NATIONAL PARKS AUTHORITY · WESTERN AUSTRALIA ·

BADGINGARRA NATURE TRAIL

The National Parks Authority wishes to thank the Badgingarra Community Association for their enthusiastic involvement in initiating and joint installation of this National Park Nature Trail.

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

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BADGINGARRA NATURE TRAIL

BEGINS WEST OF BRAND HIGHWAY NEAR BADGINGARRA ROADHOUSE AND RETURNS TO THE SAME POINT. PARKING IS AVAILABLE AT THE ROADHOUSE. PLEASE BE CAREFUL CROSSING THE HIGHWAY (ESPECIALLY WITH CHILDREN).

TIME: ABOUT 90 MINUTES WITH AN OPTIONAL DETOUR OF AN EXTRA 45 MINUTES.

DISTANCE: ABOUT 2 KM WITH AN OPTIONAL DETOUR OF AN EXTRA 1.5 KM (INCLUDING RETURN).

The features described at each stop may not necessarily be obvious. To get full advantage of the trail, one must look around to locate the object in reference. Binoculars will help you to see Emu and Kangaroo, both of which are common.

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

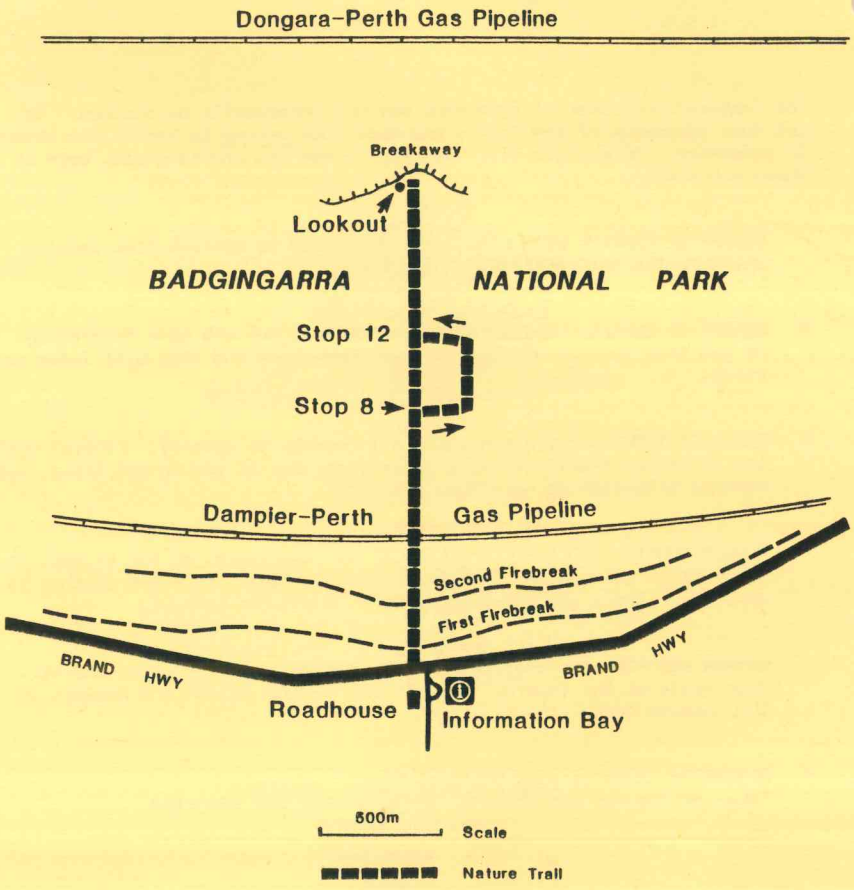
* BEWARE OF SNAKES. Snakes occur in the area but are more frightened of you than you are of them. Leave them alone and they will leave you alone.

* KANGAROO TICKS occur along the trail (mostly in summer). Liberal application of insect repellents will deter them, but if you do get ticks, seek medical attention to have them removed.

