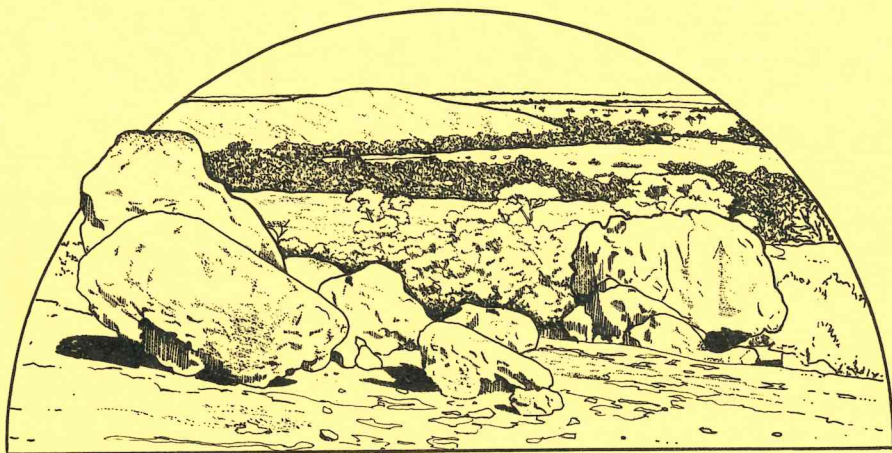


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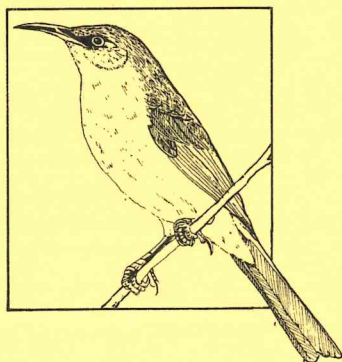
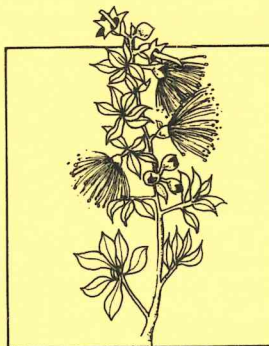
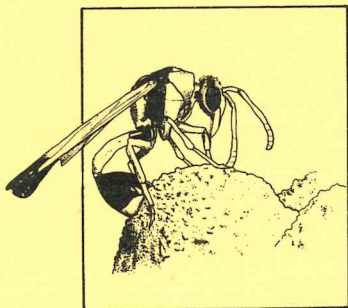
Department of Biodiversity,
Conservation and Attractions

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Sandford Rocks Discovery Trail

