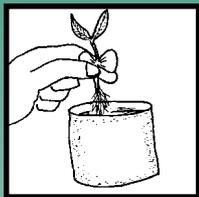


Junior Ranger

Review

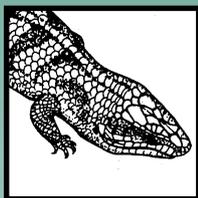
September - December 1999



Project Pages
How to Germinate
Native Seeds



Creature Feature
Leichhardt's
Grasshopper



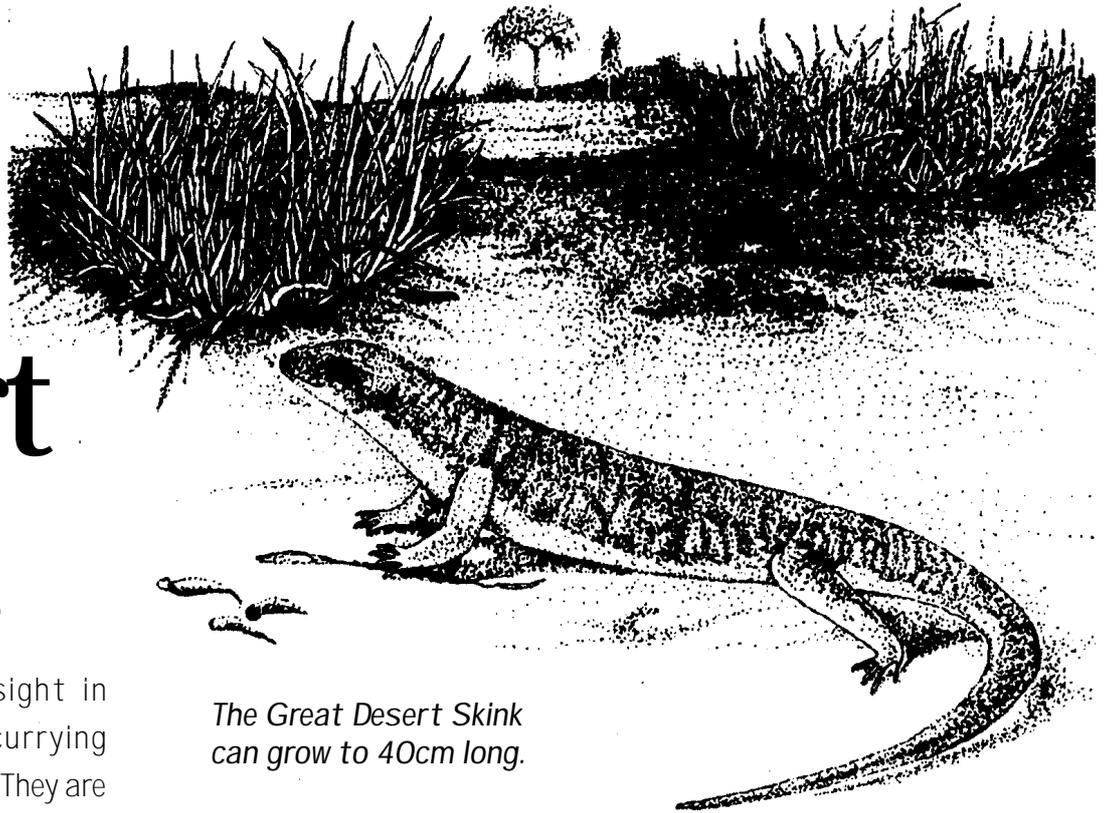
Backyard Wildlife
The Harmless
Blue-tongue



The Great Desert Skink

On The Brink

The Great Desert Skink



The Great Desert Skink can grow to 40cm long.

Skinks are a common sight in Australian gardens, scurrying across paths and up walls. They are mostly small, skinny creatures, compared to their impressive desert cousin *Egernia kintorei*.

The Great Desert Skink is a creature of the spinifex-covered sand plains of outback Australia. Mature adults live in complex burrows with young immature lizards. They emerge at night to hunt termites, ants, beetles and cockroaches. During the cooler months they hibernate rather than venture out on freezing winter nights. Sadly the Great Desert Skink is a species in decline. It is now only known in a single conservation reserve: Uluru - Kata Tjuta National Park.

Many have fallen prey to feral cats and foxes who see them as a tasty meal, too tempting to resist. However, the breakdown of traditional Aboriginal burning practices has probably been the most significant reason for their decline.

For thousands of years Aboriginal people created a rich habitat for Australia's desert wildlife by regularly burning small patches of the spinifex grasslands. But this ceased in many parts of the desert when the people moved into permanent settlements.

The traditional owners and rangers of Uluru have implemented a recovery plan to save the Great Desert Skinks on their land. This involves monitoring lizard populations, controlling foxes and cats, and developing a fire management strategy that will benefit the surviving lizards.

In March 1999 a National Recovery Team was formed to co-ordinate research and management planning across state borders. The team



includes representatives of government organisations, community groups and Aboriginal people.

