



Junior Ranger

Review

Issue 4 2006



on the
BRINK

CREATURE
feature

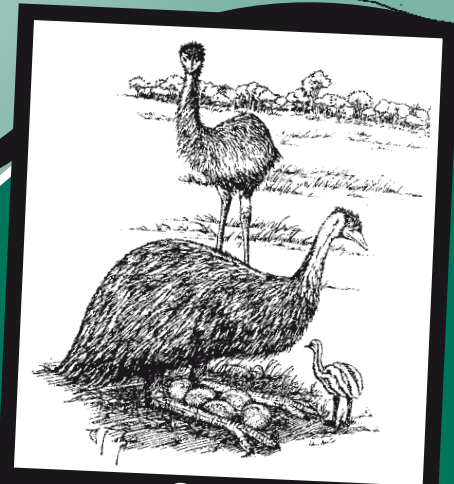
URBAN
encounter



Bearded Beauties



Katydid



Emu

Creature Feature



Central Bearded Dragon
Pogona vitticeps

Bearded Beauties

A huge mouth and a beard full of spines is how you are normally greeted by a Bearded Dragon. They are usually not shy of anyone and will hiss and fume if you come too close!

The Bold and the Bearded

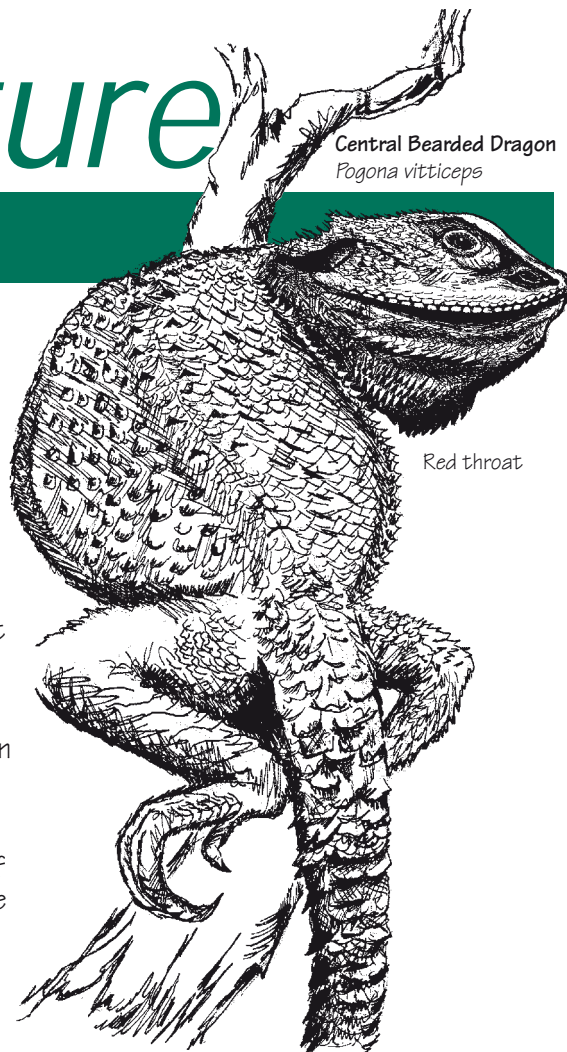
Central Australia is home to two bearded dragons. One is the large (up to 60cm in total length) Central Bearded Dragon, *Pogona vitticeps*, and the other is the much smaller Dwarf Bearded Dragon, *Pogona minor*. Check out their unusual red throats (lizards usually have yellow throats).



They are often seen basking in the sun on a tree stump or log and will generally sleep in this position on warm summer nights. In wintertime they will retire to hollow logs or leaf litter to sleep.

They have worked out how to make the most of whatever food is available. Their favourites are insects but they will eat flowers and other vegetation and during good seasons will also take the occasional mouse or small lizard!

You won't easily find or spot bearded dragon homes. They bury their eggs (15 to 25) in burrows about 20cm deep and then backfill the hole. Mum will help the hatchlings dig themselves out after about 10 weeks.



Red throat

G'day From Ranger Bill

Well the year has certainly flown by and I hope all you Junior Rangers have enjoyed your time with the program. Thank you to all those families who came along and enjoyed the various 'End of Year' events held throughout the Territory.

This will be my last column with the Junior Ranger Review as I retire at the end of the year. I do hope that your time as a Junior Ranger may inspire you toward a career in Parks, Conservation or other Environmental areas - mine has been a very rewarding and exciting one.

So good luck in the future and now that I have more free time, maybe I will see you out in the bush!

Ranger Bill

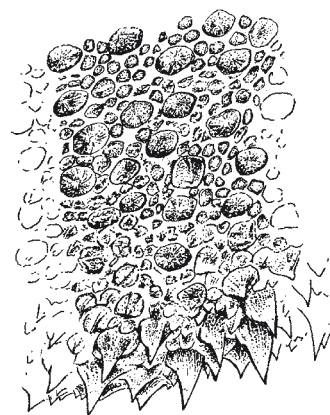
Did you know?



The Bearded Dragons of Central Australia have a northern relative - the Frilled Lizard, *Chlamydosaurus kingii*.