* RUGGED COUNTRY AND A STEEP HILL must be negotiated, do not attempt the trail if in ill health, with inadequate footwear or if the weather is very hot. Seats are provided at Stop 12 and the Lookout.

* DRINKS AND FOOD are available at the Badgingarra Roadhouse, and sit-down meals at the Tavern. Toilets are at both places and showers at the Caravan Park.

* REMEMBER: This is your National Park.
Take nothing but photographs, leave nothing but memories.



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BADGINGARRA NATURE TRAIL

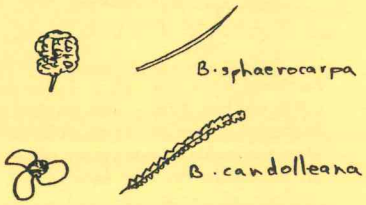
STOP 1 This is the first firebreak you cross while heading west after leaving the Brand Highway. There is another firebreak a little further on. The reason for the double firebreak is that it's a "double buffer" system. Two strips of bushland, separated by firebreaks, are left alongside major roads such as the Brand Highway. Such roads are a major source of ignition by fires caused by cigarette butts etc. or deliberately lit by passing motorists. The Ranger in charge of the Park burns patches out of the strips of bushland, creating belts of low flammability. By alternately burning the inner or outer strip, each is burnt only half as often as it would be otherwise, and the unburnt portions of the outer strip leave some wildflowers for tourists to see.

STOP 2 This is the second firebreak mentioned above. The heathy vegetation you have been passing through is typical of the very diverse and rich flora of the area. This rich array of plant life grows on very low nutritional value white sands and the flora are especially adapted to survive. Many of the plants use bacteria or fungus in their root systems to extract nutrients or turn nitrogen from the air into fertiliser.

Note that the vegetation has two layers:

A heath of great richness to about 1m tall and taller straggling shrubs "emergent" to about 2m tall.
The taller shrubs are Hakea obliqua a very spiny plant.

STOP 3 Here are two species of Banksia (see if you can find them). They are quite different in form and leaf. One, Banksia sphaerocarpa has the usual fruit shape. The other, Banksia candolleana, has much larger leaves with serrated edges and peculiar fan-shaped fruit.



STOP 4 This is the alignment of the 1983 gas pipeline from Dampier to Perth. The pipeline traverses 1500 km. It is 660 mm in diameter, is made of resin coated steel and was laid in less than twelve months; a world record.

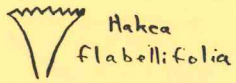
Note the laterite gravel which has been brought to the surface during pipeline construction. This is some of the residual material which would have originated on the breakaways to the west. With time this disturbance will regenerate to its heathy original form. Some regrowth has already begun.

Also near here are numerous Blackboys or "Grass Trees" (Xanthorrhoea reflexa). This remarkable plant grows at a rate of about 1-1.5 cm per year without fire, but can grow up to 10 cm in a single burst in one season after being burnt. They flower and set seed without fire, but there are many more prolific flowers after heat from a fire has affected the growing tip of the plant.

STOP 5 This low hill-crest has abundant laterite exposed on it. Laterite was formed during a much hotter, wetter climatic period thousands of years ago. Iron minerals from the soil were leached out and carried upward to be re-deposited in hard, iron-rich layers. Later these were exposed. In some places the laterite has eroded away to form rubble-covered hills such as the one you stand on and others such as those visible east of Badgingarra townsite.

STOP 6 Two interesting plants occur here. One is Allocasuarina humulis, one of the Casuarina or Sheoak family. Mostly we think of sheoaks as tall trees, but this one grows only as a low shrub. Find one of the plants and examine the leaves and nuts. The leaves are actually the tiny teeth which form circles around the green soft branches. In this species, the leaf has lost its role in photosynthesis or food production for the plant and the branches have taken over this job. The nuts have the seeds embedded in slots within the body of the fruit, protecting the delicate seeds from insect attack and fire.

