

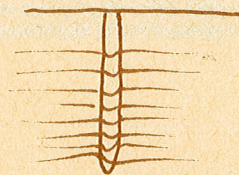
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Department of Biodiversity,
Conservation and Attractions

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Skolithos tubes



As sediments were laid down the worm extended its burrow upwards, filling behind with sand.

STOP 11. Here is an excellent example of the banded fine sediments deposited in a calm environment. The red bands are rich in iron, and the differences in band width may represent various lengths of time over which deposition took place: the thicker the band, generally the longer the time taken. However in some cases this may not be true. Any ideas why?

Also, at this point is an under-cut cave-like hollow where wind and salt have helped to erode away the softer rock, leaving an overhang of harder material. If you take a little of the powdery surface rock under the overhang and taste it, it is strongly salty. As salt crystals grow in the rock they exert tremendous pressure, forcing fragments of sand off the surface. Some salts come from wind-blown spray from the sea, but some may be salt deposited in the rocks when they were formed millions of years ago.

Also exposed in the undercut are narrow bands of differently coloured sediments similar to those discussed at STOP 9.

STOP 12. Rainbow Valley is now on your right. You are welcome to explore, but beware of visitors above who may accidentally knock stones over the edge. The trail from this point heads north along the coastline.

STOP 13. From this point, look behind you (south) along the coast. An attractive view of the sea cliffs near Eagle Gorge can be seen.

Also at this point are numerous scattered boulders which on closer inspection, are seen to be of different material from that exposed in the cliffs.

These boulders are sandstone which has been cemented together with silica, a mineral which dissolved out of their own structure. The boulders are much younger than the sandstones on which they sit, being of Cretaceous age (130 million years ago)

All the Cretaceous rocks have now been eroded away, only these extremely hard boulders being left. Additionally, a few of the boulders probably represent the course of an ancient river which once flowed over this site.

STOP 14. From this location you can see near you to the north a "jetty-like" structure of flat slabs. Here the very soft sediments similar to those you saw in Rainbow Valley have been eroded away by wind and sea until the overhang collapsed, leaving only a pile of rubble.

STOP 15. Examine the plants which are growing here. Note the Desert Pigface *Carpobrotus edulis* and a smaller but similar plant with sausage-shaped leaves *Disphyma sp.*

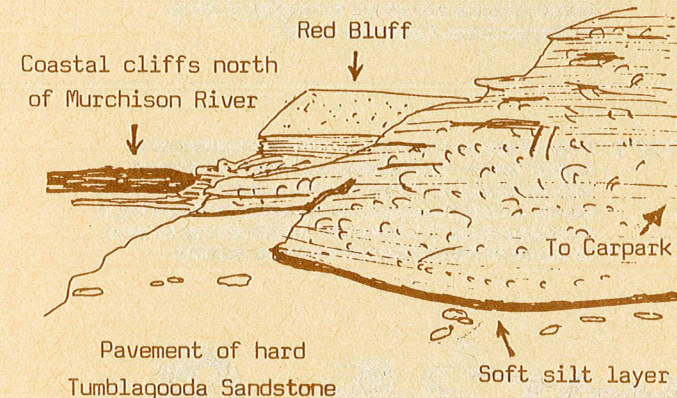
These are both succulent plants with special ways of surviving the intense heat and light of summer in this environment. Both plants have special internal chemistry which allows them to make food by photosynthesis without "overloading" their chemical systems.

Additionally the Pigface "shuts up shop" to some extent in the summer, the leaves shrivelling and becoming pale to reflect the light. The *Disphyma* in contrast deposits bright reddish-orange pigments in its leaves in summer. These cut down the amount of light penetrating the leaf and again stop "overload" of its chemistry.

From here swing slightly towards the coast and follow the bed of the gully down to the flat rocks below. BE CAREFUL - the rocks may be slippery if they are wet.

STOP 16. This large flat pavement has been caused by the sea cutting back into cliffs and removing all the rubble. A layer of very soft red siltstone occurred at the "notch" in the bottom of the cliff, and this formed the weak point which allowed erosion to progress quickly.