Spot the difference

Even scientists find it hard to tell the difference between the Central Bearded Dragon and the Dwarf Bearded Dragon. The best way to tell them apart is by the way the scales are arranged along the edge of the stomach. The Dwarf species has a scattering of scales while the Central species has a clear line of large spines right along the outer edge of the stomach.



The spines of the Central Bearded Dragon break up its outline, making it harder to be spotted by predators.

Avoiding being eaten!

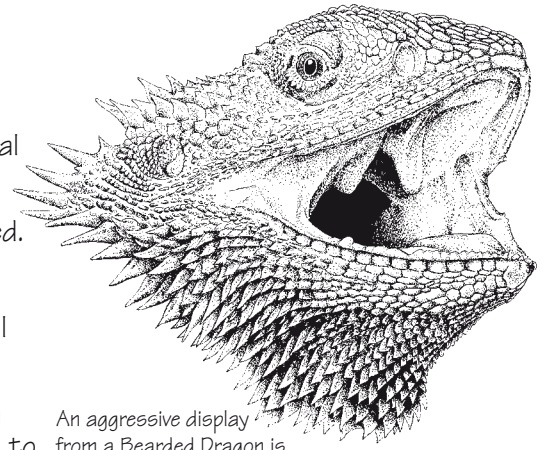
Bearded Dragons make quite a good meal for predators so they've found several ways to defend themselves...

Puffer Fish Technique! The Bearded Dragon will puff itself up when threatened. This makes it look like a big meal of spines - not something worth eating at all! When the lizard is puffed up the spines on the side of the body break up the outline of its body - to a bird of prey flying over it no longer looks like the typical lizard shape.

Eagle Eye Technique! Bearded Dragons have exceptional eyesight - they can see you from about 80m away - well before you can see them. This allows them to keep an eye on possible danger.

Chameleon Technique! Bearded Dragons have an ability to change colour to suit their surroundings - although not as well as the world famous chameleons. If they live and breed in particular habitats they will often take on the colour of the soils and rocks of that area. The Central Bearded Dragon that lives on the Barkly Tablelands is a very grey in colour - better to blend into the grey coloured soils of the region.

If All Else Fails...Bite! If all these techniques fail the Bearded Dragon can rely on its last line of defence. It has a very strong bite - and it doesn't mind holding on for quite a while! Of course, like all Australian lizards, it's not a poisonous bite, but reptile bites can often become infected.



An aggressive display from a Bearded Dragon is often enough to frighten away a predator.



Careful, this Central Bearded Dragon may just bite.

Marking their Territories with invisible ink

The male Bearded Dragon has small pores on the bottom of his back legs and body. A strange waxy substance flows from these pores and the Bearded Dragon will wipe this magic ink onto rocks and soil to mark his territory. You and I can't see these marks but it is believed that the Bearded Dragon can see in ultraviolet. With ultraviolet vision these marks stand out as a warning to others.

Track the Bearded Dragon as he wanders around marking his territory - can you see where he has been and how big his territory is?



On the Brink



Flightless Feathered Friends

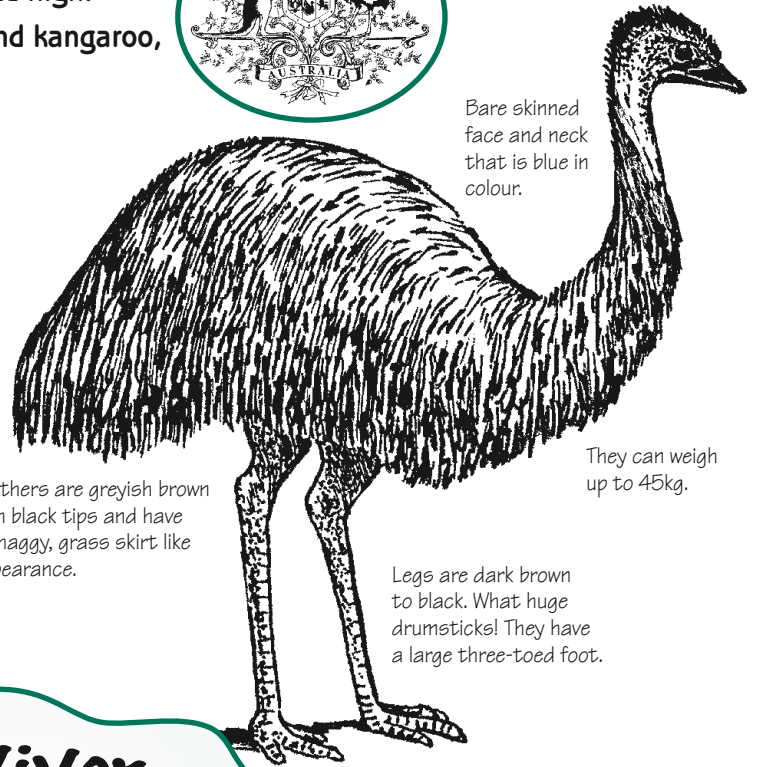
Who Am I? I am Australia's largest bird, but I cannot fly.
My legs are long to run fast and make me stand quite high.
I stand proudly on our Coat of Arms, next to my friend kangaroo,
Who am I? I am of course old man Emu.



Big, Bold Bird!