The other plant Hakea flabellifolia has a fan-shaped leaf. This type of leaf is very unusual in the Australian flora and is readily recognisable.



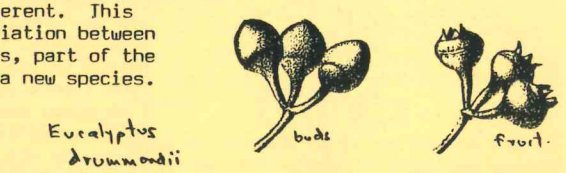
Between here and Stop 7, look for grey, clayey patches and lumps on the soil both on the track and in the bush. These are remnants of termite mounds and are often covered with green or black and yellow lichens on the surface. These minute plants can gain a better foothold on the clayey surface than is possible on the sand.

STOP 7 This clump of taller shrubs is the Attenuate Banksia - Banksia attenuata. If you are from Perth you will be more familiar with this species as a tree up to 5m tall, but in Badgingarra National Park it is only found as a low stunted shrub. Note the "attenuated" or flat, blunt end to the leaf and how the old remnants of the flower styles persist as little hook-shaped bristles on the fruit. Smokebush (Conospermum) with its white fluffy flowers occurs abundantly here in spring and there is also a clump of stunted "Prickle bark", Eucalyptus todtiana trees.

STOP 8 This is the junction of the track you will take up hill and the one you will return on. In other words, the beginning of the loop. But just before you turn north along the foot of the breakaway, walk south about 60 m through the bush to the two whitish shrubs at Stop 9. These are Mottlecah, "Rose of the West" or Eucalyptus macrocarpa. "Macrocarpa" means large fruit and indeed this species has the largest flower of any known Eucalyptus, producing bright pink to red flowers up to 10 cm across, mainly in summer, but sporadically throughout the year.

Also near here (about 30 m away) is a small clump of another interesting but less spectacular mallee. This is Drummonds mallee or Eucalyptus drummondii named from a specimen collected by Botanist James Drummond, who collected plants extensively in the region in the 1840's, and had a farm "Yere Yere" near Dandaragan. Examine the clump closely and see that there are two variants of the species.

One has pale green, elongated leaves where the other has darker, more greyish, foliage and the leaves are a little more round. Bud shapes are also different. This demonstrates genetic variation between the two individual clumps, part of the process of evolution of a new species.

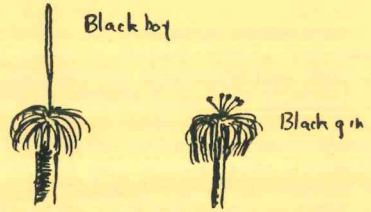


When you have finished examining these mallees, return to the junction at Stop 8. From here, turn north along the track to Stop 10. (remember 9 was the mallees!) Between here and Stop 10 notice how the Blackboys are on the gravelly hill slopes and scarce or absent on the sands.

STOP 10 Here the track turns west and you climb the breakaway. The low heath between here and the breakaway is extremely rich in flowering species and can be a carpet of flowers at some times of the year. Do not worry if you cannot identify many species, names are just a convenience. What you can do however, is look at leaf shapes. Note the broad flat ones, the needle shaped, the minute round ones and literally dozens of forms. Also, many are hard, spiny or coated with resin. All of these types have one factor in common; they are designed to conserve water in a harsh, dry environment. The plants here have devised about 30 different ways of doing it successfully by changing their leaf shapes etc. See if you can figure out what trick each species has used.

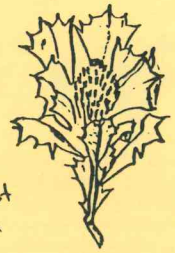
Also in this area are many dung beetles, insects of the Scarab family which dig holes to bury Kangaroo droppings. Look for little holes about 1 cm in diameter with a pile of sand like a small volcano around the top.

