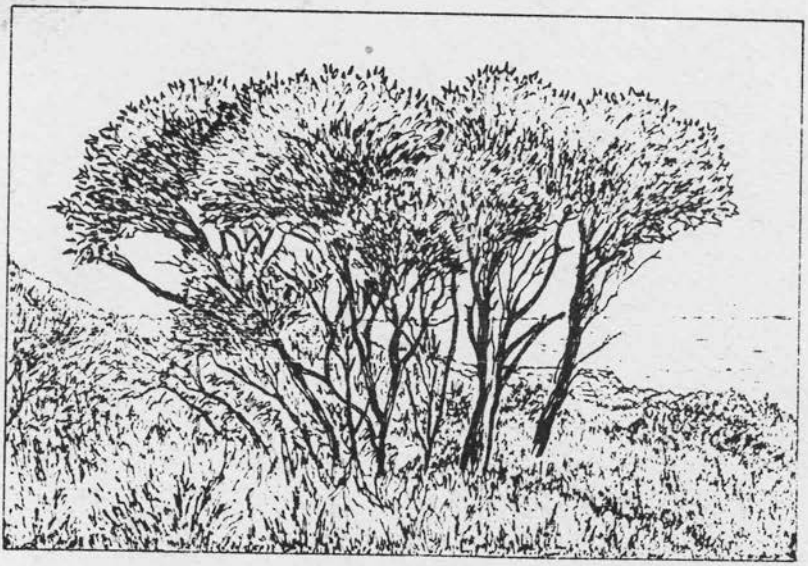
SURVEY OF RARE AND POORLY KNOWN EUCALYPTS OF WESTERN AUSTRALIA

FIELD GUIDE No. 1

SOUTH COAST REGION



BY

ANNA NAPIER, ANNE TAYLOR, SUSAN PATRICK

AND STEPHEN HOPPER

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The booklet contains a great deal of unpublished research data which will be published elsewhere, and also provides precise locations of some of the State's rarest eucalypts. Such information may place these eucalypts at risk to the activities of illegal seed collectors if widely disseminated.

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FIELD GUIDE NO. 1
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LINE DRAWINGS
BY
SUSAN PATRICK

WESTERN AUSTRALIAN DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

1987

CONTENTS

INTRODUCTION

This interim field guide has been produced to assist contributors to the "Survey of Rare and Poorly Known Eucalypts of W.A." to identify the species of interest. As the list of such species is large, it has been subdivided into different State regions. This first booklet covers the South Coast Region, as defined by the Western Australian Department of Conservation and Land Management (see Fig. 1). Subsequent booklets will cover other C.A.L.M. regions.

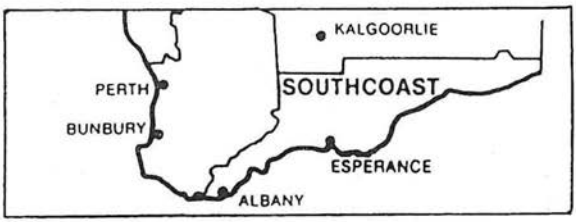


Figure 1

Eucalypts have been the subject of recent name changes and taxonomic research. This field guide is the most up-to-date reference available for rare and poorly known eucalypts of the South Coast Region, including new species and subspecies whose names have not yet been published. For information on such taxa, we have relied heavily on the unpublished "Field Guide to Eucalypts Vol. 2" by M.I.H. Brooker and D. Kleinig. We are indebted to the authors for allowing access to their manuscript. We have also drawn heavily on the unpublished research results of Ian Brooker, Lawrie Johnson, Ken Hill, Don Blaxell and Stephen Hopper to whom we are grateful for assistance. Because of the active phase of research occurring on eucalypts, this field guide is very much an interim report. Undoubtedly, new taxa warranting inclusion in the study will be discovered during the course of the survey.

Common eucalypts of the South Coast Region can best be identified using Chippendale's "Eucalypts of the Western Australian Goldfields (and the Adjacent Wheatbelt)" and Blackall and Grieve's "How to Know Western Australian Wildflowers, Part IIIA".

Funding for this field guide and the Rare and Poorly Known Eucalypt Survey has been provided by the Australian National Parks and Wildlife Service and the Western Australian Department of Conservation and Land Management. We are grateful to the Curator, Western Australian Herbarium, for providing access to specimens and to Paul Gioia of the Western Australian Wildlife Research Centre for FLORAPLOT computer mapping.

Species Description and Illustrations

The species are listed in alphabetical order. Unpublished taxa of L. Johnson and K. Hill are given a three letter code and referred to as aff. (with affinity to their nearest named relative). Unpublished taxa of Brooker and Hopper are given as manuscript names enclosed in parentheses. For each species (or subspecies), the main identifying features of the plant are indicated on the drawings. Other features, including those which can only be seen in the field are included under "Additional Field Characteristics". If there are similar eucalypts with which the species in question can be confused, these are indicated and their distinguishing features highlighted. In cases where a similar species is common and is thus not included in the field guide, full details of the comparison are given. If a similar species is rare, and is included in the field guide, only a brief comparison is provided. Further details can be found on the relevant page for that species.

All illustrations have been drawn using material from the W.A. Herbarium or from other collections. As it is not possible to show the slight variations of ornamentation

which may occur within a species, the most representative specimens have been drawn.

Location Maps

The location maps have been produced from records of specimens lodged at the Western Australian Herbarium, from personal records of M.I.H. Brooker and S.D. Hopper and from information supplied by various wildlife officers and individuals as recorded on the Department of Conservation and Land Management species files. The maps have been compiled on the FLORAPLOT Computer System at the W.A. Wildlife Research Centre.

The maps of species location are given as a general guide and should not be regarded as covering the entire range of the species.It is hoped that the present survey will either extend the known range or verify the restricted occurrence of certain species. It is also possible that some previously recorded populations or individuals may have disappeared as a result of agricultural clearing, or road widening, or other factors.

Collecting Specimens

Since eucalypts can be difficult to identify and also since we are only looking at rare and poorly known taxa for which confirmed identification is essential, we will be relying greatly on voucher specimens to confirm certain records.

A properly collected, well pressed and labelled specimen will be required in each of the following circumstances:

- For each 'new' species or subspecies recorded by a person e.g. when John Smith records *E. acies* for the first time, a voucher specimen is needed.

- For any species or subspecies located a significant distance from its nearest known location (consult the

map scale each time as most maps are at different scales). "Significant" may be a few kilometres for an extremely localised species (e.g. *E. bennettiae*), further for more widespread species.

- Whenever you are unsure of an identification.

The following guidelines suggest techniques for collecting and processing specimens so that they remain in a well preserved, identifiable state.

1. Do you have a collector's permit? This is needed before collecting specimens from publicly owned land. It can be obtained from the Senior Clerk Flora, Department of Conservation and Land Management, 50 Hayman Road, Como. On privately owned land, you should always seek the owner's permission.. Special Ministerial permits are required to collect Declared rare flora (see Table 1). These may also be applied for from the Senior Clerk Flora, Dept. of Conservation and Land Management, 50 Hayman Rd, Como, W.A.

E. beardiana	*E. steedmanii*
E. bennettiae	*E. suberea*
E. brevipes	*E. synandra* subsp. (wheatbelt)
E. burdettiana	*E.* sp. 'olivacea'
E. ceracea	*E.* sp. 'latens'
E. cerasiformis	*E.* sp. 'pruiniramis'
E. coronata	*E.* sp. 'bla'
E. crucis subsp. *crucis*	*E.* sp. 'crispata'
E. erectifolia	*E.* sp. 'phy'
E. insularis	*E.* sp. 'pla'
E. johnsoniana	*E.* sp. 'balanites'
E. lateritica	*E.* sp. 'absita'
E. merrickiae	*E.* sp. 'cuprea'
E. mooreana	*E.* sp. 'argutifolia'
E. rhodantha	*E.* sp. 'leprophloia'

Table 1. Declared Rare Eucalypts of W.A.

2. Collecting and Pressing

We recommend that you label each specimen collected with a unique number and your initials. For example, John D. Smith's collection of two eucalypt species at the first site he collects would be labelled JDS1 and JDS2. The same number should also be written in your field note book and on the relevant Sight Record Sheet, thus allowing future matching of specimens with recorded information. We also recommend that you collect in triplicate for each of your unique numbers. That is, enough material of each species to enable you to keep an adequate sample and to forward to the Survey Coordinators two duplicates (one destined for the W.A. Herbarium and the other for the Albany Regional Herbarium) see Fig. 2.

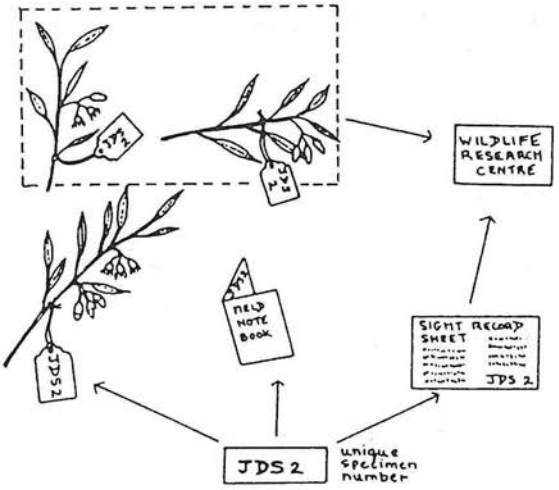


Figure 2. Labelling Plant Specimens

Collections should include leaves, buds and fruits and a small packet of fruits with the seeds enclosed. Where available, juvenile leaves from suckers near the base of the trunk should also be collected. If buds

are not available, a search on the ground may produce shed bud caps which are often an important aid in identification. Bark may be included if it is unusual.

As soon as possible after collection, plant parts should be put between sheets of newspaper, spread out so that they are clearly seen, and pressed. A simple press can be made from two sheets of any non-bending material, strapped together. Some sheets of cardboard, preferable smooth-sided corrugated cardboard, placed between the newspaper sheets will assist air circulation through the press. Drying of plant material occurs within the press and can be facilitated by keeping it in a warm room or in front of a heater and by changing the newspaper daily for the first few days, and then as conditions dictate. Most plants should dry in about a fortnight. Once dried, the plants should be placed between clean, dry sheets of newspaper and suitable measures taken to protect the specimens whilst they are in transit.

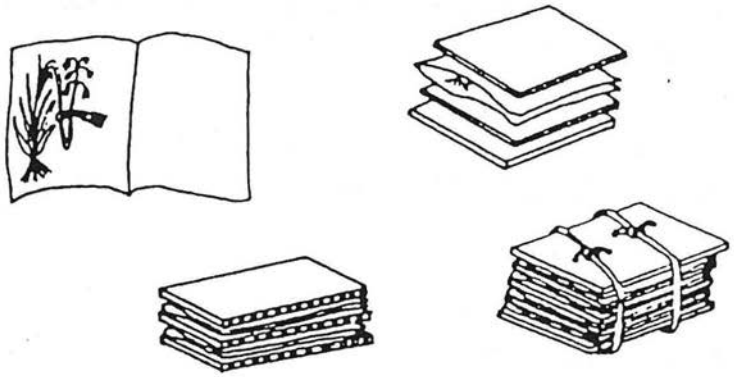


Figure 3. Pressing Plant Specimens

3. Specimen Label Slips

These are standardised recording slips which must accompany any specimen when it is submitted to a

herbarium. These can be filled in by either yourself or the Survey Coordinators (based on information contained on Sight Record Sheets). If you would like to fill in your own Specimen Label Slips, please contact Rare Eucalypt Survey Coordinators, W.A. Wildlife Research Centre, P.O. Box 51, Wanneroo, 6065.

4. Field Notebooks

We recommend the use of field notebooks when recording in the field, with all relevant data being later transferred to Sight Record Sheets. It is important that you make notes on most features illustrated in Fig. 4. when in the field, especially those difficult or impossible to observe on herbarium specimens (e.g. tree or mallee, habit, height, shape, bark features, leaf glossiness, leaf venation and oil gland pattern, presence of pith glands in branchlets, flower colour etc. Such information should be included on the Sight Record Sheets under "Additional Remarks". If there is insufficient space, please attach an additional sheet of paper. If you have collected a specimen, remember to include its unique number in your field note book for future reference.

5. Where to Send Duplicate Specimens for Identification

Please forward your duplicate specimens with relevant sight record sheets to:

Eucalypt Survey Coordinators
Wildlife Research Centre, C.A.L.M.
P.O. Box 51
Wanneroo W.A. 6065

The coordinators will ensure that your specimens are correctly identified, with the able assistance of botanists Ian Brooker and Stephen Hopper. As mentioned

above, one of the duplicates you send will be deposited in the Western Australian Herbarium, while the second will be forwarded by the Coordinators to the Albany Regional Herbarium in the CALM South Coast Regional Headquarters, Albany.

6. Confidentiality

We urge contributors to be circumspect in divulging precise locations of the rarest of the eucalypts. Many of these are of considerable horticultural value, and some have been stripped entirely of mature fruits at particular sites by unscrupulous seed collectors in the past. If you consider that a given species might be at risk from such activities, please use general locations (e.g. Ravensthorpe district) when discussing or writing about your survey work. While we require very precise locations on computer sheets to ensure we can determine land status and ownership accurately, publications arising from this survey will not provide accurate details or maps for the rarest species.

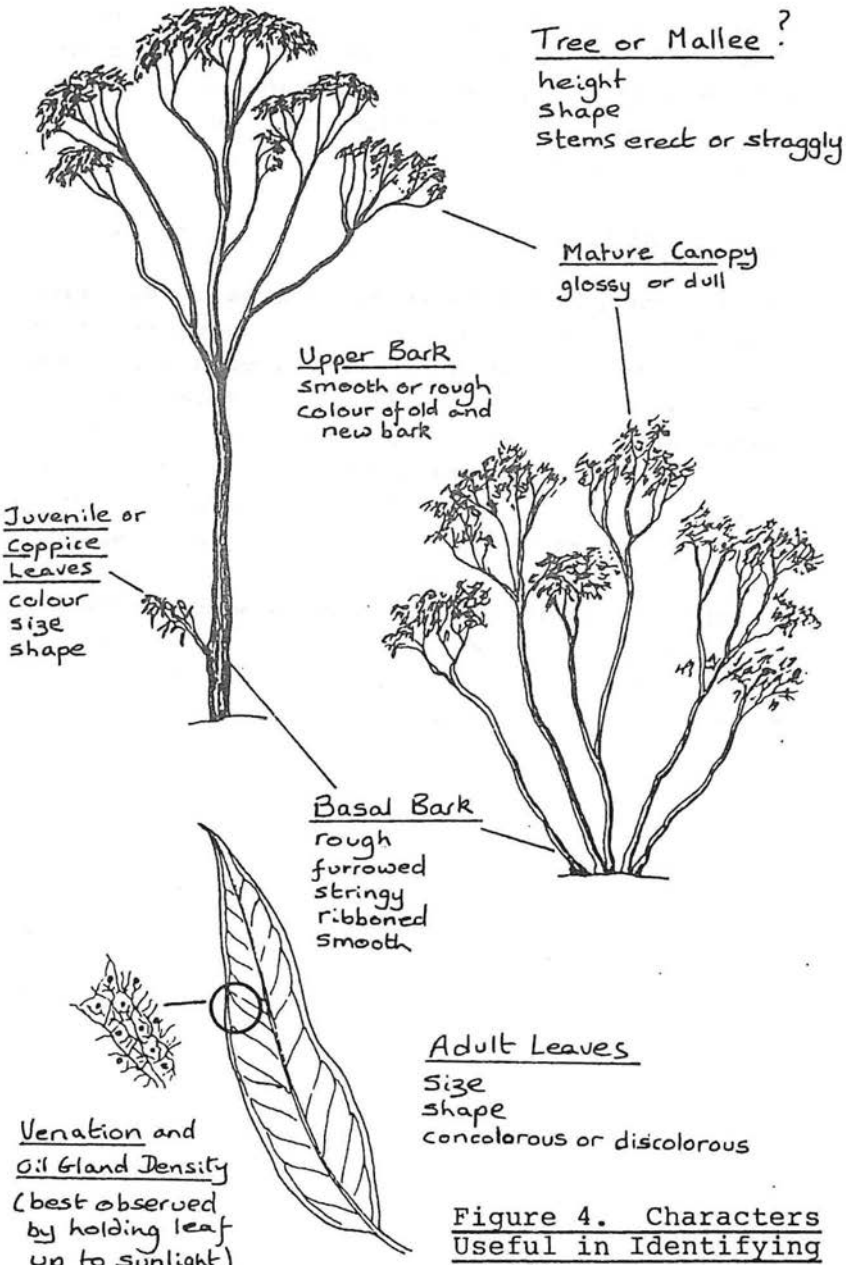
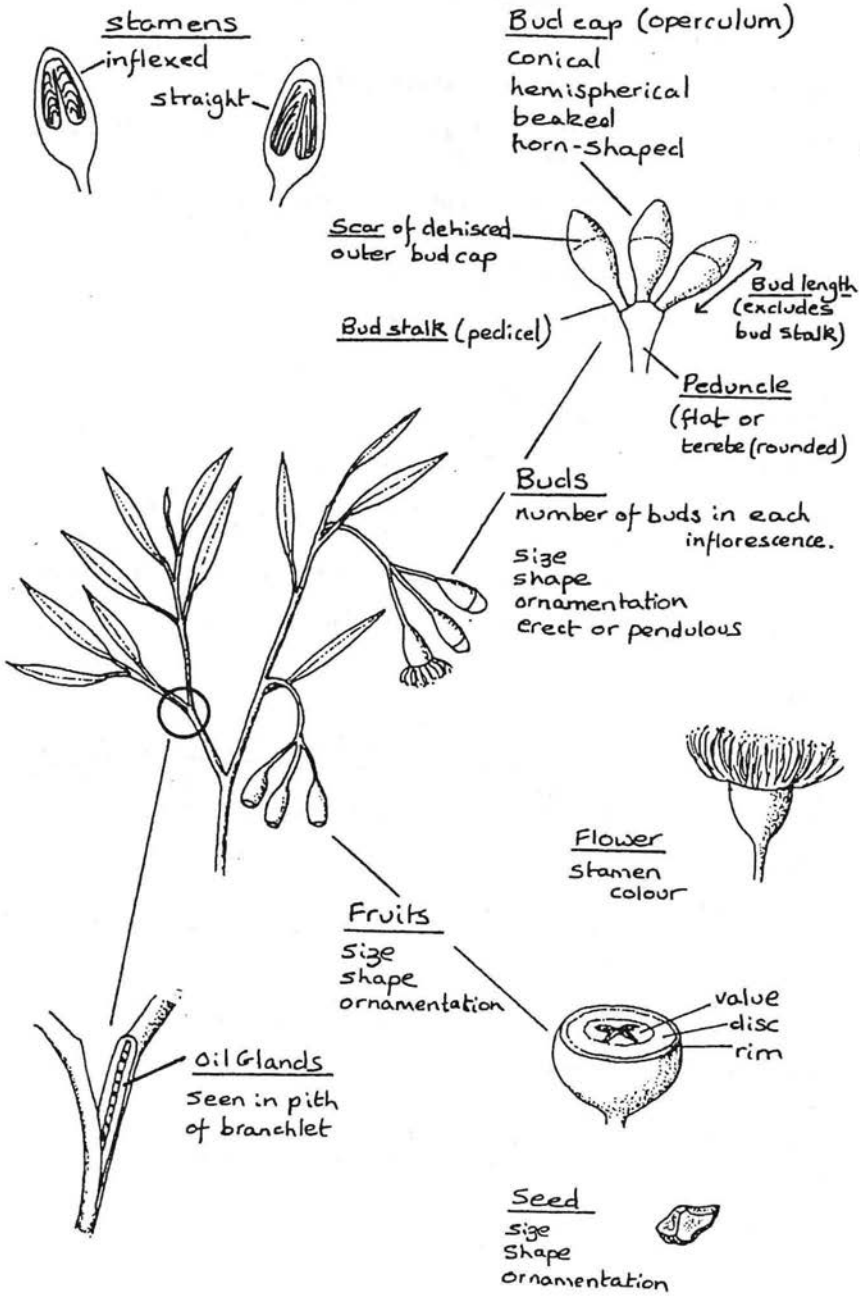


Figure 4. Characters Useful in Identifying Eucalypts


Stamens
inflexed
straight
Bud cap (operculum)
conical
hemispherical
beaked
horn-shaped
Scar of dehisced outer bud cap
Bud length (excludes bud stalk)
Bud stalk (pedicel)
Peduncle
(flat or
terete (rounded)
Buds
number of buds in each inflorescence.
size
shape
ornamentation
erect or pendulous
Flower
stamen
colour
Fruits
size
shape
ornamentation
valve
disc
rim
Oil Glands
seen in pith of branchlet
Seed
size
shape
ornamentation

GLOSSARY OF TERMS USED

acute	ending in a sharp point
axillary	in the leaf axil; from where the leaf joins the branchlet
concolorous	leaf with upper and lower sides the same colour
cuboid	resembling a cube
discolorous	leaf with upper and lower sides a different colour
exserted	protruding from the top or opening of the fruit
fertile	(of stamens) having an anther
glaucous	with a waxy coating giving a white, grey or blue-grey appearance
globoid	of the anthers, somewhat globular in form
hypanthium	the flower receptacle or lower part of the bud
inflorescence	cluster of flowers
mallet	small to medium-sized tree, usually of steep-branching habit, sometimes fluted at the base of the trunk, and often with a conspicuously dense, terminal crown
obtuse	blunt or rounded at the apex
oil glands	minute oil containing structures seen near the surface of young stems, leaves, buds and fruits
operculum	the bud cap, the upper part of the bud which joins the hypanthium and covers the stamens
panicle	a much-branched inflorescence
peduncle	the stalk which holds the cluster of buds; may be terete, stout or flattened
pendulous	weeping habit or downturned
petiole	stalk joining the leaf to the branchlet

pith	the inner core of tissue of a plant stem
reticulation	the pattern of leaf veins
scar	the marking left on the bud when the first operculum is shed. If only one operculum is present no true scar is formed although a line of dying tissue which resembles a scar may appear near to flowering
sessile	without a stalk
terete	rounded; used when describing stems, peduncles and petioles and referring to a cross-section
truncate	slightly cut off
venation	refers to the pattern of veins in the leaf

