



Who Did That?

A trail of tracks and traces



Alive with *discovery*



Australian National
Botanic Gardens

Welcome!

The *Who Did That?* trail introduces children to concepts such as adaptations for survival, animal architecture, biodiversity and pollination – and that plants hold the key to animal diversity.

- Take your time to explore.
- Carers may need to read the booklet to younger children and explain some of the words used.
- Look up and around to discover all of the creatures lurking about.
- Some activities in this booklet are designed to be completed at home after your visit.

Along the way keep an eye out for...

- A Tasmanian Devil
- A Sleepy Wombat
- A Green and Golden Bell Frog
- A wild bush shelter

How many Fairy Wrens can you spot?



Blue Fairy Wren

The buzz about bees

There are over 2000 different species of native bees in Australia. Look closely and you might spot Betty the Bee along the trail.

Many native bees are solitary and do not sting, unlike the introduced Honey Bee that can sting and lives in colonies with many other Honey Bees. Native bees can be black, yellow, red, metallic green or even black with blue polka dots! They can be fat, furry or sleek and shiny.

Take the time to walk up to the Native Bee Hotel near the Rock Garden to learn more about these amazing creatures.

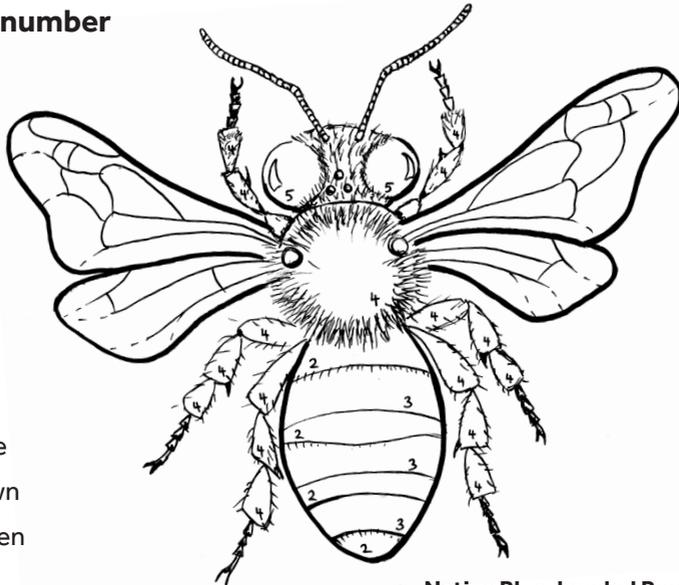
Did you know?

Native bees are vital pollinators for food plants, native plants and garden plants.

Bees have five eyes and can beat their wings 200 times per second – which makes the ‘zzzzzz’ sound.

Colour by number

1. Yellow
2. Black
3. Bright blue
4. Light brown
5. Bright green



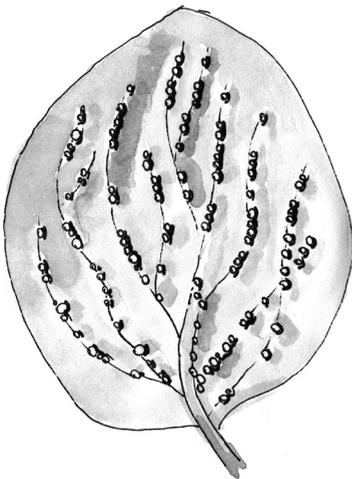
Native Blue-banded Bee

Odd lumps and bumps

Plants and insects live together – sometimes in harmony, but often it's a scuffle! Many insects rely on plants as food and for places to lay their eggs, but plants don't always want the attention!

Tiny Skeletoniser Caterpillars can chomp away on leaves just leaving the leaf veins behind.

Other insects burrow into leaves and the leaf reacts by making a gall or bubble of leaf around the insect.



Sugary lerps feeding from the leaf veins

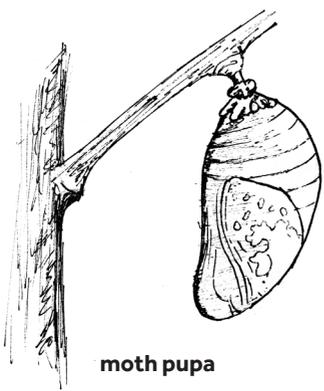


Did you know?

The little "top hats" on the heads of the Skeletoniser Caterpillars are actually the head capsules left over from when the caterpillar moults as it grows. While the body moults are shed, for some reason this species of caterpillar hangs onto its head capsules, creating a very stylish hat!

