

Junior Ranger

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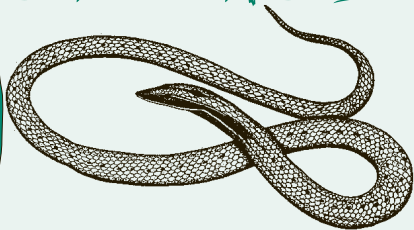


Review

ISSUE 3, 2004



URBAN
encounters



Burton's Legless Lizard

Archerfish



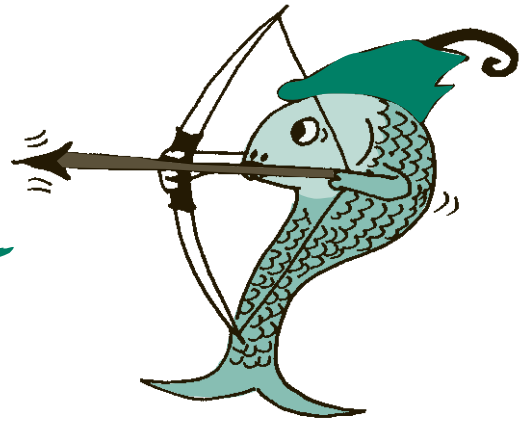
CREATURE
feature

PLANT
profile



Bush Tomatoes

CREATURE feature

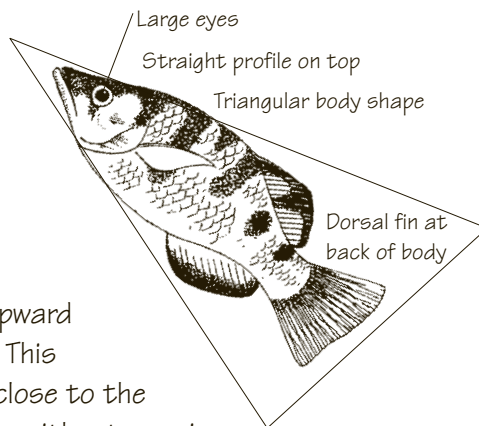


Archerfish

Archerfish are so-named for their remarkable hunting ability. They can accurately spit jets of water to dislodge their insect prey, resting above the water. They belong to the Family Toxotidae of which there is a single genus *Toxotes* (which means 'archer') and six worldwide species. They live in estuaries and freshwater areas over a wide range, from India through South-east Asia to the western Pacific. In Australia there are four species, three of which are represented in the Top End.

Hide and seek assassins

The Archerfish is an ambush predator, so like a submarine it tries not to be spotted before it fires. Its body shape and colouration helps. The fish have a flattened/straight top and their dorsal fin is located well back on the triangular body. They have a broad, upward slanting mouth with a long lower jaw. This combination allows the fish to swim close to the surface in an almost vertical position without causing a disturbance and alerting insects above the water.



The top of the fish is coloured a dark greenish-brown for camouflage from above. They also have irregular black blotches, bands or spots of varying size on their upper body, depending on the species. During the day this colouration resembles the shadows from overhanging trees. At night the skin patches fade so the fish looks more silvery, like moonlight on the water.

Archerfish have large moveable eyes for scanning for prey and have excellent binocular vision to help them judge distance.

Straight Shooter - death from afar!

Once they have spotted an insect the Archerfish spits water to try and knock it into the water. Archerfish have a very accurate aim over a distance of about a metre and larger fish are capable of precision shots of up to two to three metres. Along the roof of their mouth is a groove into which the ridged tongue fits forming a tube. Before shooting, the fish raises its tongue and then, by the quick closing of the gills, propels a 'bullet' of water through this 'barrel'. The tip of the tongue acts as a valve, flicking loose to let the water drops out and up into the air.

G'day from Ranger Bill

Hello everyone, first of all I would like to congratulate all staff involved in the popular Parks and Wildlife Service show displays across the Territory. A great job was done by all and we scooped first prize in Alice Springs and Katherine and third in Darwin in the best Government display categories. We thank everyone, especially all the Junior Rangers, for visiting our exhibits and contributing to their success; great to see you there.

One of the Reviews great new features is the 'Discover a Territory Park', in which we tell you about some of our smaller and less famous Parks. Did any of you manage to visit them during the school holidays? For any of you that are budding writers, there is a chance that you or your class could write a review of a Park and have it published in this magazine. Contact your local Community Education Rangers for more details. So get out there and enjoy our park system! Hope to see you there.