The Emu, *Dromaius novaehollandiae*, has a long neck and legs and so can stand up to 2m tall. Their powerful legs allow them to run really fast if they want to, at a top speed of about 50km/h. Like all birds they do have wings but they are small and hang uselessly under their chest.

Emus are 'nomads', wandering around in the bush for many hundreds of kilometres. They will stay in one place if there is lots of food and water. But if not, off they go walking!



Bare skinned face and neck that is blue in colour.

Feathers are greyish brown with black tips and have a shaggy, grass skirt like appearance.

They can weigh up to 45kg.

Legs are dark brown to black. What huge drumsticks! They have a large three-toed foot.

Vulnerable Survivor

Emus can be found right across the Northern Territory (except in our towns and cities or living in thick forests). However in the last ten years or so their numbers have dropped (by as much as one third) and so scientists have listed them as vulnerable in the NT.

We do not really know why their numbers have dropped. It could be because most of the country they live in is getting burnt every year by huge bushfires, therefore there is little food to eat. Also fires burning at the wrong time could destroy any eggs before they hatch. In Central Australia changes in the bush associated with the introduction of cattle may play a part. What we do know is that we need to find out more before we can really help our national bird!



Not fussy eaters

Emus mainly eat grasses, seeds, leaves, fruits and flowers. If there are lots of insects around, such as a grasshopper plague, they will eat them too. They will even eat their own poo or the poo of other animals in order to pick up the good bits that weren't used the first time around.

When drinking you may see an Emu squat on its haunches so it does not have to reach so far.

Eggs-ellent Dads!!

During the breeding season (March - November) when a lady Emu is ready to mate, she is the boss! To attract a mate she will make special booming and drumming sounds that can be heard up to two kilometres away. Once they pair up together the two become quite close. However it is a very different story after she lays her eggs. Mum usually just packs up, leaves home and lets dad do all the work.

Dad actually becomes obsessed with the eggs and will often drive mum away.

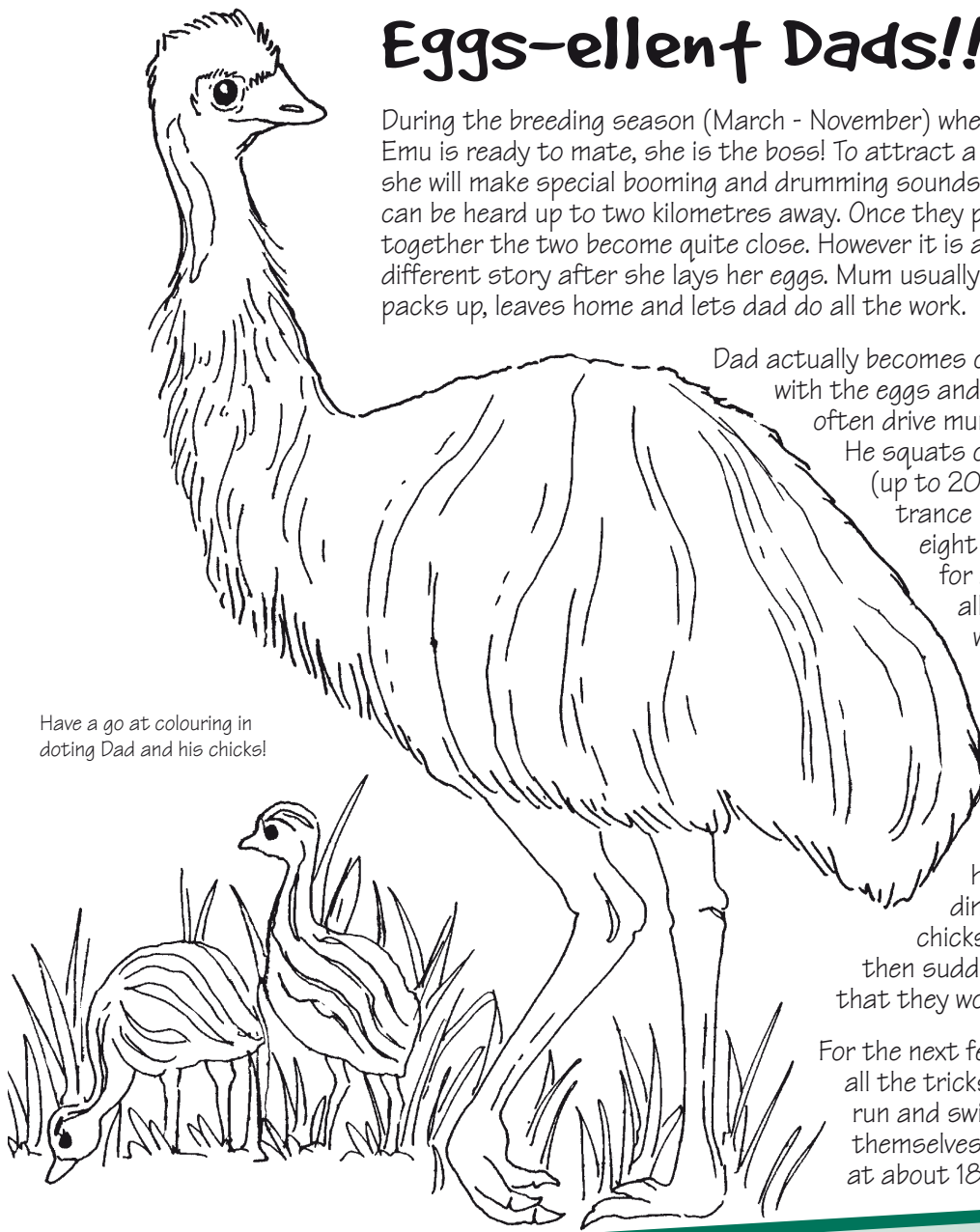
He squats on the eggs (up to 20 of them) in a trance like state for up to eight weeks. He will only leave occasionally for a drink and to eat very little, if at all. He may lose up to a quarter of his weight during this time. He won't even leave to pee or poo! What a devoted dad!!!