Try this!

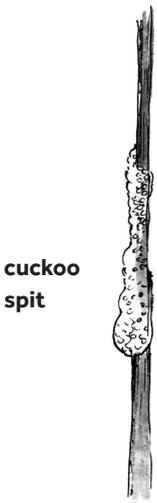
As you walk around the Gardens, see if you can spot any of these strange galls or other signs of insects or animals in the bush. Once you start looking, you will spot clues everywhere!



moth pupa



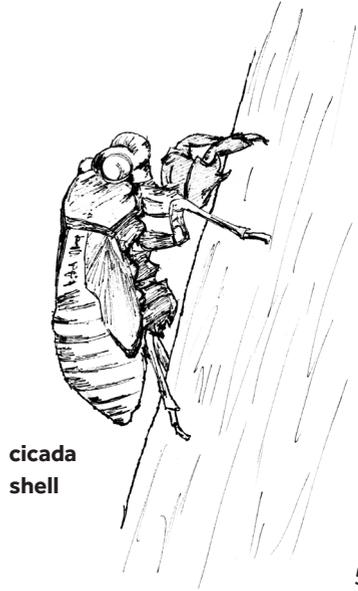
witches' broom gall



cuckoo spit



galls



cicada shell

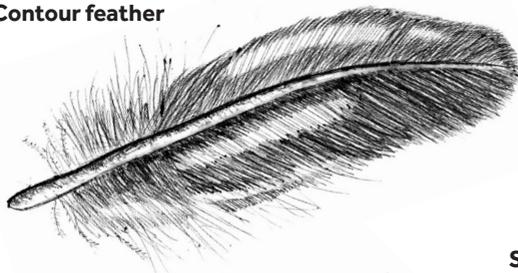
Fabulous feathers

Feathers are remarkable things that only birds have!
You can identify which birds are in an area by the feathers that you find.
Can you match the feathers on the sign to the birds hiding in the trees?

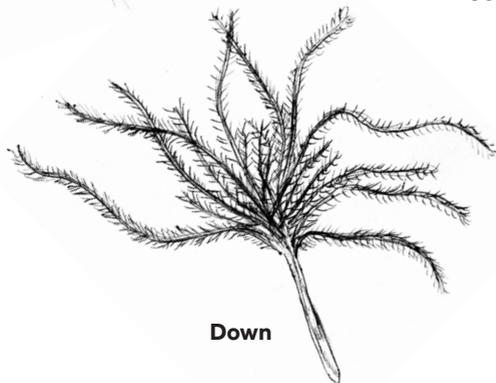
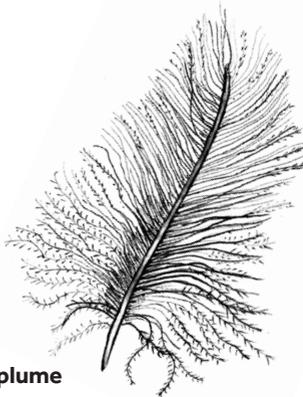
Hint, try to spot a Gang-gang Cockatoo, Powerful Owl,
Sulphur-Crested Cockatoo and a Yellow-tailed Black Cockatoo.