Ranger Bill

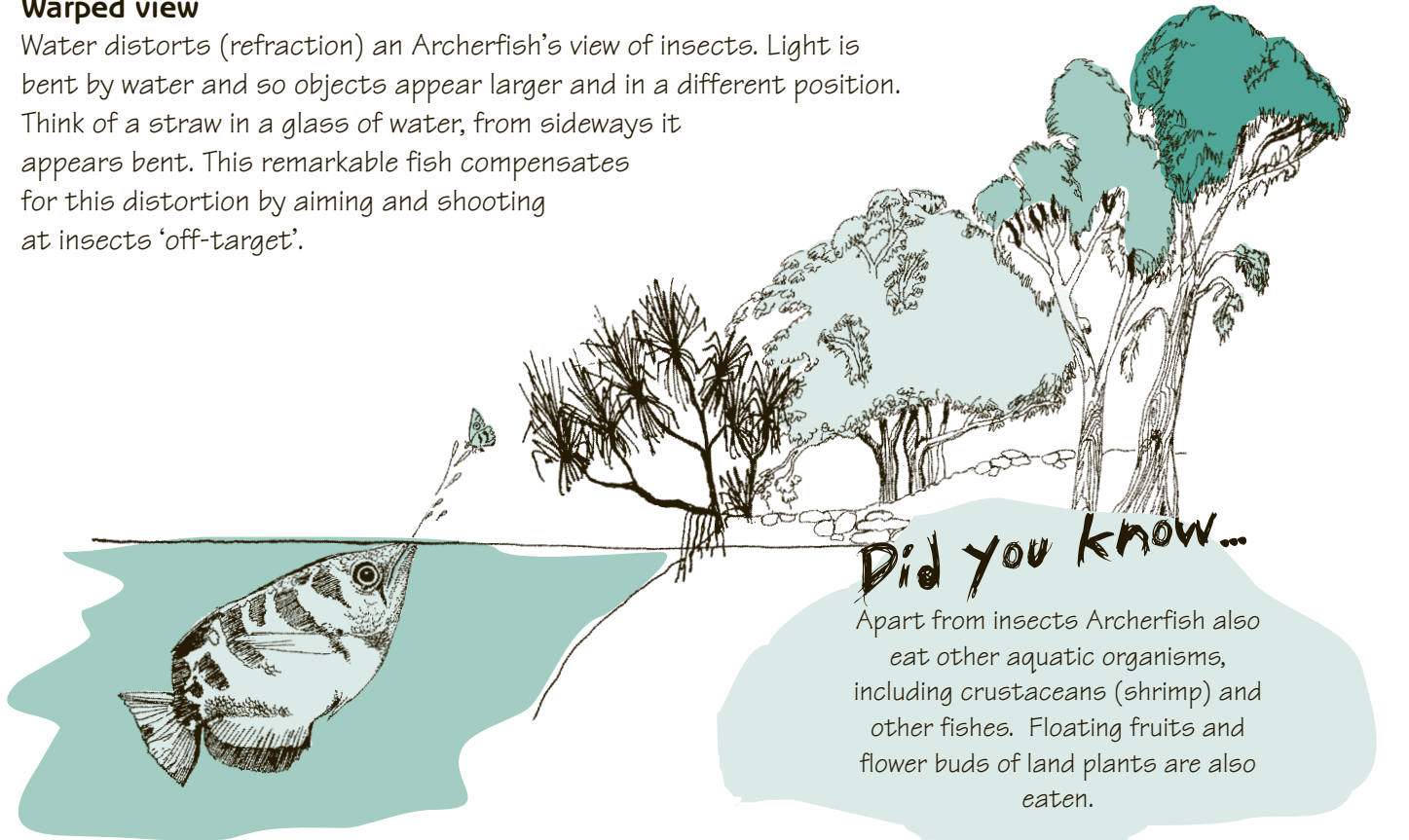


wow!

Breeding takes place in the early wet season. The female lays 20,000 - 150,000 floating eggs into the water but many do not survive the 1-2 years needed to become adults.

Warped view

Water distorts (refraction) an Archerfish's view of insects. Light is bent by water and so objects appear larger and in a different position. Think of a straw in a glass of water, from sideways it appears bent. This remarkable fish compensates for this distortion by aiming and shooting at insects 'off-target'.



Did you know...

Apart from insects Archerfish also eat other aquatic organisms, including crustaceans (shrimp) and other fishes. Floating fruits and flower buds of land plants are also eaten.

The three Amigos...

There are three species of Archerfish found in Top End waterways (freshwater and saltwater). Discover their common names by changing each letter to the one that comes before it in the alphabet.

1 D P N N P O T F W F O T Q P U
 or -

Archerfish. This is the most common of the three and its scientific name is *Toxotes chatareus*.

2 M P S F O U A T
 Or

Q S J N J U J W F

Archerfish, *T. Lorentzi*.

3 C B O E F E

Archerfish, *T. Jaculatrix*.



Good catchers!

The Archerfish shoots and as soon as the stricken insect hits the water the fish rushes in to eat it. Scientists think that within a microsecond the assassin Archerfish can quickly calculate the exact landing spot, align their body to it and then swim over in a straight line. They do not seem to watch the falling insect the whole time like humans do when trying to catch a ball. Instead the fish quickly use the insects height and initial velocity to determine the splashdown point. They must get this calculation right and hurry otherwise it may miss out on lunch as the other fish nearby await ready to pounce!

On the BRINK

White-throated Grasswren

The White-throated Grasswren *Amytornis woodwardi* is a very shy ground dwelling bird. It is extremely flighty and will dart off when disturbed, running very fast to find protective cover under large clumps of spinifex grass and shrubbery. They live in places that we find hard to get to. Their preferred habitat is boulder strewn escarpment tops and rough rocky outcrops.