Between here and the top of the breakaway, note the abundant Blackboys (Xanthorrhoea reflexa) and Black Gin (Kingia australis) a completely different species with knobs on short stalks as flower heads rather than long spikes. The trunk of Kingia is also smoother and the leaves shorter. Blackboy and Black Gin grass trees do not interbreed, each being a distinct species. They like laterite soils and so grow best on these slopes.



STOP 11 The point where you turn south after having climbed the breakaway. Look at the heath here. Is it as tall or as rich as that closer to the Highway? Now examine the soil. Is it different? Parrot Bush (Dryandra) is common here. If sitting for a while, just close your eyes and listen to natures "symphony".

STOP 12



This junction is the point where you can turn east to return to Badgingarra, via the breakaway. However, if you are feeling fit, there is an interesting detour to the west along the seismic line. This takes you to a lookout about 1 km away, and from where the geology of the area is described in some detail. If you do not want to take the detour (described a little further on), turn east to the breakaway and STOP 13.

STOP 13 Edge of breakaway.
From here you can see the Brand Highway and Badgingarra townsite. At this point, you are about 64 m (210 ft) above Badgingarra and about 270 m (885 ft) above mean sea level. The low, undulating country visible in all directions is the remnant of a well eroded landscape. The origin of laterite was described before and at this point, the softer sides have eroded away from the hard, laterite, cap-rock leaving an edge somewhat like those occurring on a mesa. The remnant laterite has broken off in chunks to tumble down the hill, forming a scree or boulder slope. You must negotiate this slope with care as some rocks may be loose.

Also on the breakaway edge, the shrubs are a little taller because of the additional moisture they obtain from run-off from the rocks. On the platform of the breakaway, many Dryandra species occur. These are very prickly, but are important species for bees which exploit their nectar and pollen. The edge of the breakaway is also a favourite for Echidna (Australian anteaters).

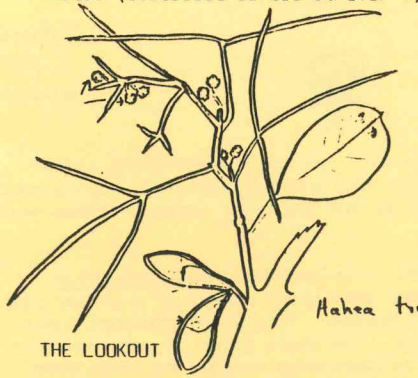
From here negotiate the breakaway slope: CAREFUL!!
and head down the seismic line track back to STOP 8, then on to Badgingarra townsite.

THE LOOKOUT DETOUR

Turn west from STOP 12, head down into the valley then up to the crest of the next hill where the lookout and a seat is located.

When near the lowest point of the valley, note the yellow soils (this may not be obvious, but look at ant nests. The ants bring the yellow sand from beneath up to the surface). The yellow colour is caused by traces of iron left when much of the iron was removed into the laterites.

Also in the valley bottom are some Christmas Trees (Nuytsia floribunda) small straggling trees to 3-5m tall with brilliant yellow-orange flowers in summer. Christmas Trees are semi-parasites, feeding partly on the roots of other plants and partly by manufacturing their own food by photosynthesis using sunlight. Other interesting plants in the vicinity are Banksia attenuata shrubs (described before at STOP 7) and Hakea trifurcata, a shrub on the track edges to about 1-5 m tall with bright green, three pronged needle-like leaves and flat oval-shaped leaves on the same bush. The flat leaves are very active in producing food from sunlight but are protected from browsing animals by being interspersed with sharp, spiney leaves.



Note the change in height of the heaths from the hill slopes down to the valley floor. Why do you think this is?