Different types of feathers

Contour feather



Semi-plume



Down

Flight feather



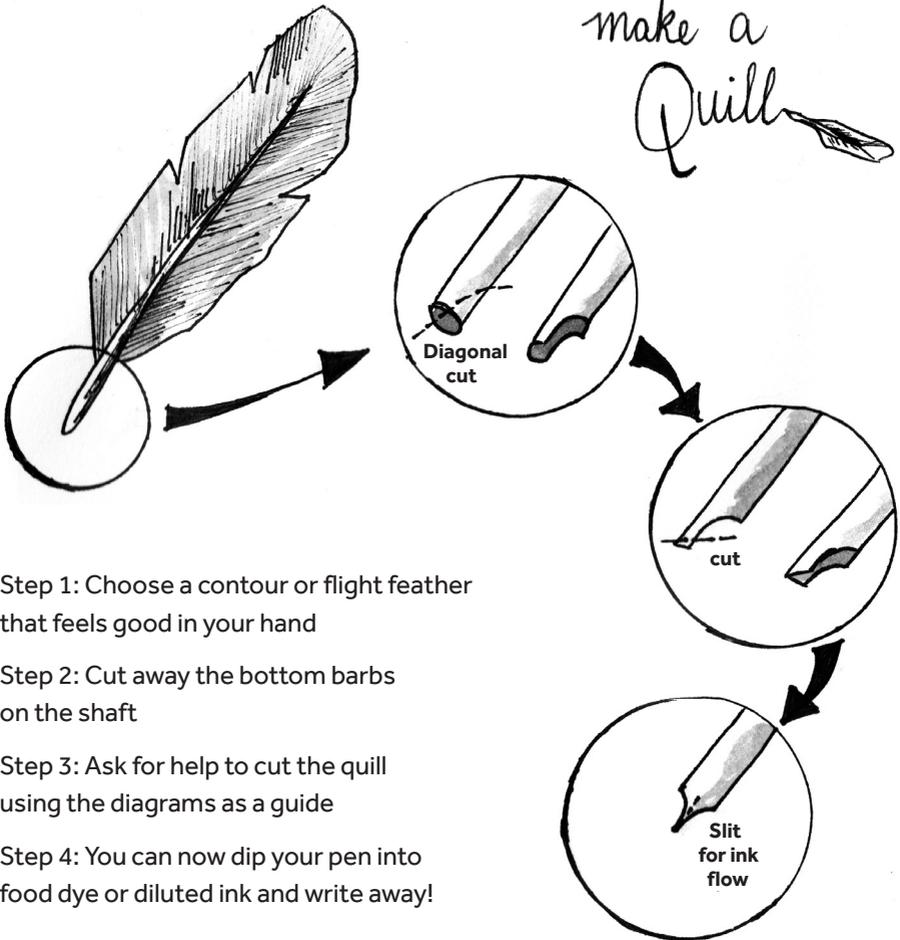
Did you know?

In 1970 astronaut David Scott took a Peregrine Falcon feather to the moon to demonstrate Galileo's famous hammer/feather drop experiment. When the hammer and feather were dropped simultaneously, they hit the surface of the moon at the same time. The feather is still up there!

Try this!

You can use feathers to make an old fashioned pen called a quill.
Find a contour feather then follow the instructions.
You will need help from an adult!

How to make a Quill



Step 1: Choose a contour or flight feather that feels good in your hand

Step 2: Cut away the bottom barbs on the shaft

Step 3: Ask for help to cut the quill using the diagrams as a guide

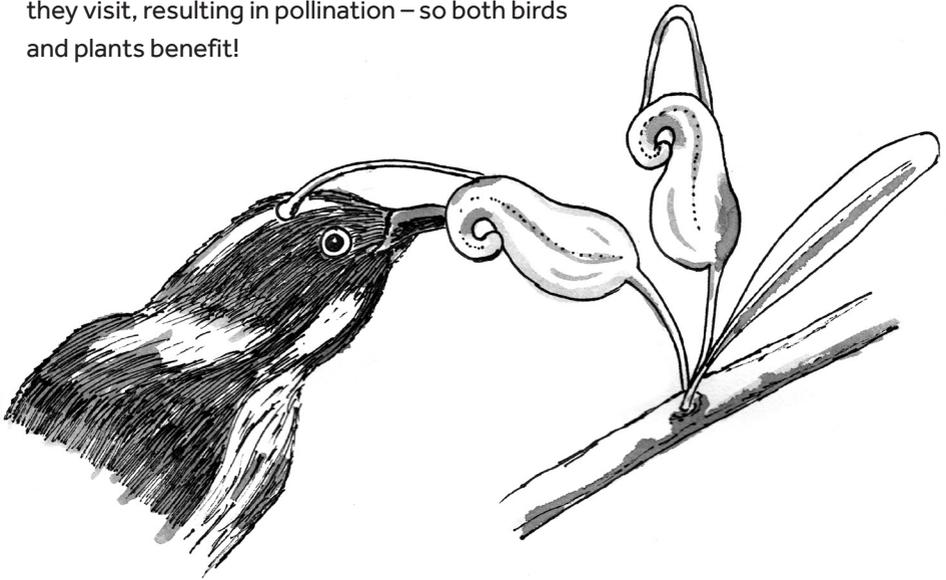
Step 4: You can now dip your pen into food dye or diluted ink and write away!

Birds and flowers working together

Can you spin and match each of the honeyeaters into the correct order? Honeyeaters are some of the many different birds that live in or visit the Gardens. These birds love the flowers of the family Proteaceae, which includes hakeas, banksias and grevilleas. Proteaceae flowers are often in reds, oranges, pinks and yellows, the colours best seen by birds.

Did you know?

