



Junior Ranger

Review

ISSUE 3, 2003



Spiky Spinifex

On the Brink

Burrowing Bettong



Urban Encounters

Agile Wallaby





Our Little Desert Digger

The red sandhills and sand plains of Central Australia are a different place today than they were 100 years ago. You'll no longer see many animals that used to live there. The Malas, Bilbies and Golden Bandicoots have all bitten the dust! Sadly, the Burrowing Bettongs have also gone.

Once upon a time, Burrowing Bettongs (*Bettongia lesueur*) were common animals in the dry parts of Australia. They dug large warrens where they hid during the heat of the day. At night they came out to feed on tubers, bulbs, seeds and the green parts of some plants.



Bettongs are similar in size and habits to the European Rabbit. They're sometimes called Rat-kangaroos because they look like a cross between a Bandicoot and a Kangaroo.

Bettongs are quite vocal creatures, making a variety of grunts, whistles and squeals.



Professor Baldwin Spencer from Melbourne University travelled to Central Australia in 1894 with the Horn expedition. He wrote at the time:

'Judging by the number and size of the excavations which it makes, it is the most common form of marsupial amongst the sandy plains and sandhills, where we often saw it during the daytime, dodging with wonderful speed and agility in and out amongst the bushes and tussocks of porcupine grass.'

It's a different story today. Now you'll only see these hard working desert diggers on 4 small islands off the coast of Western Australia.

To reveal the names of these islands, change each letter to the one that comes before it in the alphabet.

C B S S P X
[] [] [] [] [] []

and

C P P E J F
[] [] [] [] [] []

islands off the Pilbara coast.

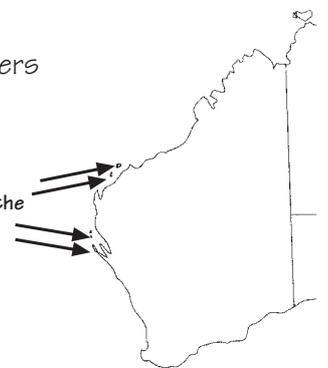
C F S O J F S
[] [] [] [] [] []

and

E P S S F
[] [] [] [] []

islands in Shark Bay.

The last refuges of the Burrowing Bettong





Arch Enemies of Australia's Bettongs



Bettongs disappeared from the mainland after European Rabbits (*Oryctolagus cuniculus*) arrived, ate their tucker and then kicked them out of house and home.

European Foxes (*Vulpes vulpes*) have also decimated the Burrowing Bettong population.

When did they go?

It seems that the crunch time for the Burrowing Bettong came in the big drought of the 1920s.

Droughts are a regular feature of the climate in Central Australia but the one of 1924-1929 was especially bad. Scientists believe that the drought had a bigger impact on the native fauna than any other in recent history.

It was the first big drought since Rabbits had made their way to Central Australia. The Bettongs found it hard to compete with them for food and their numbers were pushed to a critically low level.

Unlike Rabbits, Bettongs are not prolific breeders and weren't able to recover as quickly once good conditions returned. Once they were reduced to low numbers, they were easy pickings for crafty predators like the European Fox.

Another name for the Burrowing Bettong

In Western Australia the Burrowing Bettong is known by its Aboriginal name. Use the following grid to work out what this is.

9 across and 2 down

5 across and 5 down

10 across and 6 down

1 across and 5 down

6 across and 8 down

4 across and 9 down



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

Can you find these 30 words in the grid? They go in all directions and some are written backwards.

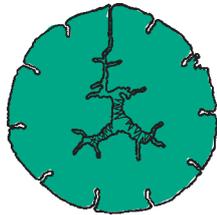
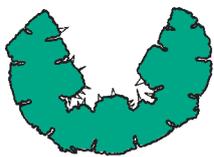
- | | | | | | |
|--------|-----------|----------|------|--------|---------|
| ANT | BURROW | COCKATOO | EGG | LEAF | RAT |
| BAT | BUSH | COW | EURO | MOTH | ROO |
| BEEBLE | CAT | DINGO | FOX | OWL | SEED |
| BILBY | CENTIPEDE | DRAGON | FROG | PEEWEE | TERMITE |
| BULB | CICADA | DUNE | HOT | RABBIT | WREN |



Spiky Spinifex

Unlike the shifting sands of the Sahara, Australian deserts contain a surprising amount of vegetation. There are majestic Desert Oaks, colourful wildflowers and many wattles. However, it is spinifex grass that rules the roost here.

