

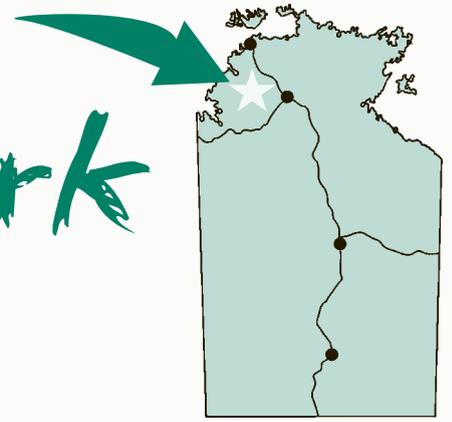


You should have 9 letters left over.
String them together to spell the name of a place in Victoria where there are native earthworms 3 metres long.

--	--	--	--	--	--	--	--	--	--



DISCOVER a territory park



Umbrawarra Gorge Nature Park

Where is it?

The Park is located about 245 km from Darwin and about 115 km from Katherine. Drive along the Stuart Highway to about 3 km south of Pine Creek. Then turn south west onto an unsealed road. The next 22 km can become very dusty and corrugated. This section contains steep dips and creek crossings. Drive with care.

When is best to visit?

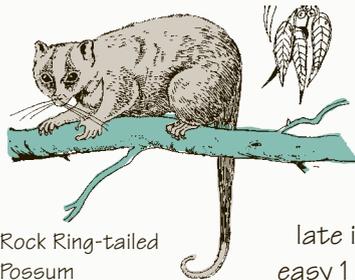
It is best to visit in the dry season, (May to September) when the river level has dropped and the gorge is accessible. The Park can be reached by all vehicles in the dry season (May - September). Towing caravans along this road is not recommended due to the corrugations. During the wet season (October - April), especially after rain, the road is often closed.

Umbrawarra in the international eye

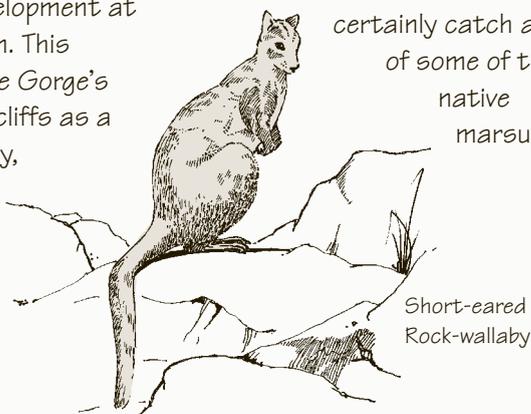
Umbrawarra has recently been in the international eye with the announcement of a US\$100,000,000 development at the Baltimore aquarium. This centre is replicating the Gorge's rugged and scenic red cliffs as a showpiece model display, representative of the Top End of Australia's freshwater escarpment country.

What can you do there?

Umbrawarra is a peaceful place to go camping. Off the beaten tourist track it is a hidden natural treasure. Rocky pools and small sandy beaches provide beautiful swimming spots, early to mid-dry season only. The creek stops flowing late in the dry season. An easy 1 km walk leads into the gorge but if you want to go further along the creek you will have to swim and rock-hop. There are magnificent views from the cliff tops. Umbrawarra supports significant colonies of the Short-eared Rock-wallaby and the Rock Ring-tailed Possum. Keen bushwalkers will almost certainly catch a glimpse of some of these native marsupials.



Rock Ring-tailed Possum



Short-eared Rock-wallaby

Puzzle Answers

Creature Feature: Webbed Feet

On the Brink: Crossword

Across

2. Wattles
3. Mac Clark
4. Lightning
6. Owl
9. Peuke
10. Phyllode
11. Rat

Down

1. Pastoralist
5. Trample
7. Waddy
8. Raptor
10. Protect
11. Rare

Plant Profile:

flowers
fruit
roots
shadow
lignotubers

Nature Quiz: Gippsland

History

The Wagiman people speak for this land. Look carefully and you'll see Aboriginal art on the gorge walls. The carpark near the entrance of the gorge was the site of a tin mine in the early 1900s.



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