Honeyeaters have beaks and tongues adapted to drink the sweet nectar buried in the base of the flowers. When they drink, pollen brushes onto their heads, which they carry to the next flower they visit, resulting in pollination – so both birds and plants benefit!



Master weavers

Bushes and trees provide excellent places for birds to roost and nest. Some birds protect their young from predators by building their nests in dense trees or shrubs and watching over them, sounding an alarm if predators get too near!

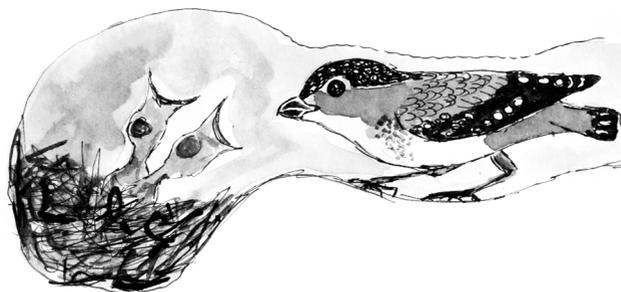
This is a nest of a Grey Shrike Thrush, one of the best songsters in the Australian bush. Their eggs are creamy white with brown and grey speckles.

Can you draw a clutch of eggs in the nest?

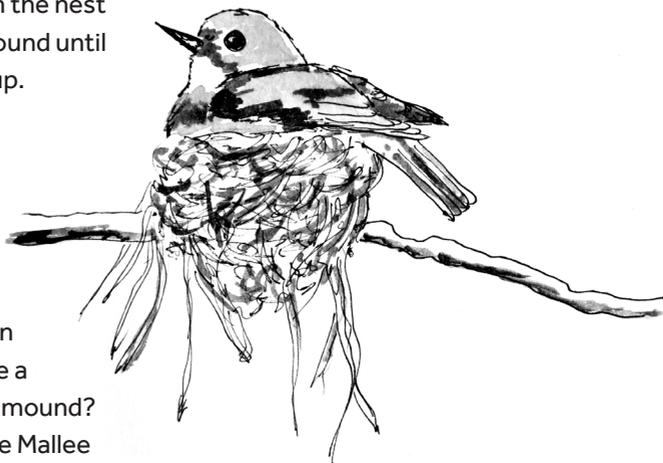


Which nest is best?

The Spotted Pardalote digs a burrow into sand or soil and makes its nest at the end in a little chamber. Because it is so dark down in the burrow, pardalote chicks have special glow-in-the-dark patches at the sides of their mouths to help parents guide food in!



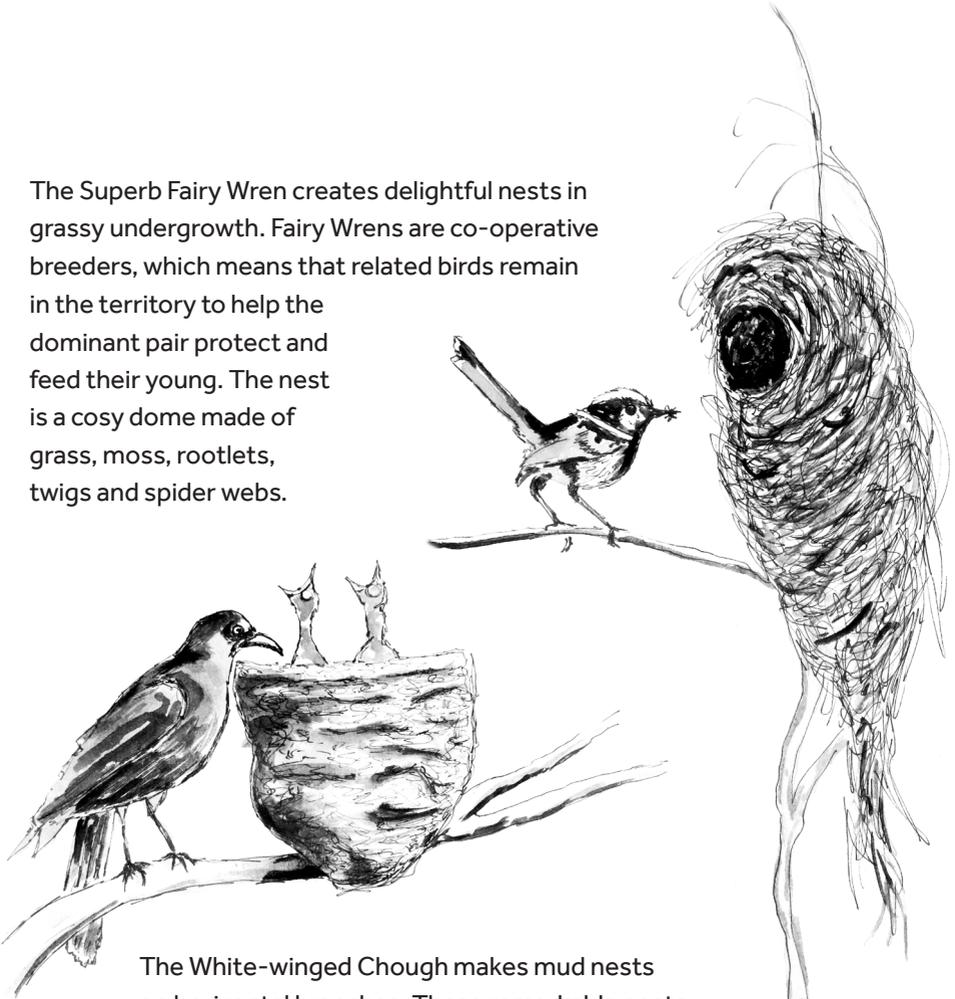
All Australian robins, including this Eastern Yellow Robin, create cup-shaped nests in the smaller branches of trees and shrubs. To make a cup-shaped nest, birds first make a pile of raw materials, placing soft feathers or grasses on the top. They then sit in the nest and turn around and around until they form a nice firm cup.