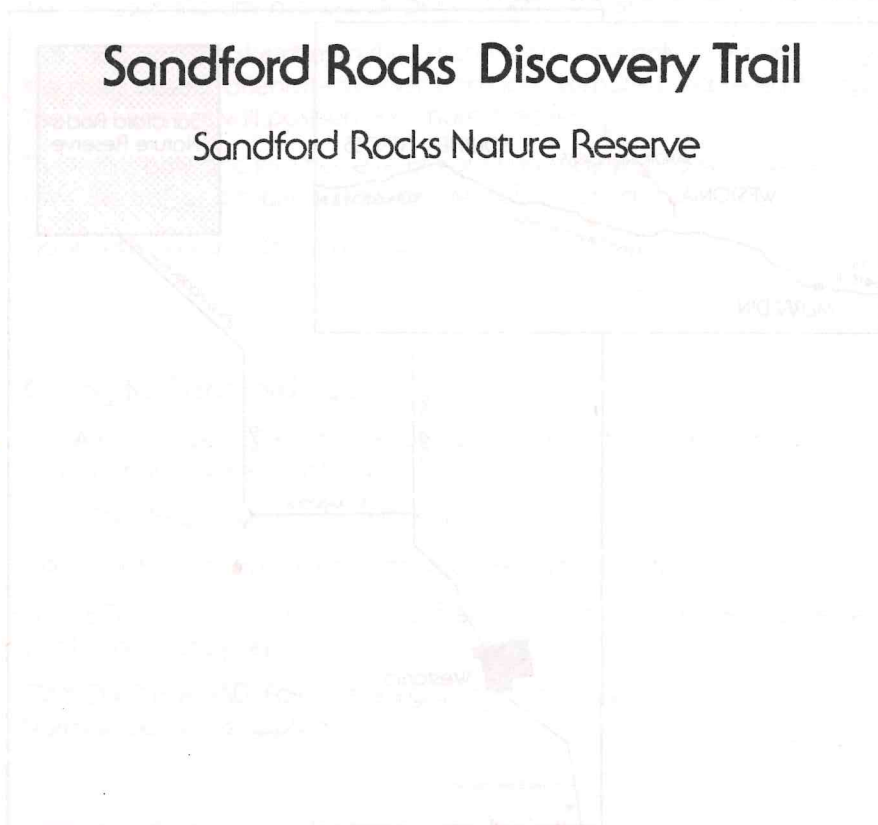
Sandford Rocks Nature Reserve



Department of Conservation and Land Management

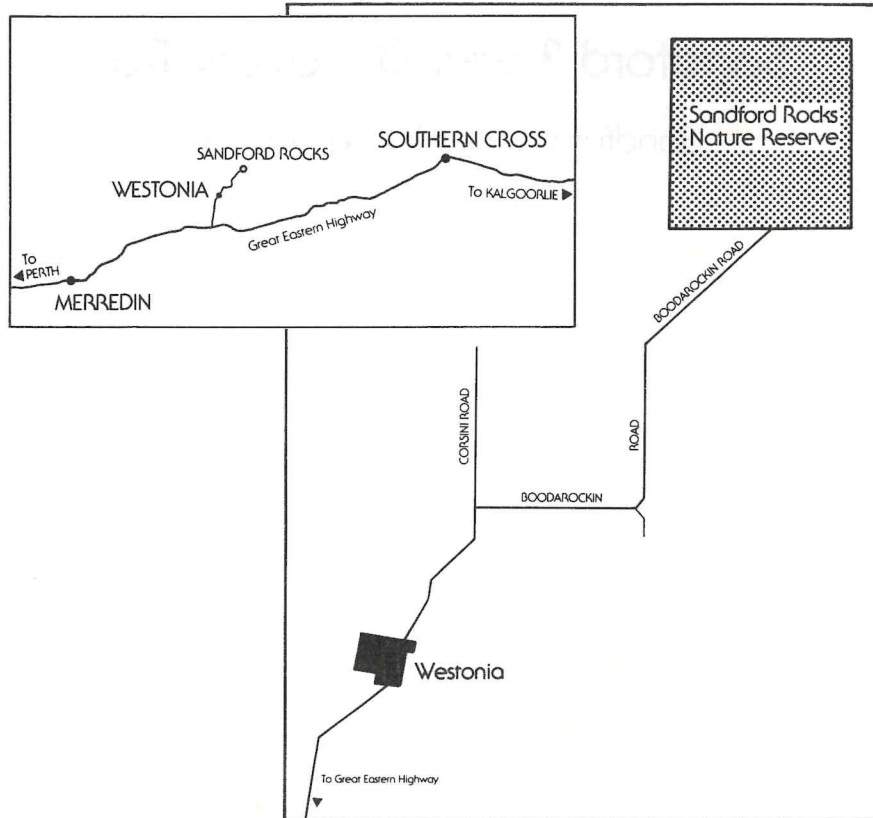
Sandford Rocks Discovery Trail

Sandford Rocks Nature Reserve



Sandford Rocks Nature Reserve

Sandford Rocks Nature Reserve is one of a number of significant granite outcrops within the Western Australian wheatbelt. It is located 322 km east of Perth. Go to Westonia, 52 km east of Merredin, then follow the roads north-east as on the map below.



Sandford Rocks Nature Reserve protects 806 ha of granite outcrop, scrub and woodland. Many species of plants and some animals are only found on granite outcrops. The Nature Reserve is managed for nature conservation and provides an opportunity for community education.

The Department of Conservation and Land Management is actively supported in promoting and protecting the natural values of Sandford Rocks Nature Reserve by the Westonia CWA and the Westonia Shire.

A companion booklet **Exploring Granite Outcrops** is available from the Westonia Shire Office.

Granite outcrops are a distinctive, natural feature in the wheatbelt landscape.

The Sandford Rocks Nature Trail is a key to exploring these ancient granite outcrops and discovering some of their intriguing wildlife.

You will not find any marked stops or a defined trail.

The map and the sketches in this brochure are your only directions. Study the map closely, orientate yourself and approximately locate each stop. The site sketches will position you more precisely.

