

**ORGAN PIPES NATIONAL PARK
A NATURAL HISTORY**

BARRY KEMP

**EDITOR: ROBERT BENDER
AUGUST 1994**

**FRIENDS OF ORGAN PIPES NATIONAL PARK Inc.
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Notes on Grey kangaroos and Swamp wallabies at Organ Pipes N.P.

I can only speculate about how aboriginal people affected numbers of kangaroos and wallabies in the area around Organ Pipes NP. With limited cover, the macropods would have been easy prey and it is reasonable to presume that numbers would never have been able to build up.

Isaac Batey, writing about his recollections of living on "Redstone Hill" (opposite the present Holden Flora Reserve) from 1847, said that kangaroos and wallabies had been "driven away" by then (he didn't recall any Aborigines either, so they also had been "driven away").

In 1972, there was no sign of kangaroos or wallabies anywhere near the Organ Pipes and we speculated about the possibility of ultimately reintroducing some of the animals that once lived there. There are records of many small mammals which are long gone and seemed impossible to bring back. Many of the birds recorded by Batey are no longer found south of the divide and are scarce overall.

Brush-tail possums like a varied diet and are good at living near European settlers, so were already there. Ring-tails can eat young gum tree shoots and a variety of native fruits, so were there also. Emus get too bossy and can be a hazard to visitors, so are not suitable for such a small park. Koalas were thought about, but in other areas where they had been reintroduced, they had quickly eaten out their food trees. In parts of NSW, they live in redgums, but at OP they would probably favour the manna gums, which were being planted in relatively small numbers, so that species would be vulnerable.

We hadn't thought about sugar gliders, but they have been a very successful re-introduction, with the help of some dedicated volunteers, and of course the microbats were already there, just needing some encouragement, thanks to Bob Bender. Water rats and platypus were seen in the creek, and presumably still survive there (lost fishing tackle is a hazard to both. Fishing in National Parks is an Australia-wide anomaly. Jack Lyale was reprimanded for refusing to allow fishing in the creek).

At first, shingleback lizards were present, but as they were well outside their normal range, it was suggested that they were released "pets". They were probably accidentally killed by fumigation of the rabbit burrows where they sheltered.

With kangaroos and wallabies, there seemed a problem of how to contain them inside the park but we were surprised to see that kangaroos appeared at "Woodlands" soon after it was taken over by National Parks.

One of the problems at the OP from the beginning of the planting program was that plantings had to be protected from rabbits. Rabbit control was spasmodic and when it was effective, self-sown seedlings would appear in many parts of the park, but then the rabbit numbers would build up again and the seedlings would disappear. How many seedlings would have survived if the rabbits had not been present is unknown.

At some point in the 1980s, first wallabies and then kangaroos appeared in the park, and since there were no natural controls, self-sown seedlings had no chance from then on, and tree guards had to be taller. There now seems to be no chance that there will be completely natural regeneration of the flora of the park without macropod breeding controls, a very contentious and difficult issue. What will happen when the park is an island in a sea of "McMansions" is a matter for conjecture.

Barry Kemp January 2018

Re: **OPNP, A natural history, Ed. Robert Bender, 1994**

Corrections and other notes..(B.Kemp) August 2021

Re. Note inside front cover.. If a copy of the original version can be located, it contains copies of many useful articles relevant to the Organ Pipes N.P and the Keilor Plains Flora, not included in this edition.

P 7 and 8 are in the wrong order.

P 25." Grevillea glabella" This species is now usually included in G. rosmarinifolia, sometimes as "Lara dwarf". The one that was planted in the carpark area did not survive. There is a good photo of this form in Vol. 3 of The Grevillea book (Olde and Mariot, 1995)

P31. Re. Acacia retinodes, the local one is now A. uncifolia

P37. The spur mentioned could consist of mixed soil over sandstone, and a 2017 check using Google Earth shows all of the trees are now gone.

P40. Hymenanthera dentata is now Melicytus angustifolius.

P41/42 The location records for Myoporum viscosum and Eremophila deserti are confused. The locations for M. viscosum are definitely for E. deserti. "Keilor cemetery" refers to the old one located just south of Keilor road. The main records for M. viscosum were at the airport quarry site and at Holden Reserve. Both species were propagated in small numbers and planted in areas of the park with a sandstone base.

P46. I can't recall how I had access to the Hoddle and Wedge-Darke survey maps, probably arranged through National Parks service.

P80. Re. Enchylaena tomentosa, for "flashy" read "fleshy"

P81 there is some displacement of paragraphs. If "Maireana pentagona" is brought down to be under "Threlkeldia diffusa", the last para makes more sense.

P83, the references to Mistletoe found at Column gully were added after I had left the area, so the text is a bit confusing.

P94. The wallaby grasses have suffered several name changes, but at August 2021 they are Rytidosperma species

P171. Re. Geological history of the Organ Pipes NP. This item originated from my notes for a VNPA visit to the park, and the first para needs revision.

General.. Records for "St. Mary's church site" refer to the site of an old church which was removed from its original location due to proximity to the Melbourne airport RW16 approach path. I think it is now the effectively the SW corner of Gellibrand Hill park and still has some original vegetation, including some old Grey box.

Editor's acknowledgments:

The bulk of this book was first written in 1987, shortly before Barry retired from his job at Tullamarine airport and moved north, after devoting much of his leisure time since 1972 to planning and revegetating the new Organ Pipes National Park, and being very involved with the Friends of Organ Pipes (FOOP) all that time. Considerable work has been done since then, in an effort to keep up with the steady stream of changes in plant names and other details.

The material has been read thoroughly by Carl Rayner (FOOP convener) and Ian Taylor (FOOP committee member).

Considerable extra material has been added, written by other people - mainly papers which nowadays are hard to obtain but which have vital information on the development of the Park,* or on aspects of the park other than flora - the section on fauna and geology, for example.

Barry also produced the bibliography, to which others have added a few extra references.

The cost of printing is being funded by a generous donation from the founder of the Friends group, Don Marsh.

To all those who have contributed to this work, my sincere appreciation. All species names have been cross-checked with the excellent "Flora of Melbourne" published by the Maroondah Society for Growing Australian Plants.

Robert Bender
July 1994

* not included in this edition - see bibliography

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THE FLORA AND ITS RESTORATION

These notes are intended to assist interested people to become familiar with the local flora and the way we are going about restoring it in the Park. They should be used in conjunction with collections of illustrations and literature references as well as unpublished material in the park library and the collection of the Friends of Organ Pipes. A personal reference library would be invaluable, and some suitable publications are listed later.

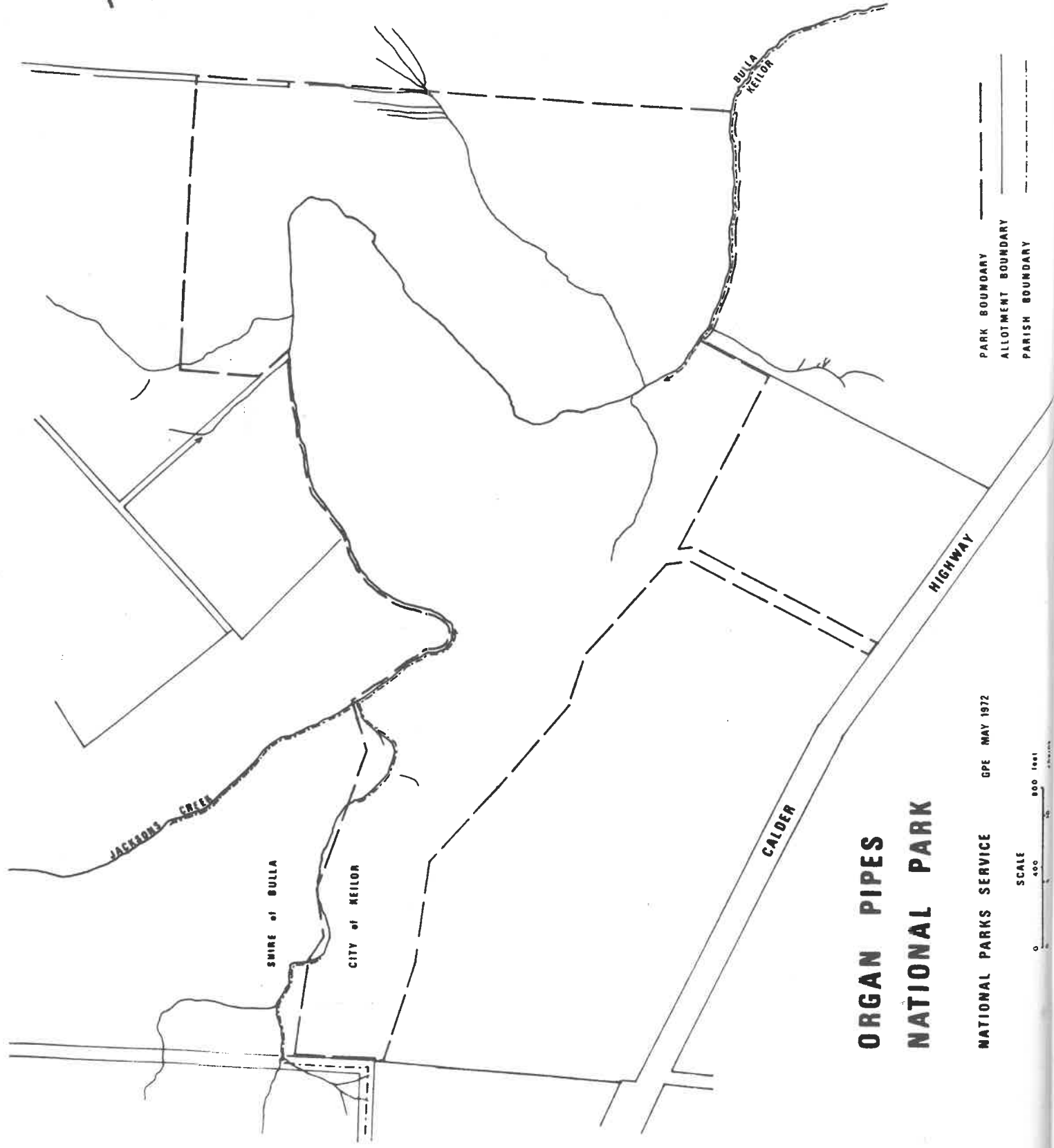
The floral association with which we are working is known as the Keilor Plains Flora. The bulk of it was obliterated in the last century, before any detailed study was undertaken, but there are enough records and later work by botanists to tell us that it was basically a grassland association, but with some areas of woodland, forest or shrubland. We have interpreted the evidence (which includes Von Guerard sketches and some surviving fragments) to indicate that the valleys of Jacksons Creek and Deep Creek were covered with trees and shrubs to varying degrees. Certainly the bulk of the tree and shrub species were (and still are) represented in the valleys.

There are only a few species which are considered rare and endangered, but the system of plant classification is a fairly artificial one, devised for man's convenience, and many plants grouped as a species show marked variation in different locations. As an example, our Silver Wattle is a small rather shrubby tree. In Gippsland the species often grows tall and straight to 30 metres, with a trunk too large for a person's arms to reach around. Sometimes, as a result of research, plants grouped as a species are "split" into several "new" species. It should be obvious that, if we wish to restore the original vegetation, and preserve the original genetic material, we cannot simply buy nursery stock, but we must collect propagating material from local sources. This has been the policy since the beginning of the planting program.

Some of the plants involved are very hardy and have been found in a wide variety of situations, e.g. creek flats, dry slopes, plains and sheltered gullies. Others are much more limited in their occurrence, e.g. the Desert Cassia, at the limit of its geographic range, finds only sandstone slopes to its liking. In some cases we have too few examples to be sure of the original site preference and we have to use a little guesswork. In the long term, natural regeneration will help sort them out, but the interaction between plants, animals, climate, etc. is very complex and we cannot expect that the Park will return to the exact state that existed at white settlement; nevertheless we are committed to producing what we believe is a reasonable facsimile.

The following pages will contain some basic botany, an identification guide to some of the species, and some notes on planting zones, site preferences and other material which may be helpful.

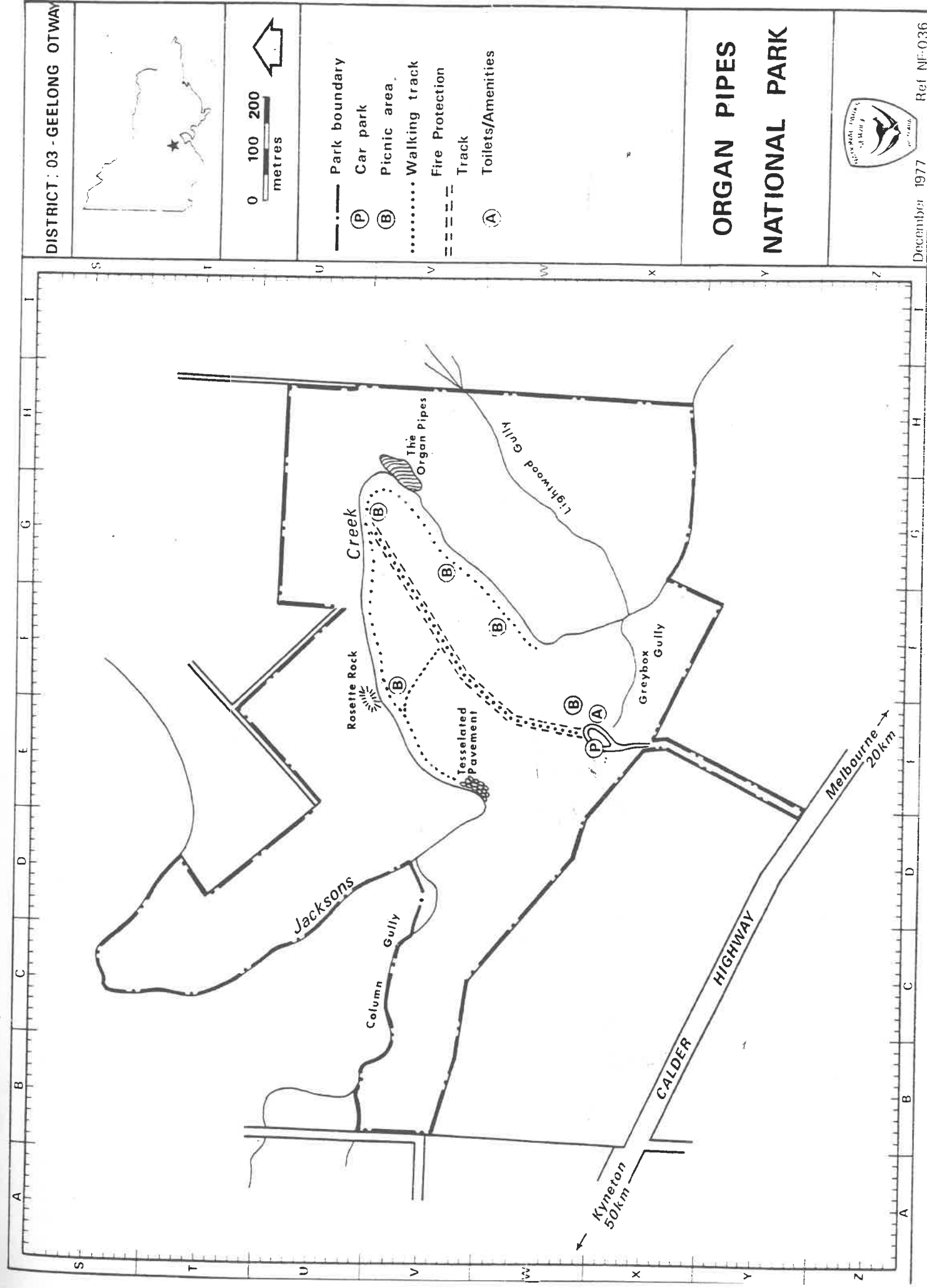
Barry Kemp



**ORGAN PIPES
NATIONAL PARK**

NATIONAL PARKS SERVICE GPE MAY 1972

SCALE
0 400 800 feet



DISTRICT : 03 - GEELONG OTWAY



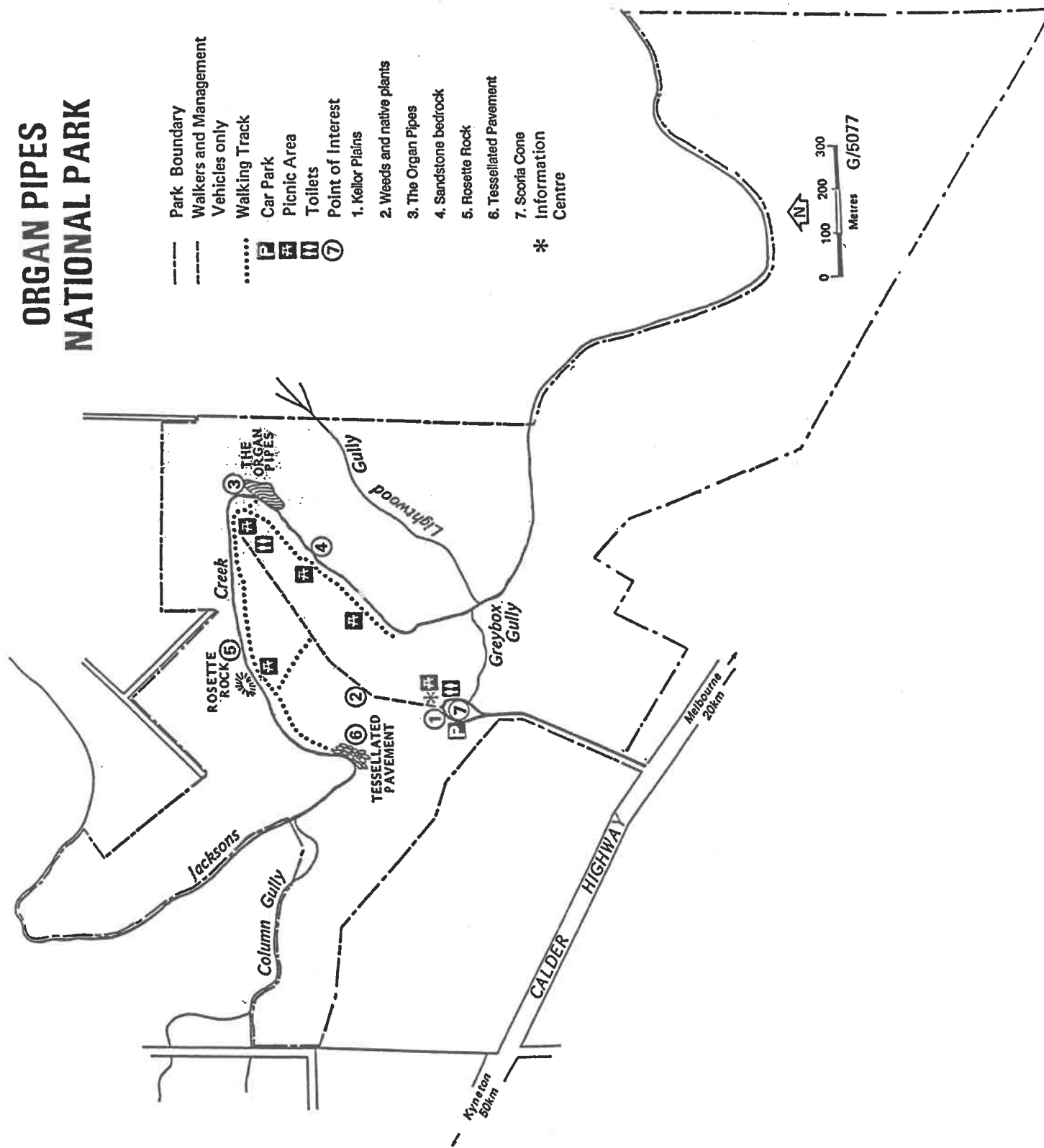
0 100 200 metres

- Park boundary
- (P) Car park
- (B) Picnic area
- Walking track
- == Fire Protection Track
- (A) Toilets/Amenities

**ORGAN PIPES
NATIONAL PARK**



ORGAN PIPES NATIONAL PARK



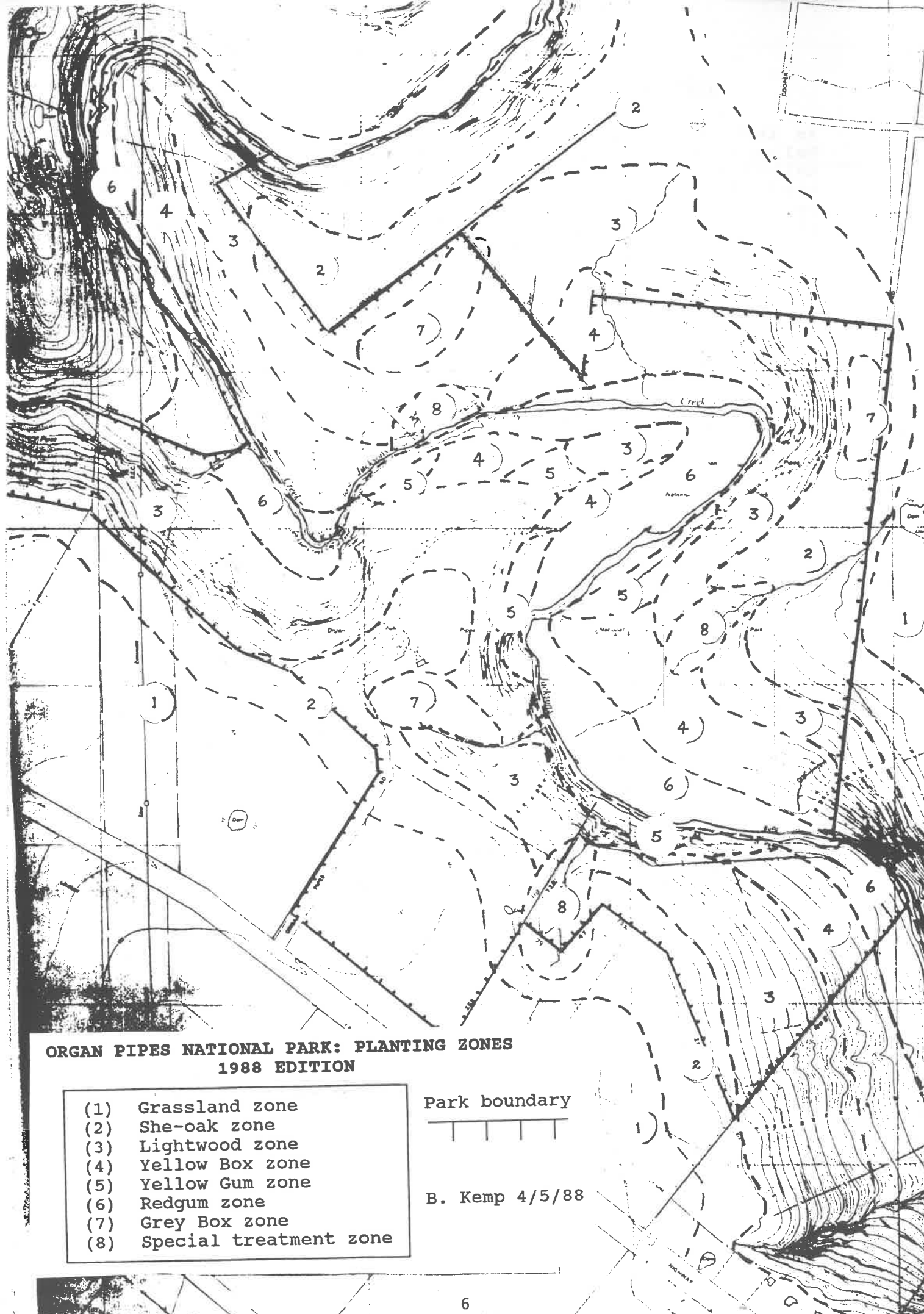
THE PLANTING ZONES or WHAT GOES WHERE?

In 1972, with the planting policy established, the Maribyrnong Valley Committee (later to become Friends of Organ Pipes) began to collect seed and cuttings from an area within a few Km. radius of the Park. A few species, e.g., Redgum, Blackwood, Lightwood, could be collected from within the Park; others came to light as we explored Jacksons Creek, Deep Creek, Green Gully, etc. The Murray Pines were located and seed collected. Old records showed that the Desert Cassia once grew in the Park and we keenly searched for it and soon found it in several places not far away. But the growing list of available plants presented a problem; the Park is obviously a very complex place, with sun-scorched, wind-swept slopes, cooler, dark-soiled southern slopes, areas of bare sandstone, deep alluvial flats, etc. etc. We had to try to get the plants we were growing into the sorts of places they would have originally favoured. Furthermore, planting had to proceed according to which areas were clear of weeds so the right plants needed to be propagated for each planting season.

Even from our limited experience, it was obvious that certain plants were only found on certain types of site, or to put it another way, on similar sites you would expect a similar assemblage of species. It seemed simpler to divide the Park into broad zones than to try to define in detail the individual requirements of 3 or 4 hundred plant species. A geological/topographic map was drawn up after studying the 1919 work of A. V. James and making field observations. Then, drawing on our experience with the plants up to that time, we superimposed a series of broad zones and named certain "staple" species to characterise each zone.

It was oversimplified. It had to be if it was to work in the field. A lot of time could have been spent on a finely detailed map of an ideal restoration, which would have worked with a well-trained, highly organised, full-time team, but that we didn't have. Our system allowed any of us to take a selection of seedlings, frames, etc., to a work site and an assortment of Friends, Scouts, Men of the Trees, etc. could get on with the job. Mistakes were sometimes made, due to misinterpretation of the map, hasty decisions, etc., and in places our map was plain wrong. Amendments were made to our map and sometimes we made on-the-spot decisions about variations. Still, overall it seems to have worked.

It sometimes worried me that we, as amateurs, had accepted the responsibility for planning such a long-term, high public profile project. We pressed the Service about this and, in the late '70s a technical officer produced a draft revegetation plan. This work never progressed any further, and of late we have returned to our old system, as will be seen in the work commencing on the "Council" land.



ORGAN PIPES NATIONAL PARK: PLANTING ZONES
1988 EDITION

- (1) Grassland zone
- (2) She-oak zone
- (3) Lightwood zone
- (4) Yellow Box zone
- (5) Yellow Gum zone
- (6) Redgum zone
- (7) Grey Box zone
- (8) Special treatment zone

Park boundary

B. Kemp 4/5/88

SHEOAK ZONE

Allocasuarina verticillata reportedly fringed the valleys through the basalt region, sometimes extending onto the plains in large belts. The more extensive stands were to the north of the Park and in our area were probably in smaller groups with isolated trees out on the plains and on the slopes. Most of the plants from the Lightwood zone would also have been found here, as well as some grassy areas with the more hardy herbaceous species in between the *Danthonia*, *Themeda*, *Silky Blue-grass*, etc. I would define the location as from the edge of a valley to an average of 100 metres onto the plains, but in a very irregular pattern, sometimes spilling down into the valley and with large gaps.

GREY BOX ZONE

The use and positioning of Grey Box has been one of the most difficult parts of the project and remains open to question, but dense stands still exist on basalt at Bulla and Wildwood, and 25 trees survive on a spur within one kilometre of the Park. We initially chose a "plains" site east of the Organ Pipes, and the sheltered side of the ridge where the car-park is sited, or perhaps better described as the upper part of Grey Box Gully. Stands of Grey Box are often "pure", or with an isolated Yellow Box and scattered *Casuarina*, a few *Bursaria* and some Lightwood. Other Wattles such as Golden, Gold-dust and Hedge Wattle may also be scattered within. A wide variety of grasses may be found, including several *Danthonias*, *Themeda* and *Stipa* species. Saltbushes such as *Enchylaena tomentosa* and *Atriplex semibaccata* do well and both *Dianella* species are recorded with Grey Box.

GRASSLAND ZONE

We now consider that there would have been no large, purely herbaceous areas within the valley, and that such areas were restricted to the heavy soils of the plains where waterlogging in winter is followed by high soil temperatures and cracking in summer. Even on these apparently featureless plains there are many subtleties of distribution caused by drainage patterns and other things we do not understand. Plants which seem to favour the better-drained areas include *Kennedia prostrata*, the *Ptilotus* species, *Chrysocephalum semipapposum*, *Dillwynia cinerascens*, *Convolvulus erubescens* and *Vittadinia cuneata*. Those normally in wetter areas include *Mentha diemenica*, *Ranunculus lappaceus*, the *Craspedias*, *Juncus* species, *Carex* and *Helichrysum rutidolepis*. *Calotis anthemoides* and *C. scapigera* are also typical of muddy sites, along with *Brachycome basaltica*, *Haloragis heterophylla* and *Eryngium vesiculosum*.

The *Danthonias* (Wallaby grasses) are great survivors and are often the last native plants on alienated land. Two species recovered strongly at the Organ Pipes and others are present. On less disturbed sites however, *Themeda* is usually dominant, with many other grasses in a minor role. A number of "pea-flowers", including *Psoralea tenax* and *Desmodium varians* seem to favour areas where there are basalt boulders on or close to the surface, but whether this is because such areas prevented ploughing or whether they only occurred on such sites is not clear.

When using the system, it should be pointed out that sometimes a zone can be fairly accurately defined, as when a river flat ends abruptly, while in other areas there is a gradual blending of conditions, subtle variations, or an unusual set of conditions. Do not worry too much if an occasional plant is "mis-placed" - nature is seldom as tidy as our maps and in any case will actually work to refine our efforts. It is interesting to note that in some areas where we thought we may have over-planted, self-sown seedlings are filling in the gaps!

PLANTING ZONES AT THE ORGAN PIPES

REDGUM ZONE

This is basically the alluvial flats, but it includes the rather specialised zone close to the creek banks. The main components are Redgum, a few Manna Gum, Blackwood, Black Wattle and Tree Violet (the latter still poorly represented). Callistemon, Tea-tree, Prickly Moses and Viminaria should not be planted above the area occasionally flooded, while Silver Wattle and Wirilda extend only a little further from the stream. (The Wirilda sometimes surprises with an occurrence on dry sandstone). At Horseshoe Bend, Lignum grows on the banks and perhaps we should try it in Column Gully.

YELLOW BOX ZONE

This is a fairly complex area consisting of various depths of older alluvial or colluvial soil over sandstone. The boundary is rather hazy in places as the contact between basalt and sandstone is often hidden. We should aim for an open Yellow Box woodland with Bursaria Hymenantha, all three Myoporums, Lightwood, Gold-dust Wattle, Black Wattle and on cooler slopes, Cassinia longifolia. Most salt-bushes and a wide range of grasses are suitable.

YELLOW GUM ZONE

Originally included in Yellow Box zone, this consists of sandstone with little or no soil and mainly northerly exposure. There are scattered Yellow Gum, a few Yellow Box, Desert Cassia, Myoporum deserti, Golden Wattle, Gold-dust Wattle, Bursaria and Saltbushes, particularly Einadia hastata and Rhagodia parabolica. The Twin-leaf (Zygophyllum glaucum) is also found here.

LIGHTWOOD ZONE

The very harsh, rocky, windswept slopes of the upper parts of the valley have little soil, but the basalt seems to have enough cracks to allow Lightwood and Hopbush to gain a firm hold, along with some Bursaria and Hymenantha. Correa glabra is sometimes found tucked under rock outcrops and the Murray Pines are found on these dry slopes. Clematis microphylla is common, climbing over shrubs or hanging down over rocks. Dianella revoluta and Einadia nutans are widespread and there are large patches of the native tobacco Nicotiana suaveolens. Grasses include a Stipa, Silky Blue-grass and Redleg.

Re-establishment and subsequent management of the plains flora remains the most difficult and frustrating part of the program, not only at the Organ Pipes, where we have relatively few suitable areas, but on all other reserved sites. A few research projects have been commissioned, and the work of Robinson, Lunt, McDougall and others has increased our chances of seeing some areas of plains herbaceous flora restored.

SPECIAL ZONES

These are simply areas where there are unusual conditions or a range of different conditions in a small area. The little gully at the boundary of the "Council land" and the original Park is such an area. I have planned to put Murray Pines on the dry side, Correa, Indigofera and Sambucus on the cooler side, and a few Redgums and Blackwood in the "basin" at the head of the gully, all within a relatively small area. Such areas have to be defined and planned one by one as they appear.

Many of the plants of the Keilor Plains flora have not been mentioned in the preceding notes. Others have been referred to for a particular zone, while we have used it in several. If in doubt, look for individual notes for the species, site records which are a good clue; find out if we have used it in the Park, on what sort of site. Then, planning for a particular site, see what we planted on a similar site. Do your own research, make your own observations, don't be afraid of making mistakes.

"PLANTING BEES"

When the soil is moist from autumn rain, it is time to start planting at the Organ Pipes. When a major program is planned, a certain amount of organisation will ensure a successful day. Our days of greatest numbers planted have not always been when we have the most hands and feet - a few people working methodically often beat a lot milling around. And other groups are not impressed if you are not ready for them.

If Park staff have left heaps of wire frames and pegs on site, you are off to a good start. The seedlings should be selected from stocks before the working bee - in separate groups if there is more than one zone - and a little pre-mixing of species in the trays may be helpful.

While a briefing may be necessary, particularly when other groups are involved, do not keep people waiting about to see who turns up. Get someone on site positioning frames, anchored by pegs (ensure they know the limits of the site and average spacing). Next, someone placing a seedling by each frame. Most volunteers don't want to keep asking Which? Where? etc. They are happier tackling the work in front of them. But beware of drying winds; do not get so far ahead that the seedlings dry out in the tubes - they have to survive without watering in.

When other groups are planting, one large area is usually better than several small, complicated ones. Make sure there are enough tools, nominate a starting point and watch for missed frames and poor work. On rocky ground, stones may be needed to supplement pegs. Finally, make sure there are seedlings or other work in reserve, and check back over the site for tools, unused seedlings, etc. before leaving.

Planning for planting at the Organ Pipes

Ideally, a planting program should be planned two years ahead, in order that the right seedlings are available, in the right numbers and at the right time.

For example - will the Holden School site be available for planting in winter 1990? Assuming that the Service assures us that it will be available and sufficiently weed-free, we should proceed as follows:

1. Make a site check and zone the land (Redgum, Yellow Box, etc.)
2. Decide how much can be handled in 1990 (e.g., plant half?)
3. Decide which species are needed and numbers required.
4. In summer 1988-89, collect seed (some long-lived seed may be in stock).
5. In spring 1989, deliver seed to Macedon Nursery or propagate in shade-house.
6. Supply cuttings to propagator at pre-arranged time.
7. Before planting in 1990, check actual numbers and species available and progress with weed control. Adjust program where necessary.
8. The next cycle overlaps - before planting begins, seed for the next season should have been collected.

CLASSIFICATION OF PLANTS

In a system of classification, plants are sorted into major groups with certain common characteristics, then into further groups more closely related, with the end result a sort of vast family tree. The major groups we are working with are the Ferns and Seed Plants (there are others present, such as Fungi and Mosses, but for the time being they will have to make their own arrangements).

Each level of sorting has a name, but we need not be familiar with all of them. The **FAMILY** is a level frequently referred to: the family Asteraceae (daisies) has at least 25,000 members, the Brunoniaceae has only one (Blue Pincushion). After passing through this level of sorting, each kind of plant is assigned to a **GENUS** (plural: genera), e.g. Eucalyptus, and then on to the basic unit, called **SPECIES** (plural: species). Plants grouped as a species are those you would expect to be able to interbreed and produce similar offspring; however it should be remembered that the framework we have imposed is a fairly artificial one, and in trying to push plants into the pigeon-holes, there are many misfits and arbitrary decisions. Occasionally sub-groups are used: thus a species may be further divided into **VARIETIES**. or *subspecies*

When using scientific names, we must state the genus and species, e.g. Eucalyptus leucoxylon, since the species name is often shared with other genera. Note that the genus is spelt with a capital letter, but never the species. Why bother with scientific names? Well, locally, we can get away with calling E. leucoxylon "Yellow Gum", but if you are from Adelaide, the tree is called "Blue Gum", and others may call it "White Ironbark". If you are a botanist in Vladivostok you can handle Eucalyptus leucoxylon without any problems. Also, many plants, the majority in fact, do not have "common" names.

BOTANICAL KEYS

A Key, as applied to botany, is a means of finding your way through a mass of information and ultimately identifying a plant specimen.

There are several types of key, but basically they give you two or more sets of information and, having made your choice as to the appropriate one, you are then directed to a further set and so on until you have eliminated all the wrong answers and there is the name of your plant. Anyone undertaking a study of native plants will sooner or later come across a key, so if you have not used one before, the following notes may help.

Some keys only go as far as the family. Others may only apply to a particular family or genus, others to a geographic region. Thus, if you use Jim Willis' key to the Victorian flora in another state you are likely to make a complete mis-identification. Make sure you understand the limits.

When making the key, a botanist selects those features which are most distinctive for the plants in question. Characteristics of the flowers and fruit are most commonly used, but often leaf shapes and such things as whether the leaves are hairy or not are found useful. In fact, any part of the plant, its growth, habits, or known geographic range, may appear in a key.

Unfortunately, there are many occasions when the parts you require for the key are unavailable (e.g., fruit). Some keys even require both flowers and fruit (which may not be present at the same time) so all you can do is be patient and gather as much information about the plant as you can. Some keys use a lot of technical terms, so you will need a suitable glossary of meanings and you must make sure you understand each question you are asked before going on to the next. Occasionally, you may come across some plant material with characteristics outside the limits set in the key (e.g., leaf size), and you must remember that we may make the rules, but the plants don't always want to play. Don't be afraid of making a mistake, but always try to verify your identification by looking for an illustration. Some keys provide illustrations, or list publications where they can be found.

The sample key below is a guide to identifying Wattle species found at the Organ Pipes National Park:

- Adult leaves bipinnate (divided into many leaflets)
 - Leaves bluish, waxy, flowers rich yellow, early spring A. dealbata
 - Leaves dark green, flowers pale, late spring..... A. mearnsii
- Adult leaves reduced to phyllodes (flattened stems resembling leaves)
 - Phyllodes less than 25 mm. long
 - Phyllodes whorled, prickly, flowers rod-shaped... A. verticillata
 - Phyllodes alternate, flat.
 - Prominent spines present..... A. paradoxa
 - Spines absent, shrub often suckering..... A. acinacea
 - Phyllodes more than 25 mm. long.
 - Phyllodes with one main vein
 - Foliage blue-grey, phyllodes narrow..... A. ^{juncea}retinodes
 - Phyllodes broad, shiny green..... A. pycnantha
 - Phyllodes with multiple main veins.
 - Phyllodes strongly curved, tree of dry sites... A. implexa
 - Phyllodes straight, tree of moist sites..... A. melanoxydon

THE FERNS

Ferns belong to a group of plants which developed a long time before the flowering plants. Their ability to compete has been limited by the need for moist conditions in their full reproductive cycle. Spores from an adult plant produce tiny green "plates" upon which sexual parts develop. Only in very moist conditions can male and female cells fuse and grow into an adult form. However, some ferns are able to reproduce by means of creeping stems, growing roots where a frond touches the ground, or in the case of floating ferns, by breaking into pieces which become new plants.

Most of the Keilor Plains ferns are hardy ones, and several species survived at the Organ Pipes. Apart from Bracken, which grows at one or two places close to the creek, and Azolla, which appears as a carpet on the water in summer, you need to search for them in rock crevices. We have not noticed any increased distribution since the Park was declared. The "Rock Fern", Cheilanthes austrotenuifolia was mistakenly recorded for the Park, but all examples are believed to be C. distans, "Bristly Cloak Fern". The Rock Fern is still found on the open plains, e.g., at Diggers Rest, and should be reintroduced to the Park with the grassland species.

~~Included here are copies of previously collected fern illustrations.~~

PTERIDOPHYTES (Ferns, etc.)

Adiantaceae (Maidenhair family)

Adiantum aethiopicum

"Common Maidenhair"

Recent records - Eynesbury,
Rockbank (Clarkes Road)



Pellaea falcata

"Sickle Fern"

Recent records - Organ Pipes
Emu Creek

Cheilanthes austrotenuifolia

"Rock Fern"

"Occurs frequently": Sutton

Recent records -
Diggers Rest, Sydenham,
Tottenham,
Deep Creek at airport



Cheilanthes distans

"Bristly Cloak Fern"

No early records - probably
mistaken for C. tenuifolia

Recent records - Holden Flora
Reserve, Organ Pipes,
Murray Pine site.

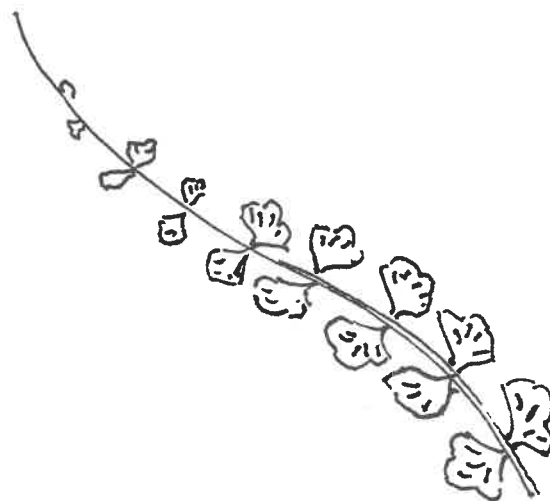


Aspleniaceae (Spleenworts)

Asplenium flabellifolium

"Necklace Fern"

Recent records - Organ Pipes,
Deep Creek at airport,
South of Keilor



Pleurosorus rutifolius

"Blanket Fern"

Recent records - Organ Pipes,
Holden Flora Reserve,
Emu Creek, Deep Creek at
airport



Azollaceae (Azolla family)

Azolla filiculoides

"Pacific Azolla"

Recent records - Organ Pipes,
seasonal in Jacksons Creek
and Deep Creek.



X1

Free-floating.

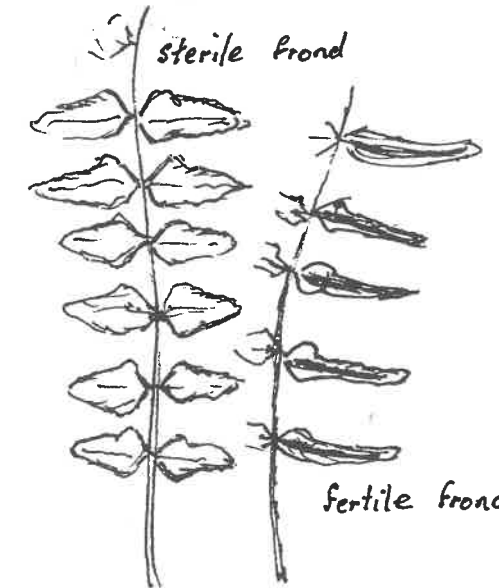
Blechnaceae family

Doodia caudata

"Small Rasp-fern"

"Broadmeadows" - Willis

Recent records - nil.



sterile frond

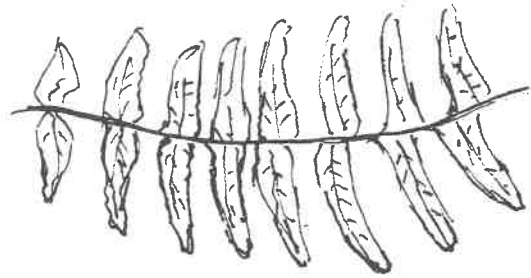
fertile frond

Doodia media

"Common Rasp-fern"

"Somerton" - Willis

Recent records - nil



Dennstaedtiaceae (Ground-ferns)

Pteridium esculentum

syn. P. aquilium

"Austral Bracken"

Recent records - Organ Pipes
Holden Flora Reserve
Rail, south of Diggers Rest



Dicksoniaceae family

Calochlaena dubia

syn. Culcita dubia

"Common ground fern"

No early records

Recent records - on a bar
on Taylors Creek, 1975



Marsiliaceae family

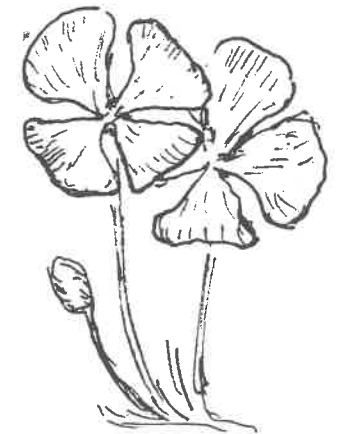
Marsilea drummondii

"Common nardoo"

"Occasionally met" - Sutton

Recent records - Eynesbury,
Taylors Lakes

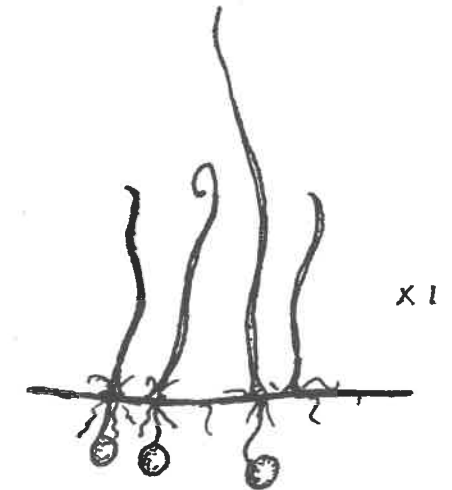
Note: M. angustifolia (Narrow-leaf
Nardoo) has been recorded at
Taylors Lakes.



Pilularia novae-hollandiae

"Austral Pillwort"

Recent records - nil.



Ophioglossaceae family

Ophioglossum lusitanicum

syn. O. coriaceum

"Adder's tongue"

"Occurs frequently": Sutton

Recent records: nil



SEED PLANTS 1: CONIFERS

Australia has many native conifers. Pollen from male "cones" is wind-borne to female "cones" where seeds develop behind protective scales which ultimately open to allow the seed to fall. Only one conifer is relevant to the Organ Pipes - the Murray Pine, *Callitris glaucophylla* (formerly *C. columellaris*) illustrated below.

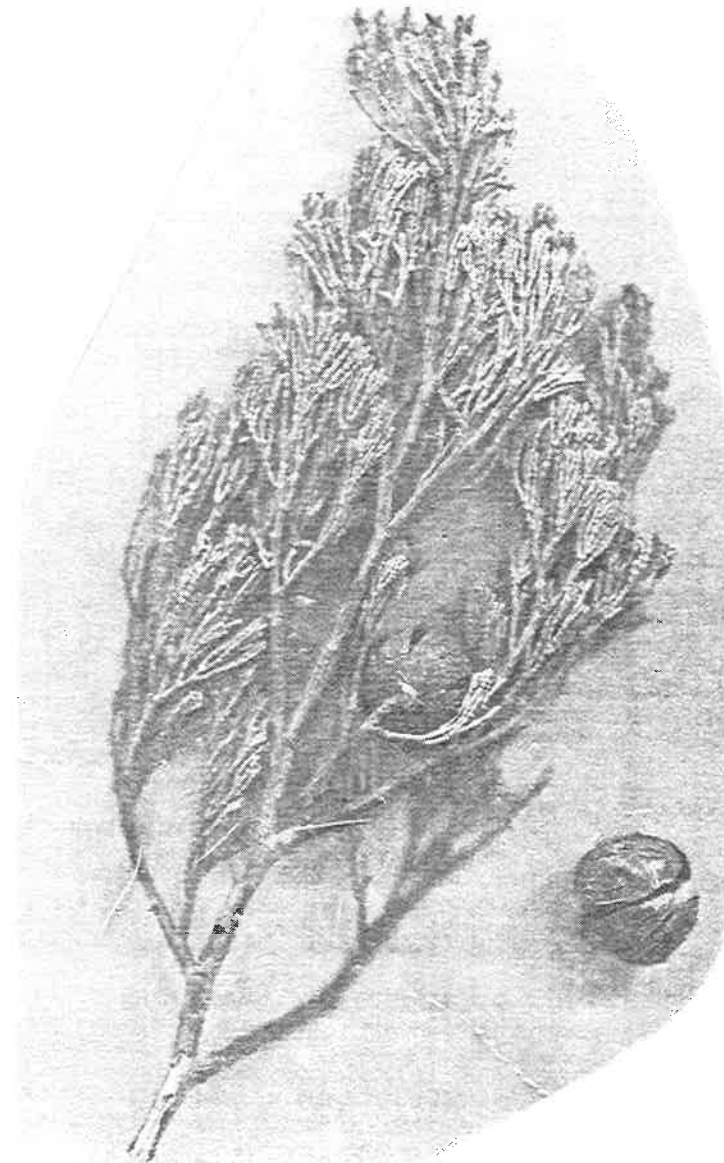
Cupressaceae family

Callitris glaucophylla
formerly *C. columellaris*
syn *C. glauca*

"Murray Pine"

Early excursion records
for Jacksons Creek

Recent records - Jacksons
Creek, 2 km. downstream of
Park.



NOTES ON THE MURRAY PINES OF JACKSONS CREEK

"...in the Deep Creek our interest was quickened by the appearance of well-grown examples of the Murray Pine...": C. S. Sutton 1911. This is our earliest record of *Callitris* in this area and a close examination of the text of the excursion report in "The Victorian Naturalist" strongly suggests that the reported trees were actually on Jacksons Creek near the present Holden Flora Reserve, several Km. upstream from the Organ Pipes. *doubtful BL, possibly Sutton's notes muddled.*

"The present Jacksons Creek Pines - there are approximately half a dozen - are the sole survivors of a colony and the only remaining naturally grown examples of *Callitris* in close proximity to Melbourne ... In a sheltered nook immediately below the level of the plains a batch of pines still stands...a few well clothed in the velvet-green of their lovely foliage... These pines now cannot resist for long the rigours of these windswept and sunbaked areas since much of their natural protective under growth has gone...no younger trees exist and no seed can ever germinate to survive for long; and, it will be noted but few of the pines here bear fruit at all..." W. H. Nicholls, 1942. This report in "The Victorian Naturalist" was accompanied by a photograph of an ancient tree (now dead), which clearly identifies the site where three trees still exist, two kilometres downstream from the Organ Pipes. The *Callitris* planted in the Organ Pipes National Park are the progeny of these trees.

Callitris glaucophylla (formerly *C. columellaris*) F. Muell. (Murray Pine, White Cypress Pine) is widespread in the Murray Valley and dry inland areas of N.S.W. and S.A., although much depleted over most of its range. Two isolated occurrences are in the Snowy River area and at Mount Arapiles, but perhaps the most interesting are several small groups west of Melbourne (most on private property), including a few huge trees in the Werribee Gorge.

Since our first record is over 70 years after white settlement we may never know how frequently the pines occurred on Jacksons Creek. It is reasonable to assume that they were uncommon, but it is possible that several small clusters existed, most soon falling victim to the settlers' need for building material, fencing and firewood. (Bear in mind that the plains were very sparsely treed). There has been little chance of regeneration as the seedlings are very palatable to domestic stock and rabbits.

A core sample was taken in 1985 from one of the surviving trees, but the Forestry officer reported that it was a difficult job, the timber was pithy and unsuitable for measurement, but the outer section yielded 80 growth rings.

Most of the seedlings we have planted have grown steadily in very harsh conditions (almost solid rock); some are over two metres high and now producing fruit, so we should soon be able to collect seed from within the Park. Mr. Don Saunders (then Director of National Parks) has proposed that seed of this and other locally threatened species should be placed in long term storage to guard against loss by fire.

SEED PLANTS 2: FLOWERING PLANTS

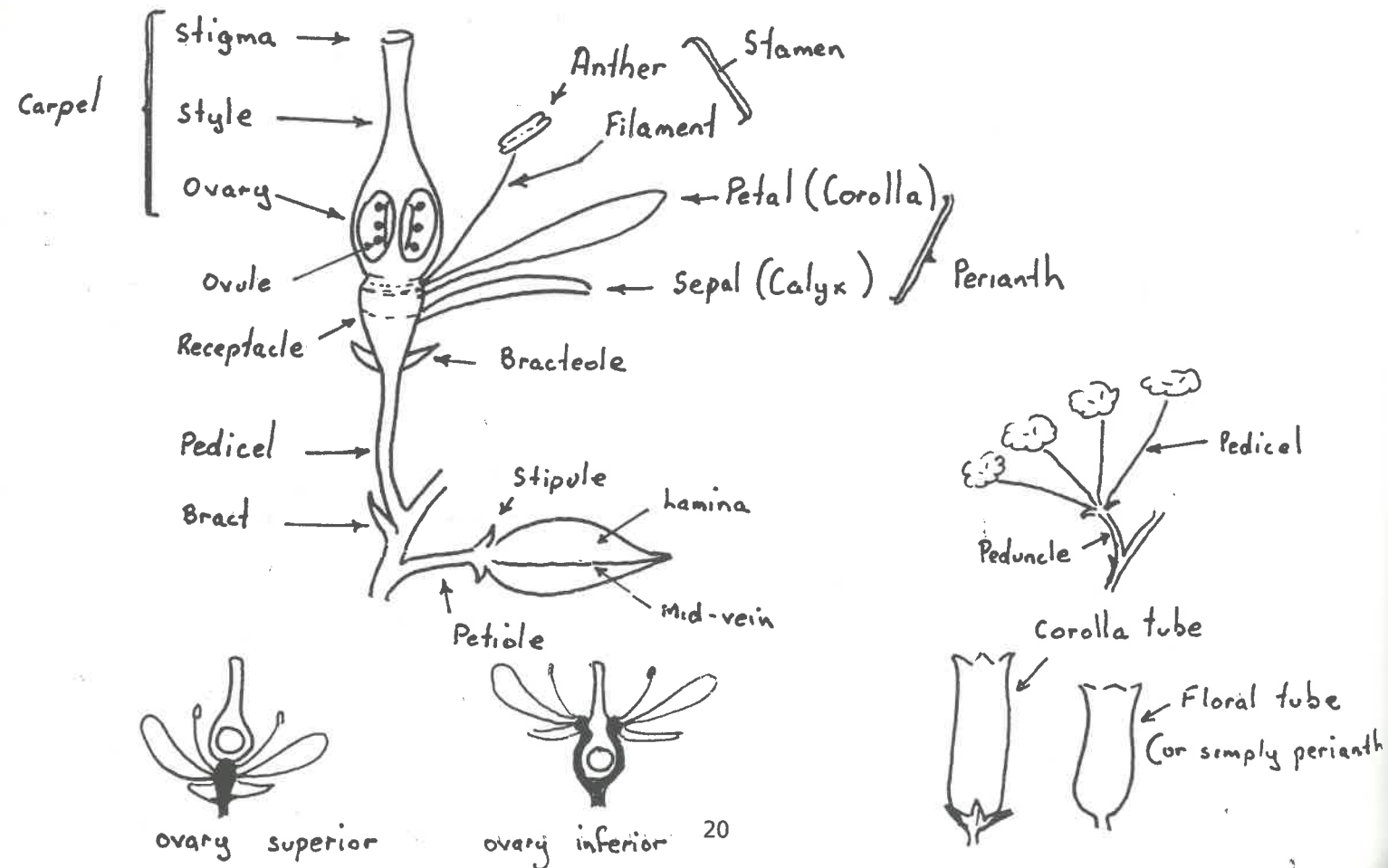
Most of the plants we grow for the Park belong to this category. Pollen is distributed by a variety of means - wind, birds, insects, etc., and is collected on a sticky receptacle called a stigma, from which the male cells are directed to an enclosure called an ovary, containing the female egg cells (ova). See below for detail. Note that flowers may be male only or female only, and sometimes individual plants carry only male or female flowers. Allocasuarina verticillata (formerly Casuarina stricta - Drooping Sheoak) is an example.

BASIC FLOWER STRUCTURE

There are four whorls (groups) of flower parts, although not all flowers contain all four whorls. The outer, sterile, part of the flower is known as the perianth, and may consist of two parts - the calyx, usually green and having a number of segments called sepals; and the corolla, often coloured and divided into segments called petals. The calyx protects the flower in bud, and the petals attract insects and birds.

The inner (reproductive) parts of the flower are the Androecium (the male part) made up of stamens, and the Gynoecium (the female part), made up of one or more carpels. Stamens consist of a pollen-bearing body called an anther, and a supporting filament (not always present). A carpel consists of a receptive pad known as a stigma, which receives pollen via wind, insects or birds, a style which supports the stigma and carries the male cells to the most important part of the flower - the ovary.

The ovary is an enclosure where female cells (ova) develop. The ovary may have more than one cell, and each cell may bear a number of ova, which become the seeds. These are attached to the wall of the ovary, or some form of central column, via a placenta. The arrangement of the placenta within the ovary is an important characteristic of different groups of plants.



The flowering plants are divided into two groups which are usually easily distinguishable - the MONOCOTYLEDONS and the DICOTYLEDONS. On the Keilor Plains, about 30% of flowering plant species are monocots and the rest are dicots.

