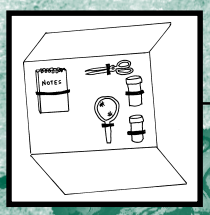
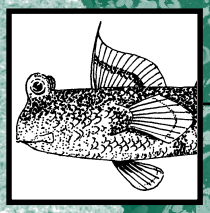
Junior Ranger Review

Issue 1, 2000



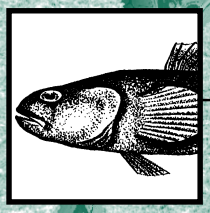
Project Pages

A Naturalist's Toolkit



Creature Feature

Mudskippers

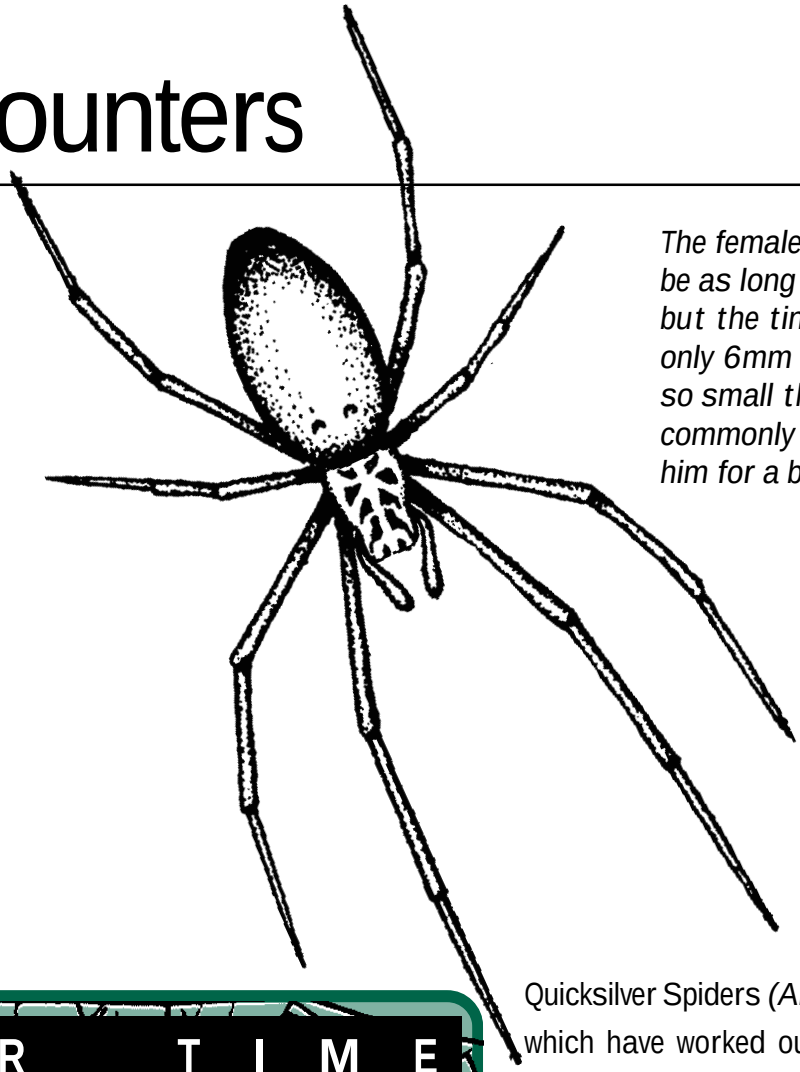


Nature Quiz

The Desert Goby

Waterlilies

Urban Encounters



The female's body can be as long as 45mm but the tiny males is only 6mm long. He's so small that people commonly mistake him for a baby spider.

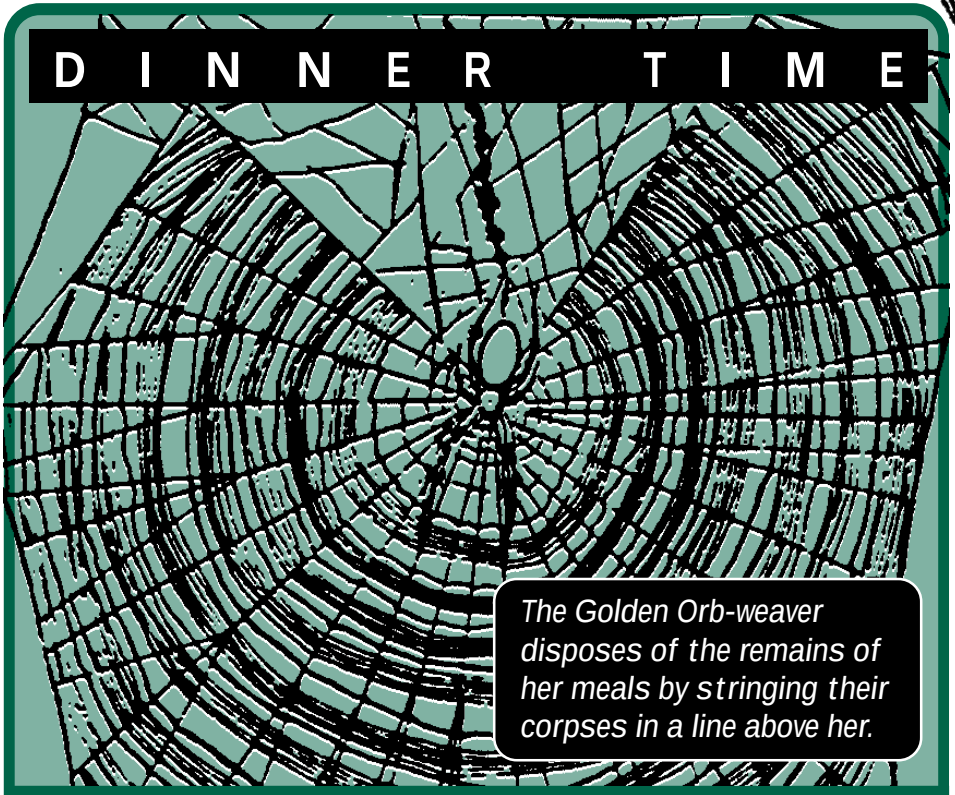
You mostly find *Nephila* spiders in dry, open woodland. Their large, golden webs shimmer in the sunlight. These are the largest and strongest webs built by any Australian spider. They're magnificent feats of engineering and design, and the female Golden Orb-weaver spends all her time there. She has only to sit and wait patiently for her lunch to arrive. The males are much smaller and it is common for a couple of them to hang around the edge, waiting for an opportunity to mate with her.