The trail is only one kilometre return but you may wish to walk away from the trail and make further discoveries of your own.

Good luck and good discovering.

Caring for Sandford Rocks

BE CAREFUL: Your safety and enjoyment in this nature reserve is our concern but your responsibility.

BE CLEAN: Take your rubbish with you.

STAY COOL: Don't light fires; bring your own portable gas stove.

PROTECT ANIMALS AND PLANTS: No firearms or pets, thank you. Conserve wildlife habitat by replacing rocks as you found them.

STAY ON THE ROAD: Follow the signs and stay on approved roads. Normal road rules apply.

For further information contact:

Westonia Shire Office

or

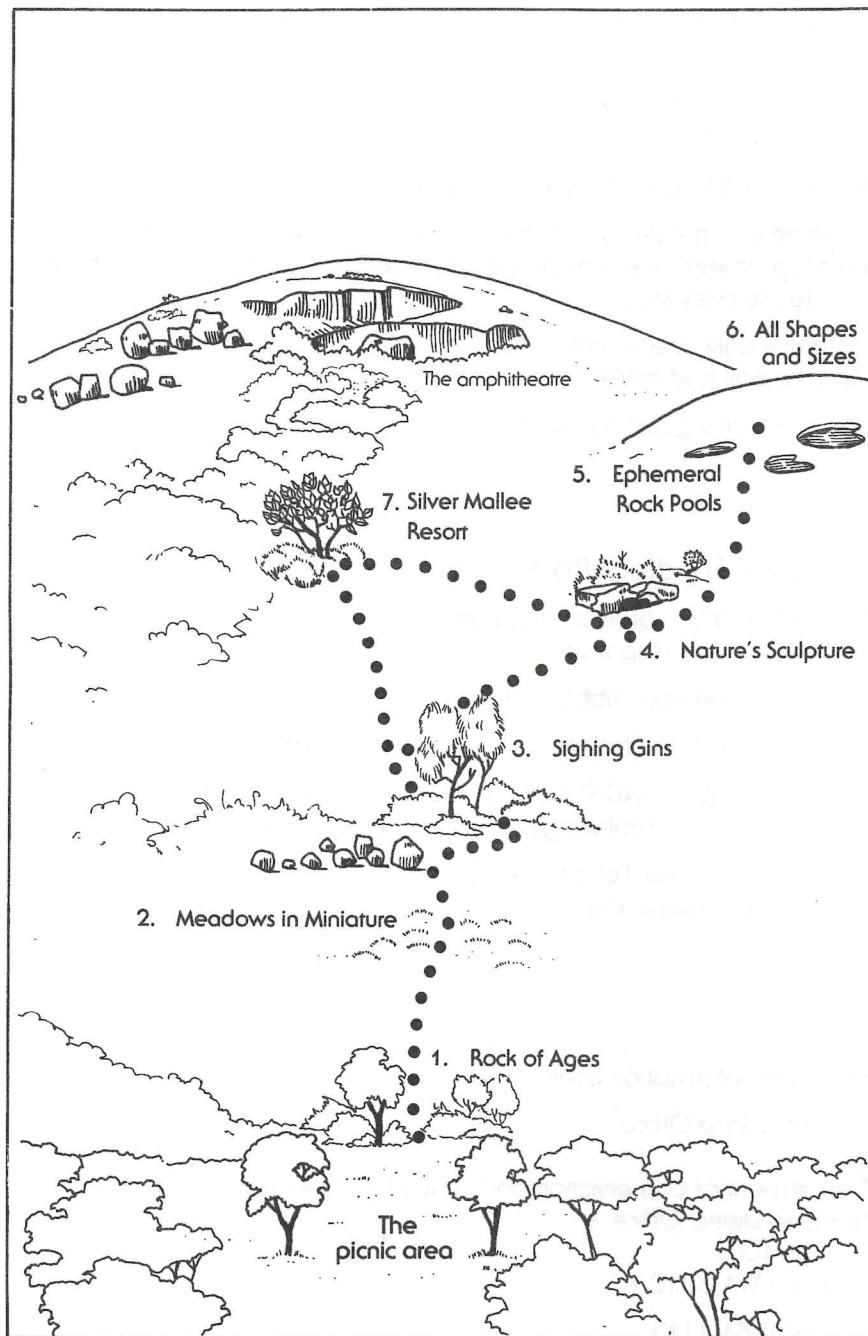
Department of Conservation and Land Management

Narrogin District Office

PO Box 100

Narrogin WA 6312

Ph: (098) 81 1113



1. Rock of Ages

The huge granite landforms you see before you were once a mass of molten rock (magma) deep beneath the earth's surface.