More than a fifth of Australia is covered by Spinifex (*Triodia* spp.). There are over 60 species. These tough grasses have no trouble coping with the hot desert sun and Australia's driest and most infertile soils.



When they're young the leaves are flat and relatively soft. However, they curl up lengthwise as they age, becoming a stiff, pointed spike.

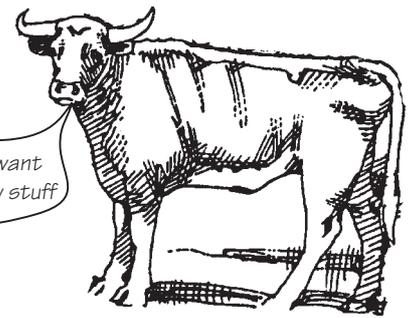
As Nutritious as Newspaper

Very few animals eat Spinifex. The leaves are too tough! Cattle won't touch them unless they're desperate and there's nothing else.

They're stiff and hard because they contain lots of silica. This is the same mineral that makes up the desert sand. The leaves become a bit more digestible after rain but they're still lousy tucker!



Clumps of Spinifex have deep roots to suck up moisture.



We don't want that lousy stuff



Euros (*Macropus robustus*) are one of the few native animals known to have a nibble on Spinifex. They have a specially adapted stomach sac containing microorganisms that help them break down the tough leaves.

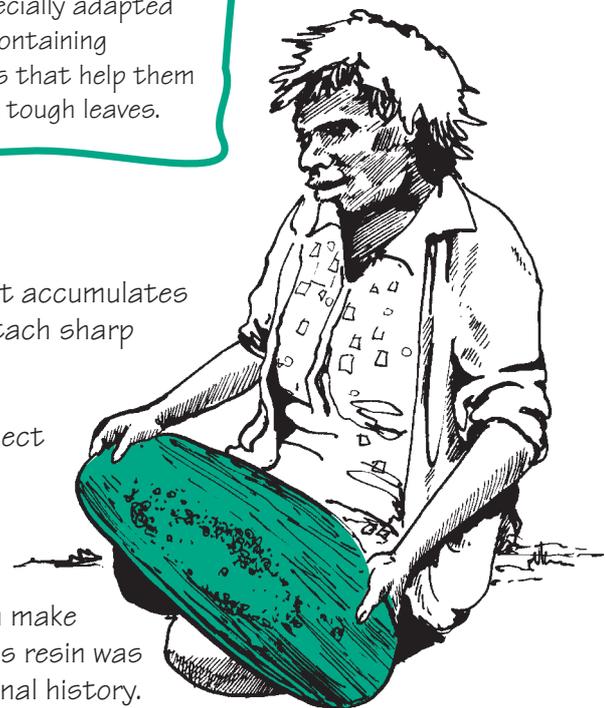
A Technological Breakthrough



Some species of Spinifex contain lots of sticky resin that accumulates at the base of the stems. Aboriginal people use it to attach sharp stone knives.

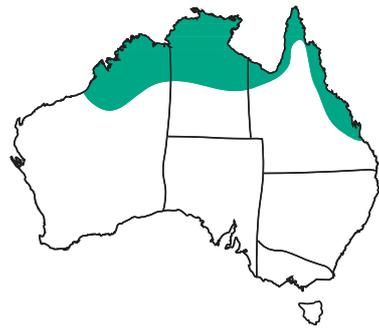
Extracting this resin takes time and skill. The people collect the grass and pile it up on flat rock. Then they pound it repeatedly with a stick.