Try This!

Can you find two birds in the Gardens that create a nest by building a huge mound?
Hint – there is one in the Mallee Garden near the Visitor Centre and one in the Rainforest.

The Superb Fairy Wren creates delightful nests in grassy undergrowth. Fairy Wrens are co-operative breeders, which means that related birds remain in the territory to help the dominant pair protect and feed their young. The nest is a cosy dome made of grass, moss, rootlets, twigs and spider webs.



The White-winged Chough makes mud nests on horizontal branches. These remarkable nests are made in several layers, the lower layers needing to dry before others can be added on top. They can take many months to complete. Sometimes choughs substitute animal dung for mud if mud is scarce!

Did you know?

Fairy Wrens in the Gardens have been studied by researchers from the Australian National University for many years. If you see birds with tiny bands around their legs it means they are being studied by scientists. There are about 50 Fairy Wren family groups living in the Gardens.

Extraordinary echidnas

Echidnas are unusual creatures that live all across Australia. Their scientific name is *Tachyglossus aculeatus*.

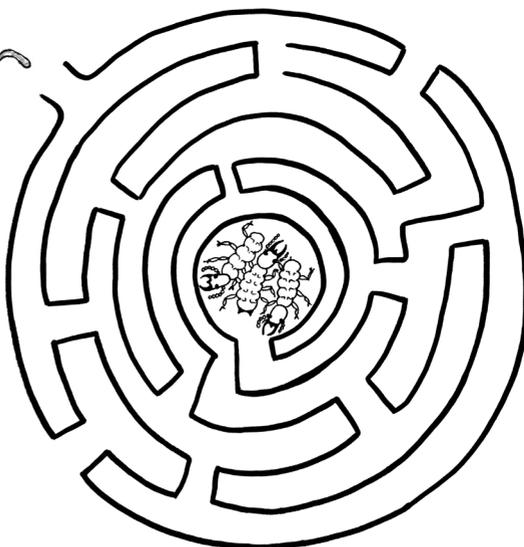
Tachyglossus means "quick tongue" as echidnas can speedily flick their long sticky tongue to catch food, and *aculeatus* means spiny referring to the sharp spines all over their body that protects the animals from predators like foxes and goannas.

Did you know?

The Echidna and Platypus are the only mammals in the world that lay eggs. These special mammals are called monotremes.

The echidna's egg has a soft shell and is only the size of a large marble.

Echidnas don't have teeth! They have rough bumps in their mouth for grinding up their favourite food of ants and termites.