Internal pressures beneath the earth forced magma up to where it cooled and solidified still deep below the surface.

Over millions of years this land surface has been extensively eroded, particularly by wind, rain and the resultant streams. These forces exposed and shaped this huge granite outcrop and helped form the surrounding soils.



Erosion continues today — but there is more to the story than wind and water.



2. Meadows in Miniature

Look closely at these miniature meadows and the surrounding granite rock.

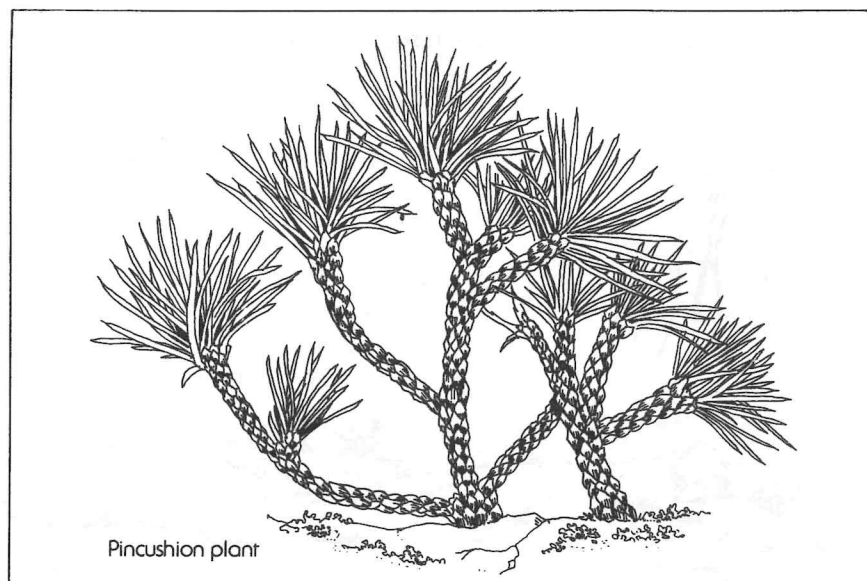
What looks like many-coloured paint blotches are actually the growth patterns of lichens, mosses and algae.

Run your hand over the surface of the rock. The pitted and scarred granite contrasts with the spongy mosses and dry flakey lichen. In the wet months mosses are green and in the hot summer months they dry out, becoming dark grey-brown.

Both lichens and mosses quickly recover when the first winter rains fall.

Lichens play a part in the process of breaking down granite rocks by secreting very weak acids that ever-so-slowly loosen the tiny sand grains in the rock surface. The root-like rhizoids of mosses also help loosen sand grains. Both mosses and lichens trap dust, sand and other material. When they die this matter adds to a seed bed for larger plants. As the surface changes, different types of plants are able to grow on the rock; this progressive change of plant communities is called succession.

One of the slightly larger species common to granite soils and, like the mosses and lichens adapted to extremes of wet and dry, is the aptly named pincushion plant (*Borya constricta*). How would you find it?!