The web is also home to tiny Quicksilver Spiders *(Argyrodes spp.)* which have worked out a boarding arrangement with their *Nephila* host. She allows them to stay and feed on all the insect prey too small for herself, in exchange for cleaning the web regularly.

The ease with which she is able to move about the sticky web is quite amazing. Web builders have specially modified feet for grasping the silk thread. They always keep their body clear of the silk, even when resting. If their body should happen to accidently brush against the web, an oily coating on their skin prevents them from becoming entangled.

Despite the female's impressive size, *Nephila* spiders are completely harmless to people. They are not aggressive and only bite in self-defence if grabbed or roughly handled. Even so, their fangs are not designed for biting large creatures such as ourselves.

D I N N E R T I M E



The Golden Orb-weaver disposes of the remains of her meals by stringing their corpses in a line above her.

When an unlucky insect arrives for dinner, the spider quickly ties it up with silk to prevent it tearing the web.

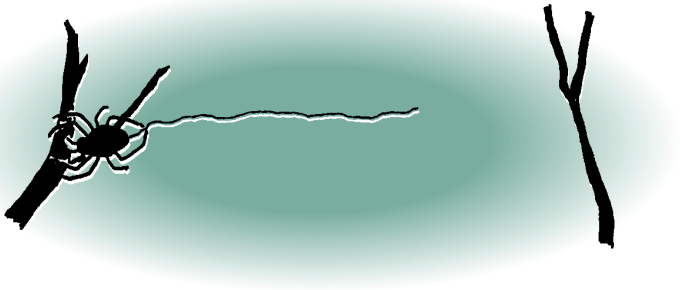
Spiders can't chew solids like we do. They can only swallow liquids. So they drool saliva over their prey and mince it into the flesh with their chelicerae mouth parts. Then they suck the body juices into their stomach. The Golden Orb-weaver disposes of the remains of her meals by stringing their corpses in a line above her.

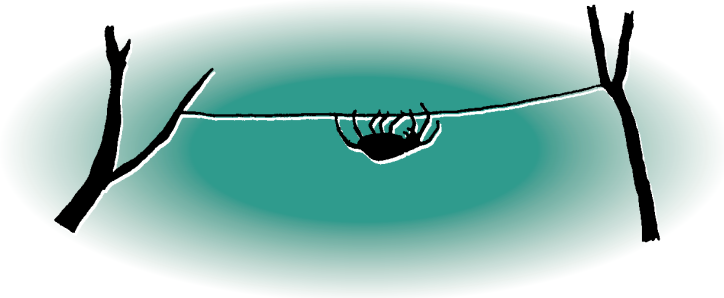
Golden Orb-weavers

Making a web

Spider's silk is one of the strongest and most elastic materials in nature. It is produced in special glands called spinnerets. The female spider can't squeeze it out like toothpaste but has to pull it out with her back legs as she moves along.

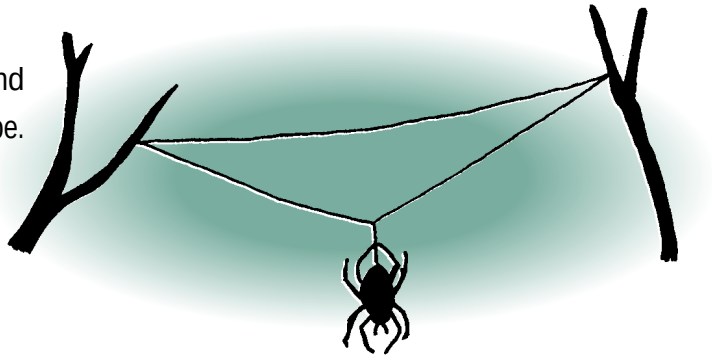
The first step in building an orb web is to construct a horizontal line. She does this by pulling out a very fine thread of silk and letting go of it in the breeze. (There are always very light breezes blowing, even though we don't feel them.) She persists until it catches onto something.

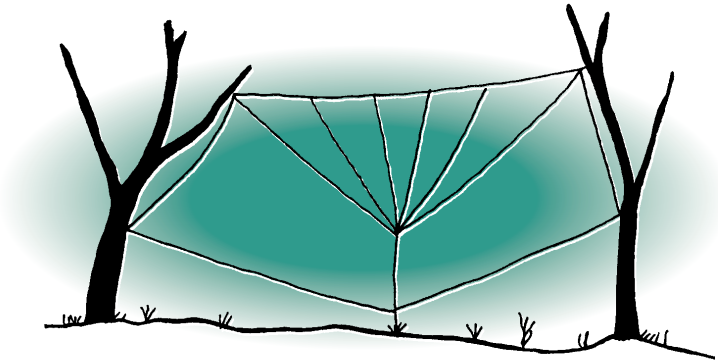




She tests with her feet to make sure it's secure and then ties down her end. Then she darts across to the other side like a tightrope walker in a circus. As she goes, she adds extra silk. She may go back and forth several times, adding silk all the while until it is strong.

Her next move is to build another line across the space and attach it to something on the ground so it forms a Y shape. Then she can construct the radial threads.





