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HONEY Plants

DEPARTMENT OF AGRICULTURE OF WESTERN AUSTRALIA

Bulletin No.3618

**HONEY PLANTS
IN
WESTERN AUSTRALIA**

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1969

PREFACE

This book was planned five years ago in consultation with the Executive Committee of the Beekeepers' Section, Farmers' Union of W.A. Compiling material for it has proved a formidable task and, as the work proceeded, it was found that there were many aspects on which fundamental research was needed.

In the meantime the gap has been filled by Mr. R.S. Coleman's excellent check list *Honey Flora of Western Australia* (Western Australian Department of Agriculture Bulletin 3038) and *An Introduction to Beekeeping in Western Australia* (Bulletin 3108) by the present author. However, Bulletin 3038 is now out of print, and it has become a matter of urgency to provide beekeepers with a new guide to the honey plants in Western Australia.

The region covered by this guide is that southern part of the State, having an average annual rainfall of more than 9 inches, and in which is concentrated all commercial honey production.

The descriptions of bee plants are confined to the Eucalypts, and Mr. C.A. Gardner's excellent drawings, supplemented by others of Mr. S.R. Chambers, have been used to illustrate them. For descriptions of other plants, C.A. Gardner's *Wildflowers of Western Australia*, with its magnificent colour pictures, is recommended. For the botanically inclined the field key *How to Know Western Australian Wildflowers* by W.E. Blackall is most useful.

F.G. SMITH.

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INTRODUCTION

Successful honey production depends, among other things on a good knowledge of the plants which produce nectar.

Every apiarist needs to know which plants are of importance to honey-bees, where those plants occur, and when they flower. He also needs to know which plants produce nectar which will result in the production of good quality honey, and which produce unpalatable or unmarketable honey. To maintain the strength of his bee colonies he also needs to know which plants produce nutritious pollen.

The object of this bulletin is to provide the basic information on these subjects in the main beekeeping areas of Western Australia. The bulletin does not pretend to say everything that there is to be said on the matter as this would be quite impossible. Every year each beekeeper learns a little more about the honey flora, but no one year is exactly the same as the previous or any other year because the flowering behaviour and nectar production is dependent on that infinitely variable factor, the weather.

A successful apiarist is one who has the aptitude for working with nature, and who is sensitive to the changing conditions which affect the flowering of plants and the behaviour of bees. In Western Australia, where the greatest honey production is produced by moving the bees from honey flow to honey flow, the apiarist has to keep himself informed on the condition of flora over very large areas of country. It is this constant contact with nature, and the study of the interplay of climate, soil, vegetation and bees, which is one of the great fascinations of beekeeping.

The response of the apiarist to nature's ever changing conditions is an art rather than a science. Mastery of this art should be the aim of everyone who owns a hive of bees. This bulletin outlines some of the science on which the art is founded, and possibly a little of the art itself.

THE IMPORTANT FAMILIES OF BEE PLANTS

The plants of prime importance to bees in Western Australia mostly belong to a very few families.

The first and most important honey producing family is the Myrtaceae. In this family is the genus *Eucalyptus*, to which most of our trees belong. Other important bee forage plants in the same family are trees and shrubs of the genus *Melaleuca* and small shrubs of *Calothamnus*.

The second most important family is the Proteaceae. To this belong the trees and shrubs of the genera *Banksia*, *Dryandra*, *Hakea*, *Grevillea*, *Lambertia* and *Xylomelum*, all of which are important nectar producers. It is this family which is most useful during the winter and spring, particularly in coastal areas and in the sandy heathlands of the interior.

Epacridaceae, the family of heath plants, akin to the heaths and heather of the northern hemisphere, is a valuable source of pollen and nectar in sandy areas. The most important genus is *Leucopogon*.

The pea family, Papilionaceae, is also useful, particularly the prickly shrubs of the genus *Daviesia*. The clovers also belong to this family. Some clovers are good honey producers and it is possible that developments in agriculture will increase the importance of this family to honey production.

In the Mimosaceae the genus *Acacia*, which includes the wattles, provides an important source of pollen. However, although valuable for nectar in other parts of the world, there is no evidence that the Mimosaceae are important nectar producers in Western Australia.

Compositae, the daisy family, is a valuable source of pollen and includes the genera *Arctotheca* and *Hypochoeris*. Useful members of these genera are cape weed and flat weed.

The Boraginaceae is important to honey production through an important weed, *Echium plantagineum*, commonly called Paterson's curse or salvation Jane. However, active eradication measures are reducing the spread of this plant. *Heliotropium* also belongs to the family but is mostly confined to the northern parts of the State where there is little beekeeping.

BEE FORAGE ZONES

Because of the vastness of Western Australia, even of the southern part to which commercial bee-keeping is confined, it is convenient to subdivide the State into provinces and zones which have characteristic vegetation types. These subdivisions are shown in figures 1 and 3. Figure 2 is included to show all place names mentioned in the bulletin.

Most beekeeping takes place in what is known to botanists as the South West Province. This lies south and west of a line from the southern end of Shark Bay to Israelite Bay east of Esperance. The ocean provides the western and southern boundaries, while the landward boundary runs from Shark Bay and passes close to Mullewa, Morawa, Koorda, Bencubbin, Burracoppin, Hyden, Ravensthorpe, Grass Patch and so to Israelite Bay. The Province is a winter rainfall region with a Mediterranean type of climate and an annual rainfall ranging from 12 inches to over 60 inches in the extreme south-west. While there is a summer drought and most rain falls in the winter months, some falls occur during the summer along south coastal areas.

Within the South West Province lie the Karri, Jarrah and Tuart forests, the Wandoo and York Gum woodlands, the *Banksia* wooded heathlands and much of the open heathlands.

North and east of the South West Province, in the drier interior, lies the Eremean Province. In the southern part of the Eremea occur mixed *Eucalyptus* woodlands and mallee formations with wide belts of heathland. These areas attract commercial beekeepers when there are poor honey flows in the South West Province. In this bulletin this part of the Eremea is called the Mallee Zone.

Figure 1.

WESTERN AUSTRALIA
Vegetation Provinces

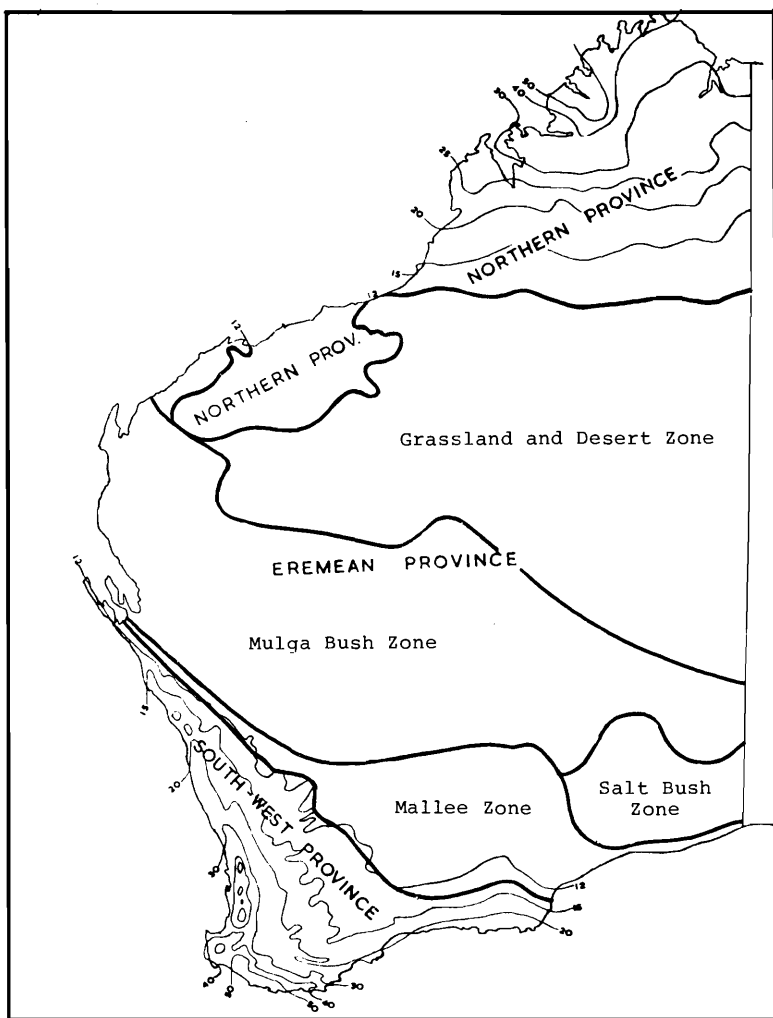
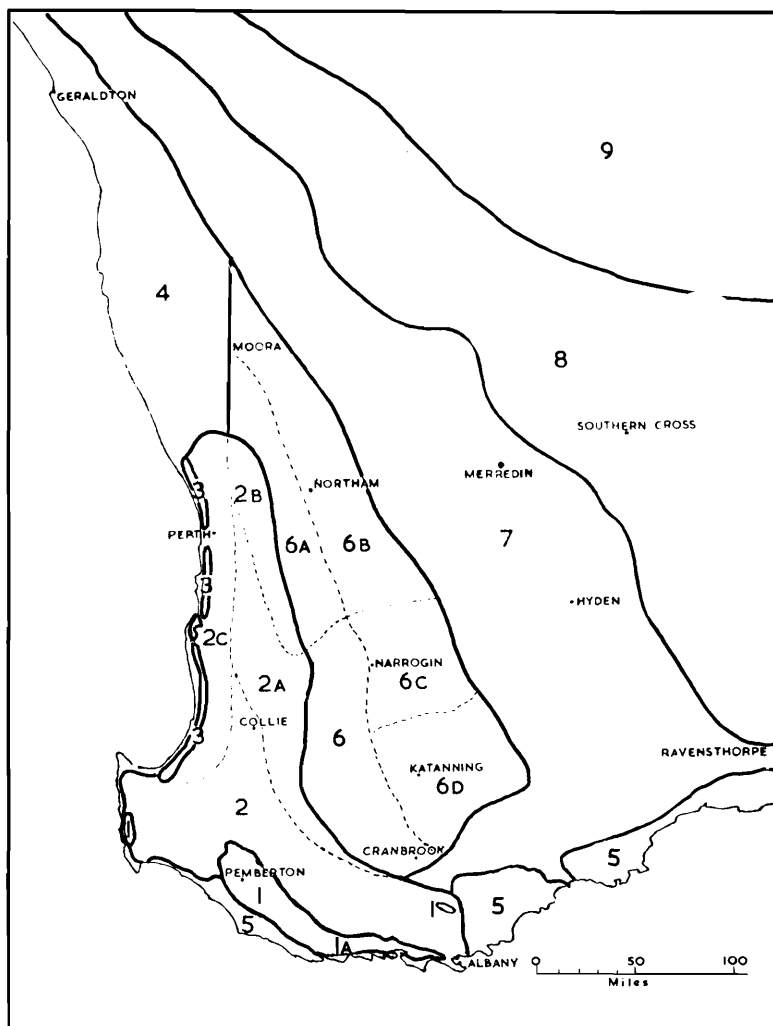


Figure 2.

The South West of Western Australia
(Place names mentioned in text)



Figure 3.- The South West of Western Australia (Vegetation Zones)



1. Karri Forest with Jarrah and Marri. 1A. Karri-Jarrah-Marri Forest with Red and Yellow Tingle.
2. Jarrah-Marri Forest. 2A. Jarrah-Marri Forest with Wandoo intrusions. 2B. Jarrah-Marri-Wandoo Forest with local Powder Bark. 2C. Coastal Plain Jarrah-Marri Woodland.
3. Tuart Forest and Woodland.
4. Heathland and Banksia Wooded Heathland, West Coast.
5. Heathland and Banksia Wooded Heathland, South Coast.
6. Wandoo Woodland Zone. 6A. Wandoo Woodland with local Powder Bark. 6B. Wandoo Woodland with York Gum Wooded Grassland. 6C. Wandoo and York Gum with local Mallet. 6D. Wandoo and York Gum with local Swamp Yate.
7. York Gum Wooded Grassland with local Transitional Woodland and belts of Heathland.
8. Mallee Zone with belts of Heathland and local Transitional Woodland.
9. Mulga Zone.

Karri forest

The karri forest is dominated by *Eucalyptus diversicolour* and occurs in the extreme south-west where the annual rainfall exceeds 40 inches and summer rainfalls of more than 12 inches are frequent. It covers only a small area extending south and south-east from near Nannup and Manjimup, and terminating south of Northcliffe and Shannon. Small patches also occur south of Margaret River. On the south coast, from Frankland River to Denmark River, there is another belt of karri mixed with the red and yellow tingles, *E. jacksonii* and *E. guilfoylei*. Patches of karri forest also occur in the Porongorup Range north of Albany, and at Mt. Manypeaks, east of Albany.

The forest presents a mosaic of stands of pure karri and stands of a mixture of jarrah, *E. marginata* and marri, *E. calophylla*. Usually less than half the forest is covered with karri.

The karri grows on hillsides on light soils derived from granite and gneiss. It has an understorey of smaller trees, including *Banksia* and *Agonis* species, and dense layers of shrubs.

The honey flow from karri is one of the most intense experienced. In years when the flow is on, 300 to 500 pounds of the finest quality honey may be harvested from each hive. Although a certain amount of blossom is produced in the forest each year, heavy flowering occurs only once in four to twelve years, but may continue for two years. Buds form 18 months before flowering, and one part of the forest may be nine months ahead of another.

From spring to December, the flowering of shrubs in the karri forest may lead to uncontrollable swarming. The main part of the honey crop is usually obtained from January to April. During a long heavy flow, the populations of bee colonies may be severely reduced, so young vigorous queens are needed to maintain the brood nests.

Colonies of bees permanently in the karri areas obtain moderate crops from the shrub *Chorilaena hirsuta* during November and December. *E. guilfoylei*, which grows on the sides of valleys in the south, produces well in December-January in hot, dry summers. *E. jacksonii* yields good crops of excellent honey every four years or so.

Jarrah forest

The jarrah forest is dominated by *E. marginata*. Marri, *E. calophylla*, is a co-dominant on certain soils but is limited in its distribution by the need for a winter rainfall of 30 inches. The forest extends from a few miles north of the Swan and Avon Rivers to the south coast. Eastwards it extends to a little beyond Albany. Like the karri forest, most of the jarrah is in forest reserves.

Jarrah, *E. marginata*, occurs on soils derived from laterite. It is found usually on the tops of hills where the hard laterite caps still exist, and on the slopes of laterite gravel. Jarrah is the dominant tree in such situations. It is also dominant in the low-lying sandy plains in the karri forest areas, in addition to being co-dominant with marri, *E. calophylla*, on the laterite soils of such areas.

Marri becomes dominant on the deeper sandy soils, particularly those overlying granite, and especially in hollows and along dry river beds where the moisture conditions are better. The banks of streams in the jarrah forest form the habitat of *E. patens*, the forest blackbutt. In the valleys, particularly on the eastern side of the jarrah forest where clay soils derived from basic dykes occur, wandoo or white gum woodland, *E. redunca* var. *elata* makes an appearance. Powder bark wandoo, *E. accedens*, occurs occasionally amongst jarrah on rocky laterite outcrops.