MONOCOTYLEDONS

* usually not visible -

The name indicates that when the seed first germinates, there is only one leaf. Monocots are mainly herbaceous, i.e., non-woody, with a parallel vein system. The floral parts are often in threes or multiples (e.g., three sepals, three petals, six stamens, three carpels). Included are the Lily family, Orchids, Grasses, Rushes and Sedges. Many have a tuber, rhizome or other specialised root system and the above-ground parts of the plant die back annually in many cases.

DICOTYLEDONS

The dicots have two opposite seed leaves and include most of the woody flowering plants as well as some short-lived ones. The vein system is usually netted ("reticulate") and the floral parts are often in fours or fives. There are a large number of families and most of the seedlings we plant out in protective frames are dicots.

FLOWERING PLANTS OF THE KEILOR PLAINS FLORA

In most botanical works, it is usual to first list or describe the monocots, but in this case it suits us to first look at some of the dicots because they are more prominent and less seasonal in nature. Likewise I have not stuck with the usual order in which families are grouped.

The most important elements for plant identification are the flowers and fruit. If you are not familiar with the foliage of a plant, it is usually very difficult to identify until flowers appear. Still, the number of woody species in the Park is not large, and it is possible to get to know at least the more common ones fairly quickly.

Casuarinaceae family

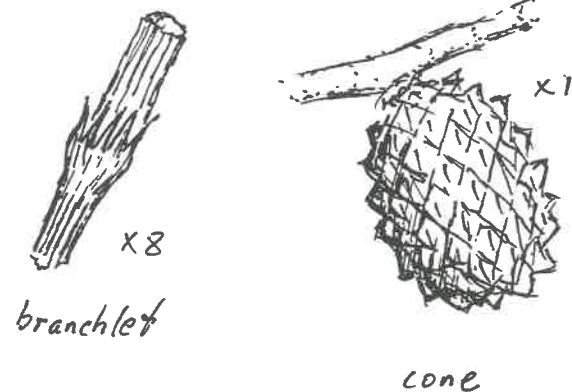
Allocasuarina verticillata ("Drooping she-oak") (formerly Casuarina stricta)

The needle-like foliage and cone-type fruit of the She-oak causes confusion with conifers, but the woody cones are an aggregate of true (female) flowers which first appear as little clusters of maroon styles. The male flowers, on different trees, extend along the outer branches, colouring the trees pale brown. The seeds have small "wings" to aid dispersal by wind. The "needles" are simply branches, and the leaves appear as tiny scales in whorls around the branches. Note that some non-local species have male and female flowers on the same tree.

Allocasuarina verticillata

"Drooping She-oak"

Recent records - Diggers Rest,
Horseshoe Bend, Oaklands,
Deep Creek at airport,
Holden Flora Reserve



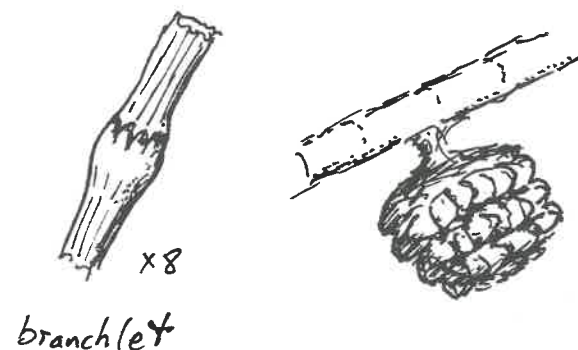
Allocasuarina luehmannii, "Buloke"

This is a taller tree, once common on the western part of the plains, but it does not seem to have occurred near the Organ Pipes. It is fast disappearing and perhaps it would be legitimate to grow some for planting in the highway duplication if seed can be obtained.

Allocasuarina luehmannii

"Buloke"

Recent records - Melton
Exford.



THE SHEOAKS OF GLENCOE STATION

In Duncan's Lane, north of the Diggers Rest to Bulla road, someone has planted a windbreak which includes a non-indigenous Casuarina (probably ~~Allocasuarina~~ *Allocasuarina glauca*). If you look carefully across the paddocks, you will see a few of the original Sheoaks (*A. verticillata*), about 20 in all, scattered singly or in small groups, ancient, battle-weary trees, one recently fallen.

At the end of the lane, there is an overgrazed and Boxthorn-infested property with little of interest except the name on the gate - "Glencoe". I wonder how many of the owners of the many small acreages in the area will ever know, or care, that here could once be seen the Hooded Robin, Bower birds, Bellbirds, Bustards and Babblers. For this was Glencoe Station, and here stood a belt of Sheoaks, "...about 4 miles in length, in parts a mile wide, and forming a dense forest."

Isaac Batey lived on the adjacent station, "Redstone Hill", from 1846. He was a keen bird observer, and in 1907 he wrote an article for "The Emu" in which he described the bird life of the district in the latter half of the nineteenth century. It is a fascinating account which also gives us clues to the original tree distribution in the area and the effects of white settlement on the flora and fauna, e.g. "BABBLER (*Pomatorhinus temporalis*) - a party lived in Glencoe sheoaks. This bird had its habitat in sheoak country, for it was never found where eucalypts were the prevailing timber. Since the almost total destruction of sheoaks this bird has taken to eucalyptian tracts."

Glencoe Station was only 2 or 3 miles north of the Organ Pipes, and although there is no evidence that the Sheoaks were of this density about the region of the Park, most of the birds described by Batey would surely have been seen there. There are also some surviving Grey Box and Yellow Box on the basalt within the old Glencoe. It is reasonable to assume that these, too, were more extensive, and this helps to back up our use of Grey Box in the Park.

References:

- Batey, Isaac, "On fifteen thousand acres: its bird-life sixty years ago", The Emu, vol VII, 1st July 1907
- Batey, Isaac, "The animal life of the Sunbury district sixty years ago", The Victorian Naturalist, vol XXIV, August 1907, pp. 69-74

Proteaceae family (Grevilleas)

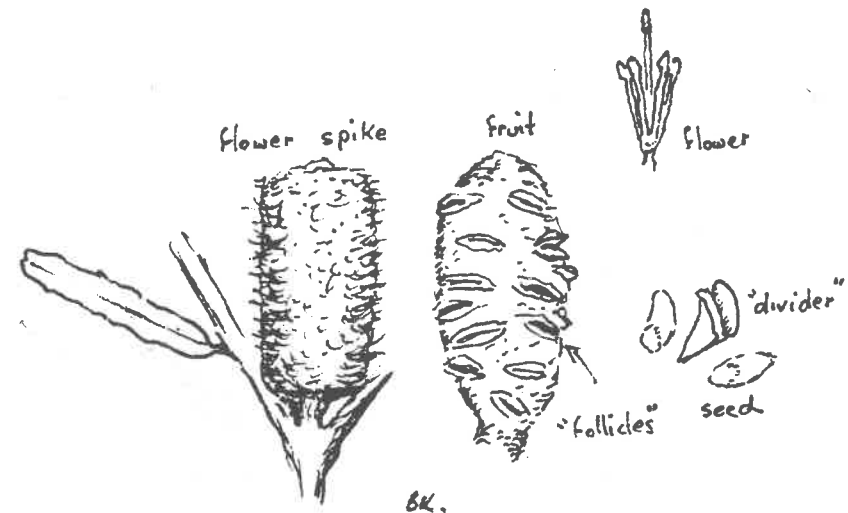
Banksia marginata, "Silver Banksia"

From historic records, we know that *Banksia marginata* was relatively common on the basalt, but it is now found, on the plains, only at Clarkefield and on the edge of the basalt at Yan Yean. An occurrence at Lara was destroyed by the railways about 1975. We have plants growing in the Park from seed collected at Clarkefield and Yan Yean, though these are possibly not surviving. The flowers are aggregated into a yellow "bottlebrush" which is followed by a woody fruit bearing relatively few seed-bearing "follicles". Unlike many *Banksias*, the Silver Banksia allows seed to fall from the follicles without the stimulus of fire. This is a very variable species, and some forms regenerate from the base after fire, but we do not yet know if the plants in the Park have this capacity.

Banksia marginata

"Silver Banksia"

Recent records - Lara
Clarkefield, Yan Yean.



Grevillea glabella

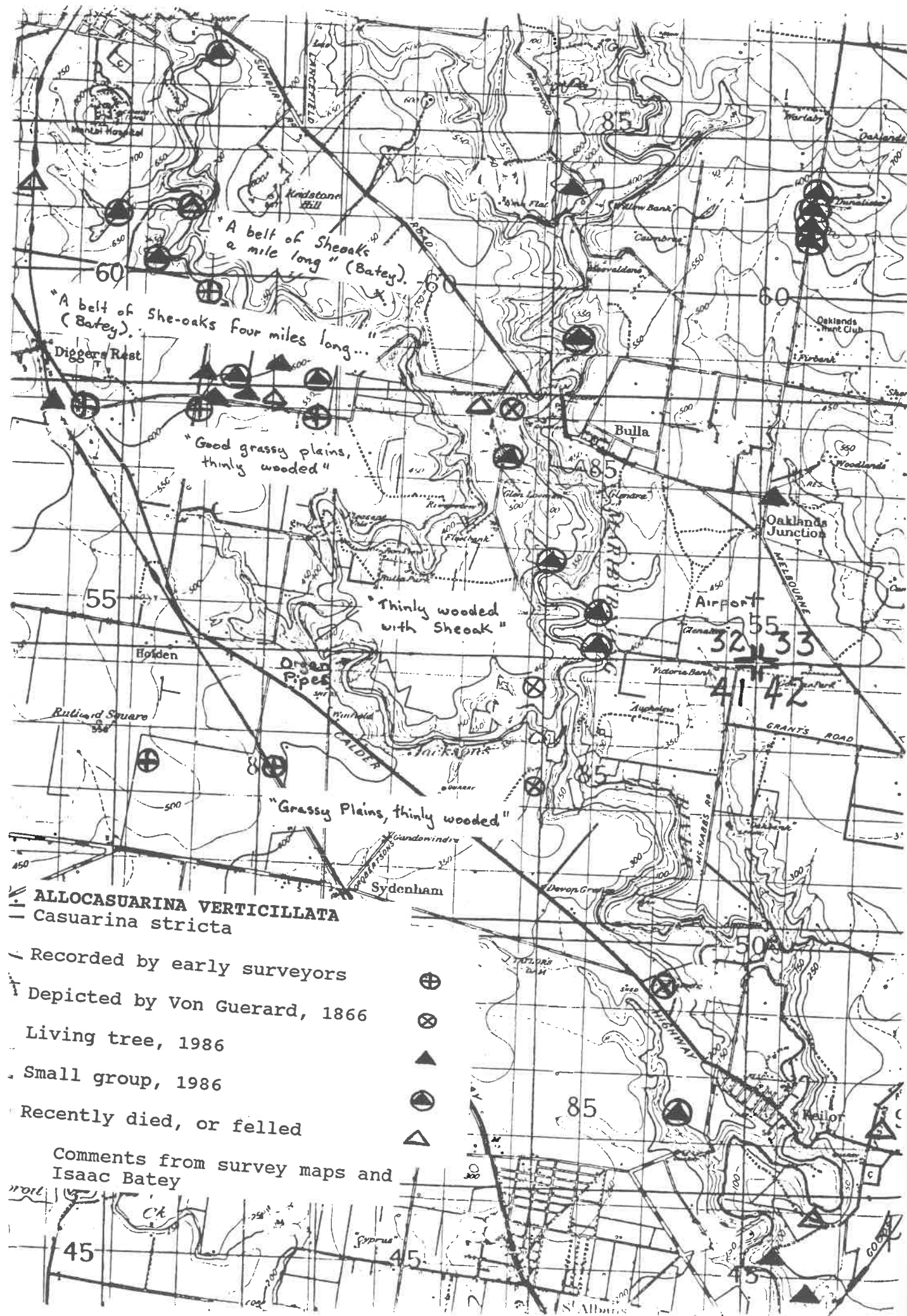
Apart from a puzzling occurrence of *Hakea sericea* (reported at Taylors Lakes), this is the only other member of the large Protea family known to occur on the Keilor Plains. It is an attractive form of the species, with rather sprawling, pale blue-green foliage and clusters of pale pink flowers. It was known only from Lara on the rail line, where it suffered the same fate as the *Banksia*. However, Don Marsh (leader of the Friends group) propagated it, and there is a single plant in the car-park, as well as a few in gardens. It was also grown by Austraflo nursery and registered as a "cultivar". Its inclusion in the Park can only be on the basis of preserving this form of the species.

Grevillea glabella

(formerly included under
G. rosmarinifolia)

No early records

Recent records - Lara
(probably now extinct
on Keilor Plains)



Sapindaceae family (Hop-bush)

Dodonaea viscosa variety cuneata, (Wedge-leaf Hop-bush)

This plant has recently been "demoted" from species status to a variety of the very widespread *D. viscosa* (the differences are quite small). In his "Handbook to Plants in Victoria", Jim Willis states "Dodonaea viscosa, *D. cuneata* and *D. angustissima* are co-extensive in many parts of Victoria and appear to intergrade so that the distinction between any pair of them may often be hazy...Leaf form is the principal criterion for delineation."

J. G. West, in "Flora of Australia", has relegated both *D. cuneata* and *D. angustissima* to sub-species of *D. viscosa*. Since this is intended to be the definitive work, we should now change our ways and discard the name given to a Hop-bush collected at Port Jackson in 1809, or rather tack it onto the name given in 1760 to a highly variable plant spread across four continents and the Pacific Islands. The Type specimen was collected in Jamaica !

This may be inconvenient to us, but it is hard to argue against and it still leaves Australia with 61 Hop-bush species. *Dodonaea cuneata* was a nice, neat name compared to *Dodonaea viscosa variety cuneata*, and I guess this is one case where the common name is preferable in day-to-day use.

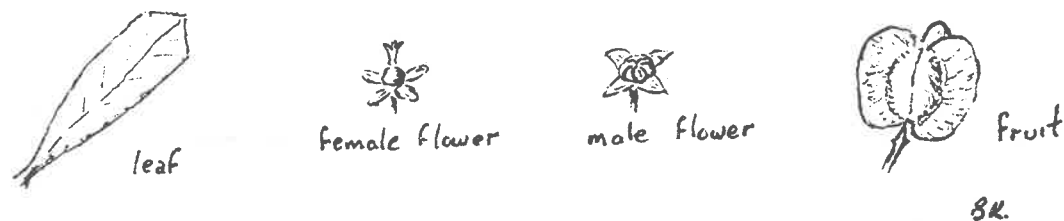
It is at home on hot, dry sites and is sometimes almost the sole occupant of steep, rocky, windswept slopes. The flowers are rather insignificant with male and female usually on different plants. The fruit is three-winged, turning bright red, then brown and papery as it matures. Self-grown seedlings are becoming common in the Park.

Dodonaea viscosa seedlings have become common in some areas, which raises an interesting question. Even allowing for a mortality rate of 50 % to 80 %, we may soon have a far more dense shrub cover than we have assumed was the "natural" state. Is the Hop-bush about to proliferate in the absence of its original biological control? What were its natural enemies, are they present now, can they be re-introduced? * Macropods have answered that! BK

Dodonaea viscosa variety cuneata

"Wedge-leaf Hop-bush"

Still widespread on valley slopes



WATTLES

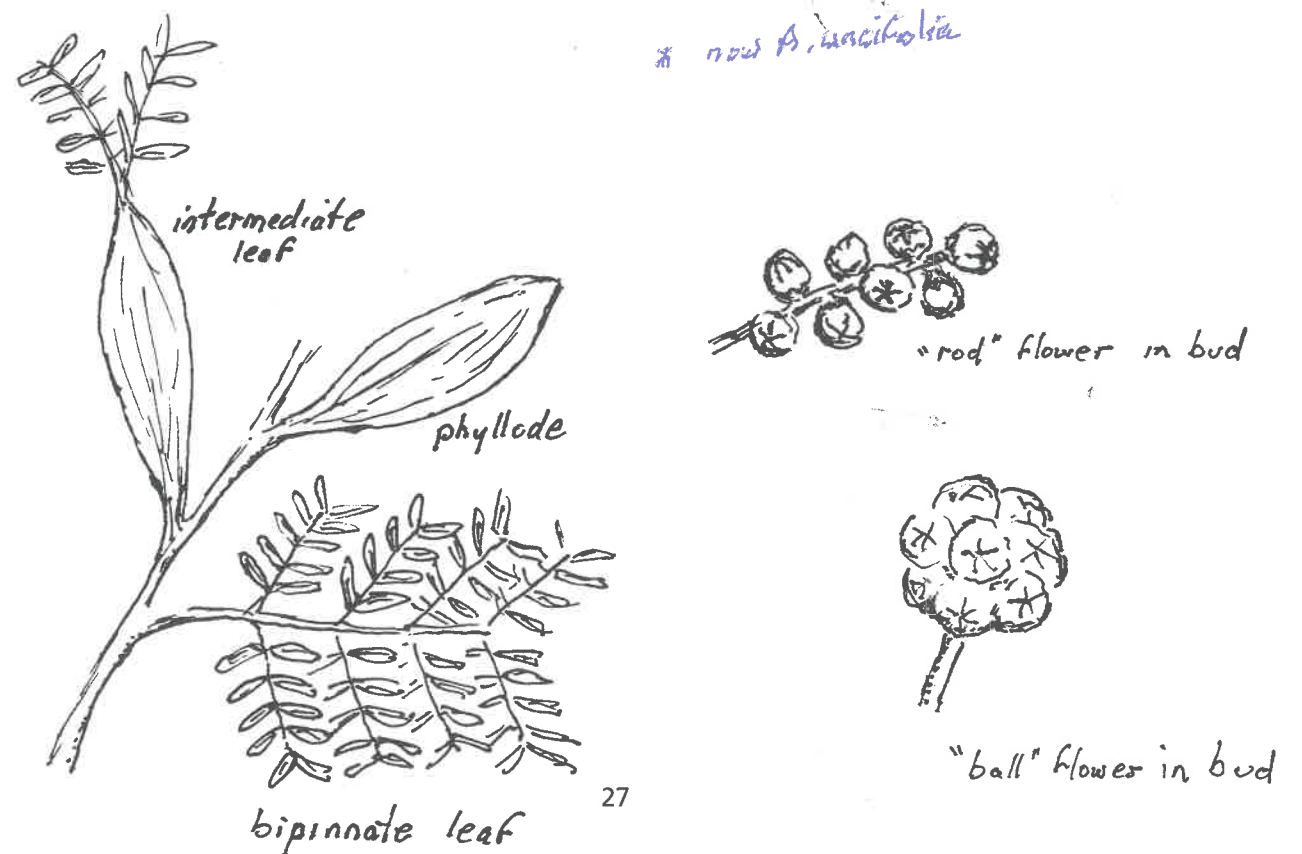
Acacias, in the family Mimosaceae, were once included in a large family called Leguminosae, on the basis of the "pea-pod" type fruit and nitrogen-fixing nodules on the roots. But this family has been broken up into several smaller ones. There are about 10 genera in Australia, and in excess of 600 species in the Mimosaceae. *Now in Fabaceae*

The prominent parts of Acacia flowers are the stamens, and individual flowers may be arranged around a central stem as a "rod", or grouped into balls which may be borne singly in the leaf axils, on branched stems (racemes) or spikes. All Acacia seedlings begin with true leaves which are pinnate (i.e. with leaflets attached to a mid-rib). As the plant develops, the leaves may become bipinnate (twice divided) but the majority lose their true leaves and their function is taken over by "phyllodes" which are flattened stems superficially similar to leaves. Small glands are usually present on the edge of the phyllode or on the mid-rib of the leaves.

Acacia seeds have a hard, waterproof coating which delays germination until it is damaged by fire, insects or abrasion. For germination in the nursery, pouring boiling water over the seeds is usually effective.

Wattles have been the major element in our planting, and the following page comprises notes on collection sites, planting areas, etc. In recent years, seedlings of eight of the nine species have been noted as spontaneous regeneration in the Park.

When the Organ Pipes National Park was first declared, there was a single surviving Black Wattle (Acacia mearnsii) at about the flood level opposite the outlet of Grey Box Gully. Many of the thousands of Black Wattles we have planted are the progeny of this old veteran, and we named the flat after it but, alas, it may not have long to live. Witchetty Grubs have riddled its twin trunks, and there are few green branches left, but there are numerous seedlings along the creek, so the cycle of life is re-established. In this area, Acacia retinodes (Wirilda) is also producing seedlings, some now over head-height. Acacia paradoxa seedlings have been reported since the late 1980s.



THE WATTLES

Wattles have played a large part in our restoration program, and they are now a prominent and colourful feature of the Park. Some are producing seedlings, and we can now expect that there is enough seed in the soil to allow natural recovery in the event of fire, assuming rabbits are controlled. Several species are also known to produce root suckers, and this is occurring with at least three species.

ACACIA ACINACEA (Gold-dust Wattle) Survivors are recorded at Dry Creek, Holden Flora Reserve, Wildwood, old St. Mary's church site, Eynesbury and near the Murray Pine site, all on sandstone or basalt with some mixing from granite or sandstone. There is also a single plant in the Park, beside the creek at the base of a sandstone cliff. Some of our planting has extended onto heavy basalt, but this should not be overdone, and there is room for a few more on sandstone slopes and the drier alluvial/colluvial areas.

Acacia acinacea

"Gold-dust Wattle"

Recent records - Organ Pipes, Dry Creek, St. Mary's site, Holden Reserve, Wildwood.

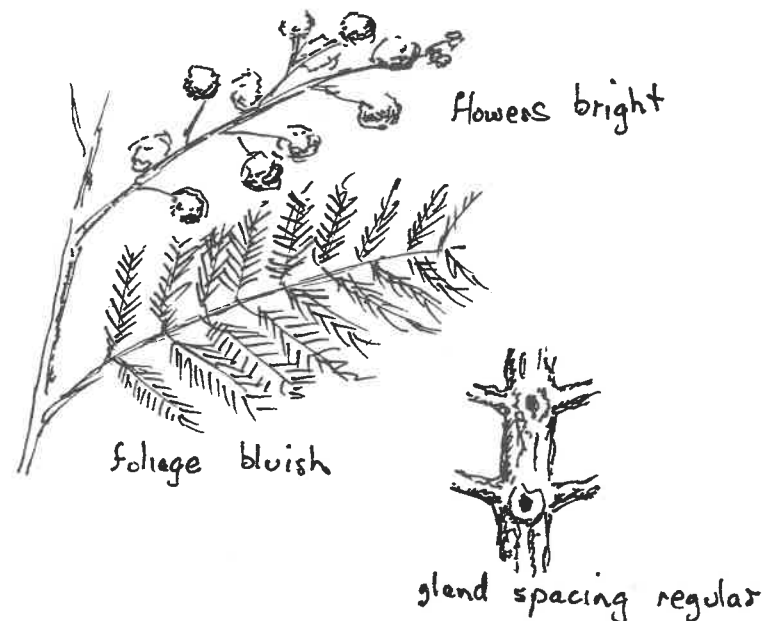


ACACIA DEALBATA (Silver Wattle) Still common on stream banks. Recovery was rapid once grazing was stopped, and we reinforced with seedlings in some areas. Some of these have since suckered to produce dense thickets, and no further planting would be necessary.

Acacia dealbata

"Silver Wattle"

Recent records - widespread on creek banks



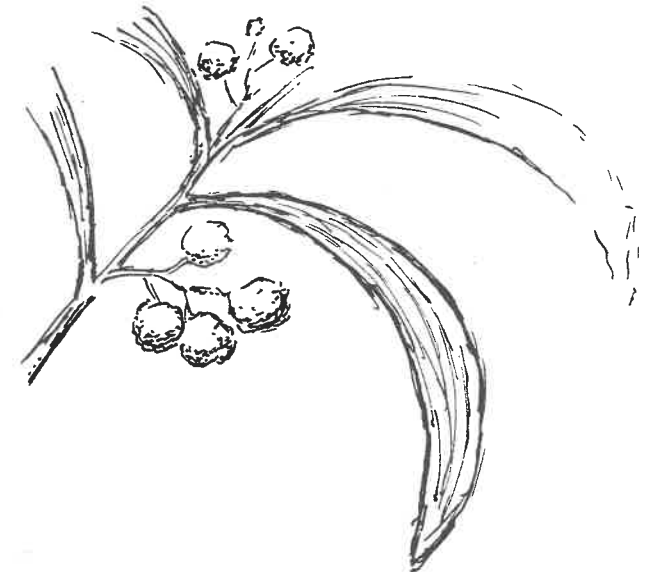
ACACIA IMPLEXA (Lightwood)

Without doubt the toughest of our Wattles, there are still frequent survivors on most situations in the valleys and across the plains. A few survived in the Park, and it has been our most widely planted Wattle, with emphasis on the harsh, windswept slopes. Both seedlings and suckers have appeared in many areas. An unusual feature of this species is that it frequently flowers both in late spring and late summer or autumn.

Acacia implexa

"Lightwood"

Recent records - widespread on dry slopes and rises, occasionally on creek flats.

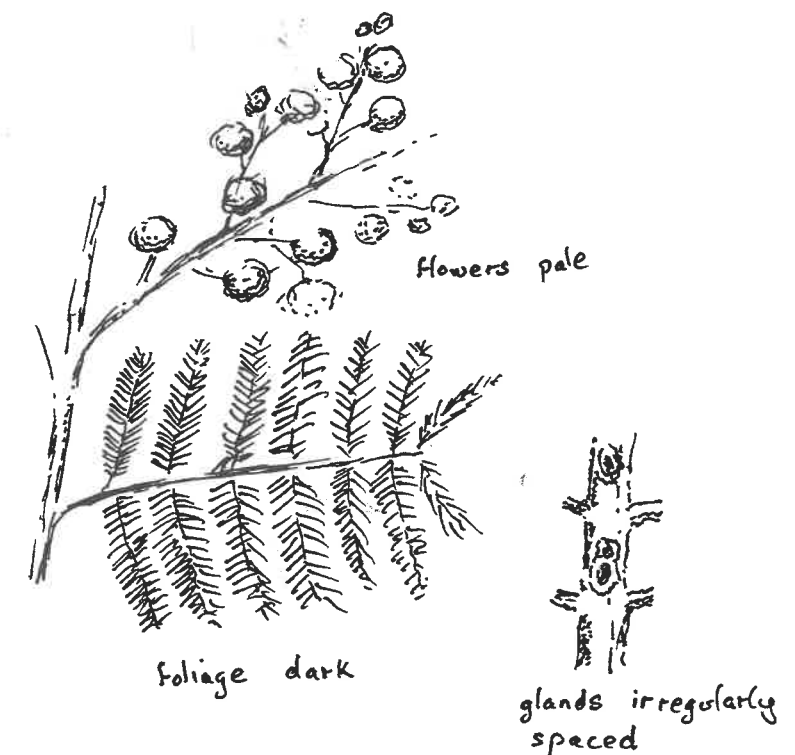


ACACIA MEARNsii (Black Wattle) A single tree survived on the flat in the Park, and there are several near the head of Column Gully. We have recorded it in a variety of situations except the driest of basalt slopes, and it has been useful in planting some problem areas, both wet and dry.

Acacia mearnsii

"Black Wattle"

Recent records - Organ Pipes, Bulla, Oaklands, Keilor, Holden Reserve, etc.



ACACIA MELANOXYLON (Blackwood) Generally restricted to stream banks and flats, but it can still be seen along drainage lines on the plains, e.g. south of Diggers Rest. Our planting has been restricted to the flats, but the upper section of Lightwood Gully may be suitable. The species is capable of vigorous suckering when damaged

Acacia melanoxyton

"Blackwood"

Recent records - widespread on creek banks and flats. Rail easements north of Sunbury.



ACACIA PARADOXA (Hedge Wattle) In some areas, this Wattle can become a pest, but no self-reproduction has been seen in the Park as yet. There is a survivor on the flat in a neighbouring property, but most others are on dry slopes on sandstone, granite and basalt. It also appears on silcrete outcrops at Sunbury and Diggers Rest. There is room for more in a number of sites in the Park.

Acacia paradoxa

"Hedge Wattle"

Recent records - Bulla, airport, Sunbury, Oaklands, 2 km. south of Organ Pipes.



ACACIA PYCNANTHA (Golden Wattle) Around Sunbury and Melton, there are survivors on the basalt, but other records are more often on sandstone, granite or mixed soils. It seems to be short-lived and very sensitive to herbicides, but seedlings have been noted in the Park. There is room for further planting on sandstone and mixed soils in the Park.

Acacia pycnantha

"Golden Wattle"

Recent records - Holden Reserve, Sunbury, Bulla, Emu Creek, etc. Mostly on sandstone or granite.



one main vein.

ACACIA RETINODES (Wirilda) The local form has broader and paler leaves than the one usually sold in nurseries, and has a more definite flowering period, highlighting the importance of using local seed for accurate restoration. The nearest record is at Dry Creek, Keilor, growing on sandstone, and there are several other records in the Keilor area, either on the creek bank, or on the adjacent sandstone slope.

Acacia (retinodes) uncifolia

"Wirilda"

Recent records - Dry Creek, Horseshoe Bend, Green Gully, Exford.

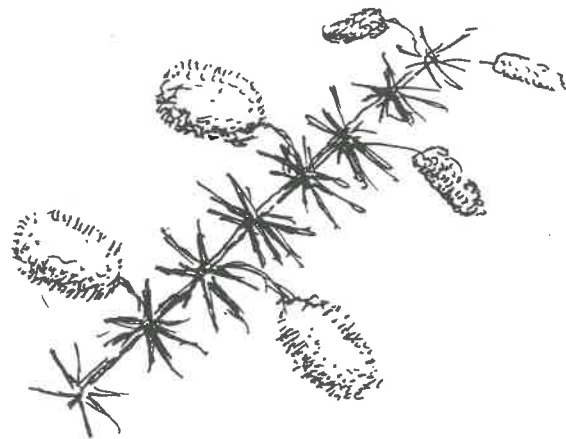


ACACIA VERTICILLATA (Prickly Moses) Within the plains region, this Wattle also appears to be restricted to stream banks. There were a few survivors in the Park and we added others, but it was probably never a dominant species. An inspection would be worthwhile to see how it is faring amongst more vigorous species.

Acacia verticillata

"Prickly Moses"

Recent records - occasional on creek banks, including Organ Pipes and Holden Reserve.



Myrtaceae family (Eucalypts, etc.)

The Keilor Plains Flora, being primarily a grassland association, has not many members of the family Myrtaceae. Apart from the shrubs Woolly Tea-tree, Fringe-Myrtle and River Bottlebrush, there are 8 or 9 Eucalypt species, only five of which are considered relevant to the Organ Pipes National Park.

All available evidence indicates that the creek valleys were much more favoured by trees and shrubs than the open plains. The more varied conditions of soil, moisture, drainage and shelter would account for this, some species being quite demanding in their requirements. Perhaps the valleys were invasion routes and there was a slow conversion to woodland under way. Unfortunately we have no untouched areas to use as a model; a few acres at Holden Flora Reserve are closest to this, but generally we now have only isolated trees as clues, plus some literature references and a few sketches by Eugen von Guerard.

EUCALYPTS

Three Eucalypt species survived in the Park at the time of its declaration. Our planting program has included these three and two others. The following notes contain some of our reasoning as well as quotations from an article by C. S. Sutton written in 1916, eighty-one years after settlement.

REDGUM (Eucalyptus camaldulensis) "...has almost undisputed possession of the watercourses, often extending in that way right up on to the open plain." Still common on stream banks and natural regeneration is prolific when grazing is stopped. We have added seedlings to the banks in places and have extended out over the broad silt flats.

GREY BOX (Eucalyptus microcarpa) "...not found on the sands or Silurian, is next in importance to the Redgum, and is somewhat exclusive. It is sparingly distributed over the eastern part (of the plains), but...near Melton and Bulla and on the western slopes of Gellibrand Hill...it forms open, pure forests of limited extent." These stands and others still exist, but probably much reduced in area. Seed from the airport has been propagated and planting has been mainly on the Eastern Plain (above the Organ Pipes), in the upper part of Grey Box Gully, and on the hill above Rosette Rock.

YELLOW BOX (Eucalyptus melliodora) "...pretty common on the granite near Broadmeadows and elsewhere is scattered in small groves, while a somewhat exclusive forest of rather poor trees occurs east of Sunbury." Two trees survived in the Park, one on a steep sandstone bank and the other on a deep alluvial flat about 100 metres from the creek. Other surviving examples are on sandstone, granite or mixed soils and only one or two are on basalt. We have propagated from the trees in the Park and have generally kept to soil with a sandstone base or drier alluvial or colluvial areas.

YELLOW GUM (Eucalyptus leucoxylon) "...climbing well up the steep rocky banks...has not been noticed on the plains." Willis excluded this species from his basalt plains list and, apart from the granite, all surviving examples we have seen are on sandstone. A single

survivor about 150 metres downstream from the Pipes has provided most of our seed and planting has been mostly on warm sandstone sites. A stump below the "Rock Wall" was analysed and found to be an old Yellow Gum. It is interesting that the local form of this and the Yellow Box seem to ~~diverge~~ converge in their characteristics so that they must be examined carefully for identification.

MANNA GUM (*Eucalyptus viminalis*) "...standing on the terraces, not far from water..." Remaining examples are generally dispersed as single trees, either among the Redgums or a short distance up the slopes. It is assumed that it was more frequent on the silt flats, which would have been cleared for cultivation at a very early stage of settlement. Seed from Holden Flora Reserve has been used and planting has been concentrated on creek banks and flats.

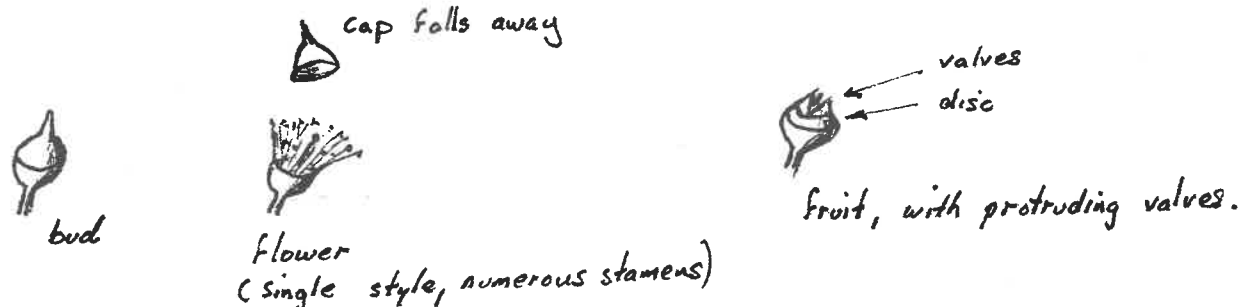
Of the other species, **Swamp Gum (*Eucalyptus ovata*)** is the most important, since it was common in the higher rainfall areas towards Darraweit Guim and Clarkefield, but there seems to be no evidence of it growing near the Park. The others, such as Red Box and Narrow-leaf Peppermint are on mixed soils some distance from the Park, or isolated records.

We have probably over-planted with Eucalypts and our success rate has been high, but there will probably be losses before natural seedling growth begins to refine or correct our planting zones. All Eucalypt species are now flowering and producing seed, so we should watch for the tiny seedlings which will appear when the conditions are suitable.

Quotations from C. S. Sutton, "A sketch of the Keilor Plains flora", Victorian Naturalist, vol. 33, no. 8, Dec. 7 1916 and January 11 1917, pp. 112 - 123 and 128 - 143.

Eucalypt flowers

Eucalypt flowers do not have normal sepals and petals. Instead, a cap (sometimes 2) covers the flower in bud and is shed to expose the stamens and style. Seed falls from the mature fruit by means of valves which open as the fruit dries. The shape and arrangement of buds and fruit, and whether the valves are protruding, level or sunken, are important in Eucalypt identification.



Eucalypt buds and fruit

Buds x Fruit.



Redgum

Bark shades of grey, shed in plates.



Grey Box

Bark fibrous



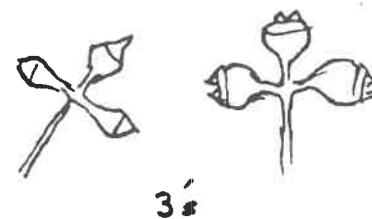
Yellow Box

Bark fibrous in local form



Yellow Gum

local form sheds bark to a stocking, creamy above.



Manna Gum

shed in strips, leaving a dark "stocking", white or cream above.

B.H.

Eucalypt leaves

Eucalypt leaves go through several stages of development, with "juvenile" leaves often very different from the adult. The juvenile leaves of the species in the Park are illustrated below. This type of foliage may be present for two years or more.

Redgum - lance shaped, stalked, opposite or alternate, often with reddish tinge.



Grey Box - Variable, but usually broad, oval, alternate. Sometimes narrow, shiny green.



Yellow Box - Alternate, stalked, rather short, grey-green.



Yellow Gum - Opposite, stalkless, broad, sometimes blue-green.



Manna Gum - Opposite, stalkless, narrow, bright green.



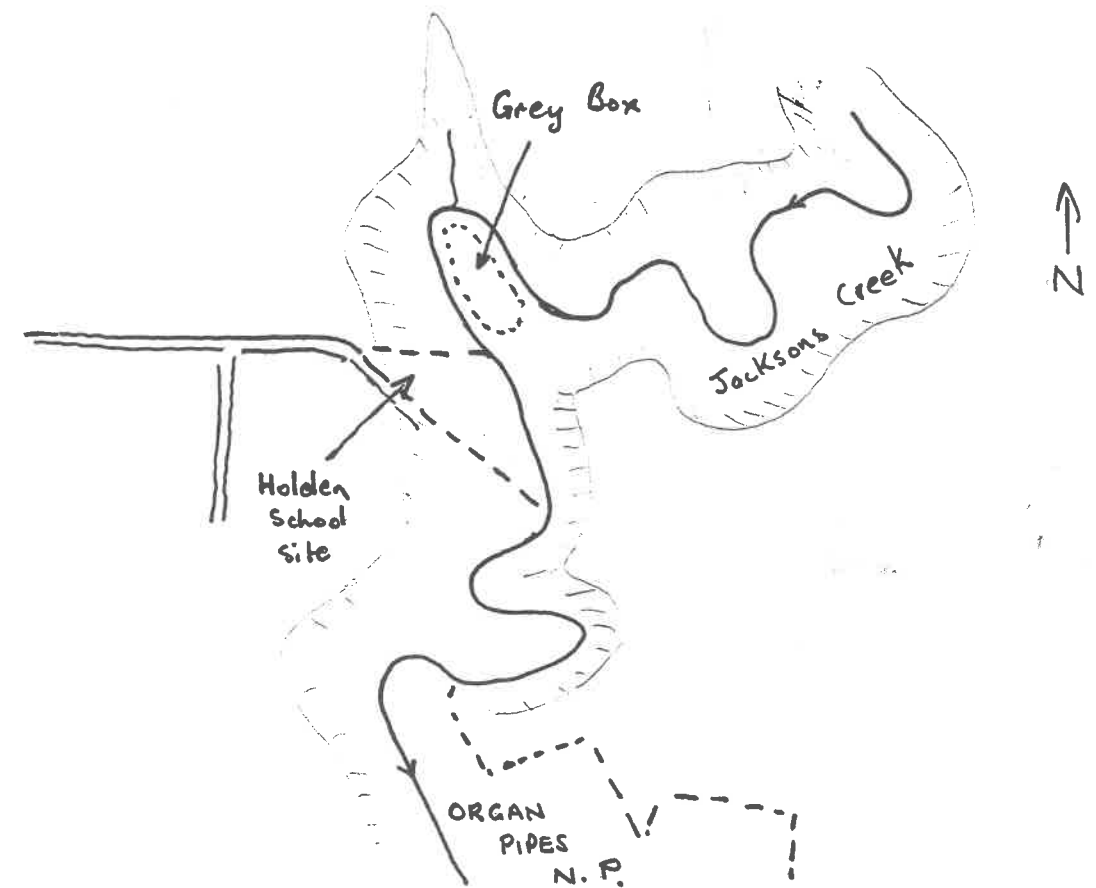
BK

On Jacksons Creek, only about half a kilometre north of the Park boundary, is a forgotten triangle of land known as Holden School site. We once envisaged that this land (about 8 hectares, I think) would be included in an extended Organ Pipes National Park, but financial constraints and creeping development make this increasingly unlikely, unless the connection could be made via the steep, rocky slopes on the east side of the valley.

Standing on the edge of the basalt plateau, beside Sugar Gums and Cypress Pines, where the Holden State School must once have been, I look out over the valley. The creek zigzags down from the north-east, then loops around a long, narrow, but gently-graded spur before entering the steep-sided gorge leading to the Park. The landform is still starkly beautiful; what European man has done to it is not. Land-holders in this area seem incapable of relating to the natural landscape. Some try to convert it to an alien version of the scene, others simply treat it with contempt.

That long, gentle spur should have made a pleasant home-site, but I am confronted with a property whose owners seem unsure whether they are running a farm, an industry, a pigsty or a rubbish dump, with the last two being the most likely. But I came here to check out something I remembered from about twelve years before. On that spur, scattered through the ghastly farmyard, and amongst old car bodies and weeds, are twenty-five old trees, and a glance through my binoculars is enough to confirm that these are Grey Box (*Eucalyptus microcarpa*), standing on basalt soil which probably has a little added gravel deposited on the spur ^{prob not} as the stream carved out the loop.

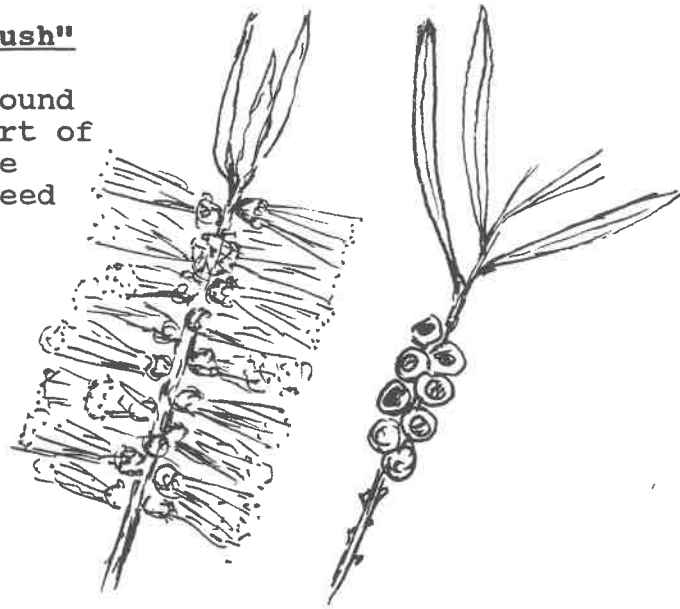
These trees widen the range of conditions under which we have found Grey Box remnants, and are so close that they strongly support our use of the species in the Park.



Other members of Myrtaceae at the Organ Pipes

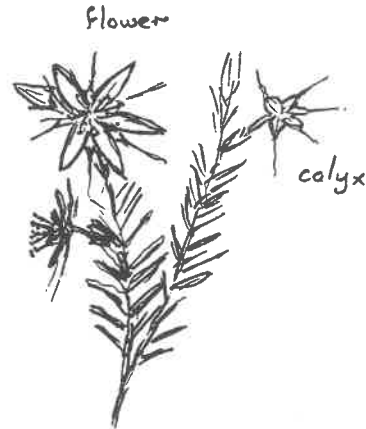
Callistemon sieberi, "River Bottlebrush"

Callistemon flowers are clustered around a central stem, and the prominent part of the flowers are the long stamens. The fruit is a woody capsule with fine seed which germinates readily, but since the shrub is common on stream banks, and has produced many seedlings, only a few have been propagated and no more are likely to be needed. The stamens are usually a creamy colour, but occasional pale pink examples are seen.



Calytrix tetragona, "Fringe-myrtle"

I think the three plants which survived at the Tessellated Pavements have succumbed to trampling feet, but we have planted several in the area. It grows well from cuttings and can be grown from seed. The only other site records we have are on similar situations at the Jacksons Creek bridge at Sunbury and 2 or 3 kilometres below Gisborne (where it grows quite high up the banks). The leaves are small, narrow and crowded. Flowers are pale pink and when the petals fall, the maroon calyx persists. It grows as a small, upright shrub which may flower when about 30 cm. tall, but can grow to more than a metre.



Leptospermum lanigerum, "Woolly Tea-tree"

This is a moisture-loving shrub and consequently it will only grow close to the creek in our area. In suitable conditions, it will grow to three metres and the blue-grey foliage is attractive. The white flowers are very showy and these are followed by a woody capsule which has a woolly base. It grows well from seed, but since it survived at a number of places in the Park, not much planting has been needed. It is still found on most stream banks in the region.



Caesalpinaceae family

DESERT CASSIA (Senna artemisioides)

One of the most attractive plants we are planting at the Organ Pipes is the Desert Cassia (*Senna artemisioides*, formerly *Cassia nemophila*), a widespread shrub of the dry inland, but rare south of Bendigo.

"...said to have occurred freely along the creek just here, it is now only to be seen in situations where it is out of reach of stock." C. S. Sutton and R. W. Armitage, "Excursion to Sydenham, Bulla and Diggers Rest", Victorian Naturalist, 1911. The Field Naturalists Club of Victoria recorded it at the Organ Pipes in 1900 and as late as 1961 (J. Ros Garnet), but it had disappeared when the Park was declared in 1972.

After a long search of local valleys, a few plants were found above Deep Creek near the airport, and most of the plants in the Park are now descendants of these. Some were then found a short distance upstream from Bulla and near the Murray Pines on Jacksons Creek. (The two latter sites have not been inspected since 1977). One or two have survived illicit grazing in the Holden Flora Reserve near Sunbury, and a small group were recently discovered below Keilor. (Sutton recorded plants "up to seven feet high" south of Keilor in 1916).

All sites observed are on sandstone with a warm, northerly exposure, and planting at the Organ Pipes has followed this guide, but relatively few are established and there is room for more. The shrubs are covered in bright yellow flowers in spring, composed of five petals enclosing ten stamens and a characteristic hooked ovary and style. Being a legume, the fruit develops into a "Pea-pod" which is flat and papery when mature. The hard, black seeds can be treated as for Wattles for propagation, but the seedlings are very susceptible to "damping off" diseases and should not be over-watered.



Rutaceae family

Correa glabra, "Rock Correa"

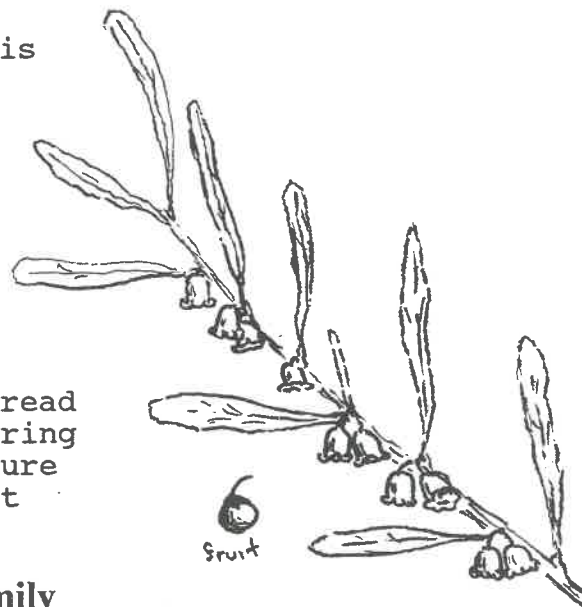
This much-branched shrub is found below rock outcrops on a number of sites in the valleys of Jacksons and Deep Creeks, and is also to be seen occasionally close to the creek on sandstone (as at the Park) or sediment (Emu Creek). The leaves are dark green above and much paler underneath. The flowers are pale green bells. Propagation from cuttings is fairly easy, and all we have planted have been grown in this way. There is room for more in the Park.



Violaceae (Violet family)

Melicope argusifolia
Hymenanthera dentata, "Tree Violet"

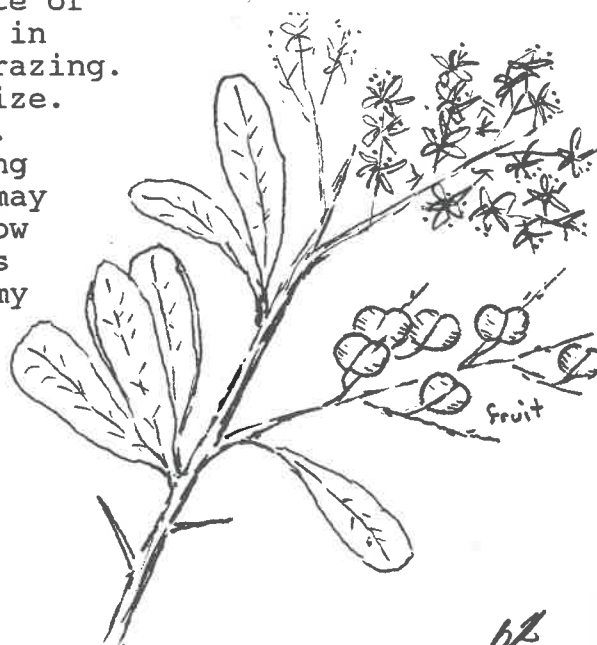
The common name for this versatile shrub is quite appropriate, as it is placed in the Violet family (Violaceae). The small yellow flowers hang along the branches in late winter to early spring, and are pleasantly scented. The dull green leaves are faintly toothed. This is the most common shrub on the plains, where it grows along fence-lines, sometimes mixed with the exotic Boxthorn. It is also found on a variety of sites in the valleys, and birds eat the fruit, then spread the seed widely. Many seedlings are appearing in the Park, usually under trees. The mature fruit is a leathery capsule which must rot or break for the seed to germinate.



Pittosporaceae family

Bursaria spinosa, "Sweet Bursaria"

J. Ros Garnet described "a wealth of bursaria" amongst the Boxthorn on a visit to the site of the Park in 1961. Only a handful survived in 1972, probably as a result of intensive grazing. Sutton (1916) reported examples to tree size. Rabbits will attack the trunks when 50 mm. or more thick, and wallabies find the young shoots irresistible, although the latter may be considered natural pruning. It will grow on most sites and the ends of the branches are decorated with bunches of small, creamy flowers in late spring, followed by flat, papery fruit which split at the top to release two seeds into the wind. Collection time is critical - too early and the seed is not viable, too late and the seed has fallen. A stocking over fruit is sometimes effective.



Myoporaceae family (Boobialla)

THE "BOOBIALLAS"

There are seven Myoporum species found in Victoria, mainly in dry areas or near the coast. The leaves and young stems are fleshy, and the white flowers are followed by small, woody fruit from which the seed is not easily extracted. They can be grown from cuttings, some species more easily than others. The following are of interest to the Organ Pipes revegetation:

Myoporum insulare, "Common Boobialla"

A large shrub, widely planted as a windbreak, but a number of local plants are believed to be natural occurrences, ranging from stream flats to exposed basalt outcrops. The nearest to the Park is on the rail easement north of Diggers Rest, and we have recorded it at Dry Creek, Emu Creek and Green Gully. Propagation material from the latter site has been used in the Park and some of the resulting plants are now suckering strongly, with shoots appearing several metres from the parent.

Myoporum insulare - leaves fleshy, thick bright green, toothed mainly on upper half. Flowers white, purple spots. Tree sprawling, thick trunk, suckers.



Myoporum viscosum, "Sticky Boobialla"

A shrub with dark green, shiny leaves which give the impression of being sticky. It survives on the slopes of Deep Creek (near the airport) and at Holden Reserve and downstream from the Park near the Murray Pine site. It also survives on the basalt at Keilor cemetery and on the roadside between Bulla and Sunbury. Most original cuttings were taken at Horseshoe Bend and later ones from Bulla. Success rate is usually low.

Myoporum viscosum - leaves dark and shiny on upper surface, dull underneath, finely toothed. Flowers like M. insulare, but petals hairy inside. Stems often reddish.



Eremophila deserti (Myoporum deserti)

"Turkey Bush"

Leaves narrow, not toothed, flowers without spots or hairs. A smaller shrub than the preceding, upright or rounded.



Myrsinaceae family

The "Muttonwood" (Rapanea howitteana)

This small tree is undoubtedly one of the most interesting of the Keilor Plains records. Its usual habitat is moist forest and stream banks on the high rainfall side of the Great Divide from northern N.S.W. to eastern Victoria, and the survivors on Deep Creek are apparently the most westerly occurrence. A few have been able to grow amongst huge basalt slabs breaking away from the capping layer where Loemans Road cuts in close to the valley, and there are others amongst granite boulders near the creek, less than a kilometre from the other site, smaller and more slender, apparently suckering. Propagation has proved difficult, but a few cuttings were rooted by a professional nurseryman, possibly using bottom heat.

Suitability for the Park is a matter for discussion, but it seems reasonable to preserve the local material by means of a few examples in the Park.

Rapanea howitteana - resembles Pittosporum, but flowers and fruit small. Leaves dark green and shining on top, paler underneath, wavy edges. New leaves bright green. A small, upright tree, sometimes suckering.

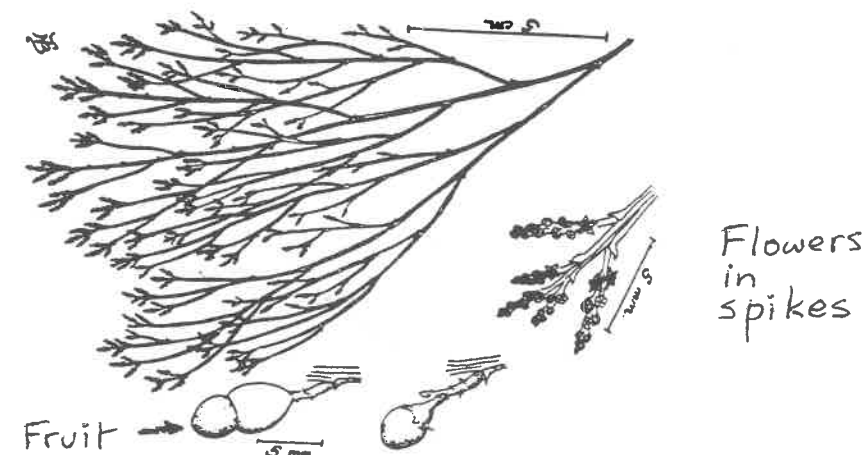


Santalaceae family

Exocarpos cupressiformis (Cherry Ballart)

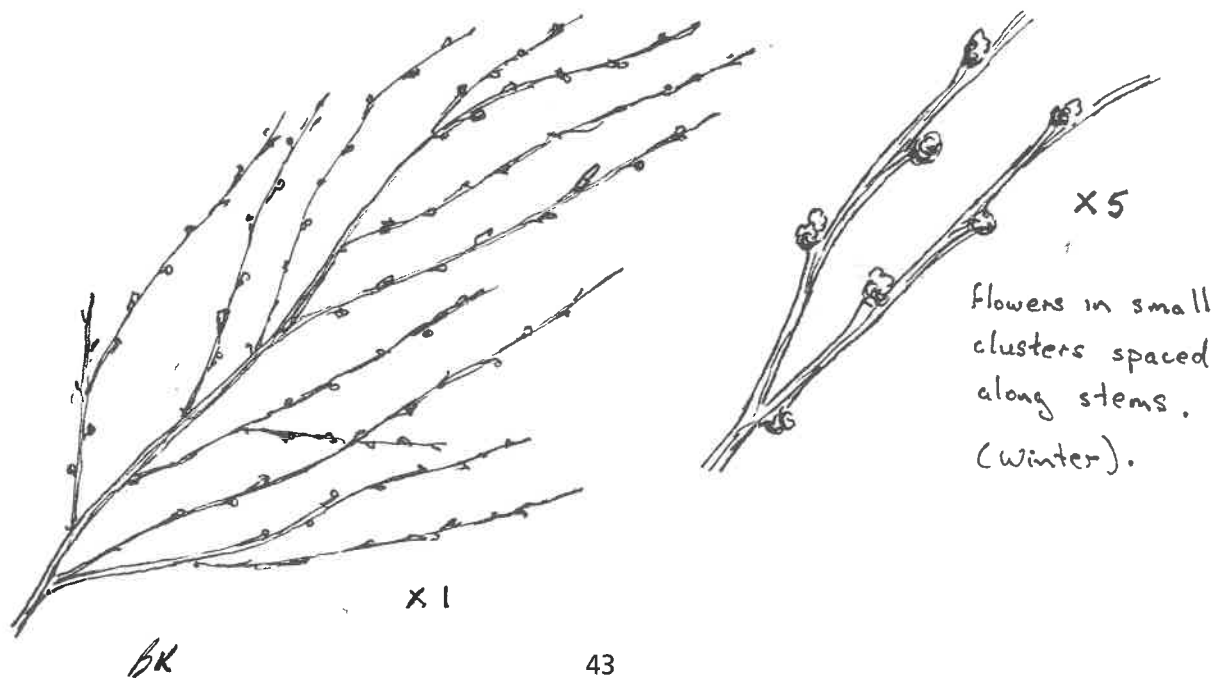
This is a very attractive conifer-like tree, semi-parasitic, its roots tapping into the roots of other plants to supplement its intake of nutrients. Apparently a wide variety of hosts will do, the removal of nearby trees and shrubs does not seem to affect the Cherry Ballart. The "cherry" is the swollen, red stem of the fruit, which is a small, hard capsule.