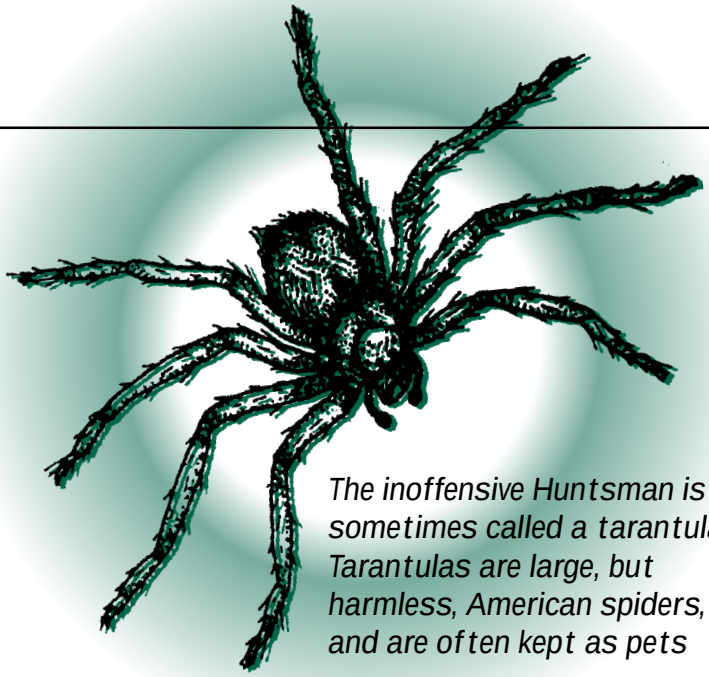
The hard work is now done. All that remains is for her to move around in circles, starting at the centre, and add the sticky spiral threads.

Did you know...

- The word cobweb is derived from the old English word for spider: *coppe*. Cobwebs (or coppe-webs) literally means 'spider-webs'.
- Two spiders were taken aboard the American Skylab in the 1970's to see if they could spin their web without gravity. These spidernauts had no trouble making a perfect web.
- The Bolas Spiders are relatives of the orb-weavers but have given up web-making. Instead they have developed a highly sophisticated way of catching insects. They produce special perfumes, called pheremones, to attract male moths and then 'hook' them with sticky 'fishing lines'.

Nature Quiz

How many of these questions about spiders can you answer. (You'll find the answers on page 11 of this edition



The inoffensive Huntsman is sometimes called a tarantula. Tarantulas are large, but harmless, American spiders, and are often kept as pets

1. What is a baby spider called?
2. How many eyes do spiders normally have?
3. True or False?
   More people are bitten by redback spiders than snakes in Australia each year.
4. Which spider has the most toxic venom?
   a) Redback
   b) Sydney Funnel Web
   c) Daddy-long-legs
5. True or False?
   A spider can grow a new leg if it loses one.
6. Which creatures are most closely related to spiders?
   a) insects
   b) scorpions
   c) crabs
7. How can you tell a male Daddy-long-legs from a female?
8. In the nursery rhyme, little Miss Muffet sat on her tuffet, *eating her curds and whey.* What are *curds and whey?*
9. The tiny spider *Archemorus curtulus* is a master of camouflage. It sits on the leaves of trees disguised as.....?
10. Where are a spider's taste buds located?

S P I D E R W O R D S

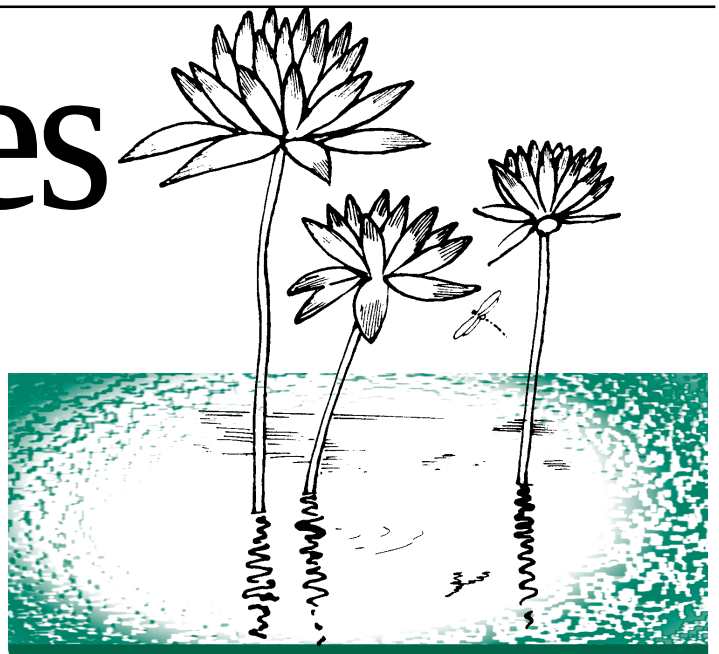
G	L	U	E	T	N	E	M	O	D	B	A
S	E	G	G	R	W	E	B	D	S	C	L
A	A	S	N	A	R	E	N	I	I	H	U
L	F	C	H	P	D	I	L	N	L	E	T
O	C	A	U	D	X	K	I	H	V	L	N
B	U	R	R	O	W	F	U	C	E	I	A
E	R	E	T	O	O	N	B	A	R	C	R
M	L	D	L	R	T	R	V	R	G	E	A
Y	E	F	M	S	A	E	O	A	A	R	T
Z	R	C	M	I	S	C	A	T	R	A	X
N	F	A	N	G	K	C	A	B	D	E	R
E	N	S	P	I	N	N	E	R	E	T	S

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

ABDOMEN
ACINIFORM
ARACHNID
ATRAX
BOLAS
BRAIN
BURROW
CHELICERAE
CRAB
DRAG
EGG
ENZYME
FANG
GLUE
HUNTSMAN
HURT
LEAF CURLER
LEAVES
LID
REDBACK
ROCK
SAC
SCARED
SILK
SILVER
SNARE
SPINNERETS
TARANTULA
TOXIN
TRAPDOOR
WEB
WOLF

Plant Profile

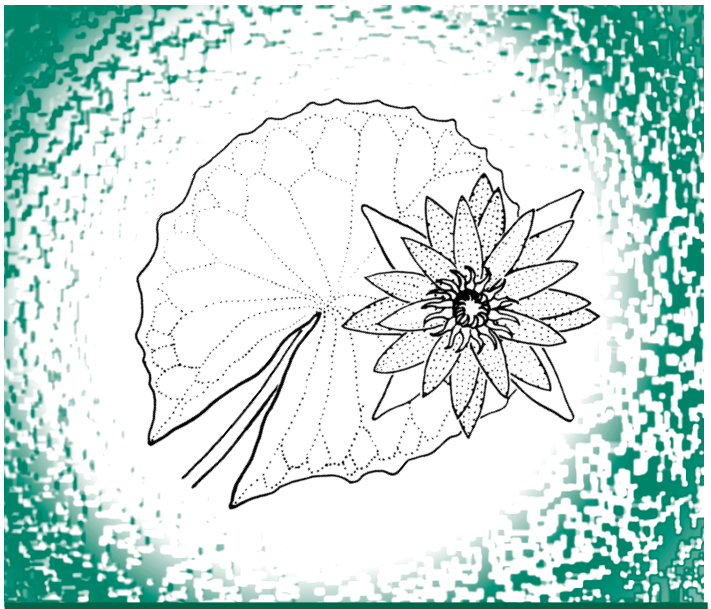
Waterlilies



By early April, the Top End's wet season is nearing the end and the heavy storms become less frequent. With the break in the rain, insects set to work. Termites rebuild nests in the soft soil, while newly developed green ant workers set about making new homes from leaves bound with silk. Grasshoppers and dragonflies are abundant.