Jarrah forms a fairly open forest with an understorey of small trees and numerous smaller shrubs, of which the most noticeable are *Banksia grandis* (bull banksia), *Xanthorrhoea* spp. (black-boy), *Macrozamia riedlei* (zamia palm), and *Casuarina fraseriana* (bulloak). The understorey varies in its components and thickness according to the soil, topography and locality.

In the jarrah forest the most important honey flow comes from the marri in February and March. Marri yields in most years, with particularly good honey flows every three to seven years. The jarrah is less productive, and flowers according to district between September and January. Better honey is obtained on sandy soil than on laterite soil.

The forest blackbutt, which flowers in January and February, provides a good build-up. The understorey in the jarrah forest provides no appreciable

honey flow but does provide nectar and pollen between spring and early summer.

Tuart forest

On the western coastal plain, between the jarrah forest and the sea, small belts of forest occur on limestone formations. These belts run from south of Moore River, about 40 miles north of Perth, down the coast to the Busselton area. The dominant tree is tuart, *E. gomphocephala*.

In the northern parts of the tuart's range it forms forest or woodland mixed with jarrah and marri, with a ground flora of shrubs and herbs. Poot, *E. decipiens*, and coastal blackbutt, *E. tottiana* occur locally. The most important shrub to beekeepers in the tuart forest is parrot bush, *Dryandra sessilis*, which occurs locally.

Towards the south, tuart forms forest without much shrubby undergrowth but with a rich development of understorey trees, particularly peppermint, *Agonis flexuosa*, and *Banksia grandis*. At the southern limit yate, *E. cornuta*, occurs and forms hybrids with the tuart. *Melaleuca* species occur as shrubs along the banks of streams, together with *Grevillea* species and trees such as flooded gum, *E. rudis*, and marri, *E. calophylla*.

Because the tuart belt is narrow, and its vegetation changes quickly with soil type, it is important to consider other vegetation types on the coastal plain adjoining the tuart zone. Jarrah, *E. marginata*, is dominant in the sandy areas, accompanied by *Casuarina fraseriana* and marri, *E. calophylla*. Important small trees or shrubs are *Xylomelum occidentale*, *Hakea prostrata*, *Banksia* species, *Jacksonia* species, Christmas tree, *Nuytsia floribunda*, and parrot bush, *Dryandra sessilis*. Where clay occurs in the sand, wandoo, *E. redunca* var. *elata*, and marlock, *E. lane-poolei* appear in small amounts a little to the south of Perth. In swampy places *Melaleuca* species are numerous, and *Banksia littoralis* may occur.

The tuart forest and its associated vegetation types produce moderate honey flows, and nectar is obtainable throughout the year. Two *Banksia* species provide food in the winter months. B.

menziesii, which occurs in the northern parts, flowers between March and August, and *B. ilicifolia* from March to November. Along and near streams flooded gum, *E. rudis*, flowers between May and November and can be useful for the build-up period. Shrubs of *Hakea*, particularly *Hakea trifurcata*, which flowers from June to August, build up the colonies well, and may produce a crop.

Parrot bush, *Dryandra sessilis*, flowers from July to the middle of October and is a reliable and heavy producer, particularly on limestone. The most useful concentrations of this plant lie north of the tuart zone where it yields honey of excellent quality. Poot, *E. decipiens*, has its main flow from September to November on the limestone hills.

The paperbarks of the swamps, *Melaleuca* species flower from October to January and produce regular honey flows. *Melaleuca huegelii*, on limestone outcrops, helps the bees along in December to February.

Jarraah flowers in December to January and, although not reliable, can produce good quality honey on the coastal plain. Coastal blackbutt, *E. todtiana*, produces a good crop of rather dark honey in January-February every two years or so, while marri provides a honey flow during February and March. In the extreme south, yate, *E. cornuta*, produces excellent honey from December to February but most of the trees have now been cut out. Tuart flowers from March to April but is irregular and requires three years for bud development. It is also subject to insect attack.

Coastal heath and banksia wooded heathland

Dovetailing in with the northern tuart forest and extending northward past Geraldton to the Murchison River are extensive areas of coastal heathland and *Banksia* wooded heathland. The heathland contains numerous species of shrubs. The dominant plants are *Acacia* species near the coast, *Hakea* species inland, and *Dryandra sessilis* on the limestone ridges. Further inland *Banksia* species, with *Casuarina fraseriana*, are dominant small trees.

The *Banksia* wooded heathland provides good

winter sites, with nectar available from the *Banksia* species and *Hakea trifurcata*. The heath plants, particularly *Leucopogon* species and *Casuarina fraseriana*, provide abundant winter pollen. The *Hakea* may produce a crop between June and August but the honey is dark and strong. Nevertheless the *Hakea* is valuable for building the bee colonies up to strength for the main honey flow. From July to the middle of October an excellent honey flow of good quality honey is produced on the limestone ridges from the parrot bush, *Dryandrs sessilis*.

On the south coast the heath extends from Albany right through to Israelite Bay, within a zone having an average annual rainfall of 17 inches and over. The principal genera on the south coast are the same as on the west coast, but the species are different. Chittick, *Lambertia inermis*, is often the dominant tall shrub, while in other parts, *Banksia speciosa* is dominant. Both species flower throughout the year but chittick flowers most heavily in September.

Little information is available about honey flows in this part of the country, but the success of escaped swarms indicates that it is a good area for bees. However, considerable areas are being cleared for cultivation, particularly near Esperance.

In the Albany area, an introduced plant, taylorina, *Psoralea pinnata*, yields very good crops of honey between September and November.

Wandoo woodland

The wandoo woodland lies to the east of the jarrah forest. It occurs on clay soils overlying granite, except where it intrudes in shallow valleys into the jarrah forest where it is found on red clay soils derived from epidiorite. The most northern occurrence is at Three Springs but the main woodland begins just north of Watheroo and extends southwards and eastward to Boyup Brook and Cranbrook. The 15 inch rainfall isohyet forms the approximate eastern boundary of the wandoo woodland area.

Much of the wandoo, *Eucalyptus redunca* var. *elata*, has been cleared for agriculture but two

common plants brought in by agriculture are of use to bees. These are cape weed, *Arctotheca calendula*, and Paterson's curse, *Echium plantagin-eum*, the latter being a declared weed.

Thus, other than in isolated patches in the agricultural areas, wandoo is now mainly limited to the forest reserves. The main blocks occur from south of New Norcia to the Avon Valley and from the Mundaring-York road to south of Wandaring. Elsewhere it remains in scattered patches one or two square miles in extent.

The woodland is almost pure wandoo although some marri occurs in the western parts, and flooded gum, *E. rudis*, is common near water courses. On the laterite hills, particularly in the area bounded by Mundaring, York, and the Bannister River, powder bark, *E. accedens* occurs. The shrub undergrowth in the wandoo woodland is similar to that in the jarrah forest but without the *Casuarina*. *Acacia acuminata*, the jam tree, becomes important towards the east. South of Bannister River, and towards the east, the laterite hills become covered with dense stands of brown and blue mallets, *Eucalyptus astringens* and *E. gardneri*, but these have been mostly cut over. In the low lying country south of Wagin, swamp yate, *E. occidentalis*, appears. It becomes more important in the association further south, together with larger species of *Melaleuca* and *Hakea*.

Wandoo was the source of the most important honey flows in Western Australia but it has become less dependable in recent years. In the northern area from New Norcia to the Avon Valley, the main flow occurs from March to June; to the south, flowering is later, in the spring. Even further south the wandoo flowers in January-February. Trees on high ground tend to flower before those in the valleys, drainage apparently being a controlling factor. Powder bark, *E. accedens*, although limited in its distribution, may yield honey from the end of January to the beginning of March. Powder bark also yields pollen and the colonies maintain and build up their strength. *E. rudis* provides a winter source of nectar and occasionally a surplus in the spring. The mallet, *E. gardneri*, and swamp yate, *E. occidentalis*, also produce winter flows.

York gum wooded grassland

A form of wooded grassland composed of two tree species, york gum, *Eucalyptus loxophleba*, and jam, *Acacia acuminata*, extends from the wandoo woodland and the 18 inch mean annual rainfall isohyet, eastwards to the edge of the South West Province along the 12 inch isohyet. This association, often with *Casuarina* and a ground flora of grass and *Compositae*, occurs on granite and diorite sandy loams.

The york gum produces an excellent honey flow, usually every two years in September to December. Its flowering time alternates with *E. rudis*.

Transitional woodland

Eastward from the 15 inch rainfall isohyet, a transitional type of woodland occurs on red loam in alluvial depressions. This woodland extends eastwards through the mallee belt of the Ereman Province. The principal trees are salmon gum, *Eucalyptus salmonophloia*, red morrel, *E. oleosa* var. *longicornis*, yorrel, *E. gracilis*, and gimlet, *E. salubris*. They provide little shade and there is often a sparse undergrowth of shrubs. In the South West Province the shrubs are mainly *Proteaceae*, but outside the Province the shrubs change to the Ereman types.

Salmon gum sometimes is of great value to bees, and red morrel produces a flow of good honey in January to March. Yorrel, or snap and rattle, also produces a flow, but is very variable in the time of the year when it flowers. Gimlet is worked by the bees between November and February for its pollen and a fair amount of nectar.

Heathland

A fairly definite belt of heathland extends from near Geraldton in the north to the Stirling Range in the south from where it stretches far to the east. It is found on deep sand and is frequently referred to as sand heath or sand plain. The heathland occurs where the annual rainfall is

less than 15 inches, and it extends into the Ereman Province, though with fewer species.

The heathland contains more than half the species of plants in Western Australia and is exceedingly complex and variable in composition. Flowering takes place between late-winter and late-spring. A rather dark and strongly flavoured honey crop is obtainable from the numerous plants, especially from *Grevillea* and *Hakea* species. The heathland is of greatest value as a source of pollen and it builds up colonies for the honey flows from adjoining areas of mallee and mixed *Eucalyptus* woodlands.

Mallee and thicket

Large areas of mallee country extend from the drier parts of the South West Province out into the south-western parts of the Ereman Province. There are numerous *Eucalyptus* species making up the mallee vegetation but some are of only limited occurrence. The best development occurs on alluvial soils. *Melaleuca* species occur on low lying sandy soils. Where the mallee joins the heathland, an intermediate zone of *Acacia* and *Melaleuca* thicket may occur.

Little is known of the honey potential of the mallee areas in Western Australia. Large crops of excellent honey were obtained from mallee in the Coolgardie area for the first time in the summer of 1961-62, but were not repeated in the following year. In 1964 and 1966 there was also excellent nectar production in the mallee and mixed woodland areas.

As mallee occurs in areas with rather unreliable rainfall, good yields are likely to be irregular. In general, good flowering occurs in a year following a year of high rainfall. However, very little flowering can be expected in a year when the trees are heavily laden with fruit.

MONTHLY CALENDAR OF BEE PLANTS

The main plants of importance to bees are given for each month in the lists which follow. For the most part the plants are those which, if sufficiently abundant, could be expected to yield a honey flow.

The time of flowering cannot be forecast exactly as seasons are early in some years and late in others. Some plants yield nectar every year while others may be of value only once in ten or twelve years. The lists are provided simply as a guide to the plants to look for at a particular time of the year. However, there can be no substitute for personal reconnaissance.

January

Coastal plain

Jarrah, <i>Eucalyptus marginata</i>	Honey and pollen. Honey flow finishing
Sugar gum, <i>E. cladocalyx</i>	Honey; good yields where enough trees are cultivated
<i>Melaleuca huegelii</i>	Confined to limestone ridges. Honey and pollen
<i>Banksia attenuata</i>	Honey and pollen

Forest areas

Karri, <i>Eucalyptus diversicolor</i>	Main honey flow begins with warm humid weather
Jarrah, <i>E. marginata</i>	Honey flow begins in forest areas between Mundaring and Bindoon
Forest blackbutt, <i>E. patens</i>	Some honey and excellent pollen in Jarrah forest on moist sites
Powder bark, <i>E. accedens</i>	Honey flow starts, very good pollen
Wandoo, <i>E. redunca</i> var. <i>elata</i>	Honey flow starts in area south from Wandering and Boddington to Mt. Barker
Yate, <i>E. cornuta</i>	Southern areas, excellent honey
Paperbark, <i>Melaleuca parviflora</i>	In swamps in south-west - 3 weeks honey flow

Mallee zone

Morrell, <i>E. oleosa</i> var. <i>longicornis</i>	Good honey flow in mixed woodland; east of Hyden
<i>E. leptophylla</i>	Pollen
Mallee form of Wandoo, <i>E. redunca</i>	Very good honey yields
<i>E. corrugata</i>	
<i>E. eremophila</i>	
<i>E. annulata</i>	Very good honey yields
Moort, <i>E. platypus</i>	Good honey flow and pollen; in wetter southern mallee areas

February

Coastal plain

Marri, <i>Eucalyptus calophylla</i>	Excellent for both honey and pollen
Coastal blackbutt, <i>E. todtiana</i>	Of minor importance for both honey and pollen
Sugar gum, <i>E. cladocalyx</i>	Cultivated tree; honey
<i>Banksia attenuata</i>	Honey and pollen

Forest areas

Powder bark, <i>Eucalyptus accedens</i>	Good for honey and pollen
Forest blackbutt, <i>E. patens</i>	Good pollen and nectar source
Marri, <i>E. calophylla</i>	Major honey flow and excellent pollen for raising queens; From Dandaragan to Albany
Wandoo, <i>E. redunca</i> var. <i>elata</i>	Honey flow; Wandering to Boyup Brook
Karri, <i>E. diversicolor</i>	Honey flow in Karri forest areas
Red tingle, <i>E. jacksonii</i>	Honey and pollen; limited to most southerly forest area

Mallee zone

<i>Eucalyptus oleosa</i> var. <i>longicornis</i>	Honey flow in mixed woodlands
<i>E. leptophylla</i>	Good pollen source
<i>E. corrugata</i>	In full flower
<i>E. eremophila</i>	Scattered flowering
<i>E. dundasi</i>	Flowering in Bremer Range
<i>E. annulata</i>	Excellent honey production
<i>E. anceps</i>	Southern mallee areas
<i>E. concinna</i>	East of Hyden - in full flower
<i>E. pileata</i>	East of Hyden - in full flower
<i>E. oleosa</i> var. <i>obtusa</i>	Bremer Range

March

Coastal plain

Marri, <i>Eucalyptus calophylla</i>	Honey and pollen flow continues in warm humid weather
Tuart, <i>E. gomphocephala</i>	Honey flow not very dependable
Sugar gum, <i>E. cladocalyx</i>	Cultivated tree; honey
Yellow banksia, <i>Banksia attenuata</i>	Honey and pollen
Swamp banksia, <i>B. littoralis</i>	Honey and pollen; swamps
Orange banksia, <i>B. prionotes</i>	Honey and pollen; on deep sands

Forest areas

Marri, <i>Eucalyptus calophylla</i>	Honey and pollen; excellent flow
Powder bark, <i>E. accedens</i>	Flow finishes this month
Wandoo, <i>E. redunca</i> var. <i>elata</i>	"Winter" wandoo starts flowering north of the Mundaring-Northam Road to Three Springs
Karri, <i>E. diversicolor</i>	Honey flow continues
Red tingle, <i>E. jacksonii</i>	Southern forest areas only

Mallee zone

Morrel, <i>E. oleosa</i> var. <i>longicornis</i>	In mixed woodland
<i>E. annulata</i>	Good flow of excellent honey
<i>E. leptophylla</i>	Pollen
Mallee form of wandoo, <i>E. redunca</i>	
<i>E. salmonophlora</i>	Honey flow and pollen

April

Coastal plain

Tuart, <i>E. gomphocephala</i>	Honey flow ends this month
Sugar gum, <i>E. cladocalyx</i>	Honey flow ends
Menzies banksia, <i>Banksia menziesii</i>	Honey flow occasionally but yields nectar through the winter; Brood nests decline
Orange banksia, <i>B. prionotes</i>	Honey flow in northern areas
Swamp banksia, <i>B. littoralis</i>	
<i>Leucopogon concinnus</i>	Honey and pollen in southern areas

Forest areas

"Winter"wandoo, <i>Eucalyptus redunca</i> var. <i>elata</i>	Northwards from Mundaring-Northam road; Honey flow
Swamp yate, <i>E. occidentalis</i>	Southern areas; good honey flow
Karri, <i>E. diversicolor</i>	Honey flow may intensify this month if weather warm

Mallee zone

<i>E. anceps</i>	Southern areas
<i>E. corrugata</i>	
<i>E. comitae-valis</i>	Lake Cronin
<i>E. griffithsii</i>	
<i>E. leptophylla</i>	
<i>E. salubris</i>	
<i>E. pileata</i>	
<i>E. salmonophloia</i>	

There may be a heavy flow on fine warm days, but it is liable to cease with a change in the weather. Generally, nectar is available in mallee areas but there is no real honey flow.