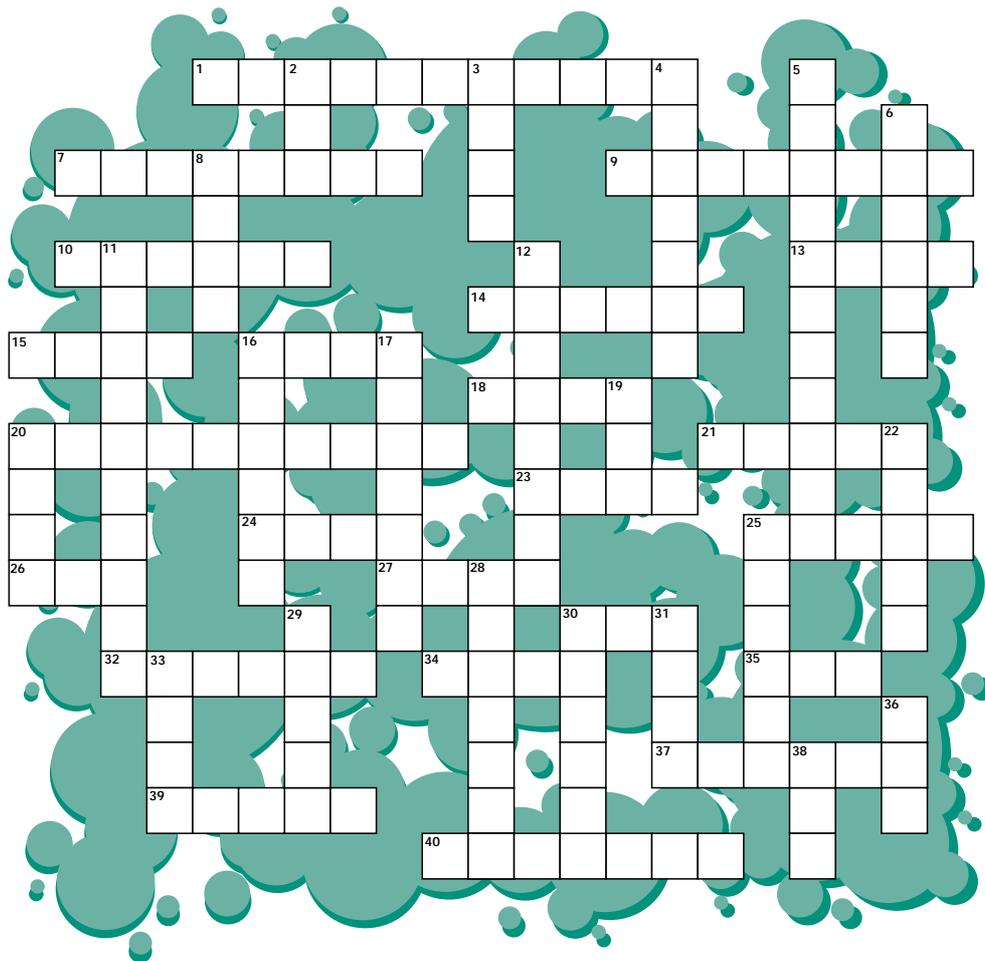
Thanks to Colleen O'Malley from the **Threatened Species Network** for providing the illustration and information for this article. If you would like to know how you can help save endangered species, you can contact Colleen at:

PO Box 2796 Alice Springs NT 0871.