Many plants flower in the Top End at this time. The tall grasses bend over with the weight of their seeds. Waterlilies bloom and cover the billabongs with a carpet of colour.

The name Nymphaea is a reference to the beautiful water nymphs of Greek mythology.



Nymphaea violacea has smooth glossy leaves 10 to 20 cm in diameter. Long green stalks hold the spectacular violet flowers above the water's surface.

Bush Tucker

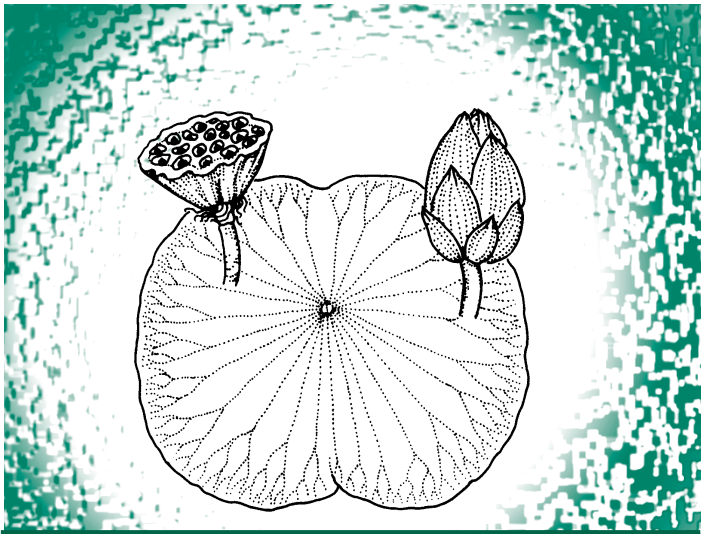
Aboriginal women and children wade around in the billabongs and dig the waterlily bulbs out of the mud with their fingers. These are then roasted in a fire for 10 to 15 minutes, peeled and eaten.

They nibble the green flower stalks like celery and collect the fruits. The seeds can be eaten raw but usually are roasted inside the fruit. They have a rich, oily taste when prepared this way and good nutritional value.

The striking Lotus Lily *Nelumbo nucifera* has much larger leaves that do not float.

They grow in deep, permanent swamps such as Darwin's Fogg Dam.

This giant of the waterlily family also grows in India. It is sacred to Buddhists who say it proves that virtue and purity can triumph in spite of the world's wickedness. This is because it rises from pure mud to produce a miracle of perfection. The Buddha himself is often depicted in artworks, seated in the centre of a golden lotus.



Distinctive fruiting receptacle with seeds in individual pockets.

Project Pages

	1	2	3	4	5
A	A	B	C	D	E
B	F	G	H	I	J
C	K	L	M	N	O
D	P	Q	R	S	T
E	U	V	W	X	Y

When you are going on field trips or just exploring your local bush, it's handy to carry a few items with you such as a compact pair of binoculars, a notepad and a pen. You might also like to put together a small naturalist's toolkit to carry as well.

Work through the following puzzle for some suggestions to go in a small toolkit.

Use this grid to decode the names

D4 C4 A1 D1 C2 C5 A3 C1 A2 A1 B2 D4

D5 B4 A4 A5 A3 B3 A1 D3 D5 D4

D4 D5 D3 B4 C4 B2 D3 E1 C2 A5 D3

C3 A1 B2 C4 B4 B1 E5 B4 C4 B2 B2 C2 A1 D4 D4

PUTTING YOUR TOOLKIT TOGETHER

1

You will need:
- a cheap placemat
- scissors
- elastic
- velcro
- pen

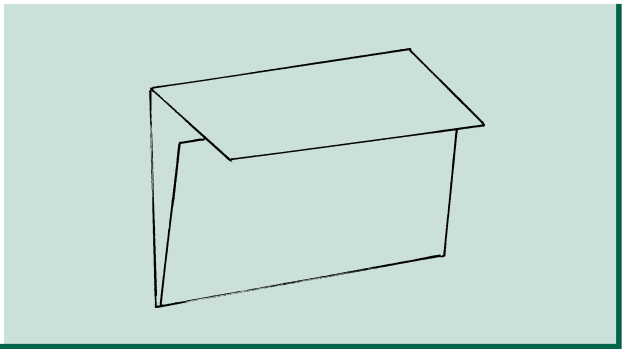
2

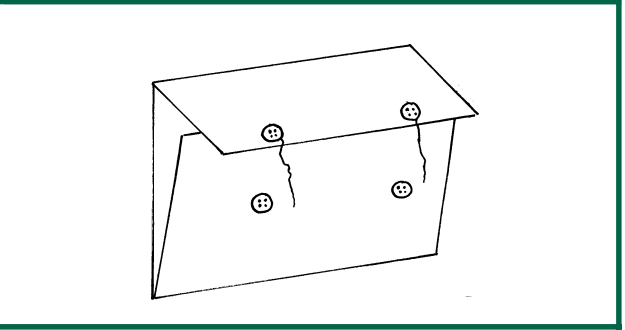
Used film cannisters are handy for collecting things you need for identification, such as gum nuts or unusual insects. Ask at your local photo shop.