Baby Emu chicks are really cute ... fluffy and dark brown with creamy stripes. This makes them hard to see when they sit in the grass and helps them avoid predators like eagles, dingos and feral cats. If surprised the chicks will first run as fast as they can then suddenly drop and sit perfectly still hoping that they won't be seen.

For the next few months dad will show his chicks all the tricks: how to find their own food, how to run and swim. He makes sure they can look after themselves before sending them out on their own at about 18 months.



The dark green Emu eggs are huge! They are about 15cm long and 10cm wide and weigh nearly one kilogram. That's a lot of yolk.

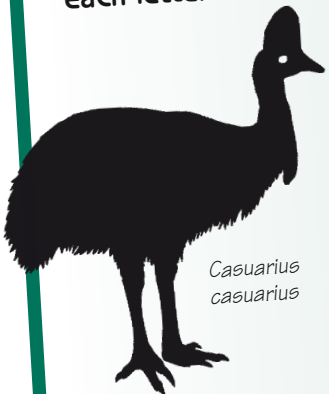


Have a go at colouring in doting Dad and his chicks!

What are our names?

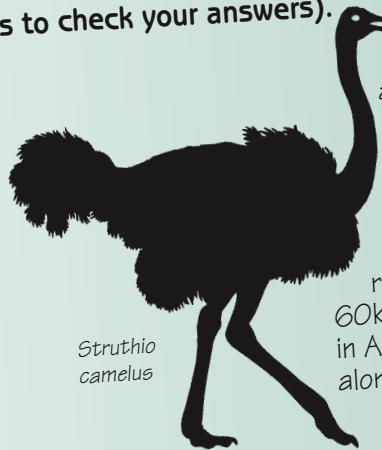
There are other large flightless birds in the world. Can you decode the names of two of them? Replace each letter with the one that comes before it in the alphabet.

(You can use the scientific names to check your answers).



Casuarus casuarus

I am the Emu's closest relative. I am stockier and heavier but not quite so tall. I have a horny helmet that extends onto my beak which is called a 'casque'. Unlike the Emu I like to live in rainforests. I love eating fruit. You might see me in Cape York, North Queensland.



Struthio camelus

I am the largest of all the birds. I can stand up to 2.7m tall and weigh a massive 150kg. At this size I make the Emu look like a big chicken! My top running speed can reach 60km/h. You won't find me in Australia because I live alongside lions and zebras.

T	P	V	U	I	F	S	O	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
D	B	T	T	P	X	B	S	Z
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

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Urban Encounter



Katydid, or Katy didn't?

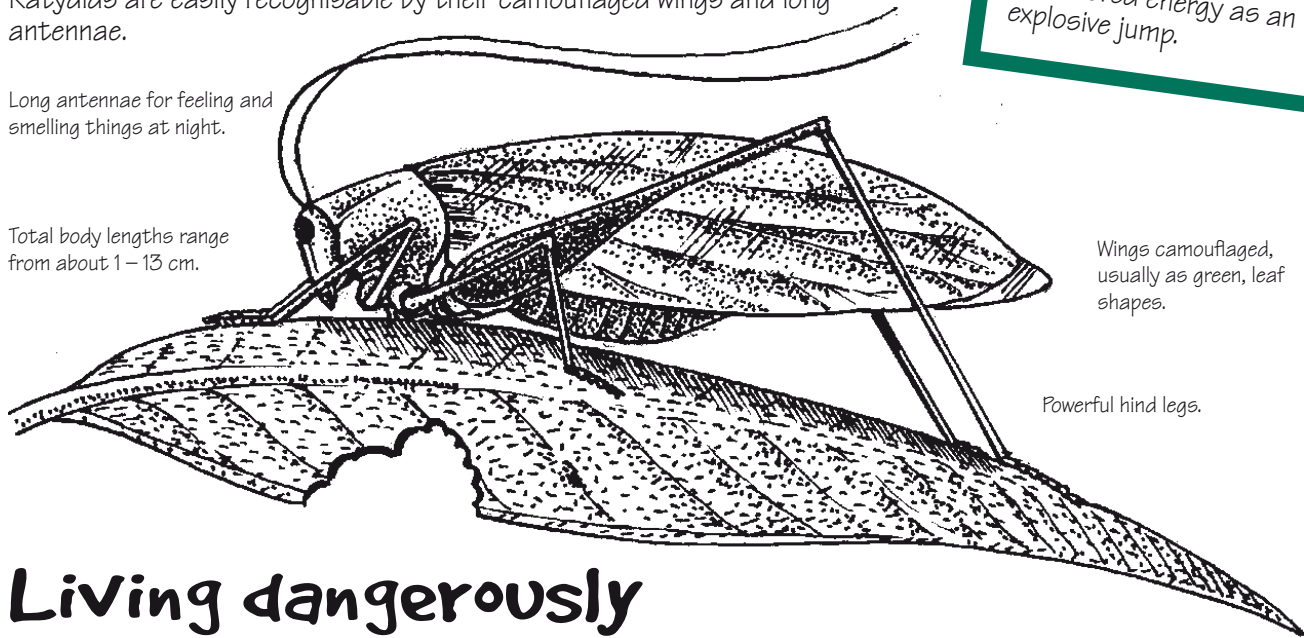
Katydid occur all over Australia, and even if you haven't heard their name, you've probably heard their calls at night. Their strange name comes from the sound of the call that a few of the 1000 or so Australian species make. Some people think it sounds like "Katy did, Katy did!" Although this interpretation might need a bit of imagination, it's easy to see that this is an amazing group of insects!