May

Coastal plain

Menzies banksia, <i>Banksia menziesii</i>	Widespread on deep sands; useful winter nectar supply, occasional honey flow
Orange banksia, <i>B. prionotes</i>	Sands of northern coastal plain; useful winter nectar production
Heath, <i>Andersonia lehmanniana</i>	Widespread on deep sands; valuable pollen source; starts brood rearing
May flower, <i>Leucopogon conostephioides</i>	Most valuable for pollen for brood rearing; starts at end of May or may be delayed until August
Mothers bell, <i>L. concinnus</i>	Valuable in south coastal areas
Red bell, <i>Calothamnus sanguineus</i>	Widespread; useful for pollen and nectar

Forest areas

Karri, <i>E. diversicolor</i>	Honey flow intermittent due to cooler weather and rain; brood nests contracting and colonies weak; bees develop dysentery in shaded or damp sites
Swamp yate, <i>E. occidentalis</i>	Honey flow continues if weather suitable
"Winter" wandoo, <i>E. redunca</i> var. <i>elata</i>	Honey flow continues if weather suitable
Kerosene bush, <i>Dryandra ashbyi</i>	Good for honey and pollen northern area, Dongara and northwards
<i>D. fraseri</i>	Between Badgingarra and Wagin; helps to maintain bees during the winter

Mallee zone

<i>Eucalyptus flocktoniae</i>	Frazer Range; nectar flow and pollen; honey not the best
Snap and rattle, <i>Eucalyptus gracilis</i>	May yield nectar in some localities, but pollen from some other source is required

<i>E. oleosa</i> var. <i>obtusa</i>	Flowering may begin
<i>E. salmonophloia</i>	
May flower, <i>Leucopogon</i> <i>conostephioides</i>	Starting to flower in heathlands

No honey flow; bees winter well where heath
and mallee meet.

June - July

Coastal plain

<i>Banksia menziesii</i>	Nectar mainly southern areas
<i>B. prionotes</i>	Nectar mainly northern areas
<i>Hakea lissocarpa</i>	Widespread
<i>H. trifurcata</i>	Widespread
<i>Andersonia lehmanniana</i>	Widespread
<i>Leucopogon conostephioides</i>	Widespread
<i>L. concinnus</i>	South coast
<i>L. oldfieldii</i>	Widespread
<i>Calothamnus sanguineus</i>	Widespread
<i>C. quadrifidus</i>	Widespread
<i>Daviesia juncea</i>	Widespread
<i>Anthericum divaricatum</i>	Coastal sand dunes
Onion weed, <i>Asphodelus fistulosus</i>	Widespread weed

Forest areas

<i>Dryandra ashbyi</i>	North of Dandaragan
<i>D. armata</i>	Laterite
<i>D. fraseri</i>	South of Badgingarra
<i>Hakea lissocarpa</i>	Widespread
<i>H. trifurcata</i>	Widespread
<i>Calothamnus quadrifidus</i>	Widespread
<i>Daviesia juncea</i>	Widespread

Mallee zone

<i>Eucalyptus loxophleba</i>	Widespread flowering; attracts parakeets; no honey flow records
<i>Adenanthos flavidiflora</i>	Heathland
<i>Leucopogon</i> spp.	Heathland

No honey flow can be expected anywhere these months. However, bees located among these plants will start developing their brood nests.

August

Coastal plain

Parrot bush, <i>Dryandra sessilis</i>	Honey flow starts in the northern area towards end of July, developing in August further south; on limestone hills, not productive on laterite
<i>D. carduacea</i>	On gravel soils among deep sand; honey flow
<i>Hakea trifurcata</i>	Some honey but may finish as <i>Dryandra</i> starts
<i>Lambertia inermis</i>	South coastal plain; honey flow
May flower, <i>Leucopogon conostephioides</i>	Abundant in late season
<i>L. oldfieldii</i>	Pollen; widespread
<i>Andersonia lehmanniana</i>	Widespread
<i>Adenanthos cuneata</i>	South coastal plain
<i>Calothamnus quadrifidus</i>	Nectar and pollen
<i>C. sanguineus</i>	Nectar and pollen
White myrtle, <i>Hypocalymma angustifolium</i>	Nectar and pollen
Prickly moses, <i>Acacia pulchella</i>	Abundant pollen; wide-spread
Wattles various, <i>Acacia</i> spp.	Pollen; widespread
<i>Clematis pubescens</i>	Widespread pollen source
<i>Daviesia incrassata</i>	Nectar and pollen
<i>D. juncea</i>	Honey flow and pollen
<i>Casuarina</i> spp.	Valuable source of pollen; whole anthers collected and discarded like saw dust outside hive
Cape weed, <i>Arctotheca calendula</i>	Widespread, valuable pollen
<i>Anthericum divaricatum</i>	Coastal sand dunes; pollen
Onion weed, <i>Asphodelus fistulosus</i>	Widespread; pollen
Guildford grass, <i>Romulea rosea</i>	Widespread; pollen

Forest and inland cultivated areas

Flooded gum, <i>Eucalyptus rudis</i>	Honey flow and pollen; along river banks in wandoo and york gum country, and in coastal plain
Patersons curse, <i>Echium plantagineum</i>	Weed of cultivation in northern wandoo and york gum areas; excellent honey flow
<i>Daviesia</i> spp.	Shrubs producing both nectar and pollen, may produce honey flow
Prickly moses, <i>Acacia pulchella</i>	Valuable source of pollen
Cape weed, <i>Arctotheca calendula</i>	Widespread in cultivated areas; valuable for pollen and nectar

Numerous varieties of shrubs in the forest and woodlands, particularly in the northern areas, contribute to the build-up of bee colonies.

Mallee zone

<i>Eucalyptus calycogona</i>	Honey flow
<i>E. celestroides</i>	Honey
<i>E. gracilis</i>	Honey flow only if pollen has been obtainable from another source
<i>E. gardneri</i>	Honey
<i>Adenanthos</i> spp.	Source of pollen; heathland
<i>Leucopogon</i> spp.	Source of pollen; heathland
<i>Hakea</i> spp.	Pollen and nectar; heathland

September

Coastal plain (Perth to Dongara)

Parrot bush, <i>Dryandra sessilis</i>	Main honey flow on limestone ridges
<i>D. carduacea</i>	Sandy gravel soils
<i>Calothamnus sanguineus</i>	Honey and pollen
<i>Hypocalymma augustifolium</i>	Honey and pollen
<i>Leucopogon oldfieldii</i>	Pollen and nectar
<i>Acacia pulchella</i>	Pollen
<i>Daviesia</i> spp.	Nectar and pollen

Coastal plain (Moore River southwards)

Poot, <i>Eucalyptus decipiens</i>	Honey and pollen
Jarrah, <i>E. marginata</i>	Honey and pollen; Harvey southwards
Peppermint, <i>Agonis flexuosa</i>	Honey and pollen; honey very strongly flavoured; Perth to Busselton
Swamp tea-tree, <i>Leptospermum firmum</i>	Honey
<i>Banksia grandis</i>	Honey and pollen; mainly in Jarrah areas
Taylorina, <i>Psoralea pinnata</i>	Swamps in Albany districts excellent honey flow
Chittick, <i>Lambertia inermis</i>	Honey flow, Esperance district

Forest areas

Flooded gum, <i>Eucalyptus rudis</i>	Honey and pollen; northern wandoo and york gum areas
Spring wandoo, <i>E. redunca</i> var. <i>elata</i>	Wandering to Bolgart
Cape weed, <i>Arctotheca calendula</i>	Pollen and nectar; cultivated areas
Patersons curse, <i>Echium plantagineum</i>	Honey flow; cultivated areas
Diamond bush, <i>Bossiaea laidlawiana</i>	Karri forest. Honey and pollen

Mallee zone

<i>E. calycogona</i>	Honey flow
<i>E. celastroides</i>	Honey
<i>E. gracilis</i>	Honey flow if pollen available from another source
<i>E. gardneri</i>	Honey and pollen local occurrence
<i>E. oleosa</i> var. <i>glauca</i>	Honey and pollen
Coral gum, <i>E. torquata</i>	Honey and pollen; gold- fields area
<i>E. flocktoniae</i>	Honey and pollen

October

Coastal plain

Poot, <i>Eucalyptus decipiens</i>	Honey and pollen
Jarrah, <i>E. marginata</i>	Honey flow and excellent pollen
Peppermint, <i>Agonis flexuosa</i>	Strongly flavoured honey
Red bell, <i>Calothamnus sanguineus</i>	Honey and pollen
Paper bark, <i>Melaleuca raphiophylla</i>	Dark honey and pollen; swamps and rivers
<i>Banksia grandis</i>	Jarrah areas; honey and pollen
Taylorina, <i>Psoralea pinnata</i>	Albany and Denmark; honey flow

Forest areas

Jarrah, <i>Eucalyptus marginata</i>	Honey and pollen
York gum, <i>E. loxophleba</i>	Honey flow; east and north of forest areas
Brown mallet, <i>E. astringens</i>	Honey and pollen, southwards from Brookton
Flooded gum, <i>E. rudis</i>	Honey and pollen; northern areas along rivers
Wandoo, <i>E. redunca</i> var. <i>elata</i>	Wandering to Bolgart; honey flow
Bullich, <i>E. megacarpa</i>	Southern parts of Karri forest
<i>Banksia grandis</i>	Honey and pollen
Patersons curse, <i>Echium plantagineum</i>	Excellent honey flow; weed of cultivated areas
<i>Bossiaea laidlawiana</i>	Honey and pollen

Mallee zone

Coral gum, <i>Eucalyptus torquata</i>	Honey and pollen; gold-fields area
<i>E. oleosa</i> var. <i>glauca</i>	Honey and pollen
<i>E. annulata</i>	Honey and pollen
<i>E. eremophila</i>	Honey and pollen
<i>E. floetoniae</i>	Honey and pollen
<i>E. calycogona</i>	Honey flow
<i>E. gracilis</i>	Honey flow
<i>Melaleuca</i> spp.	Honey and pollen

Heathlands in mallee zone

<i>Daviesia</i> spp.	Honey and pollen
<i>Burtonia hendersoni</i>	Pollen
<i>Calothamnus quadrifidus</i>	Honey and pollen
<i>Grevillea</i> spp.	Honey and pollen

November

Coastal plain

Jarrah, <i>Eucalyptus marginata</i>	Honey flow and pollen
<i>E. citriodora</i>	Cultivated; honey and pollen
Taylorina, <i>Psoralea pinnata</i>	Swamps in Albany-Denmark areas; honey flow

Forest areas

Jarrah, <i>Eucalyptus marginata</i>	Honey and pollen
Wandoo, <i>E. redunca</i> var. <i>elata</i>	Honey flow north of Wandering-Boddington
York gum, <i>E. loxophleba</i>	Honey flow
Flooded gum, <i>E. rudis</i>	Along rivers in northern areas
Patersons curse, <i>Echium plantagineum</i>	Honey flow; weed of cultivated areas
Diamond bush, <i>Bossiaea laidlawiana</i>	Honey and pollen; Karri forest

Mallee zone - heathlands

<i>Daviesia</i> spp.	Honey and pollen
<i>Burtonia hendersoni</i>	Pollen
<i>Grevillea excelsior</i>	Honey and pollen
<i>G. pterocarpa</i>	
<i>G. incrassata</i>	
<i>Calothamnus quadrifidus</i>	Honey and pollen

Mallee and woodlands

<i>Eucalyptus eremophila</i>	Honey and pollen
<i>E. salubris</i>	Honey and pollen
<i>E. floetoniae</i>	Honey and pollen
<i>E. oleosa</i> var. <i>glauca</i>	Honey and pollen
<i>E. calycogona</i>	Honey flow
<i>E. gracilis</i>	Honey flow
<i>E. oleosa</i> var. <i>longicornis</i>	Honey and pollen
<i>Melaleuca undulata</i>	Near lakes

December

Coastal plain

Jarraah, <i>Eucalyptus marginata</i>	Honey flow and pollen
<i>Melaleuca huegelii</i>	Honey and pollen; limestone ridges
<i>Banksia attenuata</i>	Honey and pollen
<i>Xylomelum angustifolium</i>	Honey and pollen
Yate, <i>E. cornuta</i>	Honey flow and pollen; Vasse River and south coast
<i>E. citriodora</i>	Cultivated tree

Forest areas

Jarraah, <i>Eucalyptus marginata</i>	Honey and pollen
Wandoo, <i>E. redunca</i> var. <i>elata</i>	Honey flow; Mt. Barker to Wandering
York gum, <i>E. loxophleba</i>	Honey flow
Yellow tingle, <i>E. guilfoylei</i>	Honey and pollen; Southern forest area
Karri, <i>E. diversicolor</i>	Honey flow may start towards the end of the month if weather suitable

Mallee zone

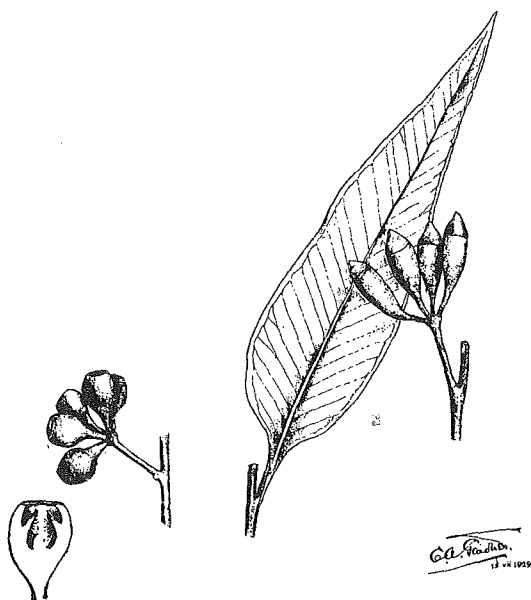
Moort, <i>Eucalyptus platypus</i>	Southern part of zone; honey flow and pollen
<i>E. calycogona</i>	Honey flow
<i>E. leptophylla</i>	Honey and pollen
<i>E. oleosa</i> var. <i>glauca</i>	Honey and pollen
<i>E. oleosa</i> var. <i>obtusa</i>	Honey and pollen
<i>E. eremophila</i>	Honey and pollen
<i>E. comitae-vallis</i>	
<i>E. redunca</i>	
<i>E. pileata</i>	
<i>E. cylindrocarpa</i>	
<i>E. loxophleba</i>	
<i>E. salubris</i>	Honey flow and pollen

DESCRIPTIONS
OF
MAIN HONEY PLANTS

EUCALYPTUS

Karri

Eucalyptus diversicolor F. Muell



Tall clean stemmed tree 100 to 250 feet high. Bark, thick, smooth, outer layer shed in plates.