Phone: 08 8952 1541

Fax: 08 8953 2988

Reptile Crossword



Across

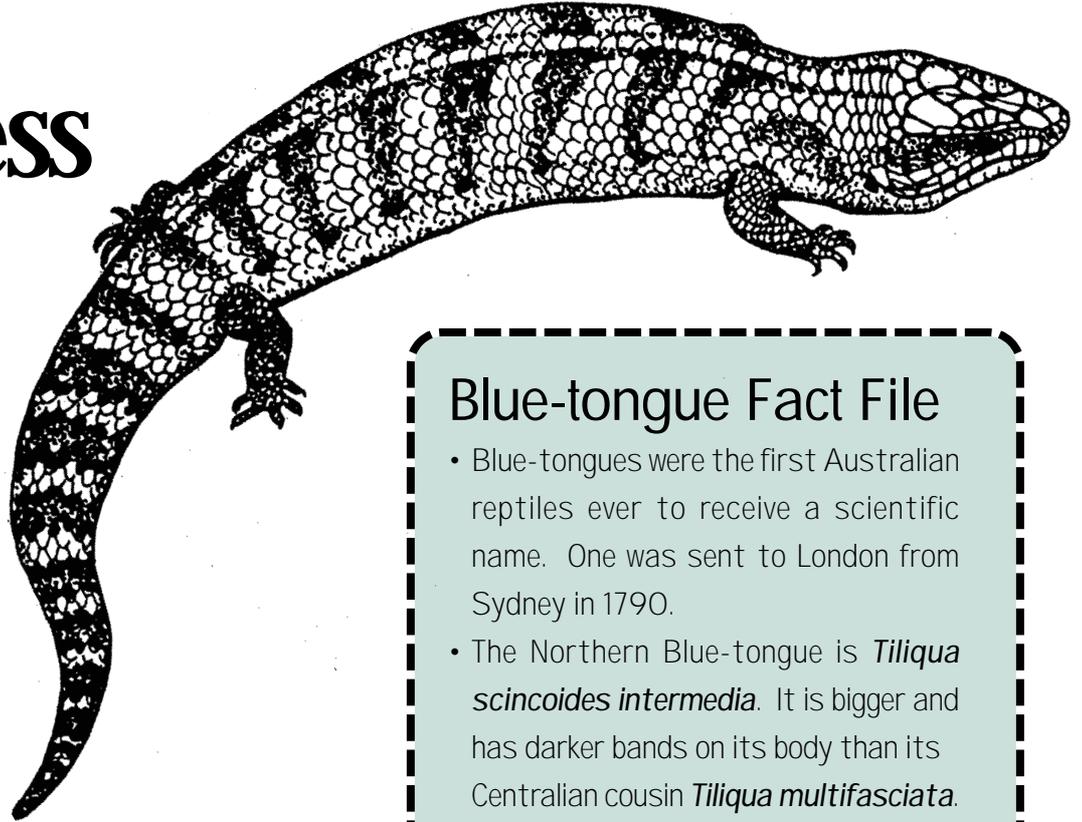
1. The common, large goanna of eastern Australia.
7. Australia's largest goanna.
9. Prickly grass of inland areas.
10. Fleшы muscular organ in a lizard's mouth.
13. Precious metal; Also the colour of the Common Water Skink of eastern and southeastern Australia.
14. Australia's most widespread gecko: *Gehyra variegata*.
15. Colour of the inside of a blue-tongue's mouth.
16. Not alive.
18. _____-tailed Gecko: *Nephrurus levis*.
20. Giving birth to live young, rather than laying eggs.
21. Move slowly on all fours with the body close to the ground.
23. Found on the feet.
24. Not closed.
25. Most numerous family of Australian lizards.
26. Number of legs on *Lerista bipes*.
27. A Thorny Devil's dinner.
30. Nocturnal bird.
32. Thin plates covering a reptile's body.
34. Colour of *Tiliqua's* tongue.
35. A type of tree She-_____.
37. A genus of Gecko.
39. A favourite location of small garden skinks and geckoes.
40. Goanna genus.

Down

2. Predator of lizards in suburban gardens.
3. Place where eggs are laid.
4. Solar-powered, scaly-skinned, egg-laying animal.
5. Slow-moving inoffensive lizard with prominent pine-coned shaped scales.
6. Colour of the tip of a Sand Goanna's tail.
8. Spherical objects made by female reptiles.
11. Feeding on both plants and animals.
12. Genus of slender, diurnal lizards.
16. Family of diurnal lizards with rough skin and well developed limbs.
17. Active during the daytime.
19. Stinging insect.
20. Anal opening.
22. Two-_____ Dragon *Diporiphora bilineata*; common in Top End gardens.
25. The feel of a skink's skin.
28. Genus to which blue-tongue's belong.
29. Thorny _____ *Moloch horridus*.
30. The genus to which the Velvet Gecko belongs.
31. _____-nosed Water Dragon. *Lophognathus longirostris*.
33. Pointed fingernail or toenail.
36. Rodent.
38. Edible starchy tuber.

Backyard Wildlife

The harmless Blue-tongue



Why do they have a blue tongue?

These harmless, slow-moving creatures rely on bluff tactics to discourage their enemies: a whole lot of huff and puff. They hiss loudly, inflate their body and stick out their impressive blue tongue. This contrasts in colour with their mouth.

What are their enemies?

They have to keep an eye out for eagles and falcons, goannas, snakes, cats and dogs. In cities, many fall victim to snail bait, car wheels and lawn mowers.

How long do they live?

Over 20 years, if they are lucky!

Can I keep one as a pet?

Yes, provided you buy it from a licenced dealer. You cannot take one from the bush.

What do they eat?

They are omnivorous. They eat a wide variety of plant and animal materials, especially fleshy leaves, flowers and fruit and insects such as beetles, and snails.

Blue-tongue Fact File

- Blue-tongues were the first Australian reptiles ever to receive a scientific name. One was sent to London from Sydney in 1790.
- The Northern Blue-tongue is *Tiliqua scincoides intermedia*. It is bigger and has darker bands on its body than its Centralian cousin *Tiliqua multifasciata*.
- You wouldn't think so at first glance but blue-tongues belong to the skink family.
- Blue-tongues are found in most of Australia, from the coasts to the highest mountains and from rainforests to the deserts.

When are they active?

They are diurnal rather than nocturnal. They are most active in the early morning and late afternoon.

Where do they hide?

They shelter in leaf litter or under logs or overhanging rocks.

How many eggs do they lay?

They don't lay any! They are viviparous, not oviparous. Eastern Blue-tongues give birth to as many as 18 live young but Centralian Blue-tongues only produce 3 or 4. Mums don't stick around to look after the babies. So there's a high mortality rate.