Early reports indicate that it was once common on the plains, but we have recent records only for Holden Flora Reserve, Deep Creek at the airport and north of Oaklands Junction, all on sandstone or alluvial. Propagation is difficult and none have been reintroduced to the Park. Cuttings "callous", but are reluctant to produce roots.



Exocarpos strictus (Pale-fruit Ballart)

This Ballart was apparently not recorded in the region until Carl Rayner discovered it growing on Deep Creek south of Bulla. It is a more shrubby and low-branching plant than E. cupressiformis, the branches very angular, often yellowish and spreading. The fruit stems are whitish or lilac.



THE CHERRY TREE AND THE HONEYSUCKLE

Since the vegetation of the basalt plains of western Victoria has been drastically altered in 150 years, we rely heavily on a combination of scattered remnants and early literature for our picture of the Keilor Plains Flora at the date of white settlement. Unfortunately, most of the very early reports were made by people unskilled in botany and interpreting their use of vernacular names can be frustrating.

"Oak" or "willow" are assumed to be the Casuarinas, and "Mimosa" the Wattle, but two names appear with surprising frequency; the Cherry and the Honeysuckle. While these have been taken to mean Cherry Ballart (*Exocarpos cupressiformis*) and Banksia (*Banksia marginata*), the scarcity of survivors of these species has left room for doubt. Cherry Ballart is semi-parasitic and throughout its range it is usually found as widely scattered trees or small groups, a minor part of any association. Isolated plants survive on Deep Creek at the Airport, on a sandstone hill at Oaklands and with Yellow Box at Holden Reserve.

The Banksia is even more scarce now, being found at only two sites close to the margin of the basalt flows at Clarkefield and Yan Yean. An ancient tree at Lara was destroyed in the 1970s by railway works.

The journal of W. H. Hovell includes the following entry for 14th December 1824, when the party was at some point north of the site of Keilor: "The only trees which grow in patches on the plains are the Honey Suckel, the Willow, and the tree which is something similar the Bathest tree, but Mr. Hume says it is not the same quality, the bark of this resembles the pine, the leaf that of the swamp oak, the tree appears short and stunted, but it is well headed, and the seed, or rather Apple, resembles the English pine. It is not so large, but I think handsomer. This tree, with the Willow and Wattle, make a very fine shade..." (The reference to Wattle conflicts somewhat with his first statement, but does not prevent a conclusion that Banksia and Cherry Ballart were prominent on the plains).

From "A month in the Bush of Australia; Journal of one of a party of Gentlemen who recently travelled from Sydney to Port Phillip", 30th May 1837, travelling south from Mount Macedon: "the first seven or eight miles of the way lay through open forest ranges with a few clear plains...We then descended into open downs almost entirely clear of timber, which extended right and left, and before us almost as far as the eye could see... Here and there were a few fringes of trees and a few rising grounds or hills, but generally speaking the surface was very level, though undulating, and with few ridges...I should have mentioned that the only trees on the "Downs" are forest oaks, honeysuckle and mimosas."

Alexander Fullerton Mollison, 1st August 1837, in the valley of Jacksons Creek, near Sunbury, "...encamped among native honeysuckle and oak trees...The plains are extensive, firm, grassy and skirted by light timber."

The Journals of George Augustus Robinson, 10th January 1840, travelling from about Keilor to Sunbury: "The country through which we travelled today consists of green hills and valleys with a verdure of transparent green...covered with rich and thick herbage and the trees sheoak and cherry tree and stunted gum." Robinson later described a tree in the Black Forest area (including an account of eating the fruit "sitting on our horses and gathering the Cherries"). His detailed description leaves no doubt that his "Cherry tree" was the Cherry Ballart.

The Banksia is easy to propagate from seed, and we already have a few plants from Clarkefield stock in the Park, and some seedlings propagated from Yan Yean seed ready to plant. The Cherry Ballart however, is much more difficult, but deserving of further attention.

References courtesy of Mr. John Osboldstone.

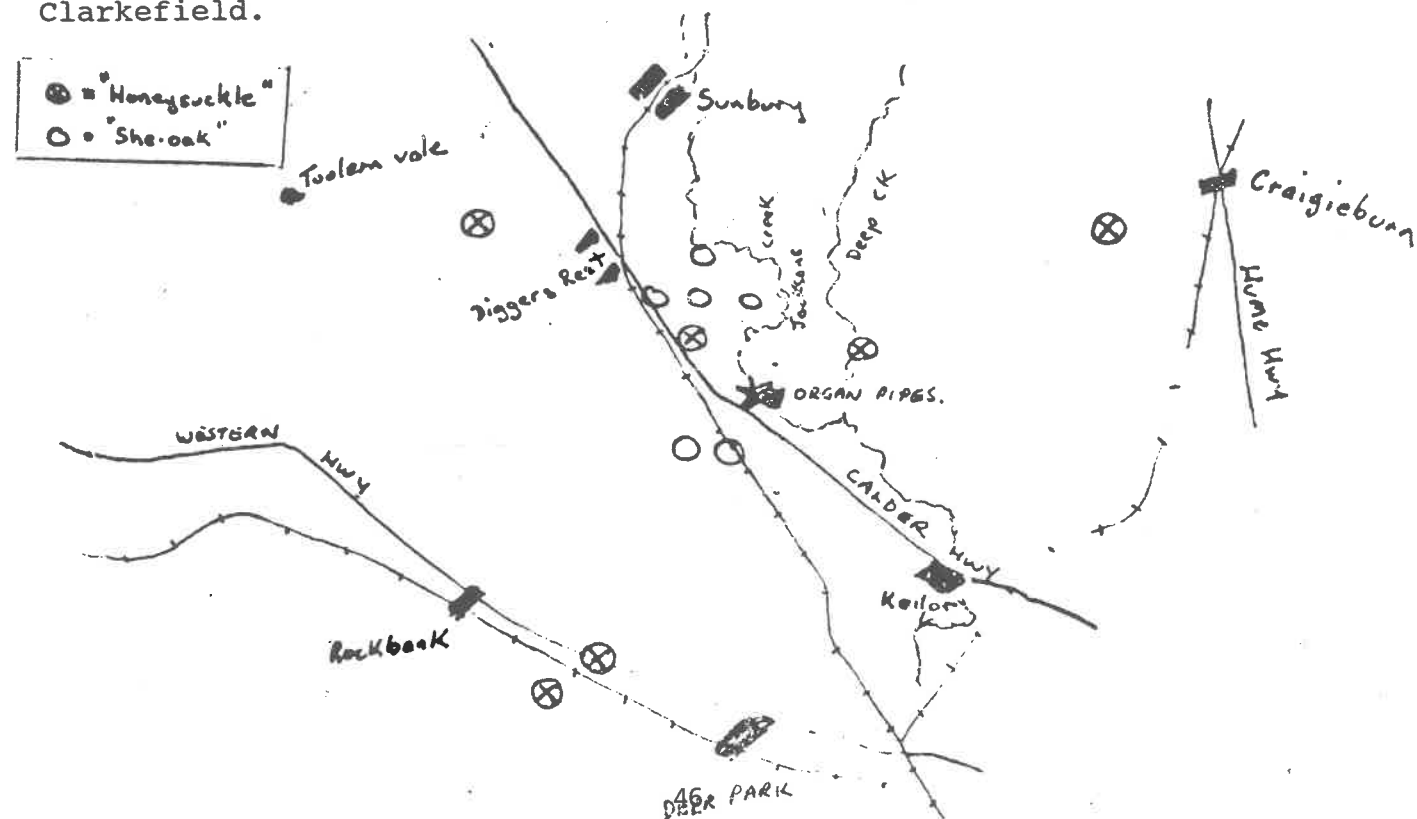
MORE ABOUT THE HONEYSUCKLE

One day in about 1847, surveyor Robert Hoddle stood near the bank of Deep Creek, close to the present airport quarry, and carved the figures XIII.XVII on the trunk of a "Honeysuckle" (*Banksia marginata*), recording the details on a map which, 139 years later gives us a pin-hole glimpse of the past.

On the previous page, I have referred to evidence of the former widespread distribution of *Banksia marginata* on the basalt plains of western Victoria, derived from the writings of early explorers and travelers. The battered, faded maps of surveyors such as Hoddle and Wedge-Darke can also provide snippets of information which give us a tantalising, but limited, insight into the flora as it was in the early days of settlement.

Occasionally a brief descriptive sentence is written with ink and quill across a tract of land, such as "Thinly wooded with She-oak", between the Organ Pipes and Deep Creek, or "Grassy plains, thinly wooded", between Sydenham and Jacksons Creek (Wedge-Darke, 1842), "Good, grassy plains, thinly wooded", south of Holden Flora Reserve. These descriptions are all too brief and infrequent, but they help to make up our picture, and the surveyors often made use of trees, either as a reference point to help locate a survey peg, or as a living peg. Trees up to 200 links away (about 40 metres) have been used.

Markers at one mile intervals west from the Organ Pipes went for ten miles without finding a tree nearby, but in other areas She-oaks were often available, e.g. one was used a mile south-west of the Park, and three between Diggers Rest and Holden Bridge. In addition to the Deep Creek *Banksia*, several others were strategically placed to feature on the survey maps. There were two between Rockbank and Deer Park, one about two miles north-east of Greenvale, and one a mile north-east of She-oak Hill (east of Toolern Vale), close to a tributary of Kororoit Creek, but the most important one for us is a tree which grew near the head of the north branch of Column Gully, only two kilometres from the Park boundary. This, combined with the evidence of widespread distribution, is justification for inclusion of *Banksia marginata* in our planting program, even though our nearest surviving trees are at Clarkefield.



Caprifoliaceae family (Honeysuckle)

Sambucus gaudichaudiana, "White Elderberry"

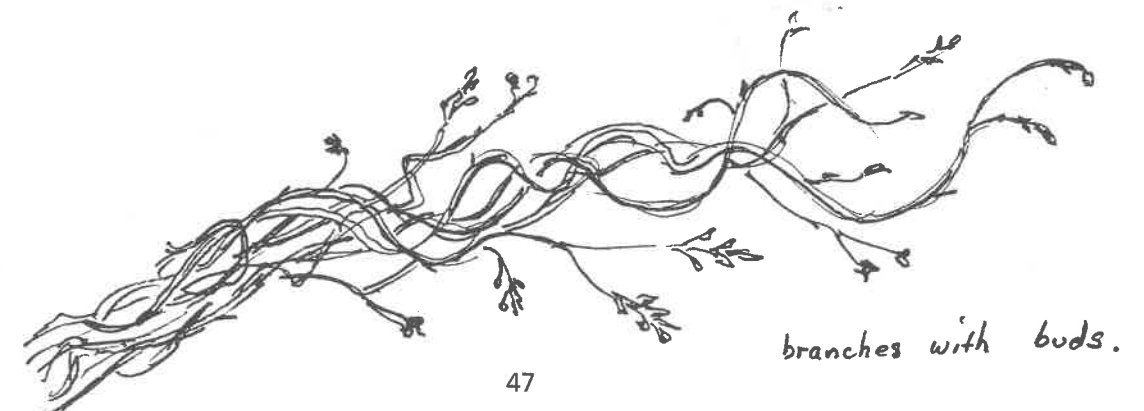
In Lightwood Gully, near Rosette Rock and beneath a basalt cliff upstream from the Pavements can be found a rather delicate-looking shrub with bright green, divided leaves. Small white flowers in spring are followed by numerous pale-yellow, soft fruit in early summer. It needs a sheltered site, but can cope with full sun and dry soil in summer. We need a few more in the Park and if the fruit are collected in late December and sown immediately into a seed box, the seed will germinate within about two months.



Lauraceae family (Laurel)

Cassytha melantha, "Coarse Dodder-laurel"

This is a parasitic plant which may choose a variety of hosts. Seedlings grow in the soil, but soon attach themselves to a nearby tree or shrub and eventually rely on it entirely. A mature plant produces a tangle of wiry branches festooned over the host, the leaves reduced to scales. As with Mistletoe, there is a place for a few Dodder-laurel in the Park, and seed could be collected at Holden Flora Reserve or on Deep Creek near the Airport.



Goodeniaceae family

Goodenia ovata (Hop Goodenia)

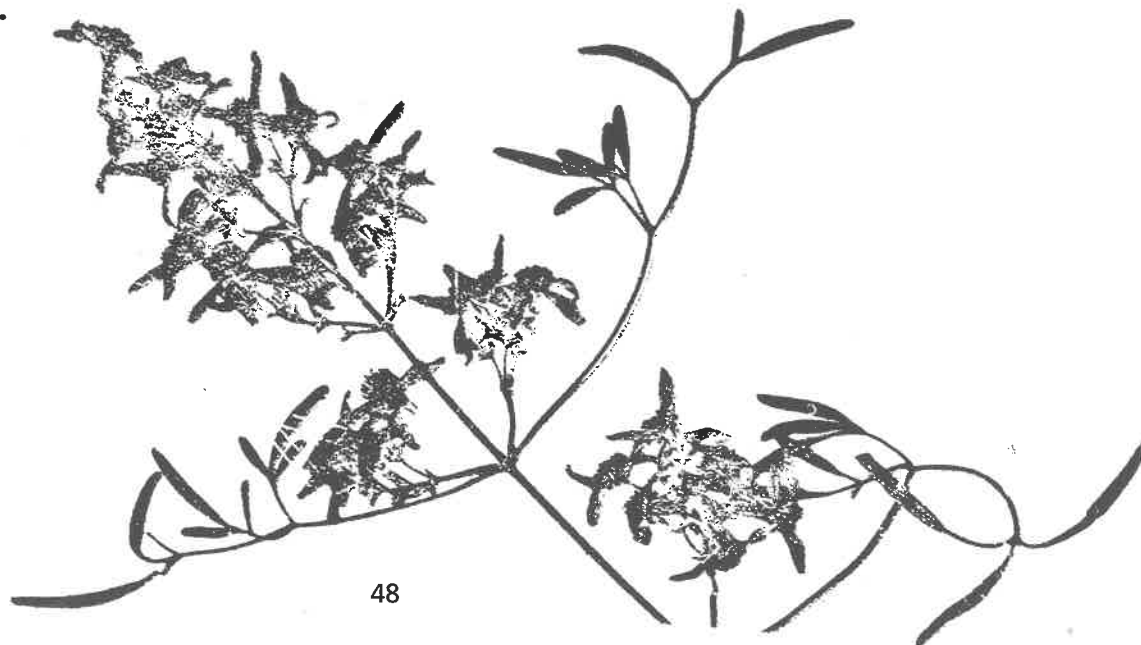
Most Goodenias are small herbs, but this one produces long, upright semi-woody stems and sometimes develops into a dense shrub. The bright yellow flowers are produced over a long period. It has been found at Holden Flora Reserve, near Bulla and near the airport on sandstone and metamorphic. It grows easily from cuttings and should be restricted to sandstone areas in the Park.



Ranunculaceae family (Buttercup)

Clematis microphylla (Small-leaf Clematis)

This is a delicate-looking, scrambling vine which produces attractive pale-lemon coloured flowers in spring, followed by masses of feathery pappus attached to the seed. It survives in many harsh places within the valleys, including the Organ Pipes, hanging down over rocks or climbing onto the nearest shrub. It grows easily from seed and we have planted it in most areas except the stream banks. Self-sown seedlings are appearing.



Rosaceae family (Rose)

Rubus parvifolius (Small-leaf Bramble)

This little Raspberry is not so robust as the exotic Blackberry. The canes are thinner, the leaves smaller and paler in colour, and the fruit is small, remaining red when ripe. It is occasionally found close to streams, including in the Park.



Urticaceae family (Nettles)

Urtica incisa, "Scrub Nettle"

This is a perennial with toothed, tapered leaves bearing stinging hairs. Male and female flowers are produced on separate "spikes". The exotic (i.e. introduced) *Urtica urens* is an annual usually shorter and with oval leaves, and flowers of both sexes on the same spikes. Both are found in the Park, the native on moist, shady sites and the exotic usually on more exposed areas.

Urtica incisa

"Scrub Nettle"

Recent records - Organ Pipes,
Holden Flora Reserve,
Deep Creek at airport,
Eynesbury.

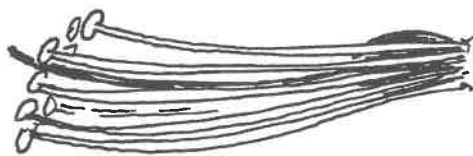
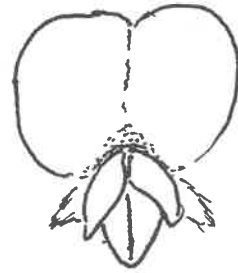
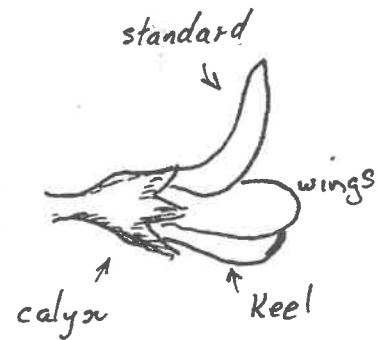


Fabaceae family ("Pea-flowers")

Like the Wattles and Cassias, this very large group of plants was once placed in the family Leguminosae, but is now usually separated. It has been referred to as the Papilionaceae, after the Latin for butterfly, but the current rules of the game require a family to be named after one of its genera, so the name Fabaceae (after the Latin for bean) is used. The family is very well represented in the Keilor Plains flora.

The flowers are very irregular in shape. The sepals are usually united into a 5-toothed calyx. There are five petals; one, known as the "standard", is usually much larger than the others, two lobed and turned upward. There are two lateral petals called "wings" and two that are united on their lower margins to form a "keel" which encloses stamens and style. There are usually ten stamens and some or all may be united by their filaments. The fruit is a pod containing one to many hard-coated seeds which in most cases (at least with native species) need similar treatment to Wattles in order to germinate.

Leaf type and size vary enormously and characteristics of the leaves are often used in "keys" to identification.



all stamens free
(Dillwynia, Viminaria,
Pultenaea)



9 stamens joined,
1 free.
(e.g. Hardenbergia, Psoralea,
Kennedy)

Fruit



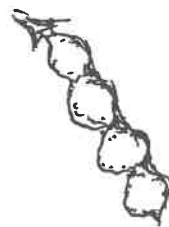
Pultenaea



Bossiaea



Indigofera



Desmodium

The "Pea-flowers" (family Fabaceae)

Bossiaea prostrata (Creeping Bossiaea)

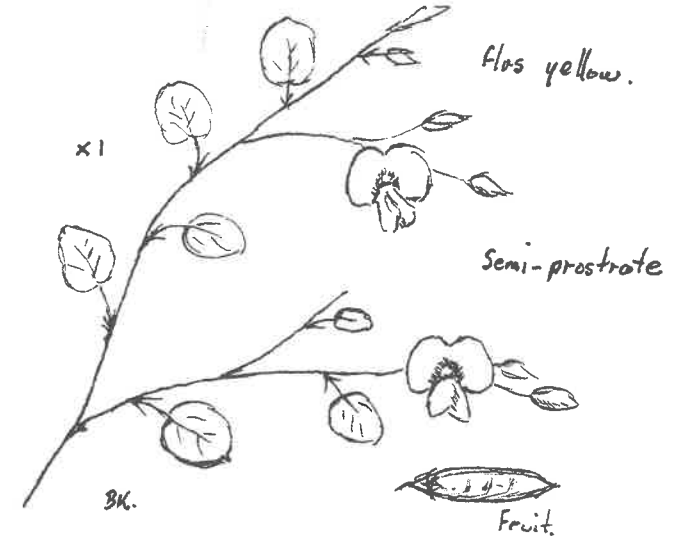
This little plant has creeping stems with short, upright branches. It was recorded by Sutton as "commonly seen" in 1916. We have recorded it at Tottenham, between Diggers Rest and Sunbury, and on the margin of the basalt at Toolern Vale. Very little seed is set.

Bossiaea prostrata

"Creeping Bossiaea"

"Commonly seen" - Sutton.

Recent records -
Diggers Rest, Sunbury,
Tottenham.



Desmodium varians (Slender Tick-trefoil)

A small, semi-prostrate plant with Clover-like leaves in the local form, although variable. We have recorded it at "Eynesbury" (Exford), near Kororoit Creek on Clarkes Road, and at Taylors Lakes.

Desmodium varians

"Slender Tick-trefoil"

Recent records -
"Eynesbury",
Kororoit Creek (Clarkes Road),
Taylors Lakes



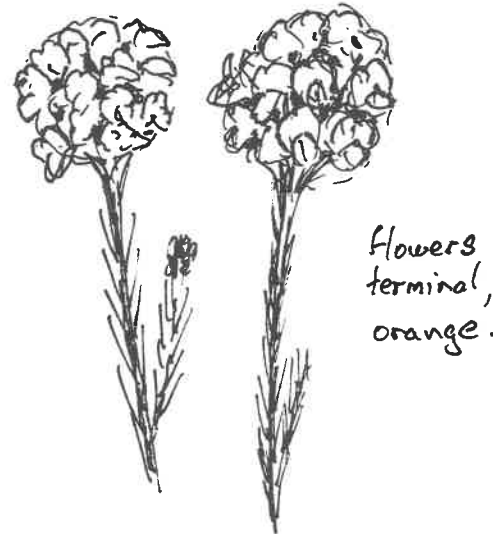
Dillwynia cinerascens (Grey Parrot-pea)

This little shrub deserves a better common name as, although the foliage and buds may be drab, the dense, orange-yellow flower heads are very attractive. It was once a common plant on the rail easement from Tottenham northward, and can still be found between Sydenham and Sunbury, also on the roadside north of Oaklands. It was recorded at Holden Reserve, but may have been destroyed by grazing. It can be propagated from seed or cuttings, but results of planting in the Park have been disappointing.

Dillwynia cinerascens

"Grey Parrot-pea"

Recent records - Tottenham, Sydenham, Diggers Rest, Holden Reserve, Sunbury, etc.



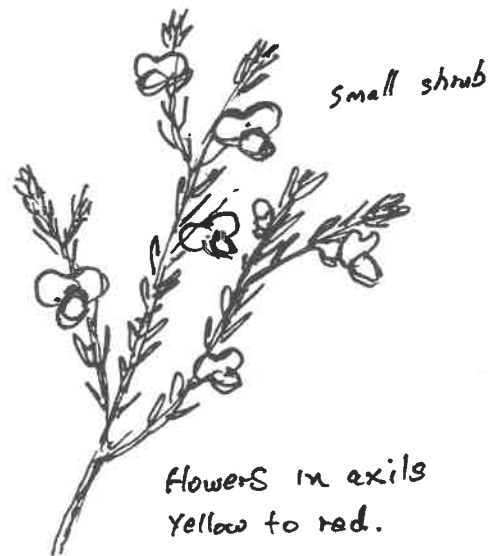
Flowers terminal, orange.

Dillwynia sericea

"Showy Parrot-pea"

"Braybrook" - Willis.

Recent records - nil.



Small shrub

Flowers in axils Yellow to red.

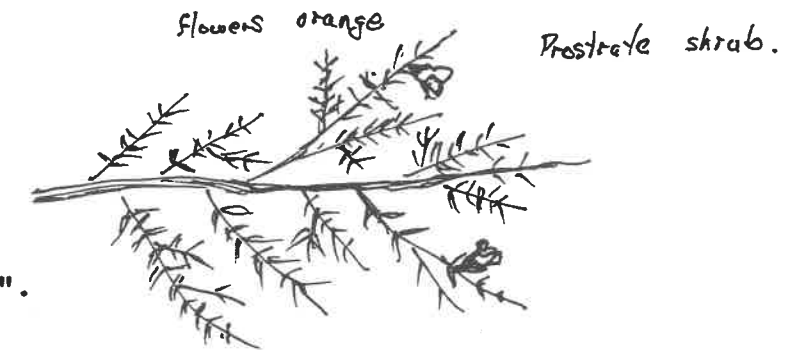
Eutaxia microphylla, var. microphylla

Recorded on the rail easement between Tottenham and Sydenham, now mostly destroyed, still surviving between Sydenham and Sunbury, on the roadside north of Wildwood (an upright form, all others being prostrate), and at Exford. Plants at Taylors Lakes may now be lost. This beautiful, orange-flowered mat plant is fairly easy to propagate from seed or cuttings, but we have not yet established any in the Park.

Eutaxia microphylla

"Eutaxia"

Recent records - Tottenham, Sydenham, Diggers Rest, Sunbury, Wildwood, "Eynesbury".



Flowers orange

Prostrate shrub.

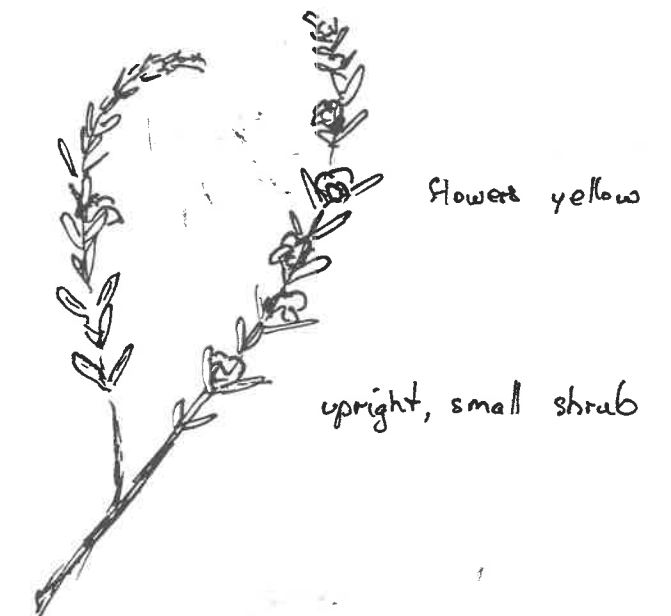
Eutaxia microphylla, var. diffusa

This upright shrub has only recently been separated botanically from Eutaxia microphylla. It occurs on private property at "Eynesbury", in Grey Box woodland. We have planted a few representatives in the Park, but the lack of near examples make this species unsuitable for broad-scale planting.

Eutaxia microphylla, var. diffusa

"Eutaxia"

A recently described variety found at "Eynesbury" and Djerriwarrah.



Flowers yellow

upright, small shrub

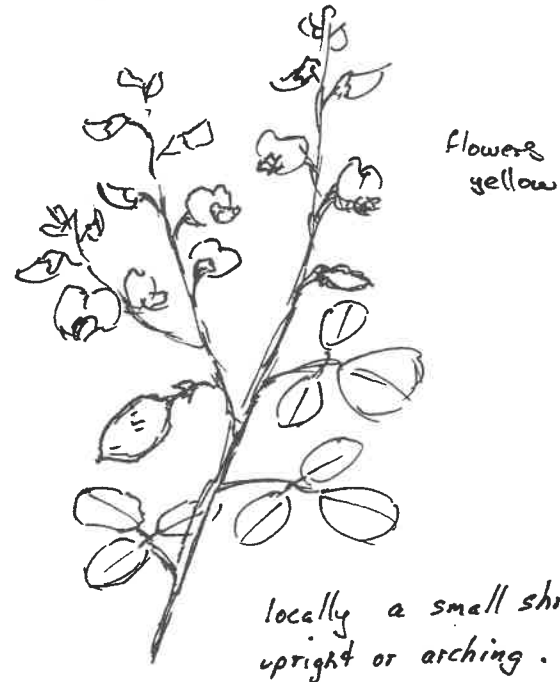
Goodia lotifolia (Golden-tip)

This yellow pea-flowered legume is typically a slender shrub of forest areas, but we have a few records from local areas. Seed was collected from the valleys of Deep Creek at Bulla, on sandstone with a southerly exposure. Single plants have since been recorded on the roadside north of Sunbury (sandstone), and on a hilltop beside Loemans Road, on the metamorphic zone between the granite and the sandstone. A few have been planted in the Park, but they tend to become twiggy and short-lived, so frequent replacement may be required.

Goodia lotifolia

"Golden-tip"

Recent records -
"Lochton" (Bulla),
Loemans Road,
Riddells Creek Road,
north of Sunbury.



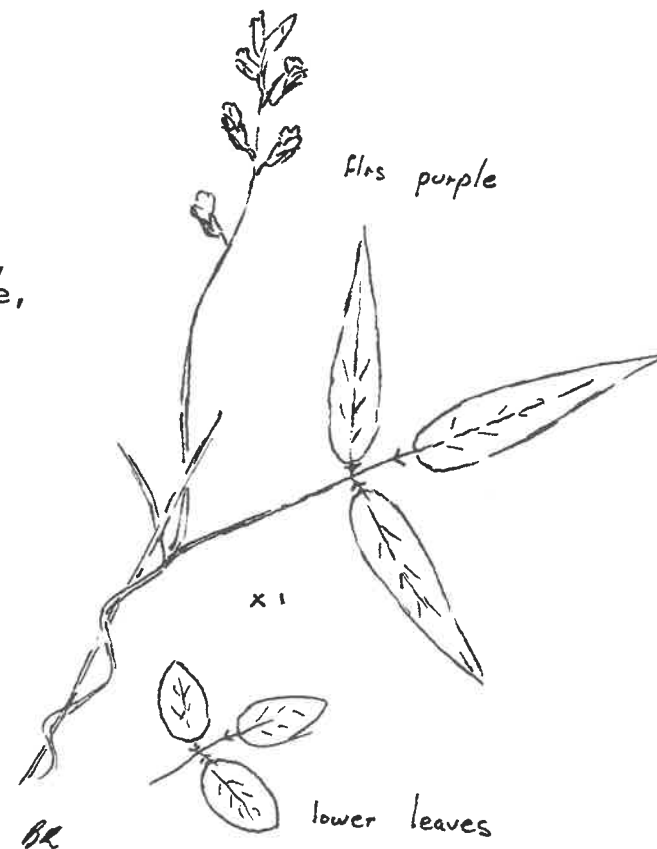
Glycine tabacina (Variable Glycine)

The common name reflects the wide range of leaf shapes. Often the lower leaves are round and the upper lance-shaped. The stems are twining and the purple to mauve flowers are widely spaced. We have recorded it at Tottenham, Diggers Rest, North Sunshine, Green Gully and Wildwood.

Glycine tabacina

"Variable glycine"

Recent records - Tottenham,
Green Gully, North Sunshine,
Wildwood, Diggers Rest.



Glycine clandestina

"Twining Glycine"

flowers
blue/mauve

Recent records - Inverleigh ?

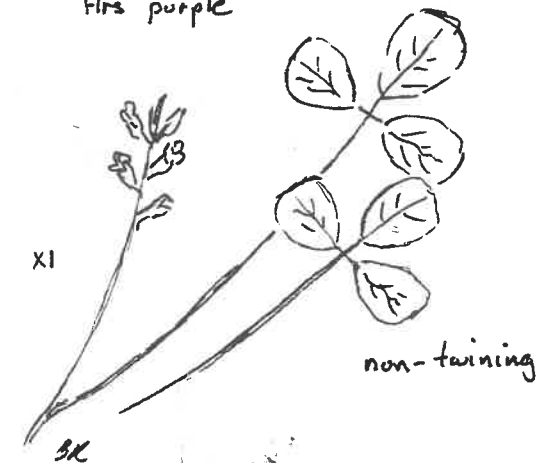


Glycine latrobeana

"Clover glycine"

flrs purple

Recent records - nil.



Hardenbergia violacea (Sarsparilla)

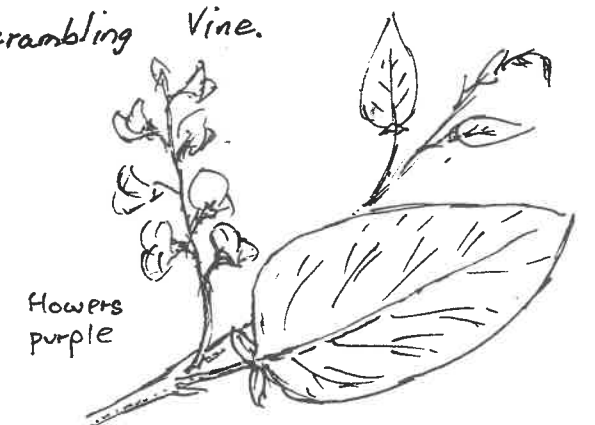
We have only one collecting site for this beautiful scrambling vine, on the rail easement between Diggers Rest and Sunbury. The soil is basically basalt, but appears to be rather gravelly. The few plants have been subject to frequent abuse by the Railways, and seed has not often been collected. Plants on the east side of the line are expected to be lost when a sewerage pipeline is installed.

Hardenbergia violacea

"Sarsparilla"

Scrambling Vine.

Recent records - Diggers Rest



Indigofera australis (Austral Indigo)

This delicate-looking shrub is widespread in Australia and is common in "foothill" forests. It is rare locally, being known from two sites on Deep Creek, on the sandstone with southerly exposure. It has also been recorded at "Eynesbury", growing in a lateral valley, just below the basalt cap, again with southerly exposure.

Indigofera australis

"Austral Indigo"

Recent records - airport and "Lochton" (Deep Creek), Eynesbury.



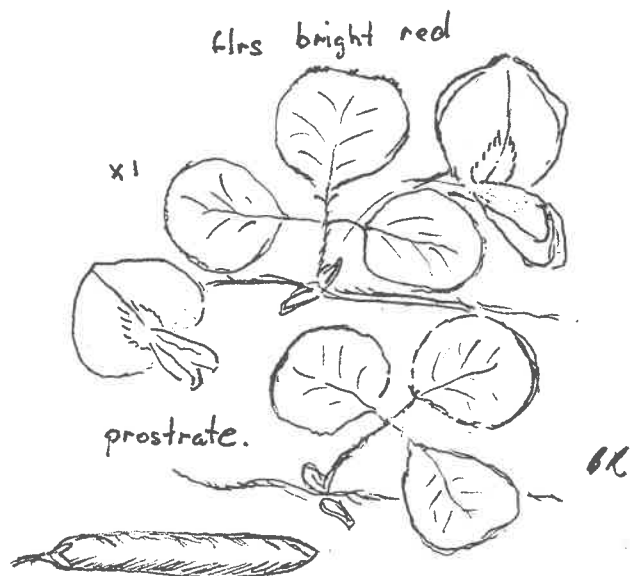
Kennedia prostrata (Running Postman)

Plants on the basalt at Tottenham have been destroyed, but there are still several sites available, on basalt, silcrete and sandstone. A site on the rail easement south of Diggers Rest is probably lost, but it can still be found on the line between Diggers Rest and Sunbury, including the Evans Street reserve, and beside the Calder Highway at Gap Hill.

Kennedia prostrata

"Running Postman"

Recent records - Tottenham, Diggers Rest, Sunbury, Gap Hill.

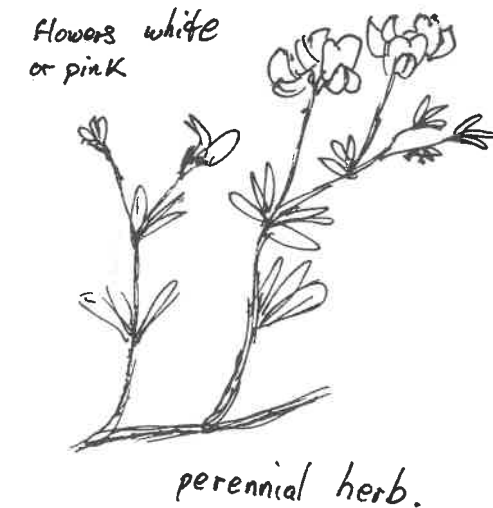


Lotus australis

"Austral trefoil"

"Rather uncommon" - Sutton.

Recent records - Manor.

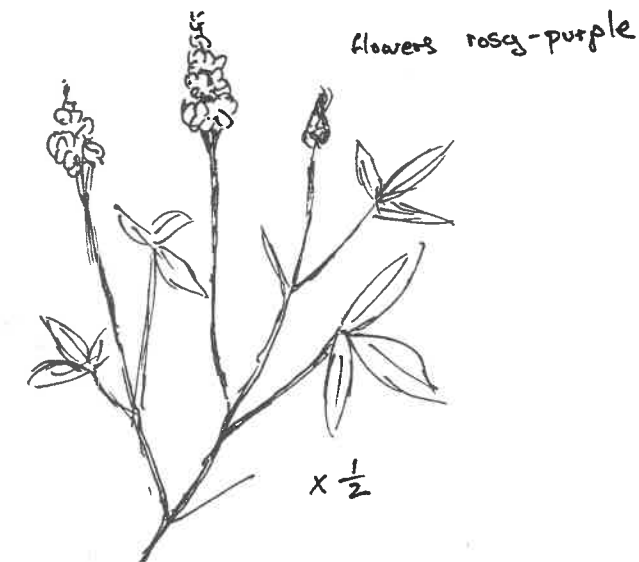


Psoralea adscendens

"Mountain Psoralea"

No early records.

Recent records - South Morang (Scarlett - pers. comm.)



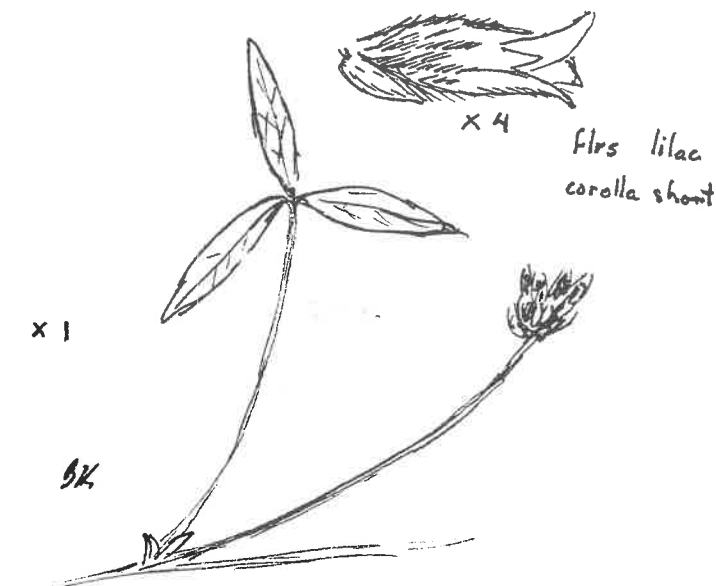
Psoralea parva (Small Psoralea)

This Psoralea is even more rare than P! tenax. There is a record for Taylors Lakes, not seen by F.O.O.P.s and N. Scarlett collected seed on the rail easement near Manor. The leaflets are in threes.

Psoralea parva

"Small Psoralea"

Recent records - Inverleigh, Taylors Lakes, Manor



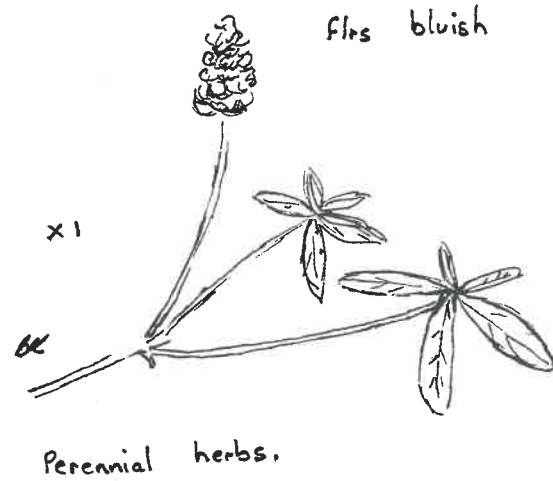
Psoralea tenax (Tough psoralea)

Another small pea becoming rare throughout its range, we have recorded it at Tottenham and Sydenham (including Taylors Lakes). There are normally five uneven-sized leaflets and bluish flower heads which produce small, black seed. In the 1980s there was some success in planting this species in the Park, where it has been flowering and setting seed.

Psoralea tenax

"Tough Psoralea"

Recent records - Tottenham, Sydenham

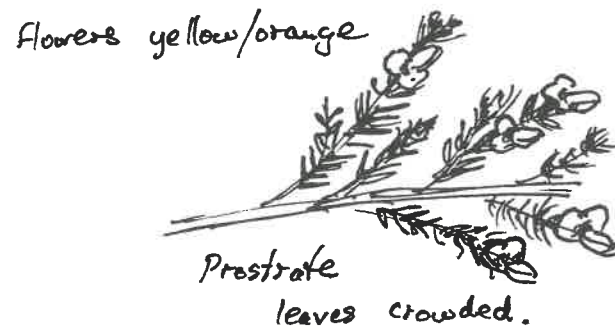


Pultenaea pedunculata

"Matted Bush-pea"

No early records.

Recent records - Clarkefield

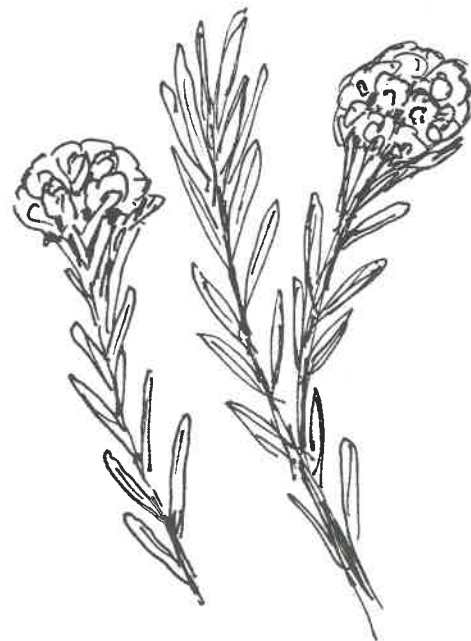


^{SMILLA}
Pultenaea paleacea

"Chaffy Bush-pea"

No early records.

Recent records - Clarkefield



Templetonia stenophylla (Leafy Templetonia)

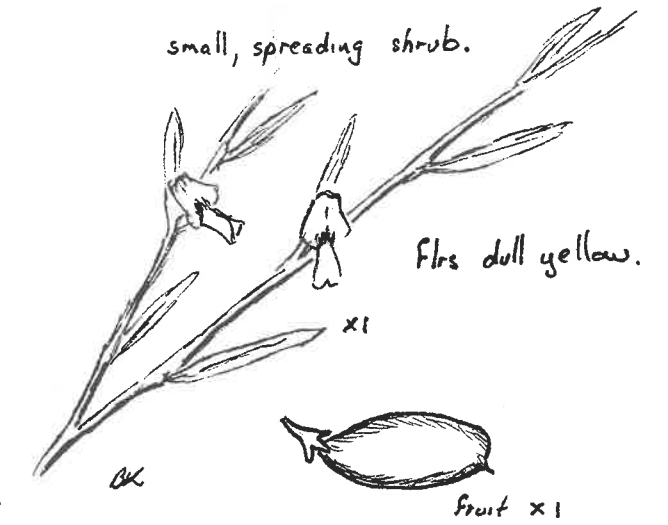
Until found recently at "Eynesbury", this lax-stemmed and easily overlooked little shrub was apparently not recorded on the basalt plains since Bentham's Flora of 1878 (at "Milton"). It grows easily from seed and we have planted several in the Park, with some success. The species is believed extinct in S.A., becoming rare in Victoria and uncommon in N.S.W. There are few in reserves.

Templetonia stenophylla

"Leafy Templetonia"

Record in Bentham (1878) - "Milton"

Recent records - Eynesbury (south of Melton)



Viminaria juncea (Golden Spray)

This is a tall, broom-like shrub of swampy places. The only plant we ever found was a single specimen which appeared on an island in Jacksons Creek at the Park. This has since died, but we collected a quantity of seed and there are now numerous plants along the creek, producing a bright yellow display when in flower.

Viminaria juncea

"Golden spray"

Recorded by Sutton (1916), but not by Willis.

Recent records - on an island in Jacksons Creek at Organ Pipes.



Geraniaceae family (Geraniums)

Erodium crinitum

"Blue Heron's-bill"

An annual

Recent records - Tottenham, Deer Park, Sydenham, Diggers Rest, Sunbury, Bulla, Organ Pipes.

Annual flowers blue



Geranium retrorsum

"Crane's-bill"

Recent records - widespread on rail easement remnants, Organ Pipes near Creek.

Perennial

flowers pink



Pelargonium australe

"Austral Stork's-bill"

Recent records - Organ Pipes, Airport (Deep Creek)

flowers pink with red lines

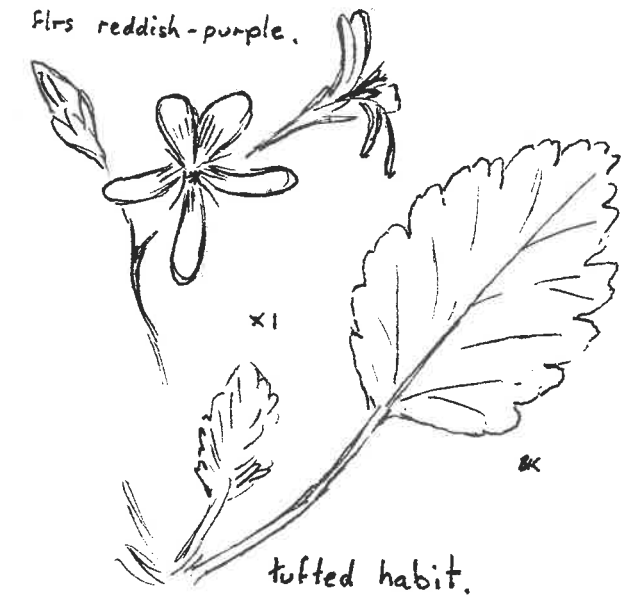


Pelargonium rodneyanum

"Magenta Storks-bill"

Recent records - Rockbank, Diggers Rest, Sunbury.

flrs reddish-purple.



Oxalis species

"Wood-sorrel"

The exotic *O. corniculata* is widespread, but several native species have been recognised recently.

O. perennans may be present on the Keilor Plains.

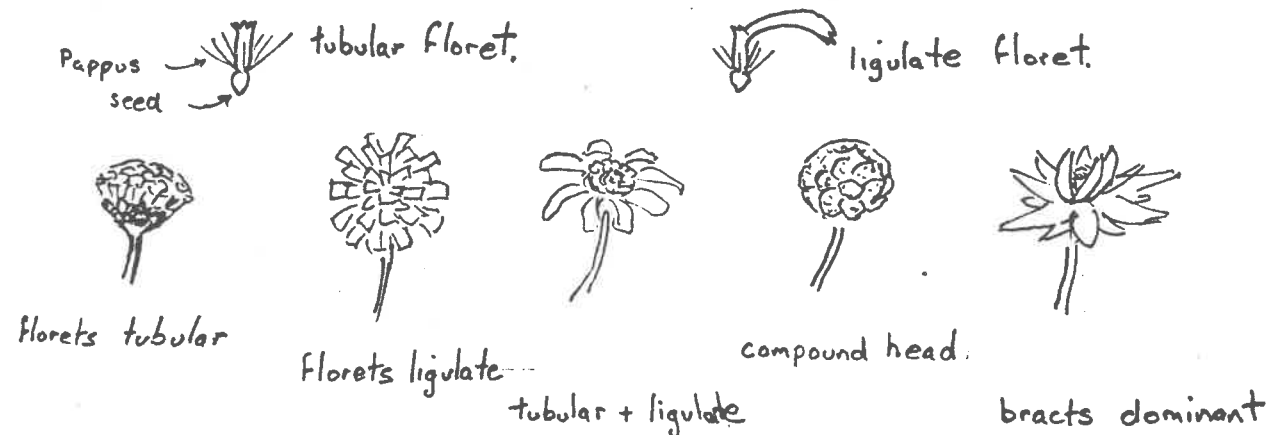
flrs yellow



Asteraceae family (Daisies)

This very large family, formerly known as Compositae, is found throughout the world, except Antarctica. It is most prominent in grassland, semi-desert and alpine areas. There are a few woody species, but the majority are herbaceous.

The most important feature of the family is the arrangement of a number of small flowers called FLORETS on a common receptacle, to form a head which may resemble, and often acts like, a single flower. Individual florets may be bisexual, unisexual or sterile and usually consist of a corolla tube, five stamens joined by their anthers, a bifid style and an inferior ovary with a single ovule (and hence only one seed). The calyx is represented by a structure called a PAPPUS, which may consist of bristles, scales etc., and often acts as a "parachute" for seed dispersal. The florets may be simply tubular, with 5 small lobes, or they may have a strap-like appendage called a ligule. A flower head may consist of one type, or both together. Arranged around each head are a series of modified leaves called BRACTS, which may be insignificant, or large and colourful, resembling petals, but fairly rigid and persisting after the true flowers have gone to seed (as in the "Everlastings"). In some cases (e.g. Craspedia) the flower consists of a compound head of many small groups of florets, each surrounded by its own set of small bracts. As well as the "parachute" method, seed may be winged to aid dispersal, or hooked to catch the fur of passing animals. Some seed can germinate after passing through the digestive tract of grazing animals.



BRACHYSCOMES (sometimes spelt Brachycomes), daisies with soft ray florets, white in local species, and flat, ornamented seeds.

Brachyscome basaltica (Basalt Daisy) is a suckering plant of moist sites. The foliage and stems are slender and grass-like. It occurs at Taylors Lakes and 3LO and can be propagated from seed or root-suckers.

Brachyscome cardiocarpa (Swamp Daisy) has fleshy, basal leaves and large flowers, one per stem. It grows in a swamp near Gisborne (site of the old racecourse).

Brachyscome heterodonta is a herb which varies from two or three stems to multiple branches carrying dozens of flowers. The leaves are usually short and strap-like with lobed ends. It has been recorded on the Sunbury line from Tottenham northwards, some roadsides and amongst Grey Box at St. Mary's church site.

Calocephalus citreus (Lemon Beautyheads) A brightly-coloured, summer-flowering herb with oval, lemon-yellow flower heads on slim blue-green stems, with leaves appressed to the stems. Widely scattered on road-sides and rail, often on drier plains sites.

Calocephalus lacteus (Milky Beautyheads) Much less colourful than *C. citreus*; flowers creamy, plants suckering to form mats on wet sites. Recorded on Dalrymple Road near Sunbury, Riddells Creek and Point Cook.

B. basaltica



B. heterodonta



Calocephalus citreus



Calocephalus lacteus



CALOTIS (burr-daisies). Small herbs with soft (locally white) ray florets and spiny seed in "burrs" which persist for a year or more. All three local Calotis can be propagated from seed or from rooted runners.

Calotis anthemoides has deeply divided leaves and grows on wet sites in the Altona-Laverton-Lara area.

Calotis scapigera has tufts of lance-shaped leaves. Grows on moist sites and recorded at Taylors Lakes, 3LO and north of Sydenham station.

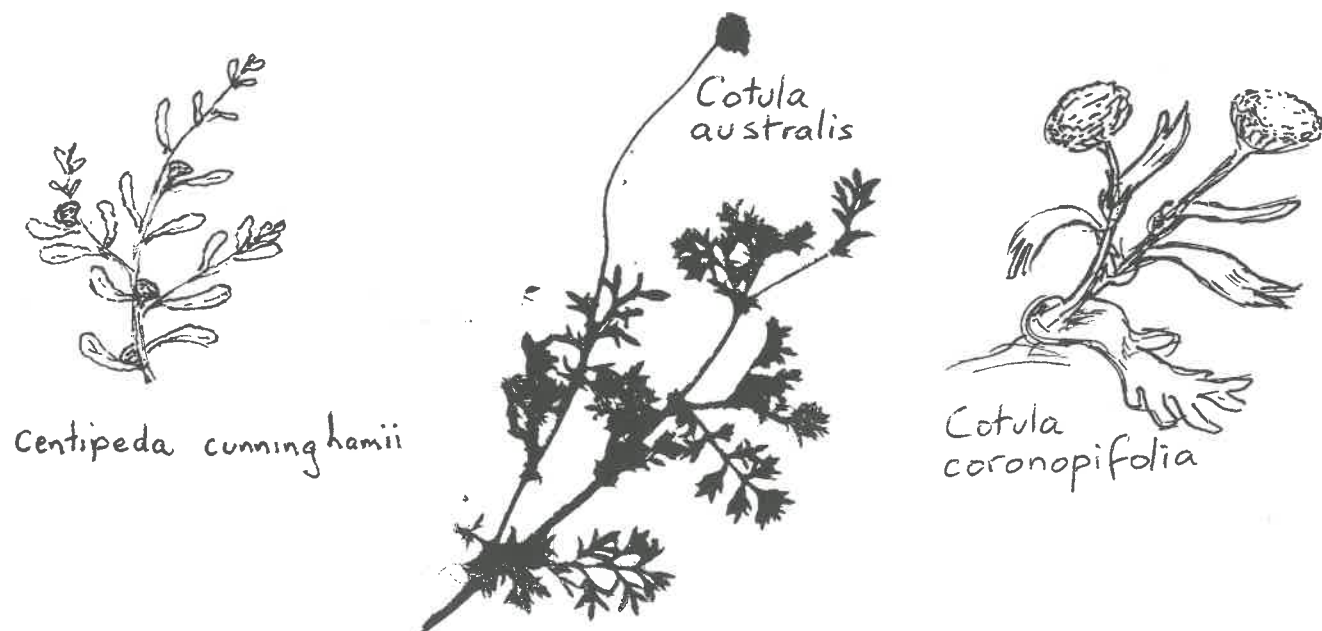
Calotis scabiosifolia grows at Tottenham and Sydenham but is now rare. The leaves are lobed and slightly rough.



Centipeda cunninghamii (Common Sneezeweed) A compact, rather fleshy herb of moist sites. Flowers and leaves dull green. Short-lived. Found at Taylors Lakes.

Cotula australis (Common Cotula) A little annual with small, dull flowers and finely divided leaves on lax stems. Recorded in the Park.

Cotula coronopifolia (now believed to be an early introduction). A plant of very wet sites, often in running water. The leaves are soft, broad, strap-shaped with divided tips. Stems fleshy, flowers tight buttons of tubular florets. Streams and water-courses including in the Park.



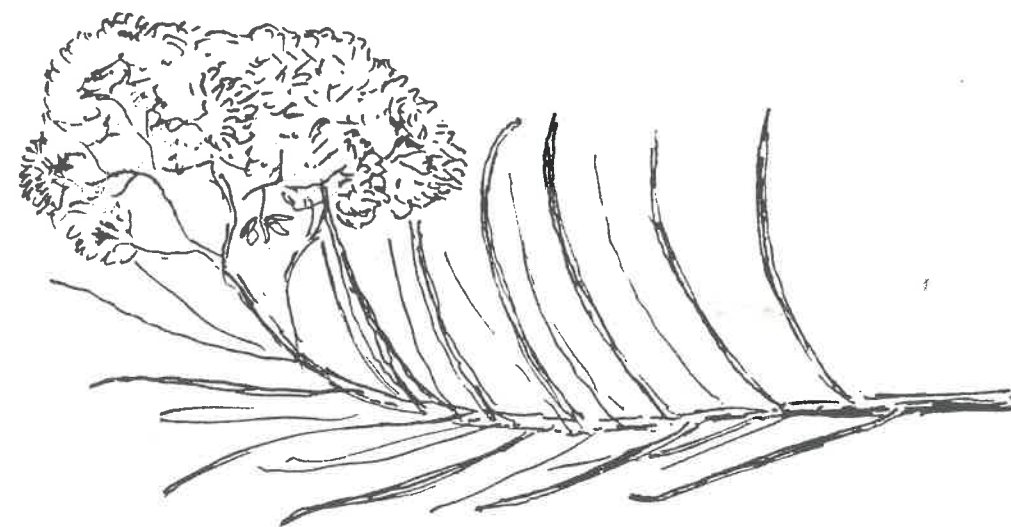
Cassinia arcuata (Chinese Scrub)

A smaller shrub than *C. longifolia* and easily distinguished by the very small leaves and bronze-coloured flower bracts. The flowers are borne on very fine stems and may cover upper parts of the shrub in weeping racemes. We have found it north of Wildwood, Clarkefield, near Keilor Cemetery and at Taylors Lakes, mostly on basalt soil, but on sandstone near Sunbury, with Yellow Box. It has a reputation as a pioneer species. We have transplanted and propagated it from cuttings, and it should grow easily from seed.



Cassinia longifolia (Long-leaf Cassinia)

This is a large shrub with rigid branches and long, narrow, aromatic leaves. The flowers are tiny, but aggregated into large heads and the white bracts persist for several months. We have recorded it in the valleys at Bulla, the airport and Holden Flora Reserve, on sandstone or metamorphic. It grows easily from seed and does best on a sheltered slope.