Flowers in umbels of three to six. Buds with very short stalks, club-shaped to cylindroid. Caps almost hemispherical or broadly conical, much shorter than calyx-tube. Fruit pear-shaped, contracted at the end.

Occurs on deep loamy soils, on hill sides and sides of valleys, in the karri forest zone.

Flowers more or less throughout the year, but honey flows occur mainly from December or January until April. Yields well under hot, humid conditions. Good rainfall needed for bud formation and during the two years of bud growth:

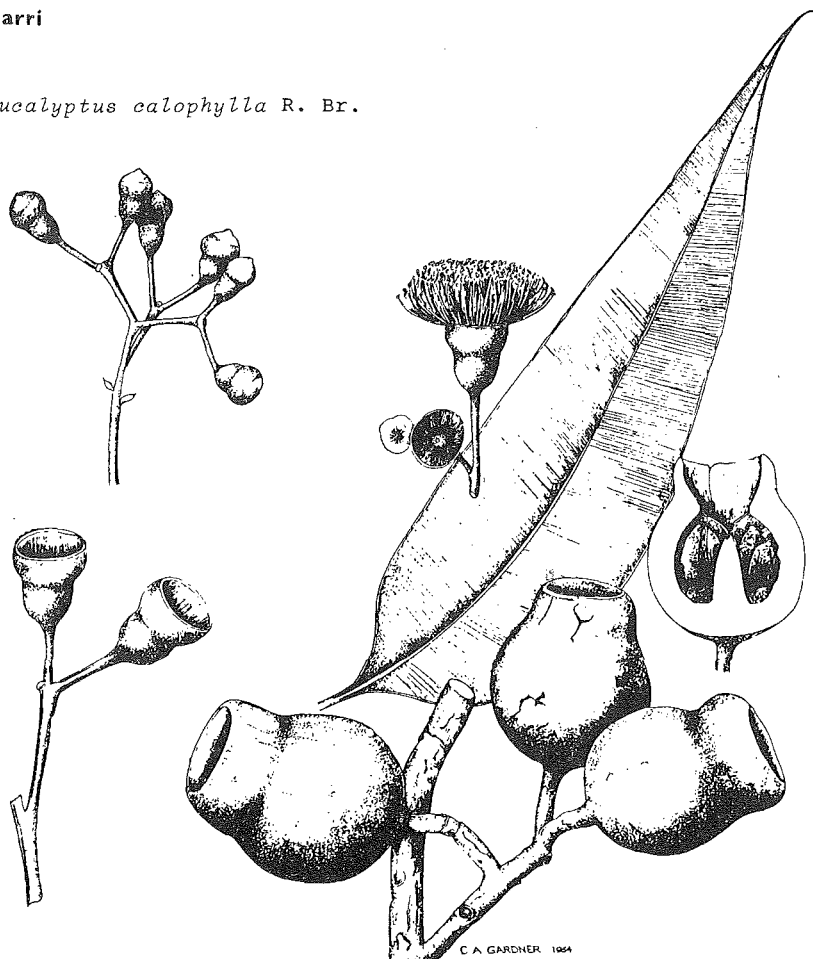
Pollen adequate to maintain brood nests during the summer.

Honey extra light amber of excellent mild but characteristic flavour. Granulates fairly readily but rather coarsely.

In autumn danger of dysentery in shaded and low lying apiary sites, and colonies decline in strength and brood production.

Marri

Eucalyptus calophylla R. Br.



Medium to large tree with wide spreading thick branches. Bark rough and flaky. Resinous exudations frequent on older trees.

Flowers large, white, in terminal corymbs. Buds bell shaped. Cap hemispherical, two to three times shorter than the calyx-tube. Fruit urn-shaped, thick and woody, large and contracted at the top.

Occurs in the jarrah and karri forest on light sandy soils and on the coastal plain.

Flowers February - March, though some specimens may be seen in flower during December and January.

Pollen highly nutritious, excellent for queen raising and brood rearing; stored in great quantity in the hive.

Fairly dependable annual source of light amber honey of excellent flavour. Flow adversely affected by hot dry winds. Produces a fine granulation.

Jarrah

Eucalyptus marginata Sm.



Tree 50 to 135 feet high, with a fairly straight clean stem. Bark is striated with longitudinal fissures, often in a spiral up the stem.

Flowers in umbels of four to eight on slender pedicels thickening towards the calyx-tube. Calyx-tube conical with narrow conical bud cap (operculum) 2 - 3 times longer than calyx-tube. Fruit more or less spherical, contracted at the top, and up to 3/4 inch in diameter.

Common throughout the higher rainfall areas of the South West on laterite gravels. Inland and northern distribution limited by minimum of 30 inches winter rainfall. Principal timber tree.

Flowers September to January according to district. Honey flows erratic. Pollen apparently highly nutritious. Honey medium amber with a delightful nutty flavour, very slow to granulate.

Forest Blackbutt

Eucalyptus patens Benth



Large tree with deeply fissured rough bark.

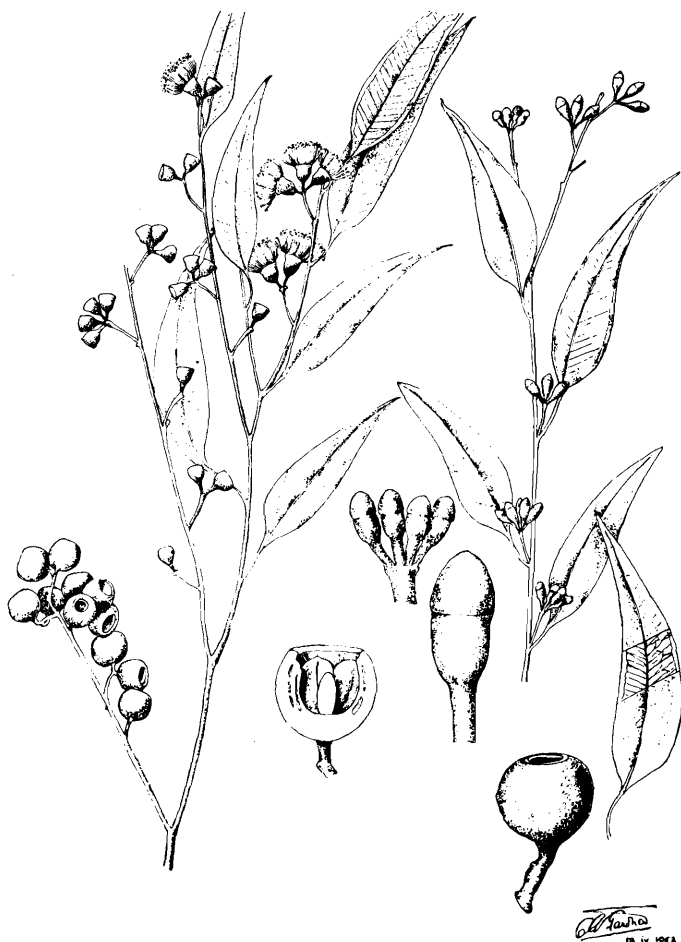
Flowers in umbels of four to eight. Buds club-shaped; caps hemispherical, shorter than the calyx-tube. Fruit ovoid, contracted at the orifice.

Occurs on deep sandy moist soils, usually near rivers and creeks in the Jarrah forest areas.

Flowering may begin in November, and continue to February. Pollen excellent for build up for marri flow. Honey obtainable where blackbutt is abundant.

Red Tingle

Eucalyptus jacksonii Maiden



Large tree up to 200 feet high. Bark fibrous, thick, fissured, reddish-brown.

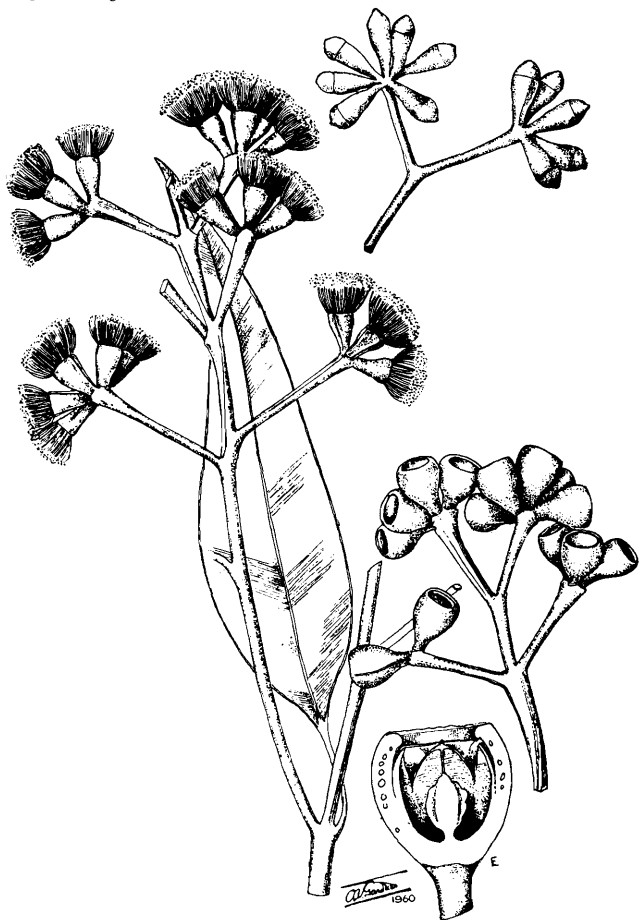
Flowers in umbels of three to six. Buds ovoid to club-shaped with short stalks. Caps conical, somewhat rounded at the end, shorter than the calyx-tube. Fruit spherical with short stalks.

Occurs on deep red loam in high forest along the lower reaches of the Deep, Frankland and Bow Rivers.

Flowers January - February - March, yielding nectar and pollen.

Yellow Tingle

Eucalyptus guilfoylei Maiden



A large tree up to 120 to 150 feet high, with widely spreading branches. Bark dark grey, rough and fissured.

Flowers in umbels, four to eight in each umbel. Buds club-shaped with short stalks. Caps conical, shorter than calyx tube. Fruit pear-shaped, truncate.

Occurs in low lying situations from the Denmark River to the Deep River.

Flowers in December to January producing pollen and nectar.

Wandoo

Eucalyptus redunca var. *elata* Benth



A tree 50 to 100 feet high with widely spread branches. Bark white with grey patches.

Flowers in umbels of four to ten. Buds horn-shaped with long horn-shaped caps, $1\frac{1}{2}$ times longer than the calyx-tube. Fruit pear-shaped to cylindrical club-shaped, sometimes slightly striate.

Occurs in valleys in the eastern parts of the jarrah forest on clay soils and generally to the east of the jarrah as far as the 15 inch mean rainfall isohyet.

Flowering to the north of the Avon Valley takes place from March to June. Southward as far as Wandering flowering is mainly in the spring and early summer, while south of Wandering flowering tends to be mainly in January - February.

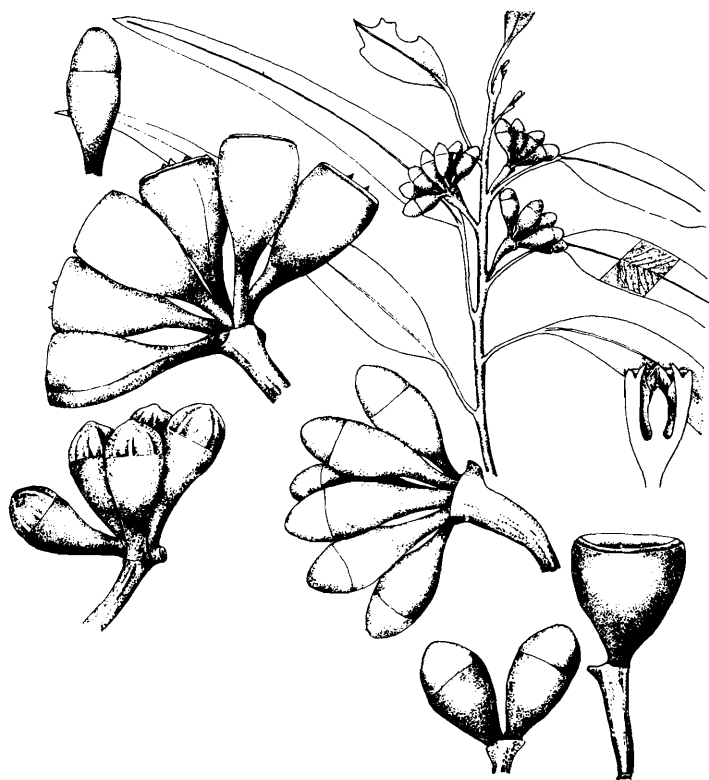
At one time the most important source of honey, it has been mainly cleared from the better soils for agriculture. The remaining areas, mostly in forest reserves, are less dependable for honey production and good flowering is extremely difficult to predict.

Honey is extra-light amber to light amber and of a mild flavour. Pollen production is rather poor.

A mallee form, *E. redunca* has more elongated bud caps, and yields honey in the mallee zone in March.

Powder Bark

Eucalyptus accedens W.V. Fitzg.



Tree 30 to 65 feet high. Bark smooth white to orange-red tinted, often flecked with small patches of older persistent bark. Surface of bark powdery.

Flowers in umbels of five to ten. Buds club-shaped, with hemispherical to shortly conical caps, shorter than the calyx-tube. Fruit similar to wandoo but slightly broader.

Occurs on laterite outcrops on high ground in the wandoo zone northwards from Pingelly.

Flowers December to March. Pollen very useful for building and maintaining bee colonies but honey flow limited.

Flooded Gum

Eucalyptus rudis Endl.



Tree 30 to 50 feet high with short trunk and widely spread branches. Bark rough, dark, persistent on trunk, smooth and deciduous on branches.

Flowers in umbels of four to ten, with short stalks. Buds more or less ovoid, with short broad calyx-tube and larger ovoid - conical cap. Fruit more or less hemispherical with a wide domed disc round the orifice. Triangular valves protruding. Buds and fruits very similar to River Gum, *E. camaldulensis*, which has a smooth white bark.