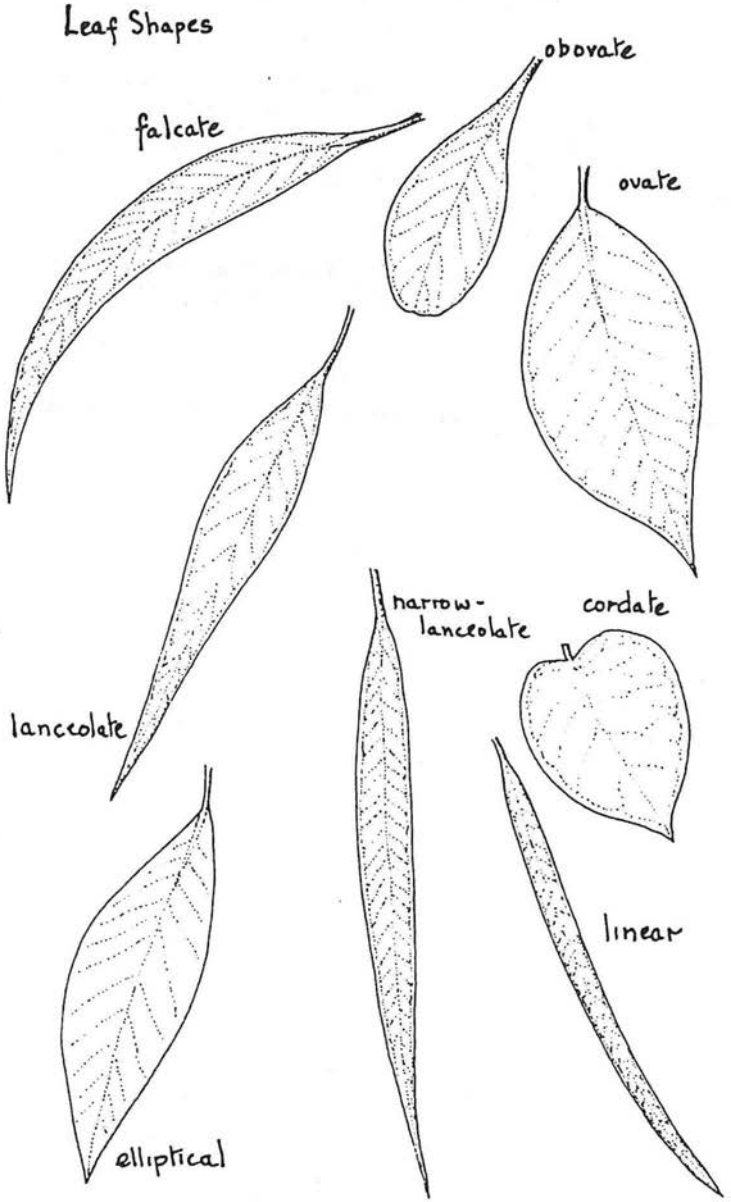
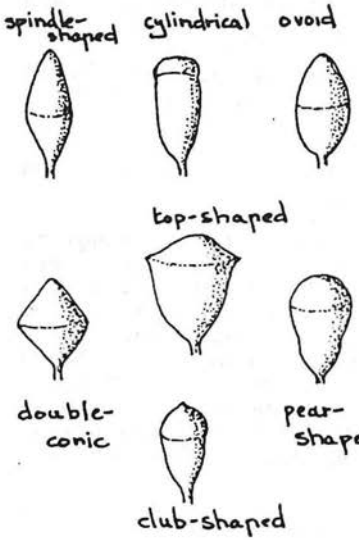
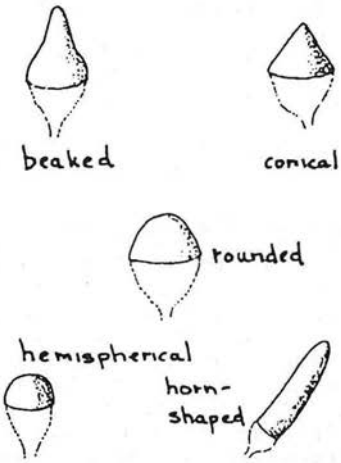


Figure 5. Leaf, bud and fruit shapes

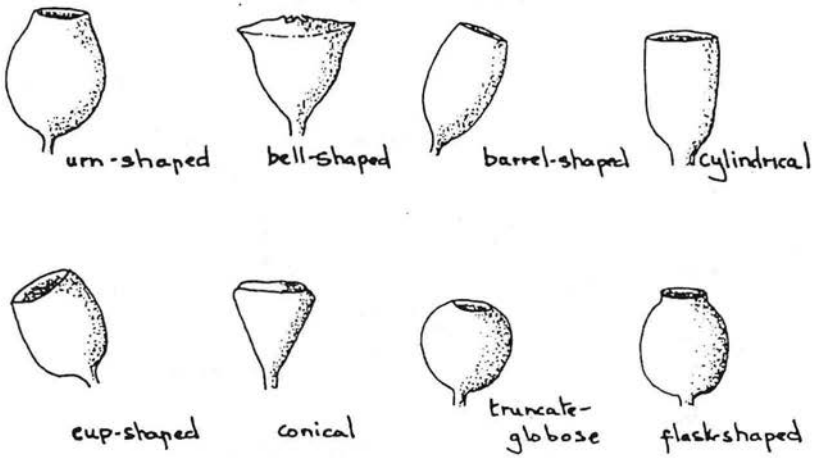
Bud Shapes



Bud Caps (opercula)



Fruits



EUCALYPTUS ACIES M.I.H. Brooker

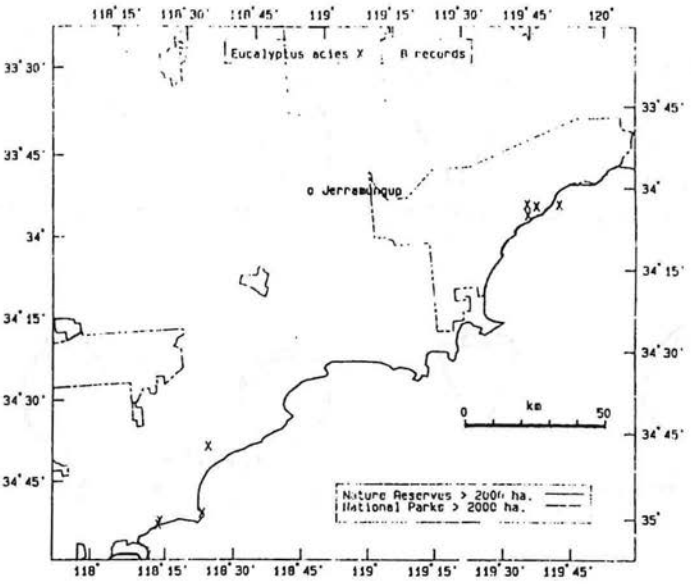
Woolburnup Mallee

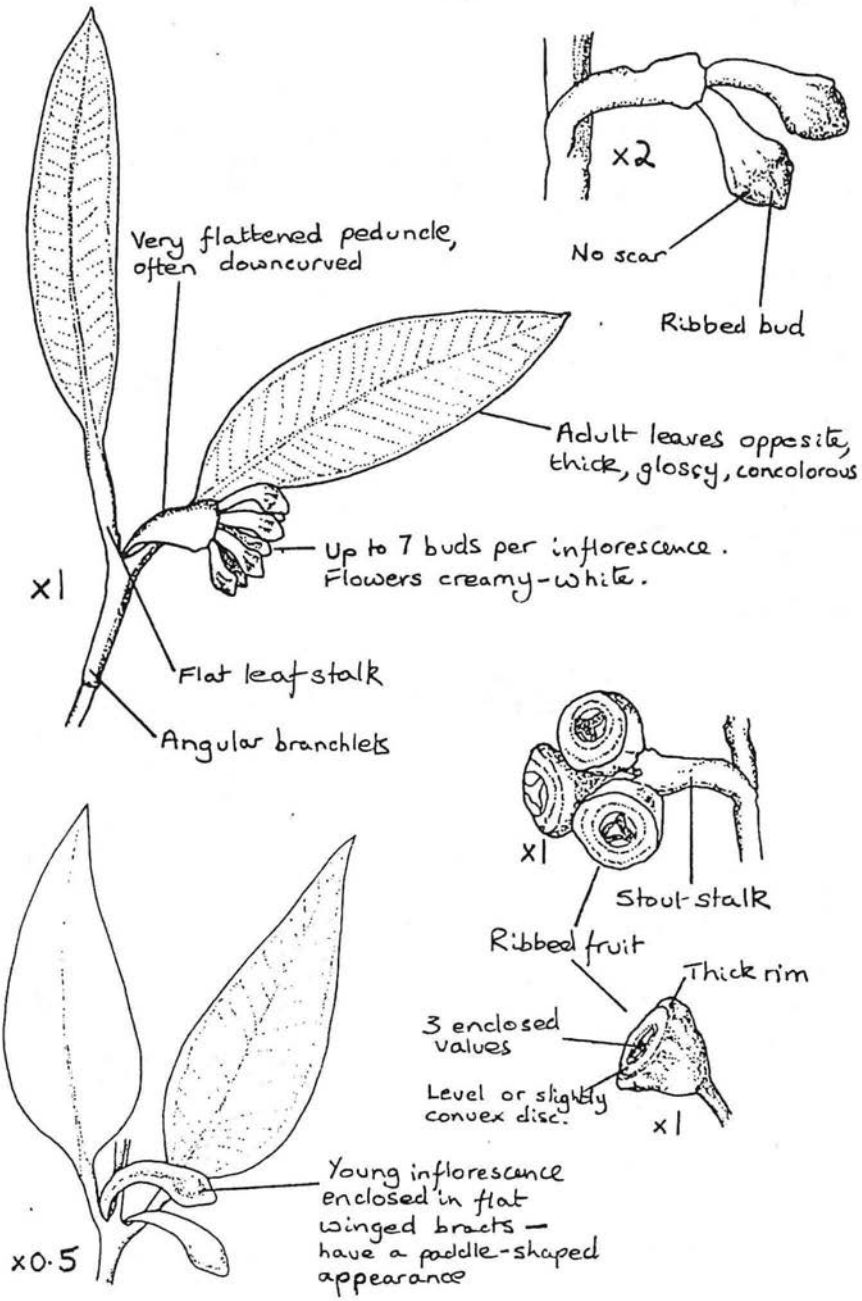
Distribution and Habitat: Has a geographical range of about 100 km with a scattered distribution between Waychinicup and Thumb Peak, mainly in the Fitzgerald River National Park. It occurs on hill slopes, growing in loams and sands amongst granite rocks, in low scrub and closed heath. Associated species include *Eucalyptus marginata* (mallee), *Dryandra formosa, Hakea cucullata, H. elliptica.*

Flowering Period: Late October to November are recorded flowering times, but is poorly collected.

Additional Field Characteristics: A distinctive straggling shrub or low mallee 1-2.5 m tall, usually with several grey, smooth-barked stems. Juvenile leaves are elliptic to ovate, 9-16 x 5-7 cm, dull and blue-green in colour, opposite for many pairs. Adult leaves are opposite or nearly so, 6-13 x 2-3 cm in size. They are dull at first, maturing to glossy green. The peduncle is 1.5-3 cm long. Buds are 0.9-1.1 x 0.9-1 cm in size. The stamens are oblique or inflexed in the bud. The anthers are versatile and open by longitudinal slits, incurved towards the top. The seed is black or dark grey, irregular in shape, shiny.

References: Brooker (1972); Chippendale (1973).




x2
No scar
Ribbed bud
Very flattened peduncle, often downcurved
Adult leaves opposite, thick, glossy, concolorous
Up to 7 buds per inflorescence. Flowers creamy-white.
x1
Flat leaf-stalk
Angular branchlets
x1
Stout stalk
Ribbed fruit
Thick rim
3 enclosed values
Level or slightly convex disc
x1
Young inflorescence enclosed in flat winged bracts — have a paddle-shaped appearance
x0.5

EUCALYPTUS ANGUSTISSIMA F. Muell.

Narrow-leaved Mallee

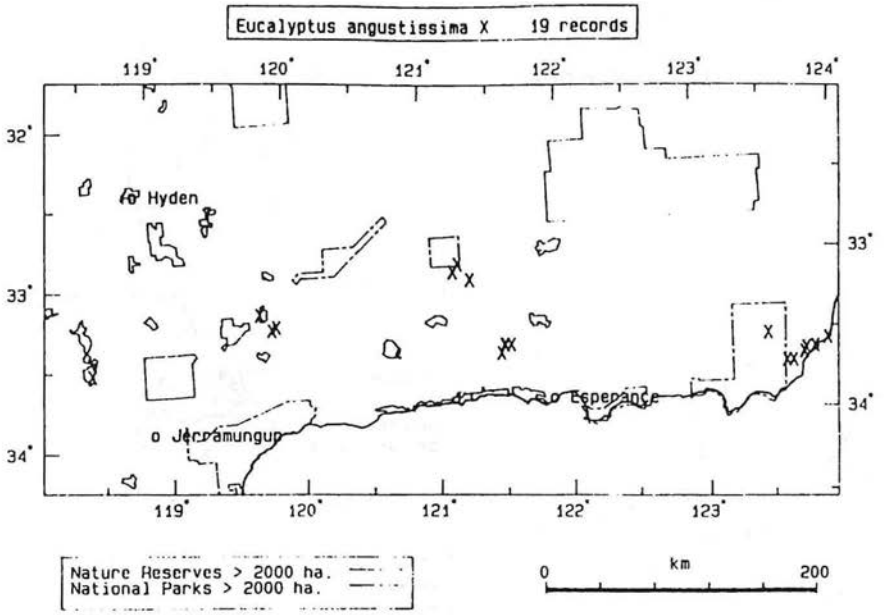
Distribution and Habitat: Known from north-west of Ravensthorpe, with a scattered distribution eastwards towards Israelite Bay. Grows near salt lakes in deep sand or alluvium in mallee and shrubland, associated species include *Acacia* sp. *Melaleuca* sp.

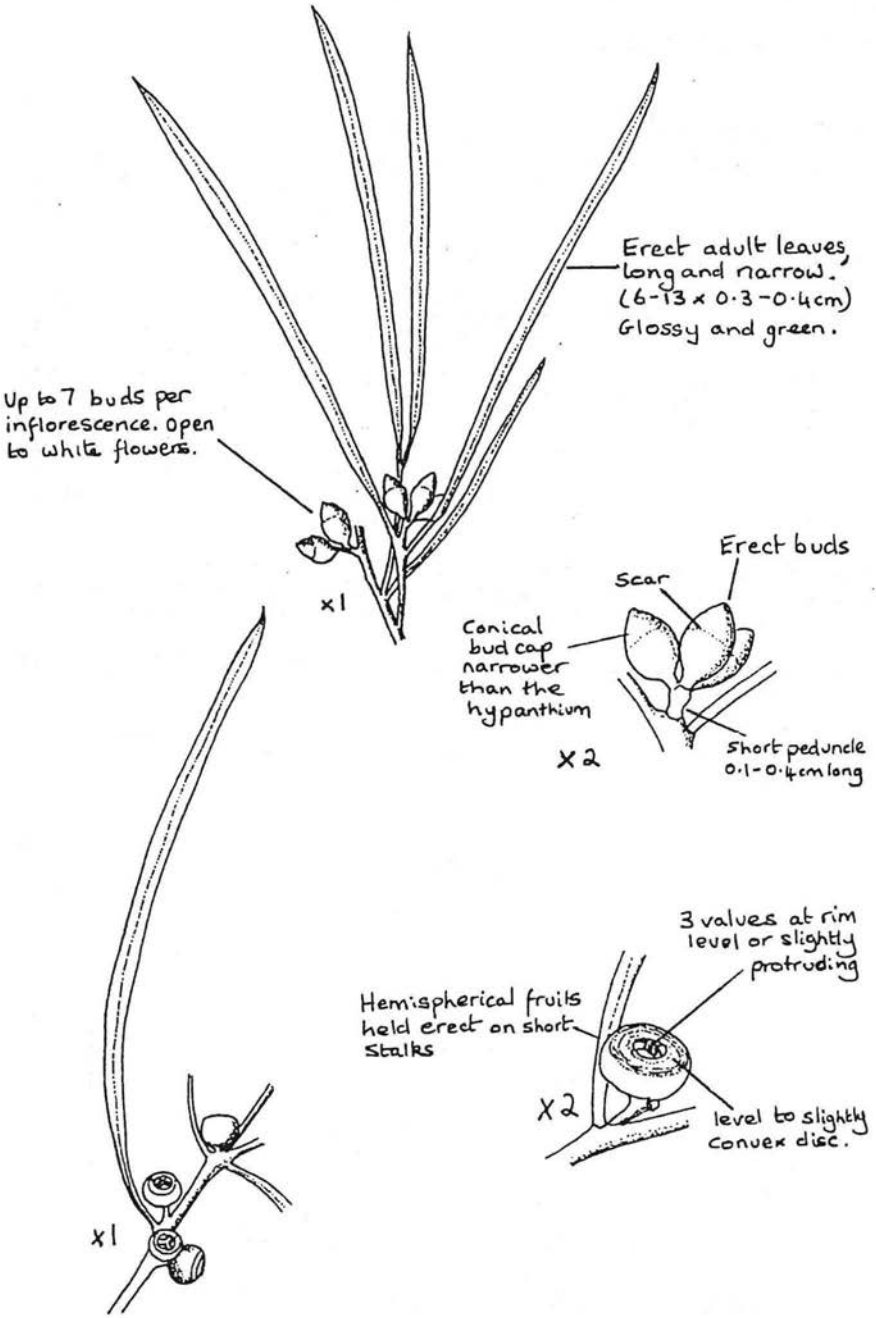
Flowering Period: August - January.

Additional Field Characteristics: A mallee 1.5-3 m high with smooth, mottled grey, whitish or light grey-brown bark. The long adult leaves have a dense vein network and numerous oil glands. The buds measure 0.6 x 0.5 cm. The fruits have a thick rim and measure 0.4-0.7 x 0.5-0.6 cm. The seed is brown, flattish to ovoid and smooth.

The species is similar to *E. 'mis'* but differs in its extremely narrow leaves, shorter peduncles and level to protruding valves.

References: Chippendale (1973).




Erect adult leaves, long and narrow. (6-13 x 0·3-0·4cm) Glossy and green.
Up to 7 buds per inflorescence. Open to white flowers.
x1
Erect buds
Scar
Conical bud cap narrower than the hypanthium
x2
Short peduncle 0.1-0.4cm long
3 valves at rim level or slightly protruding
Hemispherical fruits held erect on short stalks
x2
level to slightly convex disc.
x1

EUCALYPTUS AQUILINA M.I.H. Brooker

Cape Le Grand Mallee

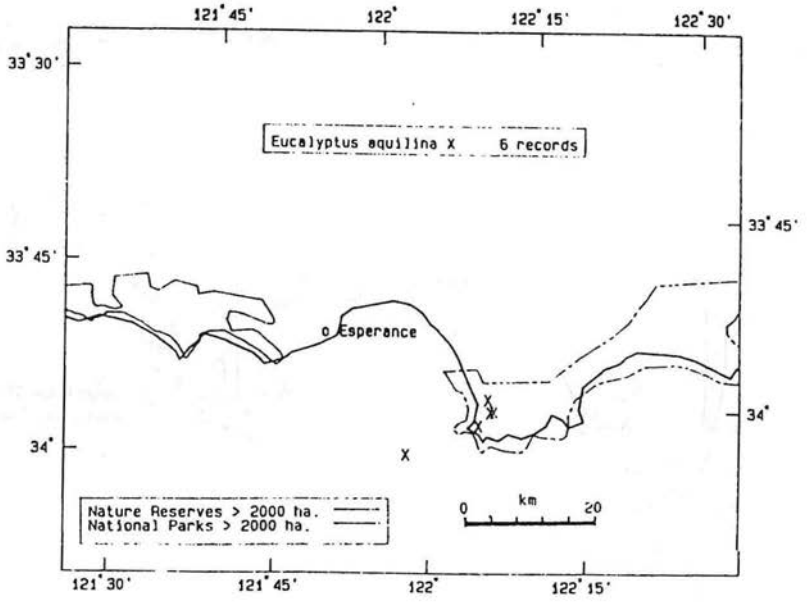
Distribution and Habitat: A species with a very restricted distribution in the Cape Le Grand area and in the Recherche Archipelago. It grows in shallow loamy soils amongst granite rocks, in well watered gullies and creek beds. Associated species include *E. doratoxylon* and *E. ligulata*.

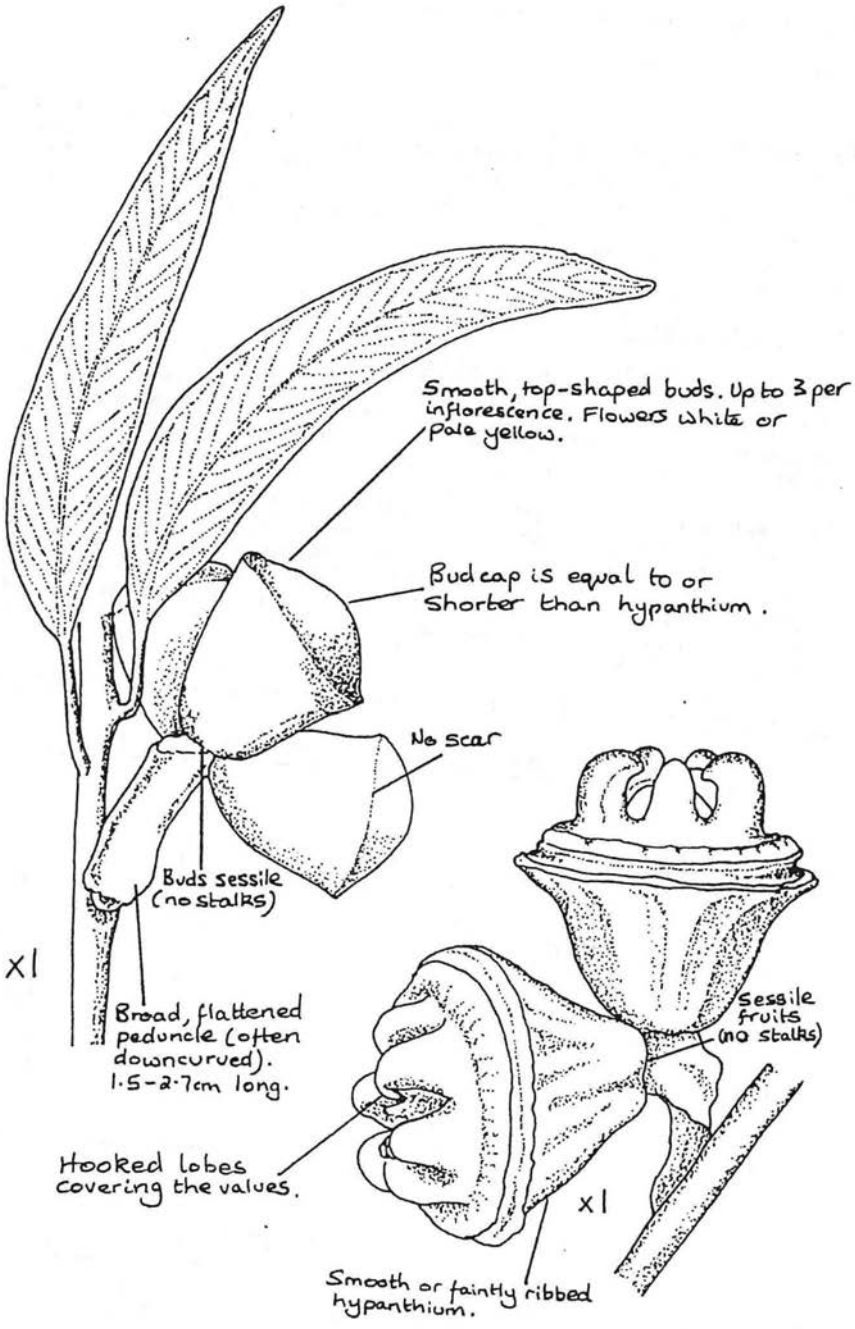
Flowering Period: April - June.

Additional Field Characteristics: A mallee to 5 m in height with smooth, grey to pinkish grey or creamy white bark. Juvenile leaves have toothed, crinkly edges, and are sessile, opposite for a few pairs, then petiolate, alternating and broadly elliptic, to 16 x 8 cm. Adult leaves are 14 x 4 cm, slightly glossy, green to dark green, with a dense vein network and scattered oil glands. Within the buds, the stamens are in a continuous ring and are inflexed. The fruits measure 2-2.5 x 3-7.5 cm. The seed is shining, black and pyramidal in shape.

The species is similar to *E. coronata*, differing in its smooth buds (*coronata* - ribbed). Also its fruits are either smooth or faintly ribbed (*coronata* - strongly ribbed).

References: Brooker (1974); Rye & Hopper (1981); Elliott and Jones (1986); Kelly (1978).