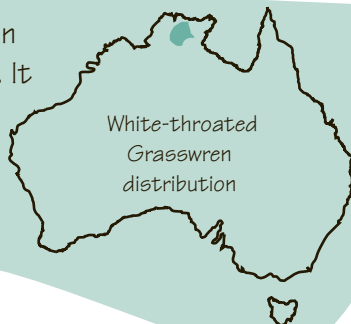


What to look for in a White-throated Grasswren!

The White-throated Grasswren is a small bird, about 22 cm long. It is slightly smaller than the Magpie-lark, but larger than the Common Red-backed Fairy-wren. It has an obvious white throat which stands out from the head and upper parts, which are black with white streaks. It has a dark chestnut brown belly, rump and tail. The tail is long and stands proudly upright when the bird is not moving.

They nest once a year, laying 2-3 eggs. These are white to pink with red to brown spots and are laid in a dome-shaped nest hidden in low vegetation.

This bird is only found in the Northern Territory. It is patchily distributed along Arnhemland's sandstone escarpment.



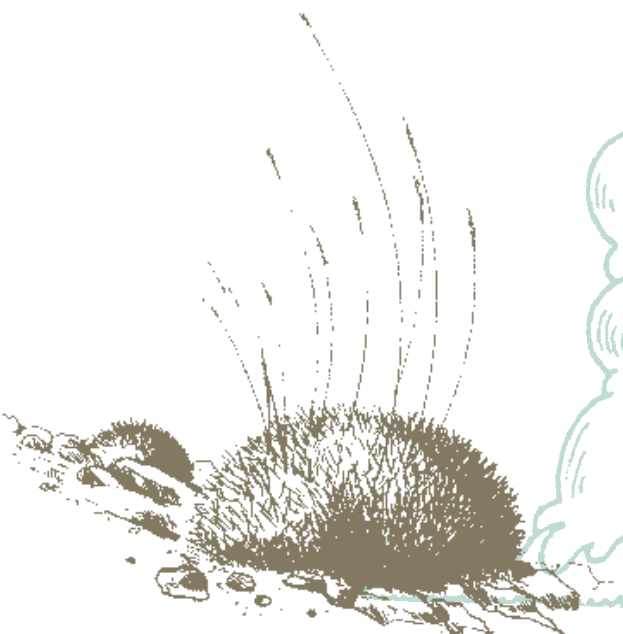
Wow!

White-throated Grasswrens often occur in small family groups of usually 3-6 birds, but also can be found in pairs or alone.

A Burning Threat

Being fussy about where they live means that any changes to the White-throated Grasswren's environment can effect their survival. Too many hot fires late in the dry season are now thought to be responsible for affecting their habitat. Frequent hot burns are not allowing the habitat to recover sufficiently. They remove food, shelter and nesting sites that are required for its survival.

The feral cat is also probably effecting their survival. Spending so much time on the ground makes them an easy target for a cat.



So how is it that scientists are able to list this bird as threatened, or vulnerable, if it is so hard to locate in the first place?

The White-throated Grasswren is so secretive and difficult to study that scientists have had a tough time trying to get enough information about them. Some of the information they need is coming from dedicated bird watching groups. The study of birds (ornithology) attracts a particularly keen sort of naturalist, and seemingly the rarer the bird, the harder these people try to find them. As a result there are now guided tours which specialise in finding just grasswrens.



By unraveling the following code you can find out more about the biology of the White-throated Grasswren.

The White-throated Grasswren is . This means

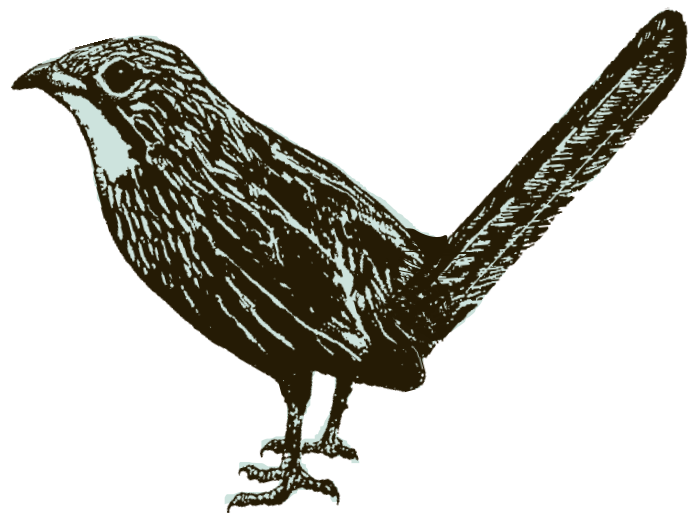
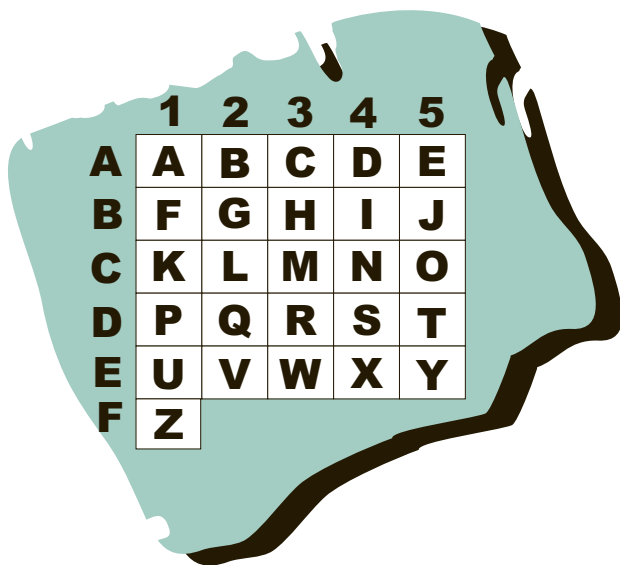
it will feed on both plants and animals, which in their case are insects and grass