Occurs along river banks and areas subject to flooding.

Flowers August to November, earlier in the more southern areas than in the northern. Can be useful source of pollen and produces light amber honey.

York Gum

Eucalyptus loxophleba Benth.



Tree 20 to 45 feet high. Bark rough and persistent on trunk and main branches.

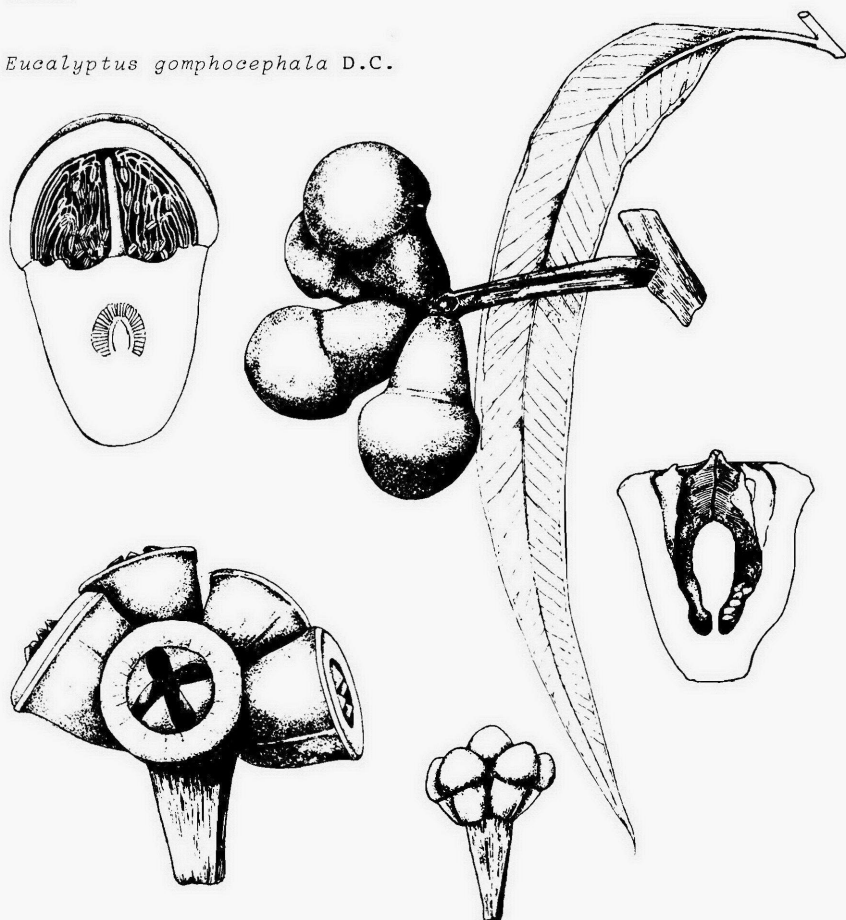
Flowers in umbels of five to twelve. Buds club-shaped, caps hemispherical to conical much shorter than calyx-tube. Fruit pear-shaped, truncate.

Widespread in occurrence from the Murchison River southwards and extending eastwards from the wandoo woodland and the 18 inch mean annual rainfall isohyet to the mallee zone.

Useful source of pollen and medium amber honey between September and December.

Tuart

Eucalyptus gomphocephala D.C.



Tree 50 to 140 feet high. Bark rough, light grey, persistent.

Flowers in heads of three to seven on a thick flattened common stalk. Calyx-tube bell-shaped, cap hemispherical to conical and much broader than the calyx-tube. Fruits stalkless, bell shaped, smooth or with one faint rib, thick walled, with broad triangular valves in the orifice.

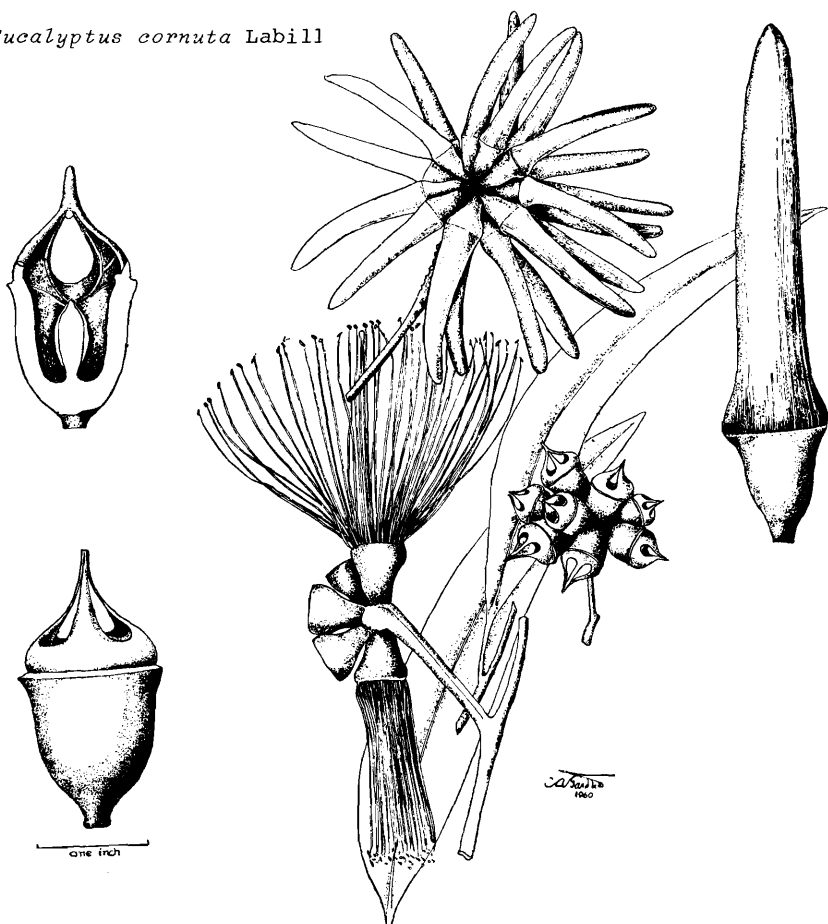
Occurs on the limestone areas of the western coastal plain from near Busselton in an almost unbroken belt to Yanchep; and extending northwards to beyond Lancelin in isolated pockets.

Flowers January to April; honey flows may occur March-April. Not a dependable honey producer owing to damage done to buds by bqrers.

Honey light, granulates quickly with fine texture.

Yate

Eucalyptus cornuta Labill



Medium sized tree, sometimes forming thickets. Bark rough, dark brown, deeply furrowed, persistent on trunks, smooth or deciduous on branches.

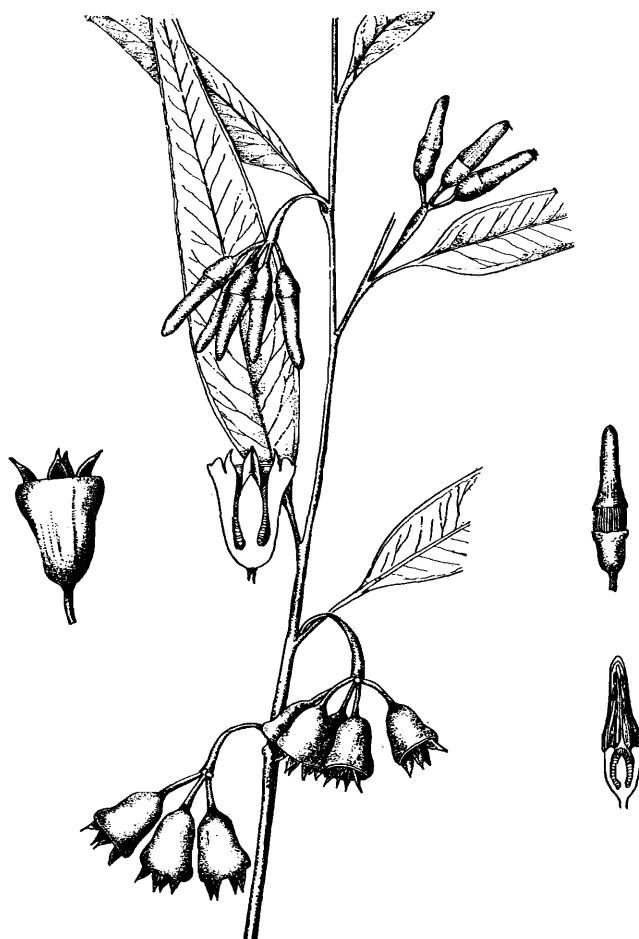
Flowers in tightly packed umbels of five to fifteen. Buds lacking or with very short stalks, horn-shaped, 3-4 times longer than bell-shaped calyx-tube. Fruit bell-shaped, with protruding conspicuous disc and long fused valves.

Occurs from Busselton to King George's Sound and inland to the upper reaches of the Fitzgerald River and the Stirling Range, usually associated with granite.

Flowers December to February, producing pollen and nectar, resulting in excellent honey.

Swamp Yate

Eucalyptus occidentalis Endl.



Flat topped tree up to 70 feet high. Bark rough, flaky-fibrous on trunk and lower parts of main branches. Bark on branches smooth, yellowish-grey.

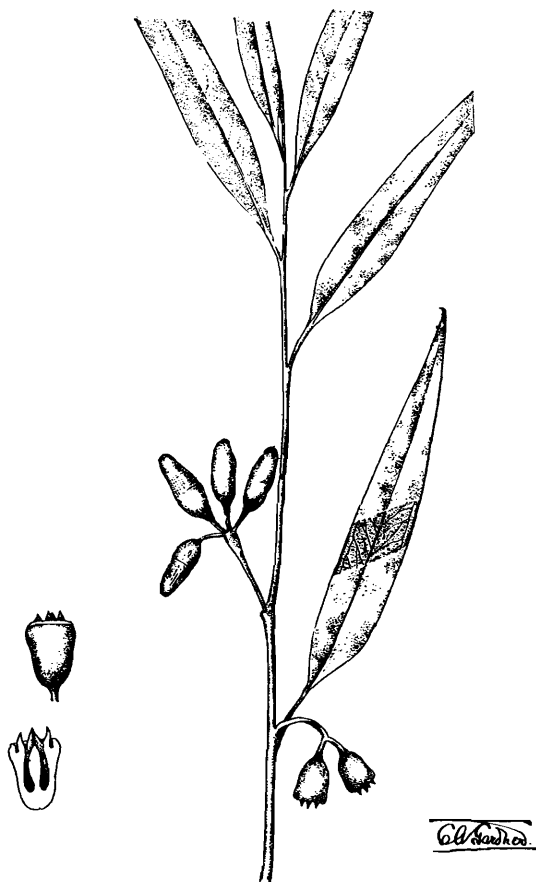
Flowers in umbels of three to seven, with main stalks thickened towards the end. Buds cylindroid-conical, with long caps. Fruit bell-shaped with protruding valves.

Occurs southwards from Wagin and Dumbleyung on flats subject to flooding; common around Katanning and Cranbrook and extends eastwards to the Esperance area.

Flowers during April and May producing a good honey flow.

Brown Mallet

Eucalyptus astringens Maiden



Tree 20 to 60 feet high with bushy crown when young. Bark smooth brown or grey, with small flakes usually adhering in patches near the base.

Flowers three to seven in umbels. Buds cylindroid with caps slightly longer than calyx-tube. Fruit bell-shaped, valves protruding.

Occurs on laterite hills southwards from Brookton to near Cranbrook, then eastwards to Ravensthorpe district.

Flowers October - November producing pollen and a honey flow.

Blue Mallet

Eucalyptus gardneri Maiden



Slender tree 20 to 40 feet high. Bark silver-grey to silver-brown, shed in small thin flakes.

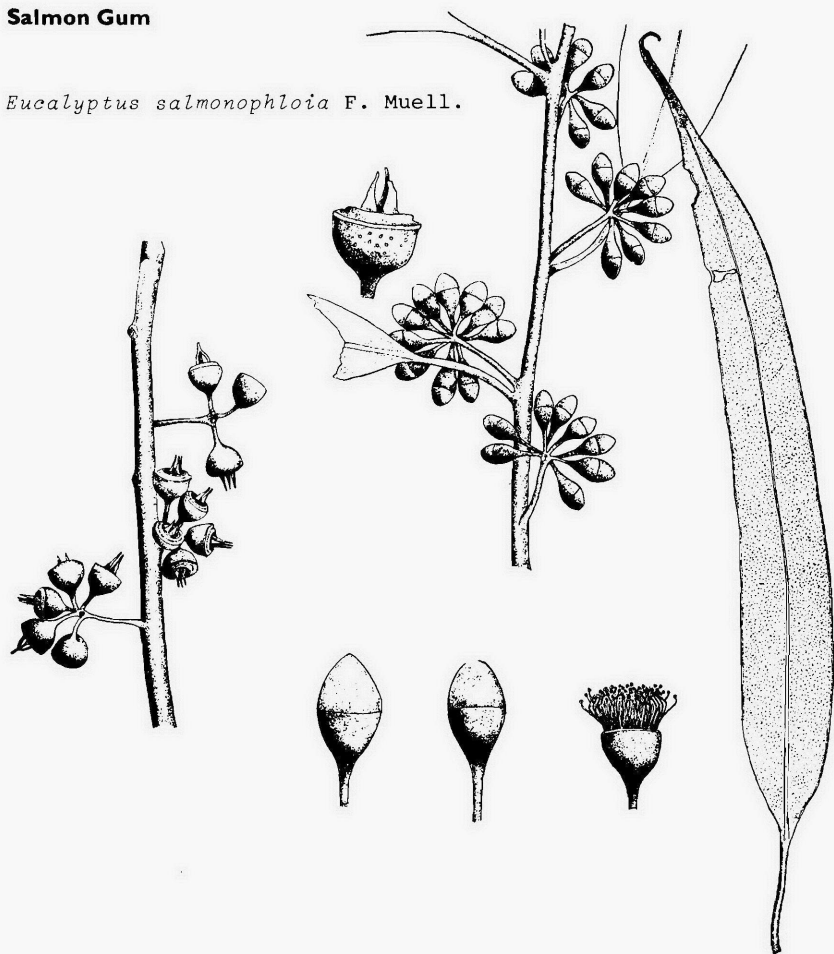
Flowers in umbels of six to ten. Main stalks flattened. Buds awl-shaped, about one inch long, with long slender stalks. Caps pointed, three to four times longer than the thin calyx-tube. Fruit pear-shaped, contracted at the top.

Occurs on gravelly laterite soils, Wagin, Narrogin, Katanning, Kondinin.

Flowers May - June yielding a winter honey flow.

Salmon Gum

Eucalyptus salmonophloia F. Muell.



Tree 40 - 100 feet high with smooth brownish-pink to white bark, deep green glossy leaves and small umbrella-like crowns.

Buds small, ovoid to club-shaped with caps hemispherical to conical, about as long as calyx-tube. Fruit small, hemispherical with protruding valves.

Occurs on heavy red clay and lighter soils throughout the wheat belt and eastwards to beyond Kalgoorlie and Norseman; usually in pure or mixed stands of open woodland.

Flowers usually in summer between November and March, but may continue in bud until later or until next year. At one time had a good reputation for honey production, but it has now mostly vanished from the wheat belt, and its performance in the drier conditions of the mallee zone is unpredictable.