They end up with a pile of resin and chaff which they heat until the resin melts. It sets hard and strong but you can make it soft and workable again if you reheat it. Discovering this resin was undoubtedly one of the most significant events in Aboriginal history.



Fleet-footed Furries

The Top End's most common roo was named the Agile Wallaby by the early settlers on the Cobourg Peninsula in the 1830s. They were impressed by its ability to elude their hunting dogs.



It isn't a big roo and the girls are noticeably smaller than the blokes.

Its distinctive droppings are shiny black when fresh. It's OK to handle them. They're just dry grass.

The Agile Wallaby (*Macropus agilis*) is a very social animal, often seen in large groups. Biologists have a word to describe animals like this.

Can you **decode the word**? (Clue: J = 12, K = 13, L = 14)

9 20 7 9 3 20 11 17 23 21



Kangaroo or Wallaby?

There's no fundamental difference between Kangaroos and Wallabies except size, with Kangaroos generally larger. All are classified as *macropods* which means big foot.

Captain Cook's Kangaroo

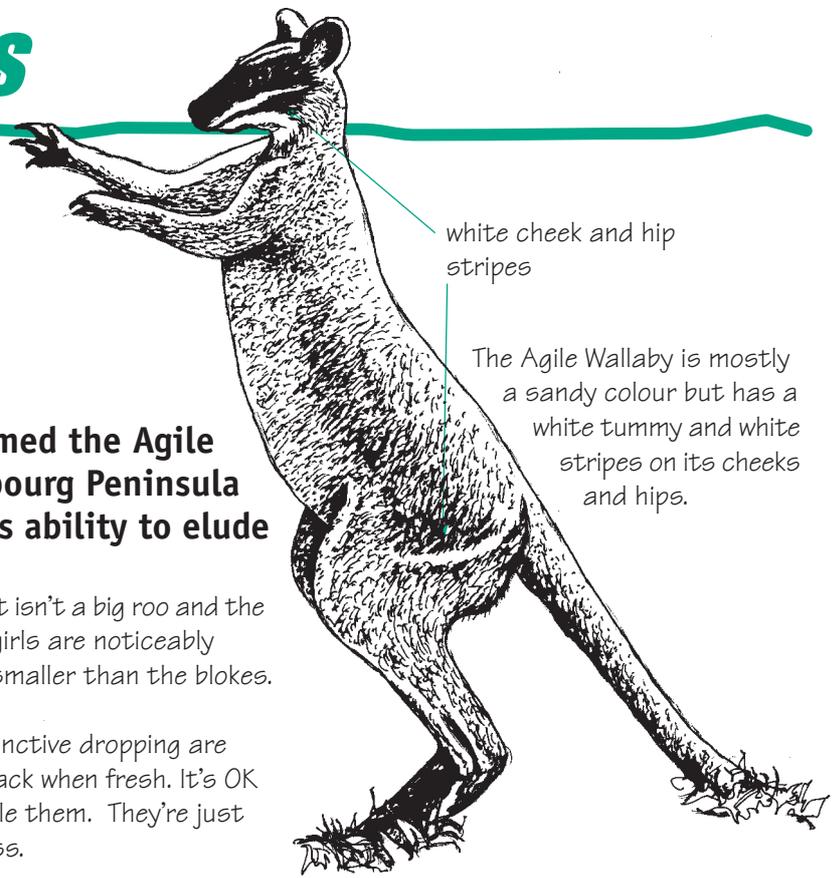
In 1770 Captain Cook and his crew spent 7 weeks ashore in North Queensland repairing their ship the Endeavour which had been damaged on the Great Barrier Reef. While there they saw Australia's extraordinary hopping mammals for the first time.

Cook wrote:

'I saw myself this morning a little way off from the ship, one of the animals before spoke of: it was of a light mouse colour and the full size of a greyhound with a long tail....Its progression is by hopping or jumping 7 or 8 feet at each hop upon its hind legs only....It bears no sort of resemblance to any European animal I ever saw.'