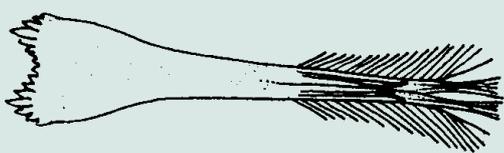
Plant Profile

Grevilleas

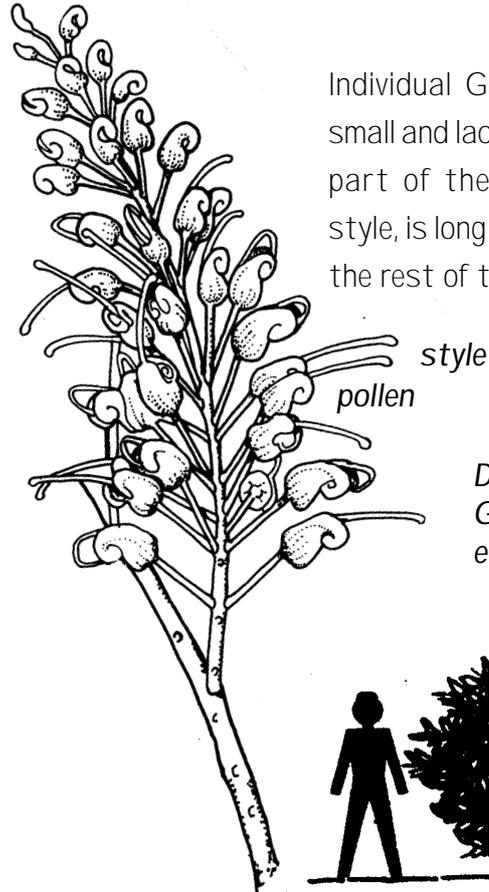
Grevilleas are named in honour of Englishman Charles Greville (1749 - 1809). He was a founder of the London Horticultural Society who took a keen interest in Australian plants. He cultivated many from seeds shipped to England from the new colony of New South Wales.



Grevillea flowers are rich in nectar. Honeyeaters push their long beak inside to get this sweet liquid. Pollen is deposited on the bird's beak and face. It transfers this pollen from flower to flower as it feeds.

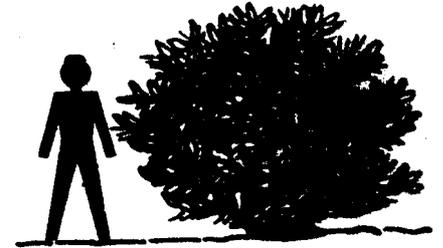


The honeyeater's brush-tipped tongue sucks up the nectar like a paint brush.



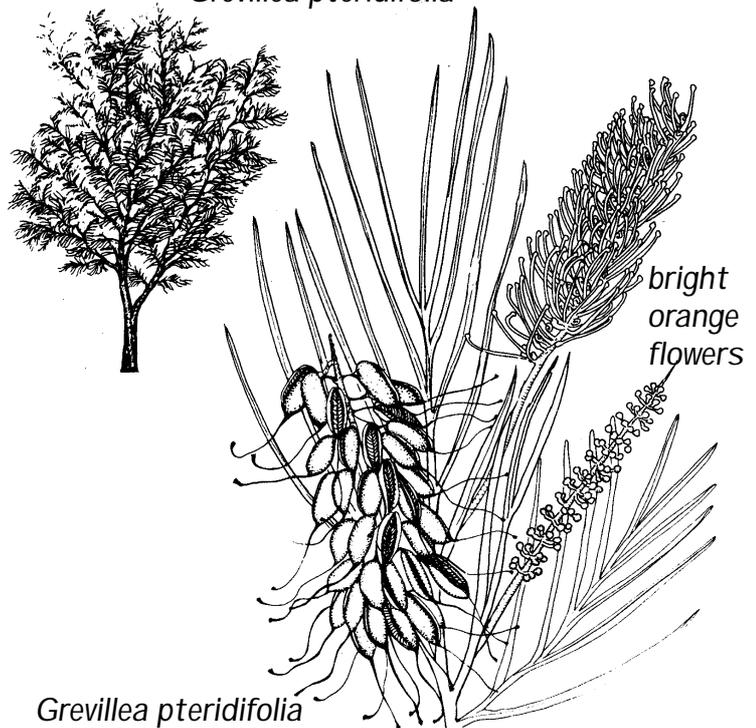
Individual Grevillea flowers are small and lack petals. The female part of the flower, called the style, is long and protrudes from the rest of the flower parts.

Desert Grevillea
Grevillea eriostachya



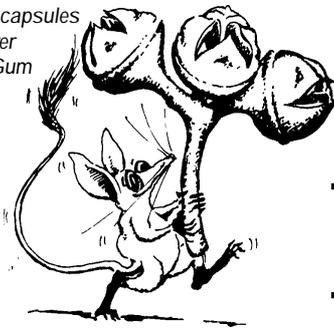
The Fern-leaved Grevillea *Grevillea pteridifolia* is a small tree which grows along the banks of creeks and swamps in the Top End.