Katydid body bits

Katydid are members of the order of insects called Orthoptera. This group also includes grasshoppers and crickets. They all have big hind legs for jumping, the adults have wings, and their mouthparts are made for chewing. Katydid are easily recognisable by their camouflaged wings and long antennae.

Long antennae for feeling and smelling things at night.

Total body lengths range from about 1–13 cm.



Wings camouflaged, usually as green, leaf shapes.

Powerful hind legs.

Living dangerously

Katydid make great tucker for all sorts of animals, so they have evolved an amazing array of defence strategies. The most obvious is 'camouflage'; their ability to blend into their surroundings. Many have wings that are the shape and colour of leaves. They can even change colour to match the plant they are eating!

This young green coloured katydid looks remarkably like a fearsome Green Tree Ant. But the long hind legs and antennae give it away on closer inspection.

The young of some species have evolved to mimic ants. Most predators won't attack ants because they tend to bite, sting, spray acid, and fight in gangs!

Some can ooze nasty poisons when attacked. These guys show off bright warning colours when threatened.

Some have spider web dissolving spit, while others have 'serrated knives' along their powerful hind legs that can cut their way out of webs. Failing that, these legs can be used to direct a deadly kick at an attacker, or simply leap clear of it. And for hand to hand combat, powerful jaws designed for eating plants can inflict a nasty bite!

Katydid love songs

Male katydids call to attract a girlfriend. Nearly all of them call at night, and generally during the warmer, wetter times of year. Different species have different calls, and they range from a soft, melodious song to an ear-piercing screech. The boys with the best or loudest call will get the girls.

These fantastic sounds are actually produced by the wings! Their left forewing has a row of **'teeth'** which they rub against a **'file'** on the right forewing. Part of the right forewing also has a modified membrane that makes the sound extremely loud. Crickets, on the other hand, rub their hind legs together to make their **'chirping'** sounds.

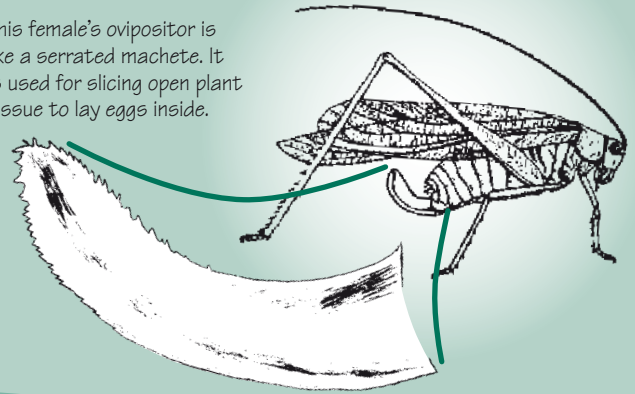
Katydids at home

Most Australians will have heard katydids calling, both at home, or while out in the bush, but most people don't realise what is doing it! So keep an ear out for them, and keep an eye out as well. They are very common, but they are good at hiding. They are most easily spotted at night if they become attracted to house lights, and they may even end up inside!

Egg-laying equipment

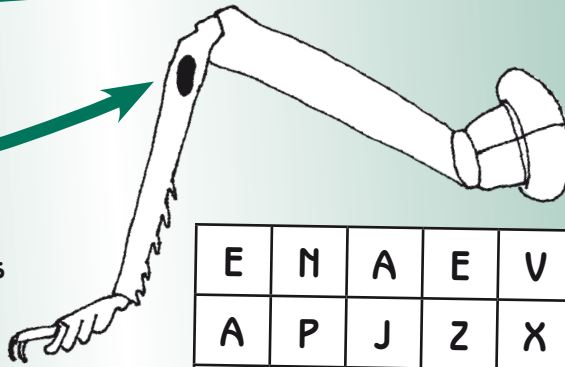
Adult female katydids are visibly different from males. They have egg-laying organs, called **'ovipositors'**, which protrude off the end of their abdomens. While some are quite small, others can be long needle-like structures that are as long as the rest of the body.

This female's ovipositor is like a serrated machete. It is used for slicing open plant tissue to lay eggs inside.



What on earth is that?

Do you know what this dark spot is on a katydid's front leg? Work through this puzzle to reveal the answer.