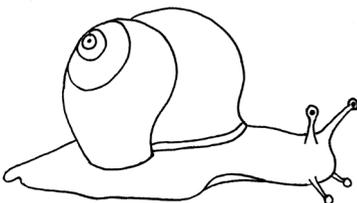
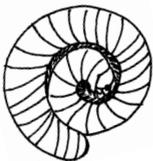
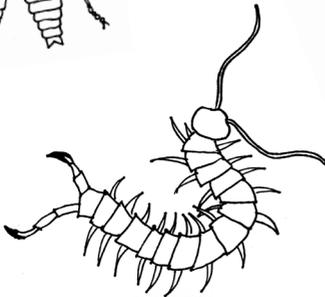
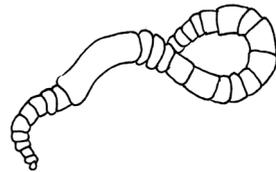
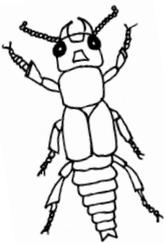
Try this!

Help this hungry echidna find the path to the plump delicious termites.

Life in leaf litter

Mulch and leaf litter on the soil surface provides moist dark habitats for invertebrates to live in. These tiny creatures help to break down the leaf litter, making nutrient-rich compost.

Look at these wonderful compost creators!
Colour them in and give each of them a name.



An eye-catching display

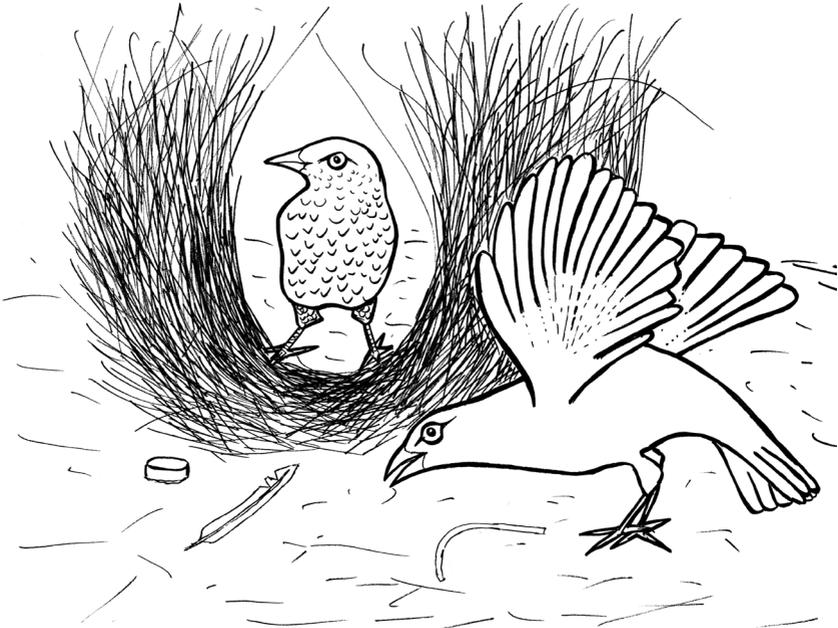
Male Satin Bower-birds build bowers to impress the females. Male bower-birds attract attention by displaying blue objects around the bower, and by dancing and calling to the females.

Did you know?

The bower is not a nest. The female builds a nest away from the male's bower to lay the eggs in and does all the work in bringing up her babies!

The inner walls of the bower are painted daily with a paint made from chewed-up lichen and charcoal, using a chewed leaf as a brush.

During a display, males bulge their eyes, arch their neck, hold their wings in incredible positions, show off prized treasures and make buzzing and clicking sounds as well – what a show!



Draw in some more blue treasures around the bower in the picture. Have a good look at the colours of the male and female birds and colour them in to match. Don't forget their purple eyes!

Spectacular Scribbles

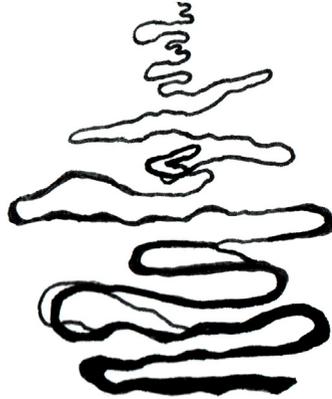
A tiny moth lays her eggs between the old and new bark of some eucalyptus trees. The egg hatches and the caterpillar, or larva burrows between the bark chomping away and growing bigger and fatter. This creates tunnels that get larger as the larva grows. The larva pupates in a cocoon and emerges as another tiny moth who will lay her eggs between the layers of bark on a gum tree. When the old bark falls away from the tree the scribbles left by the tunnels are revealed.



In the Canberra region *Ogmograptis scribula* lays its eggs mostly on Scribbly Gum, *Eucalyptus rossii* – and the scribbles are a good way of identifying this gum. However in other parts of Australia scribbles appear on different eucalypt species.

Can you write your name in scribbly gum writing?