Honey flow December to March. Honey mild flavour, extra light amber to white, fine granulation. May be mixed with gimlet at beginning of honey flow, giving the gimlet honey a cloudy appearance. A choice honey.

Black Morrel

Eucalyptus melanoxylon Maiden



Tree up to 80 feet high with rough dark deeply furrowed bark for 10 - 20 feet or more, then smooth and yellowish white. Leaves green and glossy on both surfaces.

Buds small, club-shaped to narrowly egg-shaped; caps hemispherical to conical, as long as or longer than calyx-tube. Fruit small, more or less hemispherical, valves protruding.

Occurs locally on clay soils, Bullabulling - Johnston Lakes.

Flowers January - February. Of unknown value to bees.

Buds and fruit might be confused with Salmon Gum, but bark very different.

Gimlet

Eucalyptus salubris F. Muell.



Slender tree up to 80 feet high, usually much smaller, with erect branches and twisted fluted trunk. Bark shining smooth greenish-red or reddish brown. Leaves shining deep green.

Buds cylindroid to ovoid, caps usually red and longer than calyx-tube. Fruit club-shaped to hemispherical, with strongly protruding valves.

Occurs on red clay flats, usually with salmon gum forming open woodland. Extends with salmon gum eastwards from the eastern wheat belt.

Flowers October - January producing a honey flow and an abundance of pollen. Honey extra light amber.

Silver Topped Gimlet

Eucalyptus campaspe S. Moore



Slender tree up to 35 feet high. Similar in appearance to the common gimlet but having a covering of white powder on the upper parts of the branches and on the twigs. Leaves broader than those of *E. salubris*, and blue-green.

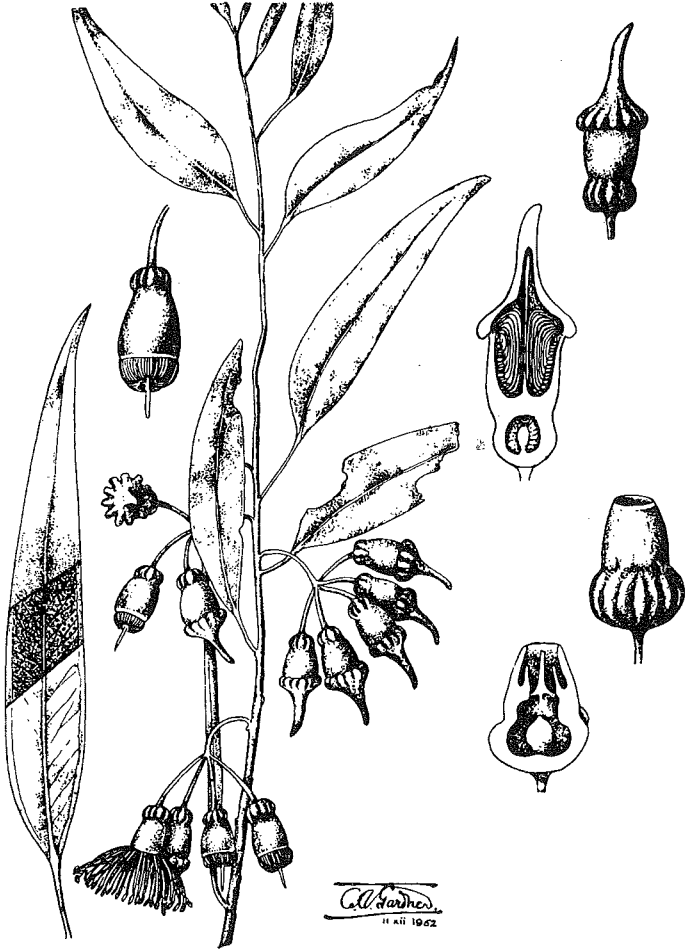
Buds almost without stalks, ovoid to globular, powdery white. Caps ovoid to hemispherical, rarely longer than calyx-tube. Fruit hemispherical with broad protruding valves.

Occurs on flats in the Eastern Goldfields from the north of Bremer Range to Coolgardie.

Flowers November - January. Honey and pollen potential unknown.

Coral Gum

Eucalyptus torquata Luehm



Tree up to 35 feet high, with widely spreading branches. Bark dark grey and fissured. Leaves blue-green, pendulous.

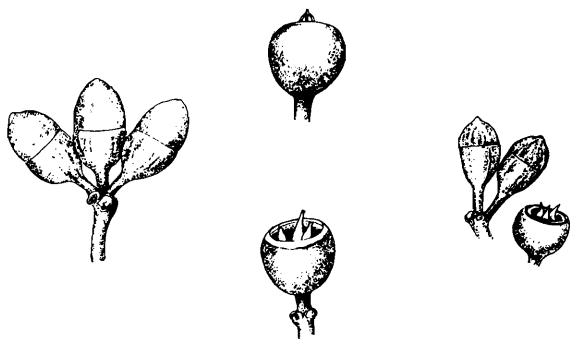
Buds yellow and red; calyx-tube with a ribbed swelling round the base; cap with a narrow beak and a deeply corrugated base broader than the calyx-tube. Flowers pink to yellowish-white. Fruit smooth and contracted at the top, deeply corrugated round the swollen base.

Occurs in Eastern Goldfields from Bullabulling through Coolgardie to Norseman on stony hills.

Flowers September to January, producing nectar and pollen and a honey flow when flowering is widespread.

Oleosa

Eucalyptus oleosa var. *obtusa* C.A. Gardn.



Tree up to 40 feet high or mallee. Bark rough, pale grey persistent at base of trunk or up to 12 feet, smooth and ribbony on upper trunk and branches. Foliage deep green and shining.

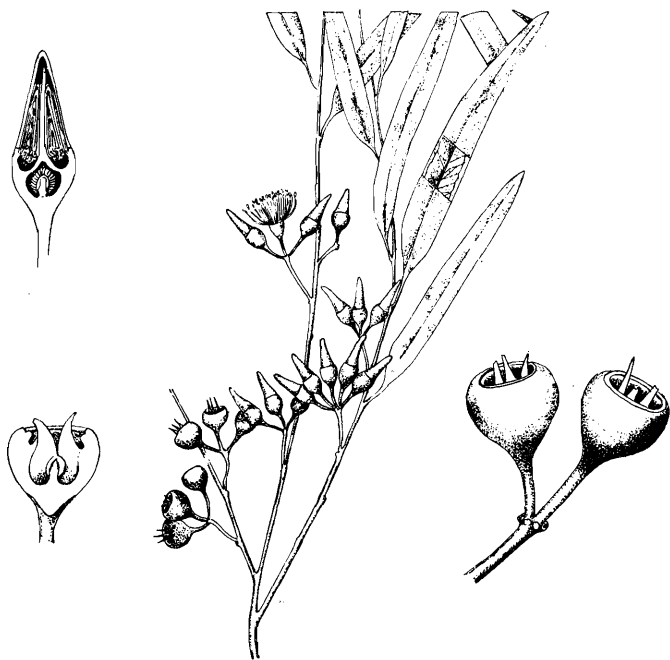
Buds ovoid to cylindrical; caps cylindrical hemispherical to cylindrical-ovoid, as long as or slightly longer and darker than the calyx-tube. Flower stalks not longer than the fruits. Fruit hemispherical or subglobular, smooth with narrow rim and deeply included valves with protruding points.

Occurs in the Eastern Goldfields and southwards.

Flowers February (Bremer Range) and May (Goldfields) producing a good honey flow.

Longicornis (Red Morrel)

Eucalyptus oleosa var. *longicornis* F. Muell



Tree up to 80 feet high with shining deep green foliage. Bark rough and persistent on the trunk, smooth on the branches.

Buds cylindroid to horn-shaped; cap cylindrical to conical up to twice as long as calyx-tube. Stalks as long as or longer than the fruits. Fruits almost globular, broadest in the upper half, smooth with a narrow rim and deeply included valves, with sharp protruding points.

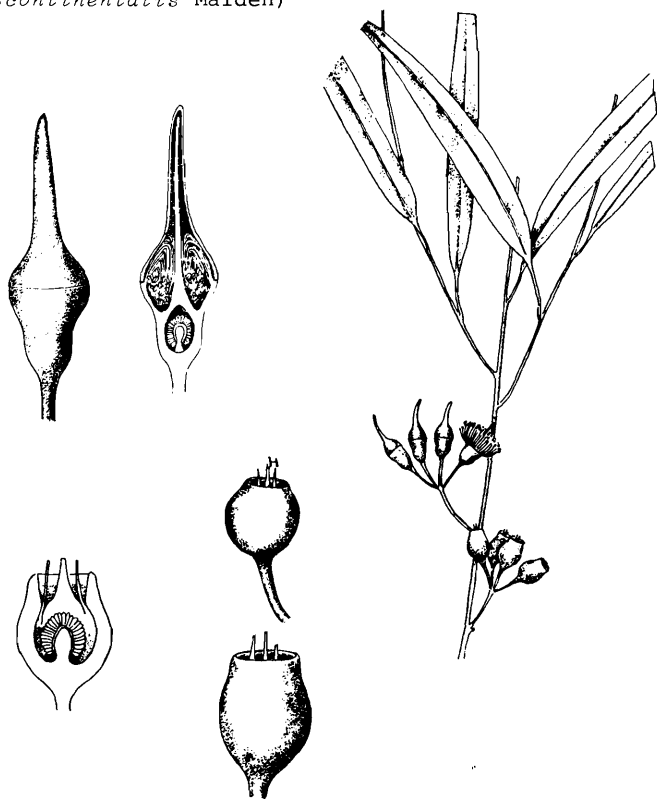
Occurs from the wheat belt to the Eastern Goldfields forming open woodland in association with Salmon Gum or other tree species.

Flowers November to March producing a good honey flow.

Glauca

Eucalyptus oleosa var. *glauca* Maiden

(*E. transcontinentalis* Maiden)



Mallee or tree up to 50 feet with blue-green foliage. Bark white, smooth throughout, except for a little persistent rough bark at the base of large stems.

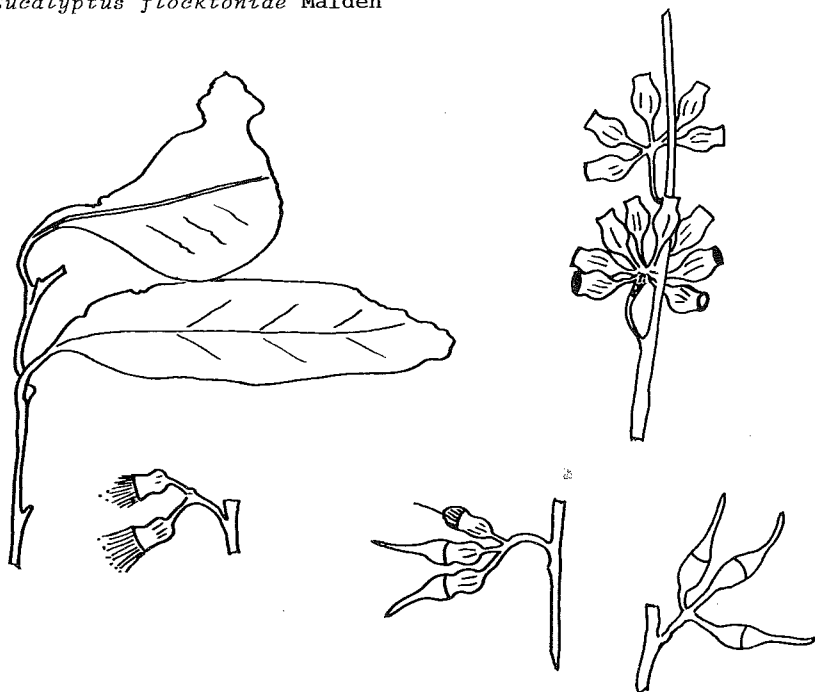
Buds and twigs glaucous (powdery-white). Bud cap somewhat broader than calyx-tube above the base and abruptly contracted into a slender beak; usually much longer than the calyx-tube. Individual flower stalks as long as or longer than the fruits. Fruit slightly urn-shaped, smooth, with a narrow rim and deeply included valves. The sharp points of the valves protrude, but may break off.

Occurrence widespread in the mallee zone, very common in Eastern Goldfields.

Flowers September to December producing a honey flow and abundant pollen.

Merrit

Eucalyptus flocktoniae Maiden



A tree up to 50 feet high or erect many stemmed mallee. Bark smooth, whitish, deciduous. Foliage dark green.

Buds with caps abruptly contracted into a long beak and of greater diameter at the base than the calyx-tube; caps much longer than calyx. Calyx-tube very constricted when young, below the cap. Fruit urn-shaped, sometimes slightly corrugated, contracted at the opening. Flower stalk shorter than the fruit.

Locally common in the mallee zone and particularly in the eastern goldfields.

Creamy-yellow flowers produce an abundance of pollen and nectar, yielding a honey flow. Flowers February - November, most useful September to November.

Ribbon Barked Mallee

Eucalyptus sheathiana Maiden



A tree up to 25 feet high, or mallee. Bark deciduous, shed in long ribbon-like strips which continue to hang from the tops for many weeks. Foliage a dull green.

Buds ovoid, with slightly pointed caps; cap slightly shorter than calyx tube. Fruits somewhat bell-shaped, smooth.

Of local occurrence in the mallee zone on alluvial soil.

Flowers April - June producing pollen and nectar.

Dundas Blackbutt

Eucalyptus dundasi Maiden



Tree up to 65 feet high. Bark rough and dark for 6 - 11 feet, then smooth reddish-brown with grey flakes. Leaves dark shining green.

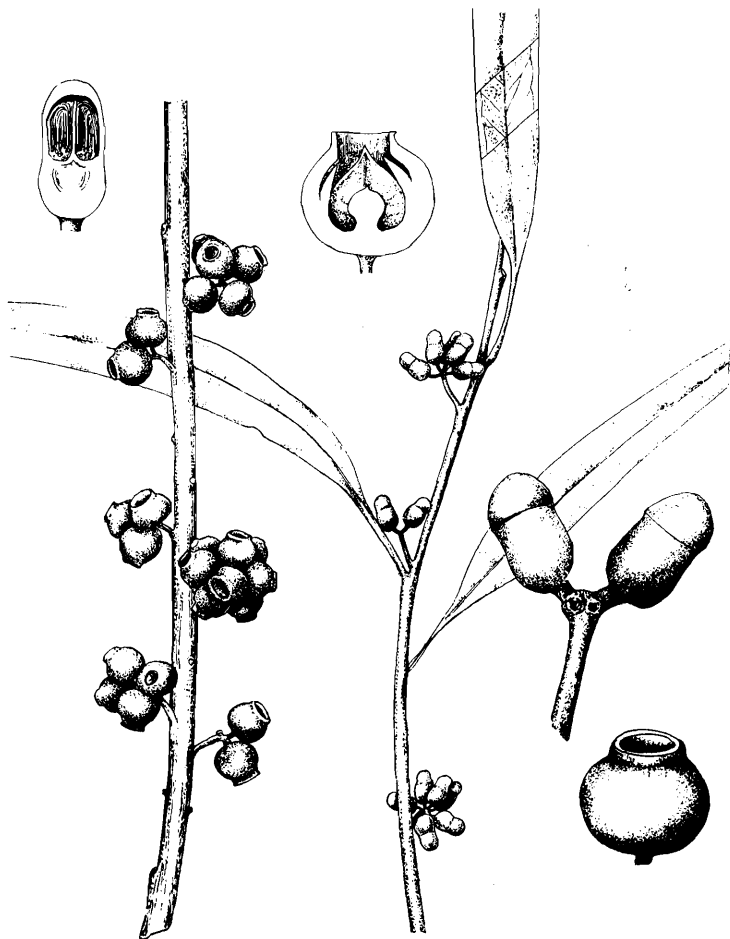
Buds cylindroid with very short stalks. Caps with short beak, shorter than calyx-tube. Fruit cylindroid, disc small, valves deeply enclosed.