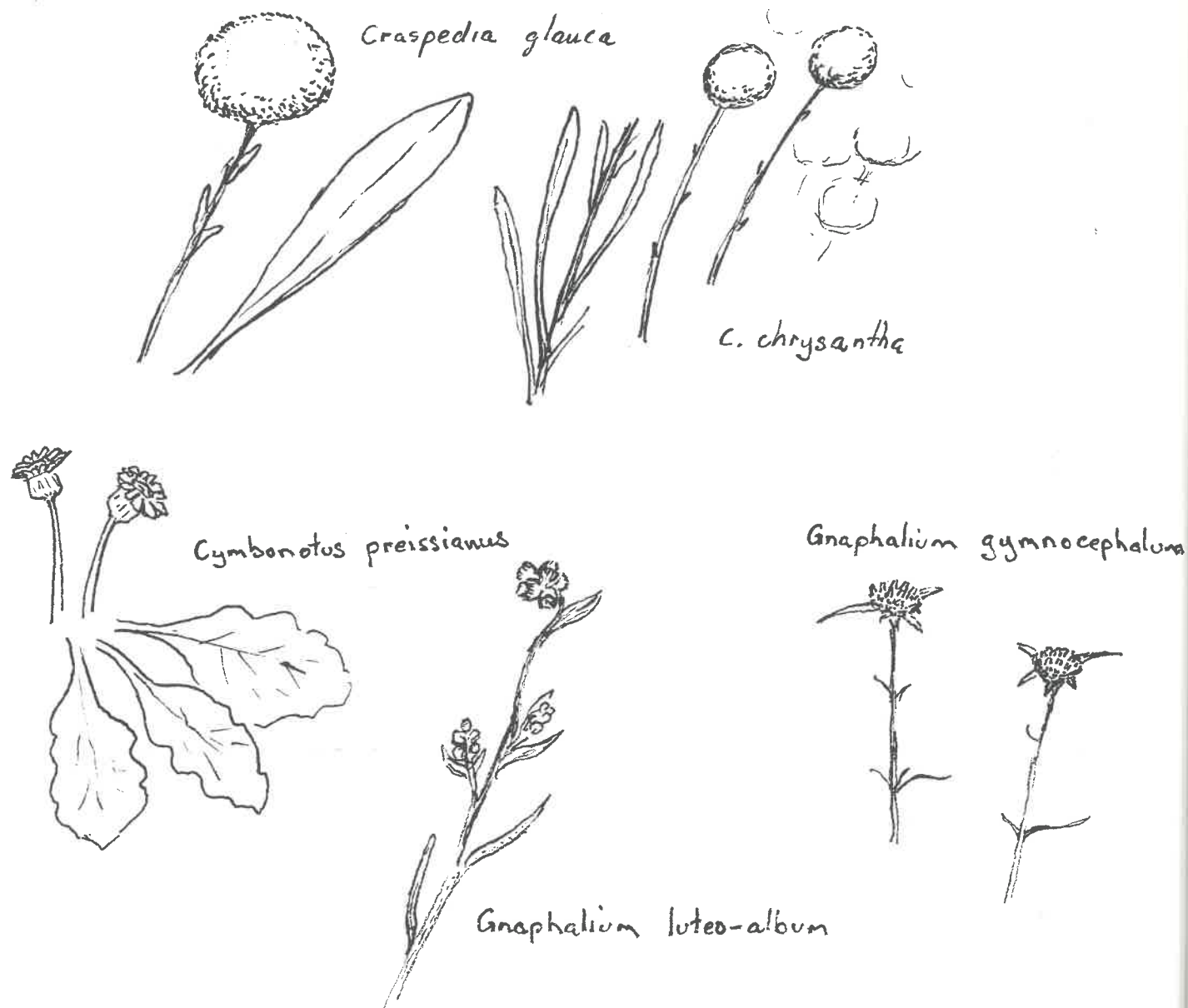
Craspedia chrysantha (Golden Billy Buttons) More shrubby than *C. glauca*, with multiple branches and smaller flower heads. Recorded at Laverton, St. Albans, Sydenham and North Sunshine, mainly on poorly drained sites.

Craspedia glauca (Common Billy Buttons) A variable species (possibly two) with large yellow compound flower heads and broad basal leaves. Recorded on most rail lines, but becoming rare. Tall form on swampy sites.

Cymbonotus preissianus (Austral Bear's Ear). Very broad, flat basal leaves, velvety, white underneath. A few short-stemmed flowers with short yellow rays. Still survives on the rail line between Riddells Creek and Clarkefield.

Gnaphalium gymnocephalum (Cudweed) An annual or short-lived perennial with a few slender stems and brownish compound flower heads backed by a few long green bracts. Recorded in the Park and at Sydenham.

Pseudo-gnaphalium luteo-album (Jersey Cudweed) An upright, annual herb, usually on moist sites; pale bronze flowers in small clusters on blue-green stems. Found on rail lines and road-sides and recorded in the Park, but susceptible to slashing.



HELICHRYSUMS (Everlastings)

It will not be possible to adequately illustrate all the plants in this group. They are, however, very important in the Plains flora and we need more in the Park. The characteristics of the pappus and the seed are often important in identification. Helichrysums usually have yellow tubular florets and prominent yellow or brown bracts.

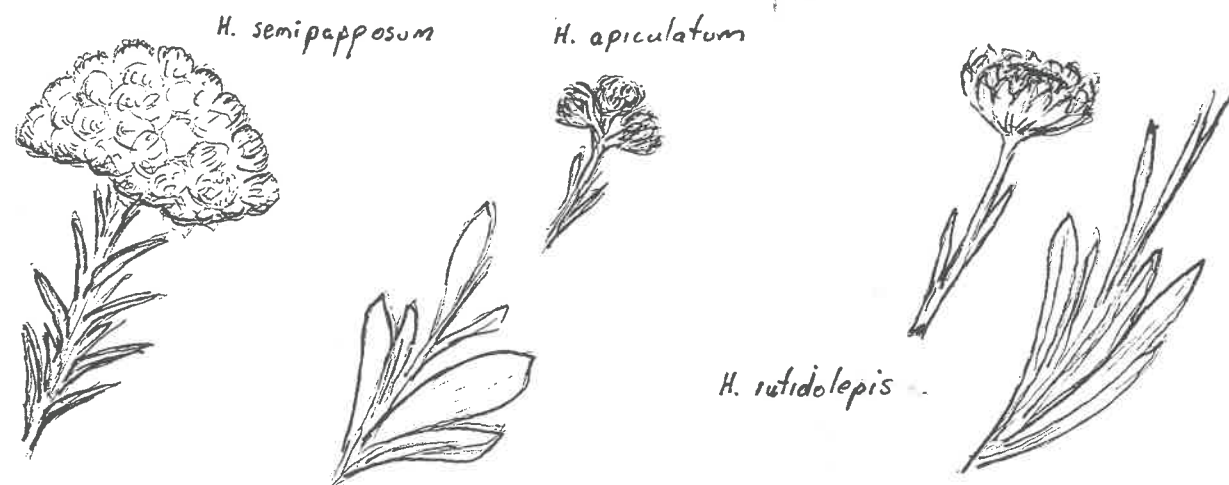
Chrysocephalum apiculatum (Helichrysum apiculatum) - Common Everlasting) was fairly widespread on the plains and is still seen at Diggers Rest and some other remnants. It is a small plant usually with a few curving stems and relatively large, blue-green leaves, and a larger-flowered form occurs on the line north of Clarkefield.

Chrysocephalum semipapposum (Helichrysum semipapposum) - Clustered Everlasting) is a highly variable, tall, multi-stemmed herb with showy clusters of golden flowers. The leaves are scattered along the stem and may be frosty blue or green. It was once common at Sydenham and still occurs on the Sunbury line from Diggers Rest northwards. At Holden Flora Reserve it extended into sheltered gullies.

Helichrysum rutidolepis (Pale Everlasting) prefers poorly drained sites on the plains and can be found at Taylors Lakes, 3LO Sanctuary, the Bulla-Sunbury Road and was recorded at the airport. The single flowers are borne on short stems and the plant suckers to form dense groups.

Helichrysum species aff. accuminatum is a brilliant everlasting, rare and unnamed, which occurs at Gisborne in a swamp on the edge of the basalt. (*Xerachrysum palustre?*)

Ozothamnus obcordatus (Helichrysum obcordatum) - Grey Everlasting) is an upright shrub recorded on a quartzite ridge opposite Holden Flora Reserve. It could not be found on a later visit and two propagated for the Park did not survive.



Isoetopsis graminifolia (Grass Cushions)
 A tiny plant which looks like a grass tuft. The woolly flowers are almost hidden at the base of the leaves. Found at Sydenham sports ground, Sunbury and near Riddells Creek.

Isoetopsis graminifolia
 (Whole plant, with flowers)



Ixiolaena leptolepis (Stalked Plover Daisy)
 A small shrub of moist sites, becoming woody at the base. Bracts greenish with papery tips, florets tubular. Only recent record for L.C.C. Melbourne Study Area was on rail line between Sydenham and Calder raceway, possibly now destroyed.



Leptorhynchus panaetioides (Woolly Buttons)
 Rather rigid, branching, woolly stems, small woolly leaves. Recorded Deer Park and west of Laverton; now rare.



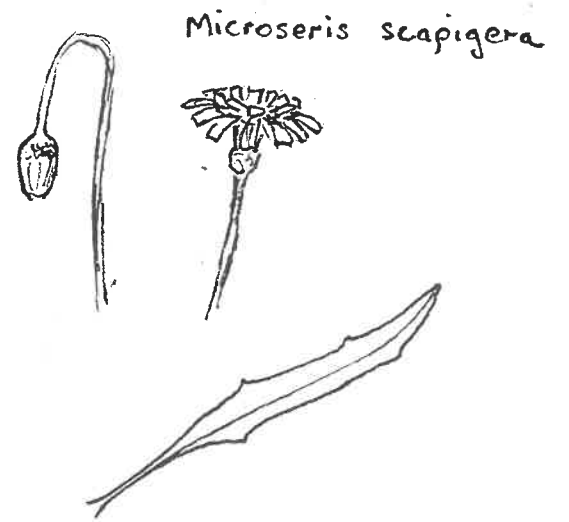
Leptorhynchus squamatus (Scaly Buttons)
 Lax, leafy stems; flowers have tubular florets and numerous small, woolly bracts with pointed tips. A small plant, usually on poorly drained sites and still found on rail easements, once widespread.



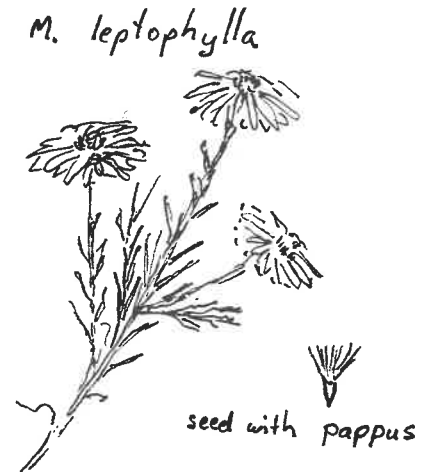
Leptorhynchus tenuifolius (Wiry Buttons)
 Long, slender stems, smaller flowers than *L. squamatus*, leaves longer. Rail easements north of Sunbury.



Microseris scapigera (syn. *M. lanceolata* - Yam Daisy)
 According to the literature, this attractive daisy was very widespread and common, but soon succumbed to stock and rabbits. It is now rare on the plains; recent records are from Tottenham, Laverton North and Riddells Creek-Clarkefield. It resembles the exotic Dandelion, but has fewer rays, buds which nod dramatically and narrower leaves with a few irregular lobes.

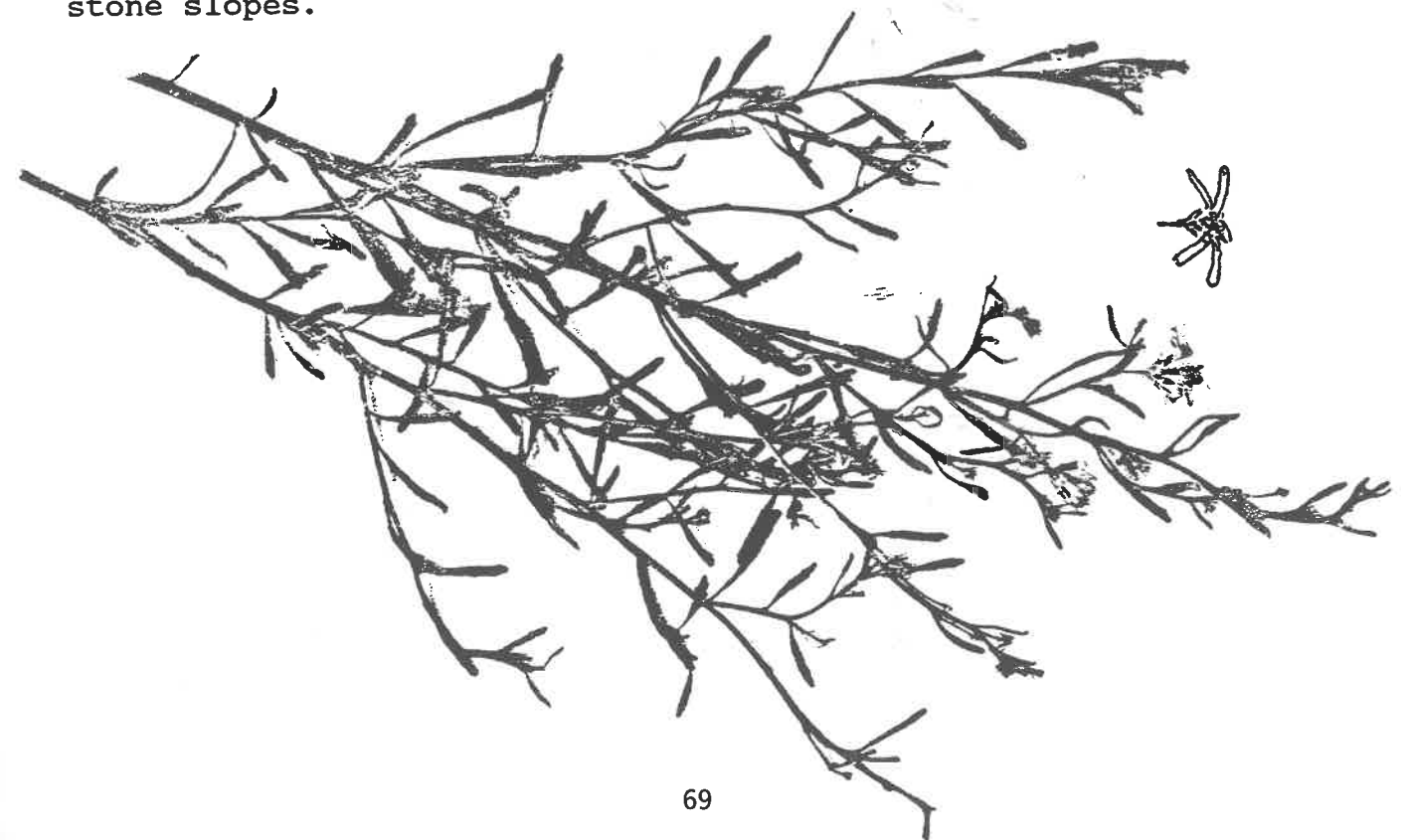


Minuria leptophylla (Minnie Daisy)
 is a small daisy with flowers which resemble *Brachycomes*, but can be recognised by the many small, fine leaves on the multiple branches. The ray-florets are white, but sometimes with a touch of purple. Recorded at St. Albans, North Sunshine, Taylors Lakes and Sydenham.



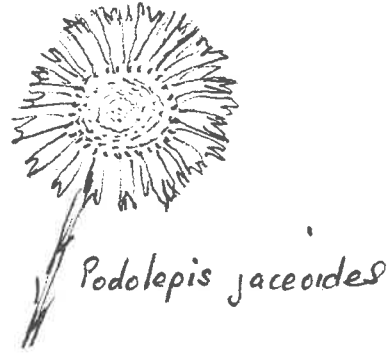
Olearia decurrens (Clammy Daisy-bush)

At Holden Flora Reserve, on dry sandstone, there is a shrub with a superficial resemblance to the Hop-bush, but in summer it produces "daisy" flowers with several soft ray-florets. This is one of the most rare plants south of Bendigo and is deserving of more attention. Propagation attempts have so far been unsuccessful. If used at the Park, it should be restricted to sunny sandstone slopes.



Podolepis jaceoides (Showy Podolepis)

A very showy plant with large yellow, long-stemmed flowers having many tubular florets and several rays with lobed tips. The foliage is a tuft of lance-shaped green leaves. Recorded between Tottenham, Deer Park, Sydenham and Sunbury (also on the rail line further north)



Podolepis jaceoides

Rhodanthe anthemoides (Helipterum anthemoides)

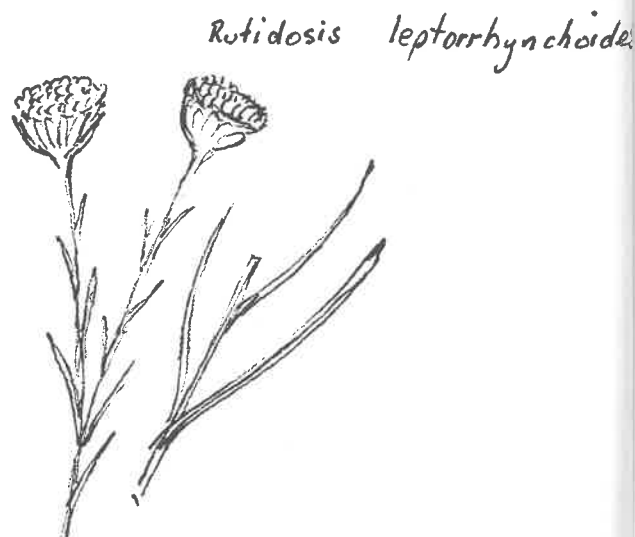
(Chamomile Sunray) Helipterums have florets all tubular, but the heads are surrounded by white, papery bracts which resemble ray-florets. The bracts persist for several months. *R. anthemoides* develops many stems with small, thin pale blue-green leaves. It survives on rocky ledges, particularly cool ones such as on Rosette Rock. We also recorded it near the airport, close to Sunbury and an interesting site for comparison near Mitchells Falls on the Campaspe. Lightwood Gully may be a good site for planting.



Helipterum anthemoides

Rutidosis leptorrhynchoides (Button Wrinklewort)

A rare and restricted plant of the plains. Has grassy green tufts of basal leaves and long stems with a few leaves and "buttons" of yellow tubular florets. Grows easily from seed. Recorded from Deer Park and St. Albans to north of Diggers Rest (probably gone) and from the Laverton-Geelong line and Truganina cemetery.



Rutidosis leptorrhynchoides

The Senecios (Fireweeds or Groundsels)

These are mainly herbaceous, annual or perennial, the latter sometimes developing a woody base. The florets may be tubular and almost hidden by green bracts ("phyllaries"), or have ray-florets.

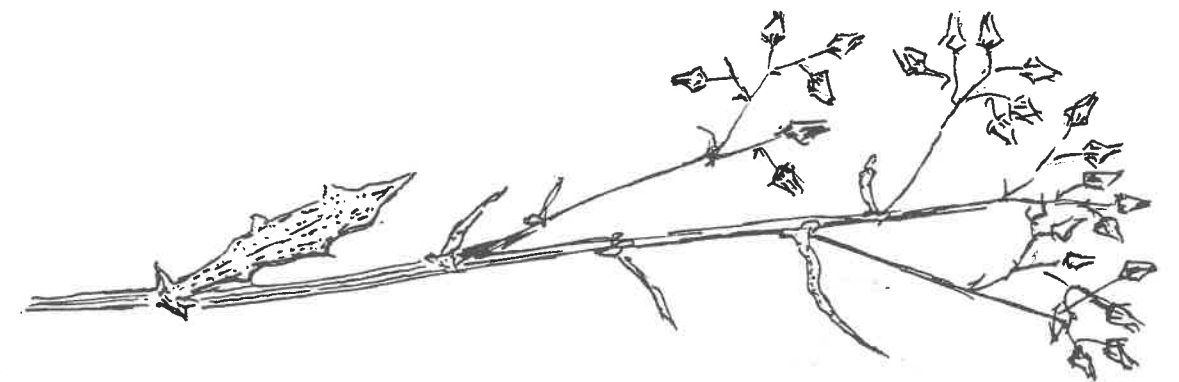
Senecio cunninghamii (Groundsel)

The only known survivor of this spreading shrub on the Keilor Plains is in the Park amongst basalt rocks near the power line. The foliage is blue-green and the florets are yellow. It appears to have suckered and has been grown from cuttings and planted in other similar parts of the Park.



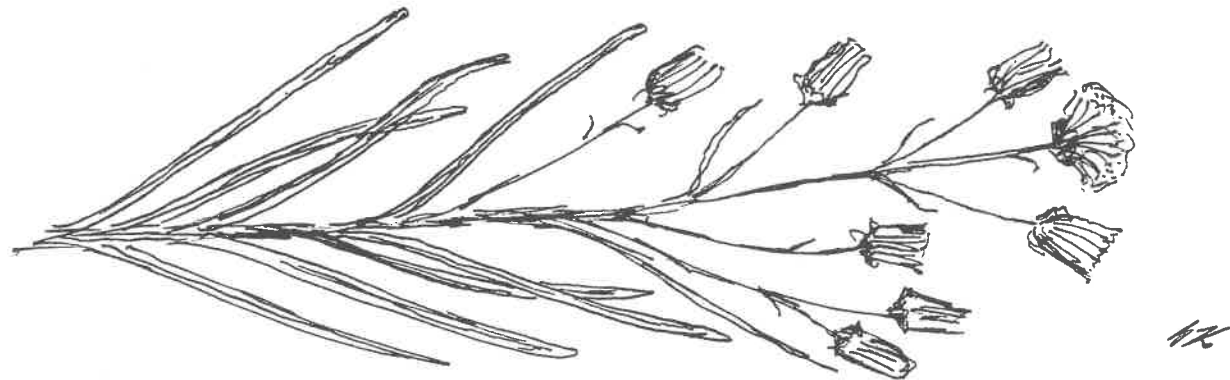
Senecio hispidulus var. dissectus (Hill Fireweed)

There are usually few stems to this Senecio, and it may grow as an annual. The foliage is rough to touch and the florets are all tubular. We have found it only at Holden Flora Reserve on dry slopes, and no seed has been collected.



Senecio macrocarpus (Groundsel)

This is a rare plant, recently "split" from *S. squarrosus*. It grows as a small, upright plant with multiple stems and long leaves. The florets are all tubular and the dense pappus is prominent as the seed ripens. We have found it on the rail line between Sydenham and Sunbury and a few have been grown from seed and planted in the Park. Grassland sites are most suitable.



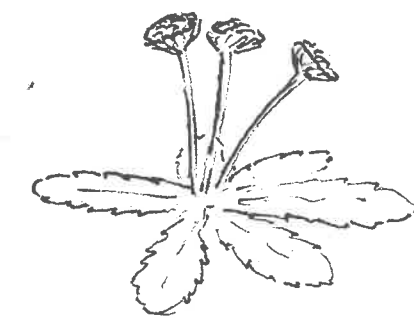
Senecio quadridentatus (Cotton Fireweed)

Cotton Fireweed survives in the Park in sheltered areas and occasionally can be found on grassland areas and other valley sites. It is a slender, delicate-looking, pale blue-green plant with a fine cottony covering. It can be grown from seed. There are a few tubular florets to each flower.



Solenogyne gunnii. A rather insignificant little plant with leaves resembling the common Flatweed. Small green flowers are borne on short stems. It has been found at Taylors Lakes, Sydenham and Sunbury.

Solenogyne gunnii



Vittadinias (New Holland Daisies). Herbs or small shrubs having narrow flowers with short mauve/purple rays. Still fairly common, but distribution of species uncertain due to being previously "lumped" as *V. triloba*.

Vittadinia cuneata (Common New Holland Daisy) usually has green leaves with broad, three-lobed tips. It can develop a woody stem and is found on valley slopes and on the plains. Plants with small, finely woolly blue leaves having few or no lobes may be *V. gracilis*; more study is needed.

Vittadinia cuneata



Vittadinia muelleri (Narrow-leaf New Holland Daisy) is small, herbaceous, with soft, multi-lobed leaves. It has been found at Taylors Lakes and Sunbury. (Also a patch of basalt grassland at Woodend).

V. muelleri



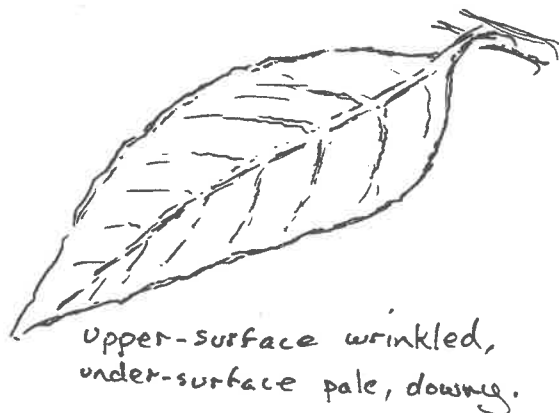
This concludes the notes on the daisy family. About 24 species not mentioned have in the past been recorded on the Keilor Plains.

Rhamnaceae family

Cryptandra amara (Bitter Cryptandra) is a small, twiggy shrub found only at Diggers Rest, on the rail line south of Watsons Road. This is a very different plant from the ones in the Macedon Range. It bears many small white flowers and has been grown from cuttings, but not successfully planted out.



Pomaderris aspera (Hazel Pomaderris) was recorded on Deep Creek in about 1973; a shrubby plant near Emu Creek, but was not found on a subsequent visit. It is a common plant in mountain gullies.



Solanaceae family (Potato)

Nicotiana suaveolens (Austral Tobacco) is a short-lived plant of dry slopes. It has creamy white flowers on long stems, opening progressively so a small amount of seed can be collected over several weeks. A survivor at the Park and in other valleys.



Solanum laciniatum (Large Kangaroo Apple) is a rounded shrub with large, soft leaves and thick stems. The flowers are purple and the fruit turns orange. It is short-lived but grows easily from seed and seedlings frequently appear in the Park, on a variety of sites. Best development is in sheltered situations. It was a survivor in the Park and has also been planted.



Thymelaeaceae family (Daphne)

Pimeleas (Rice-flowers). On the plains, these are mostly small semi-shrubs, an important part of the grassland flora. They are rather difficult to grow from cuttings (except *P. linifolia*), even harder from seed, and have a long tap-root which inhibits attempts to transplant.

Pimelea curviflora (Curved Rice-flower) is usually tufted, with short, upright stems, leaves finely hairy and curved, soft-yellow flowers. It is not as showy as the following species and has been recorded on most rail sites and some roadsides.

Pimelea glauca (Smooth Rice-flower) is found on many Themeda grassland remnants, including the rail line from Tottenham to Sunbury. The showy white flowers are borne on multi-branched stems which turn glossy brown.

Pimelea humilis (Small Rice-flower) is shorter, with fewer, often spreading stems, broader leaves and white flower heads on short, finely hairy stems. Recorded from Tottenham, Diggers Rest to Sunbury and Toolern Vale.

Pimelea linifolia (Slender Rice-flower) is so far only recorded on the granite at Bulla, as an upright shrub to about one metre. It is a different form from that found in the forests of the divide, and a few have been propagated for the Park to preserve the local genes.

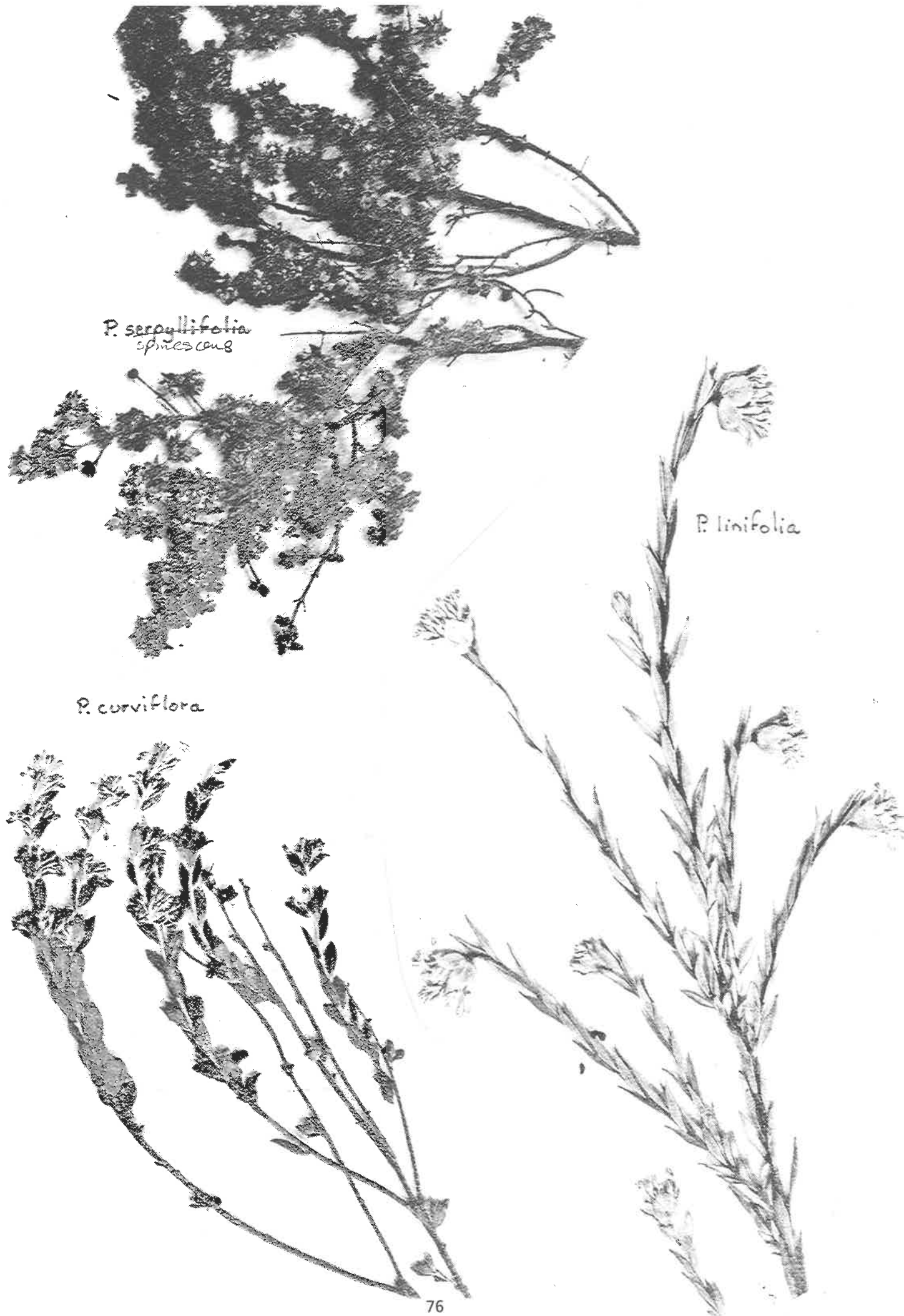
Pimelea spinescens (formerly P. serpyllifolia) (Rice-flower) is semi-prostrate, intricately branched and bearing small yellow flowers. We have records from the rail line between Tottenham and Diggers Rest, and Taylors Lakes.



Polygonaceae family (Dock)

Muehlenbeckia cunninghamii (Tangled Lignum)
(*Muehlenbeckia florulenta*)

There were once many swampy tracts on the Keilor Plains, and Lignum was the most prominent plant, but most of these areas are now drained and the Lignum destroyed. It also sometimes occurred near streams, e.g. Kororoit Creek, and still survives at Brimbank Park. A rather formless, intricately branched and wiry shrub with small cream and brown flowers, it can be grown from root cuttings and should be tried in Column Gully.



Persicaria decipiens
(formerly *Polygonum minor*)

"Slender Knotweed"

Flower spikes much shorter than
Persicaria hydropiper, and more dense.

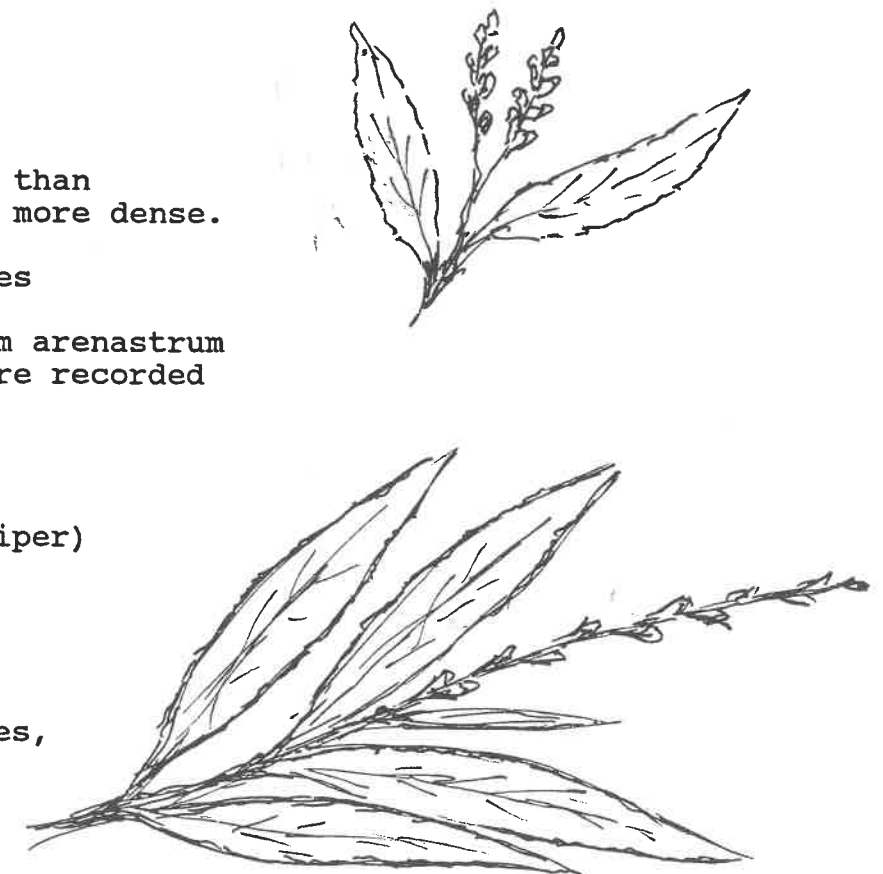
Recent records - Organ Pipes

Note: The exotic *Polygonum arenastrum*
and *Polygonum persicaria* are recorded
for Taylors Lakes.

Persicaria hydropiper
(formerly *Polygonum hydropiper*)
"Water-pepper"

At the edge of streams.
Leaves have peppery taste.

Recent records - Organ Pipes,
eep Creek



Persicaria prostrata
 (formerly *Polygonum prostratum*)
 "Creeping Knotweed"

Usually prostrate, stems hairy,
 wet sites.

Recent records - Organ Pipes,
 Taylors Lakes, near Calder Raceway

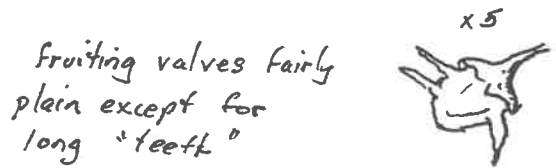


Rumex bidens

"Mud Dock"

Water plant with hollow,
 inflated stems.

Recent records - Organ Pipes
 in Jacksons Creek).

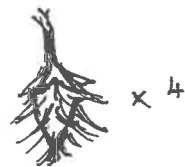


Rumex brownii

"Slender Dock"

Recent records - Organ Pipes,
 Taylors Lakes.

Note: There are several exotic
 "Docks" in the area.



Rumex dumosus

"Wiry Dock"

Scattered on grassland.

Recent records - Sunbury
 reserve, Riddells Creek
 rail, Taylors Lakes.



Malvaceae family (Mallow)

Gynatrix pulchella (Hemp Bush)

This is a gully shrub, usually near
 water, and has been found right at the
 Taylors Creek outlet. Male and female
 flowers are on different plants, but
 some seed has been found and a lot
 planted along the creek in the Park,
 most of which are doing okay.



Lavatera plebeia (Australian Hollyhock)

We had a single record beside the Creek
 in the early days, just after grazing
 stopped, but it disappeared. One was
 found on Rosette Rock and others at
 Brimbank near the junction of Taylors
 Creek and the river. Ten seedlings
 were planted at Rosette Rock and seven
 are surviving, four doing well.
 This tends to be a short-lived plant,
 so may need regular re-stocking.



Lobeliaceae family (Lobelia)

Pratia concolor (Poison Pratia)

This is a pretty little prostrate plant
 found on soggy areas of the plains, but
 now hard to find. A few have been estab-
 lished on Rubble Flat and in Column Gully.
 A related plant, *Lobelia pratioides*, may
 still be present on or near the 3LO
 "Sanctuary". It is a weaker plant with
 less pronounced teeth on the leaves and
 blue flowers.



B. Kemp April 90

Chenopodiaceae family (Saltbushes)

Plants of the family Chenopodiaceae are known as Saltbushes because many of them favour saline areas, both on the coast and inland. They are not restricted to such areas and they are believed to have been common on the Keilor Plains.

There is no simple way to recognise Saltbushes, as they come in many forms, but they are usually small shrubs, they often have fleshy, cylindrical or spade-shaped leaves and many have a waxy finish. The flowers are inconspicuous and the fruit is often a colourful, small berry. Several species survived in the Park, others have been planted and there is a lot of regeneration. Eight species can now be found in the Park; probably only 2 or 3 others are likely to have been found here.

There are also 2 or 3 exotic Saltbushes in the Park. *Salsola kali*, a rather prickly annual, was noticed a few years ago growing in cleared areas where it was being treated as a weed. Although found almost worldwide, it has until recently been regarded as a native species. It was named by Linnaeus in 1753 and seems to have been first collected in Australia in 1802. Australian material has been given several names, but subsequently these were abandoned and all regarded as *S. kali*. Overseas botanists studying *Salsola* and its spread have now concluded that *S. kali* was introduced to Australia, where it is now found in all mainland states and territories, and this view is accepted in "Flora of Australia", vol. 4, 1984.

The native species now found in the Park are as follows (note that there have been several name changes and the formerly used name is bracketed)

Atriplex semibaccata, "Berry Saltbush". A mat-forming shrub with small, pale green leaves on slender stems. Berries pale orange-brown, flattened and diamond-shaped. Believed to have been a survivor, but several have been planted and new seedlings are appearing.

Chenopodium desertorum* subspecies *microphyllum (*C. pseudomicrophyllum*). "Small-leaf goosefoot". An enormous name for a very small shrub with elliptical, pale green leaves. An uncommon survivor.

Chenopodium pumilio, "Rough-leaved Goosefoot". A small, prostrate annual with lobed, dull green leaves 5 to 15 mm. long. Appears in various parts of the Park.

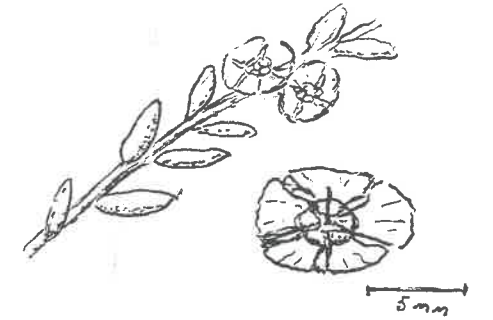
Einadia nutans (*Rhagodia nutans*), "Nodding Saltbush". Soft green, slender, nodding foliage. Leaves small and spear-shaped, berries bright red. A few survivors in protected places.

Einadia hastata (*Rhagodia hastata*), "Saloop". A small, spreading shrub with spade-shaped leaves and reddish, rigid branches. Re-introduced and uncommon.

Enchylaena tomentosa, "Barrier Saltbush". A mat-forming shrub with bright green, fleshy cylindrical leaves and yellow berries. There is also a more upright form with paler leaves and red berries. Both forms are now in the Park.

fleshy

Maireana brevifolia This has been found at Brimbank Park, on the dry slopes west of the river. It is a low shrub with small, succulent leaves and is one of a group of plants called Bluebushes and previously placed in the genus *Kochia*. The fruit is winged.



Maireana decalvans, (*Kochia villosa*) "Black Cottonbush". A small upright shrub with dark, bluish, cylindrical leaves and winged fruit. A few have been established in the Park.

Maireana enchylaenoides, (*Enchylaena villosa*, *Kochia crassiloba*) "Wingless Bluebush". A tiny shrub, usually less than 15 cm. across, with dull, slightly hairy, semi-cylindrical leaves on lax stems. Has been noted in several widely separated areas of the Park.

Maireana pentagona (Slender Bluebush) In 1983 a tiny Saltbush was found on a semi-natural roadside between Sunbury and Bulla. It proved to be *M. pentagona*, apparently the first record south of the Divide.

Rhagodia parabolica "Fragrant Saltbush". A woody shrub to 1 metre high, often spreading to about 3 metres wide; pale waxy green leaves and maroon fruit. Re-introduced to a number of areas, where it is conspicuous.

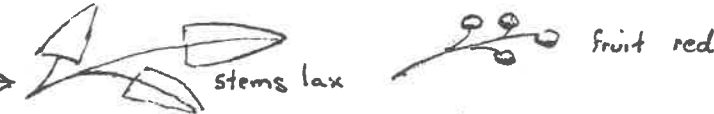
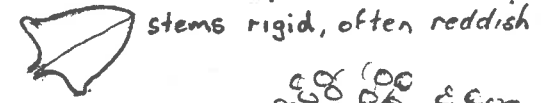
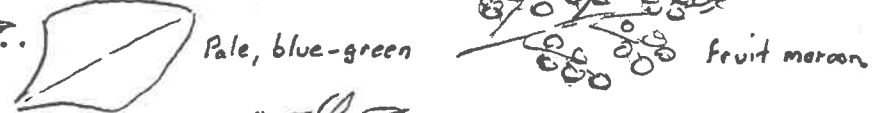


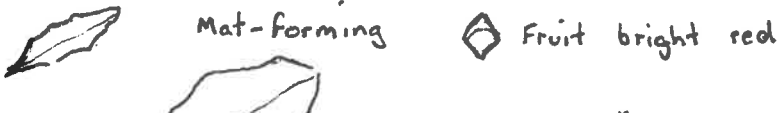

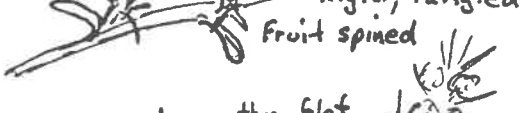

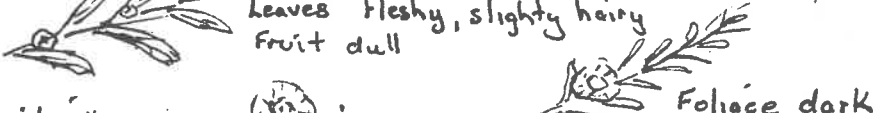


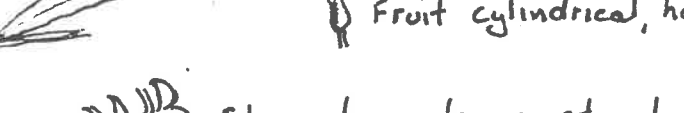
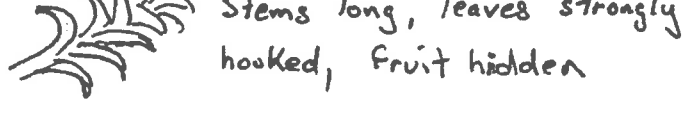

Sclerolaena muricata (*Bassia quinquecuspidata*), "Five-spined Bassia". This is the most important omission from this list, which can still be found on roadsides in the district, but we have not yet re-introduced it to the Park. It is a pale green shrub with tangled, wiry branches and spiny fruit.

Threlkeldia diffusa (Coast Bonefruit). In the spring of 1986, another small Saltbush was found, this time beside the Calder Highway at Sydenham. As the name suggests, it is mainly a coastal plant. It was included in Sutton's list of Keilor Plains Flora, but "pruned" from the list by Willis.

^{misplaced para}
Both of these plants are puzzles. Are they surviving original populations, simply overlooked by botanists for 160 years (only a small proportion of the Keilor Plains can ever have been looked at in detail), or are the Bluebushes descended from seed encased in mud shaken from dray wheels last century, and the Bonefruit the result of moving an S.F.C. auger from Anglesea or Mornington to the power line by the Calder? We shall probably never know the answer, but in the meantime, the Sunbury site is being mown and graded, and the Sydenham site is unlikely to survive highway duplication.

While we ponder over their past, we must attempt to propagate from these two small populations. They may be gone next week.

Leaves and fruit of local saltbushes are illustrated below, including some not mentioned on the previous pages.

- Einadia nutans..... →  stems lax fruit red
- Einadia hastata..... →  stems rigid, often reddish
- Rhagodia parabolica..... →  Pale, blue-green fruit maroon
- Chenopodium desertorum..... →  Frosty green
- Chenopodium pumilio..... →  Prostrate, fruit dull
- Atriplex semibaccata..... →  Mat-forming Fruit bright red
- Atriplex suberecta..... →  Fruit pale brown
- (Spreading shrub in gully on "Council land"), possibly destroyed
- Sclerolaena muricata..... →  Rigid, tangled Fruit spined
- Maireana pentagona..... →  leaves thin, flat Fruit woolly
- (very small, known only on Bulla-Sunbury Road)
- Maireana enchylaenoides... →  leaves fleshy, slightly hairy Fruit dull Foliage dark
- Fruit with papery wing.
- Maireana decalvans... →  leaves cylindrical Fruit yellow or red
- Enchylaena tomentosa.... →  Fruit cylindrical, hard
- Threlkeldia diffusa.... →  Fruit cylindrical, hard
- (known only on Calder Highway near Keilor Golf Course)
- Salsola kali.... →  Stems long, leaves strongly hooked, Fruit hidden
- (an exotic annual)
- Chenopodium murale..... →  flowers reddish
- (a widespread exotic)
- Stems reddish, often erect

Loranthaceae family (Mistletoes)

Mistletoes are a large group of plants which have long been accompanied by superstition and myth. Horticulturalists often regard them with distaste, treating them as some sort of plague, to be eradicated at all cost, but to the naturalist they are an interesting and beautiful part of the bushland flora. There are about 70 species in Australia, some very specific in their selection of hosts (e.g. Casuarinas only), while others will even attach themselves to other Mistletoes! The Mistletoe Bird, which eats the fruit and seems to be the main means of propagation, is not the only bird attracted to Mistletoes. Honeyeaters feed on the nectar and no doubt cross-pollinate flowers, while some birds nest in the foliage. I suspect other birds are involved in seed dispersal, but neither Mistletoe nor Mistletoe Bird appear in Tasmania.

The fruit consists of a leathery capsule which does not contain a seed; the embryo is embedded in a sticky substance which clings to the bark while the seedling develops. If conditions are right, a disc begins to grow under the bark, through which water and nutrients are absorbed from the host to allow the Mistletoe to grow. The branch beyond the point of attachment may eventually die, but loss of the tree is unusual. In 1983, Mistletoes survived the fires in the Macedon Range, although visible recovery took a considerable time. (Naturally, if the branch was destroyed, the Mistletoe could not survive).

We first found Mistletoes growing at the Organ Pipes in 1991, and at least two species can be found not far away. The most common is Muellerina eucalyptoides (Creeping Mistletoe), which can be found on Grey Box stands in the Airport/Gellibrand Hill area, and on Redgum near Keilor. It is also growing on a Redgum in Column Gully in the Park. Amyema miquellii (Box Mistletoe) occurs sparsely on the Grey Box. Both species are common in the marginal woodland near Toolern Vale. Amyema pendulum (Drooping Mistletoe) also sometimes appears on the basalt, the nearest I know of being on Black Wattle and Eucalypts north of Mount Aitken. Near Exford, Lysiana exocarpi (Harlequin Mistletoe) has been reported on Casuarinas (K. McDougall

My view is that the flora restoration will not be complete without Mistletoe. Theoretically they are not hard to propagate, but attempts at the Park have so far failed, apart from one known specimen of Muellerina eucalyptoides. The first problem is gathering ripe fruit. The sticky fluid must be at the stage when it is a semi-transparent gel. If it is pale green and opaque it is not ripe. Spring is the time to look for fruit of Amyema miquellii and Muellerina eucalyptoides. As it ripens, it turns pale yellow, sometimes with a reddish tinge. It must be soft to the touch.

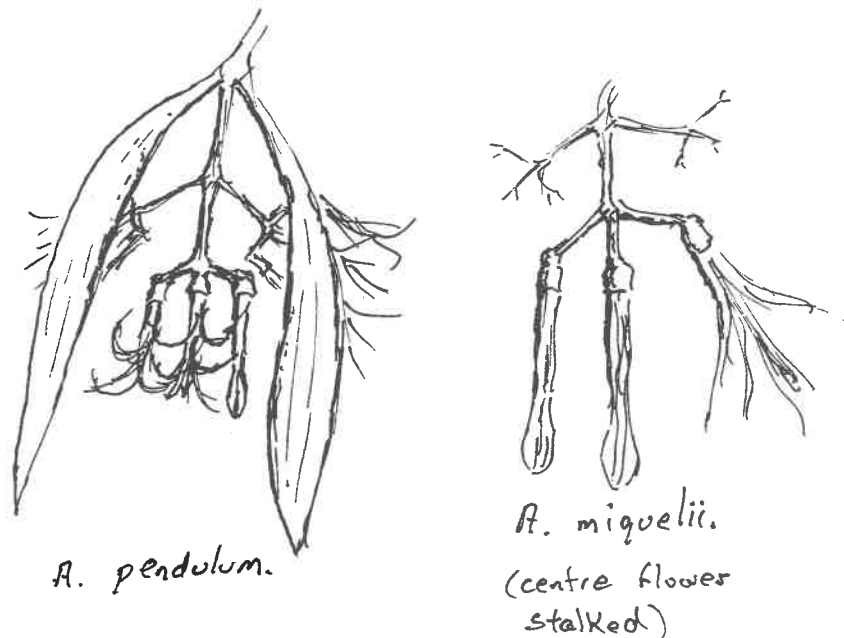
The roadside picnic ground near Oaklands Junction is a good place for Muellerina, and the Diggers Rest/Toolern Vale road for Muellerina and Amyema. But the birds may beat you to it! If suitable fruit is found, simply break open the capsule and squeeze out the gel onto a smooth-barked branch, preferably one not too exposed to wind and sun. It may be worthwhile experimenting with some sort of temporary "greenhouse" taped to the branch to prevent the gel drying out too soon.

Propagation experiments have been started and, if these are successful, we will attempt to introduce one or two species to the Organ Pipes. The only readily accessible species in our area is Creeping Mistletoe (*Muellerina eucalyptoides*), growing on Grey Box near the airport. There is also an *Amyema* species but I don't know of any within reach, except in marginal areas such as South Gisborne.

Amyema miquellii

"Box Mistletoe"

Recent records -
St. Mary's site.



Amyema pendulum

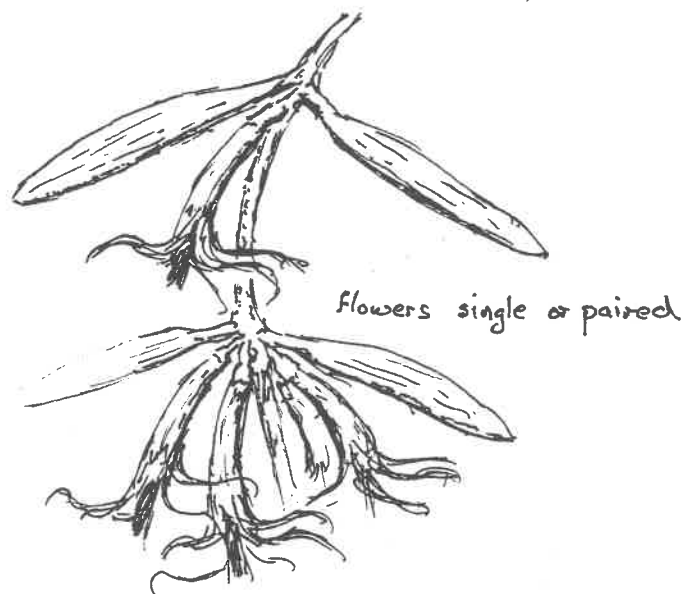
"Drooping Mistletoe"

Recent records -
North of Mt. Aitken.

Lysiana exocarpi

"Harlequin Mistletoe"

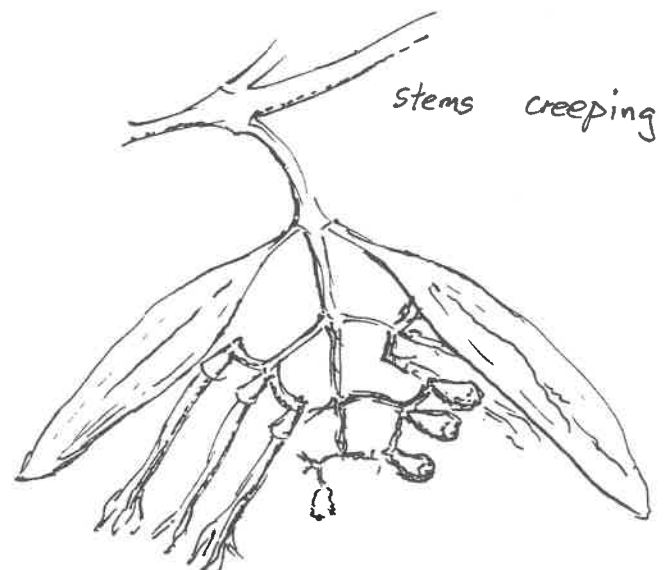
Recent records -
Exford, on Casuarina.



Muellerina eucalyptoides

"Creeping Mistletoe"

Recent records -
Airport, St. Mary's site,
(on Grey Box)



Poaceae family (Grasses)

Grasses are a modern and very successful group of plants which have figured prominently in the rise of man and remain the staple diet of a large proportion of world population, in the form of wheat, barley, corn, rice, etc., as well as the main food of domestic stock.

For the amateur they are a difficult family to study, but can be very rewarding and interesting. From time to time, there is revision of some genera, and new species are often described from groups of plants previously "lumped" as one species. Old names may become obsolete.

Grasses have visually insignificant flowers which are enclosed by protective bracts. Pollen is wind-borne and each flower produces a single seed which often falls complete with the bracts (called palea and lemma - the latter enclosing the former) and usually there are awns (long bristles), hooks or some other appendage to assist dispersal or to "screw" the seed into the soil. Below each group of florets there are usually two empty bracts known as the glumes. For further study I recommend "Grasses of New South Wales", Wheeler, Jacobs, Norton, University of New England. This describes most of the grasses, native and exotic, to be found on the Keilor plains, and many are illustrated.

As in many areas, native grasses on the Keilor Plains have been largely displaced by exotics, but most species can still be found hanging on as scattered remnants, and searching has even resulted in new records. Since grasses formed the major part of the flora, they are deserving of more attention now that most of the tree and shrub component is re-established at the Park.

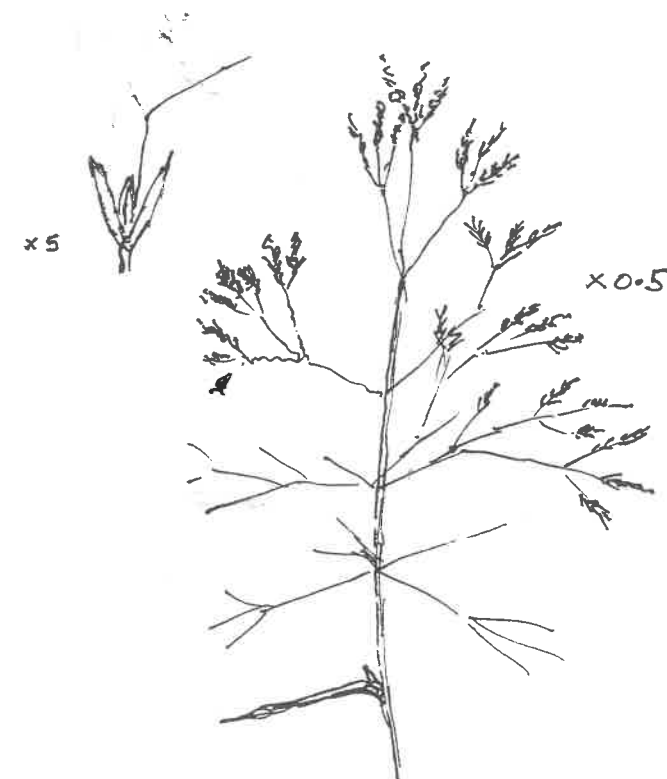
The following species represent about half the recorded grass species of the Keilor Plains (not including exotics, of which there are many).