Step 1:

Cross out every box that contains one of these 7 letters: Z J W P B M 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	N	A	E	V	A	H	J	P
A	P	J	Z	X	M	Y	B	W
R	O	N	B	M	J	L	L	A
Z	J	T	H	X	M	B	Z	U
J	W	B	E	P	S	A	C	T
R	F	R	I	Z	D	X	J	W
O	B	P	M	Z	I	D	Y	M
N	T	L	J	W	B	P	T	A
J	W	E	G	S	M	X	B	K

Plant Profile

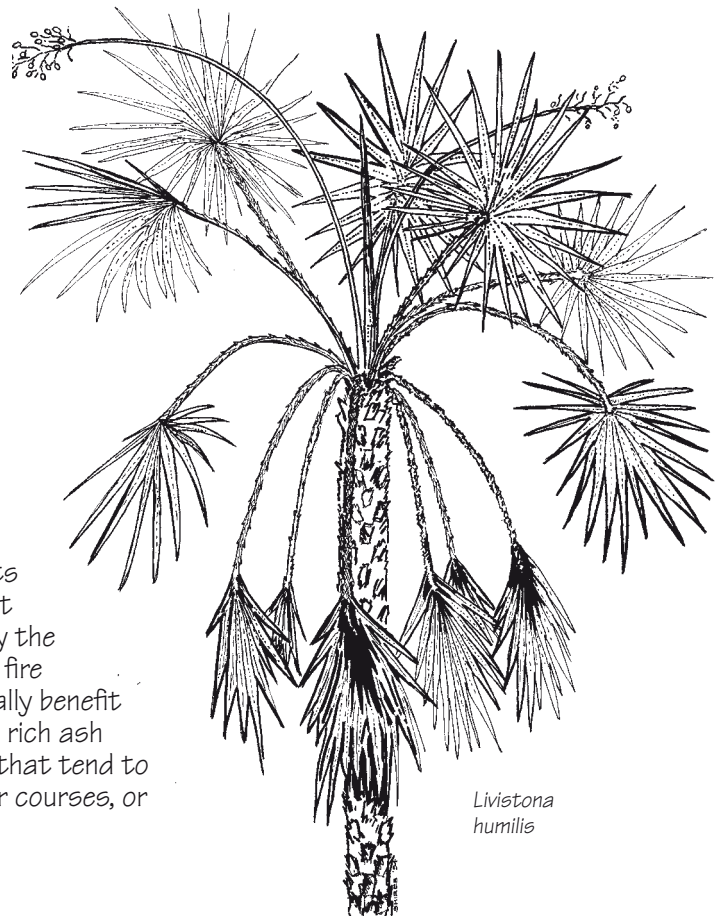


Prehistoric Palms

Livistonas are an ancient group of palms that hold an amazing secret of the Northern Territory's past. For once, long ago, they were much more common, in giant prehistoric rainforests that dominated much of the Top End. Today seven species exist in the Northern Territory. Some of them are trapped in rainforest pockets that resemble their ancient origins, while others have escaped into the vast, seasonally dry woodlands of the Top End.

Why some died and others survived?

As Australia dried out and the rainforests disappeared, plants faced another new threat: fire! Bushfires are now an important part of most savannah and desert environments. To cope, only the hardy could survive, so most *Livistona* species have developed fire tolerance. Indeed some, such as *Livistona mariae rigida*, actually benefit from fire by having their seeds germinate in the deep, nutrient rich ash beds. Most of them however choose to live in sheltered areas that tend to be more protected from fire; like bare rocky slopes, along water courses, or monsoon forest patches.



Livistona humilis

No rainforest wimps!

The Sand Palm, *Livistona humilis*, is the most drought resistant *Livistona* and it is common right across the Top End. It is an 'endemic' species, meaning it is only found in the Northern Territory. It can cope with nutrient poor soils and without water through our long dry season. This is a big advantage, because most of the Top End is like this! However it relies on the annual monsoon rains which, at least for a short time each year, bring back the rainforest conditions of long ago.

It has many uses for Aboriginal people; the central growing tip, called 'cabbage', is eaten raw or cooked and medicines are made from the inside of the stem. The new shoots are crushed and made into a dark purple dye and the fruits can also be eaten.

Livistona inermis doesn't mind it rough, either. It mainly lives in sandstone escarpment and rocky hills. It is also used by Aboriginal people. The growing tip may be eaten raw or cooked and the stem core can be made into a drink. A strong string is made from the inner parts of the fan shaped leaves and is woven into ornaments and baskets.



Livistona inermis

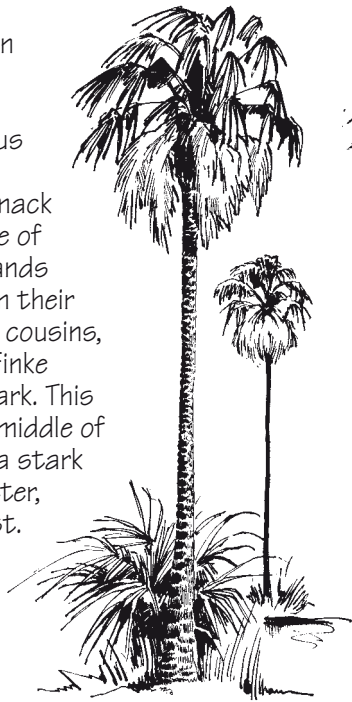


This woven dilly bag is made from string which comes from the leaves of *Livistona inermis*.

