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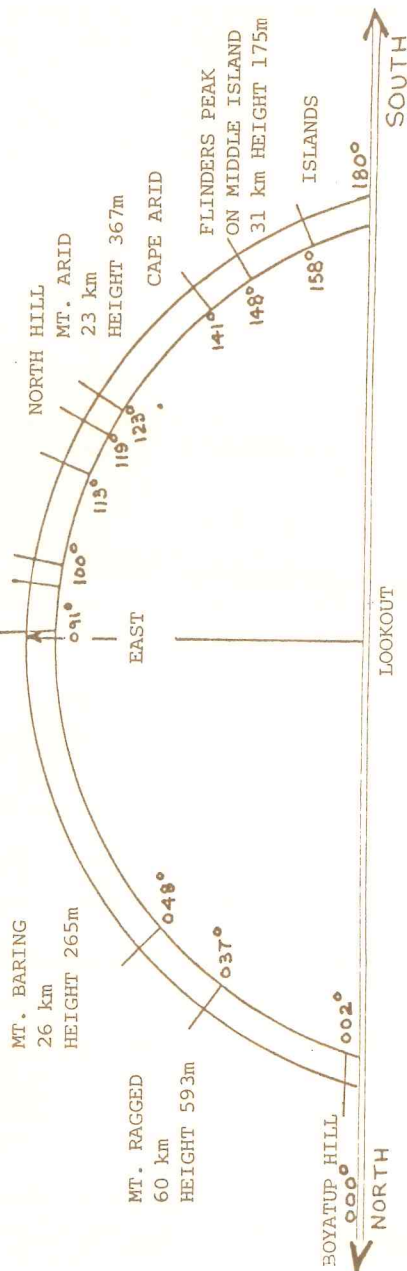
Department of Biodiversity,
Conservation and Attractions

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VIEW FROM THE LOOKOUT

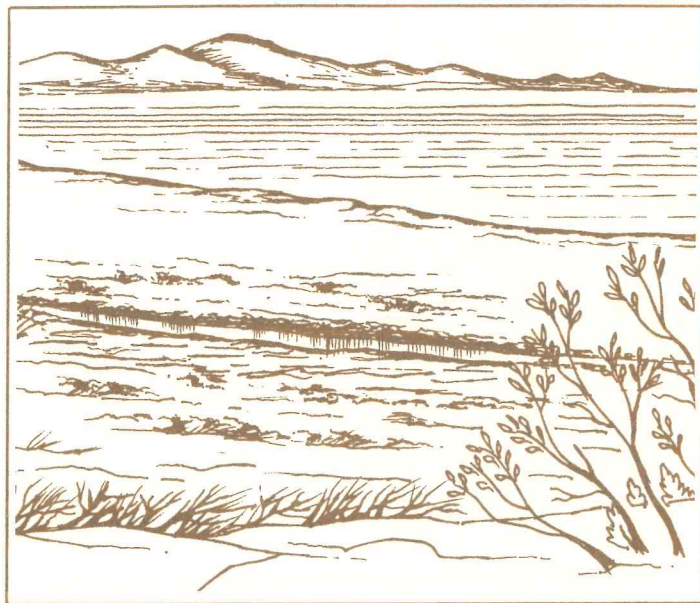
THE BROTHERS

CONE OF ROCKS



CAPE ARID NATIONAL PARK

LEN OTTE NATURE TRAIL BELINUP HILL



Mt Arid from the lookout

NATIONAL PARKS AUTHORITY

HACKETT DRIVE, NEDLANDS,
WESTERN AUSTRALIA, 6009

4M 6 81 1

BEGINNING at the rest area on Belinup Hill, the walk trail takes a circular path of approximately 1 km, returning to the starting point. The walk takes about 1 hour to complete but many visitors take longer...it is up to you.

Wooden pegs indicate the trail path. The large numbered pegs show stopping places of interest.

NOTE! Ants are numerous along the first section of the trail to Stop 4. The ants may enjoy thongs or bare feet...but you won't.

PLEASE BE CAREFUL WITH FIRE.

You are asked to refrain from smoking while on the nature trail.