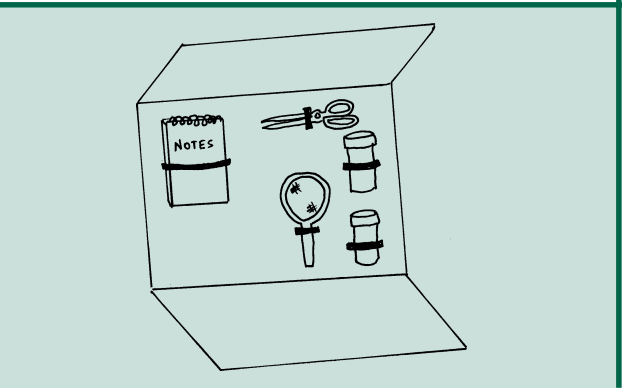
3

A dressmaker's measuring tape is a handy item. But a homemade string ruler will also do the job. Simply get a piece of good string and use a felt pen to mark it off at 5cm intervals.

A Naturalist's Toolkit







What to do:

Step 1

Discount stores sell cheap (laminated paper) placemats. Fold one so that it looks like a satchel.

Step 2

Attach some velcro so that you can open and fasten the top flap. If you can't get hold of any velcro, you can use 4 large buttons and strong thread to fashion some fasteners. (Sew two buttons to the top flap and attach a length of thread to each. This thread can wind around 2 buttons, sewn on the bottom flap, when you want to fasten the toolkit shut.)

Step 3

Open out your placemat and lay out the various items you want in your toolkit.

Step 4

Use a pen to mark a dot either side of each item. The next step is to cut small slits, where the dots are, so that you can attach elastic to hold each item tightly in place.

Step 5

Thread elastic through the slits and staple the ends to the other side of the placemat. (Alternately, you could tie a knot at each end of the elastic to stop it pulling through the slit.)

Who am I?

I was born in England but it was in Australia that I became famous as a naturalist.

I was assistant to the great ornithologist John Gould and his wife, artist Elizabeth Gould. In 1838 we left England to undertake the first detailed study of Australia's birds and mammals.

I remained in Australia when the Goulds returned to England in 1841.

In 1844, I joined Ludwig Leichhardt's expedition to explore northern Australia. We travelled overland from Brisbane,heading for the settlement at Port Essington on the Top End coast.

I kept a detailed diary describing the flora and fauna we saw along the way. On 28 June 1845, I was killed when our party was attacked by Aboriginal people near the Gulf of Carpentaria.

Use the grid on the previous page to decode my name.

B5	C5	B3	C4

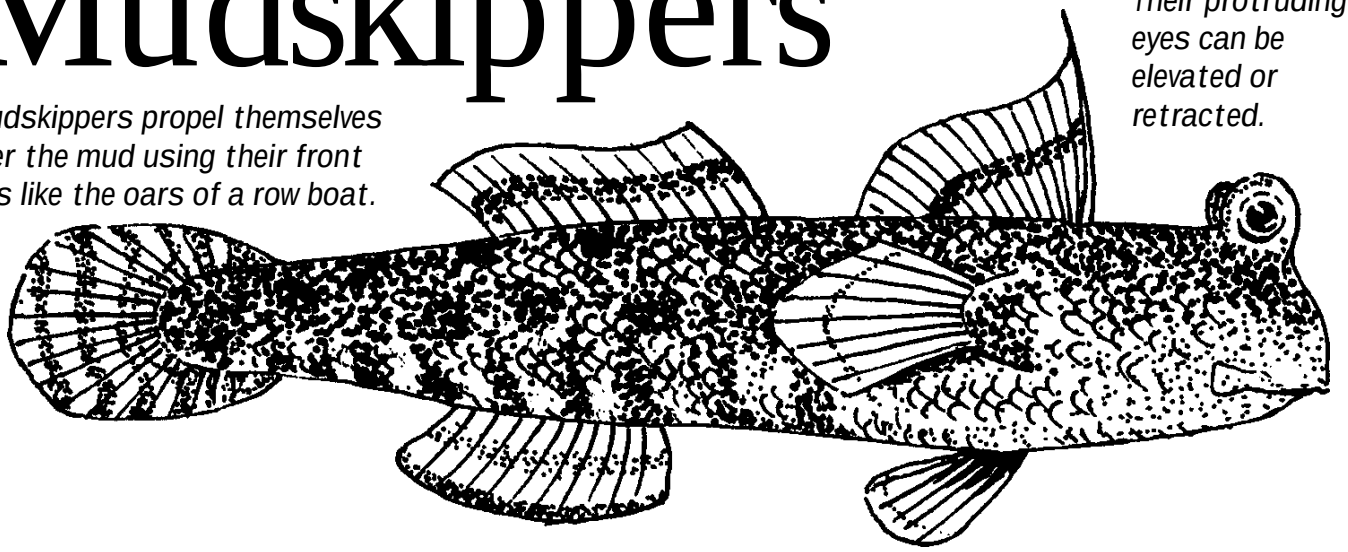
B2	B4	C2	A2	A5	D3	D5

Creature Feature

Mudskippers

Mudskippers propel themselves over the mud using their front fins like the oars of a row boat.

Their protruding eyes can be elevated or retracted.



Mudskippers are found in mangroves and estuaries along the tropical coasts of the Pacific and Indian Oceans. Unlike most fish, they can survive for long periods out of the water. They do this by trapping air in special cavities in their mouth and gill chambers. They can also absorb oxygen through the blood vessels in their tail.

Equally remarkable is their choice of home. Rather than swimming free like other fish, mudskippers have chosen to spend much of their lives in burrows in the mud. The trouble is, these muddy dwellings are very poor in oxygen. Atsumi Ishimatsu and his colleagues at Japan's Nagasaki University set out to discover how they survived in such an inhospitable environment.

As they walked around the mudflats, they noticed bubbles coming out of the mudskippers' burrows. They also noticed that the fish gulped air before entering their burrows and looked deflated when they came out. Chemical analysis revealed that burrows being used by mudskippers contained more oxygen and less carbon dioxide than old, abandoned burrows.