Smooth, top-shaped buds. Up to 3 per inflorescence. Flowers white or pale yellow.
Bud cap is equal to or shorter than hypanthium.
No scar
Buds sessile (no stalks)
x1
Broad, flattened peduncle (often downcurved). 1.5-2.7cm long.
Hooked lobes covering the values.
Sessile fruits (no stalks)
x1
Smooth or faintly ribbed hypanthium.

EUCALYPTUS BENNETTIAE D.J. & S.G.M. Carr

Bennett's Mallee

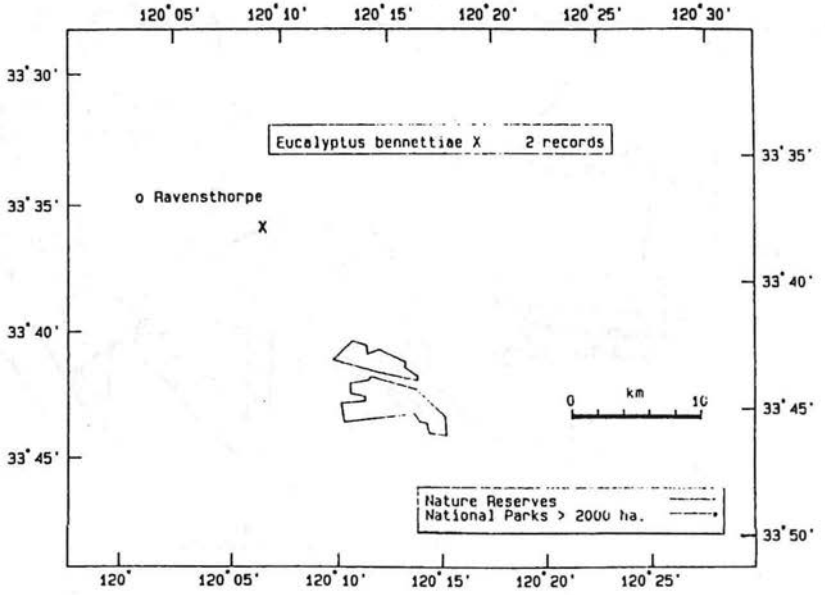
Distribution and Habitat: Occurs in the Ravensthorpe Range near Mt Desmond. It is known only from three plants. Grows on brown sandy soils on rocky upper slopes, in association with other mallees, including *E. lehmannii*, *E.* aff. *gardneri*, *E. occidentalis* mallee form, and other scrub species, *Calothamnus quadrifidus*, *Melaleuca uncinata*, *Banksia lemanniana*, *Hakea obtusa*.

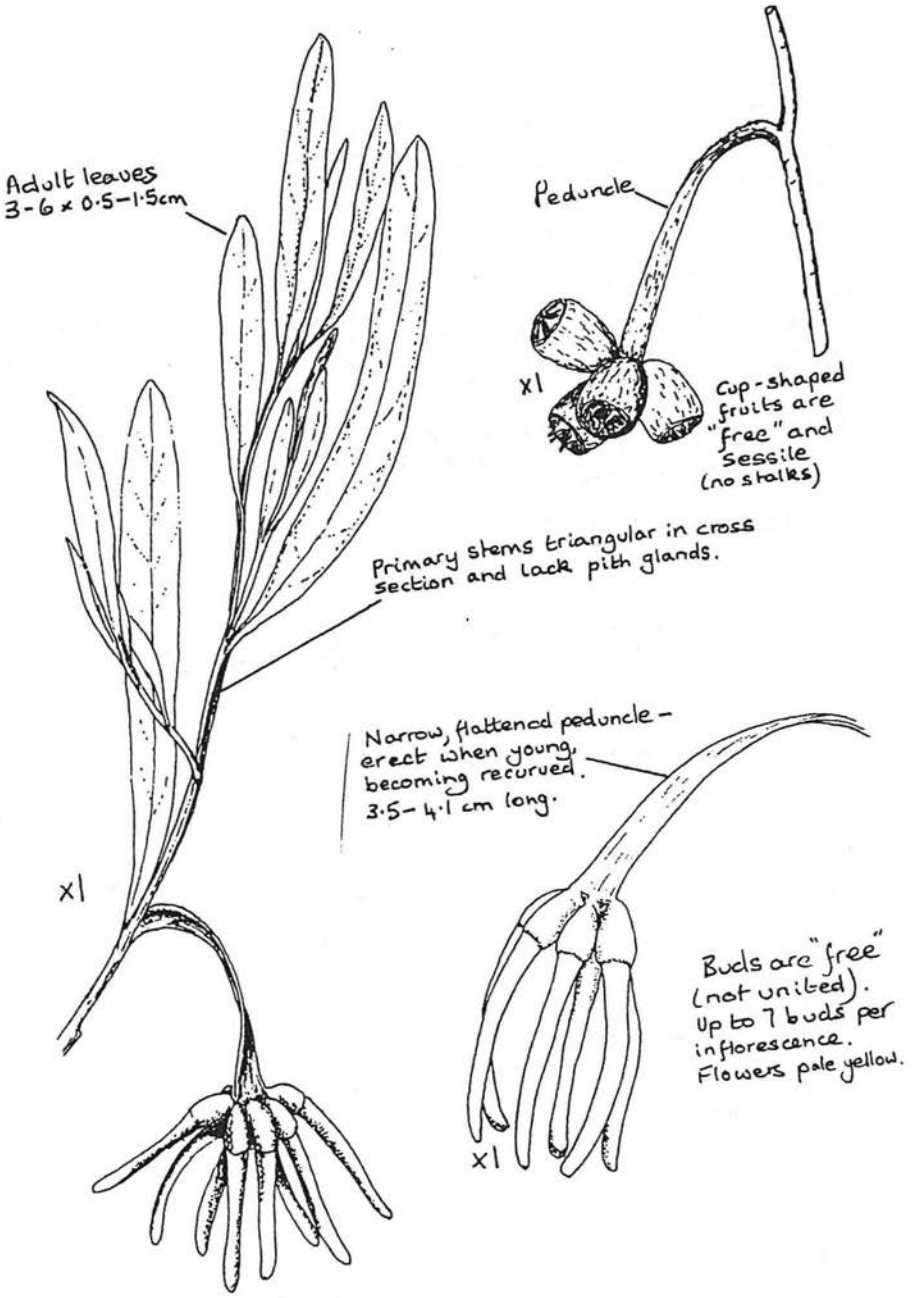
Flowering Period: June, Aug-September.

Additional Field Characteristics: A small, many-stemmed mallee up to 2 m in height. The bark is smooth, deciduous in flakes and pale-grey to brown. The elongated bud-cap measures 2-3 x 0.25-0.5 cm. The fruits have 3-4 valves and measure 0.8-1.1 x 0.4-0.7 cm.

The species is thought to have originated as a hybrid between *E. lehmanii* and *E.* aff. *occidentalis* (mallee form). It differs from *E. lehmanii* in having free flowers and fruits (*lehmanii* has parts fused at the base). From *E.* aff. *occidentalis* it differs in its leaf buds and primary stems being triangular in cross-section. The primary stems also lack pith glands.

References: Carr & Carr (1980); Patrick & Hopper (1982).




Adult leaves
3-6 x 0.5-1.5cm
Peduncle
x1
Cup-shaped fruits are "free" and sessile (no stalks)
Primary stems triangular in cross section and lack pith glands.
Narrow, flattened peduncle - erect when young, becoming recurved. 3.5-4.1 cm long.
x1
Buds are "free" (not united). Up to 7 buds per inflorescence. Flowers pale yellow.
x1

EUCALYPTUS BROCKWAYI Gardner

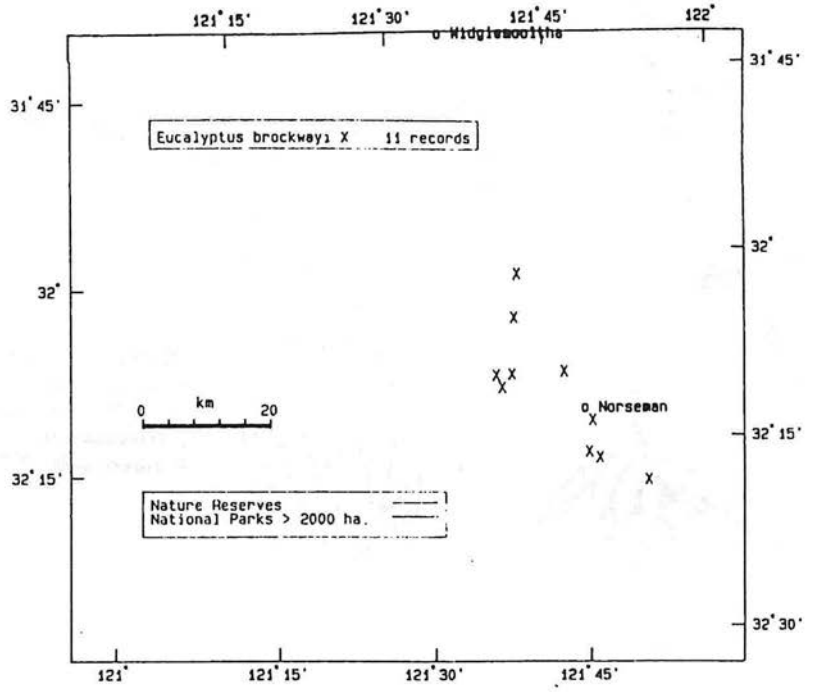
Dundas Mahogany

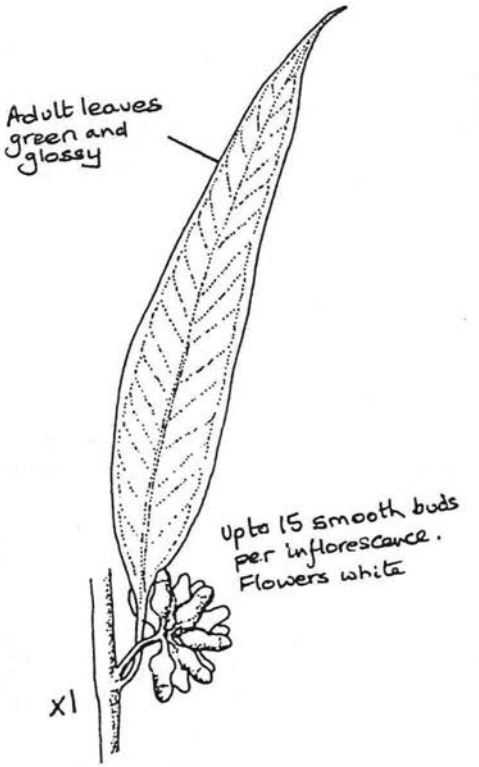
Distribution and Habitat: Occurs around Norseman, and grows in sandy, often gravelly loam, on flat ground or gentle slopes. Associated with *E. dundasii, E. flocktoniae, E. lesouefii, E. griffithsii* and *E. salmonophloia*.

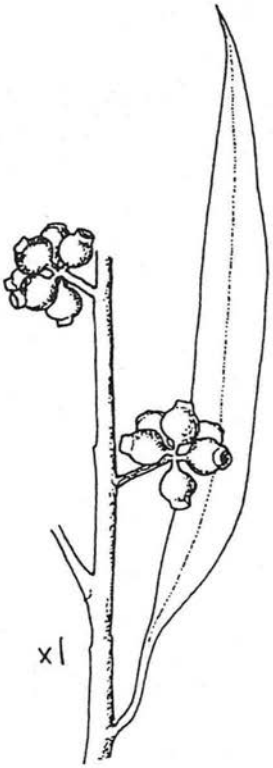
Flowering Period: April to June.

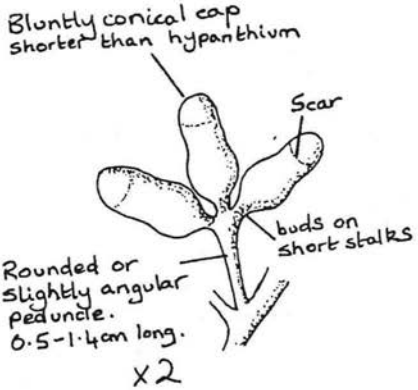
Additional Field Characteristics: A smooth erect tree up to 24 m with smooth to patchy bark, white or grey, falling off in small flakes to expose the salmon pink to bronze fresh bark. The juvenile leaves are hairy, crowded and sessile, linear at first (3 x 0.5 cm) becoming elliptic. Adult leaves are 7-13 x 0.7-1.5 cm with a dense vein network but with apparently no oil glands. The buds are 0.7-0.8 x 0.3-0.4 cm in size. The fruits have a depressed disc and are 0.5-0.7 x 0.5-0.7 cm. The seed is grey.

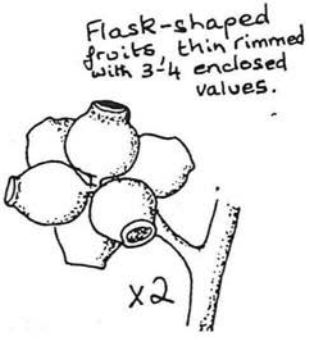
References: Chippendale (1973); Gardner (1942).




Adult leaves green and glossy
Upto 15 smooth buds per inflorescence. Flowers white
x1


x1


Bluntly conical cap shorter than hypanthium
Scar
buds on short stalks
Rounded or slightly angular peduncle. 0.5-1.4cm long.
x2


Flask-shaped fruits, thin rimmed with 3-4 enclosed values.
x2

EUCALYPTUS BURDETTIANA Blakely & Steedman

Burdett's mallee

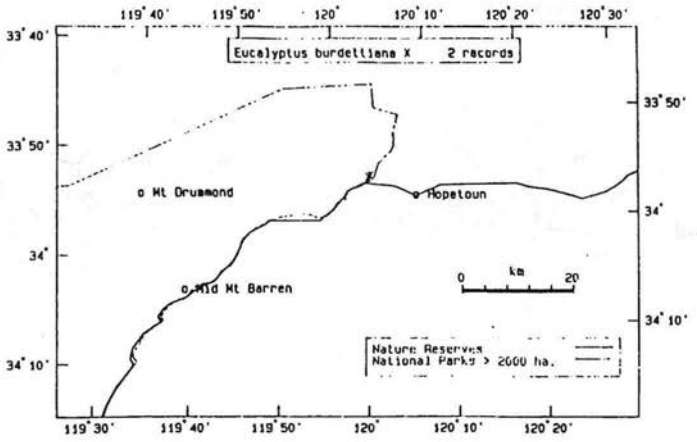
Distribution and Habitat: Known from only two localities over a geographical range of about 40 km, in the East Mount Barren area. Grows on steep slopes in stands of mallee, sometimes associated with *E. coronata*, *E. tetragona* and *E. decurva*. The dense heath of these areas is less than 1 m in height with occasional taller shrubs such as *Banksia oreophila*, *Jacksonia* sp. and *Hakea* sp. It occurs in white sand amongst quartzite rocks.

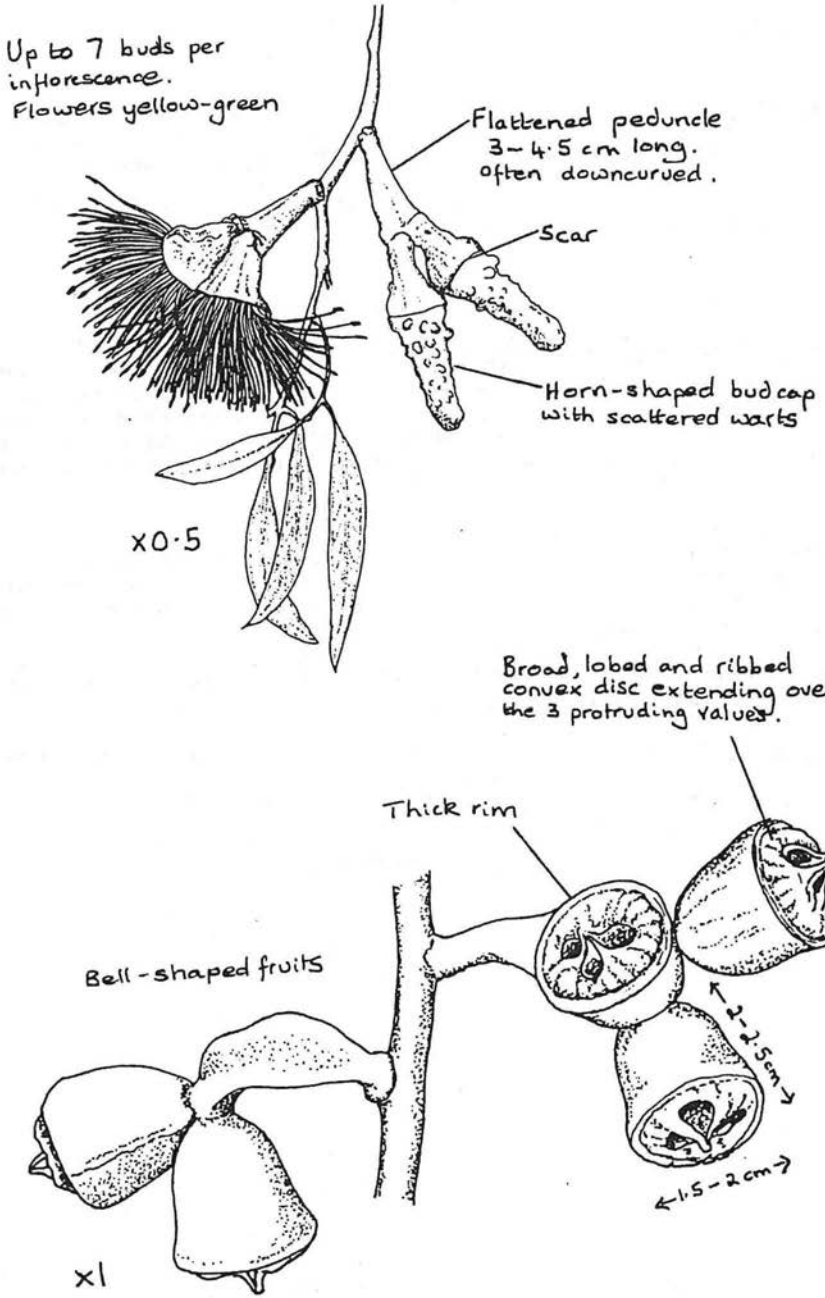
Flowering Period: Irregular throughout the year, often January to March and July and August.

Additional Field Characteristics: A mallee or shrub up to 2 m with smooth dark grey over dark orange bark. In sheltered places it may be more than 2 m. Adult leaves are glossy green to blue-green, 6-9 x 1-1.7 cm, with a dense fine vein network and numerous small oil glands. The buds measure 4-5 x 0.7-1 cm. Inside the bud, the stamens are erect. The valves in the fruit are often united at the tips. Seeds are black, irregular or ovoid, sometimes flattish or flanged.

The species is similar to *E. megacornuta* differing in its lower stature, generally smaller fruits and the bud caps having only a few small warts. It is also similar to *E. newbeyi* but can be distinguished by its warty bud cap (*newbeyi* - smooth).

References: Rye & Hopper (1981); Elliott & Jones (1986); Chippendale (1973); Holliday & Watton (1980); Gardner C.A. (1963); Blakely & Steedman (1939); Kelly S. (1978).




Up to 7 buds per inflorescence. Flowers yellow-green
Flattened peduncle 3–4·5 cm long. often downcurved.
Scar
Horn-shaped bud cap with scattered warts
x0·5
Broad, lobed and ribbed convex disc extending over the 3 protruding valves.
Thick rim
Bell-shaped fruits
2–2·5cm
1·5–2cm
x1

EUCALYPTUS CERASIFORMIS Brooker & Blaxell

Cherry-fruited Mallee

Distribution and Habitat: Known only from a very restricted area (one population), between Hyden and Norseman. Grows in low open forest in association with *E. salubris* and with a dense heath understorey, including *Melaleuca uncinata*. Occurs on reddish loamy soil with surface pea gravel, in a depression on an undulating hilltop.

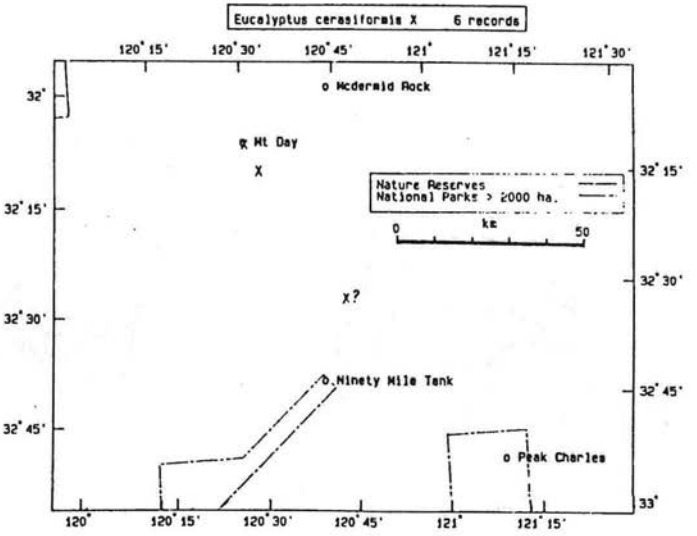
Flowering Period: October - March and mid-August.

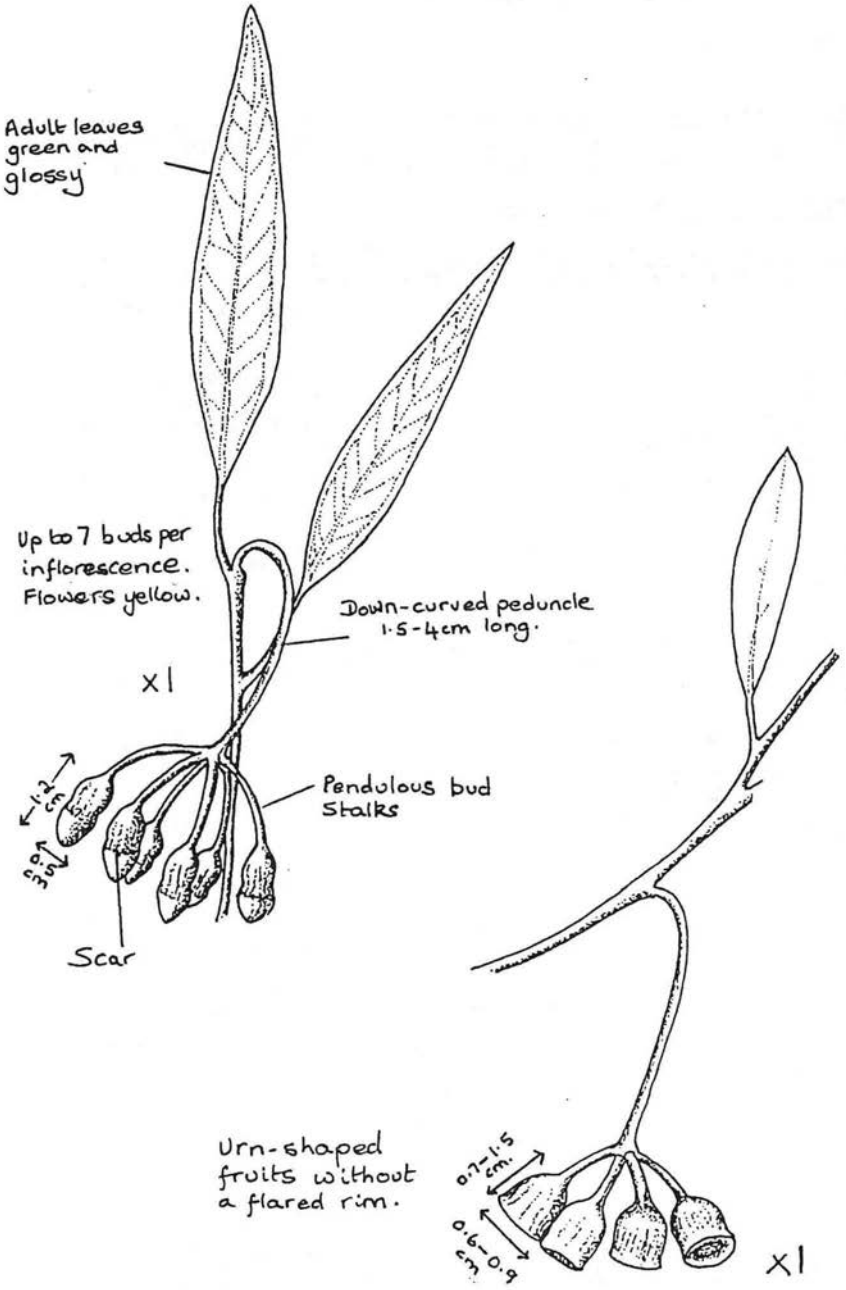
Additional Field Characteristics: A small mallee up to 3 m with smooth grey over salmon pink bark. Juvenile leaves are lanceolate and measure 3-4 x 0.6-1.5 cm. Adult leaves are 5-8 x 0.7-1.2 cm. The ovoid buds are contracted at the middle and have a concial bud cap. The fruits have a thick rim, depressed disc and 4-5 enclosed valves. Seed is brown and ovoid in shape.