Give us lots of water, please!

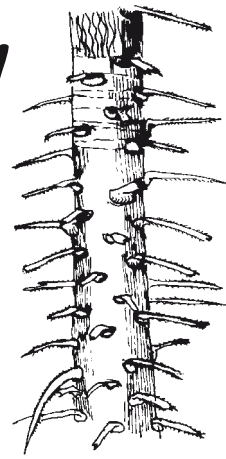
The other species of *Livistona* live close to, or permanently in, water. Many are found in dry-looking, rocky sandstone escarpment country. But these rocks act like a sponge during the wet season and release a steady trickle of underground water during the dry season. Here are a few examples.

Central Australian Cabbage Palms, *Livistona mariae mariae*, are famous for their location! They are found smack bang in the middle of Australia, thousands of kilometres from their nearest northern cousins, in a tiny area of Finke Gorge National Park. This lush oasis in the middle of arid Australia is a stark reminder of a wetter, more tropical past.



Livistona mariae rigida live near calcium rich springs and rivers. They also live in rainforest habitats with dark rich soil. They are the majestic palms of the Mataranka thermal pools in Elsey National Park.

Livistona benthamii live on the fringe of black soil flood plains and inside monsoon forests. They can cope having their roots in water for most of the year. Check them out in places like Holmes Jungle Nature Park in Darwin.

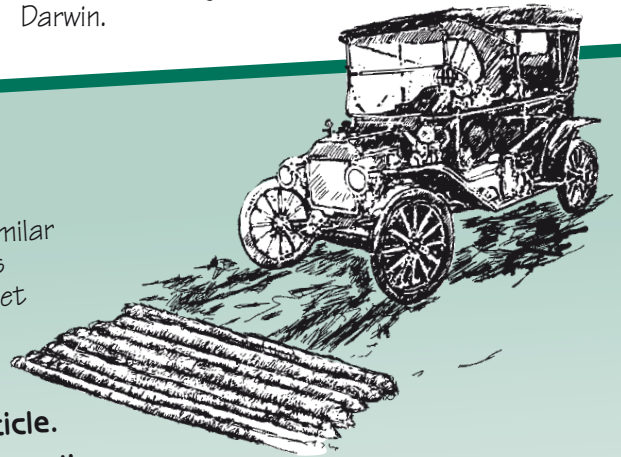


You can recognise some *Livistona*s by remnant palm fronds along their trunk. Some like *Livistona benthamii* are spiky.



A Livistona bridge!

Livistona humilis timber is strong and their trunks grow to a similar size. Early pioneers used them to make strong fences and walls for bark huts. One of the best uses was for a carriage way to get vehicles over boggy swamps and creeks.



Discover what these crossings were called by answering these questions. All the answers can be found in this article. The name has two meanings but this one is unique to Australia. The remnants of some built in the 1950's can still be seen today.

1. Finke Gorge National Park is in Australia's c_____e
2. Livistonas have a long h____y
3. It ____ns in the monsoon season.
4. Deserts are very d____.
5. The name of a Nature Park in Darwin is called Holmes _____.
6. *Livistona mariae* ____da.
7. Escarpments are mostly r_____.
8. *Livistona mariae rigida* is found in E_____ National Park.

- 1 _____
- 2 _____ _____
- 3 _____
- 4 _____
- 5 _____ _____
- 6 _____
- 7 _____ _____
- 8 _____ _____

Discovering Outdoors

Life in the mud

Mud is very wet soil and soil is formed from decomposed rocks, plant and animal bits. So even in wet, sloppy, oozing mud there is a variety of life. The trouble is many of the living things are only teeny weeny and you may not see them with the naked eye. Let's investigate what lives in mud and how to find it!

Where there is mud there is life

In any slop of mud the most obvious living things are the wriggling creepy crawlies. They live in or on the mud so that they can eat the rotting bits of plants which are usually coated in a yummy layer of bacteria. Or they might be there to feast on the animals that do so. You will need the help of a magnifying glass or a microscope to see the real teeny weenies, but you can still see plenty of things with the naked eye.

If you have a microscope you will see that your mud supports life such as amoebas, bacteria, fungi and viruses.



Where to find a sample of mud

Look inside a monsoon forest, or along a river, creek or billabong bank. Especially good mud is found at the bottom of a billabong, on a flood plain or in a mangrove forest. Good rains will also bring life to mud, even in the desert. Just wait two to three weeks for the soil biology to start ticking over. Wherever you do it, it is best to wear gloves, and don't do it if you have any cuts or open wounds on your hands. Some of the bacteria in mud can give you nasty infections!

Mud exploration!

To get the most life out of your mud follow these steps:

- 1 Place a handful of your mud into a shallow tray.
- 2 Gently tease it out so that nothing can hide. Use a watering can and a mist sprayer bottle to break it down without being too rough to the delicate animal life.
- 3 Now go to work with your magnifying glass. Once you sight an animal you may want to separate it into a specimen bottle. Use the tweezers or teat pipette to pick them up gently.
- 4 If you can, photograph what you find to keep a good record of your specimen. Some cameras have a macro setting for this sort of thing. If you're artistic try to draw what you see. This way you can do research at the library to identify your find.