Occurs Bremer Range to Norseman area.

Flowers February to April.

Dundas Mahogany

Eucalyptus brockwayi C.A. Gardn.



Tree up to 80 feet high with deep green glossy foliage; bark smooth, white or salmon-coloured, usually paler than salmon gum; bark slash deep blood red and sticky.

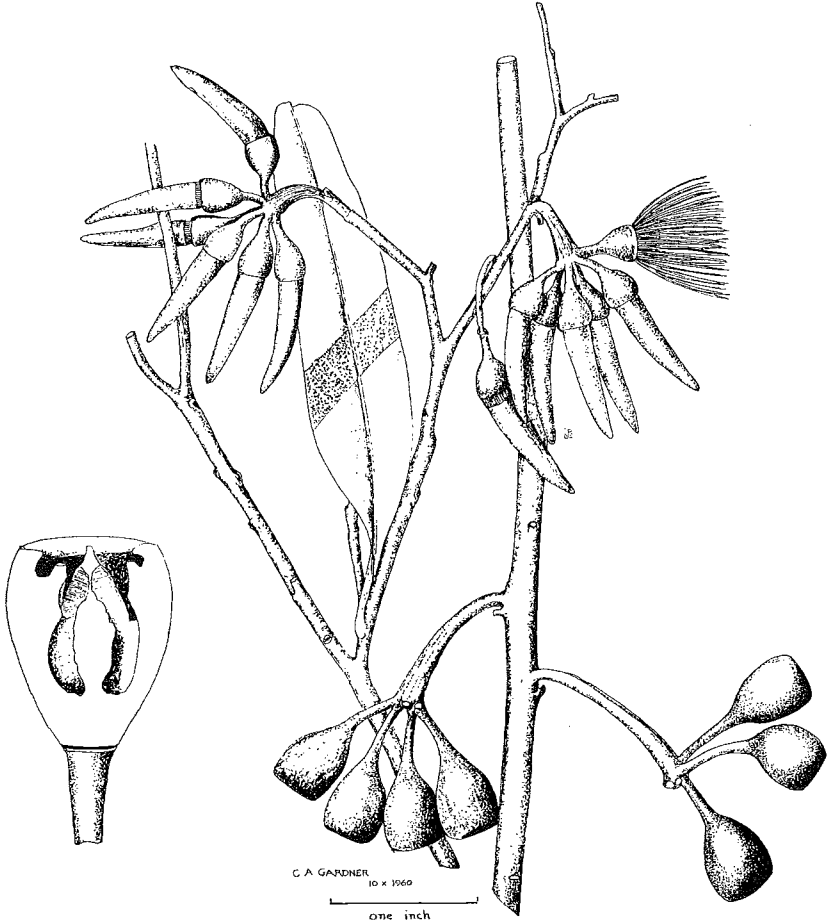
Buds on very short stalks, calyx-tube shortly cylindrical, cap hemispherical to broadly ovoid, much shorter than calyx-tube. Fruit urn-shaped globular, smooth and much contracted at the end; valves included and broad.

Occurs in Norseman area on flats or lower slopes of hills, associated with salmon gum, morrel, merriit and Dundas black-butt.

Value to bees unknown.

Eastern Goldfield's Horned Mallee

Eucalyptus eremophila Maiden



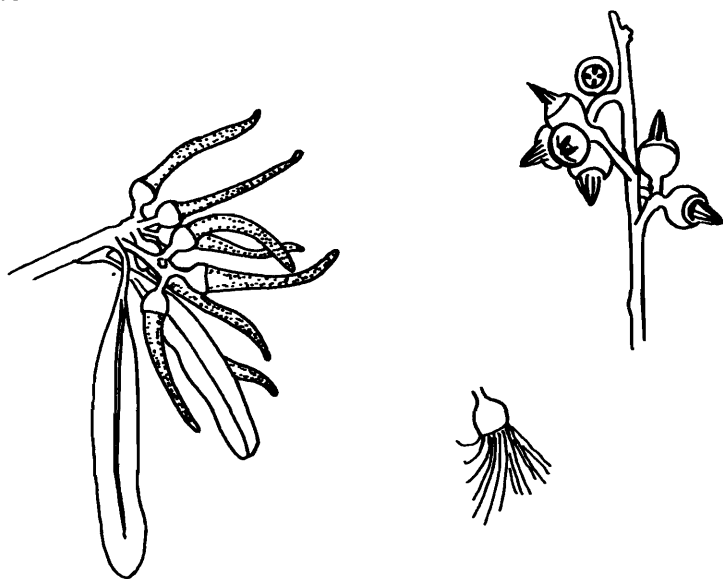
Mallee up to 15 feet high, or taller. Bark smooth cinnamon-brown, shed in thick strips in late summer. Foliage olive-like grey-green.

Buds three to seven on long flattened basal stalk, individual stalks round; buds horn-shaped caps twice as long as calyx-tube. Flowers vary from crimson to pale yellow. Fruit pear-shaped to shortly cylindrical, rounded to flat on top with a broad disc; valves included.

Of widespread distribution in the mallee zone on loamy soils, frequently on the margins of salmon gum and forming open thickets.

Flowering October to January, may start in June. Yields an abundance of pollen and nectar.

Eucalyptus annulata Benth.



Tree or more frequently a slender tree in thickets. Bark smooth, light grey. Leaves dark green, shining.

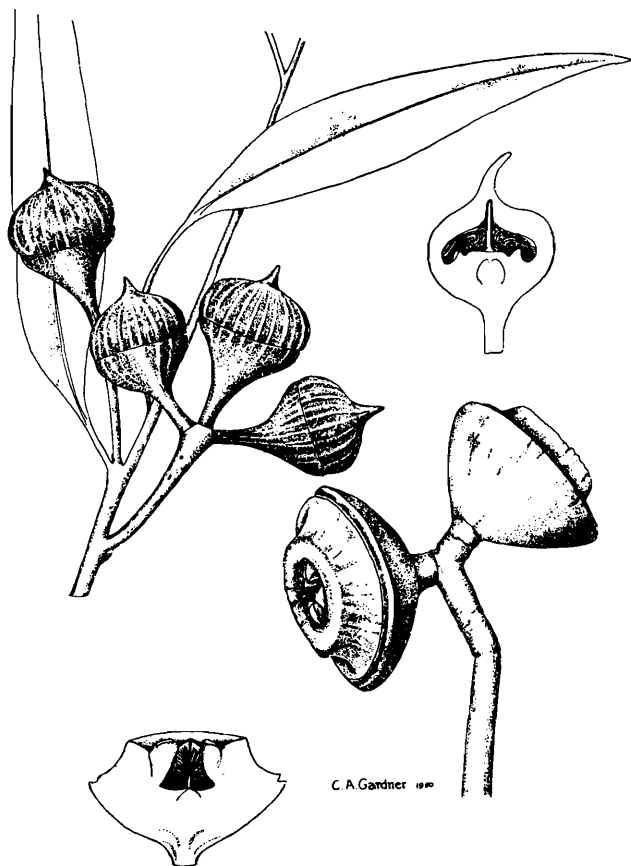
Buds 6 - 12 on common flattened stalk, very long, with a long cylindrical reddish cap, and cup-shaped calyx-tube, wider than the cap. Fruit without stalk, hemispherical, with fully protruding broad based valves.

Of local occurrence in mallee zone, Bremer Range and southwards.

Flowers between October and March. Produces an excellent honey flow of beautiful honey. Owing to long flowering period probably best suited to being worked by small apiaries.

Burracoppin Mallee

Eucalyptus burracoppinensis Maiden and Blakely



Mallee up to 18 feet high, widespreading with yellow-green to blue-green foliage. Bark dark grey on stem and smooth red or green on the branches.

Buds large with broad dome-shaped ribbed caps with a short beak. Fruit broad and relatively shallow with a thick raised disc; stalk very short.

Occurs in thickets with erect branches, and in open heathland with spreading habit from Wyalkatchem to Karalee.

Flowers October - January and worked heavily by bees.

Eucalyptus corrugata Luehmann



Mallee or tree up to 40 feet high, with shining green leaves. Bark may be persistent for 3 - 6 feet at the base, or shed in long plates giving a smooth appearance, yellowish-brown at first, becoming creamy-white.

Buds coarsely corrugated with hemispherical corrugated caps about as long as the calyx-tubes. Fruit corrugated, flat-topped with 4 or 5 slightly protruding valves.

Occurs on stony rising ground in the Eastern Goldfields and adjoining areas.

Flowers November to April. Honey potential not known.

Goldfield's Blackbutt

Eucalyptus lesouefii Maiden



Tree up to 45 feet high with persistent dark flaky bark on the stem up to 6 or 8 feet. Upper stem and branches smooth and light silvery-brown. Foliage a dull grey-green.

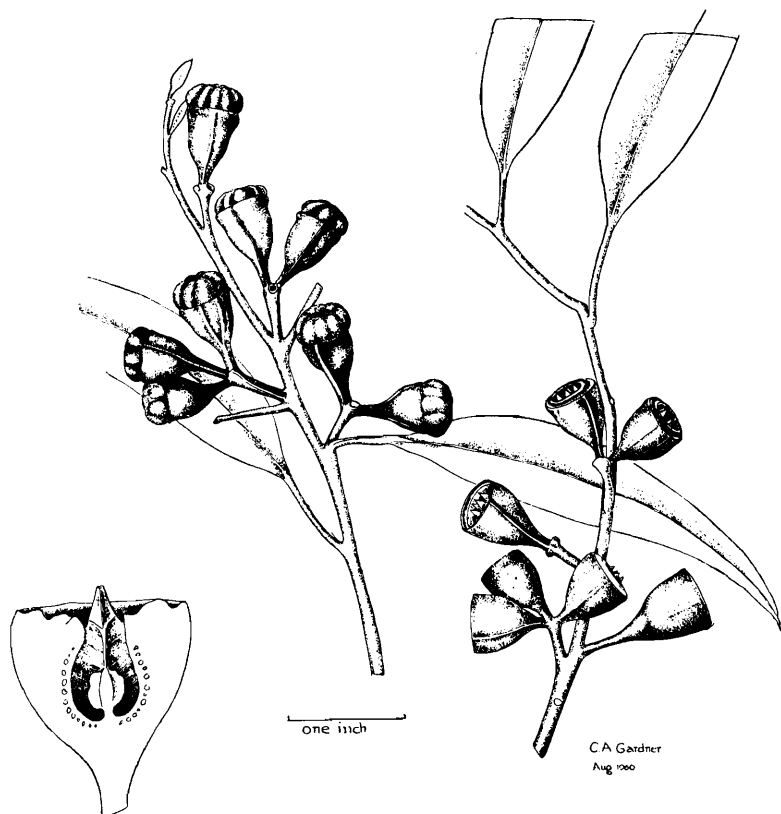
Buds corrugated, diamond shaped powdery-white with pointed corrugated caps longer than calyx-tube. Fruit corrugated, powdery-white, with flat disc and protruding valves.

Occurs on alluvial flats in the Eastern Goldfields area.

Flowers October to December, but may shed its buds without flowering. Value to bees not known.

Grey Gum

Eucalyptus griffithsii Maiden



A tree up to 45 feet high but more commonly a mallee up to 18 feet. Bark persistent, grey, on a crooked trunk in the tree form. Branches smooth, reddish in upper parts.

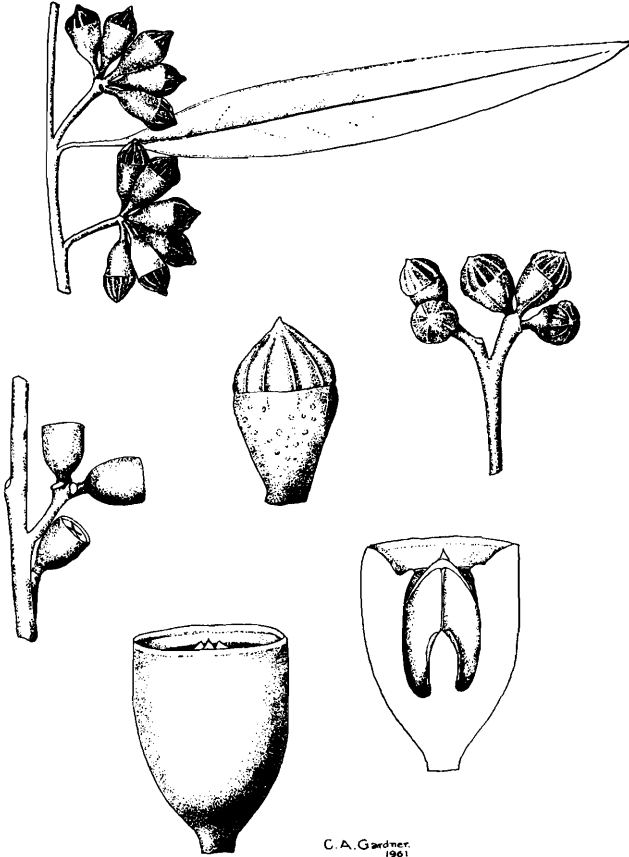
Buds in threes on compressed common stalk; individual flower stalks expanding to form calyx-tube; Calyx with narrow wings; cap hemispherical to flat topped, corrugated. Fruit bell-shaped with narrow ridges.

Occurs in Coolgardie goldfields, Bullabulling to Widgiemooltha.

Flowers September to January. May hold buds for very long period. Value to bees unknown.

Cleland's Blackbutt

Eucalyptus clelandii Maiden



A tree with a short (6 feet) stout trunk and widely spreading branches. Bark dark grey on trunk, smooth yellowish-brown to green on the branches, and glaucous twigs.