seeds. When alarmed the White-throated Grasswren will often away

rather than fly. Their is one of the best ways to locate them. They

have a particular type of call containing and .

They also have an alarm call which is a sharp sound.



What can be done to save the White-throated Grasswren?

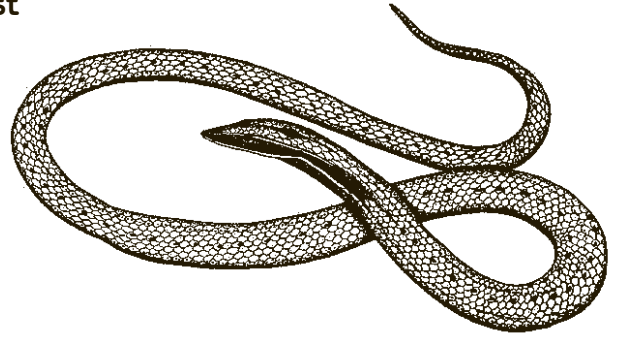
In the past the Arnhemland escarpment was burnt by aboriginal people who lived in the area. They used fire as a management tool to control destructive fires. Cooler burns were carried out earlier in the dry season as well as burning when they could in the wet season. These cooler burns were carried out over large areas and would slow down any large, hot late season fires if they did occur. Burning this way allowed some areas to go unburnt for several years allowing them to recover and increase in plant and animal diversity.

Rangers and scientists are now managing fire to try and mimic the way aboriginal people burnt their country.

URBAN encounters

Burton's Legless Lizard: Limbless Wonders

Burton's Legless Lizard, *Lialis burtonis* is Australia's most common member of the legless lizard family. You may be lucky enough to see one in your backyard, slithering through the leaf litter on the hunt for another lizard for dinner.



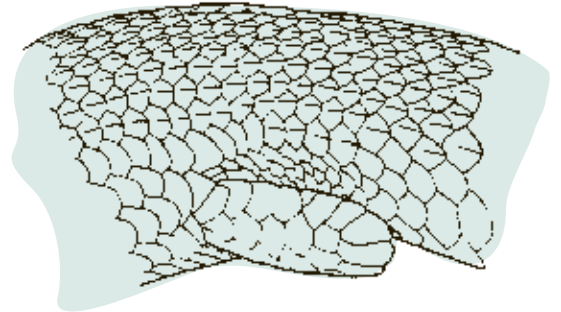
Masters of disguise and compromise

Burton's Legless Lizards are found across the whole mainland of Australia, except for the bottom of Western Australia and Victoria. They also occur in New Guinea. They can live in all sorts of habitats, from the edges of rainforests to some of our driest deserts.

They exhibit an incredible range of colours and patterns that can include shades of brown, red, olive, grey and black, and they may have gold, white or black stripes, flecks or spots. Their most distinctive feature is their long, pointy head.

No legs better than four?

As their common name suggests, these guys have no legs! They are part of the PYGOPOD family of lizards, who are all legless. Pygopod means 'flap-footed'. This refers to the two flaps that are all that remain of their back legs.

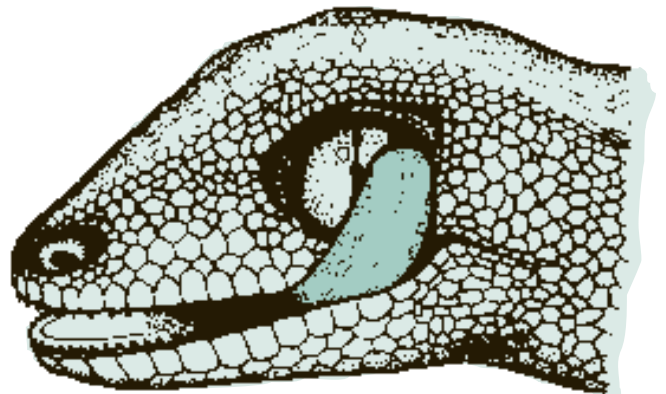


Don't judge a book by its cover!