The species is closely related to *E. dielsii* from which it differs in its smaller buds and fruits and in the urn-shaped fruits which are without a flared rim. It is also somewhat similar to *E. erythronema* but can be distinguished again by its urn-shaped fruits.

The common name of *E. cerasiformis* is a reference to the pendulous buds looking like bunches of cherries.

References: Brooker and Blaxell (1978); Elliott and Jones (1986).




Adult leaves green and glossy
Up to 7 buds per inflorescence. Flowers yellow.
Down-curved peduncle 1.5-4cm long.
x1
Pendulous bud Stalks
1-2 cm
2-3 cm
Scar
Urn-shaped fruits without a flared rim.
0.7-1.5 cm.
0.6-0.9 cm
x1

EUCALYPTUS CHRYSANTHA Blakely & Steedman

Golden Mallee

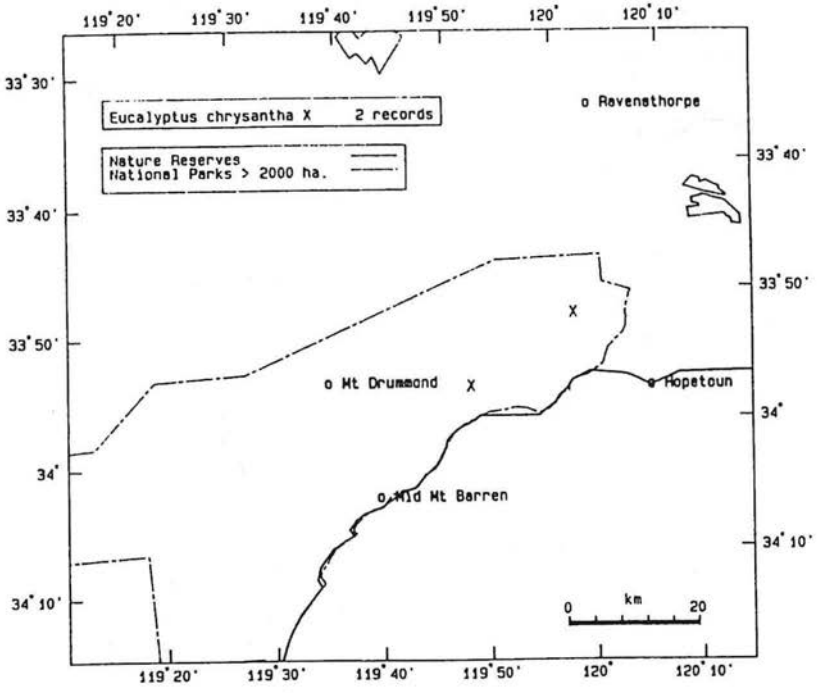
Distribution and Habitat: Known from two localities over a geographic range of 60 km in the Fitzgerald River National Park. Occurs on rocky outcrops, where it grows in sand.

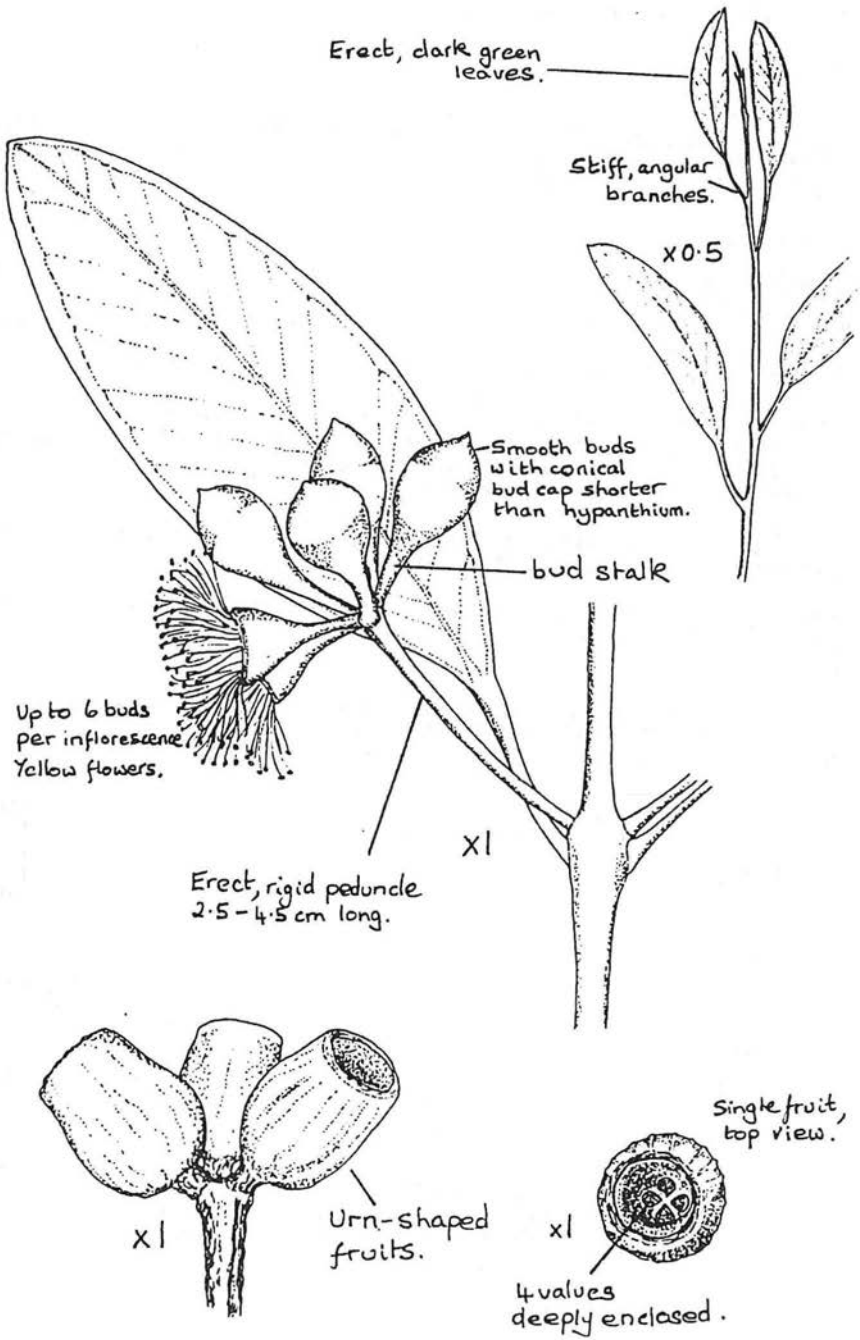
Flowering Period: November.

Additional Field Characteristics: A mallee up to 3 m high with rigid angular branches. The adult leaves are 5-10 x 1-3.5 cm. Buds measure 1.7 x 1-1.2 cm and the fruits are 2.2-2.7 x 1.5-2 cm.

The species is thought to be a hybrid of *E. preissiana* and *E. sepulcralis*. It differs from the former by its urn-shaped fruits which are also smaller than the typical bell-shaped fruits of *preissiana*. From *E. sepulcralis* it differs in its stiff angular branches, erect rigid peduncles and yellow flowers (*sepulcralis* - pendulous branches and peduncles).

References: Blakely, McKie and Steedman (1938).




Erect, dark green leaves.
Stiff, angular branches.
x0·5
Smooth buds with conical bud cap shorter than hypanthium.
bud stalk
Up to 6 buds per inflorescence. Yellow flowers.
x1
Erect, rigid peduncle 2·5 – 4·5 cm long.
x1
Urn-shaped fruits.
Single fruit, top view.
x1
4 valves deeply enclosed.

EUCALYPTUS CORONATA Gardner

Crowned Mallee

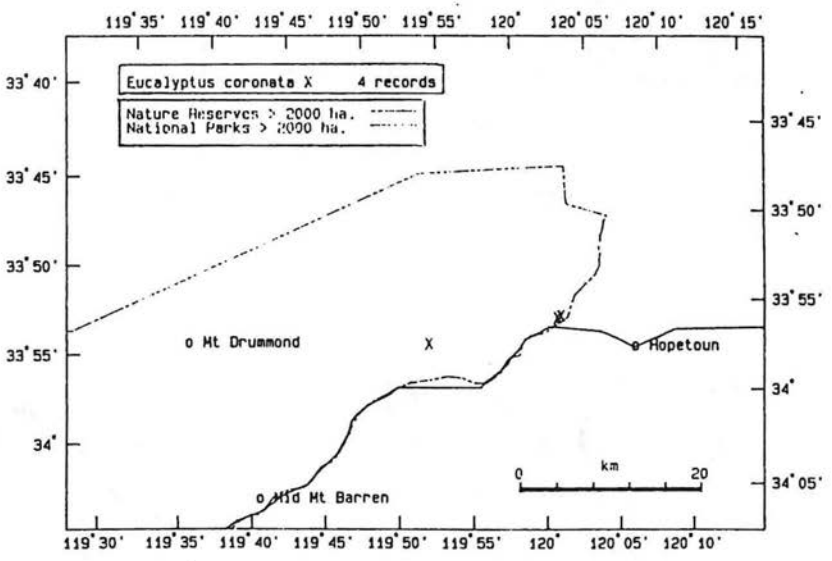
Distribution and Habitat: Restricted to hills from Middle Mount Barren to East Mount Barren. Grows in white sand amongst quartzite rocks on hillsides or summits.

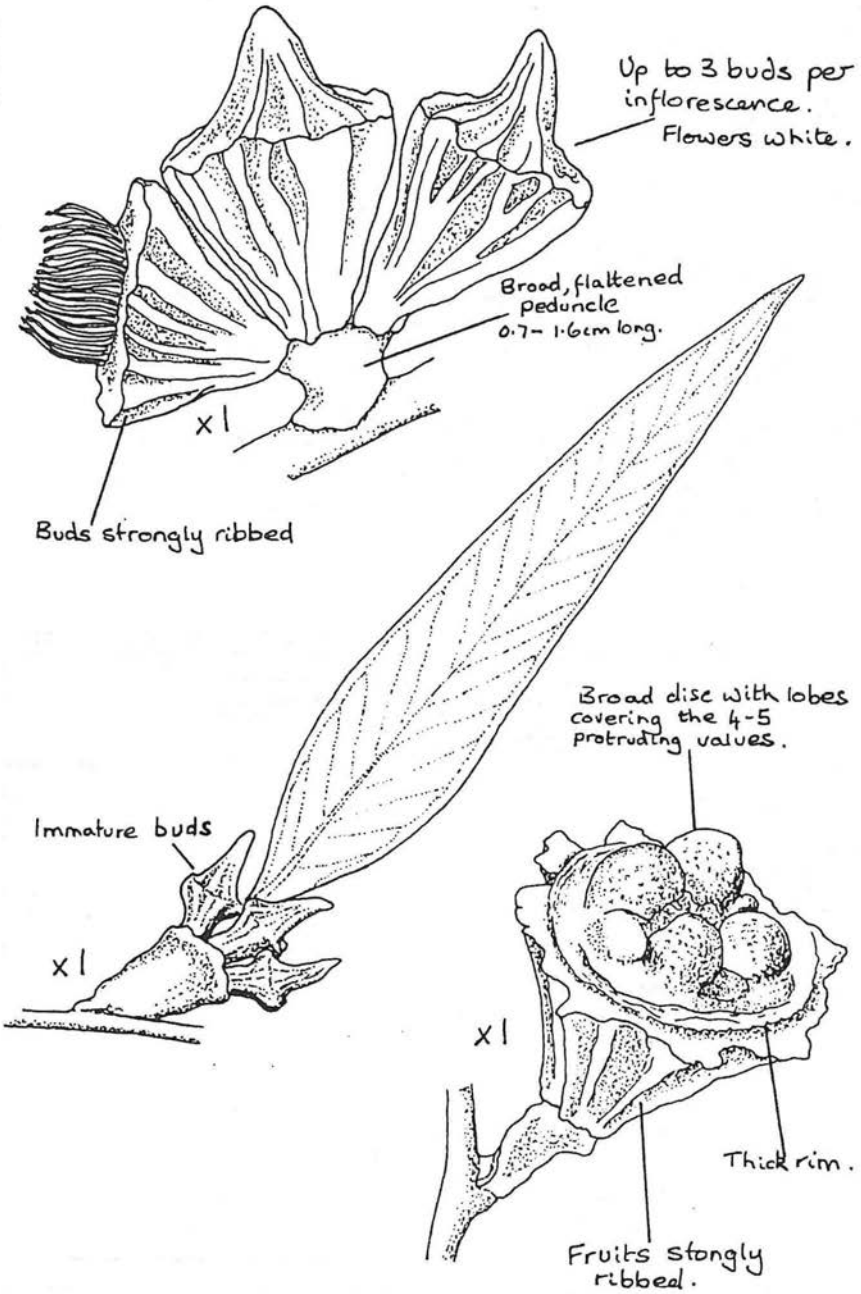
Flowering Period: July - August.

Additional Field Characteristics: A small mallee with smooth grey bark over orange. Juvenile leaves are elliptic in shape, 15 x 11 cm, light green and with crinkly edges. Adult leaves are 8-12 x 1.3-2.7 cm, lanceolate in shape, slightly glossy and green to blue-green in colour, with a moderate to dense vein network and scattered oil glands. Buds measure 2.5-5 x 2.2-3.5 cm. The stamens are in a continuous ring and are inflexed in the bud. The fruits measure 1.9-2.3 x 3.3-5.2 cm. The seed is shining and black, pyramidal in shape and ribbed on the underside.

The species is similar to *E. aquilina*, differing in its strongly ribbed buds and fruits.

References: Rye & Hopper (1981); Chippendale (1973); Gardner (1979); Kelly (1977).




Up to 3 buds per inflorescance.
Flowers white.
Broad, flattened peduncle
0.7 - 1.6cm long.
x1
Buds strongly ribbed
Broad disc with lobes covering the 4-5 protruding values.
Immature buds
x1
x1
Thick rim.
Fruits stongly ribbed.

EUCALYPTUS 'CRE' aff. diptera

Large-fruited gimlet

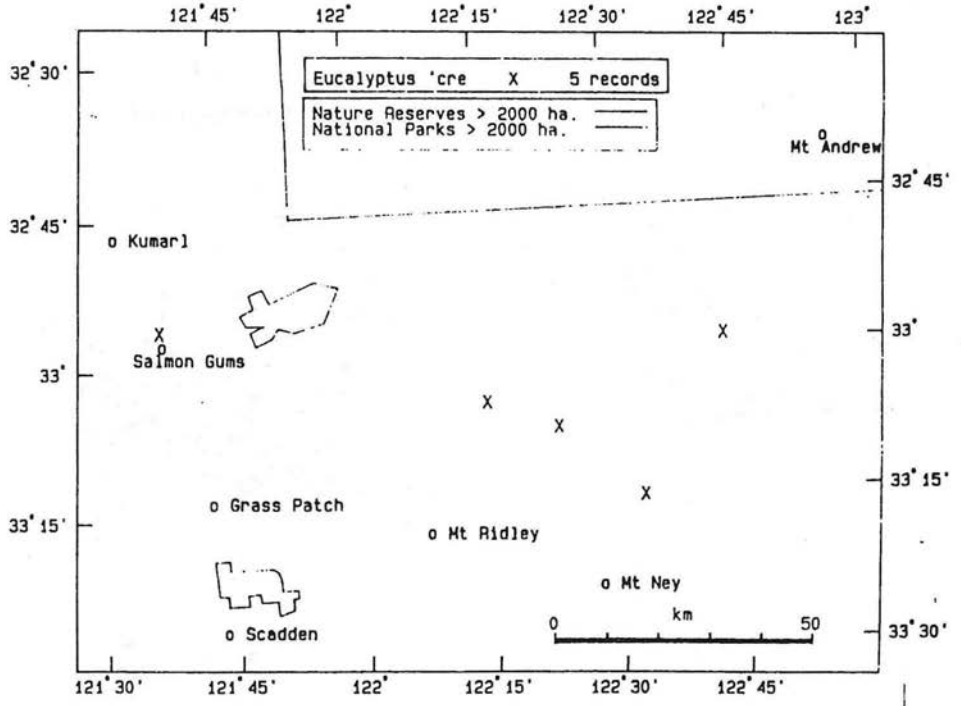
Distribution and Habitat: Restricted to an area east of Salmon Gums and north of Mt Ney over a range of c. 100 km.

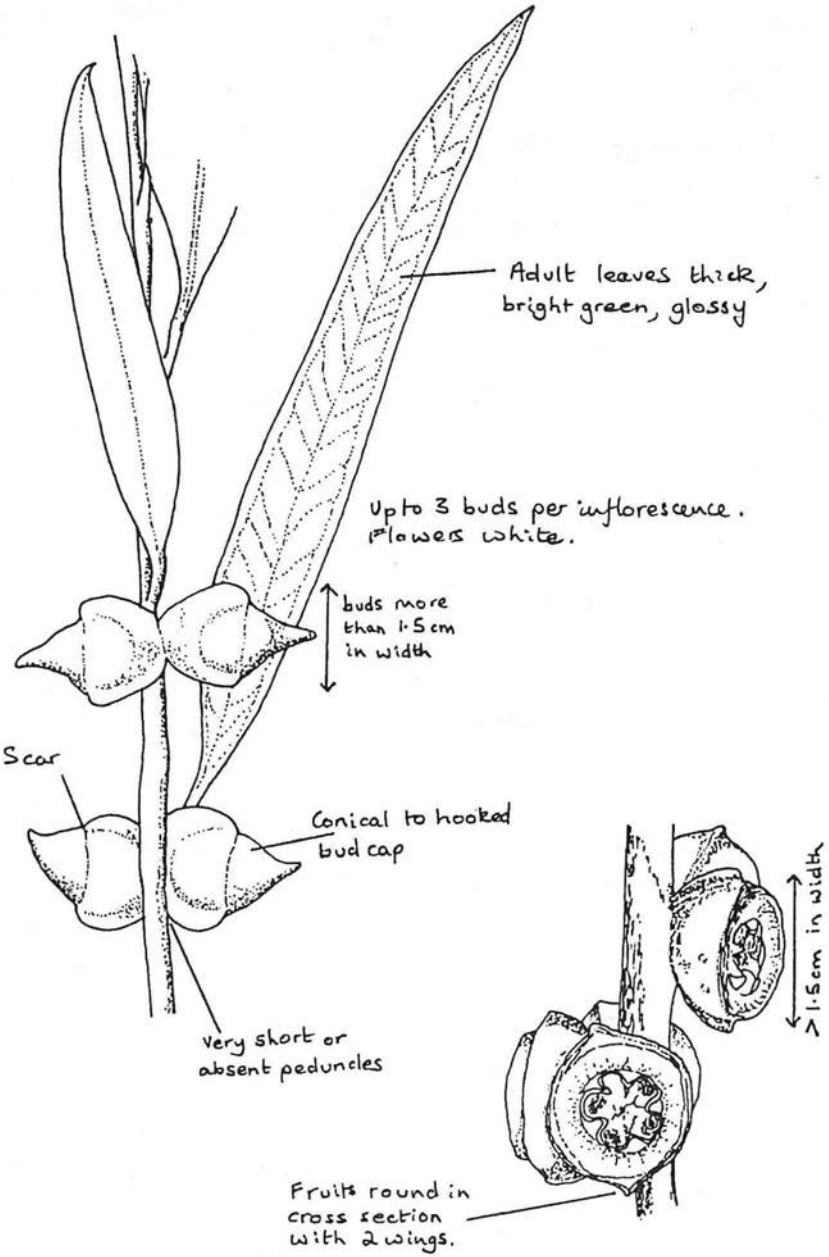
Flowering Period: Not known.

Additional Field Characteristics: A mallet with smooth bark and stems coarsely fluted, grey to deep coppery in colour. The leaves have a sparse vein network and numerous, large oil glands. The fruits have a convex disc, thick rim and 4-6 protruding valves. The flowers are white. Seed is yellow-brown, flattish or slightly angular and pitted like honeycomb.

This species is related to *E. diptera*, *E. 'ter'* and *E. 'jim'*. From the first two it differs in its larger buds and fruits which are more than 1.5 cm in diameter. It can be distinguished from *E. 'jim'* by being 3-fruited (*'jim'* has 7) and by its operculum which is rounded with a sharp point rather than conical.

References: Burgman (1985); Brooker & Kleinig (ms).




Adult leaves thick, bright green, glossy
Up to 3 buds per inflorescence. Flowers white.
buds more than 1·5 cm in width
Scar
Conical to hooked bud cap
Very short or absent peduncles
>1·5 cm in width
Fruits round in cross section with 2 wings.