Agrostis avenacea

"Blown Grass"

Recent records - Tottenham,
Airport.

Whole flowering stem may break
off and blow in the wind.



Amphibromus neesii

"Swamp Wallaby Grass"

Recent records -
Roadside north of Mt. Holden
(west of Diggers Rest)

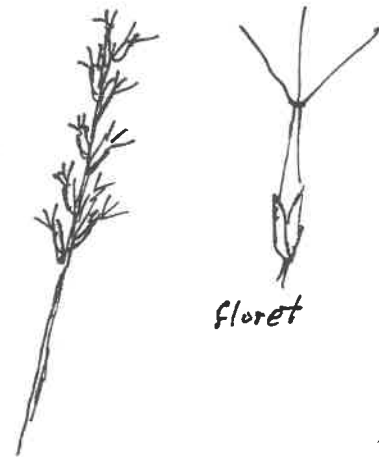


Aristida ramosa

"Cane Wiregrass"

No early records.

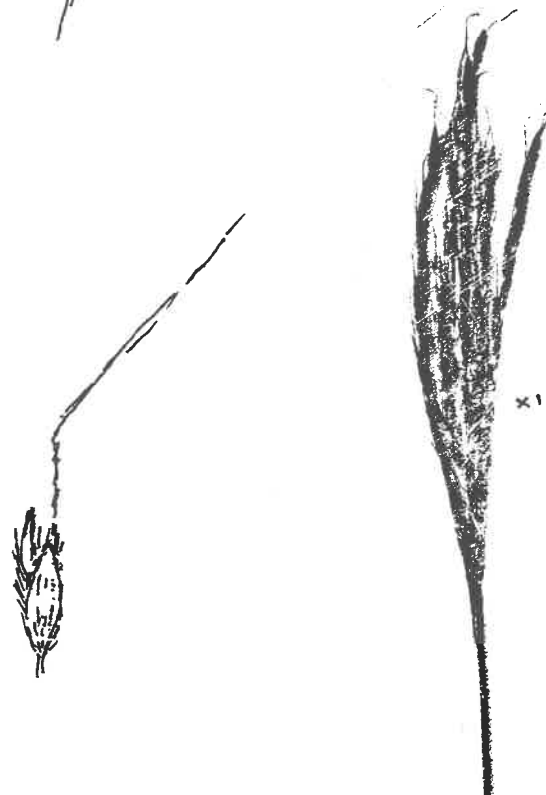
Recent records - Organ Pipes
(K. Thiele - an isolated
population on the rocky
headland north of the lookout.
Only known record near
Melbourne.)



Bothriochloa macra

"Redleg Grass"

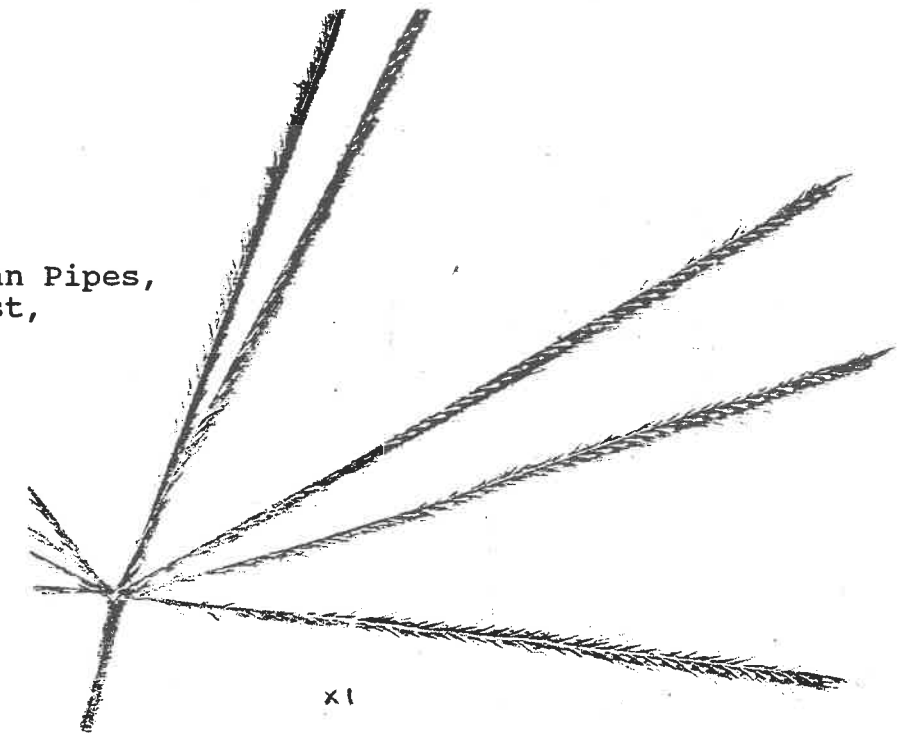
Recent records - Organ Pipes,
Jacksons Creek south of Organ
Pipes, Bulla, Gellibrand Hill.



Chloris truncata

"Windmill Grass"

Recent records - Organ Pipes,
Sydenham, Diggers Rest,
Airport, Bulla.



Cynodon dactylon

"Couch"

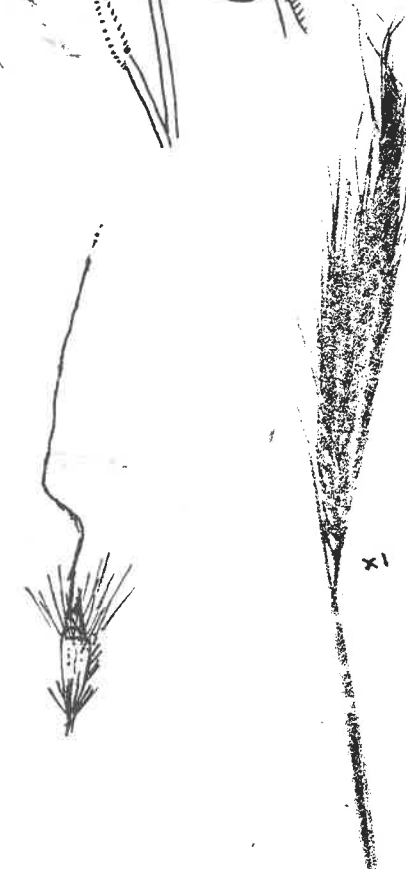
Recent records- Organ Pipes,
Gellibrand Hill.



Dichanthium sericeum

"Silky Blue-grass"

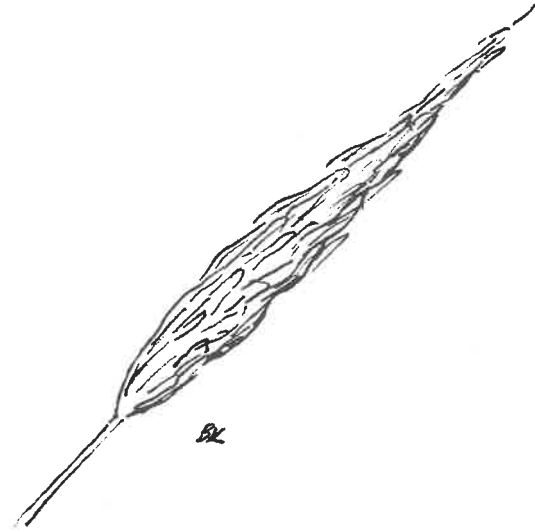
Recent records - Organ Pipes,
Tottenham, Airport.



Dichelachne crinita

"Long-hair Plume-grass"

Recent records - Diggers Rest,
Sydenham, St. Mary's site,
Organ Pipes ?



Echinopogon ovatus

"Common Hedgehog Grass"

Recent records - Organ Pipes



Elymus scabrus formerly Agropyron scabrum

"Common Wheat-grass"

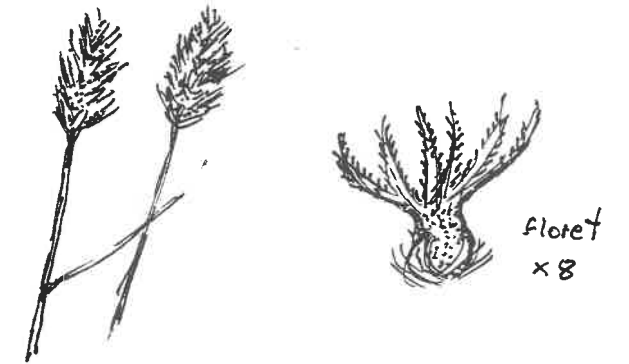
Recent records - Organ Pipes,
Holden Flora Reserve.



Enneapogon nigricans

"Niggerheads"

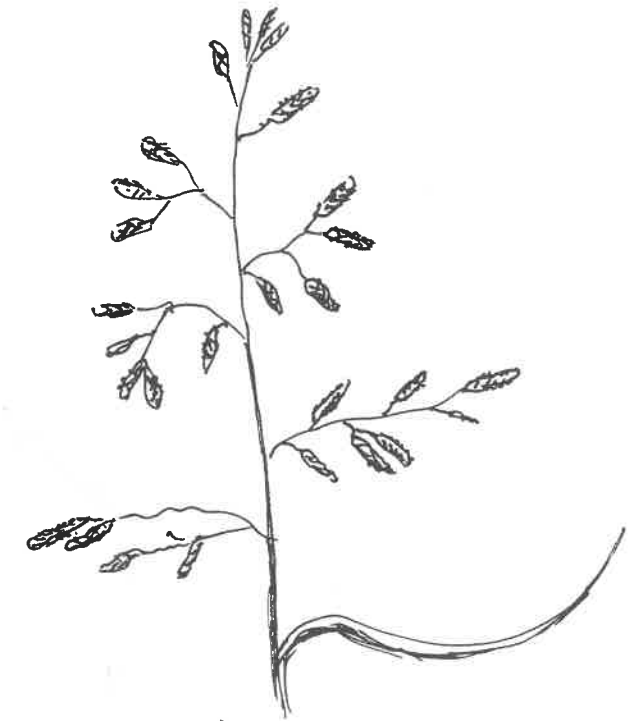
Recent records - Organ Pipes,
Taylors Lakes, Wildwood,
Holden Reserve.



Eragrostis brownii

"Brown's Love-grass"

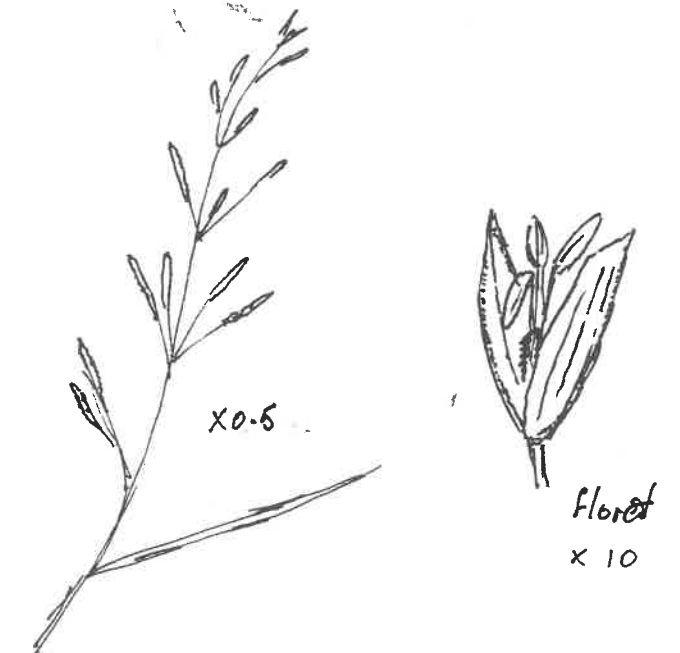
Recent records - Organ Pipes.



Glyceria australis

"Australian Sweet-grass"

Recent records - nil.



Hemarthria uncinata

"Mat Grass"

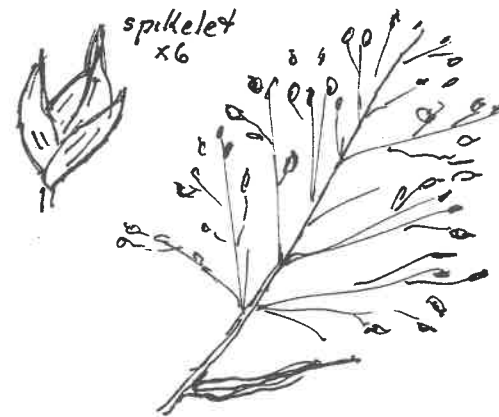
Recent records - nil.



Homopholis proluta

"Rigid Panic"

Recent records - Organ Pipes, Airport, Sydenham.



Microlaena stipoides

"Weeping Grass"

Recent records - Organ Pipes, Holden Flora Reserve.

Often forms dense, leafy tufts
Flowering stem arches strongly

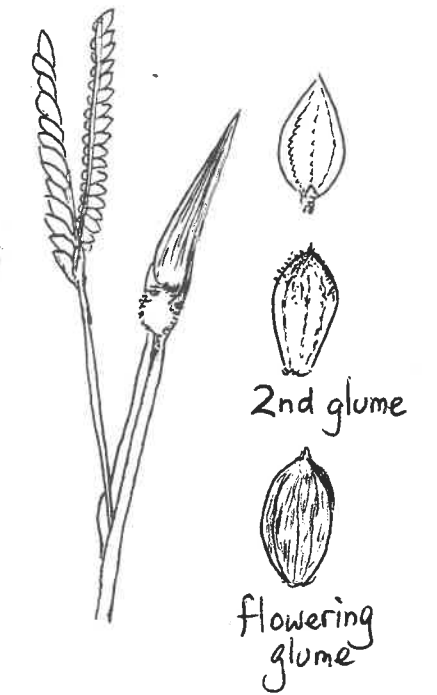


Paspalum paspalodes (syn. distichum)

"Water Couch"

(A cosmopolitan species, occurring both as indigenous and exotic)

Recent records - Organ Pipes, Gellibrand Hill, Holden Reserve



Phragmites australis

"Common Reed"

Tall grass growing in creeks and dams.

Recent records - Organ Pipes, Jacksons Creek, Deep Creek, etc.

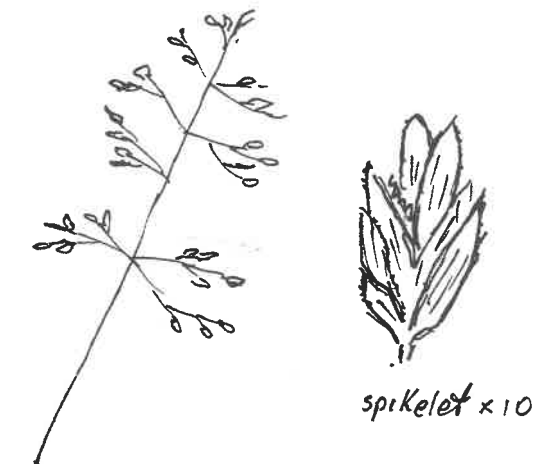


Poa labillardieri

"Common Tussock Grass"

A tall, tussock-forming grass.

Recent records - Organ Pipes, Holden Flora Reserve, Tottenham.



Stipa bigeniculata
(similar to *Stipa blackii*)

"Tall Spear Grass"

Recent records - Sunbury,
Sydenham - Toolern
Vale Road.

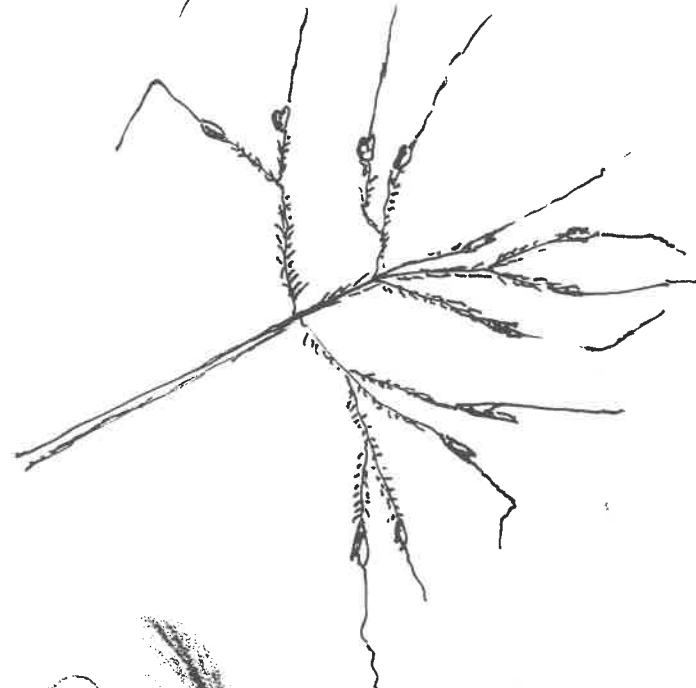


Stipa elegantissima

"Feather Spear Grass"

A sprawling grass with silky
hairs on flower stems.

Recent records - Gellibrand
Hill, Holden Flora Reserve,
Keilor Cemetery.

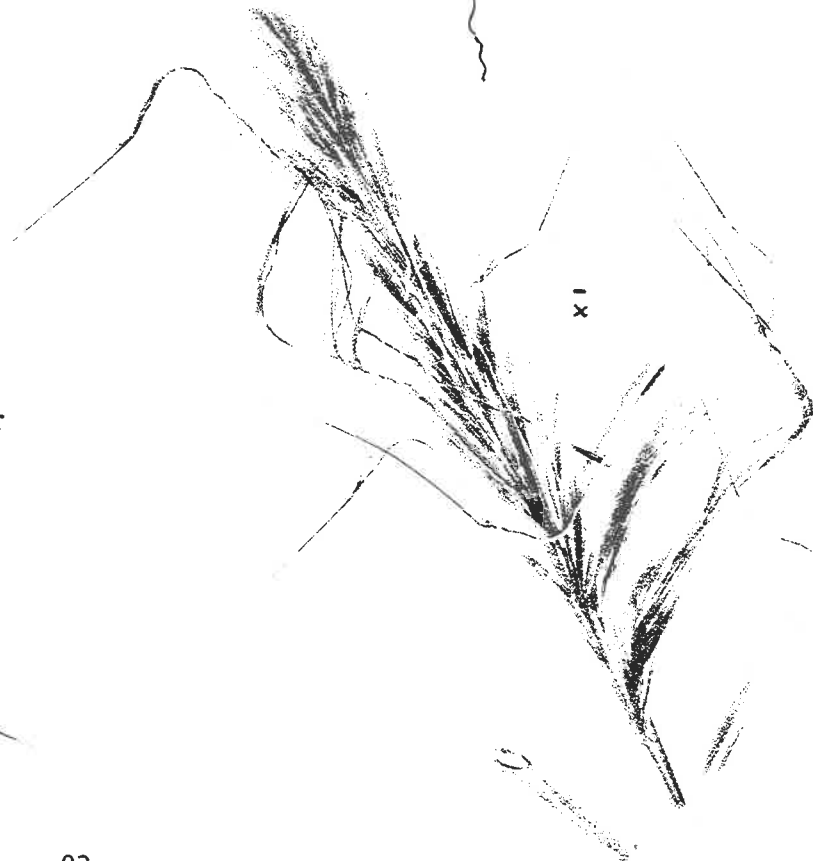


Stipa semibarbata

"Fibrous Spear Grass"

Recent records -
Diggers Rest, Gap Hill,
Sunbury.

Note: the information on
these pages may need to be
reviewed and updated,
particularly *S. variabilis*
which is probably no longer
valid locally.



Stipa variabilis complex

"Spear Grass"

Recent records - Organ Pipes,
Sunbury, Gellibrand Hill,
Sydenham, etc.



Themeda triandra

"Kangaroo Grass"

Recent records - Gellibrand Hill,
Bulla, Airport, all rail lines.
(All *Themeda* at the Park has been
re-introduced).

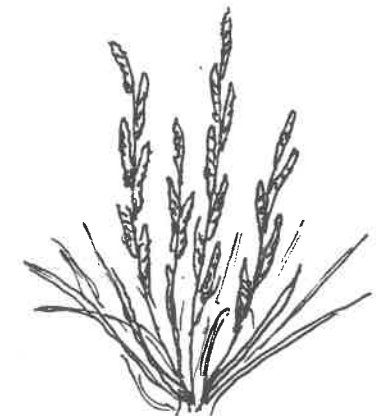


Tripogon loliiformis

"Rye Beetle-grass"

A "resurrection" grass, i.e.
dormant in dry weather,
recovers very rapidly after
rain.

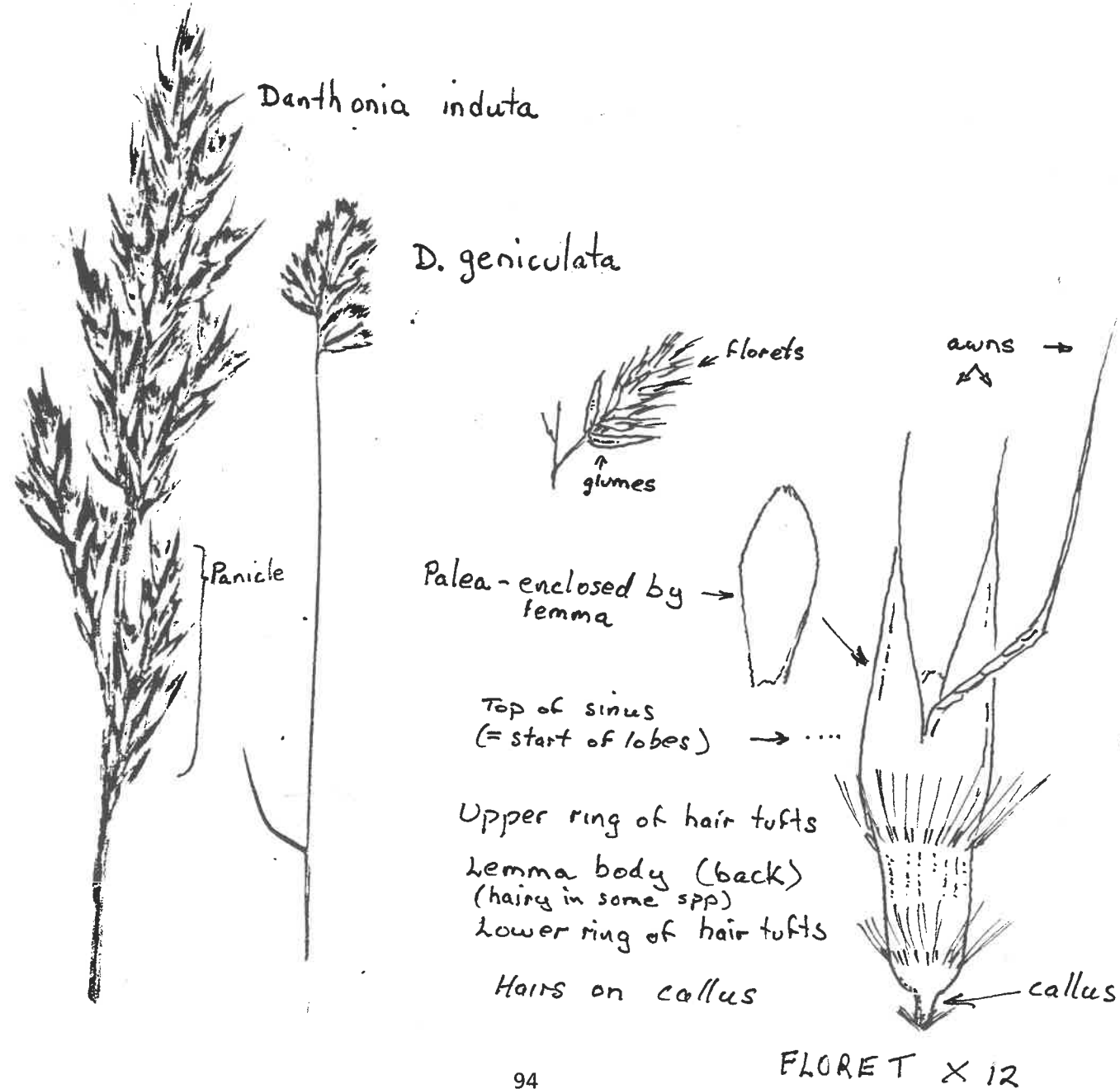
Recent records - Organ Pipes.
(Tessellated pavements)
Rare in southern Victoria.



Danthonia (Wallaby-grasses)

One of the most persistent survivors on the Keilor Plains, Wallaby-grass can still be seen on many roadsides, rail easements and in the least disturbed pastures. While they cannot compete with the more aggressive exotics such as *Phalaris arundinacea* (Canary Grass) some species seem to be able to re-colonise dry areas like the Organ Pipes once grazing pressure is stopped or reduced. Overall, however, the *Danthonias* are believed to be in retreat like the rest of the Keilor Plains flora, and I believe that we should try to re-establish as many as possible in the Organ Pipes National Park.

Danthonia is now fairly widespread in the Park, but it seems to be mainly 2 or 3 species. There are about 24 species in Victoria, and at least 13 have been recorded on the Keilor Plains. They vary from small, sparsely flowering grasses, less than 30 cm. high, to robust plants over a metre in height. The creamy-white, fluffy flower heads are easily recognised when mature, but separating the species is a different matter, usually requiring examination with a lens or microscope. The main identifying features are characteristics of the flower spikes and individual florets. Several *Danthonia* florets are depicted below.



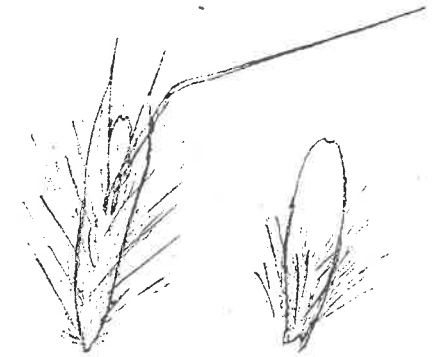
Chionochloa pallida

"Red-anther Wallaby Grass"

A robust grass common in Macedon Ranges. When mature, brick-red anthers emerge.

No early record.

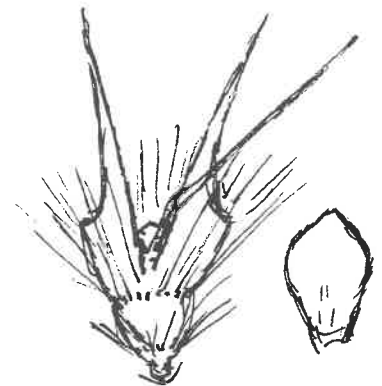
Recent records - Gellibrand Hill



Danthonia auriculata

"Lobed Wallaby Grass"

Recent records - Tottenham, Sunbury, Gellibrand Hill, Dalrymple Road.

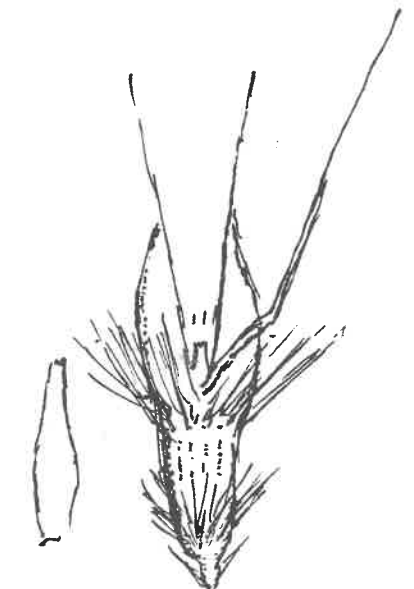


Danthonia caespitosa

"Common Wallaby Grass"

Usually tall, with large, dense flower heads.

Recent records - Sunbury, Tottenham-Sydenham, Gellibrand Hill, Organ Pipes.



Danthonia carphoides

"Short Wallaby Grass"

Locally quite short.

Recent records -
Dalrymple Road (Sunbury)
Toolern Vale



Danthonia duttoniana

"Brown-back Wallaby Grass"

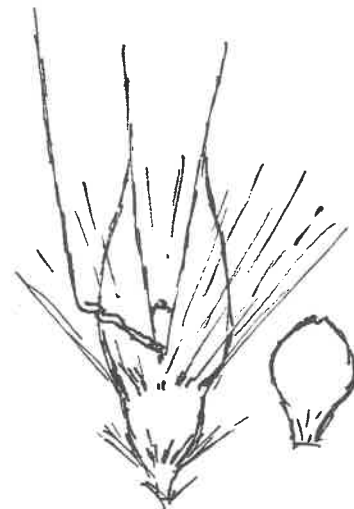
Recent records - Airport,
Sunbury, Organ Pipes,
Gellibrand Hill.



Danthonia eriantha

"Hill Wallaby Grass"

Recent records - Sunbury,
Gellibrand Hill.



Danthonia geniculata

"Kneed Wallaby Grass"

A short grass with a
distinct "knee" in the
flowering stem.

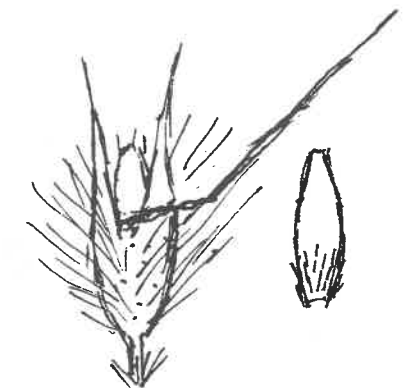
Recent records - Tottenham,
Gellibrand Hill,
Organ Pipes ?



Danthonia induta

"Yellow Anther Wallaby Grass"

Recent records - Gellibrand
Hill, Holden Reserve,
Dalrymple Road, Organ Pipes
National Park ?

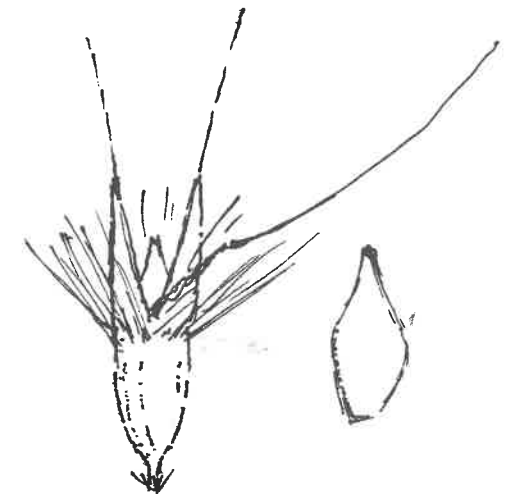


Danthonia laevis

"Wallaby Grass"

No early record.

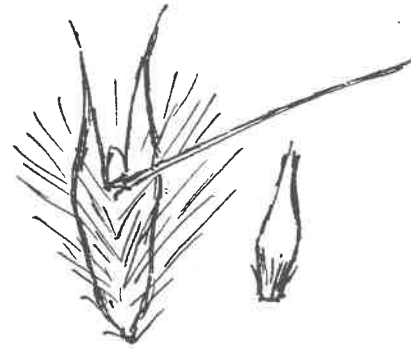
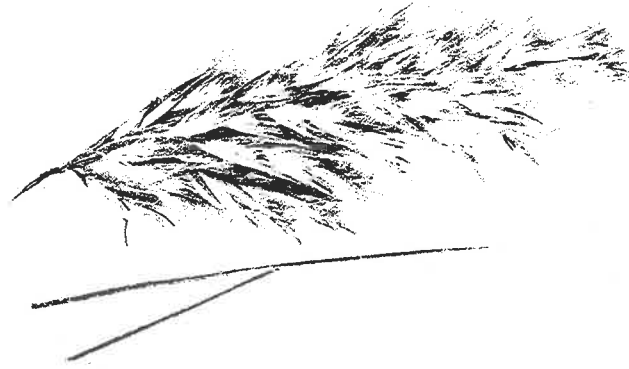
Recent records - Tottenham,
Gellibrand Hill,
Dalrymple Road.



Danthonia linkii

"Wallaby Grass"

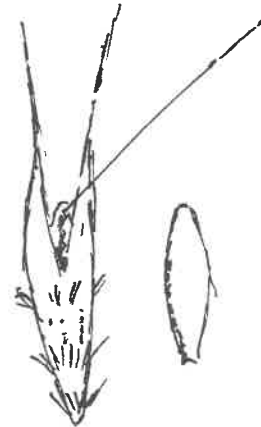
Recent records - Gellibrand Hill, Bulla - Sunbury Road



Danthonia penicillata

"Slender Wallaby Grass"

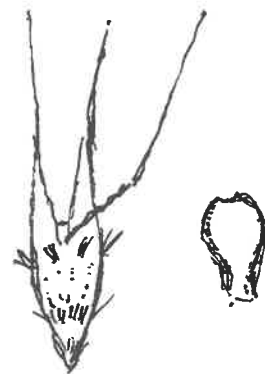
Recent records - Gellibrand Hill



Danthonia pilosa

"Velvet Wallaby Grass"

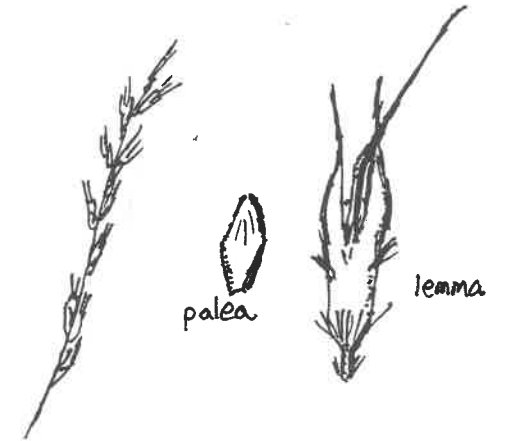
Recent records - Organ Pipes, (not sighted for several years)



Danthonia racemosa

"Clustered Wallaby Grass"

Recent records - Sunshine, Gellibrand Hill, Organ Pipes. (Widespread and common at the Park)

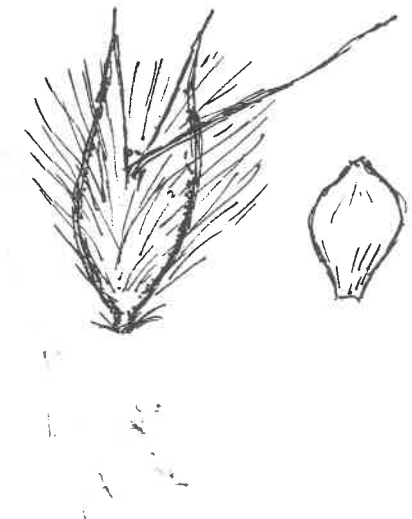


Danthonia richardsonii

"Wallaby Grass"

Recent records - Nil

Recorded at Sydenham (Willis)

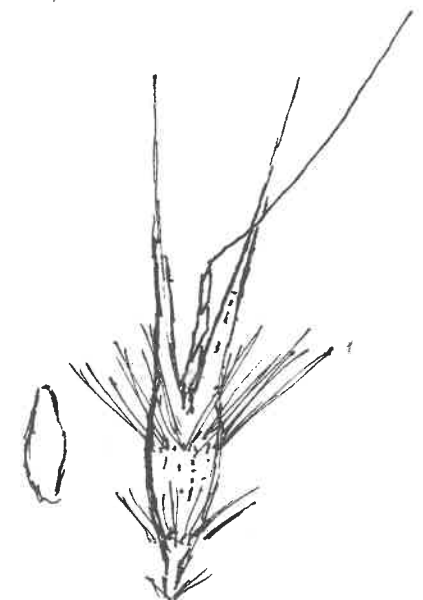


Danthonia setacea

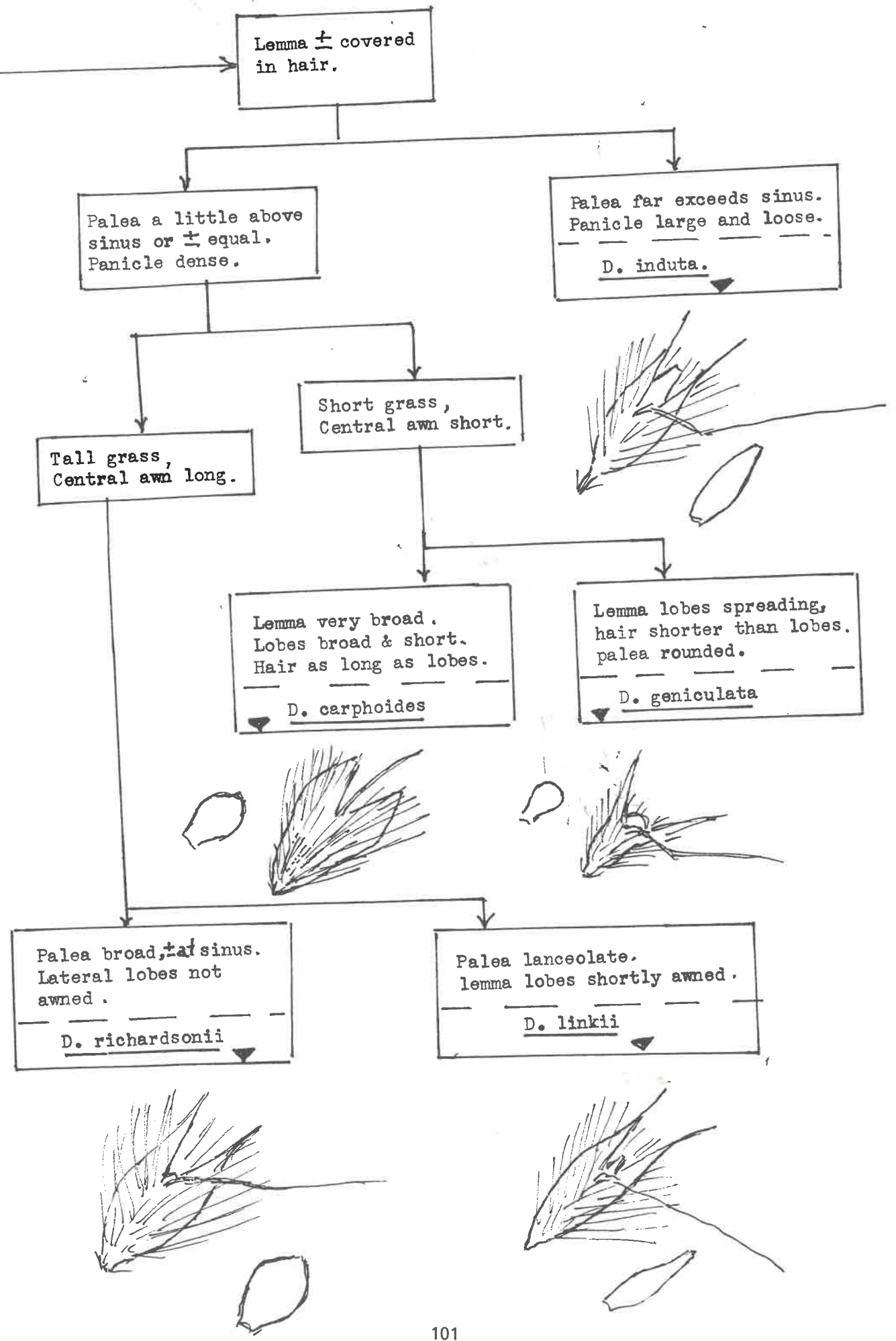
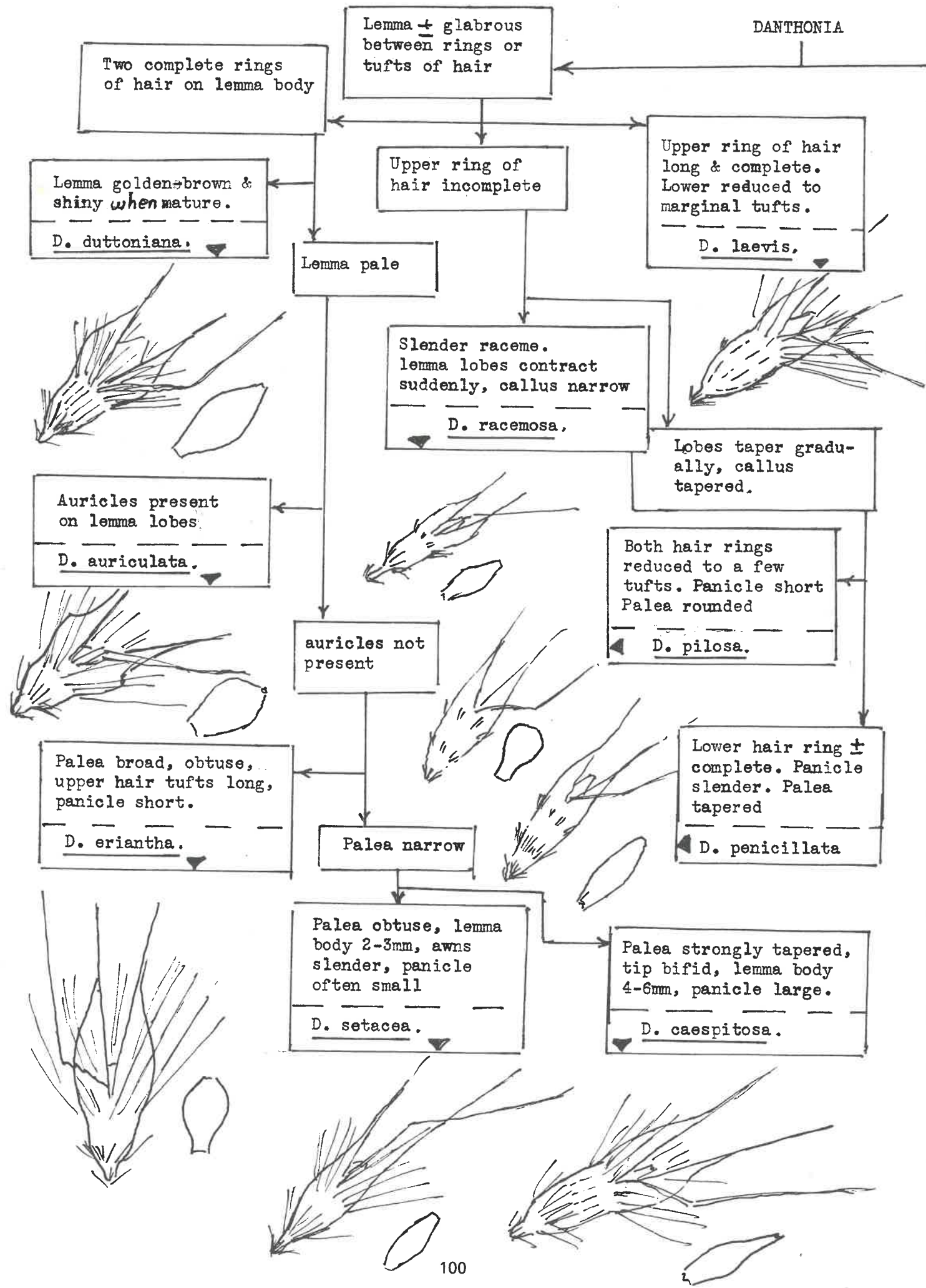
"Small-flowered Wallaby Grass"

No early records.

Recent records - Gellibrand Hill, Organ Pipes, Diggers Rest, etc. (locally common)



DANTHONIA



Redleg, Silky Blue and Friends

At the Park's inception, there were large areas of the original 164 acres showing no sign of grass - just bare earth in between the Artichoke Thistle, Horehound and Boxthorn. There were, however, a few areas of Danthonia, mainly *D. racemosa* and *D. setacea*. The largest patch was on the main flat and one of FOOP's early tasks was gathering hay from this site (cut by sickle-bar mower) for distribution on other areas.

Also surviving, in small patches, were *Chloris truncata* (Windmill Grass), *Dichanthium sericeum* (Silky Bluegrass), *Enneapogon nigricans* (Niggerheads) and a beautiful small Spear-grass we know as *Stipa variabilis*, since re-classified to I am not sure what (*Stipa scabra* or *Stipa nodosa*). There was a *Poa* along the creek which we didn't identify and there was a report of *Themeda triandra* (Kangaroo Grass) near the Pavements, but I could not find it.

On close examination of apparently bare areas, there were often grass roots protected by rocks, and sometimes these turned out to be Danthonia, many plants recovering after a degree of weed and rabbit control. Unfortunately, exotic grasses also quickly appeared - *Phalaris* moved in from neighbouring properties and two *Stipa* species and a *Paspalum* also became pests.

Small-scale trials were conducted with direct sowings of *Themeda*, *Bothriochloa macra* (Redleg Grass), *Homopholis proluta* (Rigid Panic) and several Danthonias. Most of the Redleg in the Park is, I think, the result of a sowing by Don Marsh in the mid-seventies. Silky Blue also showed the results and the existing stands began to spread steadily until it is now an attractive feature beside the main track.

When a good crop of Danthonia, mainly *D. duttoniana*, was found at the airport, baling was arranged and the Service conducted trials, sowing hay on the slopes and sometimes spraying with bitumen. The results were patchy and sometimes short-lived (with hindsight, the sites selected were wrong for *D. duttoniana*, which is often found in poorly drained parts of the plains.) Next season's crop unfortunately contained a number of weeds, including Thistles and Plantago. The source had deteriorated, so harvesting was discontinued.

A few *Themeda* plants germinated in fenced trials, or were transplanted, but the first major Kangaroo Grass trial was on the newly acquired "Burns" property, involving the spreading of a very thick layer of *Themeda* hay and burning after the seed had screwed itself into the ground. Very little seemed to happen for at least 12 months, then *Themeda* began appearing amongst the exotics and after a few years was spreading from the plot. Keith McDougall's later work with *Themeda*, on "the 25 acres" explored various other techniques and more economical sowing rates.

As I recall, the "25 acres", before it was acquired for the Park was cultivated and sown with Oats. It seemed beyond recovery as a native grassland, but a surprising number of native grasses have

reappeared and others have been successfully introduced, so that, along with the *Themeda* there are several Danthonias, a *Panicum* and a few *Chloris truncata*.

The interesting grasses we overlooked were discovered by a botany student (Kevin Thiele) in the early '80s. *Aristida ramosa* (Cane Wire-grass) is a survivor on a rocky ridge - the only record anywhere near Melbourne. *Tripogon loliiformis* (Rye Beetle-grass) is a funny little "resurrection" plant growing on the Pavements. After rain it rapidly changes from a dry, dormant state to fresh and green.

We introduced to our "seed-bank" plot an assortment of interesting grasses like *Stipa elegantissima*, diminutive Danthonia *carphoides* and tall *D. laevis*. I don't know the current status of these.

In our plant list for the Park there are three Danthonias which should be regarded as doubtful until confirmed. *D. auriculata* was reintroduced, but may not have persisted. *D. pilosa* was an early record, not recently reported, and *D. geniculata* was recorded by A. C. Beaglehole on the basis of non-flowering material, so needs confirmation. The list I have does not include *D. induta*, which grows on the "25 acres".

Sedges, Rushes and other Water Plants

The plants in this section range from those which float on water or have roots in mud beneath the surface to other simply preferring water-logged soil. A few have adapted to depressions on the open plain. The ones depicted here are monocotyledons, but there are whole groups of plants not addressed, including algae, quite common in Jacksons Creek. See also Azolla (a fern) and Phragmites (a grass).

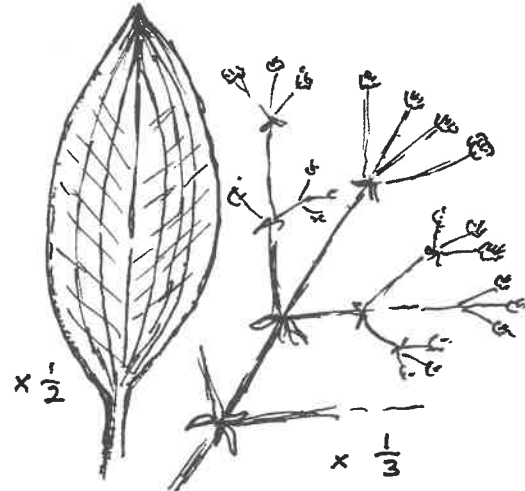
Alismataceae family

Alisma plantago-aquatica

"Water Plantain"

Usually tucked in against the stream-bank.

Recent records - Organ Pipes, Holden Flora Reserve.



Cyperaceae family (Sedges)

Cyperus tenellus

"Tiny Flat-sedge"

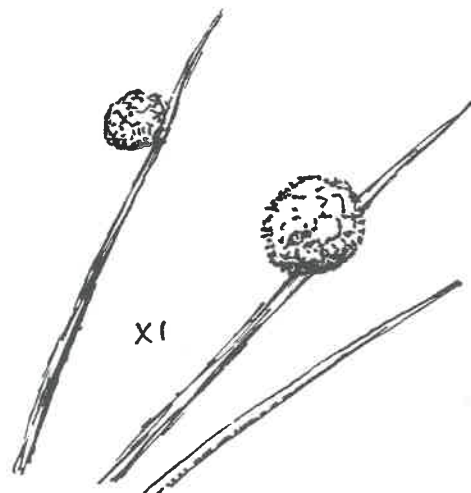
Recent records - Sunbury, Gellibrand Hill, Gisborne, Taylors Lakes.



Isolepis nodosa formerly Scirpus nodosus

"Knobby Club-rush"

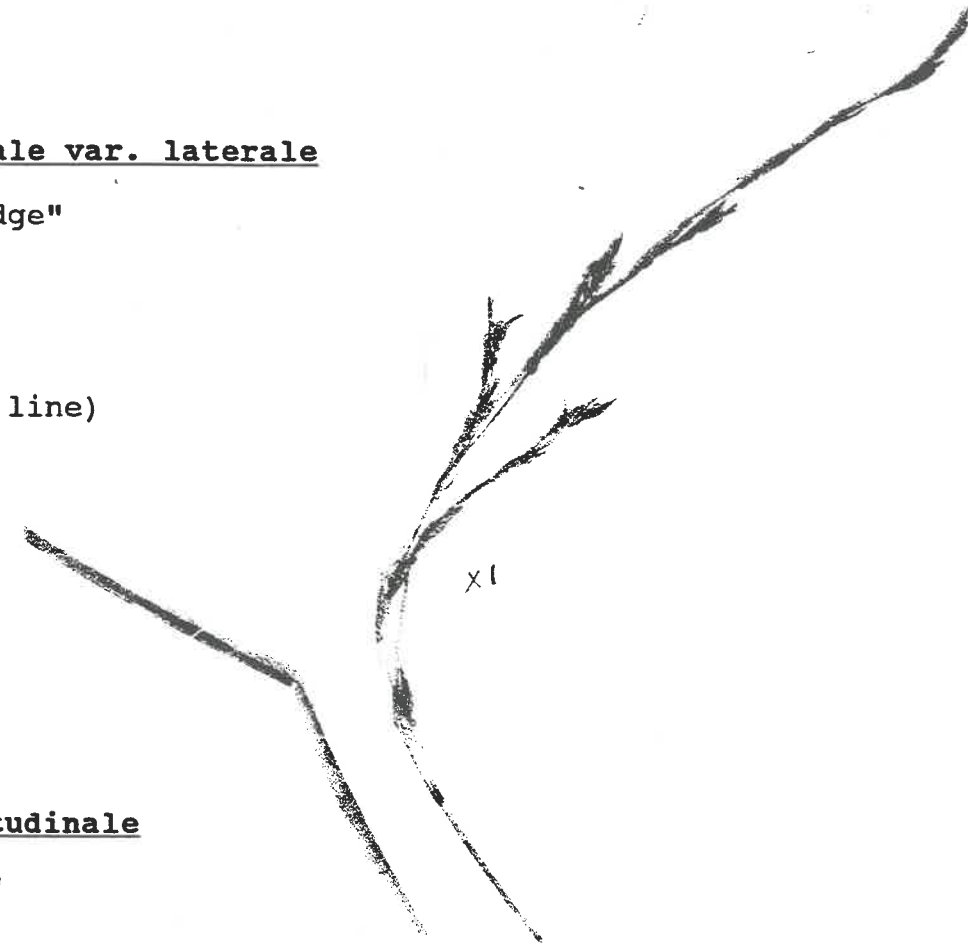
Recent records - Organ Pipes, Holden Reserve.



Lepidosperma laterale var. laterale

"Variable Sword-sedge"

Recent records - Diggers Rest (rail line)

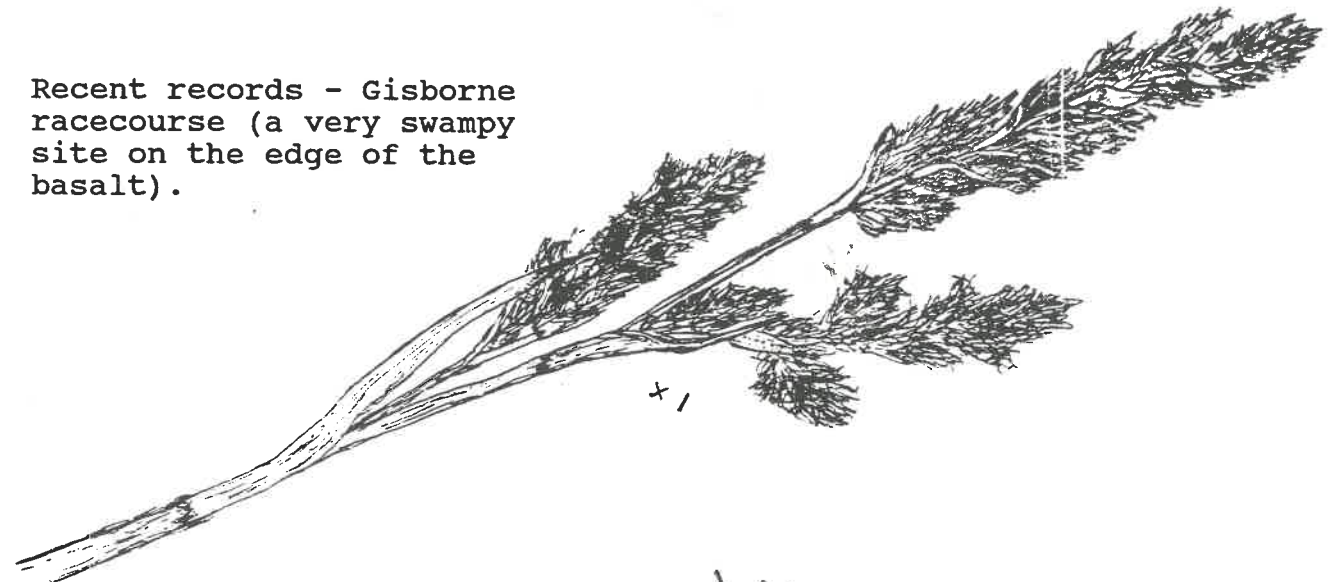


Lepidosperma longitudinale

"Pithy Sword-sedge"

No early records.

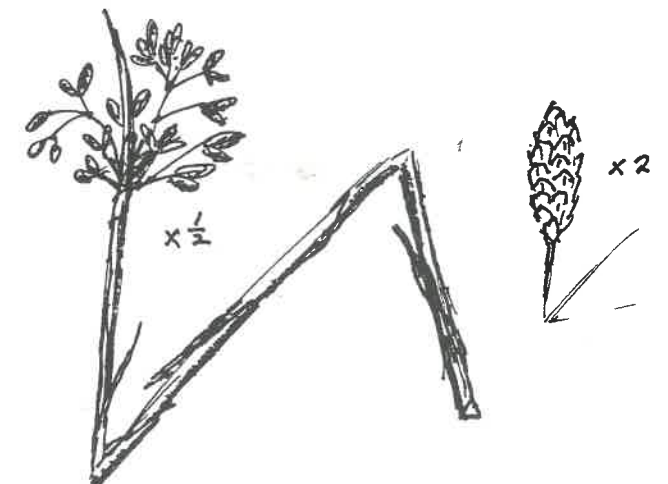
Recent records - Gisborne racecourse (a very swampy site on the edge of the basalt).



Schoenoplectus validus

"River Club-rush"

Recent records - Organ Pipes, Holden Reserve.



Schoenus apogon

"Common Bog-rush"

Recent records - Organ Pipes
Gellibrand Hill.



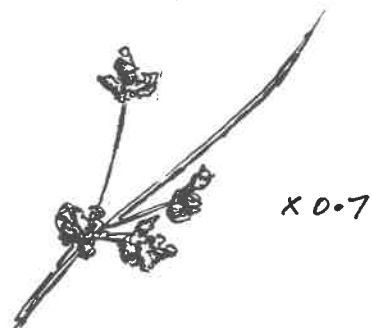
Juncaceae family (Rushes)

Juncus amabilis

"Rush"

No early records.

Recent records - Organ Pipes.



Juncus bufonius

"Toad Rush"

A delicate annual.