For many years scientists wondered what Kangaroo Captain Cook and his men saw. Some thought it might have been the Agile Wallaby which is found in North Queensland as well as the Top End. However, it's more likely it was the Whiptail Wallaby (*Macropus parryi*). It looks a lot like an Agile but is smaller, grey rather than sandy coloured, and has a long slender tail like a whip.

The story goes that the local Aboriginal people replied 'kangaroo' when the white men pointed to these animals. They assumed this was the Aboriginal name for the creatures. Little did they realise the word Kangaroo actually meant 'go away'!



white cheek and hip stripes

The Agile Wallaby is mostly a sandy colour but has a white tummy and white stripes on its cheeks and hips.

The animal has quite an upright stance.

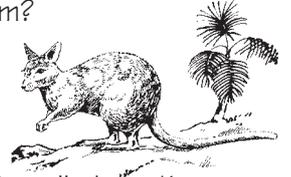


Kangaroo Questions

- Australia's biggest Kangaroo is the
 - Grey (*Macropus giganteus*).
 - Euro (*Macropus robustus*).
 - Red (*Macropus rufus*).
- The Kangaroo speed record is held by a female Eastern Grey which was clocked at
 - 64 kph
 - 84 kph.
 - 104 kph.
- What percentage of Kangaroos survive to their second birthday?
 - 25 %.
 - 50 %.
 - 75 %.
- True or False?** Kangaroos don't sweat.
- True or False?** The NT's smallest macropod, the Nabarlek, can produce an endless number of teeth to replace ones that wear out.



- Which animal is the emblem of the Australian Wallabies Rugby Union team?
 - Agile Wallaby.
 - Pretty-faced Wallaby.
 - Red-necked Wallaby.
- Which Victorian AFL team is called the Kangaroos?
- What island off the coast of Western Australia is famous for its Quokkas?
- Kangaroo Island is off the coast of which Australian state?
- Euros generally live in
 - sandy deserts.
 - rocky country.
 - mangroves.



Different flavoured milks from the one cow

You don't normally see pictures of Kangaroos on Mother's Day cards. It's a pity because they're pretty clever Mums.

A female roo can have three babies on the go at once: a young joey at her feet; a small one growing in her pouch and a tiny embryo in her tummy.

She's also got a great milk bar. The stuff she feeds the toddler at her feet is quite different to the milk she supplies to the bub in her pouch. Cows aren't so clever!

Imagine how good it would be if we could breed a cow to produce chocolate, strawberry and iced coffee from the same set of udders!

Desert roos - masters of survival

Desert Kangaroos can go a long time between drinks. Their specially modified kidneys enable them to excrete very concentrated urine to save water.

They also have a low **metabolic rate**. (An animal's metabolic rate is a bit like the speed at which a car's engine ticks over.) Because a roo's **'engine'** is running at fairly slow **'revs'**, it generates less body heat than other mammals. So it doesn't have to waste a lot of water by sweating.

Having a low metabolic rate also reduces its protein requirements. This means it can get by on grass feed that's too poor in quality for many other grazing animals.

Great fuel economy and an excellent suspension system

Kangaroos hop at a fixed rate. This is very fuel-efficient.

If they need to go faster, they lengthen their stride but don't change their hopping frequency.



Bushwalking Birds

If you go walking in the Top End bush, you may be lucky and come across a line of Partridge Pigeons strutting across country too.

The Partridge Pigeon is a bird of the Top End. It has a distinctive patch of bare red skin around its eyes.

You may also spot them in the Kimberley region but the ones from the west have a yellow eye patch.



Generally, the birds keep to areas of open woodland. However, they don't like areas with tall stands of speargrass.

Instead, they prefer gravelly slopes where the grasses are shorter and they can more easily poke around for seeds. Their favourite feeding places in the dry season are clearings where new growth has begun to appear after a grass fire.

The largest numbers of birds are seen in the country between the East Alligator and South Alligator Rivers. They're also common around Pine Creek but you're not so likely to see them in Darwin.