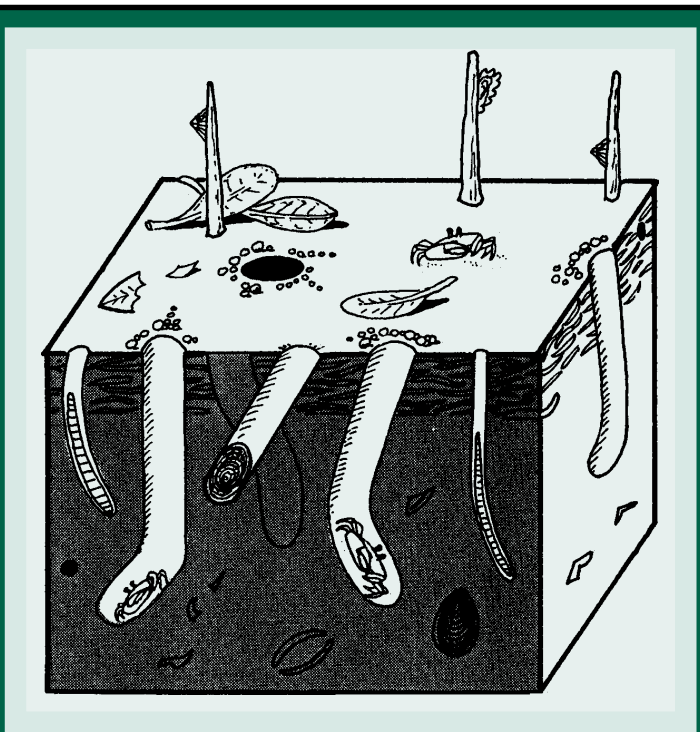
The fish had worked out how to aircondition their homes. As they walked around in the burrows they forced the stale air out and replaced it with fresh air they had carried in with them.

Why is mangrove mud black and smelly?

Mangrove mud is very fine grained. Only the top layers have much oxygen. Burrowing crabs, shellfish and worms live here.

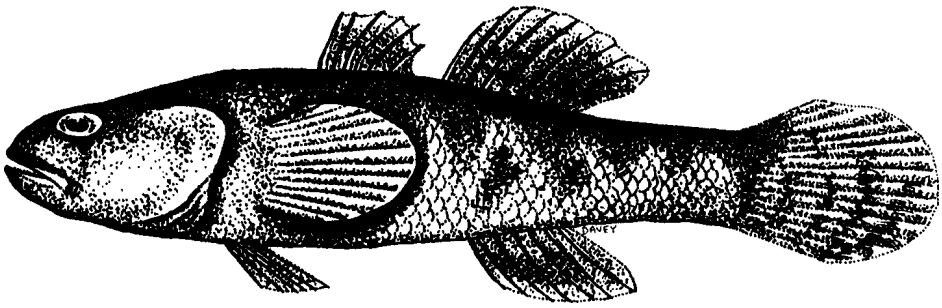
Sulphur-using bacteria thrive deeper in the mud where not much else can survive. They give off hydrogen sulphide gas which, along with rotting material, gives the mud its smell.

The hydrogen sulphide also reacts with iron compounds in the mud. New compounds, called hydrated iron sulphides, form and give the mud its characteristic dark colour.



Nature Quiz

The Desert Goby



Mudskippers belong to the Goby family. A distant relative lives in outback Australia: the Desert Goby *Chlamydogobius eremius*. John Glover, Curator of Fishes at the South Australian Museum, studied it in the 1970's. He found that it could survive in water of varying salinity, including distilled water and seawater. This is a real advantage in outback waterholes and salt lakes where salinity can change considerably. Salt concentrations drop after flooding rains and increase as waters evaporate.

Solve this puzzle to reveal the outback stronghold of the Desert Goby. Match the authors from the list to the 10 book titles. The shaded boxes spell out the solution.