Being legless, thin and long (up to 62 cm in total length) means many people mistake these lizards for snakes. But there are numerous characteristics that scientists use to set Burton's Legless Lizard (and most other Pygopods) apart from snakes.

They have broad fleshy tongues, while snake tongues are forked. Burton's Legless Lizards can make a squeaking, barking noise, much like a gecko. Another similarity with geckos is that Pygopods don't have eyelids. They clean their eyes with their tongues! Snakes don't have eyelids either, but they don't lick their eyes to clean them.

All Legless Lizards can shed their tails when threatened and then regrow a new one, but snakes cannot. Their tails are also proportionally much longer than a snake's. Snakes' tails may only be 10% of their total length, but Pygopods' tails are at least 50% of their total length, sometimes as much as 70%.



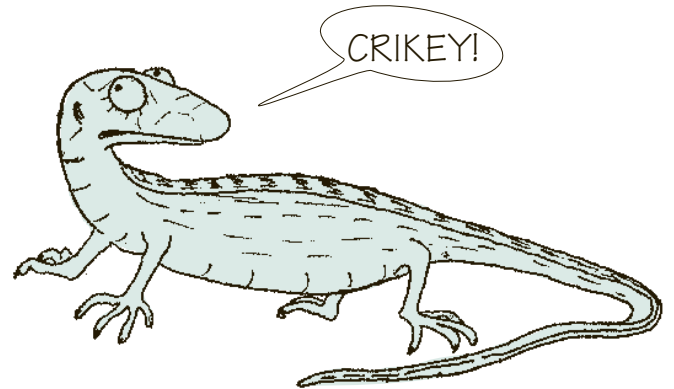
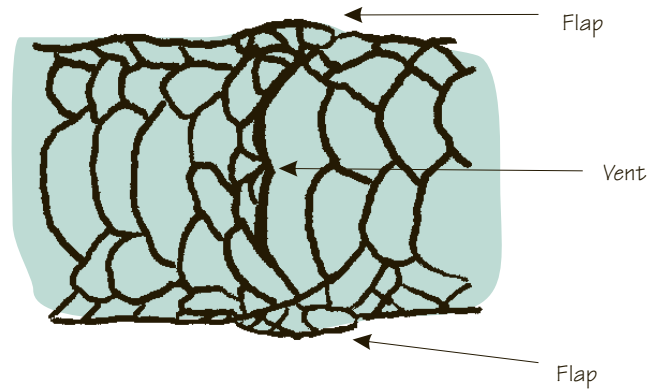
How do you tell where the body stops and the tail starts on a snake or lizard?

Well, it's easy, the tail starts at their vent (bum)! This is also where the back legs or flaps are for a lizard. Don't try this on a live snake. They may get upset with you looking at their backside!

Lethal hunters with big appetites

Burton's Legless Lizards are fearsome predators who mainly hunt skinks but will also catch geckos, dragon lizards and even snakes! They use a variety of tactics to catch their prey. Most commonly they simply hide in the leaf litter and wait for a victim to wander too close. At other times they stalk prey, sneaking up on them until they are close enough to lunge at them. They have even been observed using the tip of their tails as bait to lure unsuspecting prey within striking distance.

They generally kill prey by clamping down on the victim's chest or neck to suffocate them. Then they swallow them whole and head first! Their jaws are very flexible and this allows them to swallow surprisingly large prey. Their teeth fold backwards and they can move their jaw back and forth and sideways (they can dislocate it), and this helps them to work their food down their throat.



There is one other sure fire way to tell a Burton's Legless Lizard (and most other Pygopods) from a snake. Work through this puzzle to find the answer.

Step 1

Cross out every box that contains one of these 7 letters: C F J M Q U Z.

Step 2

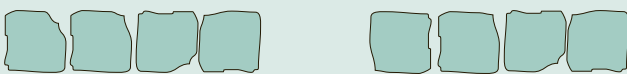
Track the answer through the letter maze, starting from the arrow and following the winding path.

Step 3

Write the answer in the boxes below.

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

START



PLANT profile

Savvy Solanum - Bush Tomatoes

The genus *Solanum* is a member of the Solanaceae family which is one of the largest and most utilised groups of plants in the world. They provide us with a wide variety of food plants, medicines and drugs as well as some of our prettiest ornamental garden plants.

There are 36 species of *Solanum* that can be found in Central Australia and several in the Top End. That's more than you can buy at the supermarket!

What did you have for dinner last night?

You may have eaten a member of the *Solanum* family. Tomato, capsicum, potato and eggplant are all related to the native Bush Tomato (also known as Bush Potato or Wild Tomato).