Grevillea pteridifolia



Grevillea pteridifolia

Grevillea seed pods split down one side to release two winged seeds. At the tip of each pod are the remains of the style.



Project Pages

How to germinate

Many native Australian plants have a built-in mechanism to delay germination. So they need special treatment if you want to grow them from seed. As a general rule, seeds with hard, shiny coats (e.g. Acacias) need to have their coat cracked. The methods that can be used include:

- scratching or filing the coat
- acid treatment
- boiling water treatment

These treatments, called scarification, replace natural processes such as being cracked by fire, passing through a bird's gut or long periods in the hot sun.

Boiling water treatment

- Place seeds in a dish and pour boiling water over them.
- Leave them to soak overnight.
- Adding vinegar to the boiling water helps if the coats are particularly tough.

Your seed tray

You'll need a shallow, plastic tray, with holes punched in the bottom. Sterilize it with a bleach solution to kill fungi and bacteria (mix 10 ml of bleach in a litre of water).

Buy some peat from a garden shop and soak it in a bucket with water. (This is important because peat is difficult to moisten once it's in a container with drainage holes.) Then mix the wet peat with an equal quantity of coarse sand. Peat holds moisture and sand ensures good drainage. So combining the two will give a mix that is not too wet or too dry.

Fill your tray to just below the top with the mix. Gently bump it on a hard surface to settle it. Don't pack the mix in tightly because the young roots will have trouble pushing through it.

Sowing

Sprinkle the seeds on the surface and cover them with more mix to a depth equal to their thickness. Seeds sown too deep will not germinate. Seeds sown too shallow may dry out and die.

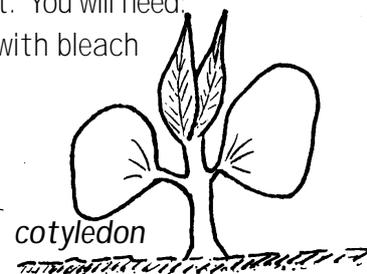
Place the tray in a spot that receives filtered sunlight and use a spray bottle to keep them moist.



Germination

Some seeds germinate within days but others may take months. The first pair of leaves are actually food stores, called cotyledons. Once the seedling has its true leaves and is about 2 cm tall, it is ready for pricking out. You will need:

- recycled potting tubes washed with bleach solution to make them sterile
- potting mix from a garden shop
- an icy pole stick
- Osmocote native plant fertiliser

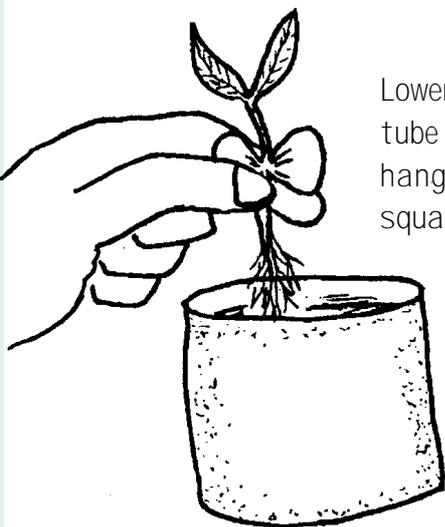


Pricking out



- 1 Fill the tubes with moist potting mix, making a hole in the centre big enough for the seedling.
- 2 Hold the seedling gently between your thumb and forefinger. Slide the icy pole stick down to the bottom of the tray and carefully lift out the seedling. You must not damage the roots.

native seeds

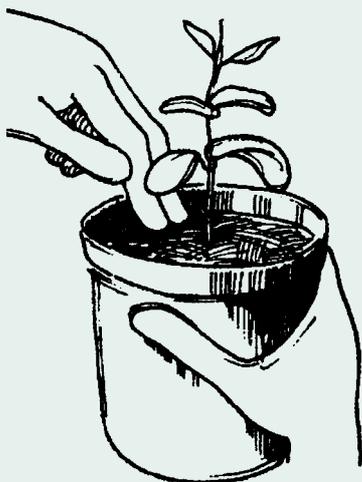


3

Lower the seedling into the tube making sure the roots hang down and don't get squashed up.

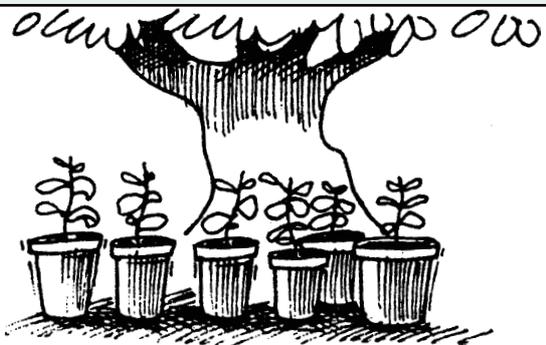
4

Put extra potting mix around the seedling up to the level it was in the tray.



5

Gently push the potting mix down with your finger tips.



7 After one week sprinkle a teaspoon of Osmocote on top of the soil and water it in. Keep the fertiliser away from the stem.