These Pigeons like a bit of company...of the feathered kind, that is! They regularly gather in flocks of 50 or more. Sometimes even a few hundred have been seen together!

They live on the ground and are great walkers. In the wet season, when the grass is too tall for easy movement, they often make their way along buffalo tracks or quiet bush roads.

When they're on the move, they string out in long lines as they hurry through the bush and constantly coo to each other as they go.

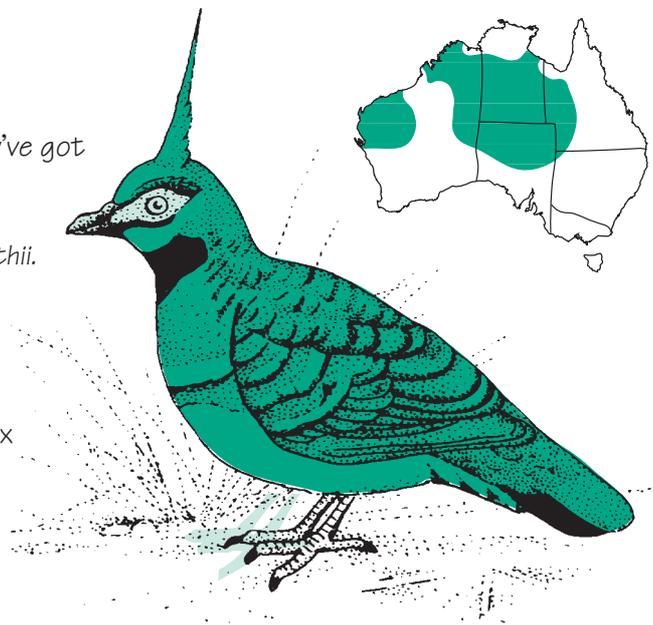
Desert Cousins

You don't see Partridge Pigeons in the Centre. But they've got a close relative there: the Spinifex Pigeon.

The Partridge Pigeon's flash scientific name is *Geophaps smithii*.

The Spinifex Pigeon is *Geophaps plumifera*. It has a distinctive plume on its head.

Spinifex Pigeons inhabit rocky areas covered with Spinifex grass. They also spend most of their time on the ground, hunting for seeds. If you disturb them they explode into the air, noisily flapping their wings, but only fly a short distance before landing again.





Measuring Wind Speed

The 'knock-em' down winds are pretty famous in the Top End. Have you ever wondered about just how fast the winds actually blow? Here is a simple device that you can make to measure wind speed and it's surprisingly accurate.

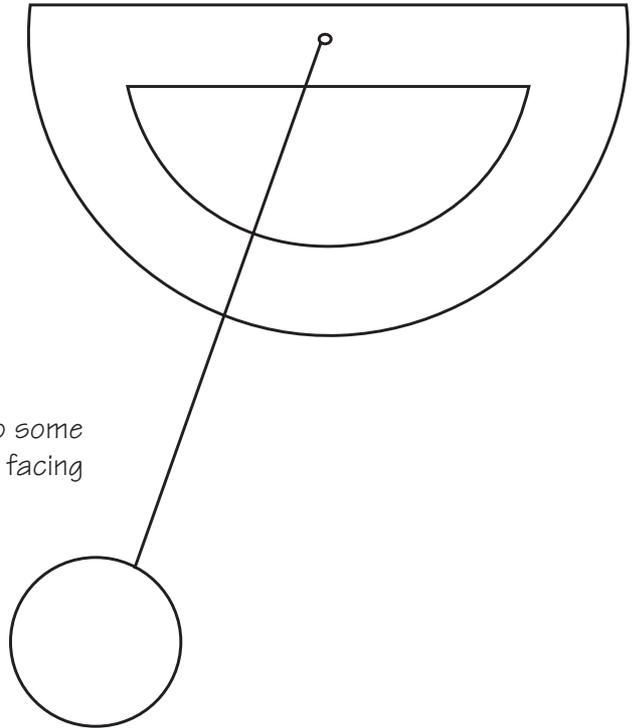
Once the speed is established you can then compare it with the Beaufort Wind Scale to determine a number, description and potential effect of the wind.