BUSH AREAS ARE FRAGILE

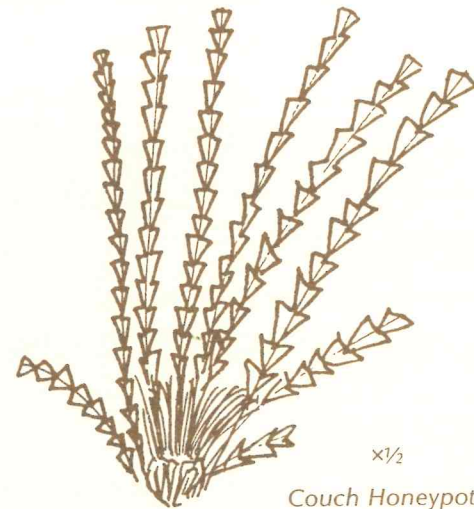
Please keep to the track whenever the ants allow you to.

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.

STOP 1 This is but one of the many magnificent ant beds in the area. A protective ant viewing platform is provided at Stop 3. From the beginning to this point you have been walking in a stand of mostly Flat-topped Yate trees *Eucalyptus occidentalis*. The Yate has a grey-black stringy bark which peels off in strips half to two-thirds up the trunk. The upper branches are grey and smooth.

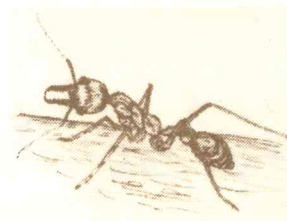
STOP 2 Couch Honeypot *Dryandra nivea* is in clumps here. It flowers from July to September and occurs from Badgingarra to Israelite Bay. Between here and Stop 3 are several species of low semi-succulent shrubs of the Chenopod family. Although unspectacular the fruits of these plants are an important part of the diet of many native mammals and birds.



Couch Honeypot

STOP 3 There are numerous ant species within the Park. The species of meat ant here, most commonly builds large mounds such as you can see.

Also in the area are nests of Sergeant Ants *Myrmecia regularis*. These large (25mm or more) ants have painful bites and stings . . . so leave them alone. However, many species of frogs, lizards and small mammals are known to use their nests as homes, without any interference from the ants.

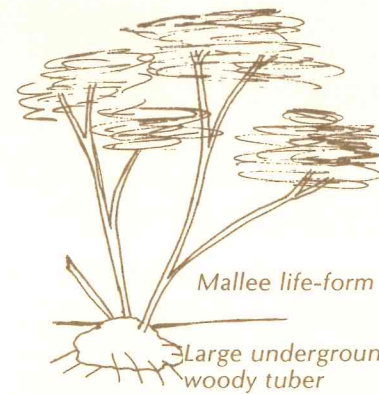


Sergeant Ant

Mt Ragged, some 60 km NE of Belinup Hill is the locality where a very rare "Living-fossil" ant *Notomyrmecia macrops* was collected in 1930.

STOP 4 This large *Zamia Palm Macrozamia riedlei* is one of many on Belinup Hill. *Zamias* are not true palms but members of the Cycad family, distant relatives of conifers (pine and fir family). They are interesting plants in that male cones with pollen and female cones producing bright red nuts, are present on different plants; the pollen being wind-blown from one to the other. Another interesting feature, is that in nutrient-deficient soils, *Zamias* may produce special coral-like roots which contain a green alga capable of fixing nitrogen from the air. This is similar to the process of nitrogen-fixing bacteria found in legumes, an ability widely exploited in agriculture.

Also of interest here are the coloured lichens present on rock surfaces. The commonest ones are green *Parmelia spp*, orange *Caloplaca spp* or black (some are lichens, some algae). Lichens are fascinating plants in that they are in fact an intimate intergrowth of an algae and a fungus. The algae may produce sugars and nitrogen to feed the fungus and the fungus breaks down the rock providing mineral salts for the algae to use. There is thus, mutual benefit from the association.



On your way downhill from here to Stop 5 are abundant mallee *Eucalyptus congolobata* which, unlike the trees, have numerous stems arising from a large underground woody tuber. This area of vegetation as you can see has not been burnt for a long time. Old vegetation of this type is vitally important for many animals and plants which require old, unburnt habitats and cannot tolerate frequent fires. Unfortunately habitats of this type are now very scarce as man's desire to keep vegetation looking "young and lush" by frequent burning, has destroyed most old habitats, and many plants and animals have perished or become rare as a consequence.