8 Continue to water the seedlings daily with a fine spray. Store the tubes in a well lit spot but not in full sunlight.

Word Slide

A major pollinator of Australian native plants
Change one letter at a time to make each work in this puzzle. Then rearrange the 10 letters in the shaded boxes to reveal the answer.

Heat to 100°C	B	O	I	L
Spiral Shape	C	O	I	L
Metal Money				
Lamb Chop				
Lend				
Groan				
Nasty				
Bend Over				
Drip Out				
Bird's Jaw				
Wild Mammal				
Ray of Light				
Group of Players				
Rip Apart				
52 Weeks				
Listen				
Expensive				
Fruit				



Thanks to Greening Australia (NT) for this information and illustrations. For more information and assistance contact: Greening Australia NT GPO Box 1604, Darwin NT 0801. Phone: (08) 8981 344, Fax: (08) 8981 1182.

Nature Quiz

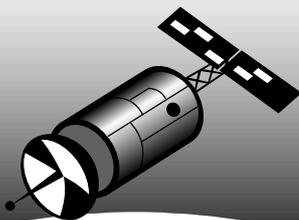
The Weather

(Answers on page 11 of this edition)



Australia's First Weatherman and Weather Station

Lieutenant William Dawes arrived with the First Fleet on HMS Supply. He was ordered to set up an observatory as soon as possible. Governor Phillip wanted him to learn all he could about the climate to help the colony's farmers establish crops.



Weather Satellites

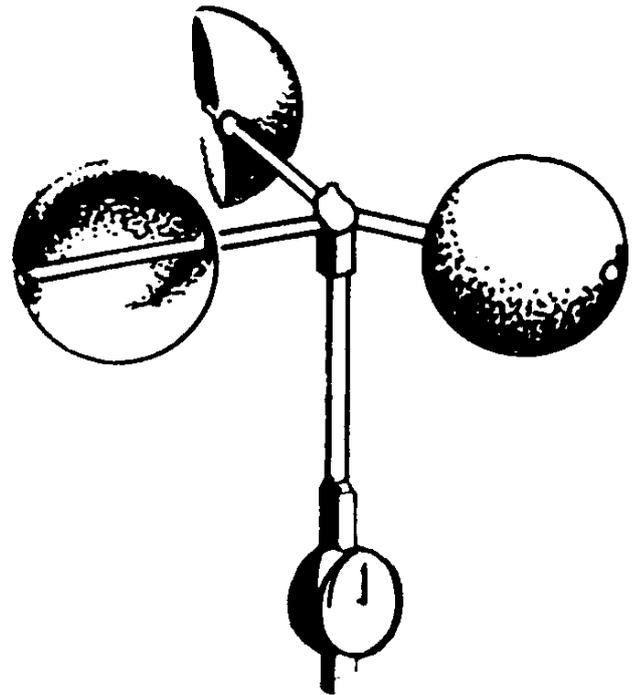
The first weather satellite was launched by the USA on 1 April 1960 and named TIROS1 (Television Infra-red Observational Satellite.)

The cloud photographs Australians see on nightly weather reports are taken by the Japanese Geostationary Meteorological Satellite GMS. It's located 37500 km above New Guinea.

- 1 Why is the date 5 February 1877 significant in the history of Australian meteorology?
 - a) Australia's highest ever temperature was recorded.
 - b) Australia's greatest ever daily rainfall was recorded.
 - c) It was the first time a weather map appeared in an Australian newspaper.
 - d) It was the first time the Met Bureau got the weather forecast right.
- 2 Australia's driest capital city is:
 - a) Adelaide
 - b) Perth
 - c) Canberra
 - d) Darwin
- 3 What Australian town holds the record for the highest temperature ever recorded?
 - a) Alice Springs NT
 - b) Cloncurry QLD
 - c) Oodnadatta SA
 - d) Marble Bar WA
- 4 What does a pluviograph measure?
- 5 What NT bird is known as the Stormbird or Rainbird?
- 6 What are the colours of the rainbow?
- 7 Extreme heat discomfort is called:
 - a) hypothermia
 - b) hyperthermia
- 8 How big were the wind gusts that destroyed Darwin during Cyclone Tracy in 1974?
- 9 What does nimbo (or numbus) mean when joined with a cloud's name (as in nimbostratus and cumulo nimbus).
- 10 Complete these folk sayings:
 - a) When dew is on the grass.....
 - b) Red sky in the morning.....
 - c) Rain around the moon.....
 - d) Rain before seven.....

Weather Words

These hidden words go in all directions and some are written backwards. Colour the boxes as you find each letter.



- | | | |
|----------|----------|--------------|
| Air Mass | Humidity | Monsoon |
| Cloud | El Nino | Oasis |
| Cumulus | Front | Ozone |
| Cyclone | Frost | Radar |
| Desert | Hail | Ray |
| Dew | Ice | Sea |
| Eddies | Isobar | Stratosphere |
| Fire | Land | Sun |
| Fog | La Nina | Trough |
| Heat | Light | Wet |
| Hot | Low | Windy |

You should have 10 letters left over. String them together and you'll get the name of a weather instrument.