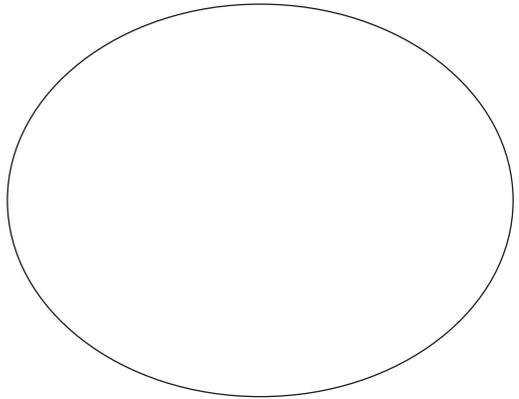
Start at the tiny egg and imagine you are a little larva zig-zagging your way through the bark. Don't forget to make your scribbly writing thicker as the larva grows fatter!



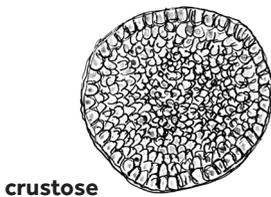
Liking the Lichen

Lichens are truly remarkable. A lichen is not a single organism but is made up of an alga and a fungus living together and helping each other to live. This is called symbiosis.

Have a close look at some lichen you can see nearby. Draw what you see.



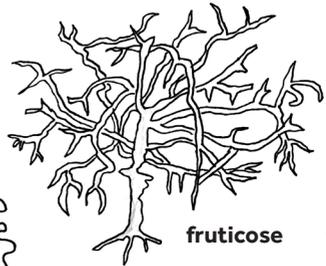
Lichens have 3 common shapes or forms – crustose (a crusty layer), foliose (leaf-like) and fruticose (shrubby or a bit like coral).



crustose



foliose



fruticose

Some interesting facts about lichens

Lichens occur in some of the most extreme environments on the planet – Arctic tundra (reindeer eat them!), hot deserts, rainforests and rocky coasts.

Fossil lichen have been found that are 600 million years old.

They come in an incredible variety of shapes and colours.

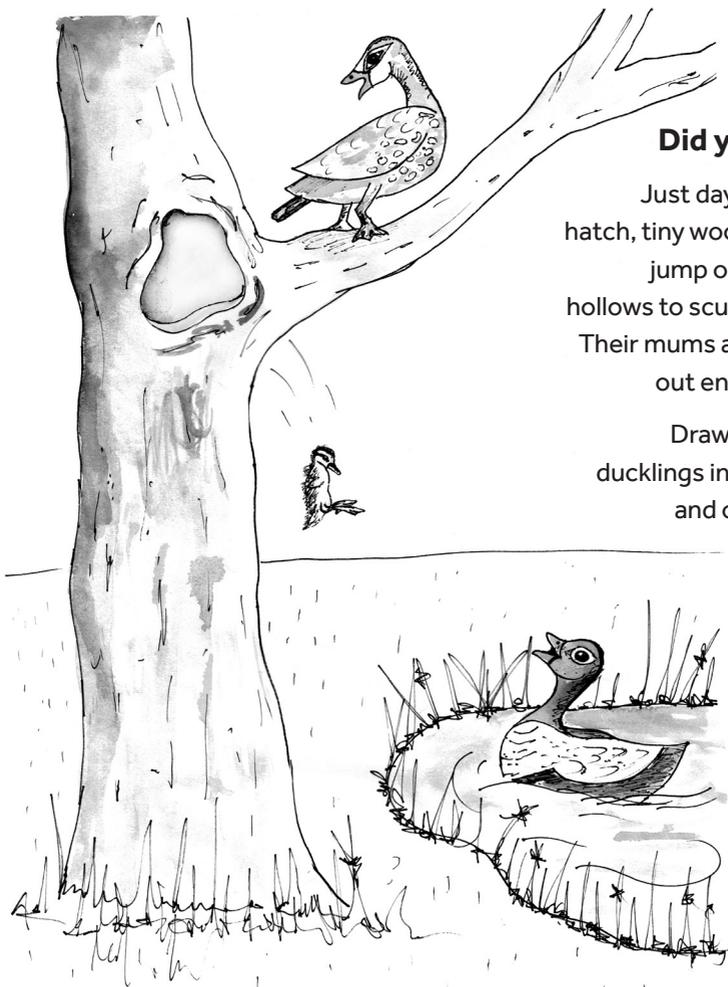
Scientists used lichen dating to work out how old the famous moai sculptures on Easter Island are.