What you'll need

- strong thread or fishing line, about 40 cm long
- ping-pong ball
- large protractor
- glue and sticky tape thick cardboard (for mounting the protractor)

Construction:

1. First you must use sticky tape to attach the protractor to some cardboard. Do it so that the curved side of the protractor is facing downwards.
2. Tape or glue the thread (or fishing line) to the ping-pong ball.
3. Tie or glue the other end of the thread to the centre of the protractor.



Using the device

Take it outside, away from buildings, to measure the wind speed. As the wind blows the ping-pong ball, the thread will move off centre at an angle. Read this angle on the protractor.

Then use this table to convert this angle to a measure of the wind speed.

String angle degrees	90	80	70	60	50	40	30	20
Wind speed km/h	0	13	19	24	29	34	41	52

Refer to the **Beaufort Wind Scale** and write down your observations about the strength of the wind.

Beaufort Wind Scale

Beaufort number	Description	Wind speed kph	Effect
0	calm	less than 2	Smoke rises vertically
1	light air	2-5	Smoke drift shows wind direction, wind vanes don't move
2	light breeze	6-12	Wind felt on face, wind vane moved
3	gentle breeze	13-20	Leaves and small twigs in motion, hair disturbed, clothing flaps
4	moderate breeze	21-30	Dust and loose paper moved, small branches move
5	fresh breeze	31-40	Small trees with leaves begin to sway, wind force felt on body
6	strong breeze	41-51	Large branches move, umbrellas difficult to use, difficult to walk steadily
7	moderate gale	52-63	Whole trees in motion, inconvenience felt when walking
8	gale	64-77	Twigs broken off trees, difficult to walk
9	strong gale	78-86	People blown over, slight structural damage including tiles being blown off houses
10	whole gale	88-101	Trees uprooted, considerable structural damage
11	storm	102-120	Widespread damage
12	cyclone	greater than 120	Widespread devastation

Did you know?

The strongest wind ever reliably recorded on Earth howled across Mt. Washington USA on the 12 April 1934. It was 362 km/h.

This is pretty fast but meteorologists say that much stronger winds occur near the centre of tropical cyclones.

PUZZLE ANSWERS

On the Brink (page 2 & 3)

Barrow, Boodie, Bernier and Dorre islands Boodie

Plant Profile (page 5)

Its efficient kidneys produce the most concentrated pee of any mammal on Earth.

Urban Encounters (page 6)

gregarious

Nature Quiz (page 7)

- c
- a
- b
- True. They lick their arms and chest and the evaporating saliva takes heat from the blood vessels.
- True
- c
- North Melbourne
- Rottneest Island
- South Australia
- b

Creature Feature (page 9)

The common Partridge of Europe is also a grey bird with a red face and spends most of its time on the ground.

We need to change the way we burn and when we do it. Big hot bushfires are a problem for the birds.

Around the traps



G'day from Ranger Bill

Welcome to the third issue of the Junior Ranger Review for 2003. It is terrific to see so many young Territorians being involved in exploring, learning about and helping to protect our natural environment through the Junior Ranger Program. Many of you may not be aware that we are now known as the Parks & Wildlife Service of the Department of Infrastructure, Planning & Environment (DIPE), Northern Territory Government. We manage over 90 parks and reserves as well as all the flora and fauna of the Northern Territory. This is our main contribution to balancing conservation with development. Kakadu and Uluru-Kata-Juta (Ayers Rock) National Parks are not looked after by us but are managed by the Federal government agency Environment Australia.

A big thank you to all the Junior Rangers who dropped in and supported the Parks & Wildlife show displays throughout June and July, great to see you there. The displays in Alice Springs, Tennant Creek, Katherine and Darwin proved very popular once again. Also congratulations to all those Darwin Junior Rangers who recently completed their St. John's Ambulance First aid Certificates - stay safe in the bush!