Did you know...

- There's 16 000 000 000 000 000 000 000 litres of water floating around up there in the atmosphere!
- Lightning discharges about a million volts, heating the air through which it travels up to 30 000°C!
- The tiny droplets of water that make fog are so small that it would take seven thousand million of them to make a single tablespoon of water!
- The largest desert in the world is Antarctica. It only gets about 125 ml of precipitation a year - just slightly more than the Sahara!
- The fastest winds on Earth are inside a tornado funnel: around 500 kph!

Creature Feature

Leichhardt's Grasshopper

250 000 visitors go to Kakadu National Park each year. The first German visited in 1845 but he wasn't your regular tourist.



*Leichhardt's Grasshoppers feed on the smelly leaves of **Pityrodia jamesii**. It only grows in rocky sand stone country. Chemicals in the leaves give the creature a rotten taste. It has no known predators.*



Explorer Ludwig Leichhardt and his 9 companions were the first white people to visit Kakadu. They travelled overland from Queensland. Before arriving, they struggled for many days to cross the rugged Arnhem Land plateau.

In the stone country they found an amazing, large grasshopper, coloured orange and blue. Leichhardt collected specimens but scientists didn't get to see another one until 1971.

Penelope Greenslade and Lyn Lowe are CSIRO scientists who have been studying this rare creature. A few

years ago they became suspicious that our habit of burning speargrass every dry season might be the reason the grasshopper is now endangered. Young, wingless grasshoppers hatch in March, at the end of the wet season. They climb the stems of a shrub called *Pityrodia jamesii* to feed on its leaves. They grow slowly during the dry season, going through 5 moults before emerging as winged adults in December.

However, this natural cycle, so closely tuned to the seasons, is upset by dry season burning.

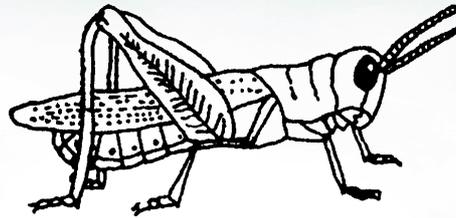
Burning mostly occurs in May or June when the wingless juveniles are vulnerable. They have trouble escaping the fires. Even if they do find shelter they may starve when their host plants get burnt.

If the grasshopper is to avoid extinction, a recovery plan must be put in place. We need to accurately map those places where it survives and protect them from fire. Attempts could also be made to breed the insects in captivity and reintroduce them to sites with suitable habitat.

Creature Feature

Grasshopper Gossip

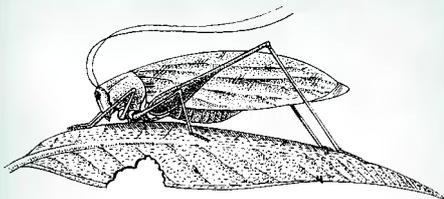
Grasshoppers belong to the order of insects called Orthoptera. This means 'straight-winged' and refers to the way they fold their wings lengthwise, along the back.



A Short-horned Grasshopper's chirping is called stridulation. It rubs part of its fore-wing against toothed ridges on its abdomen. Nearby is a tightly-stretched membrane which acts as an amplifier. It is much like the music a violinist makes by rubbing their bow across the strings of the violin.

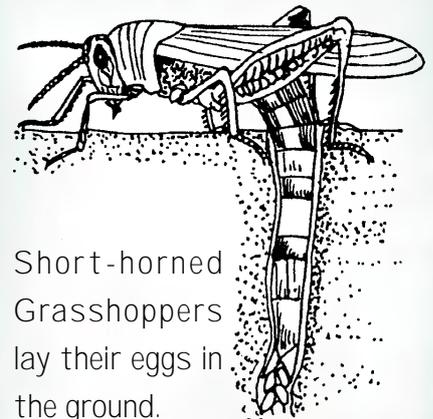
Grasshoppers and termites are the greatest consumers of plant material in the Northern Territory. They eat more than our cattle and kangaroos.

Where are a Leichhardt's Grasshopper's ears? On its abdomen, just behind the spot where its back legs join the body!



Long-horned Grasshoppers lay their eggs on the branches of shrubs. In America they're called katydids because their call sounds like "Katy did, she did".

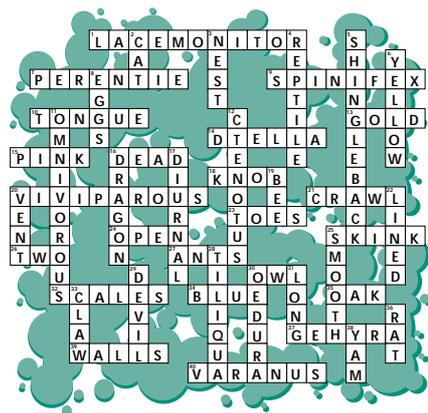
In some parts of the world grasshoppers are eaten. They're considered a great delicacy.



Short-horned Grasshoppers lay their eggs in the ground.