STOP 5 Note the termite nest in the base of a mallee. Some species of termite are interesting in that although they eat wood, they cannot digest it. In the gut of the termite live single-celled micro-organisms which take the wood fragments into their "body", digest it then excrete what they don't require into the gut of the termite. The termite uses these excretions as its actual source of food.

The large fallen tree beside the trail is a specimen of Flat-topped Yate *Eucalyptus occidentalis*.

During your walk from here to Stop 6 you pass through a thicket of numerous species of shrubs. Note the great diversity of plants of different lifeform, leaf shape, etc, even in this small clump.

STOP 6 The large tree at the bend is a fine specimen of Flat-topped Yate. This is a good place to stop and listen for the sounds of the bush. In winter, crickets, birds and frogs may be heard and in spring, bees, flies, crickets, and if you are fortunate, baby birds giving feeding calls. In summer months, bees, flies, cicadas, birds and crickets are common. Autumn has a mixture of summer and winter sounds.

Between here and Stop 7 we cross an area of granite gneiss. This rock is a granite which has been remelted and distorted by earth movements millions of years ago. The minerals in the rock recrystallised in alternate bands of coarse granular quartz and feldspar and layers of black platy minerals, particularly a form of mica called biotite. Close inspection of the rock will enable you to see the individual mineral grains.

This is a good area to examine the process known as lithic succession. This daunting term means the process whereby soils develop from rock. In the earliest stages, lichens such as those seen at Stop 4 begin to corrode the rock surface and eventually a few grains collect in pockets and in cracks. This allows mosses to gain a hold and these collect moisture and further aid in rock breakdown. Eventually enough soil is present to trap a few seeds or spores and before long, tiny plants and ferns begin to grow. The process continues and eventually slightly larger shrubs become established. The shrubs in turn drop seeds or act as barriers to wind and flowing water, allowing litter to accumulate and larger plants to establish. Eventually deep soil forms and the rock becomes covered with dense vegetation. This process may take thousands of years.

A common flower on the granite outcrops is a native "buttercup" *Hibbertia eremicola*. This shrub with soft green foliage and bright yellow flowers presents a spectacular show in spring, and even has a few flowers as late into summer as February.



Hibbertia Flower

STOP 7 THE LOOKOUT

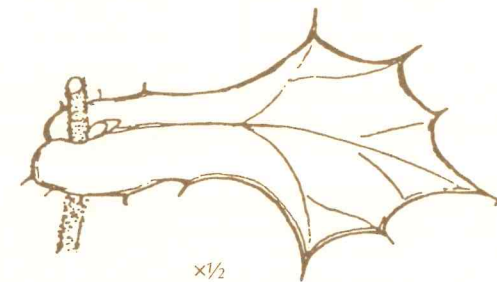
Standing on the flattest part of lookout rock with the *Zamia* palm ahead, and blackboy clump on left, align the directional diagram so that the easterly line points out about the *Zamia* palm. This gives easy reference to features on the horizon.

The Thomas River may be seen in the valley and Yokinup Bay on the right with its 20km of sandy beach.

Extensive stands of *Banksia speciosa* may be seen in the valley.

Just before moving off the next stop, it's worth contemplating the blackboys (grass trees) growing on the outcrop. There are many myths about the growth rate of these fascinating plants, ranging from only growing after fire to "one inch (2.5 cm) every thousand years". Recent research has shown that the growth rate is actually about 0.5 to 1.5 cm per year, with bursts of growth after fire. Additionally after a fire the growing point in the top of the plant may be damaged, causing it to divide and form two stems. If this happens repeatedly multi-headed blackboys may develop. Some excellent examples of multi-headed blackboys occur on Belinup Hill.

Between Stops 7 and 8 are a profusion of native plants including species of *Melaleuca*, *Daviesia*, *Dryandra*, *Thryptomene*, *Acacia*, *Hakea* and numerous sedges.



Hakea prostrata leaf

STOP 8 Plants in this area include *Hakea prostrata*, a shrub with interestingly shaped leaves. The name means "prostrate" but the plant is commonly a shrub or small tree. The name arises from the first specimens described and which were found on coastlines where the shrubs are blown flat by strong winds.