Darwin

Since our last issue, Junior Rangers have been very busy. Working activities around the mid-year holiday break wasn't easy, but we still managed to have some enjoyable sessions. Congratulations to all those who participated in our St. John's Ambulance First Aid courses.

During June, the 9-11 year old Junior Rangers explored bush safety and survival skills. We learnt about some of the dangerous creatures of the NT - snakes, spiders and stingers! Making fire for survival was a big hit with lots of rubbing of sticks and magic chemical reactions. July saw Junior Rangers take a break during the school holidays only to return later in the month for a 3.5km hike along a coastal trail at Casuarina Coastal Reserve where we learnt about habitat change and how to identify subtle vegetation differences and possible causes. By all accounts everyone had a thoroughly enjoyable experience culminating in some 'snags on the

barbie'. August saw Junior Rangers investigating heritage and culture with a highlight being a journey back in time to explore the ruins and stories of Channel Island's leprosarium. September will see a flashback to some favourite activities including crocodile management.

The 12-14 year old Junior Rangers have been busy exploring Top End flora and fauna over the last couple of months. Visits to Holmes Jungle and Howard Springs explored the nocturnal world with a spotlight walk and the lives of threatened species. This group is now planning toward their end-of-year camp.

By the way, Ranger Vanda had a baby boy named Ethan and is enjoying her leave and looks forward to returning in time for next year's program.

See you in the scrub!

Ranger Dean.

Katherine

The Parks and Wildlife Katherine show was a huge success this year. It is one of Ranger Andrew's main tasks to coordinate the planning and construction of the display. This year's theme was based on 'protecting your patch', and was about allowing the survival of wildlife on your property by managing your property to support wildlife, much the same as rangers do on National Parks.

The main topic was bush fire and how through protecting your patch, fire can be better managed on properties and vacant bushland outside of National Parks. Fires are part of our bush environment and it has been that way for a long time. However the way we manage fire now is different from the way Aboriginals burn.

Woodland is gradually being turned into grassland with the result that large numbers of our wildlife species will disappear from those

areas. The cause is too many fires; later in the year most of which are large hot-fires. Healthy bush is one that supports as much plant and animal life (diversity) that it can. There are ways of managing fire that allows for the survival of all species found in the area. For those that missed out this year's show do not worry because it will run again in 2004.

Our 'Earth' theme runs in September, so be prepared for making mulch, geology, fossil hunts and caving, then we will look skyward at night toward the stars through a large telescope because all of the space that surrounds earth is part of nature as well. After our 'Earth' theme, Junior Rangers will be having a close look at 'Fire' the final theme for the year.

See you all soon

Bye from Ranger Andrew

Alice Springs

Central Australia Junior Rangers have been celebrating National Biodiversity Month, with activities happening in September. Alice Springs members got involved with the annual 'Great Marsupial Night Stalk' and Tennant Creek members took up the challenge at the 'Great Threatened Species Quiz night'.

Adrian Bailey, one of our Alice Springs Junior Rangers would like to share a story from his recent trip overseas. Read on to find out more.....

'In my holidays I went to Hawaii where I went to the Hawaiian Volcanoes National Park. I became a Junior Ranger of the park and this is how you can do the same thing.

All you had to do is buy a book that costs a couple of US dollars and fill out at least 3 activities in your age group. They are fairly easy activities to complete for all ages. Then when you're done, you hand it back at the Park Visitor Centre where you would get a ranger to check you're book. After your book is checked, you are asked to agree to a number of things in order to become a Junior Ranger. They give you a badge and a really cool drawing of the volcanoes on a poster. After that the ranger may make an announcement over the PA system to everyone in the Visitor centre. I think that it was a great thing to do while on holidays.'

If any other Junior Rangers have any stories about things they have done while enjoying the environment on holidays or at home, we would love to hear about it. Just contact the Junior Ranger coordinator in your town.

Central Australian Junior Rangers have heaps more activities to get involved in before the end of the year, so get involved.

See you out in the bush,

Ranger Emily.

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