Solutions

Reptile Crossword



Word Slide

Coin, Loin, Loan, Moan, Mean, Lean, Leak, Beak, Bear, Beam, Team, Tear, Year, Hear, Dear, Pear and Honeyeater.

Nature Quiz

- (c)
- (a) Adelaide 528 mm
- (c) The mercury reached 50.7°C in Oodnadatta in 1960. A recording of 53°C for Cloncurry in 1889 has been found to be an error. Marble Bar holds the record for the most number of consecutive days over 100°F: 162 in 1924.
- Rain

- Koel
- Red, orange, yellow, green, blue, indigo, violet
- (b)
- Gusts reached 217 kph before the wind gauge at the airport was destroyed.
- Rain
- (a) rain will come to pass.
(b) sailor's warning.
(c) rain before noon.
(d) fine before eleven.

Weather Words

Anemometer

Around the Traps

Junior Ranger Letter

We have a block at Dundee in stage 1. It is woodland country. Our shack is made from bush timber with an iron roof. Woodland horse shoe bats live in the shack, under the roof insulation, in the door jam and in a light fitting. They are about 10cm long. Every evening at dusk the bats leave to look for food. If the lights are on they fly around the shack a few times before leaving. They come back just before dawn and settle back in to their homes for the day.

Written by Junior Ranger
Raighne Hearn-Renshaw.

Darwin

Animals and plants come in all shapes and sizes and the Top End is well known for many of its unique flora and fauna. Unfortunately much of our wildlife, many of which includes our urban wildlife is found very appealing to people who smuggle them out of the country to make money. Junior Rangers learnt more about this after meeting one of Darwin's Custom Officers and saw first hand the items that have been smuggled in and out of the Northern Territory. Many of these animals die on the trip out and many do not survive once they are in a new environment.

Junior Rangers learnt how they could assist Customs by being community watchdogs and learnt of signs to look for out in the bush of probable smuggling operations.

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The Junior Ranger Review is produced 4 times a year by the Parks and Wildlife Commission of the Northern Territory. This edition was written by Stuart Traynor and design and layout are by Big Picture Graphic Art. The cover was designed by Robbie Henderson. Illustrations in this edition are by Bob Whiteford, Sharon Hillen, Adi Dunlop, Adrian Salter, Kaye Kessing and Glenda John.

G'day from Ranger Bill

The Northern Territory supports a diverse range of flora and fauna, and as some of our Junior Rangers recently discovered, it is illegal to sell or take plants and animals from the Territory without a licence.

Some species are allowed to be legally traded, kept and harvested, but only under special permits and licences issued by the Parks and Wildlife Commission of the Northern Territory. Regulations are also in place to protect animals and plants from unsustainable practices.

The Parks and Wildlife Commission works closely with many Departments including

Australian Customs, Quarantine and Fisheries to help catch people who are illegally trading wildlife without permission.

Parks and Wildlife Commission of the Northern Territory and other Departments depend on the community to help report any suspicious activities relating to our wildlife.

From our backyards to our National Parks, all plants and animals deserve protection and this is something we can all be involved in.

Ranger Bill, Assistant Director
Park Operations.

Katherine

Katherine, like most of the Northern Territory's 'Top End' has turned green with an early start to the wet season. This season is called Jungalk in the Jawoyn peoples language.

The Katherine Junior Rangers are following the Jawoyn Calendar to learn how the Jawoyn's knowledge of six distinct seasons are incorporated into our Calendar year. The season of Malapbar (July, August and September) has been captured in environmental art activities, collecting seasonal seeds, watching the night sky and a full cultural experience at Manyallaluk Cultural Centre.

In Jungalk (October and November), Junior Rangers will be watching the clouds roll in, in Weather Watch. As the rains increase so will a lot of Jawoyn bush food. Junior Rangers are going to learn about what is ready to eat in Jungalk, (the build up) and how the Jawoyn people use this food to survive. The rains of Jungalk have also stimulated our wildlife, which now have plenty to eat. Junior Rangers will be finding out how important the weather is to us and our bush environment.

Alice Springs

The scientific study into the recently discovered Desert Goliath Stick Insect continues with Junior Rangers recording the length of their study insects after moulting. One stick insect named Gumbly Junior Ranger grew 9cm in 15 days. This information will help scientists who are studying these insects.

Did you know that worms had their own special week this year? October 11th was National Earthworm Week. To celebrate, Junior Rangers learnt about worm biology, what they ate and how they moved through the soil. After digesting this information they put together a worm farm, which is now housed at the Commission office. The worm farm consists of approximately 1000 worms but in 1 year we should have between 15,000 to 20,000 worms, not bad for a load of scraps! Did you know that in India they use pits of worms to eat raw sewerage to produce clear water products and fertilisers, which are safe for gardens, crops, and the environment!

"Sharp eyed readers may have noticed that we did not include the answers to last editions Nature Quiz, so here they are:"

1 A 3 B 5 B 7 C 9 C
2 C 4 B 6 A 8 C 10 B

**Contributions are welcome
and should be sent to:**

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