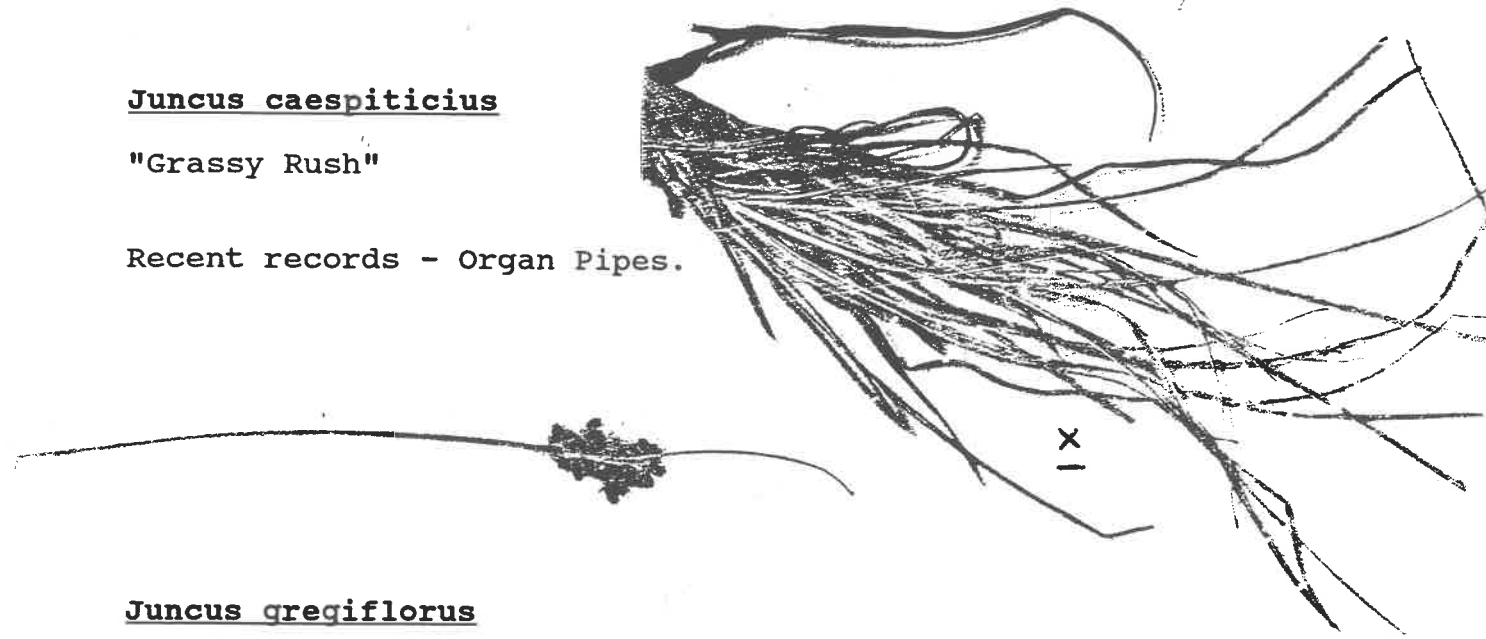
Recent records - Organ Pipes,
Sunbury, Taylors Lakes.



Juncus caespiticius

"Grassy Rush"

Recent records - Organ Pipes.



Juncus gregiflorus

"Rush"

No early records.

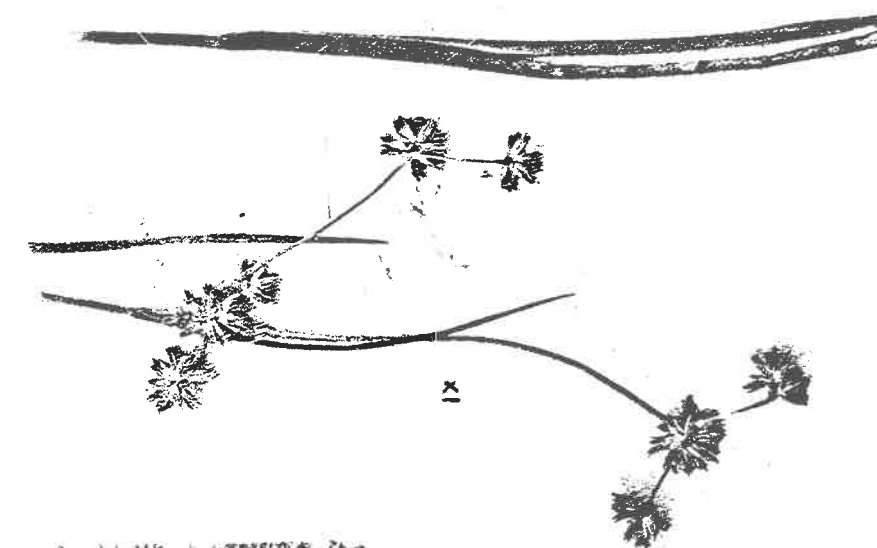
Recent records - Sunbury



Juncus holoschoenus

"Joint-leaved Rush"

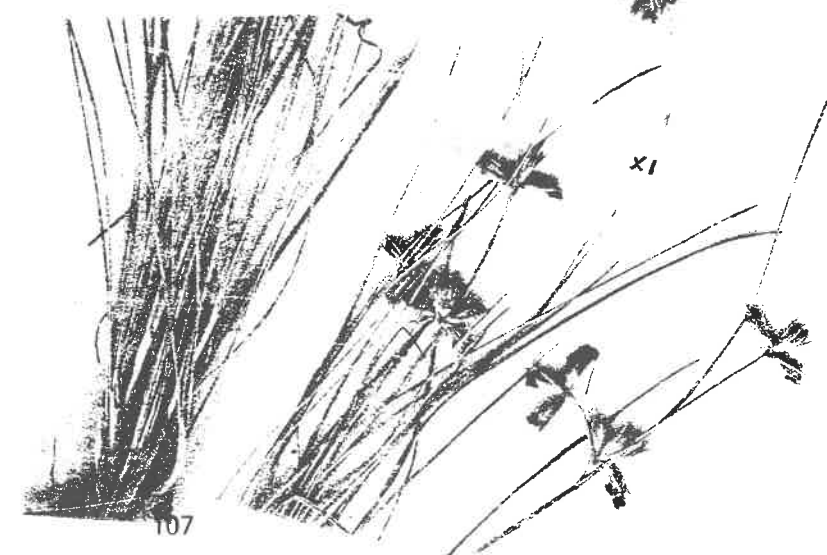
Recent records -
Gisborne, Taylors
Lakes.



Juncus homalocaulis
(syn plebeius)

"Wiry Rush"

Recent records -
Gellibrand Hill,
Taylors Lakes



Juncus pallidus

"Pale Rush"

Recent records -
Organ Pipes.



Juncus sarophorus
(syn. polyanthemus)

"Tussock Rush"

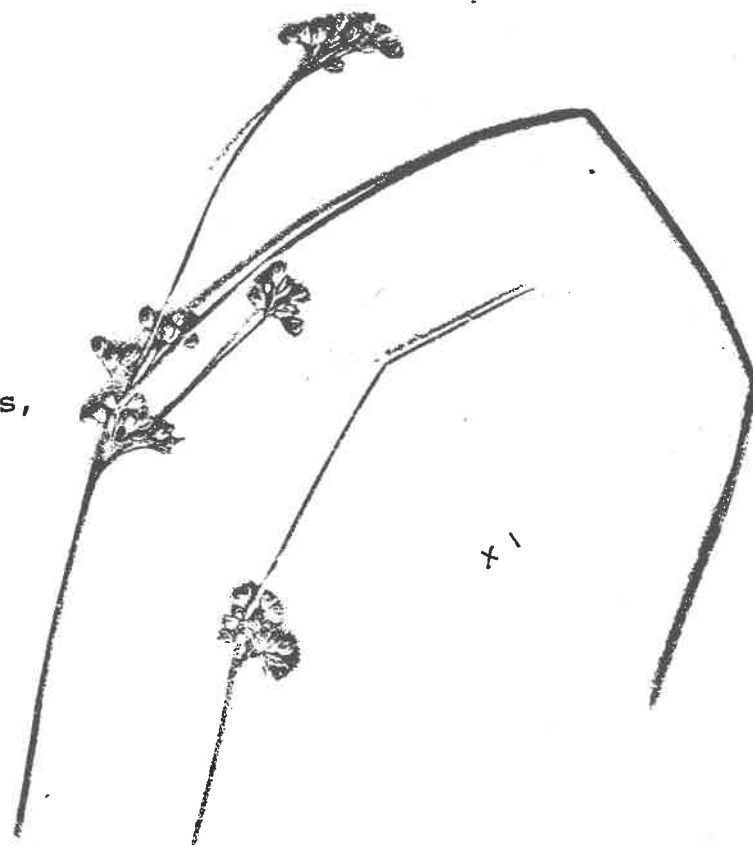
Recent records - Organ Pipes.



Juncus subsecundus

"Finger Rush"

Recent records - Organ Pipes,
Sunbury, Taylors Lakes.



Lemnaceae family (Duckweed)

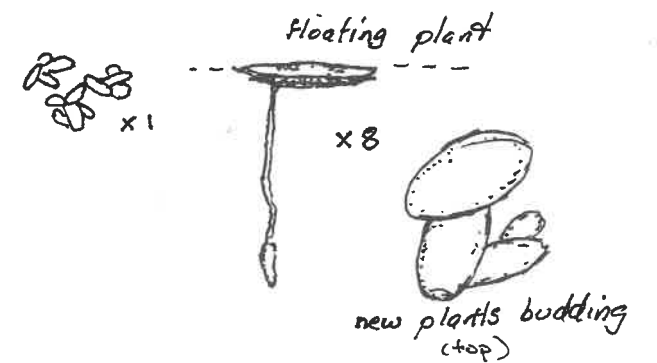
Lemna disperma
formerly Lemna minor

"Common Duckweed"

A tiny, bright-green plant
which sometimes carpets
slow-moving water.

Recent records - Organ Pipes.

(Check also for Spirodela oligorrhiza)

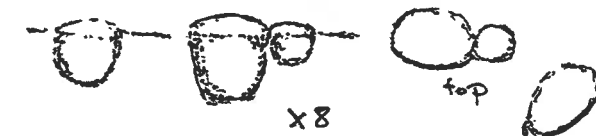


Wolffia australiana

"Tiny Duckweed"

The smallest flowering
plant. No roots beneath.

Recent records -
Organ Pipes.



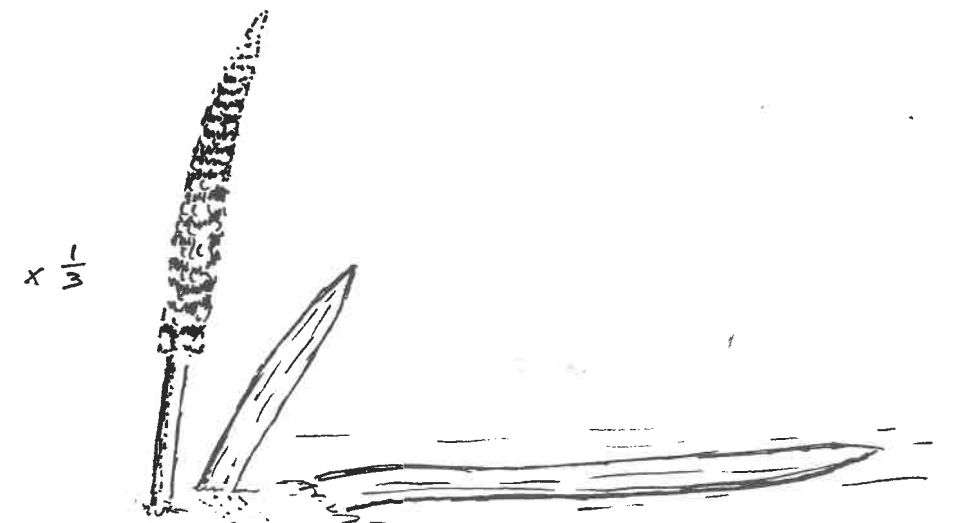
Juncaginaceae family (Arrowgrass)

Triglochin procera

"Water-ribbon"

Strap-like leaves
which float on
the surface.

Recent records -
Organ Pipes,
most waterways.



Typhaceae family (Bulrushes)

Typha domingensis

"Bulrush or Cumbungi"

Formerly included under
T. angustifolia
Recent records - Organ Pipes,
most waterways.

Check Willis, vol. 1 for
details re related species.

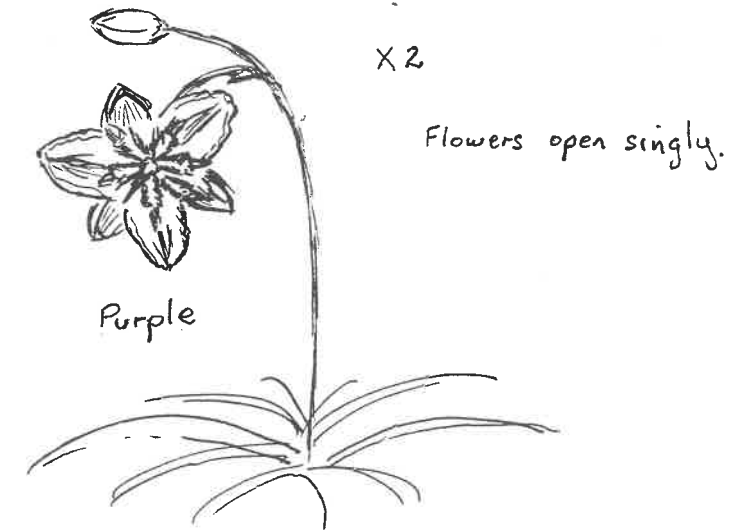


Liliaceae family (Lilies)

Arthropodium minus

"Small Vanilla Lily"

Recent records - St. Albans,
Sydenham, Laverton, Sunbury.

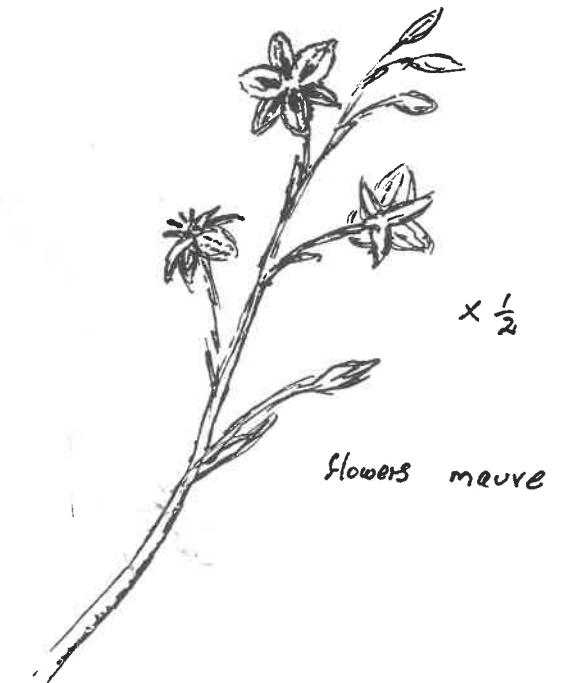


Arthropodium strictum

formerly Dichopogon strictus

"Chocolate Lily"

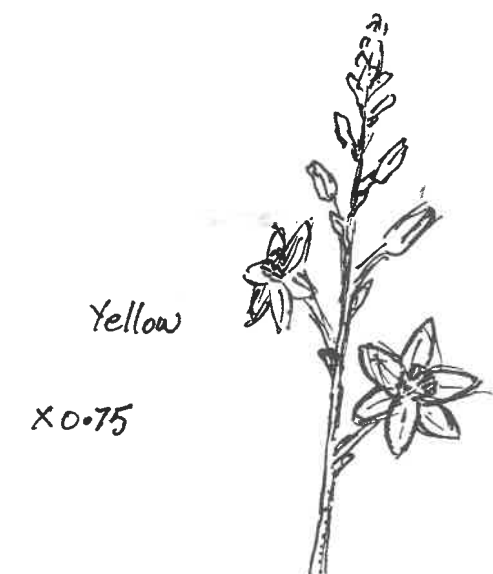
Recent records - Bulla
(Lochton), Sydenham,
Diggers Rest, Tottenham.



Bulbine bulbosa

"Bulbine Lily"

Recent records - Organ Pipes,
Deep Creek at airport,
Tottenham, Sydenham,
Diggers Rest.



Burchardia umbellata

"Milkmaids"

white

x 0.75



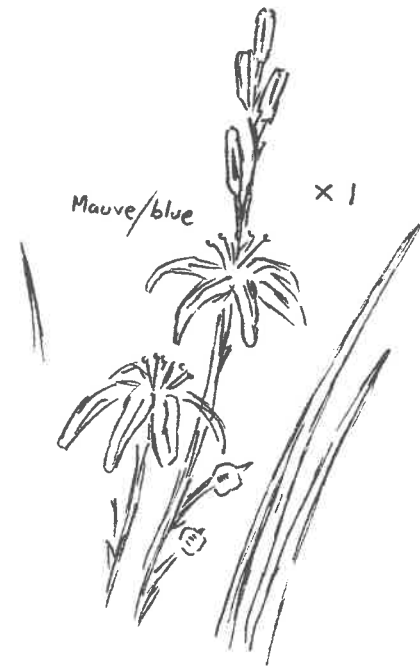
Recent records - Sydenham, Diggers Rest, Taylors Creek

Caesia calliantha

formerly *C. parviflora*, var. *vittata*
"Blue Grass Lily"

Mauve/blue

x 1



Recent records - Tottenham, Sydenham, Sunbury, Laverton.

Dianella longifolia var. longifolia
(*D. laevis*)

"Pale Flax Lily"

Recent records - Organ Pipes, Tottenham, Sydenham, St. Mary's site, Eynesbury.



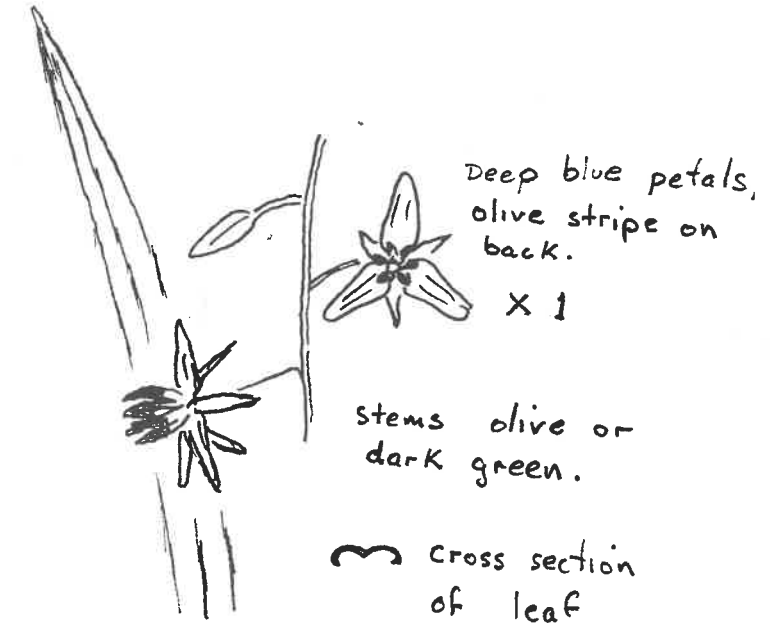
Blue

leaves & stems
paler than
D. revoluta
Anthers cream

Dianella revoluta var. revoluta

"Black-anther Flax-lily"

Recent records - Organ Pipes, Sydenham, Diggers Rest, Emu Creek, St. Mary's site, Eynesbury.



Deep blue petals,
olive stripe on
back.

x 1

stems olive or
dark green.

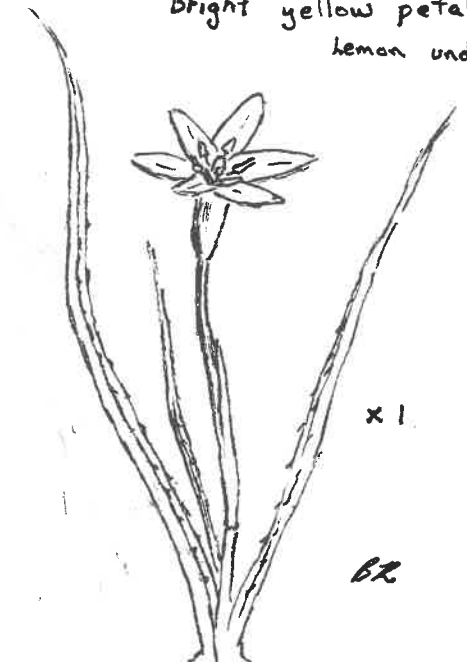
cross section
of leaf

Hypoxis vaginata var. vaginata
formerly *Hypoxis glabella*

"Yellow Star"

Recent records - Keilor to Sydenham Road (Sports Reserve), Sunbury near Flora Reserve

Bright yellow petals,
lemon underneath.



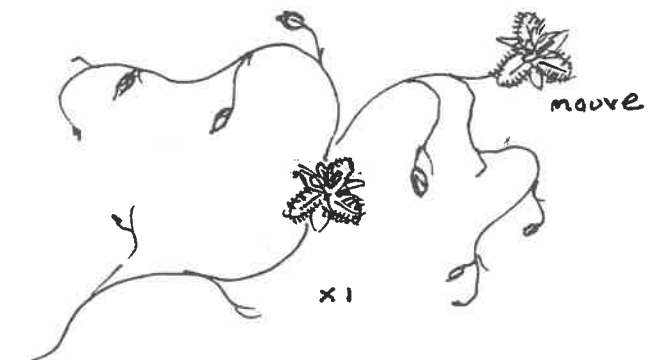
x 1

62

Thysanotus patersonii

"Twining Fringe-lily"

Recent records - Tottenham, St. Albans, Sydenham, Diggers Rest.



mauve

x 1

Thysanotus tuberosus

"Common Fringe-lily"

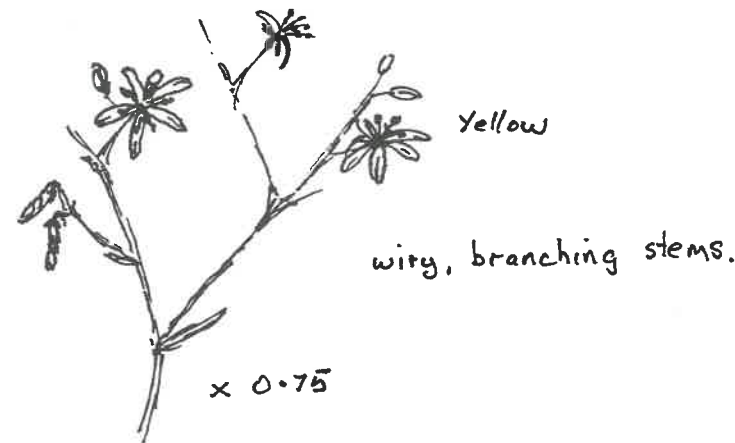
Recent records - nil.



Tricoryne elatior

"Yellow Rush-lily"

Recent records - Tottenham, Sydenham, Diggers Rest, Laverton, Eynesbury, Riddell's Creek.



Wurmbea dioica
(Anquillaria dioica)

"Early Nancy"

Recent records - Tottenham, Riddell's Creek, Organ Pipes N.P. (Pavements)



Xanthorrhoeaceae family (Grass-trees)

Lomandra filiiformis ssp. filiiformis

"Wattle Mat-rush"

Recent records - Diggers Rest Sydenham, Clarkefield



Lomandra longifolia

"Spiny-headed Mat-rush"

Recent records - Organ Pipes, Holden Flora Reserve, Deep Creek at airport

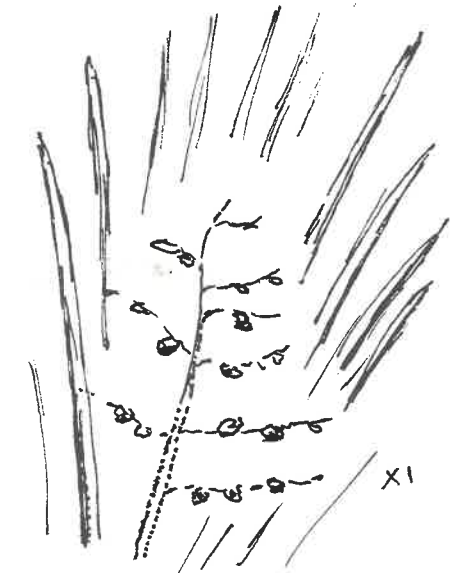


Lomandra micrantha ssp. micrantha

"Small-flower Mat-rush"

"Stony Creek" - Willis

Recent records: Sydenham, Calder



Orchidaceae (Orchids) and the Keilor Plains

Orchids have received very little attention in these notes, largely because of propagation difficulties and a paucity of surviving specimens, along with an initial lack of suitable sites in the Park. Sutton (1916) listed 20 orchids for the Keilor Plains, but Willis (1964) apparently excluded some from marginal or non-basaltic parts to arrive at a list of 15. W. H. Nicholls (1969) reported that in the spring of 1925 and that of 1927... "The yellow, moth-like flowers of *Diuris pedunculata* (*D. lanceolata*) ("Golden Moths") and the dark, wallflower-hues of *D. palustris* ("Swamp *Diuris*") were surprisingly plentiful".

Sutton described orchids as "a somewhat rare feature...only *Diuris punctata* variety *albo-violacea* (*D. fragrantissima*) in the north-eastern railway reserve is at all frequent." It is perhaps significant that this orchid, reported by Nicholls (1934) as "at one time exceedingly plentiful" was by 1916 apparently restricted to the rail easement, where it was protected from stock. The brief flowering period of most orchids and absence of flowers in some years may have caused many orchid populations to go un-noticed, particularly with constant grazing in the three-quarters of a century leading to Sutton's assessment.

Diuris fastidiosa was first discovered by Nicholls in 1923, on the rail easement at Tottenham, and was presumed extinct a few years later when ballast was dumped on the site. (It was subsequently re-discovered in another part of the state and is believed to be a hybrid). The classic, detailed paintings of Nicholls include one of this orchid at Tottenham, as well as *D. palachila* (*D. lanceolata* x *pardina*) from the same area, *Eriochilus cucullatus* ("Parson's Bands") from Sunshine, *Pterostylis mutica* ("Midget Greenhood") from Footscray and others from the Keilor Plains.

Willis (1951) reported optimistically on an attempt by the Native Plants Preservation Society to protect *D. fragrantissima* and other plants by transplanting to an enclosure near the ABC's radio mast at Sydenham. Unfortunately, a search in the seventies of the now neglected site revealed no orchids and few of the other laboriously transplanted species. In 1973, *D. lanceolata* and *Microtis unifolia* could still be easily found on the line to Sunbury, and by 1975 the Friends had located the last 100 *D. fragrantissima* on five small sites between Tottenham and Sydenham.

The best known of these sites was marked by a sturdily fenced enclosure 3 or 4 metres square at Tottenham. Unfortunately, railway maintenance gangs had been asked to avoid burning this area, so by now it was overgrown with *Themeda* and only one orchid was flowering. Worse, they had sprayed herbicide outside the fence to make a firebreak, and since there were numerous orchids outside the fence this procedure killed an unknown number of orchids.

It was apparent that extinction was imminent, so numerous authorities, including the Premier, were lobbied and meetings were held with botanists, orchid experts, rail engineers and the railways "environmental control officer". All this was largely to no avail as one site disappeared under 2 metres of fill, another was sprayed with herbicide in spring, ballast was pushed into the best area and another was destroyed by a major pipeline installation approv-

ed by the Conservation Ministry. The fifth was disturbed, mown and tubers were stolen.

In the meantime, the Friends had collected seed (on one occasion literally metres ahead of rail crew torches) and this was sent to Adelaide University, from whence we received several consignments of small tubers. These were potted in my home nursery, but due to lack of skill in this field, many were lost. The survivors were taken over by La Trobe University and planted in Laverton Grassland Reserve. I understand some of these did quite well and others have been propagated for re-introduction into suitable sites. Perhaps newly grown *Themeda* areas in the Park may eventually be suitable.

Prickly Pear at the Organ Pipes N.P. (Bulla site)

Prickly Pear and two other types of cactus that exist at the far end of Burns' paddock in the park, appears to be the result of a garden escape many years ago. Adjacent to this area is a number of bluestone blocks, all that remains of an early settler's house.

Prickly Pear (Opuntia stricta) is a native of Florida and Texas. In 1979, an isolated population of Cactoblastis cactorus was discovered living in Prickly Pear at the Bulla site. The nearest known population at that time was at Camden, near Sydney, nearly 700 km. away. Enquiries found that the Cactoblastis had been present along Jacksons Creek since 1955 and possibly as early as 1945. Unfortunately, later attempts to introduce Cactoblastis failed, apparently due to the inability of the small larvae to survive autumn and winter frosts.

All Australian Cactoblastis populations are derived from one initial introduction of 2750 eggs in 1925. By 1982, a total of 114 generations had occurred.

Due to the limited success of the Cactoblastis at the Bulla site, it was decided to release another cactus-feeding insect in an attempt for biological control. In late 1984, a release of 160 cochineal bugs, (Dactylopius opuntiae), a native of Mexico and America, was made at the site. Eighty were released at the top of the hill and a further eighty at the bottom of the hill adjacent to Jacksons Creek. These releases were made by, and being monitored by, Mr. Clinton Hale of the Department of Genetics and Human Variation, La Trobe University. A weather station was placed at both places to record temperature, humidity, rainfall and wind speed and direction. This has been done to check on environmental differences at both release locations. Some of these measured factors are known to affect the spread of the bug.

After 12 months, 7 of the original 80 releases at the top remain whilst at the bottom, 33 of the original 80 releases remain. Seven were lost at the bottom of the hill when Jacksons Creek flooded in late November 1985.

Mr. Hale is also studying a similar release at Eldorado, near Wangaratta.

During times of high flood levels, large quantities of Prickly Pear are broken off upstream and find their way into the park. As all small portions of the plant have the ability to take root, it is necessary to sift through flood debris and remove any pieces present.

Physical removal was used to rid the area above Column Gully of Prickly Pear before it spreads beyond the realms of manual control, and is now being used in Burns' paddock, too.

With the assistance of Work Experience students, work commenced in March 1985, to attempt to physically remove the cactus above Column Gully. Enclosures were constructed using wire netting and the ground covered with plastic sheeting. The cactus is cut off with mattocks and transported to the enclosure using stretchers of hessian; it is then piled on the plastic sheeting, thus preventing cactus "striking" in the soil. At regular intervals, the piles will be sprayed with the herbicide "Amine" which, over a period of months will render the cactus dead. It will then shrink to almost nothing. If necessary, the remainder can be removed to the tip.

It is inevitable that the cut off plants will regrow, so these will be treated by a direct application of herbicide. It was anticipated that with continuing work, the area should have been completed by the end of 1986, and this was achieved.

Meanwhile, the Prickly Pear continues to spread at the far end of Burns' paddock and it is hoped that the introduction of Dactylopius opuntiae is successful. Physical removal of the Pear from Burns commenced in 1993 and will continue.

Geoff Pitt
Park Assistant

Woodruff	W	<i>Asperula conferta</i>
Common Woodruff	S	<i>Asperula oligantha</i>
Prickly Woodruff		M o <i>Asperula scoparia</i>
Necklace Fern	S W K M o	<i>Asplenium flabellifolium</i>
Aster-weed	M *	<i>Aster subulatus</i>
Cranberry Heath	S W K +	<i>Astroloma humifusum</i>
Saltbush	W	<i>Atriplex muelleri</i>
Berry Saltbush	S W K M #	<i>Atriplex semibaccata</i>
Sprawling Saltbush	K o	<i>Atriplex suberecta</i> (survival in doubt)
Bearded Oat	M *	<i>Avena barbata</i>
Wild Oat	M *	<i>Avena fatua</i>
Oat	M *	<i>Avena sterilis</i> ssp <i>ludoviciana</i>
Pacific Azolla	S W K M o	<i>Azolla filiculoides</i>
Silver Banksia	W K M \$	<i>Banksia marginata</i>
Five-spined Bassia	W K	<i>Bassia quinquecupis</i> (see <i>Sclerolaena muricata</i>)
Wild Beet	M *	<i>Beta vulgaris</i>
Creeping Bossiaea	S W K +	<i>Bossiaea prostrata</i>
Redleg Grass	K M #	<i>Bothriochloa macra</i>
Swamp Daisy	K	+ <i>Brachyscome basaltica</i>
Hinge-fruit Daisy	S K	+ <i>Brachyscome cardiocarpa</i>
Field Daisy	W	<i>Brachyscome decipiens</i>
Grass Daisy	W	<i>Brachyscome graminea</i>
Lobe-seed Daisy	W K +	<i>Brachyscome heterodonta</i> (<i>B. dentata</i>)
Downy Daisy	W	<i>Brachyscome leptocarpa</i>
Lobe-seed Daisy	W	<i>Brachyscome marginata</i> (see <i>B. heterodonta</i>)
Large Quaking-grass	M *	<i>Briza maxima</i>
Lesser Quaking-grass	M *	<i>Briza minor</i>
Prairie Grass	M *	<i>Bromus catharticus</i>
Great Brome	M *	<i>Bromus diandrus</i>
Soft Brome	M *	<i>Bromus hordeaceus</i>
Compact Brome	M *	<i>Bromus madritensis</i>
Bulbine Lily	S W K M \$	<i>Bulbine bulbosa</i>
Milkmaids	S W K +	<i>Burchardia umbellata</i>
Sweet Bursaria	S W K M #	<i>Bursaria spinosa</i>
Blue Grass-lily	S W K	<i>Caesia parviflora</i> var. <i>vittata</i> (<i>calliantha</i>)
Pink Purslane	W +	<i>Calandrinia calyptrata</i>
River Bottlebrush	S W	<i>Callistemon paludosus</i> (see <i>C. sieberi</i>)
River Bottlebrush	S W K M #	<i>Callistemon sieberi</i>
Murray Pine	W	<i>Callitris columellaris</i> (see <i>C. glaucophylla</i>)
Murray Pine	S W K M \$	<i>Callitris glaucophylla</i>
Murray Pine	S	<i>Callitris verrucosa</i> (see <i>C. glaucophylla</i>)
Lemon Beauty-heads	S W K M \$	<i>Calocephalus citreus</i>
Beauty-head	S W K +	<i>Calocephalus lacteus</i>
Tufted Burr-daisy	S K M \$	<i>Calotis anthemoides</i>
Rough Burr-daisy	S K	+ <i>Calotis scabiosifolia</i>
Tufted Burr-daisy	S K	+ <i>Calotis scapigera</i>
Common Fringe-myrtle	S	<i>Calycothrix tetragona</i> (see <i>Calytrix</i>)
Large Bindweed	M o	<i>Calystegia sepium</i>
Fringe Myrtle	S W K M #	<i>Calytrix tetragona</i>
Bitter Cress	W +	<i>Cardamine laciniata</i> (<i>Rorippa laciniata</i>)
Hoary Cress	M *	<i>Cardaria draba</i>
Slender Thistle	M *	<i>Carduus tenuiflorus</i>
Tall Sedge	W	+ <i>Carex appressa</i>
Sedge	W	<i>Carex bichenoviana</i>

Short-stem Sedge	W	+ <i>Carex breviculmis</i>
Tassel Sedge	W	<i>Carex fascicularis</i>
Common Sedge	W	+ <i>Carex inversa</i>
Rush Sedge	W	+ <i>Carex tereticaulis</i>
Karkalla	W M #	<i>Carpobrotus rossii</i>
Saffron Thistle	M *	<i>Carthamus lanatus</i>
Desert Cassia	S W	<i>Cassia eremophila</i> (see <i>Senna artemisioides</i>)
Desert Cassia		<i>Cassia nemophila</i> (see <i>Senna artemisioides</i>)
Common Cottonwood	S W	<i>Cassinia aculeata</i>
Chinese Scrub	K M \$	<i>Cassinia arcuata</i>
Shiny Cassinia	S W K M \$	<i>Cassinia longifolia</i>
Coarse Dodder-laurel	S W K +	<i>Cassytha melantha</i>
Buloke	S W	<i>Casuarina luehmannii</i> (see <i>Allocasuarina</i>)
Drooping She-oak	S W	<i>Casuarina stricta</i> (see <i>Allocasuarina</i>)
Black She-oak	S	<i>Casuarina suberosa</i>
Spike Centaury	W	<i>Centaurium spicatum</i>
Centaury	M *	<i>Centaurium tenuiflorum</i>
Centella	W	<i>Centella asiatica</i> (<i>C. cordifolia</i>)
Common Sneezeweed	S W K +	<i>Centipeda cunninghamii</i>
Rock Fern	S W K M +	<i>Cheilanthes austrotenuifolia</i>
Bristly Cloak-fern	K M o	<i>Cheilanthes distans</i>
Fat Hen	S	<i>Chenopodium album</i>
Keeled Goosefoot	S	<i>Chenopodium carinatum</i>
Small-leaf Goosefoot	S W K M o	<i>Chenopodium desertorum</i> ssp. <i>microphyllum</i>
Pale Goosefoot	S W	<i>Chenopodium glaucum</i>
Sowbane	S K M *	<i>Chenopodium murale</i>
Goosefoot	W	<i>Chenopodium pseudomicrophyllum</i> (see <i>C. desertorum</i>)
Clammy Goosefoot	W K M o	<i>Chenopodium pumilio</i>
Small-leaved Goosefoot	S	<i>Chenopodium triandrum</i> (see <i>C. desertorum</i>)
Red-anther Wallaby-grass	K +	<i>Chionochloa pallida</i>
Windmill Grass	S W K M #	<i>Chloris truncata</i>
Spear Thistle	M *	<i>Cirsium vulgare</i>
White Purslane	W +	<i>Claytonia australasica</i> (<i>Montia australasica</i>)
Small-leaf Clematis	S W K M #	<i>Clematis microphylla</i>
Heath Milkwort	W	<i>Comesperma ericinum</i>
Small Milkwort	W +	<i>Comesperma polygaloides</i>
Common Bindweed	M *	<i>Convolvulus arvensis</i>
Blushing Bindweed	S W M #	<i>Convolvulus erubescens</i>
Tall Fleabane	M *	<i>Conyza bonariensis</i>
Rock Correa	S W K M #	<i>Correa glabra</i>
Common Cotula	S W K M o	<i>Cotula australis</i>
Water-buttons	S W K M *	<i>Cotula coronopifolia</i>
Creeping Cotula	W	<i>Cotula reptans</i>
Slender Cotula	W	<i>Cotula vulgaris</i>
Golden Billy-buttons	S W K M \$	<i>Craspedia chrysantha</i>
Billy-buttons	S W K +	<i>Craspedia glauca</i>
Big Billy-buttons	S	<i>Craspedia richea</i> (see <i>C. glauca</i>)
Billy-buttons	W	<i>Craspedia uniflora</i> (see <i>C. glauca</i>)
Swamp Crassula	W M o	<i>Crassula helmsii</i>
Large-fruit Crassula	W +	<i>Crassula macrantha</i> (<i>C. decumbens</i>)
Purple Crassula	W	<i>Crassula peduncularis</i>
Sieber Crassula	W M o	<i>Crassula sieberana</i>
Smooth Hawksbeard	M *	<i>Crepis capillaris</i>
Barley Grass	M *	<i>Critesion murinum</i> ssp. <i>leporinum</i>

Bitter Cryptandra	S W K	★	Cryptandra amara	
Paddy Melon		M *	Cucumis myriocarpus	
Common Ground Fern		K	+ Culcita dubia	
Austral Bear's-ear	W K	+	Cymbonotus preissianus	
Spanish Artichoke		M *	Cynara cardunculus	
Couch	S W K M	*	Cynodon dactylon	
Sweet Hound's-tongue	W	+	Cynoglossum suaveolens	
Rough Dog's-tail		M *	Cynosurus echinatus	
Drain Flat-sedge		M *	Cyperus eragrostis	
Tiny flat-sedge	S W K	+	Cyperus tenellus	
Cocksfoot		M *	Dactylis glomerata	
Lobed Wallaby-grass	W K M	+	Danthonia auriculata	o All AustroDanthonia
Common Wallaby-grass	W K M	o	Danthonia caespitosa	o
Wallaby-grass	W K	+	Danthonia carphoides	o
Brown-back Wallaby-grass	W K M	#	Danthonia duttoniana	o
Wallaby-grass		K	+ Danthonia eriantha	o
Kneed Wallaby-grass	W K M	+	Danthonia geniculata	o
Wallaby-grass	W K	o	Danthonia induta	o
Wallaby-grass		K	+ Danthonia laevis	o
Wallaby-grass	W K	+	Danthonia linkii	o A. fulva
Wallaby-grass	S W K		Danthonia penicillata	o
Velvet Wallaby-grass	W K M	o	Danthonia pilosa	o
Wallaby-grass		K M	o Danthonia racemosa	o
Wallaby-grass	W K		Danthonia richardsonii	o
Bristly Wallaby-grass		K M	o Danthonia setacea	o
Common Thorn-apple		M *	Datura stramonium	
Austral Carrot	W	+	Daucus glochidiatus	
Fern Grass		M	Desmazeria rigidum	
Slender Tick-trefoil	W K	+	Desmodium varians	
Long-leaved Flax-lily	S W		Dianella laevis (see D. longifolia)	
Pale-anther Flax-lily	S W K M	#	Dianella longifolia	
Black-anther Flax-lily	S W K M	#	Dianella revoluta	
Silky Blue-grass	W K M	#	Dicanthium sericeum	
Plume-grass	S W K	?	Dichelachne crinita	
Kidney-weed	S W	M o	Dichondra repens	
Chocolate Lily	S W K	+	Dichopogon strictus	
Grey Parrot-pea	S W K	\$	Dillwynia cinerascens	
Heathy Parrot-pea	S		Dillwynia ericifolia (syn glaberrima)	
Showy Parrot-pea	W K M	\$	Dillwynia sericea	
Salt Grass		M	Distichlis distichophylla	
Stinkwort		M *	Dittrichia graveolens	
Proud Diuris	W		Diuris fastidiosa	
Swamp Diuris	W		Diuris palustris	
Golden Moths	W	+	Diuris pedunculata (D. lanceolata)	
Purple Diuris	W	+	Diuris punctata	
Tiger Orchid	W		Diuris sulphurea	
Wedge-leaf Hop-bush	S W K M	#	Dodonaea viscosa ssp. cuneata (spatulata)	
Rasp-fern	S		Doodia aspera (see D. media)	
Small Rasp-fern	S W K		Doodia caudata	
Common Rasp-fern	S W K		Doodia media	
Tall Sundew	S W		Drosera auriculata (D. peltata ssp. auriculata)	
Tall Sundew	S W	+	Drosera peltata	
Scarlet Sundew	S W	+	Drosera glanduligera	
Scented Sundew	S W	+	Drosera whittakeri	

Hedgehog Grass	S W K		Echinopogon ovatus	
Paterson's Curse		M *	Echium plantagineum	
Perennial Veldt-grass		M *	Ehrharta calycina	
Saloop	S	K M \$	Einadia hastata	
Nodding Saltbush	S	K M #	Einadia nutans	
Common Spike-rush	S W	M o	Eleocharis acuta	
Slender Spike-rush		M o	Eleocharis gracilis	
Small Spike-sedge	W		Eleocharis pusilla	
Tall Spike-rush	S W	+	Eleocharis sphacelata	
Wheat Grass		M o	Elymus scabrus	
Three-cornered Jack	S	M *	Emex australis	
Barrier Saltbush	S W K M	#	Enchylaena tomentosa	
Pappus Grass (Nigger-heads)	W K M		Enneapogon nigricans	
Variable Willow-herb	S W	M o	Epilobium billardierianum ssp cinereum	
Glandular Willow-herb		M *	Epilobium ciliatum	
Smooth Willow-herb	S		Epilobium glabellum (E. billardierianum?)	
Hairy Willow-herb		M o	Epilobium hirtigerum	
Willow-herb	W		Epilobium junceum (E. billardierianum)	
Love Grass	S W K M	o	Eragrostis brownii	
Turkey-bush	S W K M	\$	Eremophila deserti	
Parson's Bands	W		Eriochilus cucullatus	
Big Heron's-bill		M *	Erodium botrys	
Blue Heron's-bill	S W K M	\$	Erodium crinitum	
Blue Heron's-bill	S		Erodium cygnorum (see E. crinitum)	
Blue Devil	W	+	Eryngium ovinum	
Blue Devil	W		Eryngium rostratum (see E. ovinum)	
Prickfoot	W	+	Eryngium vesiculosum	
Narrow-leaved Peppermint	S		Eucalyptus amygdalina (see E. radiata)	
River Redgum	S W K M	#	Eucalyptus camaldulensis	
Sugar Gum		M *	Eucalyptus cladocalyx	
Grey Box	S		Eucalyptus hemiphloia (see E. microcarpa)	
Yellow Gum	S	K M #	Eucalyptus leucoxylo	
Yellow Box	S W K M	#	Eucalyptus melliodora	
Grey Box	S W K M	\$	Eucalyptus microcarpa	
Swamp Gum	W	+	Eucalyptus ovata	
Narrow-leaved Peppermint	W		Eucalyptus radiata	
Red Gum	S		Eucalyptus rostrata (see E. camaldulensis)	
Manna Gum	S W K M	#	Eucalyptus viminalis	
Flat Spurge	S W	M o	Euphorbia drummondii (Chamaesyce drummondii)	
Petty Spurge		M *	Euphorbia peplus	
Eutaxia	S		Eutaxia empetrifolia (see E. microphylla)	
Spreading Eutaxia	S W K M	\$	Eutaxia microphylla var. diffusa	
Common Eutaxia	S W K M	\$	Eutaxia microphylla var. microphylla	
Cherry Ballart	S W K	+	Exocarpos cupressiformis	
Pale-fruit Ballart		K	+ Exocarpos strictus	
Fennel		M *	Foeniculum vulgare	
Common Fumitory		M *	Fumaria officinalis	
Cleavers		M *	Galium aparine	
Tangled Bed-straw	S		Galium australe	
Rough Bed-straw	S W		Galium gaudichaudii	
Rough Bed-straw	S		Galium umbrosum (see G. gaudichaudii)	
Fragile Oat		M *	Gaudinia fragilis	
Cut-leaf Crane's-bill	S	M *	Geranium dissectum	
Hairy Geranium	S W		Geranium pilosum	

Crane's-bill	S W K M #	Geranium retrorsum
Sweet-grass	W K +	Glyceria australis
Manna Grass	S	Glyceria fluitans (G. declinata)
Twining Glycine	S W K	Glycine clandestina
Clover Glycine	S W K	Glycine latrobeana
Variable Glycine	S W K M \$	Glycine tabacina
Creeping Cudweed	K	Gnaphalium gymnocephalum(see G.involucratum)
Creeping Cudweed	W K M	Gnaphalium involucratum (Euchiton inv.)
Japanese Cudweed	S	Gnaphalium japonicum (Euchiton inv.)
Jersey Cudweed	S W	Gnaphalium luteo-album(see Pseudo-gnaphalium)
Purple Cudweed	W	Gnaphalium purpureum
Common Raspwort	W M \$	Gonocarpus tetragynus
Tall Raspwort		+ Gonocarpus elatus
Slender Goodenia	S M \$	Goodenia gracilis
Hop Goodenia	S W K M \$	Goodenia ovata
Cut-leaf Goodenia	W +	Goodenia pinnatifida
Golden-tips	K M \$	Goodia lotifolia
Brooklime	W	Gratiola peruviana
Grevillea	K \$	Grevillea glabella
Hemp Bush	W K \$	Gynatrix pulchella
Varied Raspwort	W \$	Haloragis heterophylla
Common Raspwort	W	Haloragis tetragyna(see Gonocarpus tetragyna)
Sarsparilla	W K M \$	Hardenbergia violacea
Common Everlasting	S W K M \$	Helichrysum apiculatum
Grey Everlasting	K +	Helichrysum obcordatum (Ozothamnus ob.)
Pale Everlasting	S K	Helichrysum rutidolepis(see H.sp.aff.rutidolepis)
Curling Everlasting	S W	Helichrysum scorpioides
Clustered Everlasting	S W K M \$	Helichrysum semipapposum(Chrysocephalum)
Everlasting	K +	Helichrysum sp. aff. acuminatum
Everlasting	S K M \$	Helichrysum sp. aff. rutidolepis
Chamomile Sunray	S W K M #	Helipterum anthemoides
Common Sunray	W	Helipterum australe(Triptilodiscus pygmaeus)
White Sunray	S W	Helipterum corymbiflorum
Mat Grass	W K	Hemarthria uncinata
Yorkshire Fog	M *	Holcus lanatus
Rigid Panic	W K M #	Homopholis proluta
Small Pennywort	W	Hydrocotyle callicarpa
Thread Pennywort	W	Hydrocotyle capillaria
Hairy Pennywort	W	Hydrocotyle hirta
Stinking Pennywort	W	Hydrocotyle laxiflora
Slender Pennywort	W	Hydrocotyle tripartita
Tree Violet	S W K M #	Hymenanchera dentata
Oval Purse	W	Hymenolobus procumbens
Small St.John's Wort	S W M \$	Hypericum gramineum
Small St.John's Wort	S	Hypericum japonicum
Cat's-ear	M *	Hypochoeris radicata
Yellow Star	W K +	Hypoxis glabella
Austral Indigo	S W K M \$	Indigofera australis
Grass-cushion	S W K +	Isoetopsis graminifolia
Nodding Club-rush	M o	Isolepis cernua
Swamp Club-rush	M o	Isolepis inundata
Knobby Club-rush	S W K +	Isolepis nodosa
Swamp Isotome	W +	Isotoma fluviatilis
Plover Daisy	S W K +	Ixiolaena leptolepis

Sharp Rush	M *	Juncus acutus
Rush	K M o	Juncus amabilis
Toad Rush	S W K M o	Juncus bufonius
Grassy Rush	K M o	Juncus caespiticus
Common Rush	S	Juncus effusus
Rush	K +	Juncus gregiflorus
Joint-leaf Rush	W K +	Juncus holoschoenus
Wiry Rush	S W K +	Juncus homalocaulis
Sea Rush		+ Juncus kraussii
Pale Rush	W K M o	Juncus pallidus
Wiry Rush	S W	Juncus plebeius (see J. homalocaulis)
Rush	W	Juncus polyanthemos
Hoary Rush	W	Juncus radula
Rush Duckweed	K M o	Juncus sarophorus
Finger Rush	K M o	Juncus subsecundus
Running Postman	S W K M \$	Kennedia prostrata
Wingless Bluebush	W	Kochia crassiloba(see Maireana enchylaenoides)
Common Bluebush	W	Kochia villosa (see Maireana decalvens)
Austral Hollyhock	S W K M #	Lavatera plebeia
Common Duckweed	S W K M #	Lemna minor
Common Pepper-cress	M *	Lepidium africanum
Spiny Pepper-cress	W	Lepidium aschersonii
Field Cress	M *	Lepidium campestre
Small Pepper-cress	W	Lepidium hyssopifolium
Rubble Pepper-cress	S	Lepidium ruderale
Variable Sword-sedge	S W K +	Lepidosperma laterale
Pithy Sword-sedge	K +	Lepidosperma longitudinale
Woolly Buttons	W K +	Leptorhynchos panaetioides
Scaly Buttons	S W K +	Leptorhynchos squamatus
Wiry Buttons	S W K +	Leptorhynchos tenuifolius
Woolly Tea-tree	S W K M #	Leptospermum lanigerum
Levenhookia	W +	Levenhookia dubia
Australian Lilaeopsis	W	Lilaeopsis polyantha
Native Flax	S W M +	Linum marginale
Angled Lobelia	S W M o	Lobelia alata
Angled Lobelia	S	Lobelia anceps (see L. alata)
Poison Lobelia	W	Lobelia pratioides
Perennial Rye-grass	M *	Lolium perenne
Wattle Mat-rush	S W K +	Lomandra filiformis
Spiny-headed Mat-rush	K M o	Lomandra longifolia
Small-flower Mat-rush	W K \$	Lomandra micrantha
Harlequin Mistletoe	S	Loranthus exocarpi (see Lysiana)
Creeping Mistletoe	S	Loranthus celastroides (see Muellerina)
Hanging Mistletoe	S	Loranthus pendulus(see Amyema pendulum)
Austral Trefoil	S W K +	Lotus australis
Field Woodrush	W	Luzula campestris
African Box-thorn	M *	Lycium ferrocissimum
Harlequin Mistletoe	S W K +	Lysiana exocarpi
Small Loosestrife	S W M o	Lythrum hyssopifolia
Purple Loosestrife	S W	Lythrum salicaria
Bluebush	K +	Maireana brevifolia
Common Bluebush	W K M \$	Maireana decalvens
Wingless Bluebush	W K M +	Maireana enchylaenoides
Slender bluebush	K +	Maireana pentagona

Mallow M * Malva sp.
Horehound M * Marrubium vulgare
Narrow-leaf Nardoo + Marsilea angustifolia
Common Nardoo S Marsilea brownii (see M. drummondii)
Common Nardoo S W K + Marsilea drummondii
Burr Medic M * Medicago polymorpha
Sweet Melilot M * Melilotus indica
River Mint S W M o Mentha australis
Slender Mint S W \$ Mentha diemenica
Slender Mint S Mentha gracilis (see M. diemenica)
Weeping Grass S W K M Microlaena stipoides
Murrmong Yam S Microseris fosteri (see M. scapigera)
Yam Daisy W Microseris lanceolata(see M. scapigera)
Yam Daisy S W K + Microseris scapigera
Onion Orchid W + Microtis unifolia
Soft Millotia W Millotia tenuifolia
Creeping Monkey-flower W M o Mimulus repens
Minnie Daisy S W K \$ Minuria leptophylla
Carolina Mallow M * Modiola caroliniana
Tangled Lignum S W K M \$ Muehlenbeckia cunninghamii (florulenta)
Creeping Mistletoe S W K o Muellerina eucalyptoides
Turkey Bush S W Myoporum deserti(see Eremophila deserti)
Coast Boobialla S W K M \$ Myoporum insulare
Sticky Boobialla S W K M \$ Myoporum viscosum
Woolly-heads W Myriocephalus rhizocephalus
Water Milfoil S W M o Myriophyllum verrucosum
Muttonwood W Myrsine howitteana(see Rapanea howitteana)
Fine Spear-grass M * Nassella hyalina
Chilean Needle-grass M * Nassella neesiana
Serrated Tussock M * Nassella trichotoma
Austral Tobacco S W K M o Nicotiana suaveolens
Winged Daisy-bush S W K + Olearia decurrens
Heraldic Thistle M * Onopordum acanthium
Adder's Tongue W Ophioglossum coriacem(see O.lusitanicum)
Adder's Tongue S W K Ophioglossum lusitanicum
Adder's Tongue S Ophioglossum vulgatum(see O.lusitanicum)
Prickly-pear M * Opuntia sp.
Prickly-pear Opuntia stricta (see O. sp.)
Australian Caraway W Oreiomyrrhis eriopoda
Yellow Wood-sorrel S W * Oxalis corniculata
Wood-sorrel K M + Oxalis perennans
Soursob M * Oxalis pes-caprae
Australian Millet S M \$ Panicum decompositum
Rigid Panic W K Panicum prolutum(see Homopholis proluta)
Coast Barb-grass M * Parapholis incurva
Shade Pellitory W Parietaria debilis
Paspalum M * Paspalum dilatatum
Water Couch S W K + Paspalum distichum
Austral Stork's-bill S W K M o Pelargonium australe
Magenta Stork's-bill S W K + Pelargonium rodneyanum
Sickle Fern S W K M o Pellaea falcata
Water Pepper S W K o Persicaria hydropiper
Redshank Persicaria M * Persicaria maculosa
Creeping Knotweed S W K o Persicaria prostrata