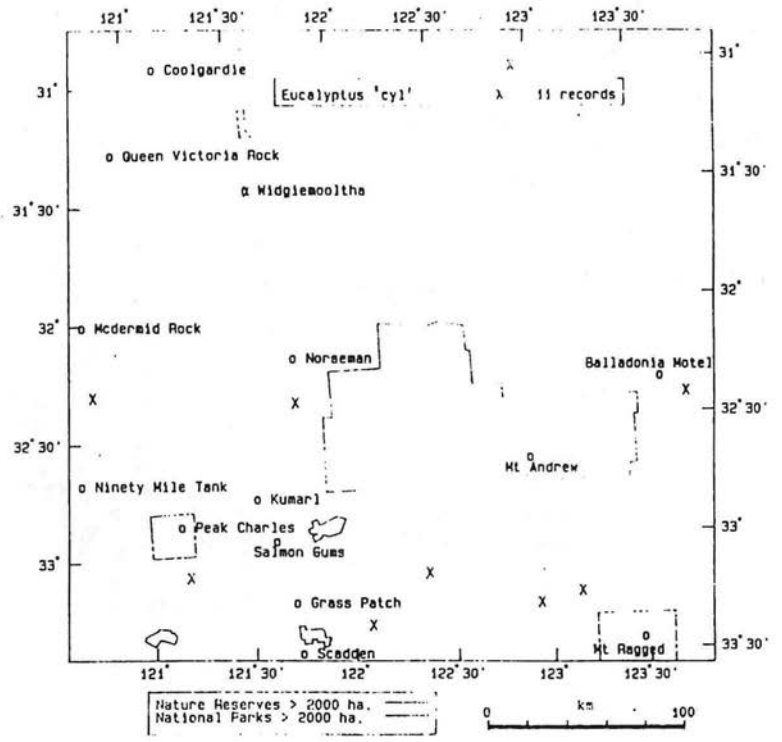
EUCALYPTUS 'CYL' aff. oleosa

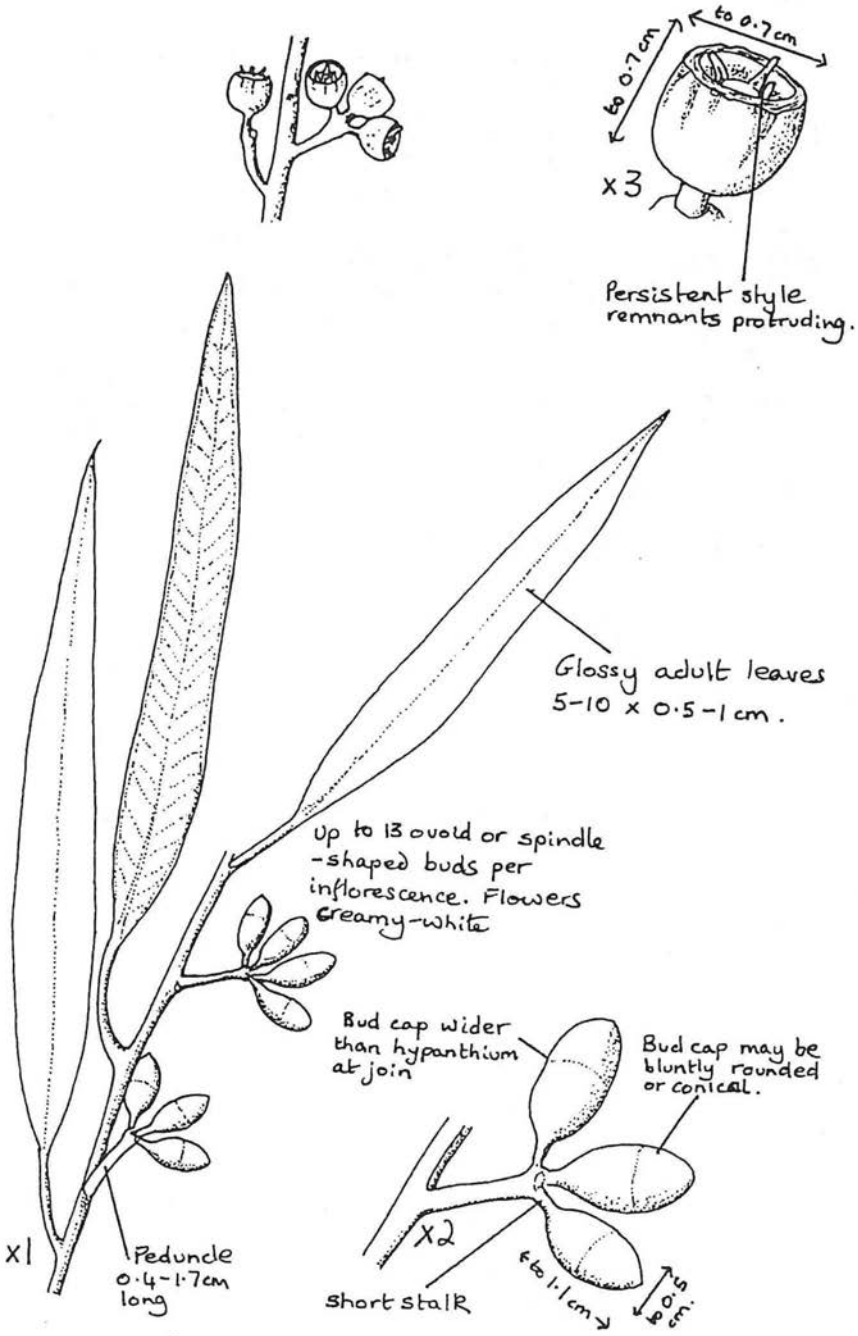
Distribution and Habitat: Has a very scattered distribution between Zanthus, Balladonia, Scadden and Mt. Day. Habitat unrecorded.
Flowering Period: May - July.

Additional Field Characteristics: A mallee with rough persistent bark over the lowest 1-2 m, then smooth, yellowish, pink or grey above. Juvenile leaves are linear at first, 4 x 0.5 cm, becoming elliptic to broad lanceolate and up to 10 x 3 cm. Inside the bud, the stamens are variously flexed. They have globoid anthers.

The species is similar to *E. oleosa* and *E. longicornis*. However, *E. oleosa* has smaller buds (0.5-0.8 x 0.2-0.3 cm) and fruits (0.4-0.6 x 0.4-0.6 cm). Also, its bud cap is generally narrower than the hypanthium at the join. *E. longicornis* is differentiated by its conical to horn-shaped bud caps which are up to twice as long as the hypanthium.

References: Brooker and Kleinig




to 0.7cm
to 0.7cm
x3
Persistent style remnants protruding.
Glossy adult leaves 5-10 x 0.5-1 cm.
Up to 13 ovoid or spindle -shaped buds per inflorescence. Flowers creamy-white
Bud cap wider than hypanthium at join
Bud cap may be bluntly rounded or conical.
x1
Peduncle 0.4-1.7cm long
x2
short stalk
to 1.1cm
to 0.8cm

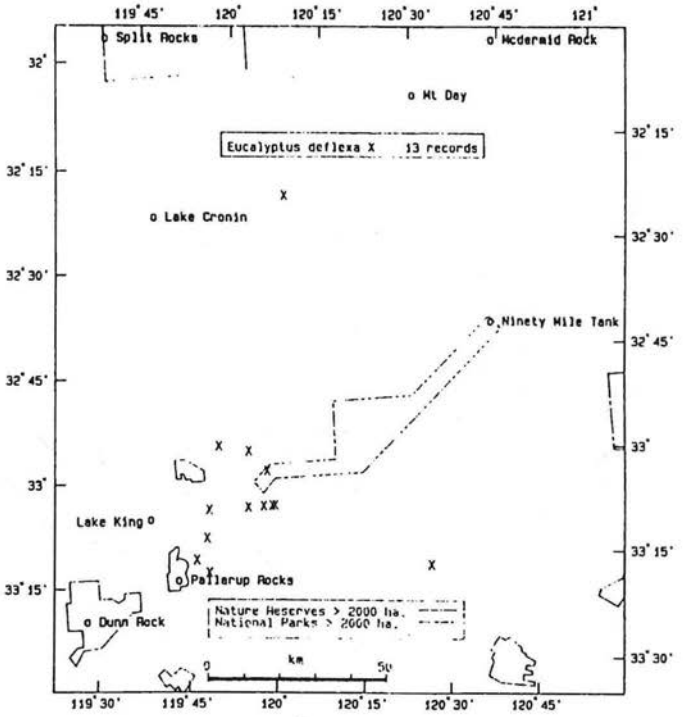
EUCALYPTUS DEFLEXA Brooker

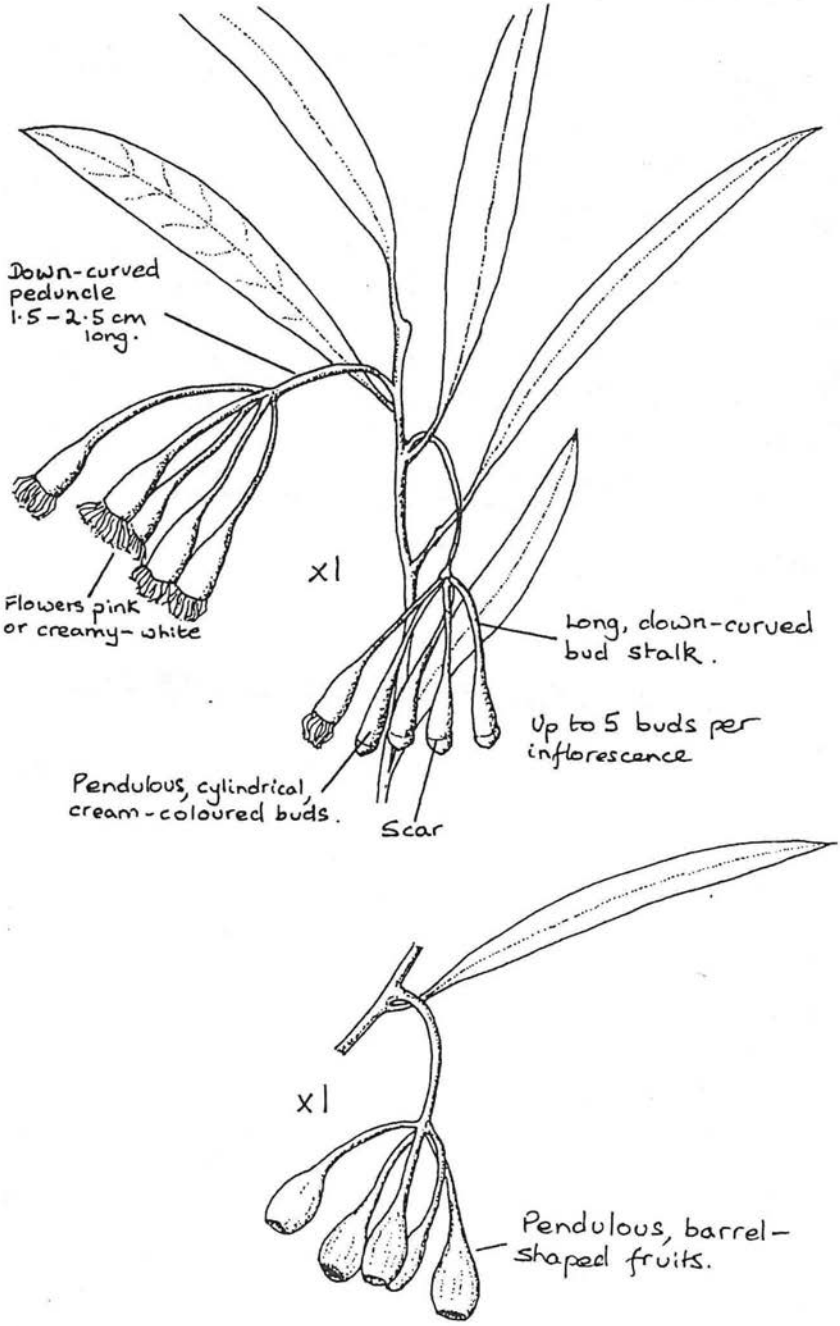
Distribution and Habitat: Occurs from E of Lake King north east to Mt Day. It grows in sandy soils, on undulating plains often with lateritic gravel, and grows in open shrub mallee in association with *E. eremophila, E. flocktoniae, E. leptophylla, E. incrassata* and *E. pileata.*

Flowering Period: August - October.

Additional Field Characteristics: A small mallee to 3 m with smooth, grey bark. Juvenile leaves are lanceolate and green 5 x 1.5 cm. Adult leaves are narrow-lanceolate or curved, 4.5-9 x 0.4-1 cm, slightly glossy and green with a dense vein network and scattered oil glands. The buds measure 0.8-1.2 x 0.4-0.5 cm. The bud cap may be hemispherical or slightly beaked. The stamens are strongly inflexed in the bud. The fruits are 0.8-1.3 x 0.6-0.8 cm. They have a fairly thick rim, depressed disc and four valves which are deeply enclosed. The seed is whitish grey in colour and ovoid in shape.

References: Brooker (1976).




Down-curved peduncle 1·5 – 2·5 cm long.
x1
Flowers pink or creamy-white
Long, down-curved bud stalk.
Up to 5 buds per inflorescance
Pendulous, cylindrical, cream-coloured buds.
Scar
x1
Pendulous, barrel-shaped fruits.

EUCALYPTUS 'DEL' aff. salmonophloia

Distribution and Habitat: Known from only one location just south of Peak Charles National Park. Habitat unrecorded.

Flowering Period: Unknown.

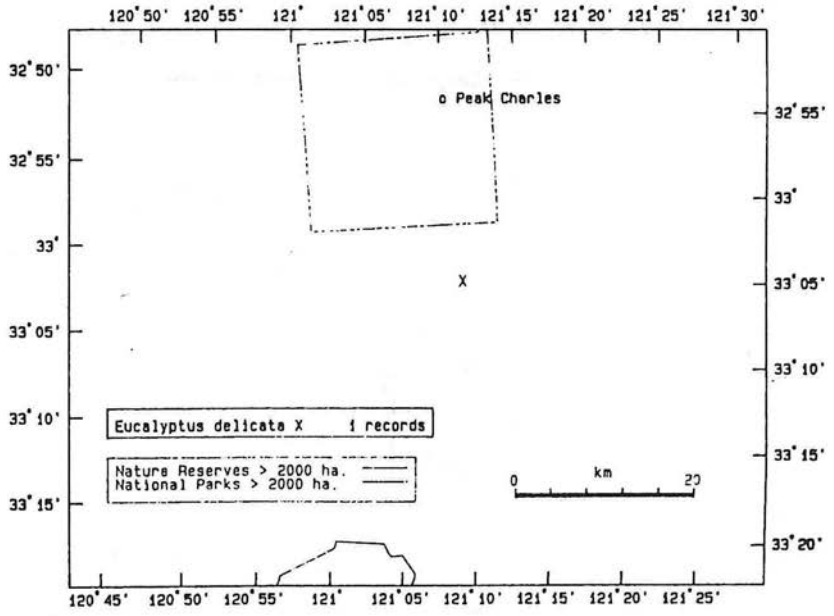
Additional Field Characteristics: A tree to 8 m. Bark rough at base.

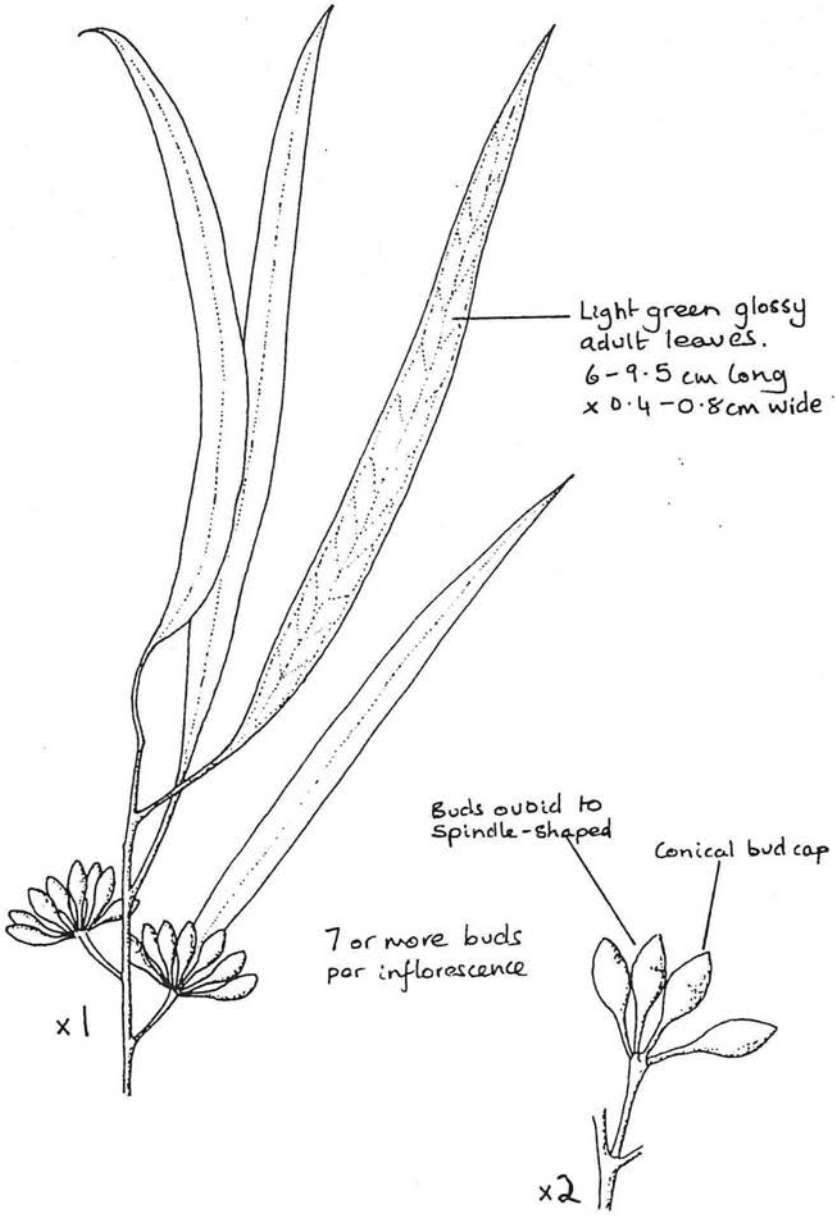
Adult leaves are petiolate, narrow lanceolate, 6-9.5 x 0.4-0.8 cm, light green and glossy with dense venation and numerous oil glands.

Inflorescences are axillary, unbranched, 7 or more flowered with peduncles terete to flattened, 0.6-1 cm long. Buds are stalked, ovoid to spindle-shaped with conical bud caps. No description of the fruits was available.

This species is related to *E. salmonophloia* but differs in its rough bark, narrower leaves and conical bud caps.

References: Brooker (pers. comm.); Hopper (pers. comm.).



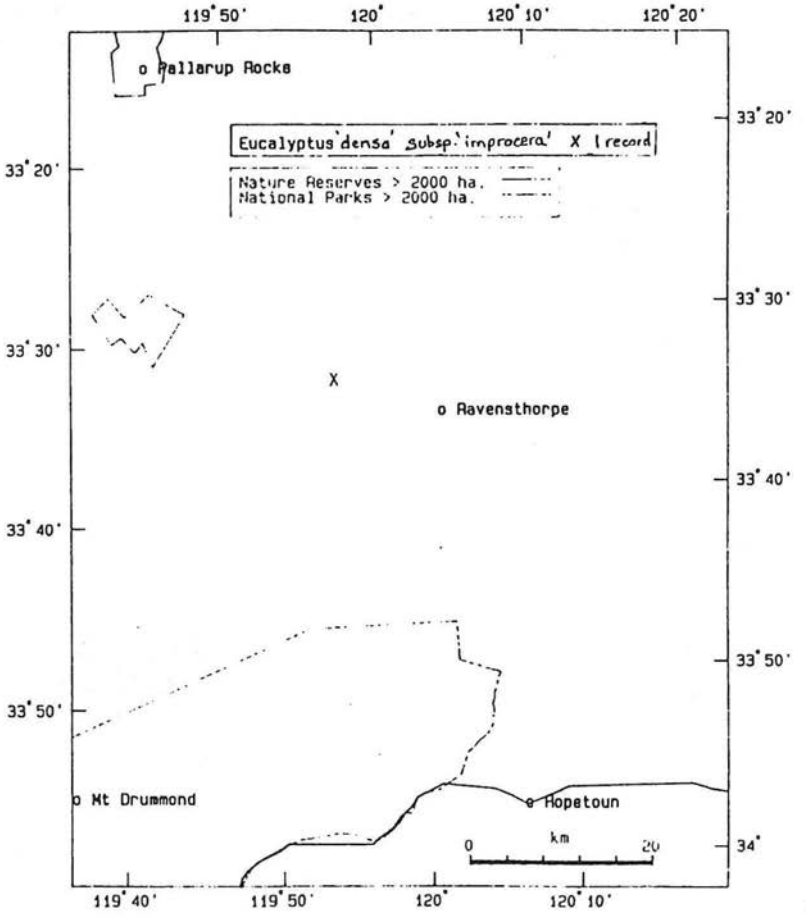

Light green glossy adult leaves.
6-9·5 cm long
x 0·4-0·8cm wide
Buds ovoid to spindle-shaped
Conical bud cap
7 or more buds per inflorescence
x1
x2

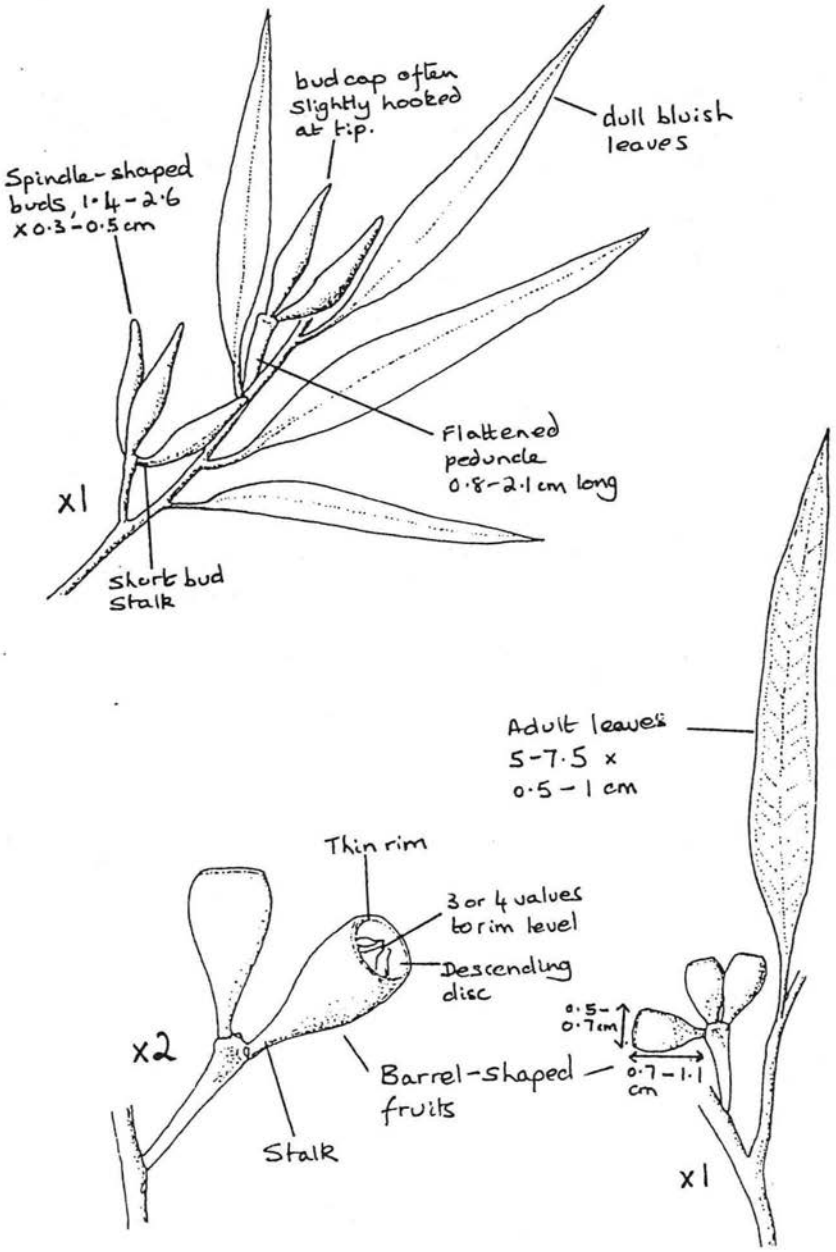
EUCALYPTUS 'DENSA' Subsp. 'IMPROCERA' ined.

Distribution and Habitat: This is a rare subspecies confined to the valley slopes of the Phillips River north west of Ravensthorpe.

Flowering Period: Unknown.