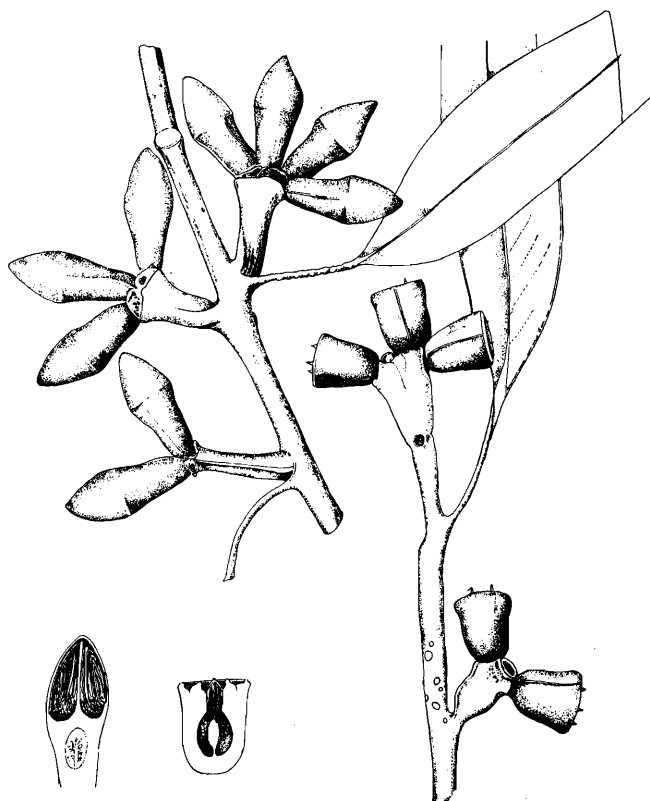
Buds five to seven, glaucous, calyx-tube smooth, bell-shaped; caps shorter, prominently ribbed ending in a point. Fruit subcylindroid to bell-shaped; valves slightly protruding.

Fairly common in the goldfields, on stony hills and on the flats.

Flowers August to February. Value to bees not known.

Strickland's Gum

Eucalyptus stricklandii Maiden



Tree up to 40 feet high, usually 20 - 25 feet, with short trunk and wide spreading branches. Bark on stem dark grey persistent flaky, abruptly terminating with smooth reddish grey bark above. Smallest branches and twigs powdery-white. Leaves more or less glaucous.

Buds sessile, lacking individual stalks, sharing a stout flattened stalk; calyx-tube angular with a bluntly conical cap having one or two faint ribs; cap yellow when ready to burst open. Fruit cylindroid to urn-shaped, with at least one well defined rib; valves protruding when mature.

Occurs on stony hill tops in the Eastern Goldfields.

Flowers November - January producing a honey flow when enough trees are available.

Eucalyptus leptophylla F. Muell



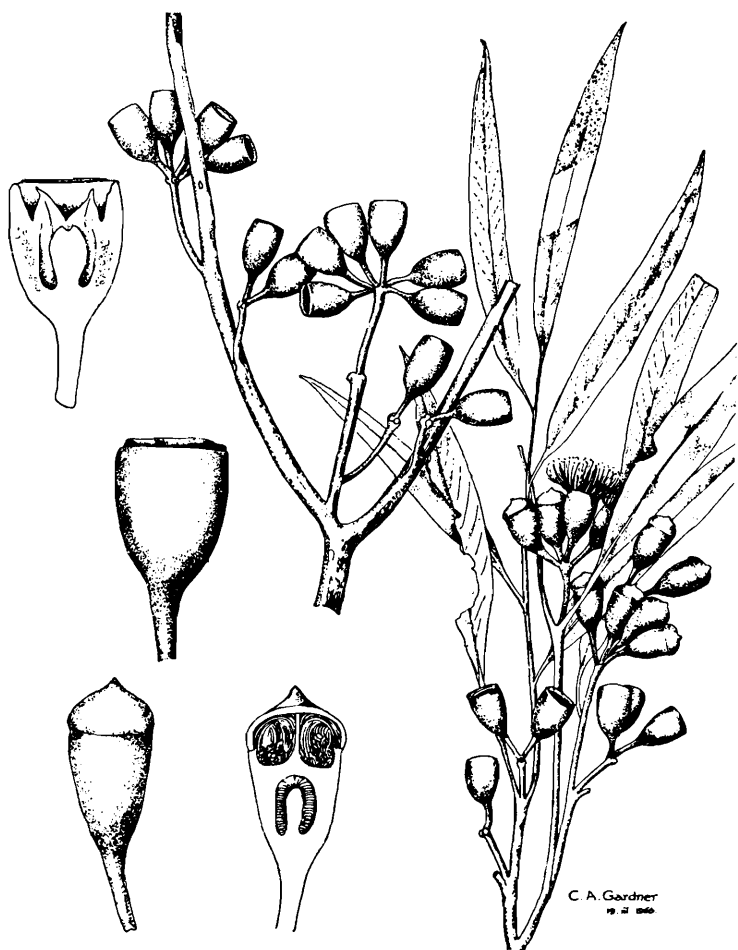
Slender many stemmed mallee up to 10 feet or more high. Bark white or maroon patchy, deciduous. Leaves narrow, light green.

Buds with short stalks, club-shaped; caps hemispherical or conical- as long as or slightly longer than the calyx-tube; fruit hemispherical, with a flat disc.

Of widespread occurrence in the wheat belt and mallee zone. Flowers December to March yielding pollen and nectar.

Comet Vale Mallee

Eucalyptus comitae-vallis Maiden



A tall erect mallee or small tree up to 20 feet high. Bark on the stem may be dark, fibrous, flaky and persistent or smooth white (Bodallin). Leaves normally deep shining green except at Kulja where they are a dull grey-green.

Buds cylindroid with very short hemispherical caps, which may be slightly pointed; constricted at junction of cap and calyx-tube. Stalks somewhat shorter than the fruit. Valves of fruit enclosed.

Occurs from Perenjori to Comet Vale and southwards to Lake Cronin.

Flowers April to December and worked by bees for nectar and pollen.

Eucalyptus concinna Maiden and Blakely



Mallee up to 12 feet high. Leaves light glossy green, somewhat thick.

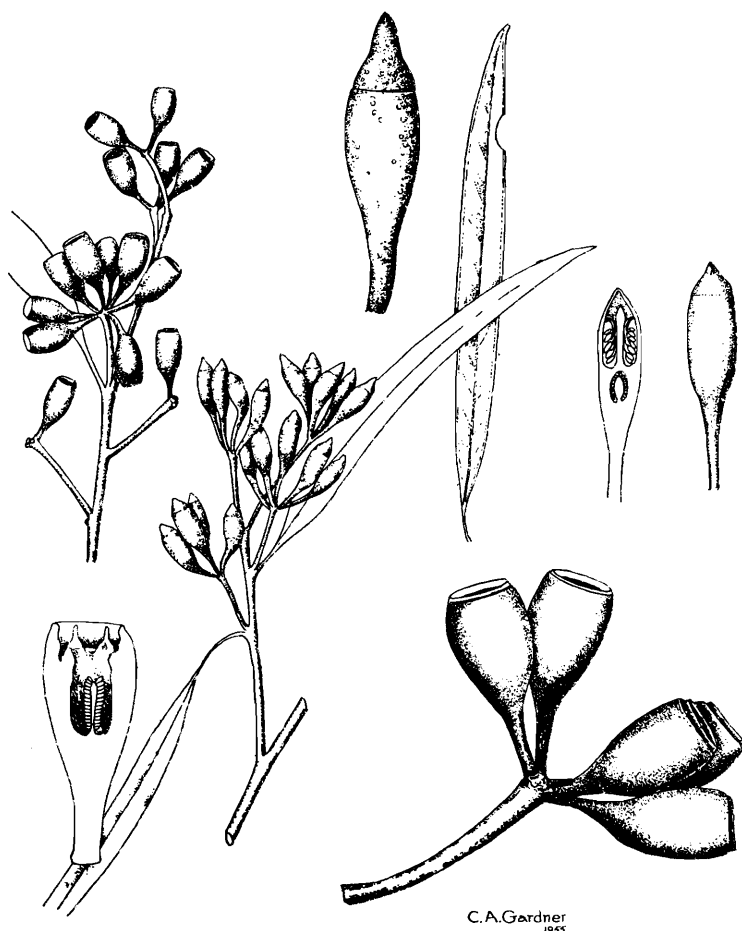
Buds 3 - 6, club-shaped, somewhat angular. Caps flattish-hemispherical, striate or slightly corrugated. Fruit stalked, pear-shaped, lightly ridged.

Occurs east of Hyden.

In full flower February.

Woodline Mallee

Eucalyptus cylindrocarpa Blakely



A mallee or small tree. Bark in mallee form rough on lower parts of stem and greenish red to light grey on upper parts. Tree form with perfectly smooth bark like salmon gum. Leaves are narrow and twigs tend to droop.

Buds cylindrical with sharp pointed caps up to half the length of the cylindrical calyx-tube. Fruit cylindrical, club-shaped, constricted at the end; valves enclosed.

Common in the Widgiemooltha area and extending eastwards to Zanthus.

Flowers in December.

Eucalyptus calycogona Turcz.



Slender mallee up to 25 feet high. Bark smooth, deciduous; leaves smooth, shining, yellowish green.

Buds angular, club-shaped; caps conical, shorter than quadrangular calyx-tube. Outer stamens longer than inner ones and lacking anthers. Fruit quadrangular, tapering into stalk. Disc small, flat, valves enclosed.

Widespread in mallee zone, locally very common.

Produces very good honey flow, August - November. Possibly deficient in pollen.

Eucalyptus celastroides Turcz.



Tree up to 65 feet. Bark light grey, rough and persistent at base, smooth and white or reddish in upper parts. Twigs and leaves more or less glaucous.

Buds club-shaped, slightly angular; caps hemispherical, much shorter than calyx-tube. Outer stamens without anthers; inner stamens sometimes very short. Fruit ovoid to urn-shaped; valves deeply enclosed.

Locally common in mallee zone.

Flowers September - November producing a good honey flow. Possibly deficient in pollen.

Eucalyptus gracilis F. Muell.



Shrub or tall tree up to 60 feet high. Frequently in clumps or thickets. May have dark coloured bark on a short trunk. Leaves smooth and shining.

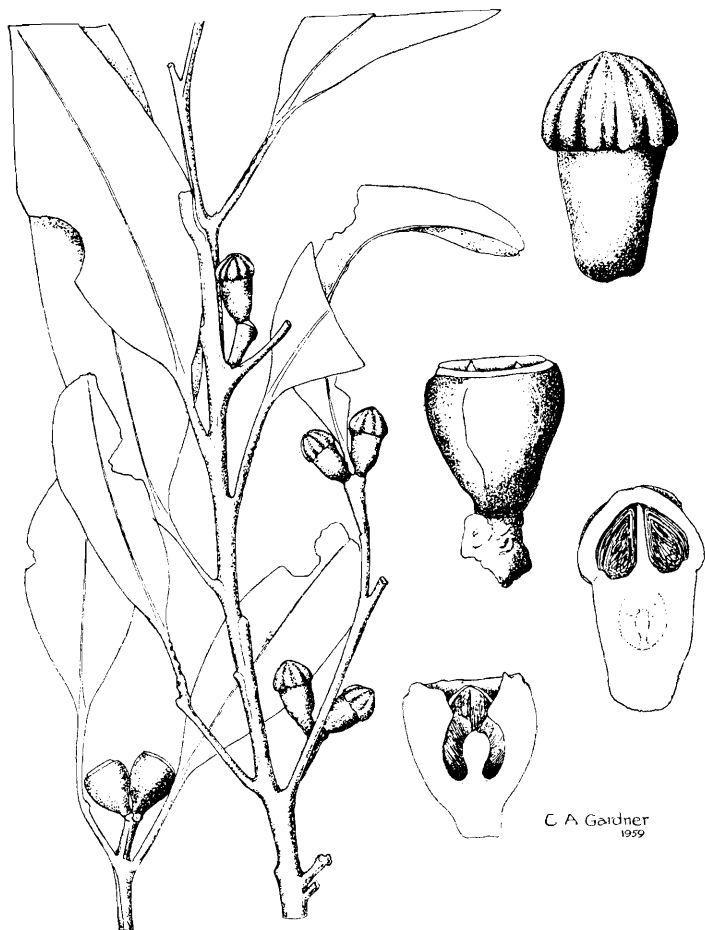
Buds club-shaped; caps hemispherical, shorter than calyx-tube. Outer stamens without anthers. Fruit ovoid to urn-shaped; valves enclosed.

Common in some localities in mallee zone.

Flowers April to November. Honey flow August - November, rarely April - May. Deficient in pollen. Bees must have another source of pollen to be maintained on this honey flow.

Capped Mallee

Eucalyptus pileata Blakely



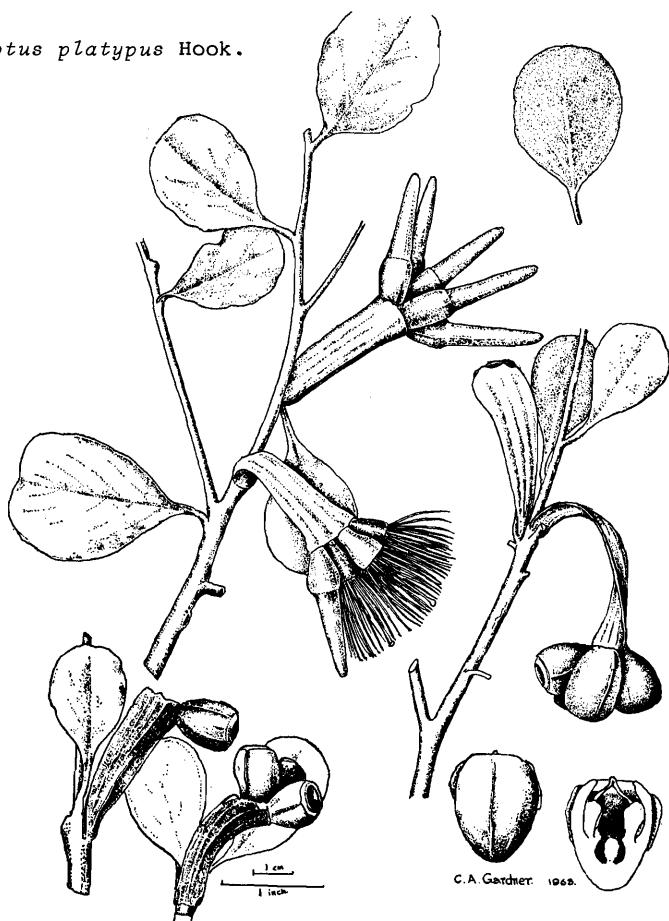
Densely branched mallee. Leaves flat, thick and glossy. Buds with very short stalks, caps corrugated, broader and shorter than slightly wrinkled calyx-tube. Fruit wrinkled.

Occurs east of Hyden down to Ravensthorpe.

Flowers December to April.

Moort

Eucalyptus platypus Hook.



Small tree 10 to 20 feet high with rather stout trunk and spreading branches. Bark smooth and yellowish, sometimes rough at the bottom of the trunk. Leaves relatively broad and rounded.

Buds without individual stalks, 4 - 9 on a flattened common stalk, cylindrical, horn-shaped. Caps smooth, cylindrical to shortly conical, narrower than the calyx-tube. Calyx-tube with 2 or 3 ribs. Fruit somewhat ovoid-truncate, ribbed; valves short, slightly protruding.

Occurs in southern mallee areas, particularly Ravensthorpe district.

Flowers June to January producing good honey flow and pollen.

Eucalyptus anceps (R. Br.) Blakely



Small mallee with compressed or very angular branches. Leaves thick and rigid.

Buds without individual stalks, 5 - 7 on common flattened stalk, caps conical, slightly striate, shorter than calyx-tube. Fruit without stalk, disc thin, valves enclosed.

Occurs in Stirling Range and southern mallee areas.

Flowers February - April.