Bush Tomato (*Solanum sp.*)

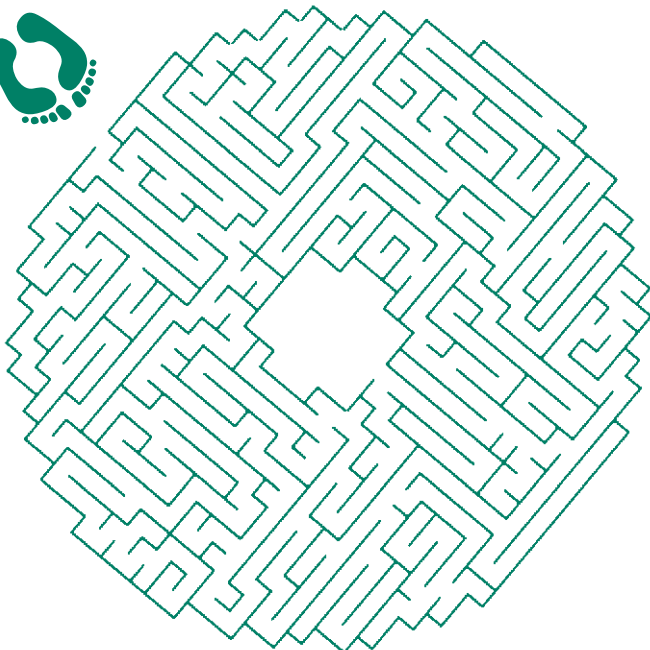


One variety of *Solanum* is the Bush Tomato. This small shrub has green greyish leaves that are furry to touch, just like velvet. Its fruit look like small unripe tomatoes, that turn yellow when they are ripe.

Tomato Treasure Hunt

Find your way through the maze to the core of the tomato.

Start here



Did you know?

Don't eat them! They may be poisonous.

Some types of Bush Tomatoes are poisonous and others are not. As it is difficult to tell them apart, it is best not to eat any. Unless we go out bush with a local aboriginal person or Botanist, we should only eat our regular red tomatoes and leave the native ones for the wildlife who depend on them.

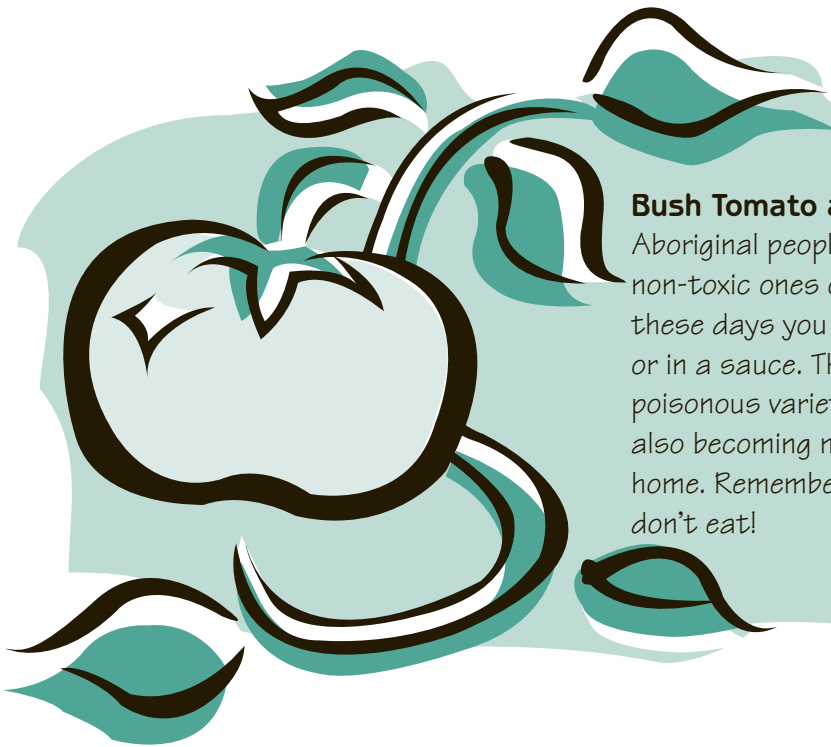
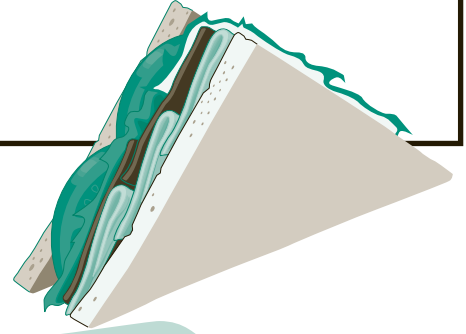


Yummo, I love a bit of tomato to go in my grass sandwich!

Lunch Box Learning

The tomatoes produced from a Bush Tomato plant are actually called fruit. A fruit is anything from a plant that has seeds. We commonly call apples, pears and oranges fruit but have you thought about what other sorts of fruits you may be eating in your salad sandwich? Draw a picture of all the fruits in your school lunch box.