Additional Field Characteristics: A low, spreading mallee to 1.5 m tall by 2.5 m across. It is allied to *E. gardneri* and has similar buds and fruits differing mostly in its spreading form (*gardneri* - a mallet). The adult leaves are petiolate, alternating and lanceolate and measure 5-8 x 0.5-1 cm (narrower than *E. gardneri* at 5-9 x 1.5-2.3 cm).




bud cap often slightly hooked at tip.
dull bluish leaves
Spindle-shaped buds, 1·4-2·6 x 0·3-0·5 cm
Flattened peduncle 0·8-2·1 cm long
x1
Short bud stalk
Adult leaves 5-7·5 x 0·5-1 cm
Thin rim
3 or 4 valves to rim level
Descending disc
x2
Barrel-shaped fruits
Stalk
0·5-0·7 cm
0·7-1·1 cm
x1

EUCALYPTUS DESMONDENSIS Maiden and Blakely

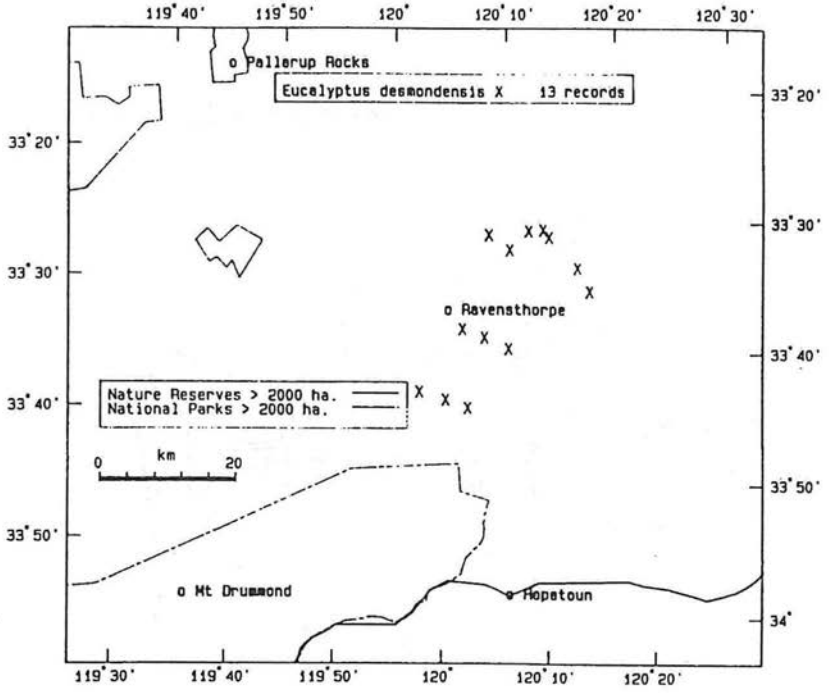
Desmond Mallee

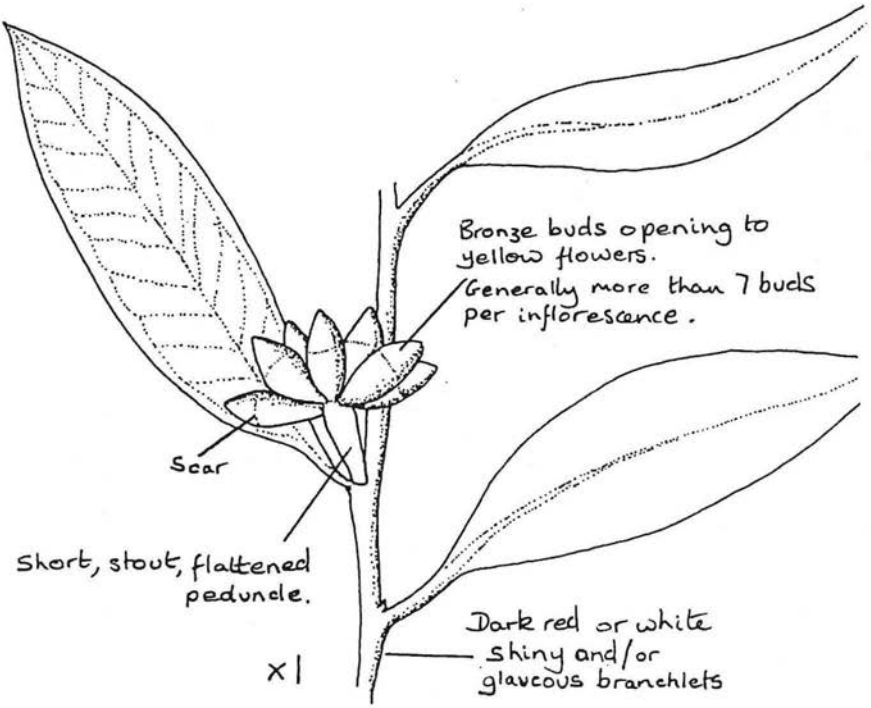
Distribution and Habitat: Has a restricted distribution of c. 35 km in the Ravensthorpe area. Grows on stony hillsides in coarse sandy soils, usually in low scrub, sometimes associated with *Melaleuca uncinata*.

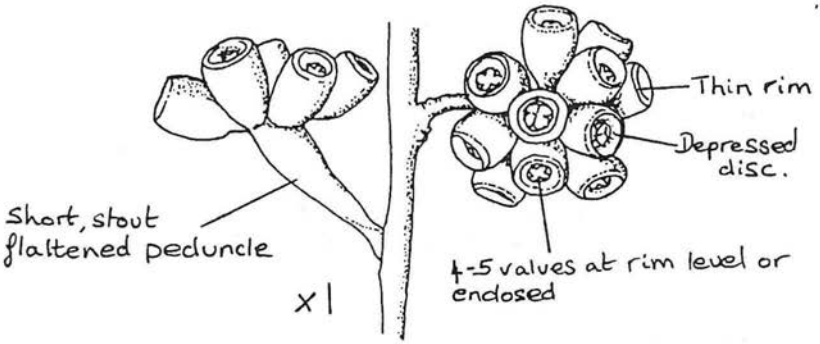
Flowering Period: Irregular throughout the year.

Additional Field Characteristics: A small, slender mallee to 4.5 m in height and with a thin drooping crown. The bark is smooth and light grey, often with some rough flakey bark at the base. Juvenile leaves are ovate to cordate, 8 x 6 cm. Adult leaves are slightly glossy with numerous scattered oil glands and measure 7-10 x 1.3-3.5 cm. Buds are 1.1-1 x 0.4-0.6 cm, spindle-shaped with a conical or slightly elongated bud cap and are almost sessile. The stamens are inflexed in the bud. Fruits may be cylindrical, cup or bell-shaped and measure 0.6-1.1 x 0.6-0.9 cm. Seeds are whitish grey, smooth and almost round.

References: Kelly S. (1977); Rye & Hopper (1981); Elliott & Jones (1986); Maiden & Blakely (1925); Chippendale (1973); Gardner (1960).







Fruits are cylindrical, cup or bell-shaped.

EUCALYPTUS DIELSII Gardner

Cap-fruited mallee

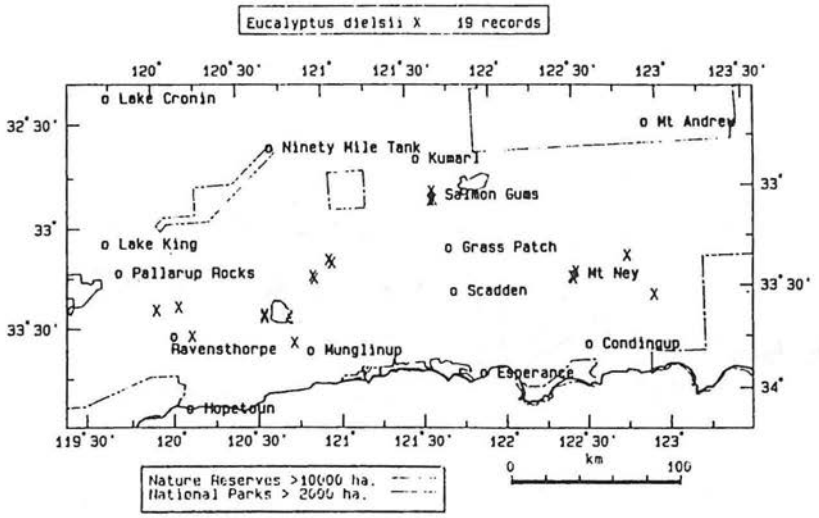
Distribution and Habitat: Has a scattered occurrence from the Ravensthorpe area through to north-east of Esperance. It can be locally abundant, and occurs on low clayey ground such as in valleys and creek beds. Associated species include *E. annulata*, *E. diptera* and *E. calycogona*.

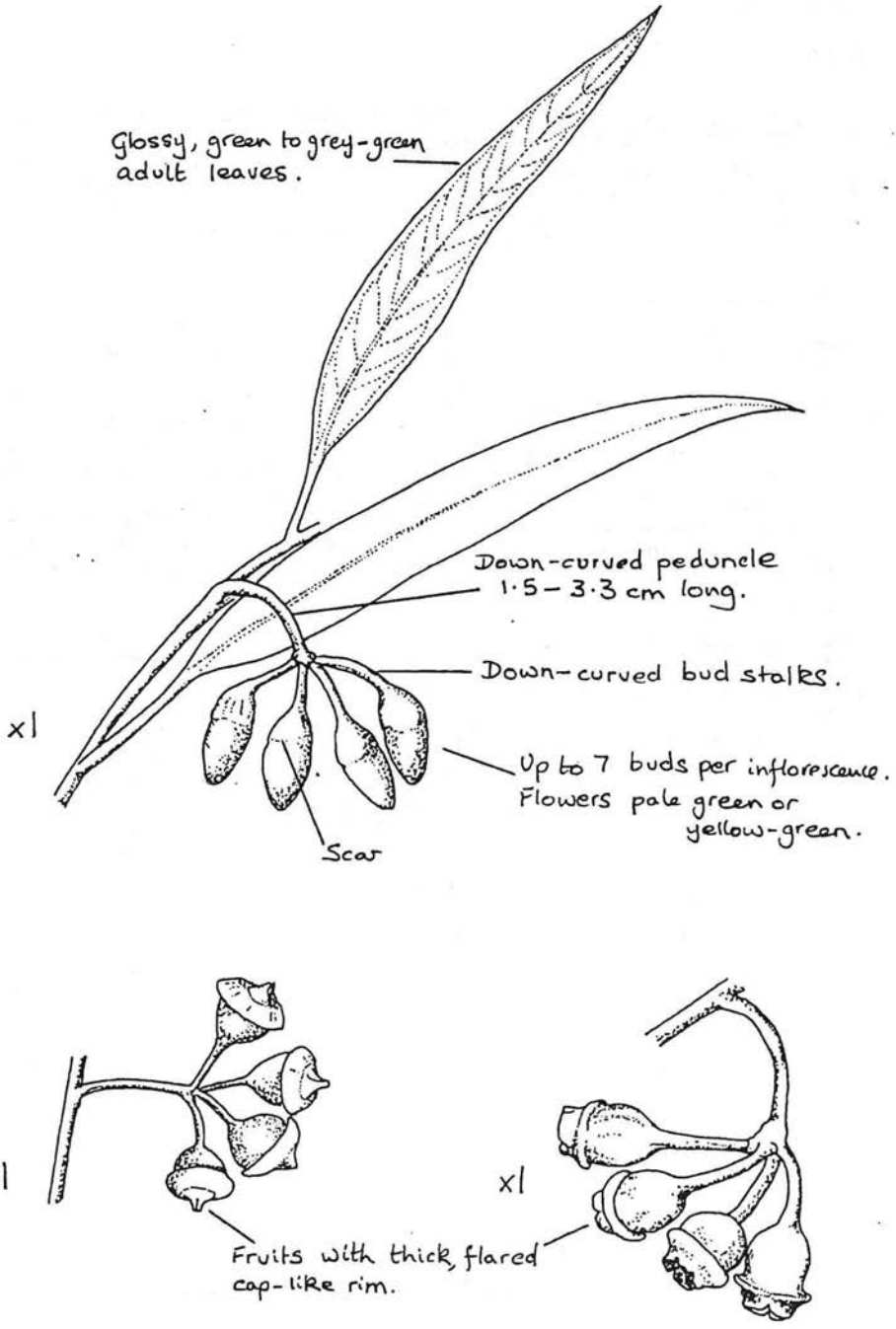
Flowering Period: December-January.

Additional Field Characteristics: A mallee or mallet up to 4.5 m, with smooth bark, grey or greenish over whitish grey to coppery. The juvenile leaves have very small hairs on the stems and the underside of the midrib. They are ovate to cordate, dull and green, 8 x 6 cm. Adult leaves are 7.5-12 x 1-2.2 cm, with a sparse vein network and numerous oil glands. The oval buds have a conical or slightly beaked bud cap and measure 1.1-1.7 x 0.5-0.9 cm. The stamens are inflexed in the bud. Fruits are cup shaped, 0.8-1.2 x 0.9-1.2 cm, with 4 or 5 valves level with the rim or slightly protruding. The seed is dark grey-brown.

The species is similar to *E. erythronema*, differing in its fruits with distinctive cap-like rims and in its flower colour (*erythronema* - bright red, pink or creamy white).

References: Chippendale (1973); Gardner 1923 & 1979.




Glossy, green to grey-green adult leaves.
Down-curved peduncle 1·5 – 3·3 cm long.
Down-curved bud stalks.
x1
Up to 7 buds per inflorescence. Flowers pale green or yellow-green.
Scar
x1
Fruits with thick, flared cap-like rim.
x1

EUCALYPTUS EFFUSA Brooker

Rough-barked gimlet

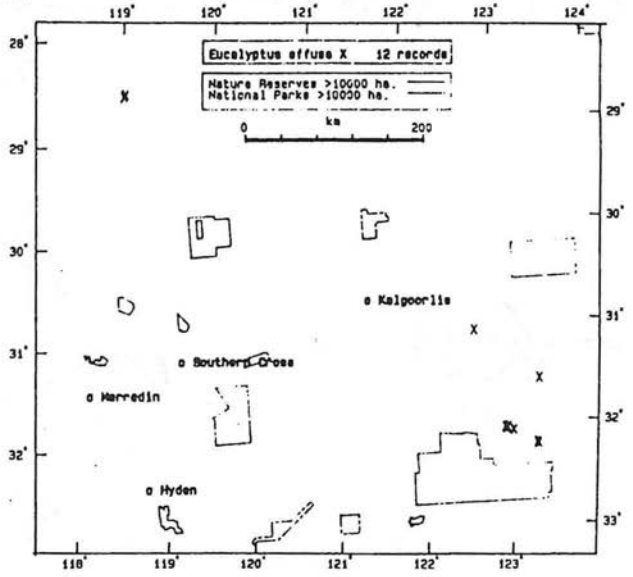
Distribution and Habitat: Has a restricted distribution from the Fraser Range eastwards towards Balladonia, and with an outlying population to the S.W. of Sandstone. Grows in flat country or on low hilly terrain, on sandy or clayey red loams. Often common in open shrub mallee with heath and associated species include *E. leptophylla* and *E. grossa*.

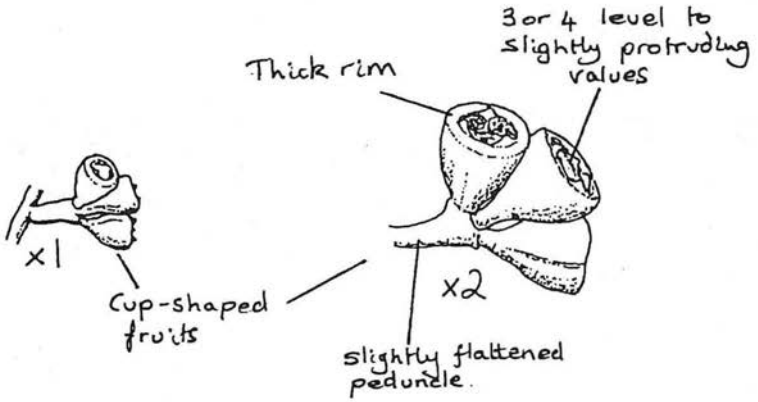
Flowering Period: January - March.

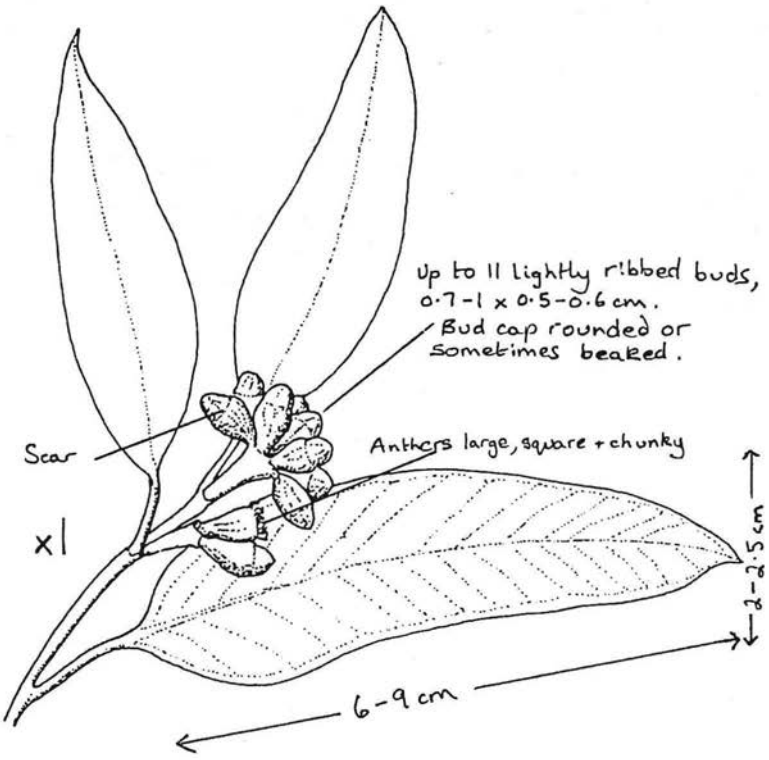
Additional Field Characteristics: Usually a small straggling mallee but may be up to 6 m tall. The small mallees have rough flaky or ribbon bark at the base, the upper parts are smooth and grey to coppery. Taller plants are rough barked over most of the stem. Juvenile leaves are lanceolate-ovate, 10 x 3 cm and green in colour. Adult leaves have a sparse vein network with scattered oil glands and are 5.5-10 x 0.6-1.3 cm. Buds are broadly spindle-shaped, 0.6-0.9 x 0.3-0.4 cm. The stamens are inflexed in the bud. Fruits measure 0.4-0.7 x 0.4-0.6 cm. The seed is yellow brown, cuboid in shape and pitted like honeycomb.

The species is similar to *E. salubris* and *E. campaspe* but differs in its rough bark at the base, its straggly habit and its lack of a fluted trunk.

References: Brooker (1976).




3 or 4 level to slightly protruding values
Thick rim
x1
Cup-shaped fruits
x2
slightly flattened peduncle.


Up to 11 lightly ribbed buds, 0·7-1 x 0·5-0·6 cm.
Bud cap rounded or sometimes beaked.
Scar
Anthers large, square + chunky
x1
2-2·5 cm
6-9 cm

EUCALYPTUS ERECTIFOLIA Brooker & Hopper

Stirling Range Mallee

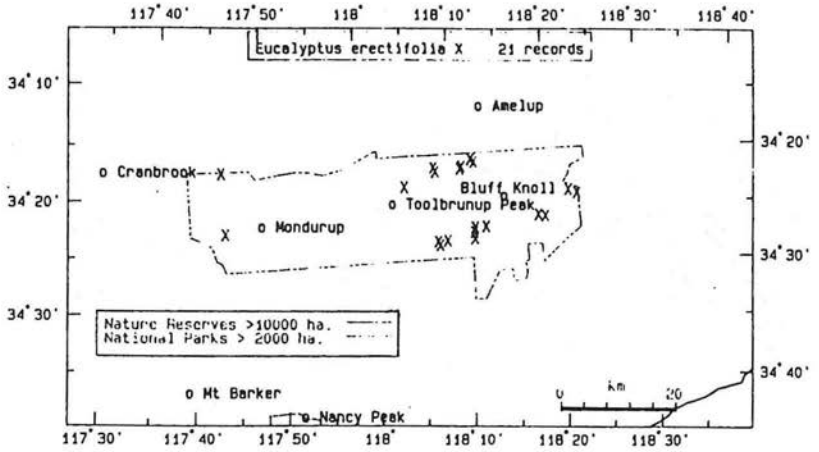
Distribution and Habitat: Known from fifteen isolated populations over a geographical range of c. 60 km within the Stirling Range National Park. Grows in open mallee with associated species including *E. decurva*, *E. marginata*, *E. tetragona*, *E. preissiana*, *E. buprestium*, *E. decipiens*, *E. pachyloma*, *E. falcata* and emergent shrubs such as *Lambertia inermis*, *L. ericifolia*, *Hakea cucullata*, *Banksia coccinea* and *Dryandra sessilis*.

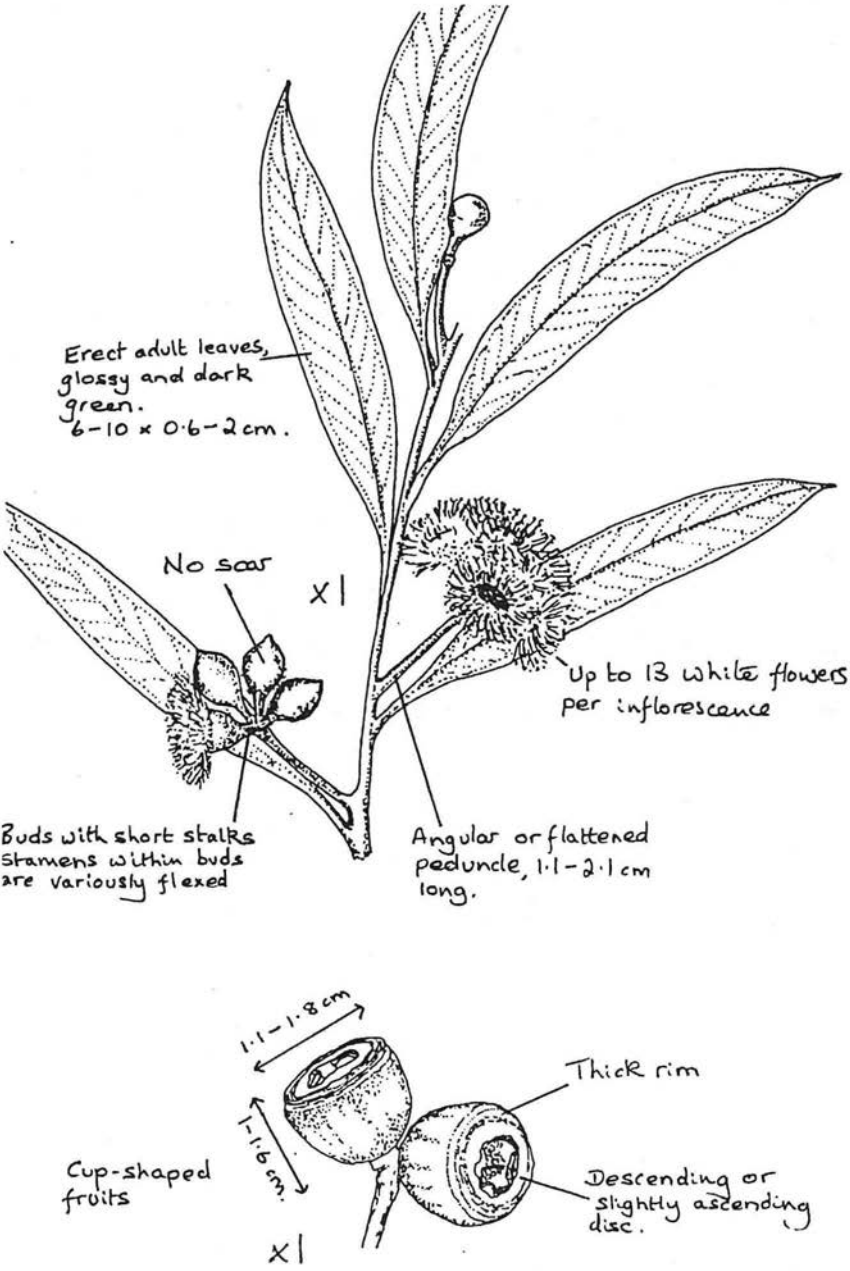
Flowering Period: March - April.