Behind you, on your left toward the sea, is Mushroom Rock. Its shape is also due to the eroding of a soft layer, leaving the harder upper sediments to form the "cap" of the mushroom.



From here turn inland up the valley, climbing the north wall (the one on your left as you head up the valley). Although it looks steep, there are several easy stepped pathways to the top. Be careful not to kick pebbles off the steps, remember there may be somebody beneath.

From the top of the cliffs follow the path back to the Mushroom Rock carpark.

STOP 17. Here are several large slabs of sandstone on which the *Skolithos* worm tubes have been left standing out in relief when the softer surrounding rock was eroded away. Please don't damage the tubes; leave them intact for someone else to examine.

From here go to the carpark, and if you started from Rainbow Valley, begin at STOP 1 in this brochure, and head south across the broad valley towards Rainbow Valley carpark.

REMEMBER: THIS IS YOUR NATIONAL PARK
HAVE A HAPPY DAY



KALBARRI NATIONAL PARK

WANPARA
H12

MUSHROOM ROCK NATURE TRAIL



Cliffs at Castle Rock, about 8km south of Mushroom Rock. The "layer cake" banding of the Tumblagooda Sandstone is very obvious at this location.

The trail follows a circular route, beginning at either MUSHROOM ROCK or RAINBOW VALLEY car parks.

Beginning at Mushroom Rock carpark	head south (beginning at Stop 1) and return via Rainbow Valley carpark and coast.
OR	
Beginning at Rainbow Valley carpark	head towards the coast (beginning at Stop 8) then return via the coast, Mushroom Rock carpark and the valley between these two car parks. Stop 1 is the first one south of Mushroom Rock carpark.
Time Required	2 leisurely hours

A steep cliff is encountered on the way back up from the coast to Mushroom Rock. Access is easy, by steps in the rock, but the elderly may find it trying.

The features described at various points are not necessarily right on the stop. To get full advantage of the nature trail one may have to look around to locate the object of reference.

PLEASE EXERCISE CAUTION IN NATURAL ENVIRONMENTS - Your safety is your responsibility.

PLEASE BE CAREFUL WITH FIRE. You are asked to refrain from smoking while on the nature trail.

BUSH AREAS ARE FRAGILE. Please keep to the track.

BEWARE OF SNAKES. Snakes occur in the area but are more frightened of you than you are of them. Leave them alone and they will leave you alone.

Compiled by Rangers and the Ecologist of the National Parks Authority and produced by the Authority's Publication Office.

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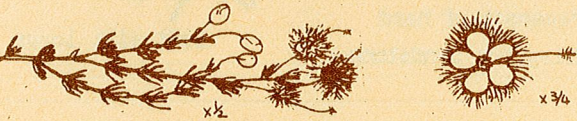
Start at Mushroom Rock carpark.

Head south following the marked trail. In the early morning or late afternoon search for Kangaroos feeding in the gully.

If starting at Rainbow Valley carpark begin at STOP 8.

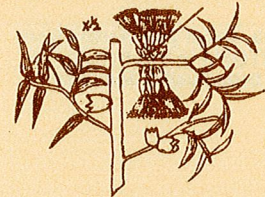
STOP 1. Here the creek meanders down the slope, separating and rejoining into several watercourses. Rubble from the sandstone has slowed the creek and forced it to take new directions. Notice the vegetation, which has been trimmed by the strong winds which rush up the valley. Some of the plant species found here are known to grow elsewhere to heights of 3m in protected areas. Cross the Creek.

STOP 2. Near where you now stand are a few bushes of a feather flower, *Verticordia penicillaris*. This plant with its attractive yellow flowers and fluffy petals and sepals is conspicuous in spring when its flowering is most abundant. It is however, visible almost all year, as the dead flowers persist for many months.



Verticordia penicillaris

STOP 3. This stand of low shrubs is composed almost entirely of *Melaleuca cardiophylla*. The species protects its delicate internal structure from the intense heat and light in the summer months by depositing pinkish-mauve pigments in the leaves. In cooler times these are lost, and the plant returns to its normal greenish foliage.