Draw here



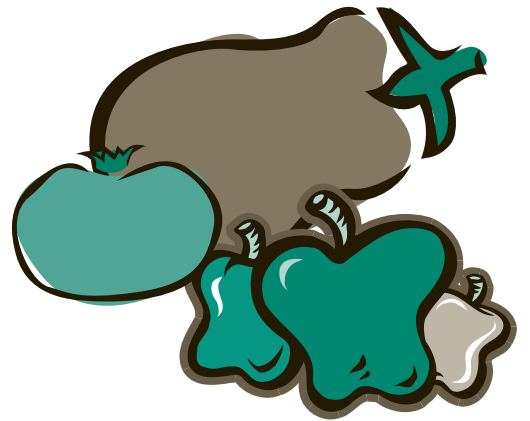
Bush Tomato as a Food

Aboriginal people enjoy eating Bush Tomato - but only the non-toxic ones of course! In some restaurants and cafes these days you might also find Bush Tomato on the menu or in a sauce. There are special places that grow non poisonous varieties and send them to restaurants. They are also becoming more popular to plant in your garden at home. Remember if you find some in the wild, just look, but don't eat!

Seedy Scramble

The tomato has some interesting relatives in its plant family. Complete the puzzle below by re-arranging these tiles in the spaces provided.

tat an ant cum oes po fam
 gpl um psi ily eg ca Sol

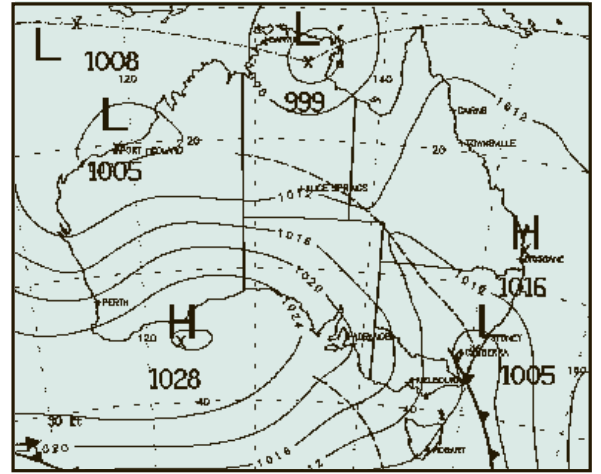


The includes
 , and .

PROJECT *page*

Make your own barometer!

Did you know that air has weight? It exerts pressure on everything around us. With all of this heavy air moving around up there, air pressure is one of the most important measurements a meteorologist uses to predict the weather. Does this weather map (above) look familiar? The symbols, letters and squiggly lines all refer to air pressure. It is measured with a device called a **BAROMETER**, and following these simple instructions, you too can make your very own version that really works!



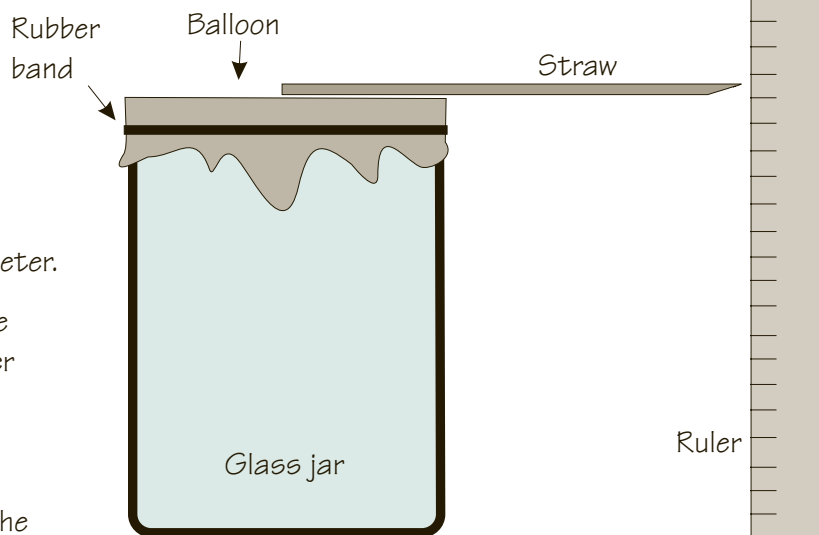
What you will need

- An empty glass jar or glass
- A large piece of balloon rubber
- A drinking straw
- A strong rubber band
- A ruler
- Adhesive tape

Putting it together

Use the diagram and follow these instructions to assemble your barometer.

1. Stretch the balloon rubber over the glass jar and secure it with the rubber band.
2. Tape the end of the straw to the centre of the balloon.
3. Place your ruler with the zero at the bottom. Taping it to an old milk carton or small cardboard box may be useful to keeping it standing.



How does it work?

When the air around us warms up, it gets lighter and rises. This means that there is less air pressure pushing down on the balloon. The balloon will now push up, causing the end of the straw to move down. This shows that a low pressure system is in your area, and it is indicated by an L on the map. This usually leads to stormy weather and at worst, a cyclone!

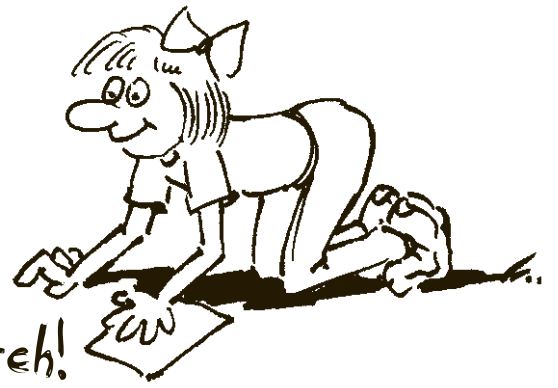
When the air cools down, it becomes heavier and sinks. This heavier air presses the balloon into the jar, causing the straw to move up. This shows that a high pressure system is in your area, and it is

indicated by an H on the map. This usually leads to clear skies and fair weather.