Pincushion plant

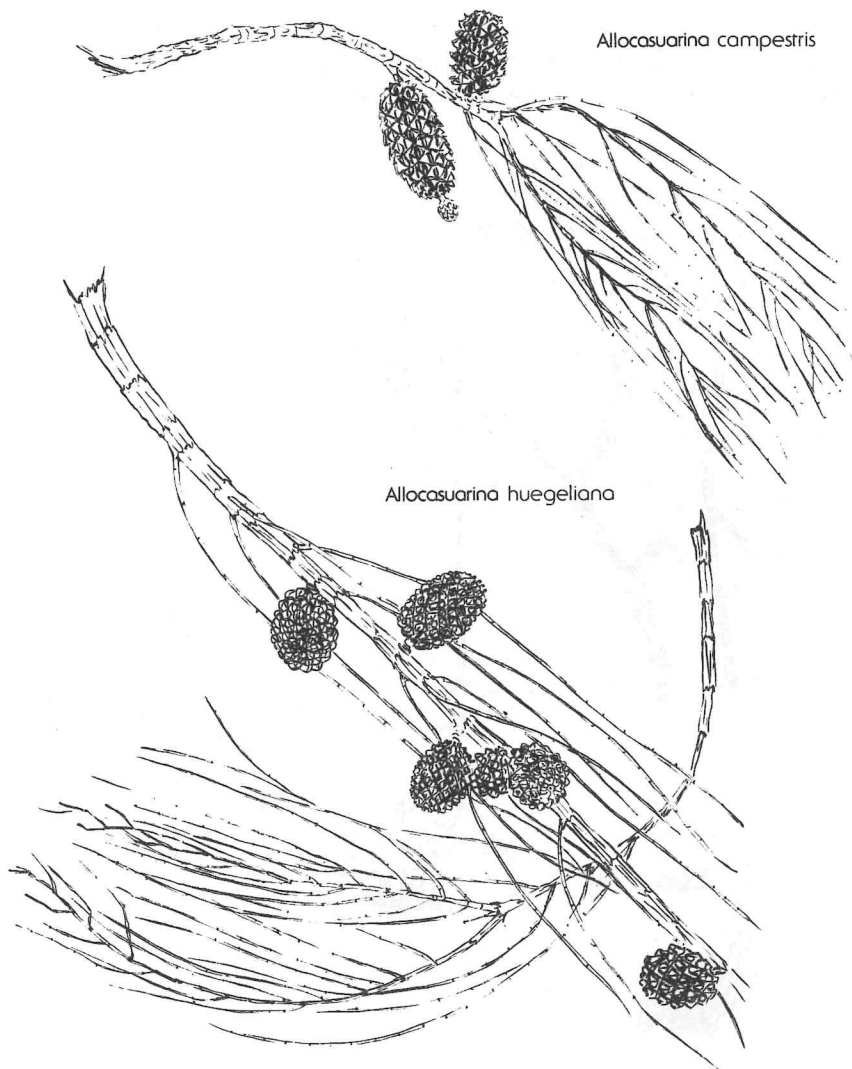
3. Sighing Gins

This depression in the rock has favoured the accumulation of soil particles and plant matter allowing shrubs and small trees to establish a hold. Perhaps you'd like to get to know some of them.



The distinctive, woody cones of the larger trees belong to the casuarinas (or sheoaks). Can you distinguish between the two casuarina species by examining the cones? Casuarinas do not have obvious leaves. Their needle-like modified stems, called cladodes, function like leaves but restrict moisture loss.

Look closely at a cladode to see a series of joints. Tiny triangular structures at each joint are all that remain of the leaves.

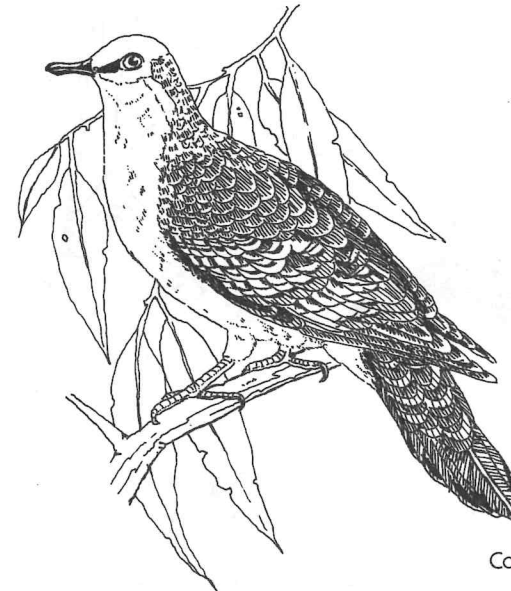


Allocasuarina campestris

Allocasuarina huegeliana

Take a moment to listen to the sound of the wind blowing through the casuarina branches. Perhaps now you know why some Aboriginal people call the casuarinas 'sighing gins'.

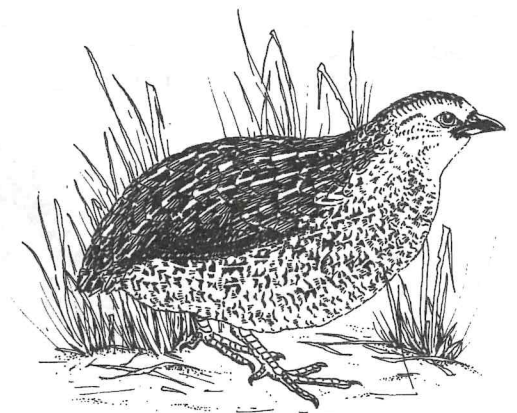
Did you hear any birds? Brown and Singing Honeyeaters commonly fossick in the flowering shrubs and amongst the needles of the casuarinas for insects and nectar. Others, such as the Brown Quail and the Common Bronze Wing Pigeon, are occasionally seen sheltering in thickets or looking for seeds.