Additional Field Characteristics: A mallee up to 3 m tall with smooth grey bark, and stems steeply branching. Juvenile leaves are dull, light green, elliptic to ovate and up to 12 x 6 cm. The erect adult leaves measure 6-10 x 0.6-2 cm. They have a dense venation and a few oil glands. The spindle-shaped buds are 0.9-1.3 x 0.5-0.7 cm. The seed is shining and brown with side wings.

The species has similarities with *E. buprestium* and *E. pachyloma*, which it grows with. *E. erectifolia* can be distinguished from *E. buprestium* by its larger more erect leaves, and by its smaller, hemispherical fruits (buprestium - globose fruits, 1.9-2.3 x 1.7-2.5 cm). *E. pachyloma* also has erect leaves, but its usually stalkless buds and fruits with a broad ascending disc distinguish it from *E. erectifolia*.

References: Brooker & Hopper (1986).




Erect adult leaves, glossy and dark green. 6–10 × 0·6–2 cm.
No scar
X1
Up to 13 white flowers per inflorescence
Buds with short stalks stamens within buds are variously flexed
Angular or flattened peduncle, 1·1–2·1 cm long.
1·1–1·8 cm
1–1·6 cm
Thick rim
Cup-shaped fruits
Descending or slightly ascending disc.
X1

EUCALYPTUS X ERYTHRANDRA Blakely & Steedman

Rosebud gum

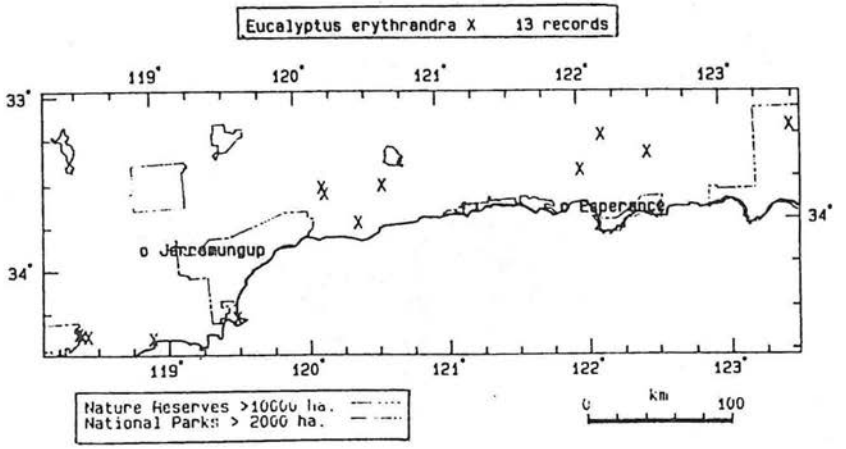
Distribution and Habitat: Occurs from the Stirling Range to Mt Ragged, with a very scattered distribution over this geographical range of about 400 km. Grows on sand plain, in white sand, sandy clay or loam, in scrub heath, sometimes with other mallee species including *E. angulosa, E. tetraptera, E. pachyloma, E. falcata, E. incrassata, E. uncinata, E. tetragona, E. micranthera, E. lehmannii, E. redunca.*

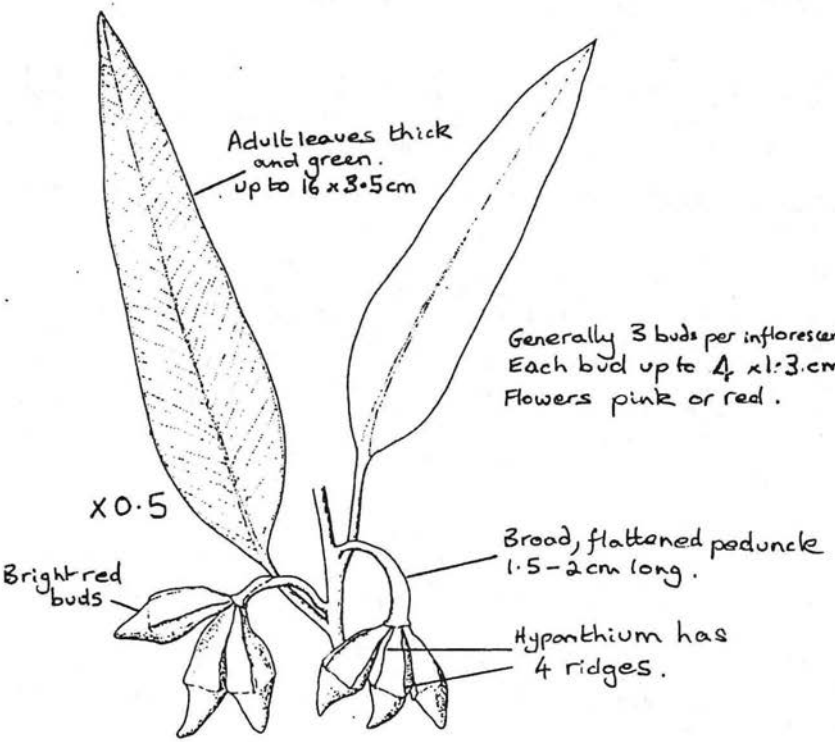
Flowering Period: Irregular, mainly March - October.

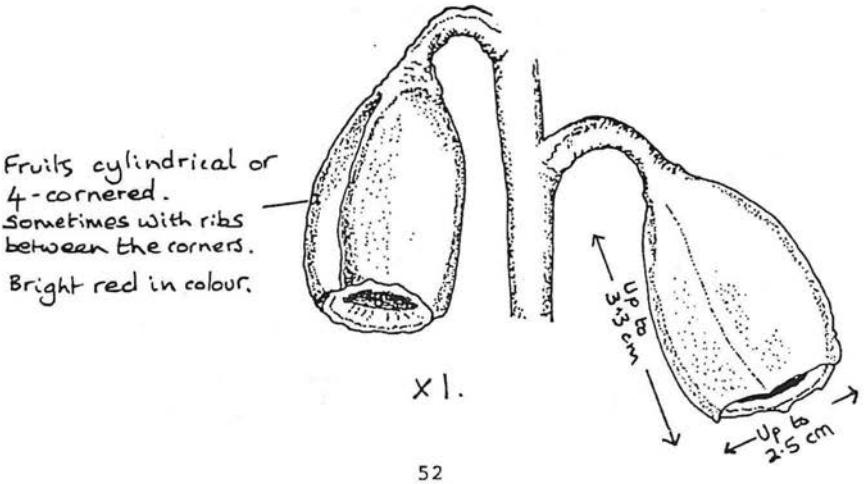
Additional Field Characteristics: A mallee 2-2.5 m high with a few smooth grey stems. The buds are up to 4 x 1.3 cm. The fruits measure up to 3.3 x 2.5 cm. They have a narrow rim, depressed disc and enclosed valves. The seeds are black or dark brown and winged around the edge.

E. x *erythrandra* is a hybrid between *E. tetraptera* and *E. angulosa*. From the former, it can be distinguished by its generally narrower leaves, buds and fruits (*E. tetraptera*: leaf 15-25 x 5-7 cm, bud 2.7-5.5 x 1.8-3.4, fruit 4-5 x 3-4.2 cm). It may be distinguished from *E. angulosa* by the latter having both buds and fruits with longitudinal ribbing rather than 4 angles. Also, *E. angulosa* has yellow flowers and up to 7 flowers per inflorescence.

References: Chippendale (1973); Beard (1973).




Adult leaves thick and green. up to 16 x 3·5 cm
Generally 3 buds per inflorescence. Each bud up to 4 x 1·3 cm. Flowers pink or red.
X0·5
Broad, flattened peduncle 1·5 – 2 cm long.
Bright red buds
Hypanthium has 4 ridges.


Fruits cylindrical or 4-cornered. Sometimes with ribs between the corners.
Bright red in colour.
X1.
Up to 3·3 cm
Up to 2·5 cm

EUCALYPTUS 'FAMELICA' Brooker & Hopper ined.

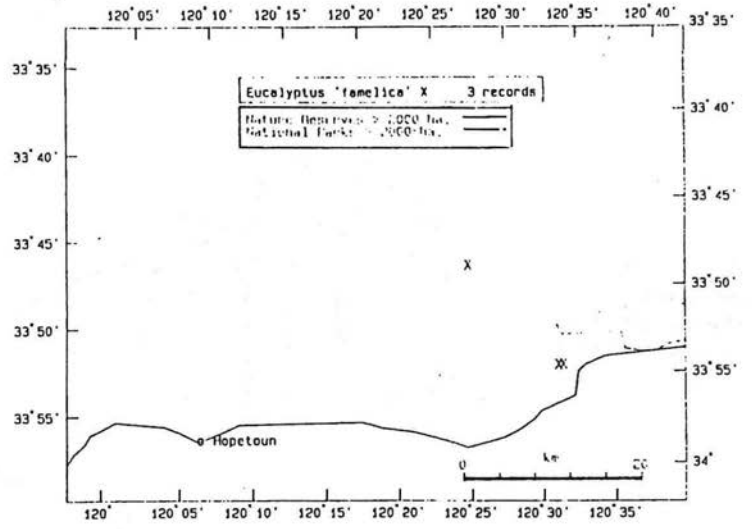
Distribution and Habitat: A species of scattered and disjunct distribution in the area east of Ravensthorpe and Hopetoun. Grows on low swampy ground, emergent above low shrubs in large clumps as a medium sized mallee.

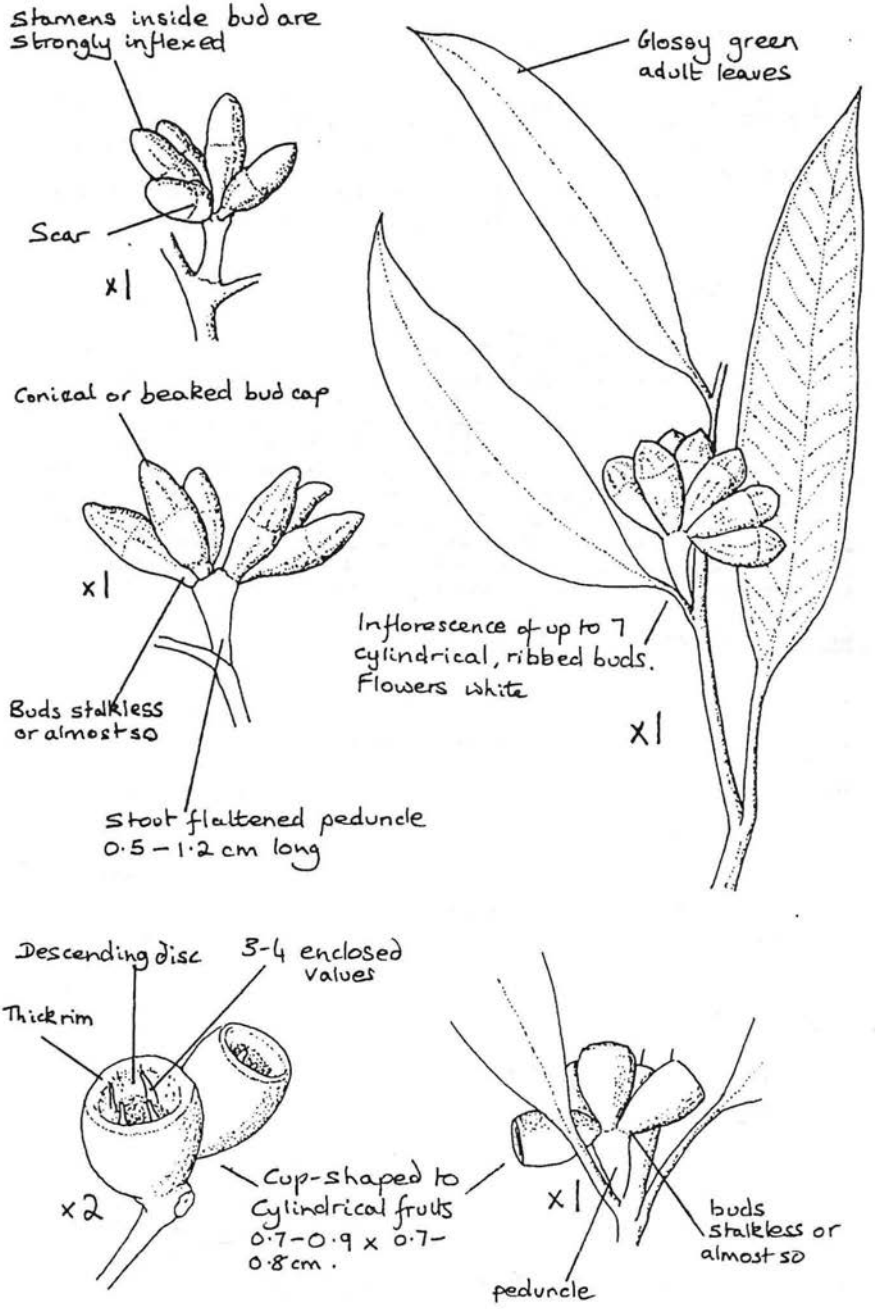
Flowering Period: April - July or intermittently throughout the year.

Additional Field Characteristics: A medium sized mallee growing in freshwater swamps the bark is smooth, grey or pinkish brown, sometimes with thin, rough, persistent bark at base. Juvenile stems are square in cross section and juvenile leaves ovate to broad-lanceolate, 8-12 x 3-4 cm. They are dull and blue-green. Adult leaves are 7-9 x 1.5-2 cm, with dense venation and sparse oil glands. The buds measure 1-1.5 x 0.5-0.6 m and the bud cap may be conical or beaked. The seed is brown and shallowly pyrimadal in shape.

The species is similar to *E.* 'rigens', *E. incrassata* and *E.* 'litorea'. From the former, it differs in its non-saline habitat, 7-flowered inflorescence, and smaller buds and fruits. From *E. incrassata*, it may be distinguished by its swampy habitat and sessile or shortly stalked fruits. The fruits of *E. incrassata* are stalked and slightly larger at 0.8-1.3 x 0.7-1.3 cm. Also, the seed of *E. incrassata* is black. It differs from *E.* 'litorea' in its non-saline habitat and smooth bark.

References: Brooker & Kleinig (ms)




Stamens inside bud are strongly inflexed
Scar
x1
Glossy green adult leaves
Conical or beaked bud cap
x1
Buds stalkless or almost so
Stout flattened peduncle 0·5 – 1·2 cm long
Inflorescence of up to 7 cylindrical, ribbed buds. Flowers white
x1
Descending disc
3-4 enclosed values
Thick rim
x2
Cup-shaped to cylindrical fruits 0·7–0·9 x 0·7–0·8 cm.
x1
buds stalkless or almost so
peduncle

EUCALYPTUS FICIFOLIA F. Muell.

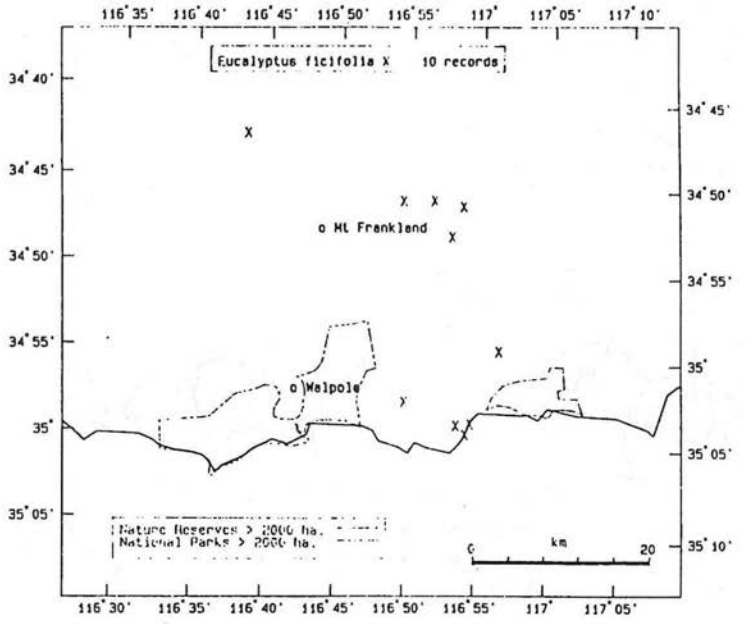
Red-flowering bloodwood

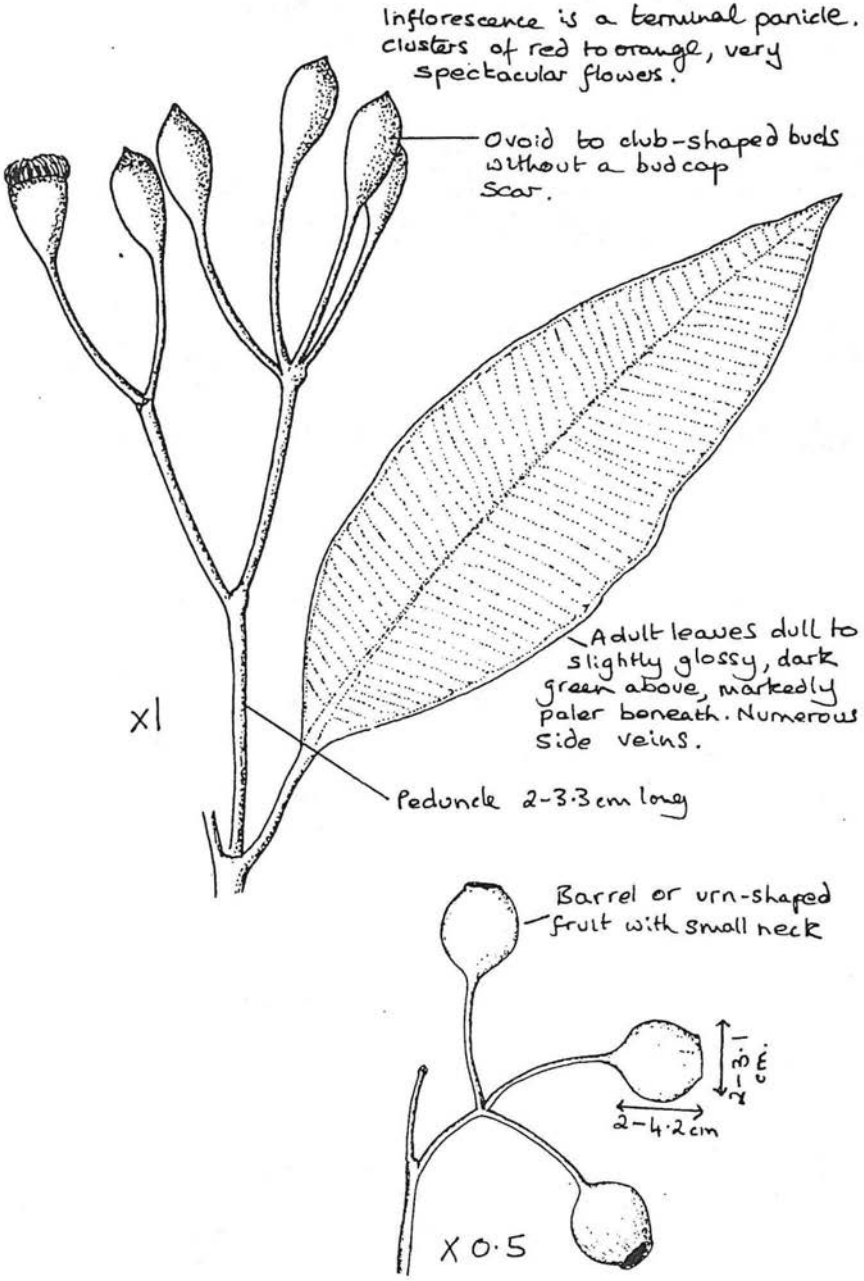
Distribution and Habitat: Occurs over a restricted geographical range of c. 30 km east of Walpole, mainly along the coast with a few scattered occurrences further inland. Grows on sandhills and depressions amongst lateritic hills, on white or grey sand. It is usually a component of low open woodland or forest, often with *E. marginata, Casuarina fraseriana, Banksia attenuata* and *B. ilicifolia.*

Flowering Period: January - April.

Additional Field Characteristics: A small straggling tree up to 9 m in height with rough, longitudinally furrowed bark, light grey to reddish brown in colour. Juvenile leaves are ovate to broad-lanceolate, 12 x 6 m. Adult leaves are 7-14 x 2-6 cm, apparently without glands. The peduncles are flattened or angular, 2-3.3 cm long. The buds measure 1.2 - 1.6 x 0.6 - 0.8 cm. Inside the bud, the stamens are all inflexed. The species is similar to *E. calophylla* ("marri") but differs in its orange to red flowers, longitudinally furrowed bark, and its seed which is reddish brown and winged at the top (*E. calophylla* seed is large, boat shaped, black, not winged).