Home sweet home

Many native animals like tree frogs, wood ducks, possums and birds use tree hollows as their homes. They need old hollow-forming trees to find safe places to sleep and have their babies

What would it be like to sleep inside a tree hollow?



Did you know?

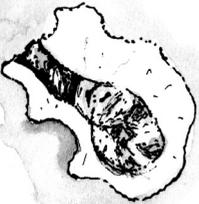
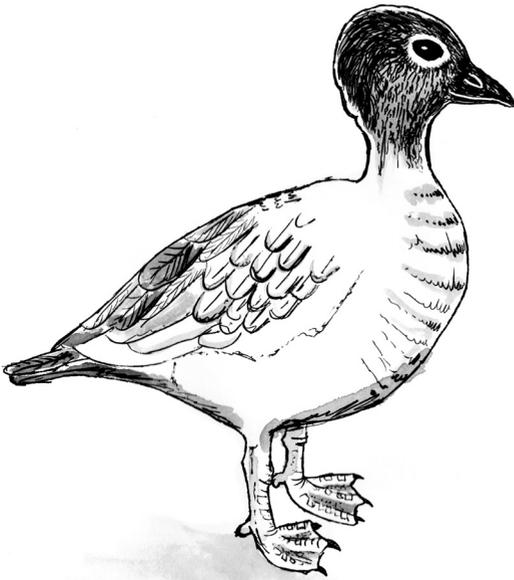
Just days after they hatch, tiny wood ducklings jump out from tree hollows to scurry to water. Their mums and dads call out encouragingly.

Draw some more ducklings in the hollows and on the pond.

Traces left behind

Animals leave evidence of their presence. Searching for evidence in the form of tracks and scats (poo) can tell us what animals live in or have visited an area, when they were there, and what they have been eating.

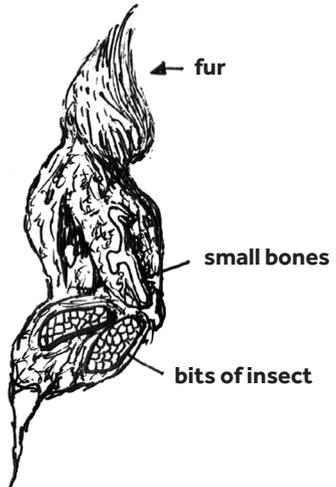
Here are some scats and tracks you might see in the Gardens today: can you match them to the animal that left them behind?





Did you know?

Some predatory birds, like owls, have a habit of vomiting up parts of their prey they can't digest, such as fur or bones. These strange-looking blobs are called pellets and can be used to identify the predator, and also the prey that ended up as a tasty snack.



Glossary

All plants and animals have a scientific name often given by the person who discovered that plant or animal. Scientific names are the same all across the world.

Common names are given in this booklet as often the scientific names are difficult to pronounce. But be careful! Common names can vary wildly!

Below is a list of some of the common and scientific names of animals and plants in the *Who did That?* trail.

Animals

Blue-banded Bee – *Amegilla* spp.

Honey Bee – *Apis mellifera*

Gum-leaf Skeletoniser – *Uraba lugens*

Peregrine Falcon – *Falco peregrinus*

Gang-gang Cockatoo –
Callocephalon fimbriatum

Yellow-tailed Black Cockatoo –
Zanda funereus

Wood Duck – *Chenonetta jubata*

Eastern Spinebill –
Acanthorhynchus tenuirostris

Satin Bowerbird –
Ptilonorhynchus violaceus

New Holland Honeyeater –
Phylidonyris novaehollandiae

Red Wattlebird –
Anthochaera carunculata

Sulphur Crested Cockatoo –
Cacatua galerita

Echidna – *Tachyglossus aculeatus*

Eastern Grey Kangaroo –
Macropus giganteus

Eastern Water Dragon –
Intellagama lesueurii howitti

Brush Tailed Possum –
Trichosurus vulpecula

Sugar Glider – *Petaurus breviceps*

Peron's Tree Frog – *Litoria peronii*

Superb Fairy-wren – *Malurus cyaneus*

Common or Bare-nosed Wombat –
Vombatus ursinus

Tasmanian Devil – *Sarcophilus harrisi*

Green and Golden Bell Frog –
Litoria aurea

Plants

Waratah – *Telopea* sp.

Bottle Brush – *Callistemon* sp.

Wattle – *Acacia* sp.

Gum Tree – *Eucalyptus* sp.