Common Bronzewing Pigeon



Singing Honeyeater



Brown Quail

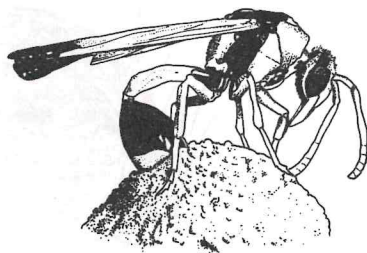
4. Nature's Sculpture

This granite sculpture provides a protective niche for a number of plants and animals.



If you sit down under this rock you should see the many-celled nests of mudwasps. Are many of the cells empty? If a cell is sealed the inmate has not yet developed into the winged form, and is still in the nest.

To construct the nest the female wasp carries mud up from the creek below. The cells are stocked with a larder of moth larvae or spiders collected from the surrounding area. Then the female deposits an egg in the cell and seals it. When the egg hatches into a larva it feeds upon this stored food. Ultimately it develops into a pupa and then emerges as an adult wasp — a process that can take up to one year to complete.

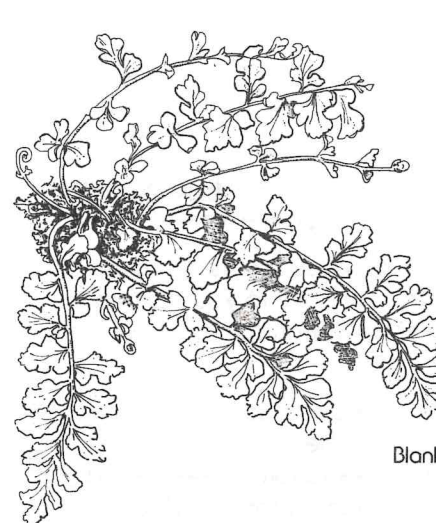


Female Mudwasp, laying an egg

Another protected resident of this sculptured granite boulder is the finely-haired blanket fern (*Pleurosorus rutifolius*) which prefers these cooler, damp areas. On the underside of the fern leaf you may find small brown spots (sporangia) in which spores develop prior to wind dispersal and subsequent germination at another protective niche. Like the lichens and mosses, ferns help to build and trap soil particles.

When sufficient soil accumulates within cracks and crevices it allows plants such as the granite kunzea (*Kunzea pulchella*) to cling tenaciously to the rock surface. As you proceed up to the top of this granite outcrop see if you can recognise these gnarled shrubs some of which resemble Japanese bonsai plants. In the wild this kunzea is found exclusively on granite rocks. When flowering it provides food and shelter for nectar and pollen-feeding insects and birds.

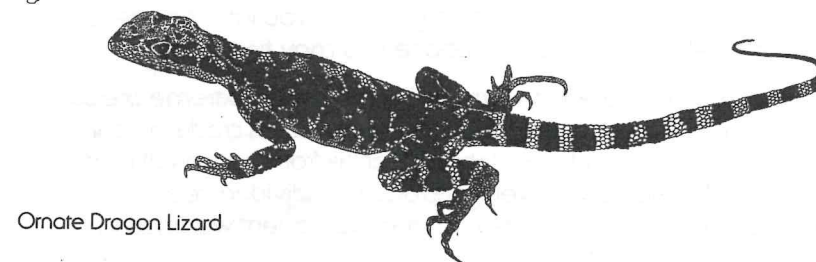
Also watch out for the fleet-footed Ornate Dragon Lizard (*Crenophorus ornatus*) which (like the mud wasp) is dependent upon the insect residents of Sandford Rocks.