Melaleuca cardiophylla

Flowers white or
yellowish white in
small lateral clusters

Between Stops 3 and 4 are numerous species of *Acacia*, or wattles. These plants have bright yellow to cream flowers in late winter and spring, and attract abundant insects. This group of plants have bacteria in their roots which take nitrogen from the air and put it into the soil, thus providing their own fertilizer.

STOP 4. The creek at this location has rocky banks covered with abundant lichens. These are the green, grey or black splotches on the rock resembling paint splatters. Look closely at them and you will see intricate folded, leafy and powdery structures. These "plants" are in fact a union of an alga (the group to which seaweeds belong) and a fungus (the group to which mushrooms belong). The alga and the fungus are both completely unlike the lichen which they make up, and often cannot live independently of each other. The alga produces food for the fungus and the fungus provides shelter from its structure and some nutrients.

STOP 5. Look about 40m away west (towards the sea) from this point and you will see a low sandstone outcrop with bedding planes in the rock.

These bands intersect and curve, and were caused by turbulent waters carrying silt and sand along ancient creeks which laid the sediments down, and which were later turned into rock.

STOP 6. On the west (seaward) side of the track at this point are rocks with numerous pits and bumps caused by weathering of the softer parts, leaving harder material standing out in relief.

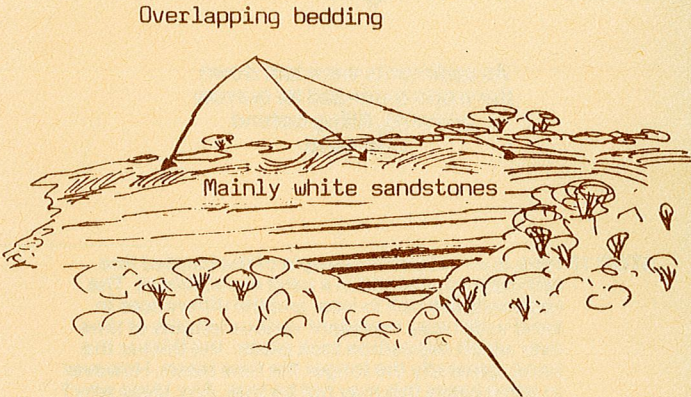
STOP 7. The ground here is littered with fragments of quartz, ironstone and rounded boulders which are the remains of river deposits much younger than the sandstones, and originally above them. These younger rocks have long since been eroded away, and all that remains are particles of the harder, more durable material.

STOP 8. RAINBOW VALLEY CARPARK
If you are starting from this carpark head west towards the sea, and follow the marked trail which leads down to near Rainbow Valley, then heads north along the coast. From here the trail climbs a steep valley wall and then slopes up to the Mushroom Rock carpark. A trail beginning at STOP 1 on the south side of the Mushroom Rock carpark (your right as you approach the parking area) leads you down a valley and up again to Rainbow Valley carpark.

The white colour is due to a lack of red iron-containing minerals in the sand. Lower down on the cliff are other bands of red silts and sands, making a layer-cake appearance.

The white upper layers show overlapping bedding features which suggest they were laid down in semi-turbulent water, as occurs in fairly fast moving, but sandy creeks. The lower, coloured and evenly formed strata were probably by contrast deposited in a still, calm, situation like that which occurs in broad river estuaries.

STOP 9. This upper portion of the cliffs on your right hand side consists of mostly white coloured Tumblagooda Sandstone. This sandstone is believed to be of Silurian age (400-430 million years old), as are the sandstones exposed in the Murchison Gorge itself.



Red and white "layer cake" strata

STOP 10. The rock face above the overhang shows overlapping bedding and vertical tube-like structures. These tubes are the remnants of burrows of an ancient worm called *Skolithos*. This worm, which lived in the Silurian waters of 400 million years ago, dug a vertical burrow similar to those made by today's sand-worms. As the sediments rose the worm would build its burrow upwards, filling in behind with sand. The compacted sand which filled the old tube was more resistant to weathering, and now the soft rock has eroded away, leaving the tubes standing out in relief.