A Knock at the Door

The Naughty Boy

Cold and Flu

Noisy Nights

Growing Rice

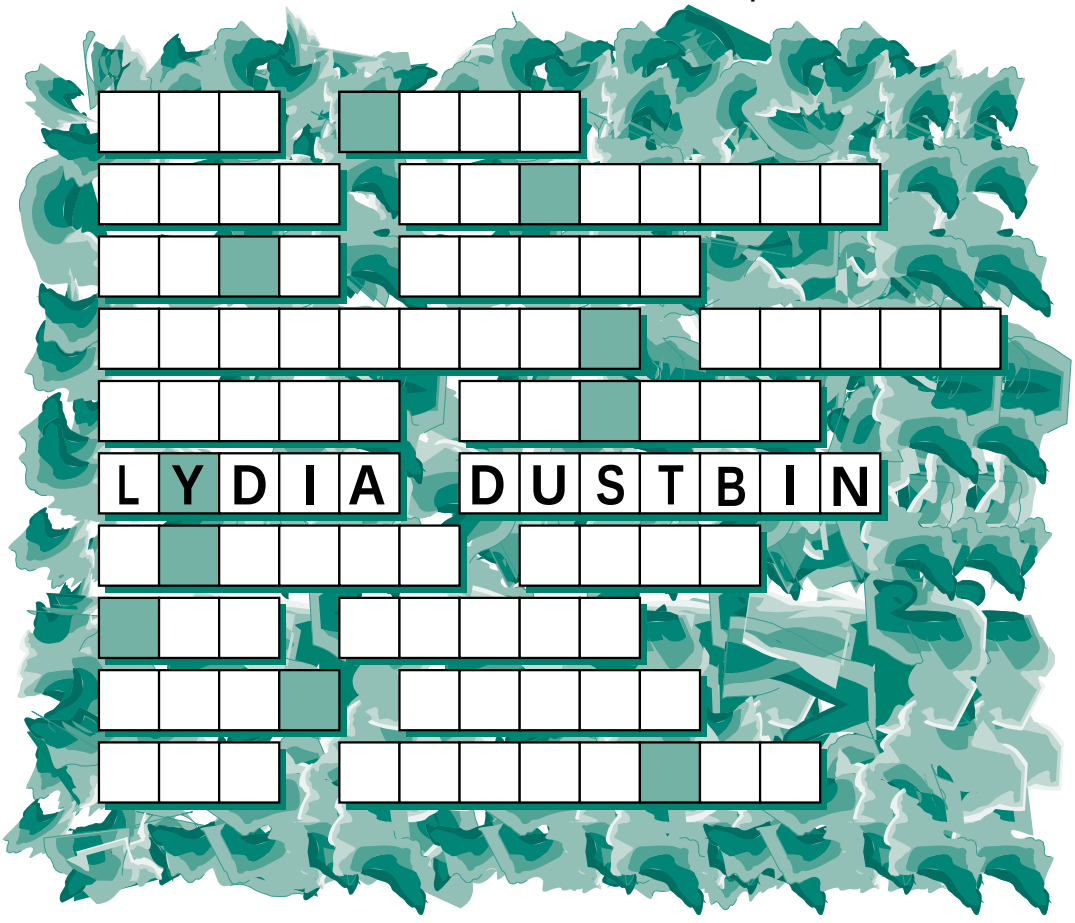
The Calypso Band

Aches and Pains

Broken Window

A Buzz in the Room

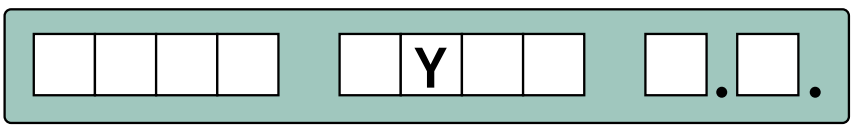
All Guns Blazing



List of Authors

Amos Quito
Arthur Itis
Bob Downfast
Constance Norah
Enid Spanking
Eva Brick
Hal Lowe
Lydia Dustbin
Mike Robes
Paddy Fields

Solution



On the brink

The Bronzeback

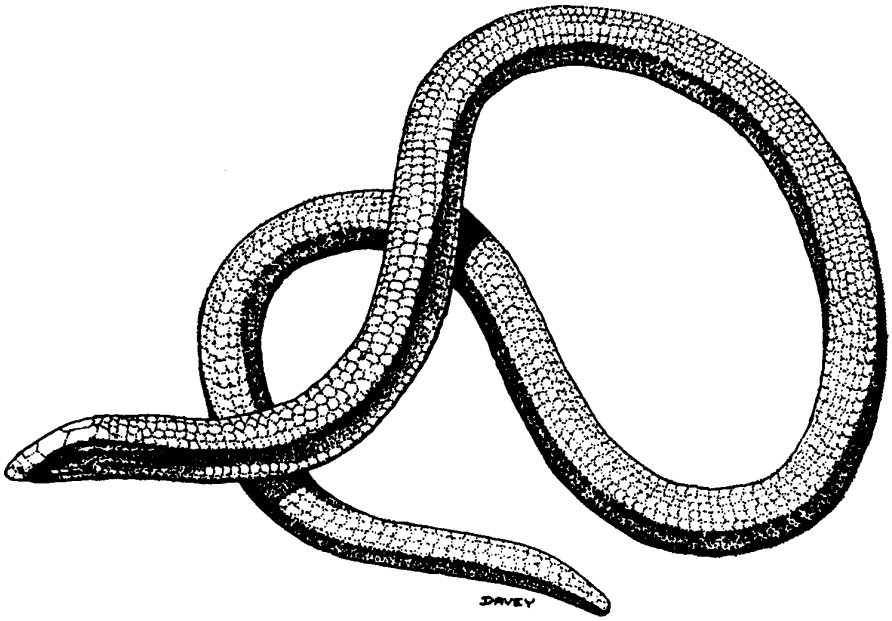
The Bronzeback *Ophidiocephalus taeniatus* is one of Australia's rarest lizards. Specimens have only been found in a small area extending across the border between the NT and South Australia.

It is a legless lizard, 25cm long, belonging to the Pygopod family. It has a grey head but a bronze-coloured back and a dark brown band along each side from nose to tail.

The animal is hardly ever seen because it spends all its time "swimming" through the top layer of loose sand and leaf litter beneath trees and shrubs. On the rare occasions that it does venture onto the surface, it's colouring provides excellent camouflage.

It's diet consists of termites, insect larvae, small roaches and beetles.

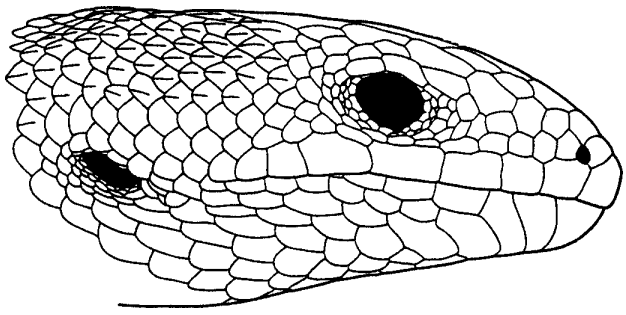
The country it inhabits has been heavily grazed by cattle in the past.

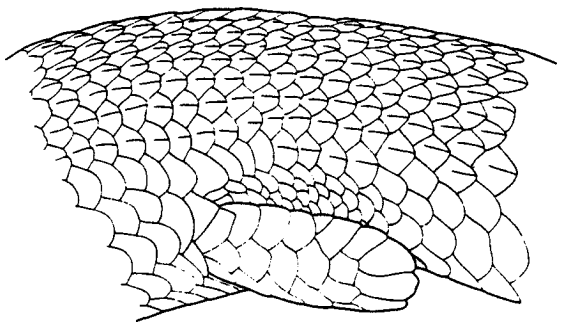


Trampling by cattle compacts the soil, making life difficult for sandswimmers such as the Bronzeback.

However, wildlife researchers are currently unsure whether the lizard is endangered or not.

Pygopods: Lizards that look like snakes





An animal's appearance affects its chances of survival. Some animals try to confuse predators by mimicking other animals which are dangerous or poisonous. Some of the Pygopod lizards mimic juvenile Brown Snakes.

Pygopod means flap-footed. This refers to the fact that nothing remains of their hind legs except two small flaps. Despite their snake-like looks, these legless lizards' closest relatives are geckoes.

Pygopods differ from snakes in a number of ways. They have:

- a broad, fleshy tongue, rather than a forked tongue;
- ear openings on their head;
- the ability to shed their tail when threatened;
- more head scales than snakes have.

Creature Feature

Did you know....