After you have carried out your investigation always release all the living things where you found them. Do your best to keep the living things you find alive.

Things you will need:



Spray mister bottle



Magnifying glass



Tweezers



Specimen jars



Shovel and bucket



Shallow white tray



Teat pipette



Pair of gloves

What's that Pong?

Phew! Some mud can really stink! This is because of special bacteria that live in soils without any oxygen in them. They are called 'anaerobic' bacteria and as they work they give off foul, 'rotten egg' smelling gases. Mangrove mud is the number one offender, but it's usually full of life, so don't be put off!



cSI: child Soil investigator!

Here are some of the animals that you may find in your sample of mud. The aim of this investigation is to match the group of animals to their mud habitat. Simply write down the letter of the habitat next to the animal group. Remember, some species of animals live in more than one type of habitat.

1

Burrowing Frog

Snail

2

Slug

Leach

Centipede

3

Earth worms

Beetle life cycle

4

Cockle

Long bums

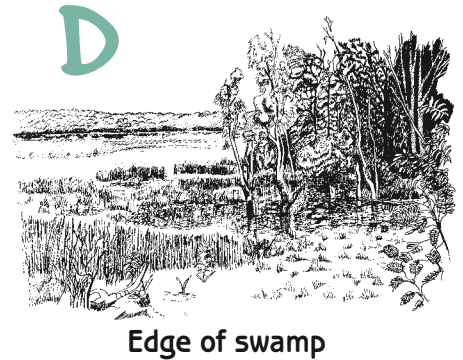
Razor shell

5

Star fish

Sand dollar

Sea urchin



Discover a Territory Park

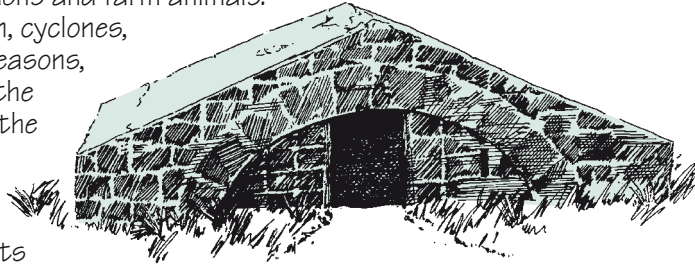
Garig Gunak Barlu National Park

Garig Gunak Barlu National Park is a large remote Park on the Coburg Peninsula, north east of Darwin. It includes the entire Peninsula, the surrounding ocean and neighbouring islands. The Park is jointly managed by the Traditional Aboriginal owners and Parks and Wildlife, and its name is translated as *Garig* (a local language name), *Gunak* (land) and *Barlu* (deep water).



A Fascinating history

The Coburg Peninsula has been occupied by Aboriginal people for at least 40,000 years and Macassan traders visited the area for centuries. In 1838 the British Government attempted to establish Victoria Settlement. They constructed buildings, homes, a fort and a jetty. They even had gardens and farm animals. But after ten years of isolation, cyclones, disease, heat, and harsh dry seasons, they abandoned it. Along with the ruins, they left behind some of the Territories first feral animals, including the Asian Water Buffalo, Bali Cattle, the Timor Pony and pigs. Their descendants still live there today!



An ammunition magazine is part of the ruins which remain at Victoria Settlement.

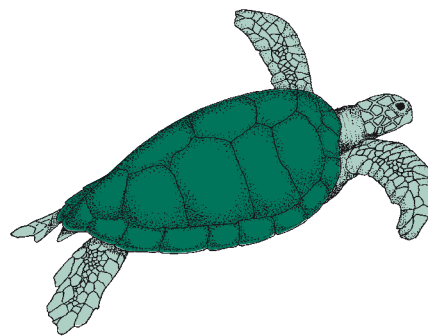
Getting there

The Park is a 570 km drive from Darwin. The road is for 4WD's only, and is closed over the wet season. You can also get there by boat, and there is an airstrip there as well. Black Point has a Rangers Station, Cultural Centre for information, and a shop for fuel, basic groceries and tour bookings.



What to see and do

You can camp in the Park or even hire cabins. Visit the ruins of Victoria Settlement, or laze on a beautiful beach. Walk around a wetland or through a pocket of rainforest. Hire a boat, go fishing and check out the coral reefs. You might even spot some of Australia's six sea turtle species that inhabit the area. Dugongs are quite common, as are potentially dangerous Saltwater Crocodiles. Swimming is not recommended in this Park!



Green Sea Turtles live in the waters and nest on the beaches of the Park.

Puzzle Answers

Urban Encounter:

Katydid's actually have an ear on their front legs.

On the Brink:

Southern Cassowary
Ostrich

Plant Profile:

Corduroy

Discovering Outdoors:

- 1 - B, C, D, F.
- 2 - B.
- 3 - B, C.
- 4 - A, E
- 5 - A.

Asian Water Buffaloes were first released in the Territory from Victoria Settlement. They later spread to cover nearly the whole Top End.

No matter how you get there or how long you stay, permits and fees will apply. If you want to go by road, make sure you book well in advance by phoning the Permits Officer on 8999 4814.

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