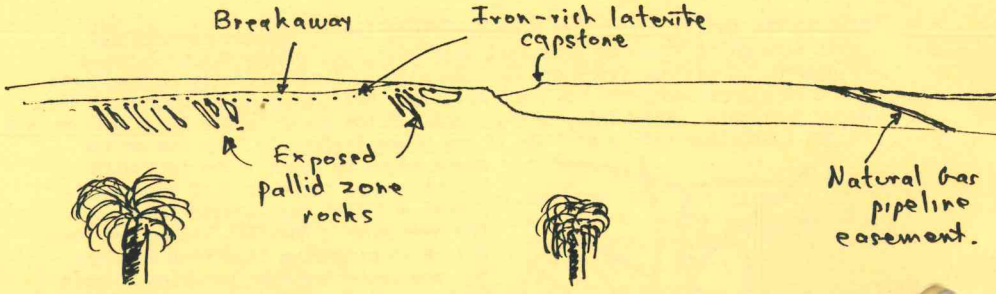
THE LOOKOUT

The view to the south and west from here is virtually wilderness, probably appearing much like this for hundreds of years. The main scar on the landscape is the easement of the 1973 natural gas pipeline which transports gas from Dongara, 320 km to Perth. Doing our best to ignore this blemish, let us look at the landscape and its origins.

About 40 km to the east of this area lies the Darling Fault, a rift in the earth which separates the so-called Perth Basin on the coastal side from the very ancient rocks of the great Continental Shield which makes up most of Australia. These ancient rocks, mostly granites and related rock types, are 2,000 million years old or more. To the west of the Darling Fault (where we are now) however, the Perth Basin area has been sinking slowly for millions of years and this, together with a general rise and fall in sea levels, has led to the formation of very deep deposits of silts, sands and boulders derived both from the sea and from erosion of the shield to the east. In some places these sediments now form layers of rocks up to 10,000 m deep. These rocks are younger, being from 225 million years old up to the coastal limestones which are only a million years old.

One of the sediments, mostly sand, was consolidated to form a sandstone of which the hills on which you now stand is part. This rock type is known as the Yarragadee Formation, is up to 33 m thick, and is of Cretaceous age, about 130 million years old.

Later, in a landscape probably somewhat similar to that seen today, but in a period of higher rainfall within the last few million years, iron from the sandstones was carried closer to the surface and redeposited as the mineral we now call laterite. This process of upward transport of iron to form laterite is still occurring today in the extreme south-west of Western Australia where rainfall exceeds 90 cm (36 inches) and has a strong seasonal distribution with very wet winters and very dry summers. The harder iron-rich capstones exposed after erosion formed breakaways where the softer, iron-depleted sandstones beneath were removed by wind and water. To the south-east, a slope can be seen where the iron-depleted or "pallid" (pale) zone of sandstones are exposed.



Further erosion on the entire landscape for several million years since lateritisation, together with an earlier well-eroded landscape, have produced the gentle, smooth undulations seen here, all the major irregularities having been broken down.

Also of interest here are the scattered Christmas Trees and Eucalyptus drummondii in the valley, and the paler, grey-green shrubs of a poison-plant Gastrolobium ilicifolium or Holly-leaf Poison. This plant produces spectacular masses of typical pea-flowers in Spring. The whole group of poison plants has not only been influential in agricultural development, but many have been instrumental in the preservation of bushland in the nature reserves and national parks of the State. It was only the presence of large numbers of these toxic species which prevented farmers from running sheep or clearing some of the land. These remnant pieces of bush are now valuable reserves and often are the only remaining examples of an otherwise cleared region.

Before heading back to the road, examine closely the rocks on the edge of the breakaway. Many are covered with blotches of colour; green, grey or red-orange. These are all species of lichen, an amazing plant. The reason it is amazing is that it is in fact two plants, an algae (like the seaweeds) and a fungus (like mushrooms). These two very different plant types now live together permanently, and have even changed their form so that their combined nature is so distinct, it can in turn be classified by botanists as a distinct species.

The process of living together with mutual advantages is called "symbiosis". Here the algae manufactures food by photosynthesis from sunlight and the fungus provides protection and some special foods extracted from the rock or the air.

From here, head east back the way you came to STOP 12 picking up the trail to 13, 8 and then back to Badgingarra.