Granite Kunzea



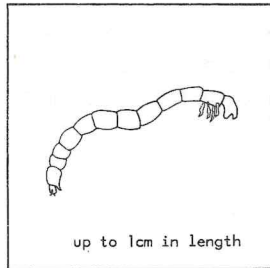
Blanket Fern



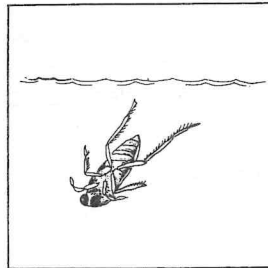
Ornate Dragon Lizard

5. Ephemeral Rock Pools

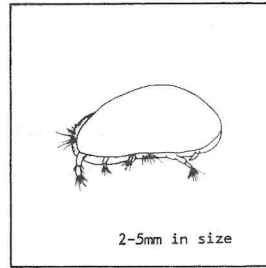
In this area are a number of quite deep hollows which hold water during winter and after summer rain storms. They contain a myriad of small plants and animals, many of which are restricted to granite outcrops. Look for small, black flatworms creeping over the bottom of the pools; insects such as back swimmers and midge larvae; and a variety of crustaceans, including seed shrimps.



Chironomidae
(Midge Larva)



Notonectidae
(Backswimmer)



Ostracoda
(Seed Shrimps)

6. All Shapes and Sizes

While you are at this vantage point, take the opportunity to enjoy the view and consider the constant weathering of granite rock.

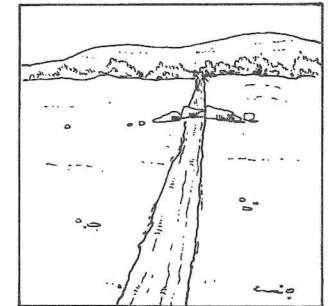
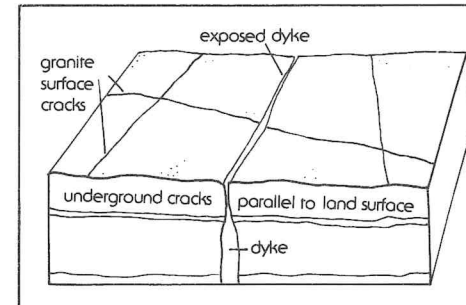
Jumbled boulders, deep crevices, potholes, loose sheets of granite and the amphitheatre beneath the surveyor's trig point to your north are graphic evidence of the actions of wind, rain, heat, cold and plant growth.

When the original molten granite rock cooled and solidified below the earth's surface cracks developed throughout the rock mass. Some of these were later filled with more molten rock to form dykes — today recognisable as raised, straight, narrow sections of rock which are more erosion resistant than the surrounding granite. If you later decide to follow the creek up to the amphitheatre you may find a dyke.

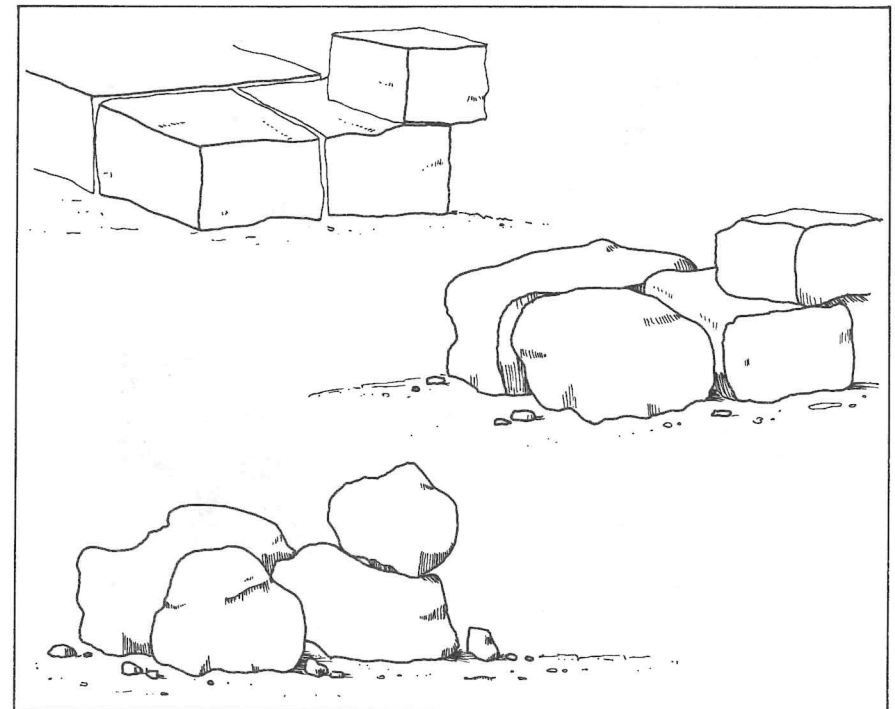
With the erosion of the earth's surface the release of extreme pressure upon the underlying granite formed additional stress cracks parallel to the land surface. This left large slabs of granite from horizontal cracking, and rectangular blocks from vertical cracking. Individual features of the granite boulders found here are from the subsequent weathering of these slabs and boulders.