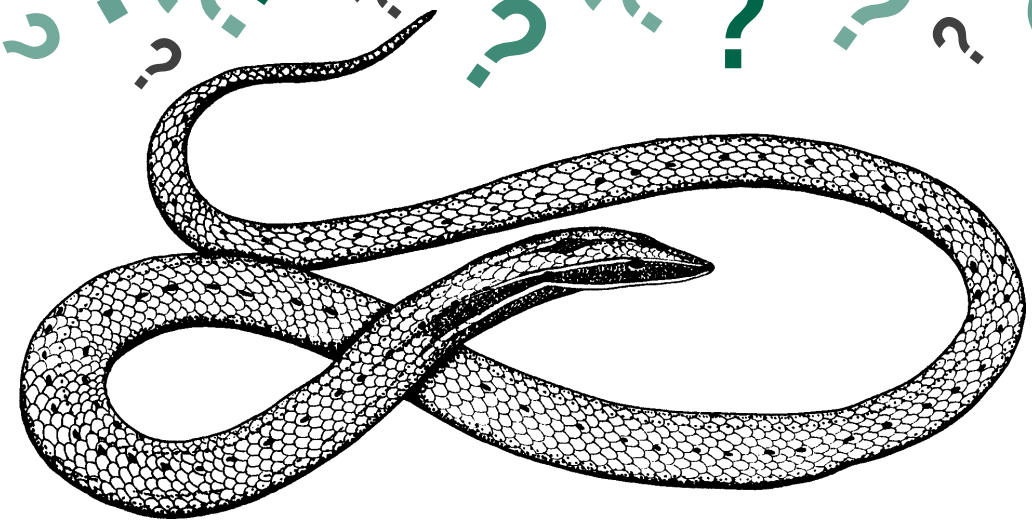
Some legless lizards mimic snakes in behaviour as well as appearance. If threatened they raise their heads and hiss like snakes. They may even strike like snakes, even though they have no fangs or venom.

A legless lizard may drop its tail to distract an enemy. The tail regrows but is rarely as long or the same colour.

The Bronzeback was first collected in the 1890's but it wasn't until 1978 that scientists saw another one.

Legless lizards are found in Australia and New Guinea but nowhere else.

The Common Scaly-foot *Pygopus lepidopodus* is Australia's biggest, being up to 75 cm long.



Burton's Legless Lizard *Lialis burtoni* preys on skinks and geckoes. It has a long snout and sharp teeth. Its jaws are flexible, allowing it to seize and swallow large prey.

Puzzle Answers

Nature Quiz (Page 4)

1. spiderling 2. eight 3. True

4. (c) While the Sydney Funnel Web is Australia's most deadly spider, the venom of a Daddy-long-legs is actually more toxic. However, its tiny poison sac contains too small an amount of venom to trouble us.

5. True, but only if it's a juvenile. Once a spider reaches maturity it loses the ability to regenerate lost limbs.

6. (b) Scorpions

7. The male is much slimmer and has longer legs.

8. When milk goes sour, it separates into a thick, white solid (called curds) and a watery liquid (called whey). Cheese is made from the curds.

9. Bird droppings

10. On the tips of its feet and pedipalps

Nature Project Page (Page 6)

snaplock bags
string ruler
tide charts
magnifying glass

John Gilbert (Page 7)

Creature Feature (Page 9)

Lake Eyre S.A.

Around the Traps

G'day from Ranger Bill

Welcome to our first edition for the year 2000! I hope this is a great year for you all and one where you discover more about the natural and cultural environment of the Territory.

A story from a Darwin Junior Ranger family highlights the important role that is carried out under the Parks and Wildlife Commission's Wildlife Rescue Program which involves the rescue, care, rehabilitation and release of sick, injured and orphaned native animals. Volunteers in the community assist with the care of these animals.

These situations offer opportunities for us to help wildlife where possible and at the same time learn more about our Territory species through this process.

Remember if you are going to assist sick, injured or orphaned native wildlife these animals require specialist treatment and must be referred on to the Wildlife Rescue Co-ordinator in your area.

Through the combined professional knowledge of Wildlife Rescue officers and the energy and assistance of the community this will help to ensure the continuing survival of our wildlife and raise awareness of the importance of our native species and the role they have to play in our natural environment.

Ranger Bill, Assistant Director
Park Operations.

Darwin

As Darwin gears up for the start of the Junior Ranger Program in April where Junior Rangers will be celebrating Seaweek on rockpool rambles, discovering snakes from the outside and inside, learning bush medicine and more we'd like to share an extract from a story with you from one of our Junior Ranger families.....

Sparky the Cute Baby Bird

"My mum was doing some cleaning in the house on a Tuesday. Then she had to go outside for some reason. She saw something on the ground that looked like some grass clippings with a beak sticking out of it. So my mum picked it up and discovered it was a baby bird. We called it Sparky. When we found him he only had some little tufts of feathers with fluff on the end."

By Skye and Cameron Jackson

Sparky, the bar-shouldered dove was released at Casuarina Coastal Reserve on Sunday 5th March 2000 on the advice of a Wildlife Rescue officer. With other bar-shouldered doves in the area Sparky would have been able to find some new friends quickly.

Remember all sick, injured or orphaned wildlife must be reported to Wildlife Rescue for the correct care.

Alice Springs

With all the rain in the last couple of months it's a great time to get out and about in the bush. February's rainfall was the highest in Central Australia for 20 years. The desert has been a sea of colour. Seeds that have lain dormant in the ground for months have made the most of the rain by germinating and quickly flowering. Animals are also making the most of the ideal conditions with budgies and other birds flocking to full waterholes.

Katherine

Katherine Junior Rangers braved creeks, swamps, and some very heavy rain to carry out this years frog watch, species survey. By comparing our records from last year's frog watch from the same sites, it seems the frogs are looking healthy, even after very late rains.

Ranger Andrew took frog watch further afield this year by including the towns of Pine Creek, Timber Creek, Mataranka, Borroloola and Jilkminggan Community, with great success frog wise.

The 2000 Junior Rangers is starting soon. April, May, and June, are going to be based on 'water'. Water is precious to all life, sculptures the erosive features we see in rocks such as sandstone, and covers much more of the earths surface than the land does. Water is also one of the main attractions that people come to experience in our National Parks. So don't miss out, because a whole program has been set-up on 'water in our environment'.