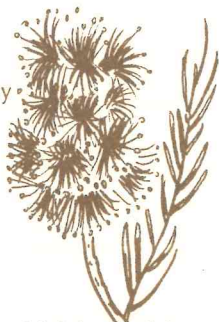
Also from here one can see glimpses of rocky coastline to the south.

STOP 9 On this open granite area are several interesting features. Right on the crest is a large *Banksia media* tree which has abundant flowers from March to October. There are also two large clumps of *Hakea clavata* shrubs. These plants have the thickest leaves of any *Hakea* species. These particular shrubs are very large and gnarled and probably of considerable age, having been protected from the fire by the open granite area surrounding them.

Also exposed on the rock is a natural cross of the mineral, feldspar. This mineral is identified by its blocky structure, smooth shiny surfaces on some sides and dull striated surfaces on other sides. The minerals have been laid down in a molten form, intruding into the granite gneiss through fissures. Two fissures crossed almost at right angles and the intruding mineral was laid down in the shape of the fissure surfaces. The fine grained gneiss eroded away faster than the coarse blocky minerals and has left them standing up in relief.

Note that the larger feldspar crystals are in the middle of the veins and smaller ones on the edges. This is because the gneiss into which the feldspar was intruded was cooler than the feldspar. Thus the edges cooled faster and there was no time for crystals to grow very large. The middle of the veins cooled more slowly and so large crystals formed.

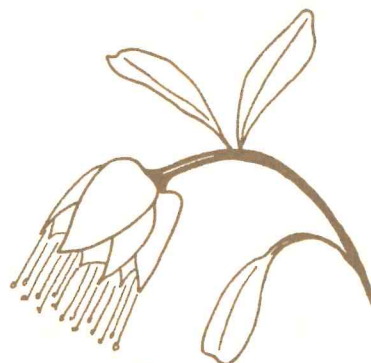
STOP 10 Clump of Scarlet Honey Myrtle *Melaleuca fulgens*. This plant has spectacular flowers from September to November. Round globular fruits may be seen when the plant is not in flower.



Melaleuca fulgens

The trail bends here, turning to the right.

STOP 11 Fallen wattle *Acacia saligna* trees which were blown over in winter storms during 1978. Some have remained alive because a few roots remained unbroken. A conspicuous feature of these wattles are woody galls on the foliage and upper branches. These are caused by a rust fungus which infects the stems, the plant retaliating by forming fleshy galls.



Diploloena Flower

Between Stops 11 and 12 are some outcrops of boulders with the attractive shrub *Diploloena*. The plants can be identified by their foliage when not in flower.

At the beginning of the slope down from Stop 11 is a large male *Zamia* palm. Note the small bracts on the cones compared to the large ones of the female fruits.

STOP 12 Here is another large Southern Plains *Banksia*, *Banksia media*, the same species as found on top of the hill near the feldspar cross. This banksia flowers from March to October and is restricted to the area between Cape Riche and Israelite Bay. Just to the left of this banksia is a large clump of pink myrtle *Melaleuca scabra* with attractive pink clusters of flowers in summer when most other plants have finished flowering. There are also numerous small native pine trees *Callitris canescens* between here and the end of the trail.

We sincerely hope that you enjoyed the trail. The plant life is extremely varied in this area and there is also an excellent range of wildlife. Lists of flora and fauna are in preparation and will be available soon.

Details of other features in Cape Arid National Park are available from the Ranger.

Keep this pamphlet if you wish, but if you have no further use for it, please return it to the box for another visitor to use.

Thank you.

LEN OTTE

This nature trail was designed and established by Len Otte, the first resident National Parks Authority Ranger at Cape Arid National Park. He passed away unexpectedly whilst on duty on 30th July, 1981.

Len was a dedicated Ranger fully committed to developing visitor facilities within this magnificent National Park, and among other duties he also pioneered several walks, and had nearly completed development of the coastal trail from Yokinup Bay to Tagon Bay.

The Len Otte Nature Trail has been dedicated as a fitting memorial to Len's achievements and life at Cape Arid National Park.