A principal weathering agent is rain water, which carries a mild acid that seeps into cracks in the rocks. Chemicals from decaying vegetation add to this acidity. These acids then weather the minerals from the rock.

Weathering is more rapid at the edges and corners of granite blocks as more faces of the rock are exposed. When granite rocks are exposed at the earth's surface the weathered outside of the rock lifts off in sheets (a process called exfoliation) leaving mostly rounded forms.

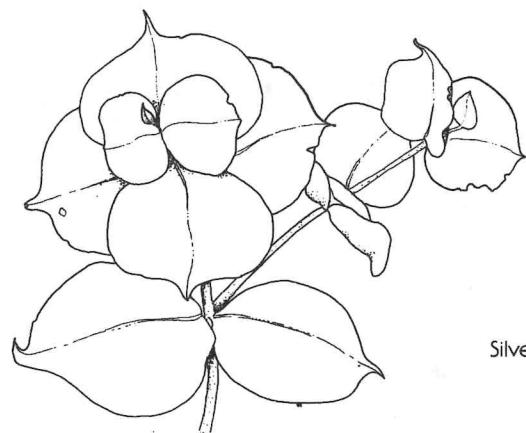
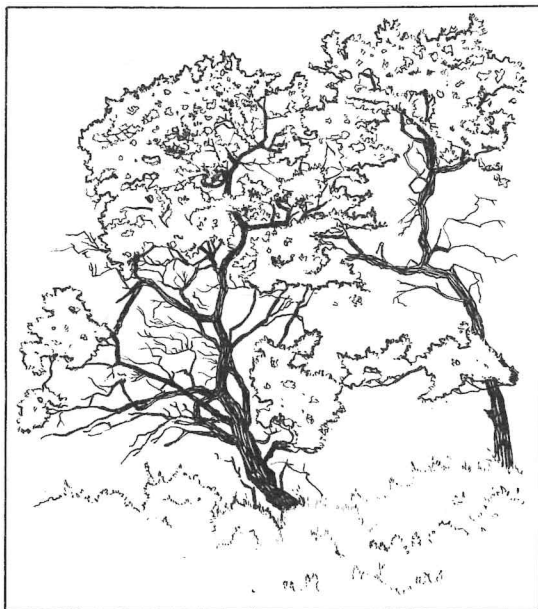


Dyke today



7. Silver Mallee Resort

The eucalypt with the distinctive silver grey leaves taking advantage of the soil and moisture within this valley is the silver mallee (*Eucalyptus crucis*) — a species only found at granite outcrops. In summer, creamy white flowers are an attractive addition to the colourfully-patterned bark, the twisted and gnarled branches and the interesting arrangement of the leaves on their stems.

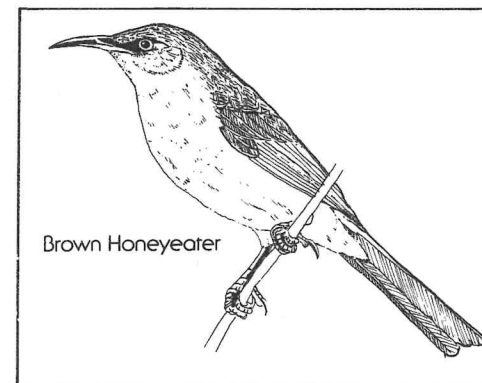


Silver Mallee



You are not the only visitor attracted to these trees and shrubs. Spider webs and their inmates, and ants making corridors of the tree trunks, are some of the permanent residents. Occasional visitors are the brilliant purple peacock beetles that shelter in the forks or bark of the silver mallee. More conspicuous are the honeyeaters that seasonally feast on the nectar of the flowers.

Can you recognise some of these other shrubs of this sandy valley habitat?



Dodonaea viscosa



Calothamnus Quadrifidus

From here follow the valley back down to the picnic area and discover more for yourself. Or perhaps you would like to continue on up the valley past the dyke to the amphitheatre and the surveyor's trig point on Sandford Rocks.

Please remember your care is required if the fragile habitats of Sandford Rocks and other granite outcrops are to continue to provide a place to share the natural environment with wildlife and people.