Hairy Pink M * Petrorhagia velutina
Canary-grass M * Phalaris aquatica
Lesser Canary-grass M * Phalaris minor
Common Reed S W K M o Phragmites australis
Common Reed S W Phragmites communis (see P. australis)
Red-ink Weed M * Phytolacca octandra
Ox-tongue M * Picris echioides
Austral Pillwort W K Pilularia novae-hollandiae
Rice-flower S W K + Pimelea curviflora
Smooth Rice-flower S W K M \$ Pimelea glauca
Rice-flower S W K + Pimelea humilis
Slender Rice-flower K M \$ Pimelea linifolia
Rice-flower S W Pimelea serpyllifolia(see P.spinescens)
Rice-flower S W K + Pimelea spinescens
Hemp Bush W Plagianthus pulchellus(see Gynatrix pulchella)
Buck's-horn Plantain M * Plantago coronopus
Ribwort M * Plantago lanceolata
Variable Plantain S W M \$ Plantago varia
Blanket Fern S W K M o Pleurosorus rutifolius
Tussock-grass W Poa australis
Tufted Meadow-grass S Poa caespitosa
Tussock-grass S K M # Poa labillardieri
Large Podolepis S Podolepis acuminata (see P. jaceoides)
Showy Podolepis S W K + Podolepis jaceoides
Prostrate Knotweed M * Polygonum aviculare
Slender Knotweed W K o Polygonum decipiens (Persicaria decipiens)
Water-pepper S W K Polygonum hydropiper (see Persicaria hydropiper)
Slender Knotweed S W K Polygonum minus (see P. decipiens)
Small Knotweed W Polygonum plebeium
Creeping Knotweed S W K Polygonum prostratum (Persicaria prostrata)
Hairy Knotweed S W Polygonum subsessile (Persicaria subsessile)
Annual Beard-grass M * Polypogon monspeliensis
Hazel Pomaderris S Pomaderris apetalà (see P. aspera)
Hazel Pomaderris S W K Pomaderris aspera
Small Poranthera W Poranthera microphylla
Common Purslane W Portulaca oleracea
Tawny Leek-orchid W Prasophyllum fuscum
Sweet Leek-orchid W Prasophyllum odoratum
Poison Pratia W K + Pratia concolor
Self-heal W Prunella vulgaris
Jersey Cudweed W K M o Pseudognaphalium luteoalbum
Mountain Psoralea K Psoralea adscendans
Small Psoralea W K + Psoralea parva
Tough Psoralea S W K + Psoralea tenax
Common Bracken S Pteridium aquilinum (see P. esculentum)
Austral Bracken S W K M o Pteridium esculentum
Swan Greenhood W Pterostylis cycnocephala
Midget Greenhood W Pterostylis mutica
Feather-heads W P + Ptilotis macrocephalus (Diggers Rest)
Pussy-tails S W P M o Ptilotis spathulatus
Chaffy bush-pea K + Pultenaea paleacea
Matted Bush-pea K + Pultenaea pedunculata
River Buttercup W + Ranunculus lappaceus
Muttonwood S W K \$ Rapanea howitteana

Muttonwood	S		<i>Rapanea variabilis</i> (see <i>R. howitteana</i>)
Wild Radish		M *	<i>Raphanus raphanistrum</i>
Weld		M *	<i>Reseda luteola</i>
Seaberry Saltbush	W	+	<i>Rhagodia baccata</i>
Saloop	S		<i>Rhagodia hastata</i> (see <i>Einadia hastata</i>)
Nodding Saltbush	S W		<i>Rhagodia nutans</i> (see <i>Einadia nutans</i>)
Fragrant Saltbush	W K M \$		<i>Rhagodia parabolica</i>
Onion-grass		M *	<i>Romulea rosea</i>
Sweet Briar		M *	<i>Rosa rubiginosa</i>
Tiny Bristle-grass		M *	<i>Rostraria pumila</i>
Blackberry		M *	<i>Rubus fruticosus</i> spp. agg.
Small-leaf Bramble	K M o		<i>Rubus parvifolius</i>
Small-leaf Bramble	W		<i>Rubus triphyllus</i> (see <i>R. parvifolius</i>)
Sheep Sorrel		M *	<i>Rumex acetosella</i> spp. agg.
Mud Dock	S W K o		<i>Rumex bidens</i>
Slender Dock	S W K M o		<i>Rumex brownii</i>
Curled Dock		M *	<i>Rumex crispus</i>
Wiry Dock	W K	+	<i>Rumex dumosus</i>
Dock		M o	<i>Rumex</i> sp.
Button Wrinklewort	S W K \$		<i>Rutidosis leptorrhynchoides</i>
Small Wrinklewort	W		<i>Rutidosis multiflora</i>
Sea Pearlwort		M *	<i>Sagina maritima</i>
Weeping Willow		M *	<i>Salix babylonica</i>
Prickly Saltwort	S K M o		<i>Salsola kali</i> (possibly not native)
White Elderberry	S W K M o		<i>Sambucus gaudichaudiana</i>
Creeping Brookweed	W	M o	<i>Samolus repens</i>
Pepper-tree		M *	<i>Schinus molle</i>
River Club-rush		K M o	<i>Schoenoplectus validus</i>
Common bog-rush	S W K M o		<i>Schoenus apogon</i>
Bristle Bog-rush	S		<i>Schoenus capillaris</i>
Floating Club-rush	S W		<i>Scirpus fluitans</i>
Knobby-Club-rush	S W K		<i>Scirpus nodosus</i> (see <i>Isolepis nodosa</i>)
Five-spined Bassia	W K	+	<i>Sclerolaena muricata</i>
Dwarf Skullcap	S W		<i>Scutellaria humilis</i>
White Sebaea	W		<i>Sebaea albidiflora</i>
Yellow Sebaea	W	+	<i>Sebaea ovata</i>
Branching Groundsel	S W K M o		<i>Senecio cunninghamii</i>
Fireweed Senecio	S		<i>Senecio dryadeus</i> (see <i>S. hispidulus</i>)
Annual Groundsel		M \$	<i>Senecio glomeratus</i>
Slender Groundsel	W		<i>Senecio glossanthus</i>
Rough Fireweed	S W K	+	<i>Senecio hispidulus</i>
Variable Fireweed	W		<i>Senecio lautus</i>
Fireweed Groundsel	W		<i>Senecio linearifolius</i>
Large-fruit Groundsel	K M \$		<i>Senecio macrocarpus</i>
Cotton Fireweed	W K M \$		<i>Senecio quadridentatus</i>
Desert Cassia	W K M \$		<i>Senna artemisioides</i> ssp. <i>filifolia</i>
Indian Weed	W		<i>Sigesbeckia orientalis</i>
Variiegated Thistle		M *	<i>Silybum marianum</i>
Hedge Mustard		M *	<i>Sisymbrium officinale</i>
Kangaroo Apple	S W		<i>Solanum aviculare</i> (see <i>S. laciniatum</i>)
Kangaroo Apple	S W K M #		<i>Solanum laciniatum</i>
Apple of Sodom		M *	<i>Solanum linnaeanum</i>
Black Nightshade	S W	M *	<i>Solanum nigrum</i>
Solenogyne	W		<i>Solenogyne bellioides</i> (see <i>S. gunnii</i>)

Solenogyne	W K	+	<i>Solenogyne gunnii</i>
Prickly Sow Thistle		M *	<i>Sonchus asper</i>
Sow Thistle		M *	<i>Sonchus oleraceus</i>
Corn Spurrey		M *	<i>Spergula arvensis</i>
Red Sand-spurrey	W		<i>Spergularia rubra</i>
Creamy Stackhousia	S		<i>Stackhousia linarifolia</i> (see <i>S. monogyna</i>)
Creamy Stackhousia	S W	+	<i>Stackhousia monogyna</i>
Slender Stackhousia	S W		<i>Stackhousia viminea</i>
Swamp Starwort	W		<i>Stellaria palustris</i>
Prickly Starwort	W	+	<i>Stellaria pungens</i>
Buffalo Grass		M *	<i>Stenotaphrum secundatum</i>
Plump Spear-grass	W	+	<i>Stipa aristiglumis</i>
Spear Grass	K	+	<i>Stipa bigeniculata</i>
Feather Spear-grass	K	+	<i>Stipa elegantissima</i>
Spear Grass		M \$	<i>Stipa gibbosa</i>
Spear Grass		M o	<i>Stipa nodosa</i>
Spear Grass		M o	<i>Stipa pubinodis</i>
Spear Grass	S W K	+	<i>Stipa semibarbata</i>
Corkscrew Grass	S W		<i>Stipa setacea</i>
Spear Grass	W K	o	<i>Stipa variabilis</i> complex
Spoon Cudweed	W	+	<i>Stuartina muelleri</i>
Stylidium	W	+	<i>Stylidium graminifolium</i>
Cranberry Heath	S		<i>Styphelia humifusa</i> (see <i>Astroloma humifusum</i>)
Peach Heath	S		<i>Styphelia strigosa</i>
Austral Seablite	W	+	<i>Suaeda australis</i>
Leafy Templetonia	S		<i>Templetonia muelleri</i> (see <i>T. stenophylla</i>)
Leafy Templetonia	S	K M \$	<i>Templetonia stenophylla</i>
New Zealand Spinach		M \$	<i>Tetragonia tetragonioides</i>
Scented Sun-orchid	W	+	<i>Thelymitra aristata</i> (<i>T. nuda</i>)
Dotted Sun-orchid	W		<i>Thelymitra ixioides</i>
Kangaroo Grass	W K		<i>Themeda australis</i> (see <i>T. triandra</i>)
Kangaroo Grass	W K M #		<i>Themeda triandra</i>
Coast bonefruit	S K	+	<i>Threlkeldia diffusa</i>
Twining Fringe-lily	W K	+	<i>Thysanotus patersonii</i>
Common Fringe-lily	W K		<i>Thysanotus tuberosus</i>
Salsify		M *	<i>Tragopogon porrifolius</i>
Caltrop	W		<i>Tribulus terrestris</i>
Yellow Rush-lily	W K	+	<i>Tricoryne elatior</i>
Narrow-leaf Clover		M *	<i>Trifolium angustifolium</i>
Hop Clover		M *	<i>Trifolium campestre</i>
Strawberry Clover		M *	<i>Trifolium fragiferum</i>
Cluster Clover		M *	<i>Trifolium glomeratum</i>
Knotted Clover		M *	<i>Trifolium striatum</i>
Subterranean Clover		M *	<i>Trifolium subterraneum</i>
Water Ribbons	S W K M o		<i>Triglochin procera</i>
Streaked Arrow-grass	W		<i>Triglochin striata</i>
Rye Beetle-grass		K M o	<i>Tripogon loliiformis</i>
Wheat		M *	<i>Triticum aestivum</i>
Bulrush	S W		<i>Typha angustifolia</i> (see <i>T. domingensis</i>)
Bulrush	S W K M o		<i>Typha domingensis</i>
Furze		M *	<i>Ulex europaeus</i>
Scrub Nettle	S W K M o		<i>Urtica incisa</i>
Purple Bladderwort	W	+	<i>Utricularia dichotoma</i>
Spur Velleia	W	+	<i>Velleia paradoxa</i>

Twiggy Mullein		M *	<i>Verbascum virgatum</i>
Purple-top Verbena		M *	<i>Verbena bonariensis</i>
Common Vervain	S W		<i>Verbena officinalis</i>
Slender Speedwell	W	+	<i>Veronica gracilis</i>
Common Vetch		M *	<i>Vicia sativa</i>
Golden Spray	S		<i>Viminaria denudata</i> (see <i>V. juncea</i>)
Golden Spray	S	K M o	<i>Viminaria juncea</i>
Blue Periwinkle		M *	<i>Vinca major</i>
Ivy-leaf Violet	W		<i>Viola hederacea</i>
New Holland Daisy	S		<i>Vittadinia australis</i> (see <i>V. sp.</i>)
New Holland Daisy		K	+ <i>Vittadinia cuneata</i>
New Holland Daisy		K	+ <i>Vittadinia gracilis</i>
New Holland Daisy		K	+ <i>Vittadinia muelleri</i>
New Holland Daisy	S W	M \$	<i>Vittadinia sp.</i>
New Holland Daisy	W		<i>Vittadinia triloba</i> (see <i>V. sp.</i>)
Squirrel-tail Fescue		M *	<i>Vulpia bromoides</i>
Tufted Bluebell	W		<i>Wahlenbergia bicolor</i> (see <i>W. communis</i>)
Tufted Bluebell	W	M #	<i>Wahlenbergia communis</i>
Tall Bluebell	W		<i>Wahlenbergia consimilis</i> (see <i>W. stricta</i>)
Austral Bluebell	S W		<i>Wahlenbergia gracilis</i>
Austral Bluebell	W		<i>Wahlenbergia quadrifida</i> (see <i>W. gracilis</i>)
Tall Bluebell	W	M +	<i>Wahlenbergia stricta</i>
Tadgell's Bluebell	W		<i>Wahlenbergia tadgellii</i> (<i>W. multicaulis</i>)
Tiny Duckweed	S W		<i>Wolffia arrhiza</i> (see <i>W. australiana</i>)
Tiny Duckweed	S W K M o		<i>Wolffia australiana</i>
Early Nancy	W K	o	<i>Wurmbea dioica</i>
Twin-leaf	W	M o	<i>Zygophyllum glaucum</i>

McDougall's list: 277 species
of which 110 are exotics
(about 40%)

ORGAN PIPES NATIONAL PARK

Plant Species List - May 1991

Compiled from lists of Barry Kemp, Rosemary Myers, L. Jolley and Keith McDougall; * indicates an exotic species. \$ - re-introduced and persisting. # - re-introduced but also occurring naturally in the Park.

There are 164 native species and 113 exotic species recorded for the Park. These numbers will continue to change as further re-introductions of basalt plains flora are made and exotic species are eradicated.

Ferns

ADIANTACEAE (Maidenhair Fern Family)

Cheilanthes austrotenuifolia
Cheilanthes distans
Pellaea falcata

Rock Fern
Bristly Cloak-fern
Sickle Fern

ASPLENIACEAE (Spleenwort Family)

Asplenium flabellifolium
Pleurosorus rutifolius

Necklace Fern
Blanket Fern

AZOLLACEAE (Azolla Family)

Azolla filiculoides

Pacific Azolla

DENNSTAEDTIACEAE (Ground-fern Family)

Pteridium esculentum

Bracken

Gymnosperms

CALLITICHACEAE (Cypress Pine Family)

Callitris glaucophylla

Murray Pine \$

Angiosperms - Monocotyledons

ALISMATACEAE

Alisma plantago-aquatica

Water Plantain

CYPERACEAE (Sedge Family)

* *Cyperus eragrostis*
Eleocharis acuta
Eleocharis gracilis
Isolepis cernua
Isolepis inundata
Schoenoplectus validus
Schoenus apogon

Drain Flat-sedge
Common Spike-rush
Slender Spike-rush
Nodding Club-rush
Swamp Club-rush
River Club-rush
Common Bog-rush

IRIDACEAE (Iris Family)

* *Romulea rosea*

Onion-grass

JUNCACEAE (Rush Family)

* *Juncus acutus*
Juncus amabilis
Juncus bufonius
Juncus caespiticus
Juncus pallidus

Sharp Rush
Rush
Toad Rush
Grassy Rush
Pale Rush

Juncus sarophorus
Juncus subsecundus

JUNCAGINACEAE (Arrowgrass Family)
Triglochin procera

LEMNACEAE (Duckweed Family)
* *Lemna minor*
Wolffia australiana

LILIACEAE (Lily Family)
Bulbine bulbosa
Dianella longifolia var. *longifolia*
Dianella revoluta

POACEAE (Grass Family)

* *Agropogon littoralis*
* *Agrostis stolonifera*
* *Aira caryophyllea*
Aristida ramosa
* *Avena barbata*
* *Avena fatua*
* *Avena sterilis* ssp. *ludoviciana*
Bothriochloa macra
* *Briza maxima*
* *Briza minor*
* *Bromus catharticus*
* *Bromus diandrus*
* *Bromus hordeaceus*
* *Bromus madritensis*
Chloris truncata
* *Critesion murinum* ssp. *leporinum*
* *Cynodon dactylon*
* *Cynosurus echinatus*
* *Dactylis glomerata*
Danthonia auriculata
Danthonia caespitosa
Danthonia duttoniana
Danthonia geniculata
Danthonia pilosa
Danthonia racemosa
Danthonia setacea
* *Desmazeria rigidum*
Dicanthium sericeum
Distichlis distichophylla
* *Ehrharta calycina*
Elymus scabrurus
Enneapogon nigricans
Eragrostis brownii
* *Gaudinia fragilis*
* *Holcus lanatus*
Homopholis proluta
* *Lolium perenne*
Microlaena stipoides
* *Nassella hyalina*
* *Nassella neesiana*

Rush Duckweed
Finger Rush

Water-ribbons

Common Duckweed
Tiny Duckweed

Bulbine Lily \$
Pale-anther Flax-lily #
Black-anther Flax-lily #

Perennial Beard-grass
Creeping Bent
Silvery Hair-grass
Cane Wire-grass
Bearded Oat
Wild Oat
Oat
Redleg Grass #
Large Quaking-grass
Lesser Quaking-grass
Prairie grass
Great Brome
Soft Brome
Compact Brome
Windmill Grass #
Barley-grass
Couch
Rough Dog's-tail
Cocksfoot
Lobed Wallaby-grass
Common Wallaby-grass
Brown-back Wallaby grass #
Kneed Wallaby-grass
Velvet Wallaby-grass
Wallaby-grass
Bristly Wallaby-grass
Fern Grass
Silky Blue-grass #
Salt Grass
Perennial Veldt Grass
Wheat Grass
Pappus Grass
Love Grass
Fragile Oat
Yorkshire Fog
Rigid Panic #
Perennial Rye-grass
Weeping Grass
Fine Spear Grass
Chilean Needle-grass

* *Nassella trichotoma*
Panicum decompositum
* *Parapholis incurva*
* *Paspalum dilatatum*
* *Phalaris aquatica*
* *Phalaris minor*
Phragmites australis
Poa labillardieri
* *Polypogon monspeliensis*
* *Rostraria pumila*
* *Stenotaphrum secundatum*
Stipa gibbosa
Stipa nodosa
Stipa pubinodis
Themeda triandra
Tripogon loliiiformis
* *Triticum aestivum*
* *Vulpia bromoides*

TYPHACEAE (Bulrush Family)
Typha domingensis

XANTHORRHOACEAE (Grass-tree Family)
Lomandra longifolia

Angiosperms - dicotyledons

AIZOACEAE (Pigface Family)
Carpobrotus rossii
Tetragonia tetragonioides

AMARANTHACEAE (Amaranth Family)
Alternanthera denticulata
* *Amaranthus albus*
Ptilotus spathulatus

ANACARDIACEAE
* *Schinus molle*

APIACEAE (Carrot Family)
Apium prostratum
* *Foeniculum vulgare*

APOCYNACEAE (Oleander Family)
* *Vinca major*

ASTERACEAE (Daisy Family)
* *Arctotheca calendula*
* *Aster subulatus*
Calocephalus citreus
Calotis scapigera
* *Carduus tenuiflorus*
* *Carthamus lanatus*
Cassinia arcuata
Cassinia longifolia
* *Cirsium vulgare*

Serrated Tussock
Australian Millet \$
Coast Barb-grass
Paspalum
Canary-grass
Lesser Canary-grass
Common Reed
Tussock Grass #
Annual Beard-grass
Tiny Bristle-grass
Buffalo Grass
Spear Grass \$
Spear Grass
Spear Grass
Kangaroo Grass #
Rye Beetle-grass
Wheat
Squirrel-tail Fescue

Bulrush

Spiny-headed Mat-rush

Karkalla #
New Zealand Spinach \$

Lesser Joyweed
White Amaranth
Pussy-tails

Pepper-tree

Sea Celery
Fennel

Blue Periwinkle

Cape Weed
Aster-weed
Lemon Beauty-heads \$
Tufted Burr-daisy \$
Slender Thistle
Saffron Thistle
Chinese Scrub \$
Shiny Cassinia \$
Spear Thistle

* *Conyza bonariensis*
Cotula australis
 * *Cotula coronopifolia*
Craspedia chrysantha
 * *Crepis capillaris*
 * *Cynara cardunculus*
 * *Dittrichia graveolens*
Gnaphalium involucratum
Helichrysum apiculatum
Helichrysum sp. aff. *rutidolepis*
Helichrysum semipapposum
Helipterum anthemoides
 * *Hypochoeris radicata*
 * *Onopordum acanthium*
 * *Picris echioides*
Pseudognaphalium luteoalbum
Senecio cunninghamii
Senecio glomeratus
Senecio macrocarpus
Senecio quadridentatus
 * *Silybum marianum*
 * *Sonchus asper*
 * *Sonchus oleraceus*
 * *Tragopogon porrifolius*
Vittadinia sp.

BORAGINACEAE (Borage Family)

* *Echium plantagineum*

BRASSICACEAE (Mustard Family)

* *Cardaria draba*
 * *Lepidium africanum*
 * *Lepidium campestre*
 * *Raphanus raphanistrum*
 * *Sisymbrium officinale*

CACTACEAE (Cactus Family)

* *Opuntia* sp.

CAESALPINIACEAE

Senna artemisioides ssp. *filifolia*

CAMPANULACEAE (Bluebell Family)

Lobelia alata
Wahlenbergia communis
Wahlenbergia stricta

CAPRIFOLIACEAE (Honeysuckle Family)

Sambucus gaudichaudiana

CARYOPHYLLACEAE (Carnation Family)

* *Petrorhagia velutina*
 * *Sagina maritima*
 * *Spergula arvensis*

Tall Fleabane
 Common Cotula
 Water-buttons
 Golden Billy-buttons \$
 Smooth Hawksbeard
 Spanish Artichoke
 Stinkwort
 Creeping Cud-weed
 Common Everlasting \$
 Everlasting \$
 Clustered Everlasting \$
 Chamomile Sunray #
 Cat's-ear
 Heraldic Thistle
 Ox-tongue
 Jersey Cud-weed
 Groundsel
 Fireweed \$
 Groundsel \$
 Cotton Fireweed \$
 Variegated Thistle
 Prickly Sow Thistle
 Sow Thistle
 Salsify
 New Holland Daisy \$

Paterson's Curse

Hoary Cress
 Cress
 Field Cress
 Wild Radish
 Hedge Mustard

Prickly-pear

Desert Cassia \$

Angled Lobelia
 Tufted Bluebell #
 Tall Bluebell

White Elderberry

Hairy Pink
 Sea Pearlwort
 Corn Spurrey

CASUARINACEAE (She-oak Family)

Allocasuarina verticillata

CHENOPODIACEAE (Goosefoot or Spinach Family)

Atriplex semibaccata
 * *Beta vulgaris*
Chenopodium desertorum ssp. *microphyllum*
 * *Chenopodium murale*
Chenopodium pumilio
Einadia hastata
Einadia nutans
Enchylaena tomentosa
Maireana decalvens
Maireana enchylaenoides
Rhagodia parabolica
Salsola kali

CLUSIACEAE (St John's Wort Family)

Hypericum gramineum

CONVOLVULACEAE (Convolvulus Family)

Calystegia sepium
 * *Convolvulus arvensis*
Convolvulus erubescens
Dichondra repens

CRASSULACEAE (Stonecrop Family)

Crassula helmsii
Crassula sieberana

CUCURBITACEAE (Cucumber Family)

* *Cucumis myriocarpus*

EUPHORBIACEAE (Spurge Family)

Euphorbia drummondii
 * *Euphorbia peplus*

FABACEAE (Pea Family)

Dillwynia sericea
Eutaxia microphylla var. *diffusa*
Eutaxia microphylla var. *microphylla*
Glycine tabacina
Goodia lotifolia
Hardenbergia violacea
Indigofera australis
Kennedia prostrata
 * *Medicago polymorpha*
 * *Melilotus indica*
Templetonia stenophylla
 * *Trifolium angustifolium*
 * *Trifolium campestre*
 * *Trifolium fragiferum*
 * *Trifolium glomeratum*
 * *Trifolium striatum*
 * *Trifolium subterraneum*
 * *Ulex europaeus*

Drooping She-oak \$

Berry Saltbush #
 Wild Beet
 Small-leaf Goosefoot
 Sowbane
 Clammy Goosefoot
 Saloop \$
 Nodding Saltbush #
 Barrier Saltbush #
 Common Bluebush \$
 Wingless Bluebush
 Fragrant Saltbush \$
 Prickly Saltwort

Small St. John's Wort

Large Bindweed
 Common Bindweed
 Blushing Bindweed #
 Kidney-weed

Swamp Crassula
 Sieber Crassula

Paddy Melon

Flat Spurge
 Petty Spurge

Grey Parrot-pea \$
 Spreading Eutaxia \$
 Common Eutaxia
 Variable Glycine \$
 Golden-tips \$
 Sarsparilla
 Austral Indigo \$
 Running Postman \$
 Burr Medic
 Sweet Melilot
 Leafy Templetonia \$
 Narrow-leaf Clover
 Hop Clover
 Strawberry Clover
 Cluster Clover
 Knotted Clover
 Subterranean Clover
 Furze

* <i>Vicia sativa</i> <i>Viminaria juncea</i>	Common Vetch Golden Spray
FUMARIACEAE (Fumitory Family) * <i>Fumaria officinalis</i>	Common Fumitory
GENTIANACEAE (Gentian Family) * <i>Centaurium tenuiflorum</i>	Centaury
GERANIACEAE (Geranium Family) * <i>Erodium botrys</i> <i>Erodium cicutarium</i> * <i>Geranium dissectum</i> <i>Geranium retrorsum</i> <i>Pelargonium australe</i>	Big Heron's-bill Blue Heron's-bill Cut-leaf Crane's-bill Crane's-bill # Austral Stork's-bill
GOODENIACEAE (Goodenia Family) <i>Goodenia gracilis</i> <i>Goodenia ovata</i>	Goodenia \$ Hop Goodenia \$
HALORAGACEAE (Raspwort Family) <i>Gonocarpus tetragynus</i> <i>Myriophyllum verrucosum</i>	Common Raspwort \$ Water Milfoil
LAMIACEAE (Mint Family) * <i>Marrubium vulgare</i> <i>Mentha australis</i>	Horehound River Mint
LINACEAE (Flax Family) <i>Linum marginale</i>	Native Flax
LYTHRACEAE (Loosestrife Family) <i>Lythrum hyssopifolia</i>	Small Loosestrife
MALVACEAE (Mallow Family) <i>Lavatera plebeia</i> (last seen 1974) (some found 1988) * <i>Malva</i> sp. * <i>Modiola caroliniana</i>	Austral Hollyhock Mallow Carolina mallow
MIMOSACEAE (Wattle Family) <i>Acacia acinacea</i> <i>Acacia dealbata</i> <i>Acacia implexa</i> <i>Acacia mearnsii</i> <i>Acacia melanoxylon</i> <i>Acacia paradoxa</i> <i>Acacia pycnantha</i> <i>Acacia retinodes</i> <i>Acacia verticillata</i>	Gold-dust Wattle # Silver Wattle # Lightwood # Black Wattle # Blackwood # Hedge Wattle \$ Golden Wattle \$ Wirilda \$ Prickly Moses #
MYOPORACEAE (Emu-bush Family) <i>Eremophila deserti</i> <i>Myoporum insulare</i> <i>Myoporum viscosum</i>	Turkey-bush \$ Coast Boobialla \$ Sticky Boobialla \$

MYRTACEAE (Eucalypt Family) <i>Callistemon sieberi</i> <i>Calytrix tetragona</i> <i>Eucalyptus camaldulensis</i> * <i>Eucalyptus cladocalyx</i> <i>Eucalyptus leucoxydon</i> <i>Eucalyptus melliodora</i> <i>Eucalyptus microcarpa</i> <i>Eucalyptus viminalis</i> <i>Leptospermum lanigerum</i>	River Bottlebrush # Fringe-myrtle River Redgum # Sugar Gum Yellow Gum # Yellow Box # Grey Box # Manna Gum \$ Woolly Tea-tree #
ONAGRACEAE (Willow-herb Family) <i>Epilobium billardierianum</i> ssp. <i>cinereum</i> * <i>Epilobium ciliatum</i> <i>Epilobium hirtigerum</i>	Variable Willow-herb Glandular Willow-herb Hairy Willow-herb
OXALIDACEAE (Wood-sorrel Family) <i>Oxalis perennans</i> * <i>Oxalis pes-caprae</i>	Wood-sorrel Sowsob
PHYTOLACCACEAE (Pokeweed Family) * <i>Phytolacca octandra</i>	Red-ink Weed
PITTOSPORACEAE (Pittosporum Family) <i>Bursaria spinosa</i>	Sweet Bursaria #
PLANTAGINACEAE (Plantain Family) * <i>Plantago coronopus</i> * <i>Plantago lanceolata</i> <i>Plantago varia</i>	Buck's-horn Plantain Ribwort Variable Plantain
POLYGONACEAE (Dock Family) * <i>Emex australis</i> <i>Muehlenbeckia cunninghamii</i> * <i>Persicaria maculosa</i> * <i>Polygonum aviculare</i> * <i>Rumex acetosella</i> spp. agg. <i>Rumex brownii</i> * <i>Rumex crispus</i> <i>Rumex</i> sp.	Three-cornered Jack Tangled Lignum \$ Persicaria Prostrate Knotweed Sheep Sorrel Slender Dock Curled Dock Dock
PRIMULACEAE (Primula Family) * <i>Anagallis arvensis</i> <i>Samolus repens</i>	Pimpernel Creeping Brookweed
PROTEACEAE (Grevillea Family) <i>Banksia marginata</i>	Silver Banksia \$
RANUNCULACEAE (Buttercup Family) <i>Clematis microphylla</i>	Small-leaf Clematis #
RESEDACEAE (Mignonette Family) * <i>Reseda luteola</i>	Weld

ROSACEAE (Rose Family)

Acaena nove-zelandiae
Acaena echinata
 * *Rosa rubiginosa*
 * *Rubus fruticosus* spp. agg.
Rubus parvifolius

RUBIACEAE (Coprosma Family)

Asperula scoparia
 * *Galium aparine*

RUTACEAE (Citrus Family)

Correa glabra

SALICACEAE (Willow Family)

* *Salix babylonica*

SAPINDACEAE (Hop-bush Family)

Dodonea viscosa ssp. *cuneata*

SCROPHULARIACEAE (Figwort Family)

Mimulus repens
 * *Verbascum virgatum*

SOLANACEAE (Potato Family)

* *Datura stramonium*
 * *Lycium ferocissimum*
Nicotiana suaveolens
Solanum laciniatum
 * *Solanum linnaeanum*
 * *Solanum nigrum*

THYMELAEACEAE (Daphne Family)

Pimelea glauca
Pimelea linifolia

URTICACEAE (Nettle Family)

Urtica incisa

VERBENACEAE (Verbena Family)

* *Verbena bonariensis*

VIOLACEAE (Violet Family)

Hymenanchera dentata

ZYGOPHYLLACEAE (Twin-leaf Family)

Zygophyllum glaucum

Bidgee-widgee
 Sheep's-burr \$
 Sweet Briar
 Blackberry
 Small-leaf Bramble

Prickly Woodruff
 Cleavers

Rock Correa #

Weeping Willow

Wedge-leaf Hop-bush #

Creeping Monkey-flower
 Twiggy Mullein

Common Thorn-apple
 African Box-thorn
 Austral Tobacco
 Kangaroo Apple #
 Apple of Sodom
 Black Nightshade

Smooth Rice-flower
 Slender Rice-flower

Scrub Nettle

Purple-top Verbena

Tree Violet #

Twin-leaf

Fauna of the Organ Pipes National Park

This report is a summary of fauna recorded at the Organ Pipes National Park during a three day survey period in February 1988.

Abundance categories:

A - more than 30 individuals recorded
 C - between 6 and 30 individuals recorded
 U - less than 6 individuals recorded
 P - recorded by rangers and park workers only

MAMMALS

Platypus (*Ornithorhynchus anatinus*) - C
 Common Ringtail Possum (*Pseudocheirus peregrinus*) - C
 Common Brushtail Possum (*Trichosurus vulpecula*) - C
 Eastern Grey Kangaroo (*Macropus giganteus*) - P
 Swamp Wallaby (*Wallabia bicolor*) - U
 White-striped Mastiff-Bat (*Tadarida australis*) - C
 Lesser Long-eared Bat (*Nyctophilus geoffroyi*) - C
 Gould's Wattled Bat (*Chalinolobus gouldii*) - U
 Chocolate Wattled Bat (*C. morio*) - C
 Little Forest Bat (*Eptesicus vulturinus*) - C
 Large Forest Bat (*E. darlingtoni*) - C
 King River Bat (*E. regulus*) - U
 Water Rat (*Hydromys chrysogaster*) - U
 Tree Rat (*Rattus rattus*) - U
 House Mouse (*Mus musculus*) - C
 Rabbit (*Cryptolagus cuniculus*) - C
 Fox (*Vulpes vulpes*) - C

BIRDS

Brown Goshawk - C
Black-shouldered Kite - U
Peregrine Falcon - U
Brown Falcon - U
Australian Kestrel - U
Dusky Moorhen - C
Fantailed Cuckoo - U
Horsfield Bronze Cuckoo - U
White-throated Needletail - A
Laughing Kookaburra - U
Sacred Kingfisher - U
Rainbow Bird - U
Welcome Swallow - C
Skylark - C
Richard's Pipit - U
Blackbird - C
Golden Whistler - U
Grey Fantail - C
Willie Wagtail - C
Clamorous Reed Warbler - U
Superb Fairy-wren - C
White-browed Scrubwren - A
Brown Thornbill - C
Yellow-rumped Thornbill - C
Yellow Thornbill - C
White-plumed Honeyeater - A
Brown-headed Honeyeater - U
Spotted Pardalote - U

Striated Pardalote - C
Silvereye - C
Goldfinch - A
European Greenfinch - U
House Sparrow - C
Red-browed Firetail - A
Common Starling - A
Australian Magpie - C
Little Raven - A

AMPHIBIANS

Common Eastern Froglet (Ranidella signifera) - C
Green and Golden Bell Frog (Litoria raniformis) - P

Note: The survey was conducted during a warm, dry spell of weather. Hence frog activity was low and it is likely that an additional three to five species occur within the park.

REPTILES

Eastern Long-necked Tortoise (Chelodina longicollis) - P
Bearded Dragon (Amphibolurus barbatus) - P
Cunningham's Skink (Egernia cunninghami) - C
Three-lined Skink (Leiolopisma duperreyi) - U
Grass Skink (L. entrecasteauxii Form A) - C
Bougainville's Skink (Lerista bougainvillii) - U
Striped Skink (Ctenotus robustus) - A
Common Water Skink (Sphenomorphus tympanum Cool Temperate Form) - A
Eastern Bluetongued Lizard (Tiliqua scincoides) - C
Stumpytail (Trachydosaurus rugosus) - P
Eastern Tiger Snake (Notechis scutatus) - U
Red-bellied Black Snake (Pseudechis porphyriacus) - U
Eastern Brown Snake (Pseudonaja textilis) - C

AMPHIBIANS AND REPTILES OF THE ORGAN PIPES NATIONAL PARK

R. Brereton and M. Schulz
Arthur Rylah Institute, 123 Brown St. Heidelberg 3084

Amphibians and reptiles form a significant part of the fauna of the Organ Pipes National Park. Sixteen species have been recorded, including two species of frogs, one tortoise, ten species of lizards and three species of snakes.

During our survey period of three days in February only two species of frogs were recorded. However, this was during a long dry spell and it is likely that another three to five species occur within the park. The two amphibians we recorded were the Common Eastern Froglet (Crinia signifera) and the Green and Golden Bell Frog (Litoria raniformis). The Common Eastern Froglet is a small species (less than 30 mm.) which is highly variable in colour. It can be found sheltering beneath rocks and debris along Jacksons Creek. The Green and Golden Bell Frog by comparison is a large frog (85 mm. in length). It is bright green in colour and can be found amongst vegetation along the edge of Jacksons Creek.

The tortoise occurring in deeper sections of Jacksons Creek (e.g. Rosette pool) is the Common Long-necked Tortoise (Chelodina longicollis). Individuals can be seen swimming in the creek or basking in the sun on the creek's banks. However, on occasions tortoises may be encountered wandering far away from the creek.

The lizards are the most diverse group of reptiles in the park with ten species recorded. However, two species may not be natural residents but escapees or released pets. They are the Bearded Dragon (Amphibolurus barbatus), a large fast-moving dragon lizard with a spiny "beard" it erects when cross and the Stumpytail (Trachydosaurus rugosus). Both species are widespread and common north of the Great Dividing Range.

Two species can be found basking on the banks of Jacksons Creek - Common Water Skink (Sphenomorphus tympanum) and the Striped Skink (Ctenotus robustus). In the drier rocky areas you'll find the Bougainville's Skink (Lerista bougainvillii), abundant Striped Skinks and the Cunningham's Skink (Egernia cunninghamii). Bougainville's Skink is a small slender lizard with reduced limbs ideal for moving through the soil in search of insects and other invertebrates. Cunningham's Skink is a much larger species (430 mm. in length) with spiny scales and can be seen basking on rocks or if disturbed sheltering in cracks and crevices within rocky outcrops. When in these crevices it then inflates itself slightly and the spiny scales "anchor" it, therefore effectively wedging it in the crevice and making it impossible to dislodge.

The largest skink in the park is the Common Bluetongued Lizard (Tiliqua scincoides). The name of this lizard is appropriate as when it is aroused it inflates itself and opens its mouth to display a bright blue tongue.

The three remaining species of skinks can be found scurrying about in grassy areas, amongst rocks and/or in leaf litter beneath the trees within the park. The largest species (180 mm. long) is the Three-lined Skink (Leiolopisma duperreyi), so called because of the number of distinct black and whitish stripes running down the back. This lizard is mostly found around rocky outcrops and in grassy areas with numerous surface rocks. The Grass Skink (Leiolopisma entrecasteauxii) is widespread in grassy areas where it is usually encountered rushing for cover. The smallest is the Garden Skink (Lampropholis quichenoti) (90 mm. in length). This is a grey lizard with a coppery-coloured head and dark vertebral stripe running down the back. It is common in treed areas along Jacksons Creek where it lives in the leaf litter. In some areas within the park all three species may be found occurring together.

The three species of snakes recorded in the park are the Mainland Tiger Snake (Notechis scutatis), Red-bellied Black Snake (Pseudochis porphyriacus) and the Eastern Brown Snake (Pseudonaja textilis). The Red-bellied Black Snake is usually encountered along Jacksons Creek. The Eastern Brown Snake is widespread while the Mainland Tiger Snake occurs around rocky outcrops on the slopes and in vegetation along Jacksons Creek. All species can at times be encountered swimming in the creek.

The diet of these snakes consists of small mammals, frogs, lizards, bird eggs and nestlings and insects. All are venomous and dangerous to man and should be avoided.

There are a number of reptiles that could occur within the park but were not recorded during our survey. Some of these are the Jacky Lizard (Amphibolurus muricatus), Marbled Gecko (Phyllodactylus marmoratus), Copperhead (Austrelaps superbus) and the Little Whip Snake (Uroechis flapellum). If you find any of these or other species that have not been mentioned please let the rangers know and take photographs if at all possible and send copies of these to us at the above address.

BATS OF THE ORGAN PIPES NATIONAL PARK

M. Schulz and R. Brereton
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Bats are the most diverse group of native mammals occurring within the Organ Pipes National Park.

A total of 53 individuals consisting of 6 species were captured in three nights' trapping in February. All bats recorded were small insectivorous species that hunt at night with the aid of echo-location. Echo-location is where bats use a variety of signals to obtain information about their environment including the presence, position, course, speed and identity of potential prey.

No fruit bats were recorded and these are unlikely to occur within the park.

The most common group of bats were the forest bats or Eptesicus. A total of 24 Little Forest Bats (Eptesicus vulturinus), 9 Large Forest Bats (E. darlingtoni [formerly sagittula]), and 3 King River Bats (E. regulus) were captured.

The Lesser Long-eared Bat (Nyctophilus geoffroyi), Chocolate Wattled Bat (Chalinolobus morio), and Gould's Wattled Bat (C. gouldii) made up the remainder of the bats captured.

An additional species, the White-striped Mastiff Bat (Tadarida australis), was spotlighted at night. This is a large, high-flying bat that is difficult to capture as it rarely comes near the ground. Fortunately it can be readily identified with the aid of a spotlight by its large size, fast flight and white stripe that occurs where the underwing joins the belly.

All these species of bats do not roost in caves or mineshafts. Instead they roost in tree hollows and some, such as Gould's Wattled Bat and the Lesser Long-eared Bat even roost behind loose bark on tree trunks or under rocks on the ground. Bats of this size prefer small hollows that most other arboreal mammals (such as possums) cannot use. Hollows of this size may occur in some of the larger trees planted along Jacksons Creek and certainly occur in the older "River Red Gums lining the creek.

To encourage bats further into the area the possibility of setting up "bat roost boxes" should be investigated. These are used with a great deal of success in Europe.

For further information about bats and their identification we suggest you look up:

1. Hall, L. S. and Richards, G. C. (1979) Bats of Eastern Australia, Old Museum Booklet No. 12.
2. Strahan, R., (ed.) (1983) Complete book of Australian mammals Angus and Robertson, Sydney.

RATS AND THE BASALT PLAINS

"Upon the plains there are immense quantities of Rats which resemble the English rat, and of which the natives are very fond". Joseph Tice Gellibrand

"Memorandum of a trip to Port Phillip, 1836."

"The ground was broken up by natives in numerous places to get rats". George Augustus Robinson, 1841

Australia has a large number of native rodent species (not to be confused with the many small marsupials), but the only surviving species on the Keilor Plains appears to be the Eastern Water Rat (Hydromys chrysogaster). Bearing in mind the lack of cover, and predators, including birds, dingoes, large numbers of "Native Cats" and the Aborigines, it seems surprising that not only large numbers, but at least six species, perhaps more, existed on the basalt plains at the time of white settlement. Undoubtedly it was destruction of habitat by the grazing and trampling herds which brought about the demise of most species.

Perhaps the most interesting was the Rabbit-eared Tree Rat, or White-footed Rabbit-rat, with long fur and brushy tail. It favoured Redgum woodlands and was widespread in south-east Australia, but disappeared rapidly from the basalt plains and was totally extinct within 50 years.

The Plains Rat (Pseudomys australis), or at least a form of it, was common, but the species is now found only in the dry interior. Another, undescribed Pseudomys quickly became extinct.

A form of the Eastern Chestnut Mouse (Pseudomys gacilocaudatus) was also found on the open plains, but quickly disappeared. Several other rodents are found only in the far west or marginal areas.

How these small animals interacted with the grassland flora we will probably never know, but perhaps it may one day be possible to include one or two of the surviving rodent species in the program for wildlife re-introduction at the Organ Pipes, along with some of the small marsupials. The smaller species do, after all, require a much smaller home range than large animals like the Kangaroo.

Barry Kemp



Eastern Water-Rat

BIRD LIST

(Observations since Park declaration 1972)

Species	Remarks
Australian Grebe (Little Grebe)	Annual visitor noted on larger pools, pairs or singly
Australian Pelican	One noted in Rosette Rock pool, March 1970
Great Cormorant following (Black Cormorant)	Small groups occasionally noted course of creek, or resting
Little Pied Cormorant	Usually noted either singly or in pairs perched or working pools. Frequent.
Pacific Heron (White-necked Heron)	A visitor to the Park often since 1970
White-faced Heron	Frequent visitor, feeding and roosting. Nested in 1981, raising two young.
Great Egret (White Egret)	Occasionally noted; feeds along shallow edge of pools; stands motionless.
Rufous Night-heron (Nankeen Night Heron)	Not often seen. Last observation March 1980
Australasian Bittern (Brown Bittern)	Observed roosting in river gums, autumn 1975
Straw-necked Ibis	Flocks to 80 noted over Park. Single bird on Black Wattle Flat May 1979
Yellow-billed Spoonbill	Several observations, flying along course of creek.
Australian Shelduck (Chestnut-breasted Shelduck)	One bird in Park in autumn 1975.
Pacific Black Duck	Occasionally on larger pools.
Black-shouldered Kite (Elanus notatus)	Commonly seen swooping and hovering above plain.
Whistling Kite	A frequent predator, calling and at times coming to the ground on steep banks.
Brown Goshawk (Collared Sparrow-hawk similar) Accipiter fasciatus	Several observations
Wedge-tailed Eagle (Accipiter audax)	Single birds and occasional pair sometimes seen high above Park.

Species	Remarks
Little Eagle	Common in colder months. Up to 4 seen together.
Marsh Harrier (Swamp Harrier)	One adult bird seen October 1981
Peregrine Falcon (Falco peregrinus)	Noted on a few occasions in fast passes across the Organ Pipes formation.
Australian Hobby (Little Falcon)	Observed December 1979 on slope above Rubble Flat.
Brown Falcon (Falco berigora)	A common predator, resident and territorial.
Australian (Nankeen) Kestrel (Falco cenchroides)	A common predator
Stubble Quail	Rare in the Park; noted on the basalt plains nearby.
Dusky Moorhen (Gallinula tenebrosa)	Resident on the creek throughout the year in good numbers.
Masked Lapwing (Spurwing Plover)	Rare in the Park; more often on adjacent plains.
Silver Gull	Noted over the Park during rough coastal weather.
Feral Pigeon (I)	Flocks commonly seen in sky above Park.
Spotted Turtle-dove (I)	Occasional visitor.
Galah	Observations becoming more frequent.
Sulphur-crested Cockatoo	Observed more frequently over the last few years.
Crimson Rosella	Sightings becoming quite frequent. Mature and immature birds in flocks of up to 9. Possibly resident and breeding.
Eastern Rosella	Increasing in numbers from first sighting in 1984.
Red-rumped Parrot	7 birds sighted at the downstream end of the Park in May 1983.
Pallid Cuckoo (*)	Sighted only rarely, probably on seasonal migration. Heard at other occasions.
Fan-tailed Cuckoo (*) (Cacomantis pyrrhophanus)	A few sightings only.

Species	Remarks
Horsfield's Bronze Cuckoo (Chalcites basalis) (*)	Seasonal migrant - a few birds noted each year.
Southern Boobook	Single sightings in early 1979 and June 1985.
Barn Owl	Recorded on 25 Sept. 1985. Probably occurring early.
White-throated Needletail (Spine-tailed Swift *) (Hirundapus caudacutus)	Observed over Park during summer and early autumn.
Laughing Kookaburra (Dacelo gigas)	One only observed in May 1981
Sacred Kingfisher (Halcyon sanctus)	Area records prior to Park creation confirmed 3 February 1986
Skylark (I) (Alauda arvensis)	An introduced species frequent on grassy plains.
Welcome Swallow (Hirundo neoxena)	Commonly seen swooping after insects above the Park.
Tree Martin	Only a few sightings.
Richard's Pipit. (Anthus australis)	Not as common as the Skylark.
Blackbird (I) (Turdus merula)	Always a few in the Park.
Song Thrush (I)	A recent sighting in April 1983
Flame Robin	An altitudinal migrant, present in winter months.
Scarlet Robin	Seen mainly during winter on plains and slopes.
Golden Whistler (Pachycephala pectoralis)	Becoming more common. Usually a bird in the Park in recent years.
Rufous Whistler (*)	Occasional sightings in last few years in summer.
Restless Flycatcher	Male bird observed near Rubble Flat June 1982 and near main track June 1986
Rufous Fantail (*)	Apparently migrates through the Park each year. Three birds together in riverine vegetation 1980.
Grey Fantail (Rhodipura fuliginosa)	Big response to re-vegetation, i.e. Black Wattle in late 1970s. Numbers now evened out. Common.
Willie Wagtail (Rhodipura leucophrys)	Always spread throughout the Park.

Species	Remarks
Glamorous Reed Warbler (*)	Up to 4 pairs observed along the creek during summer.
Golden-headed Cisticola	Noted in tall grass at either side of entrance 1979 to 1981.
Brown Songlark	Male and female at ford near pump-house December 1979
Superb Fairy-wren (Blue Wren) (Malurus cyaneus)	Very common and on the increase as habitat expands.
White-browed Scrub-wren (Sericornis frontalis)	Good numbers present in creek-side shrubbery.
Brown Thornbill (Acanthiza pusilla)	Now present in good numbers along creek.
Yellow-rumped Thornbill (Acanthiza chrysorrhoa)	Flocks throughout the Park feeding in the open.
Yellow Thornbill (Acanthiza nana ?)	Numbers on the increase, consistent with tree re-growth.
Striated Thornbill	Recent sightings in April 1983.
Red Wattlebird	Becoming more noticed. First record April 1983.
Yellow-faced Honeyeater (*)	Observed in April 1983, probably moving through.
Yellow-tufted Honeyeater	First sighted mid-June 1983 after Macedon fires.
Fuscous Honeyeater	First sighted mid-June 1983, after Macedon fires.
White-plumed Honeyeater (Meliphaga penicillata)	Now increased to good numbers.
White-naped Honeyeater	A welcome return to the Park in April 1983
New Holland Honeyeater	Two birds reliably reported May 1983 after Macedon fires.
Eastern Spinebill	Three sightings in April/May 1983, after Macedon fires.
White-fronted Chat	Infrequent groups on high slopes and plain.
Mistletoe-bird	Sighted July 1976. Look in Peppercorn Tree.
Spotted Pardalote (Pardalotus punctatus)	Several observations in creek-side Redgums, and in Grey Box Gully.

Species	Remarks
Striated Pardalote (Pardalotus substriatus)	Uncommon as yet. Last sighted feeding on lerp May 1986.
Silver-eye (Zosterops lateralis)	Fairly common and on the increase.
European Goldfinch (I) (Carduelis carduelis)	Common in flocks throughout the Park.
House Sparrow (I) (Passer domesticus)	Always a few groups in the Park.
Red-browed Firetail (Zonaeginthus guttatus)	Scattered flocks usually present; increasing.
Common Starling (I) (Sturnus vulgaris)	Fairly common.
Common Myna (I)	Only a few sightings.
Australian Magpie-lark	Not seen very often.
Australian Magpie (Gymnorhina hypoleuca)	Increasing in numbers; always present.
Australian Raven) Little Raven) (Corvus bennetti)	Both species present, with the Little Raven predominating.

I = introduced species
* = migrant or partial migrant

Total = 88 species to August 1986

Other fauna observed:

Eastern Water Rat (Hydromys chrysogaster)
Platypus (Ornithorhynchus anatinus)
Eastern Grey Kangaroo
Brushtail Possum (Trichosurus vulpecula)
Ringtail Possum (Pseudocheirus peregrinus)
Tiger Snake (Notechis scutatus)
Brown Snake (Pseudonaja textilis)
Blue-tongued Lizard (Tiliqua scincoides)
Golden Water Skink (Sphenomorphus tympanum)
Rock Skink
Striped Skink (Ctenotus robustus)
Swamp Wallabies (Wallabia bicolor)

Note: This list is not the result of regular birding in the Park; therefore it is reasonable to suggest that species numbers are greater and visitations more frequent. Many of the listed species are not resident in the Park.

A BIRD STUDY OF THE ORGAN PIPES NATIONAL PARK

MELBOURNE COLLEGE OF EDUCATION 1972
SCIENCE 2 RESEARCH PROJECT
by BILL OSBORNE

SUMMARY: This research paper sets out general details of the status of all birds found at the Organ Pipes National Park. An effort has been made to describe some factors in the present environment which, if changed, could affect the survival of many bird species within the park. An arbitrary calculation of the value of shrubs as night roosts for birds has been made to assist in this discussion. The author's list of 42 bird species is compared with a field list of 69 made by Roy Wheeler in 1962. Further areas for experimentation and improvement are suggested.

1. Introduction

The Organ Pipes National Park is situated 15 miles north-west of Melbourne near the Calder Highway. The greater part of the park is situated in the valley of the rejuvenated river system of Jackson's Creek (Sherbon Hills 1940). The physiography of the area is diverse and of great geological interest due to the unusual crystalline basalt outcrops. One of these structures has been named the Organ Pipes because of the columnar nature of the basalt rock.

Jackson's Creek, a permanent stream, lies 175 feet above sea level, whilst the adjacent plain into which the stream is cutting is 400 feet above sea level. The creek itself drops 30 feet in its course through the park. The average width of the river flood plain is about 300 feet (M.M.B.W. map).

Six field excursions, generally occupying an afternoon, were made to the Organ Pipes. On all occasions the weather was fine and windy.

Topography, Flora and Fauna The most obvious plant species in the park is the boxthorn, Solanaceae *lynum ferocissimum*. This hardy bush forms thickets on the valley sides and along the few creeks. Interspersed with the Boxthorn is Gorsebush, *Ulex euro-paeus*; Peppercorn trees, *Schinus molle*; Silver Wattle, *Acacia dealbata*; Bottlebrush, *Callistemon paludosus*; and a few specimens of *Acacia melanoxylon*, and the River Red Gum, *Eucalyptus camaldulensis*. The grassy flats near the creek support more Boxthorn and a variety of grasses, thistles and other weeds. Some plants noted here were Horehound, *Marrubium vulgare*; large areas of Artichoke Thistle, *Cyneira cardunculus*; and other thistles; Rye grass, *Coli-um perenne*; Barley grass, *Hordeum leporincum*; and Craminaceae *phalaris* (Buchanan et al, M.T.C. 1972). The rocky sides of the valley support extensive areas of Boxthorn and Horehound. Briefly summarised, the park contains a vast assemblage of plants which are mainly alien to the area. Some natives are still well established, *Callistemon paludosus*; *Acacia dealbata*; and *Eucalyptus camaldulensis*;, along the sides of the river.

Two native mammals were found to exist within the park: *Hydromys chrysogaster* and *Trichosurus vulpecula* (*Hydromys* trapped by J. Porter 1972, and *Trichosurus* found by rabbit-trapping per N.P.S) Bats have been heard at night, but not identified. Personal observations have shown a large rabbit population, *Cryptolagus cuniculus*, and the presence of the Common fox, *Vulpes vulpes*; the introduced mouse, *Mus musculus*; and the feral cat, *Felis catus*.

Insect life is abundant, and a few reptile species were seen, *Leiolopisma guichenoti*; *Egernia cunninghami*; *Sphenomorphus leisueri* spcs; *Sphenomorphus tympanum*; and *Tiliqua scincoides*.

The topography of the Organ Pipes National Park can be summed up in the word "eroded". The alluvial flood plain near the creek is still stable, although in places the creek is washing into the banks and exposing the layers of rock and silt. But the adjacent valley sides have been extremely abused and eroded. Great wash-aways of rubble and loam form small landslides amongst the box-thorn and very little topsoil or ground vegetation exists. On some of the spurs, tussock-grass is acting as a stabiliser. Rabbit burrows have damaged extensive areas, both on the hillsides and river flats.

Within this vast background of environmental upset and alien flora and fauna, it was set out to determine the bird species present, and to list the critical factors obvious in the present ecosystem with the general aim of forming a basis for future environmental research, especially in regards to the avifauna.

2. Materials and Methods

As was mentioned in the introduction, six field excursions were made to the park in the latter half of 1972. On all occasions except one (29/7/72) observations were made by the writer. On 29/7/72 invaluable assistance in observing and identifying bird species was given by F. T. Smith (Melbourne Bird Observers Club). After the first two visits to the park, a large transect was mentally noted and followed on all later visits. This transect covered all major plant and topological complexes within the park.

Binoculars used were 7x50 Highness coated optics, being adequate for identification of most birds noticed. Bird identification generally took two forms:

1. Positive identification by sight.
2. Identification by call.

If a bird was heard and not seen it was not recorded. Boobook owl presence was detected through:

1. Calls heard at night,
2. Owl pellets found beneath Peppermint trees.

References often referred to during field trips were Cayley (1965), McGill (1970), Officer (1965), Wheeler (1967) and Condon (1970). The roost value of shrubs in the river frontage transect were found by:

1. Recording all birds in bushes at dusk,
2. Using a torch for recording immediately after dusk
3. Recording the plant species used by the various bird species, and the numbers of each involved.

Critical environmental factors (see results) were observed and recorded.

3. Results

The six field trips yielded a total of 42 bird species. This list is combined with Roy Wheeler's 1962 list in the table below. Abbreviations:

1. Status
 - V.C. Regular in large numbers
 - C. . Regular in small numbers
 - I. . Irregular in variable numbers
 - R. . Only a few seen
2. Locality
 - A. . All areas
 - B. . River creek and associated vegetation areas
 - C. . Open areas on the river flats
 - D. . Valley sides
3. Observer
 - O . W. S. Osborne 1972
 - W . W. R. Wheeler (unpublished field list) 1962

All common and scientific names used in the table are synonymous with those set out in "A Handlist of the Birds of Victoria" (Wheeler 1967).