Read your barometer at the same time every day, and you should see it rise and fall with the air pressure. You could even keep an eye on the daily Bureau of Meteorology readings for your area to see if you are getting the same pressure trends (see www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDYO3O25.txt). They read the barometric pressure in hectopascals (hPa).

Good luck, and don't let the pressure get to you!

NATURE *quiz*



Giant Junior Ranger word search!

Do you dare take on this super sized word search with words from all of this edition's stories? They go in all directions, even backwards! Good luck, and remember, don't let the pressure get to you!



Air
Aquatic
Archerfish
Balloon
Barometer
Bird
Botanist
Colouration
Cyclone
Estuaries

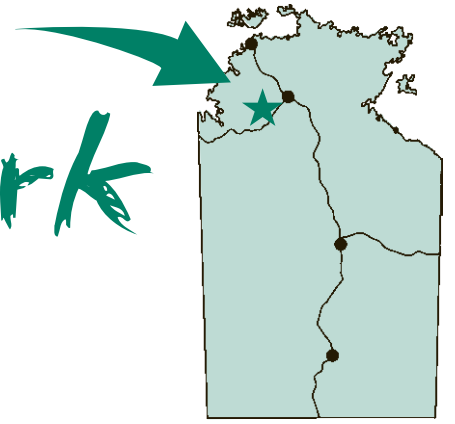
Eyelids
Fire
Flora
Food
Fruit
Geckos
High
Jaw
Legless
Lizards

Low
Measure
Meteorology
Mouth
Poisonous
Potato
Predator
Pressure
Prey
Pygopod

Refraction
Ripe
River
Seed
Snake
Solanum
Spinifex
Spit
Stalk
Swim

Tail
Threatened
Tomato
Tongues
Toxic
Vegetation
Vent
Vulnerable
Water
Wren

DISCOVER a territory park



Flora River Nature Park

Where is it?

Flora River Nature Park is located 122 kilometres south-west of Katherine. The access road (off the Victoria Highway) is suitable for 2WD vehicles during the dry season. It can, however become inaccessible to all vehicles during the wet season.

Cultural History

The Wardaman people have a rich cultural history. Ceremonies, stories and songs linking the ten clans are performed along a singing trail which traverses the Flora River Nature Park.

Plants and animals

The Park protects two major vegetation communities; open woodland and the riverine forests lining the river banks and islands. Here you will find extensive stands of the uncommon Cabbage Palm, *Livistona mariae rigida*.

The fauna of the Park is presently being surveyed to complete species lists. Aquatic fauna is of interest due to the presence of the Pig-nosed Turtle *Carettochelys insculpta*, which was once thought to occur only in Papua New Guinea but has been discovered in a few localities in the Northern Territory. The Flora River also has a variety of fish including barramundi, bream, catfish and grunters. Both Freshwater, *Crocodylus johnstonii*

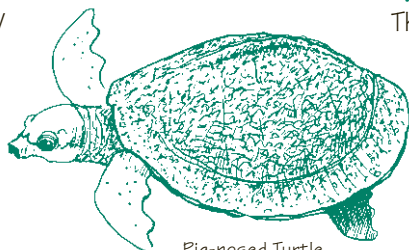


Flora River

and Estuarine (saltwater) crocodiles, *Crocodylus porosus* are known to inhabit the River.

What can you do there?

The peaceful nature of the Park makes it an ideal destination for passive water activities such as canoeing, fishing and small boating (under 15 hp only). When fishing please use lures only, to help protect the local turtle population.



Pig-nosed Turtle

Puzzle Answers

Urban Encounter:

They have visible ear openings while snakes do not.

Creature Feature:

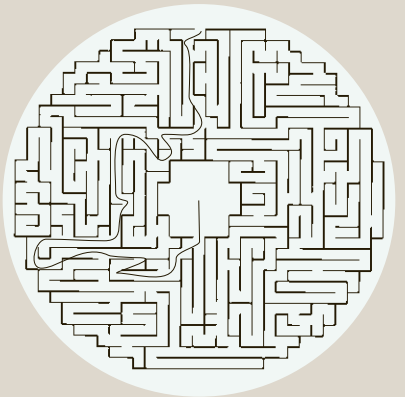
1. Common or Seven-spot
2. Lorentz's or Primitive
3. Banded.

On the Brink:

Omnivorous, run, call, trills, chirps and tzzzt.

Plant Profile:

The Solanum family includes potato, capsicum and eggplant.



Two short walking tracks originating from near the campground lead to Kathleen and Djarrung Falls. These tracks provide the visitor with an opportunity to view the interesting tufa formations which have formed as a result of precipitation of calcium carbonate onto rock bars and debris. The result is a number of picturesque cascades and small waterfalls.

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