Common Name	Scientific Name	Status	Area	Observer
Stubble Quail	<i>Coturnix pectoralis</i>	-	-	W
Spotted Turtle-dove	<i>Streptopelia chinensis</i>	X	A	W, O
Dusky Moorhen	<i>Gallinula tenebrosa</i>	R	B	W, O
Little Grebe	<i>Podiceps ruficollis</i>	-	B	W
Black Cormorant	<i>Phalacrocorax carbo</i>	-	-	W
Little Pied Cormorant	<i>Phalacrocorax melanoleucus</i>	R	B	W, O
Spur-winged Plover	<i>Lobibyx novae-hollandiae</i>	-	-	W
Banded Plover	<i>Zonifer tricolor</i>	-	-	W
Yellow-billed Spoonbill	<i>Platibis flavipes</i>	R	B	W, O
White Egret	<i>Egretta alba</i>	-	-	W
White-faced Heron	<i>Ardea novae-hollandiae</i>	R	B	W, O
Nankeen Night-heron	<i>Nycticorax caledonicus</i>	-	-	W
Black Duck	<i>Anas superciliosa</i>	-	-	W
Swamp Harrier	<i>Circus approximans</i>	-	-	W
Australian Goshawk	<i>Accipiter cirrhocephalus</i>	R	A	W, O
Little Eagle	<i>Hieraaetus morphoides</i>	R	A	O
Whistling Eagle	<i>Haliastur sphenurus</i>	R	A	W, O
Black-shouldered Kite	<i>Elanus notatus</i>	R	A	W, O
Little Falcon	<i>Falco longipennis</i>	-	-	W
Peregrine Falcon	<i>Falco peregrinus</i>	R	A	W, O
Brown Hawk	<i>Falco berigora</i>	X	A	W, O
Nankeen Kestrel	<i>Falco cenchroides</i>	R	A	W, O
Boobook Owl	<i>Ninox novae-seelandiae</i>	-	-	W, O
Galah	<i>Kakatoe roscicapilla</i>	-	-	W
Eastern Rosella	<i>Platycercus eximius</i>	-	-	W
Red-backed Parrot	<i>Psephotus haematonotus</i>	-	-	W
Laughing Kookaburra	<i>Dacelo gigas</i>	R	B	W, O

Common Name	Scientific Name	Status	Area	Observer
Sacred Kingfisher	Halcyon sanctus	-	-	W
Spine-tailed Swift	Hirundapus caudacutus	I	A	W, O
Pallid Cuckoo	Cuculus pallidus	-	-	W
Horsfield Bronze-cuckoo	Chalcites basalis	-	-	W
Welcome Swallow	Hirundo neoxena	C	B	W, O
Fairy Martin	Hylochelidon ariel	-	-	W
Willy Wagtail	Rhidipura leucophrys	R	B	W, O
Grey Fantail	Rhidipura fuliginosa	I	B, D	W, O
Scarlet Robin	Petroica multicolor	-	-	W
Flame Robin	Petroica phoenicea	I	B, C	W, O
Golden Whistler	Pachycephala pectoralis	R	B	W, O
Rufous Whistler	Pachycephala rufiventris	R	B	W, O
Grey Shrike-thrush	Colluricincla harmonica	-	-	W
Magpie-lark	Grallina cyanoleuca	R	B	W, O
Eastern Shrike-tit	Falcunculus frontatus	-	-	W
Black-faced Cuckoo-shrike	Coracina novae-hollandiae	R	A	W, O
White-fronted Chat	Epthianura albifrons	R	B	W, O
Brown Thornbill	Acanthiza pusilla	C	B	W, O
Little Thornbill	Acanthiza nana	R	B	O
Yellow-tailed Thornbill	Acanthiza chrysorrhoa	C	A	W, O
White-browed Scrub-wren	Sericornis frontalis	C	B	W, O
Brown Songlark	Cincloramphus cruralis	-	-	W
Superb Blue Wren	Malurus cyaneus	VC	A	W, O
Mistletoe-bird	Dicaeum hirundinaceum	R	A	W, O
Spotted Pardalote	Pardalotus punctatus	R	B	O
Eastern Striated Pardalote	Pardalotus ornatus	R	B	W, O
Grey-backed Silvereye	Zosterops lateralis	C	B	W, O
Eastern Spinebill	Acanthorhynchus tenuirostris	-	-	W
White-plumed Honeyeater	Meliphaga penicillata	R	B	W, O
Yellow-winged Honeyeater	Meliornis novae-hollandiae	-	-	W
Noisy Miner	Myzantha melanocephala	-	-	W
Red Wattle-bird	Anthochaera carunculata	-	-	W
Australian Pipit	Anthus australis	C	C, D	W, O
Red-browed Finch	Aegintha temporalis	I	B, C	W, O
Little Raven	Corvus mellori (Condon 1967)	VC	A	W, O
Grey Butcher-bird	Cracticus torquatus	-	-	W
White-backed Magpie	Gymnorhina hypoleuca	C	A	W, O
Blackbird *	Turdus merula	I	B	W, O
Skylark *	Alauda arvensis	VC	D	W, O
House Sparrow *	Passer domesticus	VC	A	W, O
Goldfinch *	Carduelis carduelis	VC	A	W, O
Greenfinch *	Chloris chloris	-	-	W
Starling *	Sturnus vulgaris	C	B	W, O
Indian Myna *	Acridotheres tristis	R	A	W, O

Note: Birds marked * are introduced species
Total number of species.....70
Total introduced species.....8
Total native species.....62

Roost value of some prevalent shrubs along the river frontage (see diagram 2).

Table 2

Roost No.	Occupants	Number of Birds	Roost Type
1	Blue Wren	1	Peppermint tree (Peppercorn)
2	Blue Wren	2	Peppermint tree
3	Blue Wren	1	Peppermint tree
3	Blackbird	1	Peppermint tree
4	Blue Wren	2	Gorsebush
5	Blue Wren	1	Gorsebush
5	White-browed Scrub-wren	2	Gorsebush
5	Brown Thornbill	2	Gorsebush
6	Blue Wren	1	Gorsebush
6	White-fronted Chat	2	Gorsebush
7	White-browed Scrub-wren	2	Gorsebush
8	Blue Wren	1	Gorsebush
9	Blue Wren	1	Boxthorn
9	Grey-backed Silvereye	2	Boxthorn
10	House Sparrow	20	Boxthorn
11	Blue Wren	1	Gorsebush
11	White-browed Scrub-wren	2	Gorsebush
12	Blue Wren	1	Gorsebush
13	Blue Wren	2	Gorsebush
14	Blue Wren	1	Peppermint tree
15	House Sparrow	1	Gorsebush
15	Blue Wren	1	Gorsebush
16	Blue Wren	1	Boxthorn

Total species 7 Total birds 51 Total plants 16
Total species 3*

* One Blue Wren was found in a species not listed

Summary

Table 3

Roost Type	Total Bushes Examined	Total Bushes Used	Total birds using plant as roost	Total species using plant as a roost
Peppermint tree	25	4	6	2
Boxthorn	42	3	24	3
Gorsebush	29	9	21	5
Other	2	1	1	1
Totals	98	17	52	7

Calculations:

$$\text{Roost value*} = \text{total birds} \times \frac{\text{total plants of that species used} \times 100}{\text{total plants of that species} \times 1}$$

$$1. \text{ Roost value of Peppermint} = 6 \times \frac{4}{25} \times \frac{100}{1} = 96$$

$$2. \text{ Roost value of Boxthorn} = 24 \times \frac{3}{42} \times \frac{100}{1} = 170$$

$$3. \text{ Roost value of Gorsebush} = 21 \times \frac{9}{29} \times \frac{100}{1} = 650$$

* Roost value: an arbitrary value designed for objective calculation of the value of shrubs as a bird's night roost.

Suggested critical environmental factors at present noticeable at the Organ Pipes National Park.

Table 4

Native species possibly affected	Critical factor and influence
Whistling Eagle, Little Eagle and to a lesser extent, the Black-shouldered Kite, Brown Hawk, and the Boobook Owl	<u>Removal or destruction of introduced mice and introduced rabbits</u> may drastically reduce the presence of predatory birds reliant on these two mammals as a chief food source in the park. (Food sources: field observations 1972 and Cayley 1965).
White-fronted Chat, Brown Thornbill, Yellow-tailed Thornbill, White-browed Scrub-wren, Superb Blue Wren, Grey-backed Silvereye and Red-browed Finch.	<u>Removal of introduced shrubs.</u> For example, removal of Boxthorn and Gorsebush. At present these two plants provide the only ideal protection for both introduced and native bird species. Its removal would result in a severe loss of suitable roost and nesting habitat (Field observations 1972).
Superb Blue Wren, Red-browed Finch, Flame Robin, Pipit	<u>Removal of ground vegetation and erosion,</u> for example, tussock grass, thistles and other low plants, is diminishing the protective cover provided for ground-dwelling birds (Field observations 1972).

4. Discussion

From Table 1 it can be seen that the birds most prevalent in the National Park were the Superb Blue Wren, the Little Raven, the Skylark, the House Sparrow, and the Goldfinch. The last three of these are introduced species. The large populations of these introduced species apparently being a result of a combination of early colonisation and adequate environmental conditions (Middleton 1970), found in the European-like ecology of the park.

The Blue Wren also apparently is able to cope well in this very alien environment. "Different species have different requirements and react in different ways to a changed environment - the Superb Blue Wren, *Malurus cyaneus*, is one of the few species that actually seem to thrive in association with man. Besides the gardens which surround houses and public places, the opening of the bush and the spread of exotic plants such as Sweet Briar, *Rosa rubiginosa* L., and Blackberry, *Rubus fruticosus* L., have all provided additional ecological niches suitable for *M. cyaneus*", (Rowley 1965). The occurrence of the Little Raven is probably also increased in this 'changed environment'. Nest sites are still readily available along Jacksons Creek and carrion is plentiful in the form of dead rabbits and refuse on nearby farms and dumps.

But the great majority of birds seen at the Organ Pipes are probably only just surviving. Further alienation of the environment would probably eliminate all but the most adaptable species. For instance, the reliance of many shrub-dwelling birds upon the protection and nesting sites provided by the two predominant shrubs, Gorsebush and Boxthorn, is evident in the scope of this experiment. Present vegetation clearing within the park will probably have a very adverse effect on the populations of these birds, unless genuine efforts are made to transmute the present vegetation system to its native counterpart. This would mean intermingling of native and introduced vegetation until enough suitable roosting shrubs are provided to support adequate bird populations.

The dangers to predatory birds through the extermination of the rabbit and mice population is evident in Table 4. The two larger birds of prey, the Whistling Eagle and Little Eagle, would probably be forced to hunt over areas adjacent to the park, although breeding may still occur within the park boundaries. This danger is perhaps minimised because of the park's small size, and lack of buffer zones to keep out introduced rodents.

Because of the restricted time spent in the field, some sections of this experiment are not totally reliable. For example, the studies of roosting behaviour would have been more authoritative had they been repeated for many more evenings and in more than one area of the park. The actual list of bird species present would probably have been larger had much more work been carried out over the year. Unfortunately, Wheeler's field list (Wheeler 1962) does not give details of bird status, hence no comparisons of population changes over the last ten years can be made.

Another factor contributing to experimental inefficiency was the author's lack of experience in studying birds in the field, although great progress in finding and identifying birds was made during the study.

The report does serve as a useful introduction to the birds of the Organ Pipes National Park and will probably be useful for further environmental studies. As was mentioned, the research done this far is rendered somewhat incomplete, more field work including detailed studies of bird populations and breeding status could be made. The critical environmental factors listed provide a useful corridor for future long-term studies in relation to overall changes in the environment.

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BIRD LIST FOR KEILOR PLAINS AREA

The numbers are from W. Roy Wheeler, A Handlist of the Birds of Victoria 1967. Birds listed are in Batey (1907), Marsh's list for the Park 1986 or Brereton & Schulz "Fauna of the Organ Pipes NP" Feb. 1988

Wheeler Hand List	B&S 1986	Mars h 1988	Batey: "On 15,000 acres: the bird-life of the Sunbury district 60 years ago", The Emu, July 1907
1			Family DROMAIIDAE: Emus Emu Dromaius novae-hollandiae
8	#		Family PHASIANIDAE: Pheasants and Quail Stubble Quail Coturnix pectoralis
9			Brown Quail Synoicus australis
12			Family TURNICIDAE: Bustard Quail Painted Quail Turnix varia
14			Little Quail Turnix velox
16			Family PEDIONOMIDAE: Plain-wanderer Collared Plain-wanderer Pedionomus torquatus
20	#		Family TURTURIDAE: Doves and Ground-Pigeons Feral pigeon Columba livia
23	#		Spotted turtle dove Streptopelia chinensis
25			Common Bronzewing Phaps chalcoptera
26			(Batey: Bronze-wing Pigeon) Brush Bronze-wing Phaps elegans
30			Family RALLIDAE: Rails, Crakes and Water-hens Banded Landrail Hypotoenidia philippensis
35	#	#	(Batey: Pectoral Rail) Dusky Moorhen Gallinula tenebrosa
36			Eastern Swamphen Porphyrio melanonotus
37			(Batey: Bald-coot) Coot Fulica atra (Batey: Fulica australis)
39	#		Family PODICIPIDAE: Grebes Little Grebe Podiceps ruficollis (Batey: Grebe) (Batey: Podiceps sp.)
76	#		Family PHALACROCORACIDAE: Cormorants Black Cormorant Phalacrocorax carbo (Batey: Phalacrocorax novae-hollandiae)
77			Little Black Cormorant Phalacrocorax sulcirostris (Batey: Phalacrocorax stictocephalus)
80	#		Little Pied Cormorant Phalacrocorax melanoleucus (Batey: Little Cormorant)
81			Family ANHINGIDAE: Darters Darter Anhinga novae-hollandiae (Batey: Plotus novae-hollandiae)
84	#		Family PELECANIDAE: Pelicans Pelican Pelecanus conspicillatus

Wheeler Hand List	B&S Marsh 1986	Batey: "On 15,000 acres: the bird-life of the Sunbury district 60 years ago", The Emu, July 1907 1988	
87		Family STERNIDAE: Terns Marsh Tern	<i>Chlidonias hybrida</i> (Batey: <i>Hyrdochelidon hybrida</i>)
96	#	Family LARIDAE: Gulls Silver Gull	<i>Larus novae-hollandiae</i>
106	#	Family CHARADRIIDAE: Plovers and Dotterels Spur-winged Plover (Marsh: Masked Lapwing)	<i>Lobibyx novae-hollandiae</i> (Batey: <i>Lobivanellus lobatus</i>)
107		Banded Plover (Batey: Black-breasted Plover)	<i>Zonifer tricolor</i>
118		White-headed Stilt	<i>Himantopus leucocephalus</i>
120		Red-necked Avocet	<i>Recurvirostra novae-hollandiae</i>
121		Family SCOLOPACIDAE: Curlews, Sandpipers and Snipe Eastern Curlew (Batey: Curlew)	<i>Numenius madagascariensis</i> (Batey: <i>Numenius cyanopus</i>)
143		Australian Snipe	<i>Gallinago hardwickii</i> (Batey: <i>Gallinago australis</i>)
149		Family BURHINIDAE: Stone-curlews Southern Stone-Curlew (Batey: Southern Stone-plover)	<i>Burhinus magnirostris</i> (Batey: <i>Burhinus grallarius</i>)
150		Family OTIDIDAE: Bustards Australian Bustard (Batey: Wild Turkey or Bustard)	<i>Eupodotis australis</i>
151		Family MEGALORNITHIDAE: Cranes Brolga (Batey: Native Companion)	<i>Grus rubicundus</i> (Batey: <i>Antigone australasiana</i>)
154	#	Family PLEGADIDAE: Ibises Straw-necked Ibis	<i>Threskiornis spinicollis</i> (Batey: <i>Geronticus spinicollis</i>)
156	#	Family PLATALEIDAE: Spoonbills Yellow-billed Spoonbill	<i>Platibis flavipes</i>
161	#	Family ARDEIDAE: Herons, Egrets and Bitterns White Egret	<i>Egretta alba</i> (Batey: <i>Herodias timoriensis</i>)
162	#	White-faced Heron (Batey: White-fronted Heron)	<i>Ardea novae-hollandiae</i>
163	#	White-necked Heron	<i>Ardea pacifica</i>
165	#	Nankeen Night-heron (Batey: Night-heron)	<i>Nycticorax caledonicus</i>
167	#	Brown Bittern (Batey: Bittern)	<i>Botaurus poiciloptilus</i>

Wheeler Hand List	B&S Marsh 1986	Batey: "On 15,000 acres: the bird-life of the Sunbury district 60 years ago", The Emu, July 1907 1988	
170		Family ANATIDAE: Swans, Geese and Ducks Maned Goose (Batey: Wood-duck)	<i>Chenonetta jubata</i>
171		Black Swan	<i>Cygnus atratus</i> (Batey: <i>Chenopsis atrata</i>)
174	#	Chestnut-breasted Shelduck (Batey: Mountain-duck)	<i>Casarca tadornoides</i>
176	#	Grey Duck (Batey: Black Duck)	<i>Anas superciliosa</i>
179		Grey Teal	<i>Anas gibberifrons</i> (Batey: <i>Nettion gibberifrons</i>)
180		Blue-winged Shoveller (Batey: Shoveller)	<i>Anas rhynchotis</i> (Batey: <i>Spatula rhynchotis</i>)
181		Pink-eared Duck	<i>Malacorhynchus membranaceus</i>
183		Hardhead (Batey: White-eyed Duck)	<i>Aythya australis</i> (Batey: <i>Nyroca australis</i>)
185		Musk Duck	<i>Biziura lobata</i>
186	#	Family AQUILIDAE: Eagles, Goshawks, Harriers and Kites Spotted Harrier (Batey: Harrier)	<i>Circus assimilis</i> (Batey: <i>Circus gouldii</i>)
187		Swamp Harrier (Batey: Goshawk)	<i>Circus approximans</i> (Batey: <i>Astur approximans</i>)
188	#	Grey Goshawk (Batey: White Goshawk)	<i>Accipiter novae-hollandiae</i> (Batey: <i>Astur novae-hollandiae</i>)
190	#	Collared Sparrow-Hawk (Batey: Brown Goshawk)	<i>Accipiter cirrhocephalus</i>
191	#	Wedge-tailed Eagle	<i>Aquila audax</i> (Batey: <i>Uroaetus audax</i>)
192	#	Australian Little Eagle	<i>Hieraaetus morphoides</i>
193		White-breasted Sea Eagle	<i>Haliaeetus leucogaster</i>
194	#	Whistling Eagle	<i>Haliastur sphenurus</i>
198	#	Black-shouldered Kite	<i>Elanus notatus</i>
199	#	Letter-winged Kite	<i>Elanus scriptus</i>
200	#	Family FALCONIDAE: Falcons and Kestrels Little Falcon (Marsh: Australian Hobby)	<i>Falco longipennis</i>
202	#	Peregrine Falcon (Batey: Black-cheeked falcon ?)	<i>Falco peregrinus</i> (Batey: <i>Falco melanogenys</i>)
203		Black Falcon	<i>Falco subniger</i> (Batey: <i>Falco niger</i>)
204	#	Brown Hawk	<i>Falco berigora</i> (Batey: <i>Hieracidea orientalis</i>)
205	#	Nankeen Kestrel	<i>Falco cenchroides</i> (Batey: <i>Cerchneis cenchroides</i>)
207	#	Family STRIGIDAE: Hawk-owls Boobook Owl	<i>Ninox novae-seelandiae</i> (Batey: <i>Ninox boobook</i>)

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		Family TYTONIDAE: Barn Owls
211		Masked Owl <i>Tyto novae-hollandiae</i> (Batey: Lesser Masked Owl) (Batey: <i>Strix delicatula</i>)
		Family TRICHOGLOSSIDAE: Lorikeets
214		Rainbow Lorikeet <i>Trichoglossus moluccanus</i> (Batey: Blue-bellied Lorikeet) (Batey: <i>Trichoglossus novae-hollandiae</i>)
215		Musk Lorikeet <i>Glossopsitta concinna</i> (Batey: Musky Lorikeet) (Batey: <i>Glossopsittacus concinnus</i>)
216		Purple-crowned Lorikeet <i>Glossopsitta porphyrocephala</i> (Batey: <i>Glossopsittacus porphyrocephalus</i>)
217		Little Lorikeet <i>Glossopsitta pusilla</i> (Batey: <i>Glossopsittacus pusillus</i>)
		Family KAKATOEIDAE: Cockatoos
218		Red-tailed Black Cockatoo <i>Calyptorhynchus banksii</i> (Batey: Banksian Cockatoo)
220		Yellow-tailed Black Cockatoo <i>Calyptorhynchus funereus</i> (Batey: Black Cockatoo)
222 #		White Cockatoo <i>Kakatoe galerita</i> (Marsh: Sulphur-crested Cockatoo) (Batey: <i>Cacatua galerita</i>)
226 #		Galah <i>Kakatoe roseicapilla</i> (Batey: Rose-breasted Cockatoo) (Batey: <i>Cacatua roscicapilla</i>)
		Family LORIIDAE: Lories
227		Cockatiel <i>Leptolophus hollandicus</i> (Batey: Cockatoo-parakeet) (Batey: <i>Calopsittacus novae-hollandiae</i>)
228		Superb Parrot ? <i>Polytelis swainsonii</i> (Batey: Green-leek Parakeet) (Batey: <i>Polytelis barrabandi</i>)
230		King-parrot <i>Aprosmictus scapularis</i> (Batey: King Lory) (Batey: <i>Aprosmictus cyanopygius</i>)
231 #		Crimson Rosella <i>Platycercus elegans</i> (Batey: Crimson Parakeet)
233 #		Eastern Rosella <i>Platycercus eximius</i> (Batey: Rosella)
235 #		Red-backed Parrot <i>Psephotus haematonotus</i> (Batey: Red-backed Parakeet)
241		Blue-winged Parrot <i>Neophema chrysostoma</i> (Batey: Blue-winged Grass-parakeet) (Batey: <i>Neophema venusta</i>)
243		Swift Parrot <i>Lathamus discolor</i> (Batey: Swift Lorikeet) (Batey: <i>Nanodes discolor</i>)
244		Budgerygah <i>Melopsittacus undulatus</i> (Batey: Betcherrygah)
		Family PODARGIDAE: Frogmouths
246		Tawny Frogmouth <i>Podargus strigoides</i>
247		Owlet Nightjar <i>Aegotheles cristata</i> (Batey: <i>Aegotheles novae-hollandiae</i>)

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		Family ALCEDINIDAE: Kingfishers
249		Azure Kingfisher <i>Alcyone azurea</i>
250 #	#	Laughing Kookaburra <i>Dacelo gigas</i> (Batey: Laughing Jackass)
252 #	#	Sacred Kingfisher <i>Halcyon sanctus</i>
		Family CAPRIMULGIDAE: Nightjars
254		White-throated Nightjar <i>Eurostopodus mystacalis</i> (Batey: <i>Eurostopus albigularis</i>)
		Family APODIDAE: Swifts
256 #	#	Spine-tailed Swift <i>Hirundapus caudacatus</i> (Batey: Swift) (Batey: <i>Coetura caudacuta</i>)
		Family CUCULIDAE: Cuckoos
258 #		Pallid cuckoo <i>Cuculus pallidus</i>
259 #	#	Fan-tailed cuckoo <i>Cacomantis pyrrhophanus</i> (Batey: <i>Cacomantis flabelliformis</i>)
262 #	#	Horsfield's Bronze Cuckoo <i>Chalcites basalis</i>
264		Golden Bronze-Cuckoo <i>Chalcides plagosus</i> (Batey: Bronze Cuckoo) (Batey: <i>Chalcococcyx plagosus</i>)
		Family HIRUNDINIDAE: Swallows and Martins
267 #	#	Welcome Swallow <i>Hirundo neoxena</i>
269 #		Australian Tree-martin <i>Hylochelidon nigricans</i> (Batey: Tree-swallow) (Batey: <i>Petrochelidon nigricans</i>)
270 #		Fairy Martin <i>Hylochelidon ariel</i> (Batey: <i>Petrochelidon ariel</i>)
		Family MUSCICAPIDAE: Flycatchers
271 #	#	Grey Fantail <i>Rhipidura fulginosa</i> (Batey: White-shafted Fantail) (Batey: <i>Rhipidura albiscapa</i>)
272 #		Rufous Fantail <i>Rhipidura rufifrons</i>
273 #	#	Willie Wagtail <i>Rhipidura leucophrys</i> (Batey: Black-and-white Fantail) (Batey: <i>Rhipidura tricolor</i>)
275		Satin Flycatcher <i>Myiagra cyanoleuca</i> (Batey: Shining Flycatcher) (Batey: <i>Myiagra nitida</i>)
276 #		Restless Flycatcher <i>Seisura inquieta</i>
278		Jacky Winter <i>Microeca leucophaea</i> (Batey: Brown Flycatcher) (Batey: <i>Microeca fascians</i>)
280		Red-capped Robin <i>Petroica goodenovii</i>
281 #		Flame Robin <i>Petroica phoenicea</i> (Batey: Flame-breasted Robin)
282		Pink Robin <i>Petroica rodinogaster</i> (Batey: Pink-breasted Robin) (Batey: <i>Petroica rhodinogastra</i>)
283 #		Rose Robin <i>Petroica rosea</i> (Batey: Scarlet-breasted Robin) (Batey: <i>Petroica leggii</i>)
284		Hooded Robin <i>Petroica cucullata</i> (Batey: <i>Petroica bicolor</i>)

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		Family PACHYCEPHALIDAE: Song—shrikes	
286	# #	Golden Whistler (Batey: White—throated Thickhead)	<i>Pachycephala pectoralis</i> (Batey: <i>Pachycephala gutturalis</i>)
287	#	Rufous Whistler (Batey: Rufous—breasted Thickhead)	<i>Pachycephala rufiventris</i>
291		Grey Shrike—thrush (Batey: <i>Collyriocincla harmonica</i>)	<i>Colluricincla harmonica</i>
		Family GRALLINIDAE: Magpie—larks	
292	#	Magpie—Lark	<i>Grallina cyanoleuca</i> (Batey: <i>Grallina picata</i>)
		Family FALCUNCULIDAE: Crested Shrikes	
293		Eastern Shrike—tit (Batey: Shrike—tit)	<i>Falcunculus frontatus</i>
		Family CAMPOPHAGIDAE: Cuckoo—shrikes	
299	#	Black—faced Cuckoo—shrike	<i>Coracina novae—hollandiae</i> (Batey: <i>Graucalus melanops</i>)
302		White—winged Triller (Batey: White—shouldered Caterpillar—eater)	<i>Lalage sueurii</i> (Batey: <i>Lalage tricolor</i>)
		Family CINCLOSOMATIDAE: Quail—thrushes	
304		Spotted Quail—thrush (Batey: Spotted Ground—bird)	<i>Cinclosoma punctatum</i>
307		Grey—crowned Babbler (Batey: Babbler)	<i>Pomatostomus temporalis</i> (Batey: <i>Pomatorhinus temporalis</i>)
		Family TURDIDAE: Thrushes	
310	# #	Blackbird	<i>Turdus merula</i>
311	#	Song thrush	<i>Turdus philomelos</i>
312		Australian Ground—thrush (Batey: Ground—thrush)	<i>Oreocincla lunulata</i> (Batey: <i>Geocichla lunulata</i>)
		Family EPTHIANURIDAE: Chats	
314	#	White—fronted Chat	<i>Epthianura albifrons</i>
		Family ACANTHIZIDAE: Thornbills and Warblers	
320		Brown Weebill (Batey: Short—billed Tree—tit)	<i>Smicrorhis brevirostris</i>
322	#	Striated Thornbill	<i>Acanthiza lineata</i>
323	# #	Little Thornbill (Batey: Little Tit)	<i>Acanthiza nana</i> (Marsh: Yellow thornbill)
324	# #	Brown Thornbill (Batey: Brown Tit)	<i>Acanthiza pusilla</i>
328	# #	Yellow—tailed Thornbill (Batey: Yellow—rumped Tit)	<i>Acanthiza chrysorrhoa</i>
329	# #	White—browed Scrub—wren (Batey: Scrub—wren)	<i>Sericornis frontalis</i> (Batey: <i>Sericornis esculans</i>)
334		Striated Field—wren	<i>Calamanthus fuliginosus</i>

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		Family SYLVIIDAE: Warblers	
336		Speckled Warbler (Batey: Little Field—wren)	<i>Chthonicola sagittata</i>
338	#	Brown Song—lark	<i>Cinchorhamphus cruralis</i>
343		Little Grass—bird	<i>Megalurus gramineus</i>
344	# #	Australian Reed Warbler	<i>Acrocephalus australis</i>
345	#	Golden—headed Fantail—warbler (Marsh: Golden—headed Cisticola)	<i>Cisticola exilis</i>
346		Southern Emu—wren	<i>Stipiturus malachurus</i>
348	# #	Superb Blue Wren	<i>Malurus cyaneus</i>
		Family ARTAMIDAE: Wood—swallows	
353		Masked Wood—swallow (Batey: Wood—swallow)	<i>Artamus personatus</i> (Batey: <i>Artamus sordidus</i>)
354		White—browed Wood—swallow	<i>Artamus superciliosus</i>
		Family SITTIDAE: Nuthatches (Sittellas)	
358		Orange—winged Sittella (Batey: Orange—winged Tree—Runner)	<i>Neositta chrysoptera</i> (Batey: <i>Sittella chrysoptera</i>)
		Family CERTHIIDAE: Creepers	
360		Brown Tree—creeper	<i>Climacteris picumnus</i> (Batey: <i>Climacteris scandens</i>)
363		White—browed Tree—creeper	<i>Climacteris affinis</i> (Batey: <i>Climacteris leucophoea</i>)
		Family DICAIEIDAE: Flower—peckers	
364	#	Mistletoe—bird	<i>Dicaeum hirundinaceum</i>
		Family PARDALOTIDAE: Diamond birds (Pardalotes)	
365	# #	Spotted Pardalote	<i>Pardalotus punctatus</i>
368		Eastern Striated Pardalote (Batey: Red—tipped Pardalote)	<i>Pardalotus ornatus</i>
369	# #	Striated Pardalote	<i>Pardalotus substriatus</i>
		Family ZOSTEROPIDAE: Silvereyes	
370	# #	Grey—backed Silvereye (Batey: White—eye)	<i>Zosterops lateralis</i> (Batey: <i>Zosterops coerulescens</i>)
		Family MELIPHAGIDAE: Honeyeaters	
371	#	White—naped Honeyeater	<i>Melithreptus lunatus</i> (Batey: <i>Melithreptus lunulatus</i>)
373	#	Brown—headed Honeyeater	<i>Melithreptus brevirostris</i>
377	#	Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>
382		Regent Honeyeater (Batey: Warty—faced Honeyeater)	<i>Zanthoniza phrygia</i> (Batey: <i>Meliphaga phrygia</i>)
384		Singing Honeyeater	<i>Meliphaga virescens</i> (Batey: <i>Ptilotis sonora</i>)
385	#	Fuscous Honeyeater	<i>Meliphaga fusca</i> (Batey: <i>Ptilotis fusca</i>)
386	#	Yellow—faced Honeyeater	<i>Meliphaga chrysops</i>
389	#	Yellow—tufted Honeyeater	<i>Meliphaga melanops</i>

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Family MELIPHAGIDAE: Honeyeaters (continued)				
393	#	#	White-plumed Honeyeater	Meliphaga penicillata (Batey: Ptilotis penicillata)
395	#		Yellow-winged Honeyeater (Batey: White-bearded Honeyeater)	Meliornis novae-hollandiae
396			Bell-miner	Manorina melanophrys
397			Noisy Miner	Myzantha melanocephala (Batey: Myzantha garrula)
400			Little Wattle—bird (Batey: Brush Wattle—bird)	Anthocoera chrysoptera (Batey: Acanthocoera mellivora)
401	#		Red Wattle—bird (Batey: Acanthocoera carunculata)	Anthocoera carunculata
404			Noisy Friar—bird (Batey: Friar—bird)	Philemon corniculatus
?			Honeyeater (Batey)	Ptilotis auricomis ?
Family MOTACILLIDAE: Wagtails and Pipits				
406	#		Australian Pipit	Anthus australis
Family ALAUDIDAE: Larks				
407			Horsfield Bush—lark (Batey: Bush—lark)	Mirafrja javanica (Batey: Mirafrja horsfieldii)
408	#	#	Skylark	Alauda arvensis
Family PLOCEIDAE: Weaver finches				
409			Beautiful Firetail	Zonaeginthus bellus
410			Diamond—firetail (Batey: Spotted—sided Finch)	Zonaeginthus guttatus (Batey: Staganopleura guttata)
412			Chestnut—breasted Finch (Batey: Chestnut—eared Finch)	Donacola castaneothorax (Batey: Toeniopygia castanotis)
414	#	#	Red—browed Finch (Marsh: Red—browed Firetail)	Aegintha temporalis
415	#	#	House Sparrow	Passer domesticus
Family FRINGILLIDAE: Finches and Buntings				
417	#	#	European Goldfinch	Carduelis carduelis
Family ORIOLIDAE: Orioles				
419			Olive—backed Oriole (Batey: Oriole)	Oriolus sagittatus (Batey: Oriolus viridis)
Family STURNIDAE: Starlings				
421	#	#	Common Starling	Sturnus vulgaris
422	#		Indian Myna (Marsh: Common Myna)	Acridotheres tristis
Family PTILONORHYNCHIDAE: Catbirds and Bowerbirds				
424			Satin Bower—bird	Ptilonorhynchus violaceus

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Family CORVIDAE: Crows and Ravens				
426	#		Australian Raven (Batey: Raven)	Corvus coronoides (Batey: Corone australis)
427	#	#	Little Crow (Marsh: Little Raven)	Corvus bennetti
430			White-winged Chough	Corcorax melanorhamphus
Family STREPERIDAE: Bell—magpies, Crow—shrikes				
431			Pied Currawong (Batey: Pied Crow—shrike)	Strepera graculina
433			Grey Currawong (Batey: Grey Crow—shrike)	Strepera versicolor (Batey: Strepera cuncicaudata)
435			Grey Butcher Bird (Batey: Butcher Bird)	Cracticus torquatus (Batey: Cracticus destructor)
437	#	#	White—backed Magpie	Gymnorhina hypoleuca (Batey: Gymnorhina leuconota)

Molluscs (Snails and things)

In the Park there are a number of Molluscs, both native and introduced. There is a small, conical, pale coloured snail and a similarly coloured snail about half the size of the common garden snail. Both of these are introduced and seem to have been associated with Boxthorn and Artichoke Thistle, so their numbers have reduced over the years. A number of slugs are also present and these pose a threat to some of the herbaceous plants we are attempting to re-introduce.

In Jacksons Creek there are at least three native molluscs, one a tiny cone-shaped snail found on rocks underwater, and two Mussels, a small honey-coloured one and a large black one up to 80 mm. long. The mussels half bury themselves in the mud and the small one at least may be part of the diet of the Water-rat.

GEOLOGICAL HISTORY OF THE ORGAN PIPES N. P.

needs rewording (BR)

About 450 million years ago, the first vertebrate sea creatures were evolving and life was making its first tentative moves onto a previously barren and erosion-prone landscape.

The land on which you are standing was then beneath the sea, not in this latitude and longitude, but thousands of miles away. Torrential rains were eroding the land surfaces and vast quantities of silt, sand and rubble were swept into the sea, where it settled in neat horizontal layers of varying composition.

The pressure of layers above, chemical action and minerals solidifying from solution caused the sediment to become solid stone. Over millions of years, volcanic action caused lateral movement of the Earth's crust. Huge slabs or plates moved thousands of miles and the pressures caused the sandstone to buckle and crack (what the geologist calls folding and faulting). Sometimes the seabed was lifted to form dry land.

Erosion continued and stream valleys cut through the sandstone, which can be seen as a yellow rock in the valley of Jacksons Creek, and forms the bedrock of a wide area around Melbourne. An examination of the layers in the rock will show that they are often tilted near to vertical.

But this valley is a relatively new one. Where the Organ Pipes and Rosette Rock are now seen, a valley cut into the sandstone. In places, quartz sand can be seen on top of the sandstone, part of the ancient soil layer, which we can assume supported a flora and fauna of relatively modern form, but probably adapted to a somewhat different climate.

Then, a few million years ago, an area of weakness in the crust caused a long series of volcanic eruptions in what we now call Victoria. These eruptions rarely formed large cones or craters because the lava was very liquid, flowing out freely over the sandstone, filling in the old valleys and forming new plains. There were many points of eruption and some of these can be seen from the Calder Highway as low, sometimes rock-studded hills on what became the world's third-largest lava flow area, stretching from Yan Yean to Mount Gambier.

Time after time, life was temporarily obliterated over hundreds of square miles, the old soil and its vegetation cooked and burnt. Farther west, volcanic activity continued until less than ten thousand years ago, but the bulk of the lava flows near the Organ Pipes N. P. ceased one or two million years ago.

The old streams were buried, but the sun and Earth's atmosphere now began their work on the new plains, weathering the surface and sending streams of water across it to begin the process again, grinding away at the hard basalt, slipping sideways into lateral curves which are self-perpetuating because the erosive power is greater on the outside of the curve. Waterworn gravel is often deposited on the inside of a curve and left high and dry as the stream cuts deeper and slips farther away.

As we see it today, Jacksons Creek has cut through the main basalt cap and into the ancient sandstone, exposing cross-sections of the former landscape. At the Organ Pipes, it has worked its way to the bottom of a valley, but at right angles to its direction of flow. High above, we can see the final layers of lava and ash, but we can also see that a large mass of molten basalt first filled the narrow valley and, as it slowly cooled, tension caused by shrinkage resulted in a more or less regular pattern of cracks which produced the columns we call the Organ Pipes.

Elsewhere in the Park, similar columns can be seen exposed in a different way, and other curious stress patterns can be observed. Some of the exposed basalt is dense and heavy-looking, but in parts, the lava was obviously in a state of froth and bubble when it cooled.

At the bottom of the valley, the Creek has cut broad shelves as it winds, then it has deposited deep layers of silt which has become rich soil. Soil also developed in situ over the plains and the valley sides as a result of weathering and biological activity. On the steeper slopes, the tendency is for the soil to creep slowly downhill, sometimes slumping when a layer is undermined or slips on wet rock.

Unfortunately, man has been careless here, and the last 150 years has seen soil lost much faster than it is being formed as a result of over-grazing by hard-hoofed animals and rabbits, and undermining by the latter. Clearing of the vegetation further weakened the mantle of soil and the topsoil has been lost from large areas of what is now the Organ Pipes National Park.

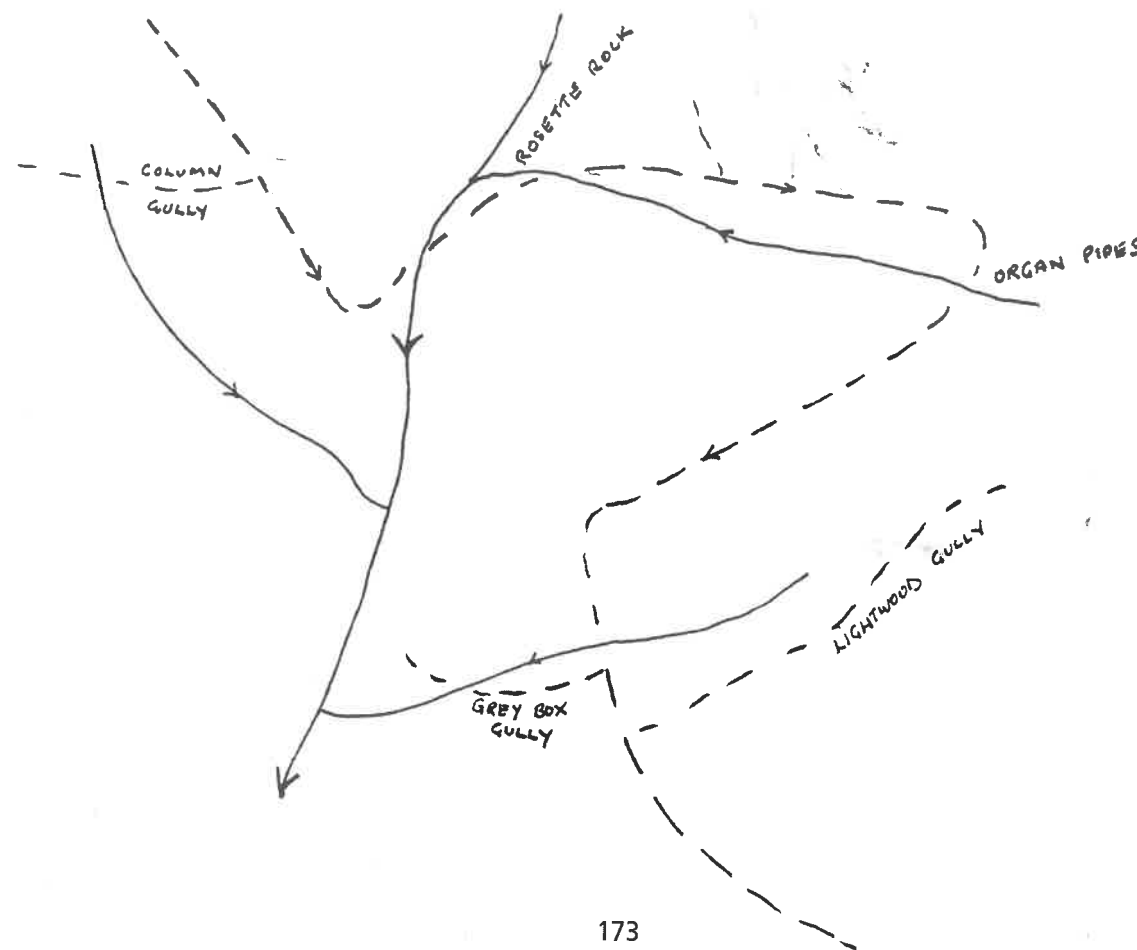
The rabbit-control and re-vegetation work being carried out will eventually halt this unnatural erosion, but it will be a long time before the soil returns to the condition in which we found it in the middle of last century.

A PUZZLE TO PONDER OVER

The Organ Pipes National Park has many interesting facets. Have you ever wondered about that ancient valley cut into the pre-volcanic landscape, its fauna, and the flora adapted to shallow, sandy soils? Can you imagine the hissing and roaring as the relentless wall of glowing red lava flowed down the valley, putting animals to flight, turning the stream to steam and the plants to carbon? The creek may have returned temporarily as a lateral stream on the edge of the lava flow, until subsequent flows obliterated the valley altogether and changed the landscape from hill and dale to flat volcanic plains.

Thanks to the cutting action of a new stream system, we can glimpse the long-dead valley, outlined in cross-section at the Organ Pipes. But where exactly did it go from there? A recent flood exposed sandstone at the base of the pipes, so the new stream has cut deeper than the old at that point. The line of basalt leads to the Rosette Rock and Tessellated Pavements, where it is intriguing to find that the stream has not yet breached the base of the flow. Does this mean that the old stream was lower here than at the Pipes? If so, it must have flowed in the opposite direction to the present stream!

Is it possible that the main stream flowed North to South, through the Pavements and under the present access road? Do the Pipes show a tributary flowing in from the East and did lava pour into both branches, meeting in terrible turmoil at Rosette Rock? A further point of great interest is the evidence of a steep-sided valley displayed near the point where Grey Box Gully hangs above Jacksons Creek. Another tributary? And where does it lead? It may have been something like the present Grey Box Gully, but flowing from the East, not West, the upper section now cut away by Jacksons Creek. The diagram below is a hypothetical pattern of stream flow, pre-basalt, with the present pattern superimposed.



MEETING AT THE HOME OF MR. J. LYON
97 EGLINTON STREET, MOONEE PONDS

21 JUNE 1973

PRESENT: Mr. Jim Lyon
Mr. Percy Lyon, his brother
Mr. J. Lyale, Organ Pipes Park Ranger
Mr. G. Edwards, scribe

The following material has been compiled from rough notes taken on the above date. Material covered in the accompanying "A Few Memories" is largely not included here.

Family history

Thomas White, grandfather of Mr. Jim Lyon, migrated from Somerset, England. For some time, he wandered around from place to place but eventually settled at Deer Park, in a house near the 16 mile point on the Ballarat Highway. The house was part timber, part mud and rush and had walls 18" thick. It was built by Thomas White himself.

There were a number of girls in the family and one boy, John. The youngest girl was the mother of Mr. Jim Lyon, who was born (in the same house as his mother, at Deer Park) on 26th March 1891. The daughters are buried at Broadmeadows cemetery.

Thomas White then lived in a house, still standing, at the top of the hill overlooking Holden ford (beside the present Holden bridge), on the Diggers Rest side. This house was built around 1890 and was called "Kinsdale". Thomas White was buried in 1902 at Bulla cemetery, and grandmother White was buried there in 1905.

The Lyons' father came from Liverpool. Although he was a rope-maker by trade he didn't do much of that work, but put his hand to many jobs such as relief work on the railways, e.g., at Dunolly.

The family went to Yarraville in 1902. Jim Lyon left Yarraville school at 13 and went to work in Millers Ropeworks at Yarraville. Then he went to the Holden and Lewin iron foundry where he learned moulding. He later worked for other foundries.

Uncle John White lived in Kinsdale, but his father would not let him bring a bride to live there, otherwise he would have been made to leave and would have lost his share in the house. Thus John didn't marry until Thomas died. After living with his father, he shifted to "Winfield" on the Calder Highway (then the Mt. Macedon or Bendigo Road) near the Organ Pipes entrance. John was buried in Bulla cemetery in 1949 but Gibsons, the executors, omitted to engrave his name on the tombstone. There are two granite slabs on the grave, which is shaded by an old tree, near the Mansfields on the left.

The Lyons lived in four houses in the Holden district:

- a. Tonkins' opposite Kinsdale
- b. Dunn's, opposite the common
- c. Oakland's Junction
- d. McLeod's Road, on the corner of the road leading to Kelly's place.

Brother Percy was born at Dunn's, which is marked now by agaves and cacti. Brother Charlie died two years ago. Charlie once lit a fire near the haystack, and Tom and Jim put it out while their parents were in town - the haystack was endangered.

The house on the corner of Kelly's Road used to have a well beside the dairy and another between the house and the shed. These wells are still present, but are now filled in. The stone wall in the corner of the paddock used to be the haystack. The timber house was in the centre of the paddock. The dairy was of bluestone and there were other sheds alongside.

Customs and anecdotes of the times

The family attended St. Mary's Church of England for about 12 months. Three brothers (Percy Edward, Charles and William John) were Christened there by the Reverend Rodda, who came from Essendon (where there is a street named after him).

Recently an article by Derek Bennett on the church appeared in "The Age". The final service and Harvest Festival prior to re-siting was held on Sunday 30th April 1972 at 3 p.m.

Mr. Jim Lyon does not remember aborigines in the district.

Holden State School began in Dunn's house. Then a State School was built on the Common in a ring of trees planted on Arbour Day. The site lies opposite Dunn's house, near the S.E.C. line. Miss Rowe was the first teacher (1901) and board at McLeod's.

In the early days the ford consisted simply of a few stepping stones. There used to be a whirlpool at the ford, causing a hole more than 20 feet deep (now silted up). Big floods would rise 10 feet high at the ford, and the brothers used to throw a net in then on the off-chance of catching fish.

Floods used to wash the white sand down the creek behind St. Mary's Church and across the road which leads from the church to the junction. Men used to bring drays down to collect it near the monument.

Squatters used to live behind the boxthorn hedge along the entrance to the Park. Bartletts lived in the house there.

Jim's uncle, Tom Williamson, owned the first store in Essendon, in Fletcher Street. The associated house behind the store still stands. The brothers used to take hay there. Uncle Tom used to have trouble with some aborigines from Doutta Galla tribe, so he used to cut holes in melons to simulate eyes, nose and mouth and used to hang them up with candles inside.

He supplied the first red government-issue blankets to the aborigines. He died at the age of 99 years and 9+ months, and was buried at Keilor.

Near Tate's place was a hill leading straight down into the creek. The brothers used to run down the hill, stripping clothes off as they went, and plunge into the creek.

Hall

The house downstream from the Organ Pipes, on the north side of the creek, was called "Millbrook" and used to be the home of the Hall family. Halls used to do some blacksmithing in the early days. The house was old when the Lyon brothers were children. It was basically a mud house with some stone. The Lyons do not remember anyone living in it; Perc and Jim used to camp overnight in it at times.

There used to be an apricot orchard there, which uncle Jim White leased. There were also almonds and walnuts. Jim's brother, Charlie used to take 10 or 12 cases of apricots at a time up the hill towards the highway by draught horse and cart, and used to carry a brick to put behind the wheel if the horse faltered.

There was once a pump at the foot of the gully, on the Millbrook side of the creek, used to water the orchard. There was a swing bridge downstream of Halls', which went over the river and the billabong, 12 feet above normal water level, to avoid flash floods. Posts are still there. There were two steel ropes on top and two underneath to carry the cleats. The bridge led directly from the house. There also used to be a track leading north up the hill behind Millbrook.

Other local people

Jackson The Jacksons used to fossick around the State in the days before the gold rush. Old Bill Jackson had a twin called Alec and an elder brother, Mark. Bill used to live at Overnewton, then later near the Park (turn right at Toolern Vale Junction along an old track). Jacksons used to live, and still do, beyond Gisborne.

Trotnim Trotnim's grave is in the graveyard of the old Church. Daughter Maud, now a 92-year-old widow (Mrs. Vincent) used to be Sunday School teacher there in 1898-9. She attended the last service.

Randall Randall's house in Loeman's Road has now disappeared.

Tate Brothers Eric and Fred. Fred used to drive a traction engine to haul the chaffcutter up the hill. Also owned a steam generator which powered a portable pump which pumped water up the hill to the house.

Slater Slaters used to live in a house where Calder Motorway is now.

McLeod In the family were R. Duncan McLeod (called "R.D."), George and Jack, who kept poor health. One of the McLeods was struck by lightning in about 1900 and had his boots ripped off. Brother Tom Lyon, who was standing nearby, was always frightened by lightning thereafter.

Natural history

The Lyon brothers specifically remember the following features: The Organ Pipes used to be taller and wider than they are now. The flat in front of them was often covered in water. Blackfish lived in a pool near "Millbrook", and eels and perch also used

to be common in Jacksons Creek. Occasionally, brown trout would spring out of the water. Frogs were abundant. Platypus were in the creek, and brushtail possums were common in the trees along the creek. Water rats were said to be present, but they didn't recall seeing any.

Wrens, wagtails, robins, kookaburras. Owls in the vegetation on the cliffs. Crows in the rookery in McLeod's cliff overlooking Tate's. Echidnas were occasionally seen, particularly around Bald Hill, where there was shelter and softish soil.

Black snakes in the creek, some Tiger snakes and the odd Brown snake on the plain. Blue-tongue lizards. A small lizard 6 to 7" long, which ran up trees. There were many beehives (stinging honeybees) in the cliffs. House mice were seen, but not plagues of them. Rabbits were common and used to be poisoned with jam and toxin. Foxes were plentiful and fed on lambs, fowls and rabbits. Bats used to enter barns and houses.

Boxthorns used to be as abundant as they now are. Artichokes were always common, and Cow-thistles (Variegated Thistles) were very abundant, and more so than Artichokes. There were never many big trees, nor were there many She-oaks near the creek, although there were four or so on the Bulla-Diggers Rest Road (still there in 1973). There were also three or four She-oaks about 50 yards downhill from the present car-park, on the rocky outcrop at about Grid P 16. The gullies were filled with shrubs, but not trees. The gums now in the creek at the Park are original ones. There were never any trees on Bald Hill, which is the spur on the east of the car-park, overlooking Hall's.

Prickly Pear in a mass hundreds of yards long and covering a couple of acres used to climb up over the bank above the place where it is now (upstream from Tessellated Pavement. It even threatened Alec Jackson's house on the top of the hill (remains of the house could possibly now be in Cameron's(?)'s block. A hedge of it used to stretch up the rise. Adam's Needle was the big rosette cactus and that also was present. Bathurst Burr used to be abundant. Tall bushes like Privet called Christmas Trees, with small white flowers used to be very common. Peppercorns had been planted near McLeod's and Hall's, and some were near the Organ Pipes when Mr. Percy Lyon was a boy. Horehound was common and in dense infestations even in the early days. It was used for making tea and beer.

Pumice was found in the paddocks near the hotel at Digger's Rest, on the right hand side when going out on the Bulla Road. Behind uncle White's house (upstream of ford) was a range of fine-grained coloured rocks.

The Lyon brothers do not specifically recall the following plants and animals:

Yabbies, tortoises, Bearded Dragons, Stumpytails, Wombats, Koalas, although they used to be plentiful near Melbourne and Jim's father had skin rugs which had been made from koalas he had shot. Kangaroos. Blackberries.

Geoff Edwards
Technical Officer

A FEW MEMORIES BY JIM LYON

97 Eglinton St., Moonee Ponds 3039

I first came to Holden, along with my parents and 3 brothers, Thomas, Charles and William John, in the year 1896 at the age of 5 years. My grandparents, Thomas and Emma and Uncle William John White owned the property and lived in the house at the top of the rise coming up from the ford over the Jacksons Creek. The house was built by my uncle White and a Mr. Richards who lived at Oaklands Junction. That is what I was told. My parents lived in a house opposite to Whites'. It was known as "Tonkin's place".

While there, brother Tom and I used to go to the Bulla School. Some walk, crossing the Jackson and Deep Creeks to get there! There were quite a few boys and girls attending the school and they came from various farms. I really have forgotten their names. I remember one girl who came from Dillons. Mr. Dillon was drowned in the Jackson's Creek just up from the ford. I remember my father, my uncle John and other men from around, went searching along the creek for him. He was eventually recovered.

We lived there for a while, then moved into a house known then as Dunns', it was situated on the side of the rise coming up from Jacksons Creek and overlooking Tate's homestead and orchard on the bend of the creek. To get there one came down McLeod's Road, which ended in the common and the house was just inside a stone wall on the side of the rise.

From there Tom and I went to Diggers Rest school for a while. Among pupils were Perce Davies, the three Boubock sisters, Jim O'Brien, other boys' and girls' names forgotten. The teacher used to come up each day by train from Melbourne. Kate and Bill McLeod also attended.

My brother Percy Edward was born at this house in August 1898. In between those dates, my father had been to Mt. Lyell, in Tasmania, but came back a sick man. We then moved to Oakland Junction and lived in a big house in a paddock owned by Mr. Daniel, who was the Master of the Hounds at the Oakland Hunt Club.

We stayed there for a while and we went to the Greenvale School. Among some of the pupils were the Gilligan boy and girls who lived a bit further down the road from us. There were also Eva and Aubrey Musgrove, whose father had a foundry and workshop at the corner of the crossroads leading to Bulla and Greenvale. Also, next door to Musgroves' was Richards - a builder - whose son went to the school. There was a lad named Ryan also, not forgetting a family named Hyslop. Hurtle was a mate of mine at school, also at St. Mary's Sunday School. Eric Mansfield was another boy who was a school mate. Nellie Bligh was another pupil; she lived by the creek near the Hunt Club. Miss Maud Trotman was Sunday School teacher (now Mrs. Vincent).

Times were tough those days, but my mother managed to have three of my brothers christened at St. Mary's Church of England by the Reverend Rodda. While at Oaklands, brother William was nearly drowned in a dam near the house.

While I had a few weeks in the Children's Hospital a while after, we shifted back to Holden, back to a house in a paddock at the end of McLeod's Road adjoining the road that leads to Kellys and Burns. It was there that another brother was born.

We had a few cows, fowls and pigs to look after but always found time to explore the valley of Jackson's Creek. There are very many interesting spots along that area which my brothers and I enjoyed many hours fossicking along the cliffs and gullies, not forgetting the famous Organ Pipes and the swing bridge which crossed the creek just down-stream from the Organ Pipes to reach Halls' house and orchard. Those were the days of our early life in the locality of Holden. We then came to Yarraville in 1902.

Just a few more notes come to my mind. The old house I mentioned as Dunns' house, well, that became the first State School at Holden and Miss Rowe was the first teacher of the State to take charge there. Previous to that, Miss Kate McLeod was a voluntary teacher for the children there. The pupils came mostly from Burns, Kellys, McLeods, Randalls, Lyons, Tuckers and others. A new school was built on the common later. A ring of trees shows where it was.

Of course, the old houses are gone now; only a good array of cacti and Adam's Needles and stone wall show the place of Dunns'. It's worth seeing - a good souvenir to photograph. All those old homes are gone except Kellys' and Tates' (Duncans' and McKenzies'). On the Bulla to Diggers Rest Road, grandfather's house is still there at Holden. A new house is built close by.

I remember while living at Dunn's house, there was a severe drought and the creek stopped running, but the big holes had quite a lot of water where we and other boys used to dog paddle. At this time there was big comet in the sky and the end of the world was rumoured around. One thing, there was plenty of eels in shallow water around the rocks.

It may be of interest to know that a light foot-bridge (swing bridge) over the creek was put up by Mr. James Tate. My father spliced the rope used in the making of the bridge. It was put up to cross the creek when high. Mr Tate had a portable steam engine and chaff cutter and used to do the district. I used to like watching the engine at work. Around about 1900 one of the McLeod sons was struck and killed by lightning. I remember the Police trooper from Sunbury used to inspect dairies etc. and Dr. Player, and Eadie's the baker of Sunbury.

Notes supplied by Mr. Jim Lyon
21 June 1973

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Categories:

1. Historical
2. Fauna
3. Flora
4. Geology and anthropology
5. General references

References in this bibliography are not all detailed, but in most cases should be sufficient to allow researchers to locate material.

Some articles are difficult to classify and may be cross-referenced. Others in a single category may be worth reading for wider information. Some of them are included in this book.

Readers are invited to add to the list, or fill in missing detail by sending information to the editor:

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