References: Blakely (1955)




Inflorescence is a terminal panicle. clusters of red to orange, very spectacular flowers.
Ovoid to club-shaped buds without a bud cap scar.
Adult leaves dull to slightly glossy, dark green above, markedly paler beneath. Numerous side veins.
X1
Peduncle 2-3.3 cm long
Barrel or urn-shaped fruit with small neck
2-3.3 cm
2-4.2 cm
X0.5

EUCALYPTUS FORRESTIANA Diels subsp. DOLICHORHYNCHA Brooker

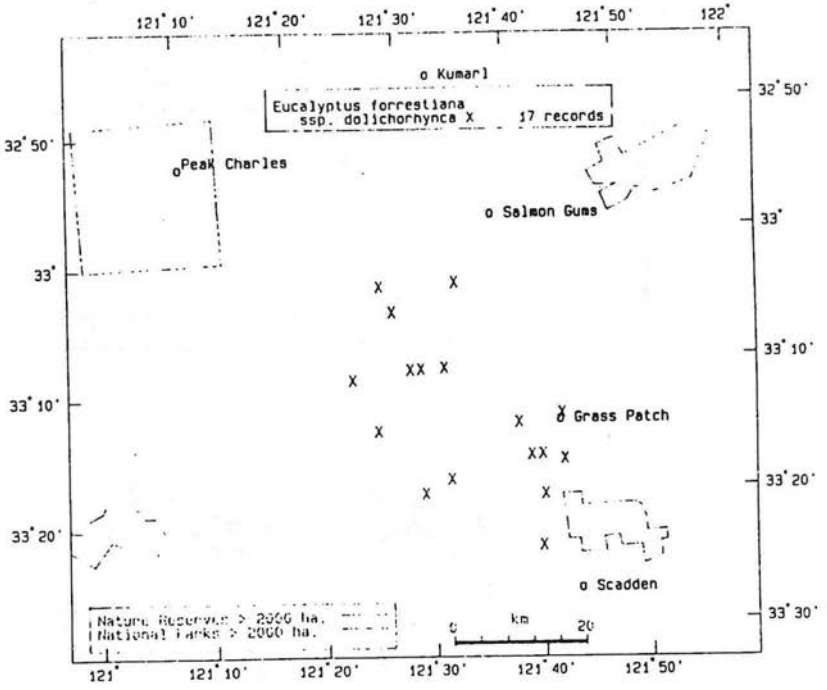
Fuchsia Mallee

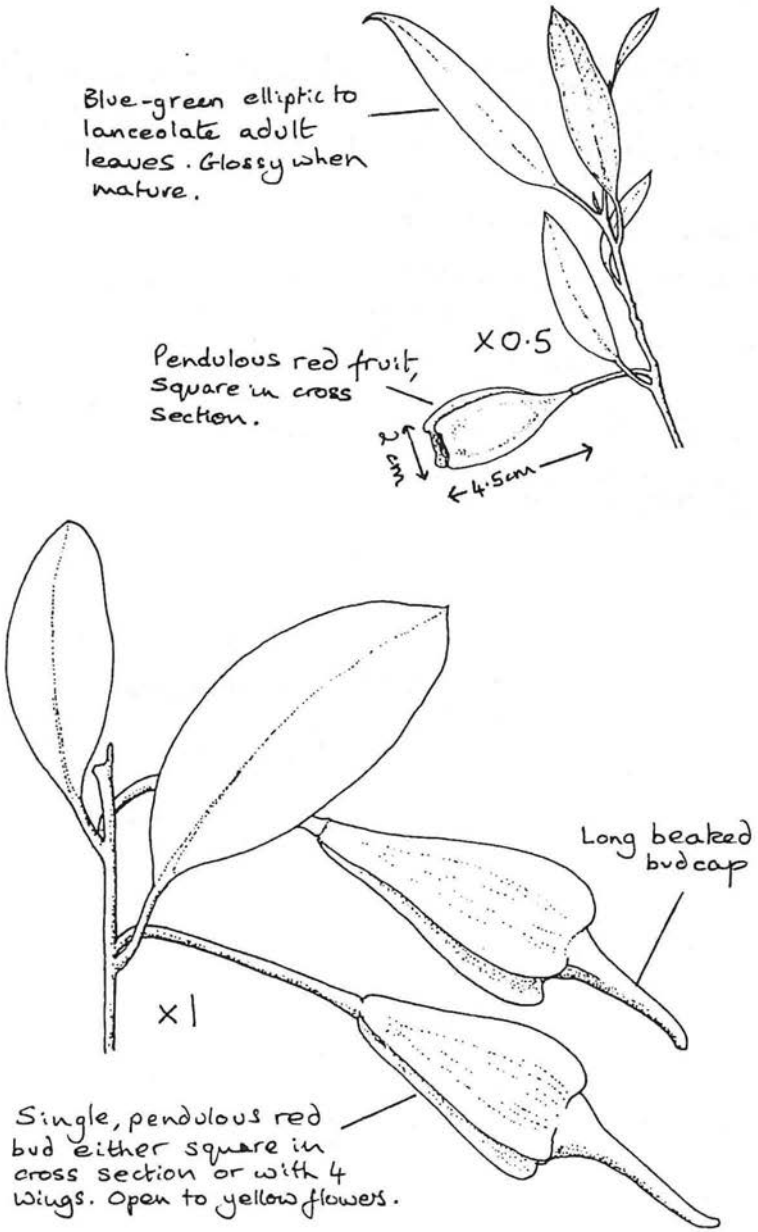
Distribution and Habitat: Is known to occur over a geographical range of c. 70 km from Salmon Gums to Gibson, growing on sandy or gravelly clays over clay subsoil. It occurs in undulating country, as a component to low woodland, in association with other mallee species including *E. eremophila, E. pileata* and *E. flocktoniae*.

Flowering Period: April - June.

Additional Field Characteristics: This subspecies is similar to *E. forrestiana* subsp. *forrestiana* differing only in its elongated bud-caps and generally smaller fruit.

References: Brooker (1973); Robinson (1984); Diels (1904); Elliot and Jones (1986); Beard (1973).




Blue-green elliptic to lanceolate adult leaves. Glossy when mature.
X0.5
Pendulous red fruit, square in cross section.
2cm
4.5cm
Long beaked bud cap
X1
Single, pendulous red bud either square in cross section or with 4 wings. Open to yellow flowers.

EUCALYPTUS FORRESTIANA Diels subsp. FORRESTIANA

Fuchsia Mallee

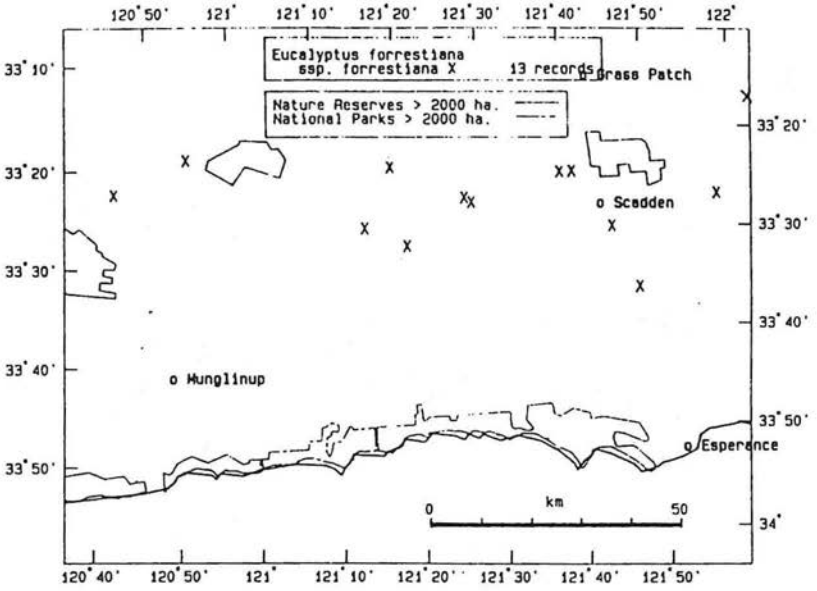
Distribution and Habitat: Has a scattered distribution over about 100 km from N.E. of Ravensthorpe eastwards towards Mount Beaumont. Grows in shallow loams or sandy loams over clays, on flat or undulating country. May be found in association with *E. leptocalyx, E. eremophila, E. kesselii* and *E. flocktoniae*.

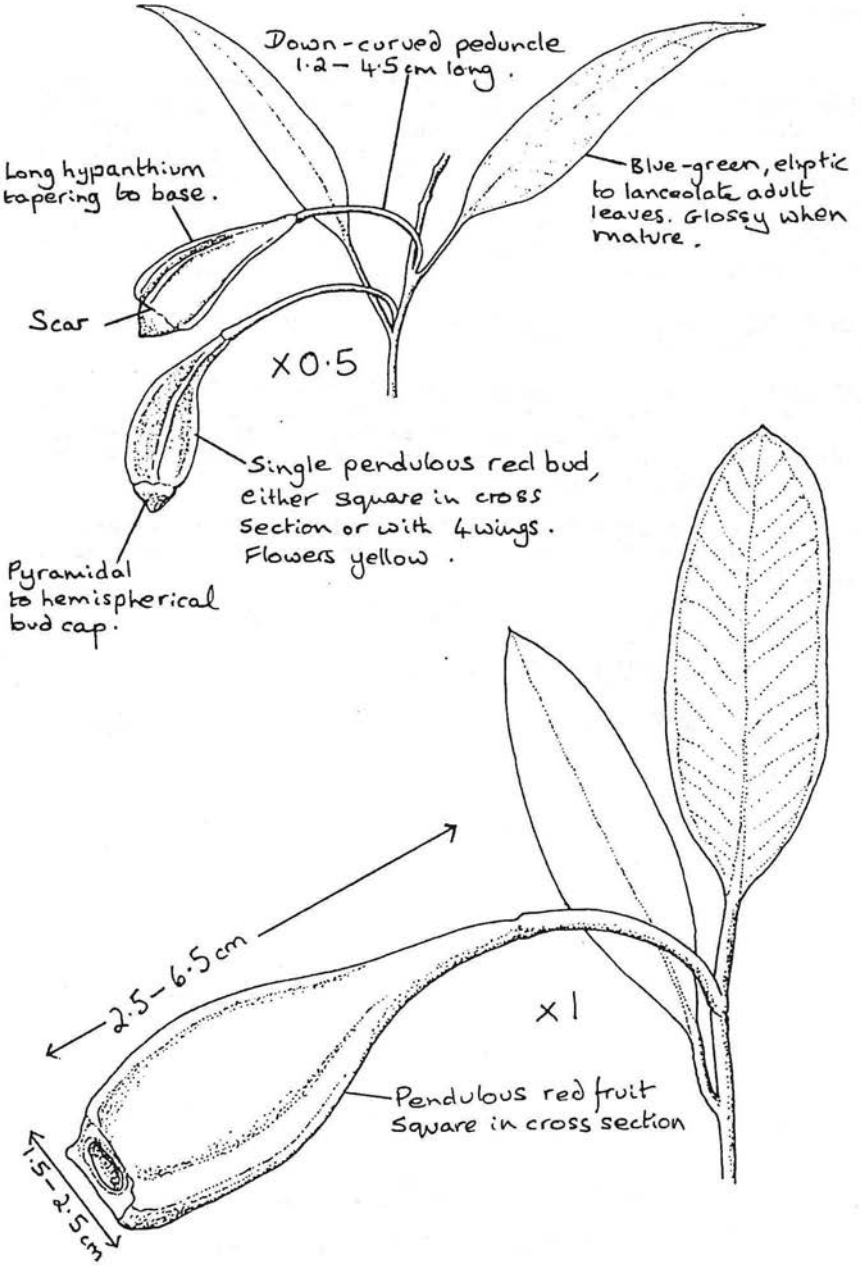
Flowering Period: January - March.

Additional Field Characteristics: A mallet or mallee to 3-6 m in height. Adult leaves are 5.5-10 x 1.3-2.3 cm, with a sparse vein network and numerous oil glands. The buds measure 3.6-6 x 1.2-2 cm. The fruits have a thick rim, level disc and three or four enclosed valves.

This subspecies may be distinguished from the two other subspecies of *E. forrestiana* by its buds and fruits.

References: Chippendale (1973); Elliott & Jones (1986); Gardner (1979); Beard (1973).




Down-curved peduncle
1·2 – 4·5 cm long.
Long hypanthium tapering to base.
Blue-green, elliptic to lanceolate adult leaves. Glossy when mature.
Scar
×0·5
Single pendulous red bud, either square in cross section or with 4 wings. Flowers yellow.
Pyramidal to hemispherical bud cap.
2·5 – 6·5 cm
×1
Pendulous red fruit square in cross section
1·5 – 2·5 cm

EUCALYPTUS FORRESTIANA Diels subsp. STOATEI (Gardner)
C.J. Robinson

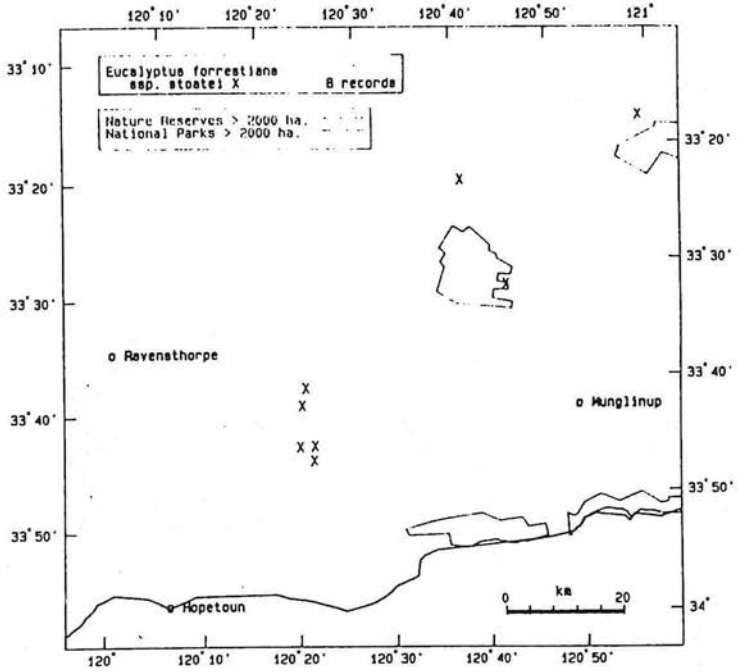
Scarlet Pear Mallee

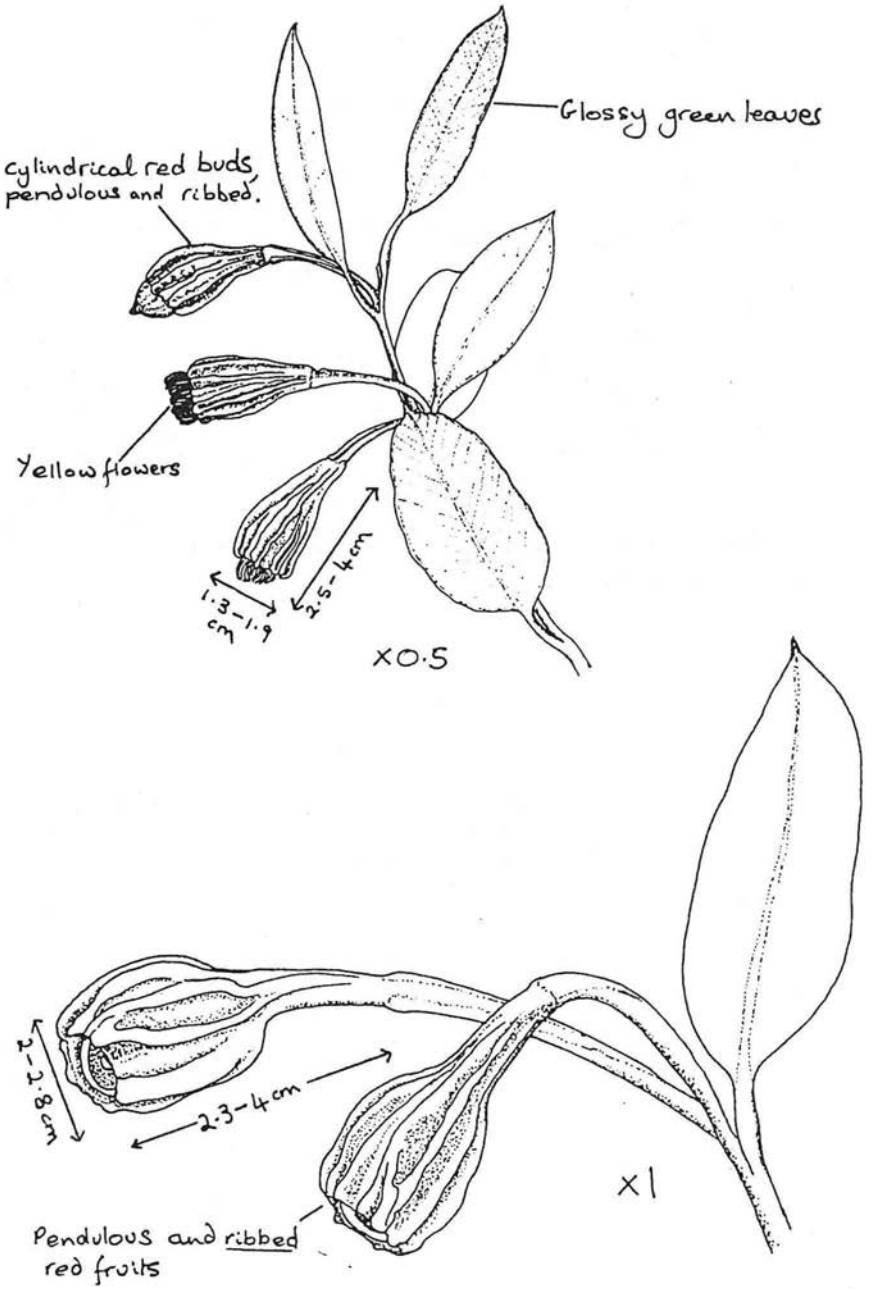
Distribution and Habitat: Of restricted distribution over a geographical range of 80 km, to the east and north-east of Ravensthorpe, but locally abundant. Grows in sand or gravelly loams over a hard clay pan. It is usually a dominant species in low woodlands or low forests. Mallee eucalypts associated with it include *E. kesselii* and *E. tetragona*. The understorey of these woodlands often includes *Banksia media* amongst low heath or low scrub. It is found on gentle slopes or high, flat, plateaux.

Flowering Period: Intermittently throughout the year, peaking December to February.

Additional Field Characteristics: A small mallee or mallet with adult leaves 5.5-8 x 1.7-3 cm. Subsp. *stoatei* is similar to the two other subspecies of *E. forrestiana*, differing in its shorter cylindrical, ribbed buds and shorter, broader fruits.

References: Chippendale (1973); Leigh, Boden & Briggs (1984); Gardner (1936 & 1979); Robinson (1984); Hopper & Moran (1981).




Glossy green leaves
cylindrical red buds, pendulous and ribbed.
Yellow flowers
1.3-1.9 cm
2.5-4 cm
x0.5
2-2.8 cm
2.3-4 cm
x1
Pendulous and ribbed red fruits

EUCALYPTUS FRASERI Brooker subsp. 'MEL'

Blackbutt

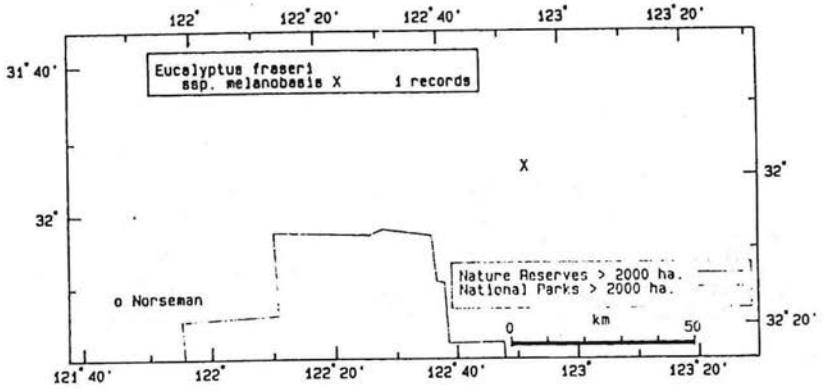
Distribution and Habitat: Of very restricted occurrence in the Fraser Range.

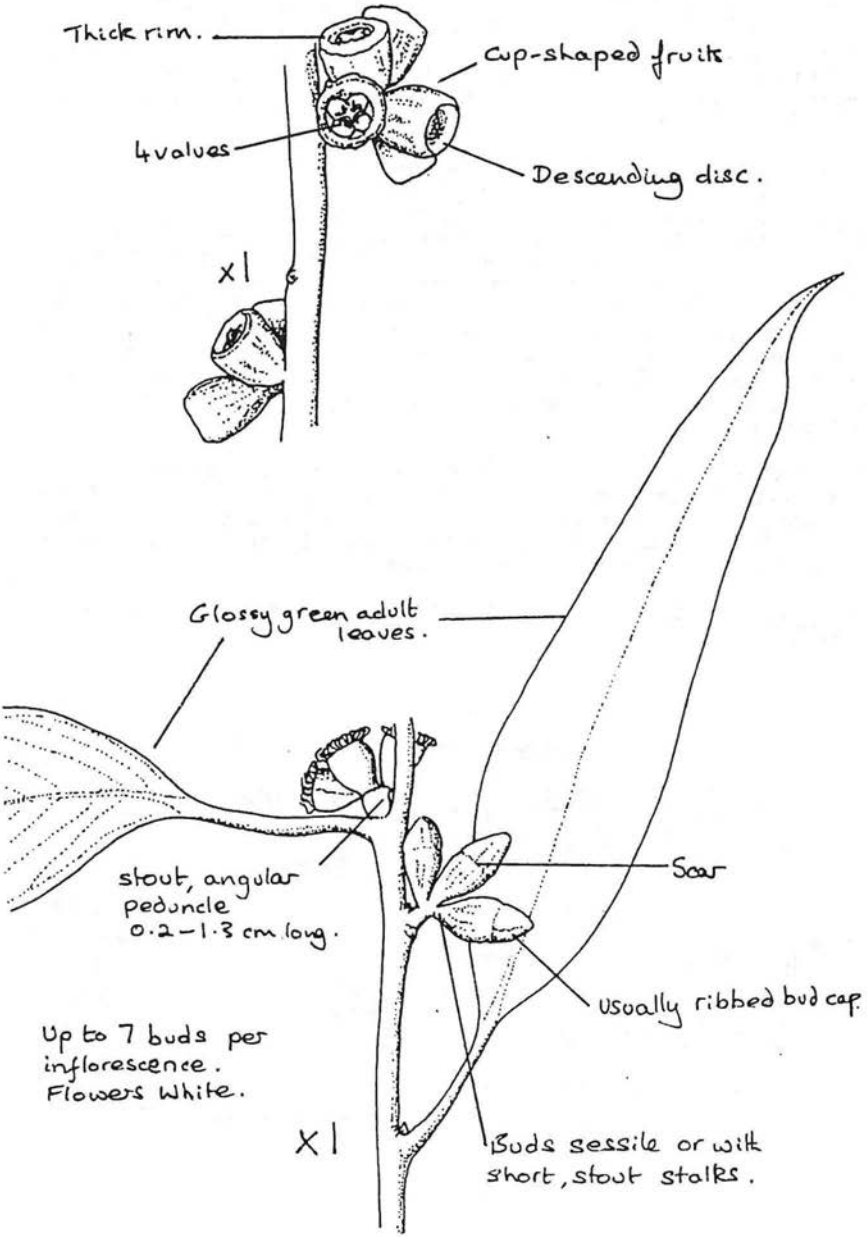
Flowering Period: January - March.

Additional Field Characteristics: A small to medium sized tree with a basal stocking of thick, dark grey-black, rough bark for 1-2 m. Above the stocking, the bark is smooth, grey over cream to coppery. The distinctive basal bark distinguishes this subspecies from *E. fraseri* which has smooth bark throughout. Young stems are square in cross-section, reddish, warty and glaucous. Adult leaves are 9.5-14 x 1.2-3.5 cm. The buds measure 0.9-1.4 x 0.4-0.6 cm and stamens are strongly inflexed within the buds. Fruits are 0.7-1 x 0.6-1 cm. The seed is shining, ruby-red to red-brown and flattish with shallow sculpturing.

E. fraseri is similar to *E. conglobata*. The latter however, is usually a mallee (not a small tree) and has shorter buds (0.4-0.8 x 0.4-0.6 cm) which are always sessile.

References: Brooker (1976).




Thick rim.
Cup-shaped fruit
4 valves
Descending disc.
x1
Glossy green adult leaves.
stout, angular peduncle 0.2–1.3 cm long.
Scar
Usually ribbed bud cap
Up to 7 buds per inflorescence. Flowers White.
x1
Buds sessile or with short, stout stalks.

EUCALYPTUS GEORGEI Brooker and Blaxell

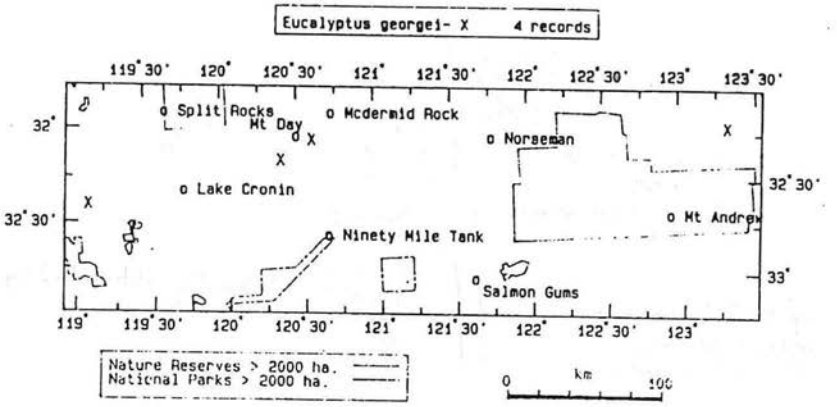
Distribution and Habitat: Has a restricted distribution in a few areas between Hyden and Norseman. Grows on flat low-lying areas on loams or clays, in open low woodland. Associated species include *E. salubris*, *E. transcontinentalis*, *E. salmonophloia*, *E. flocktoniae*, and *E.* aff. *oleosa*.

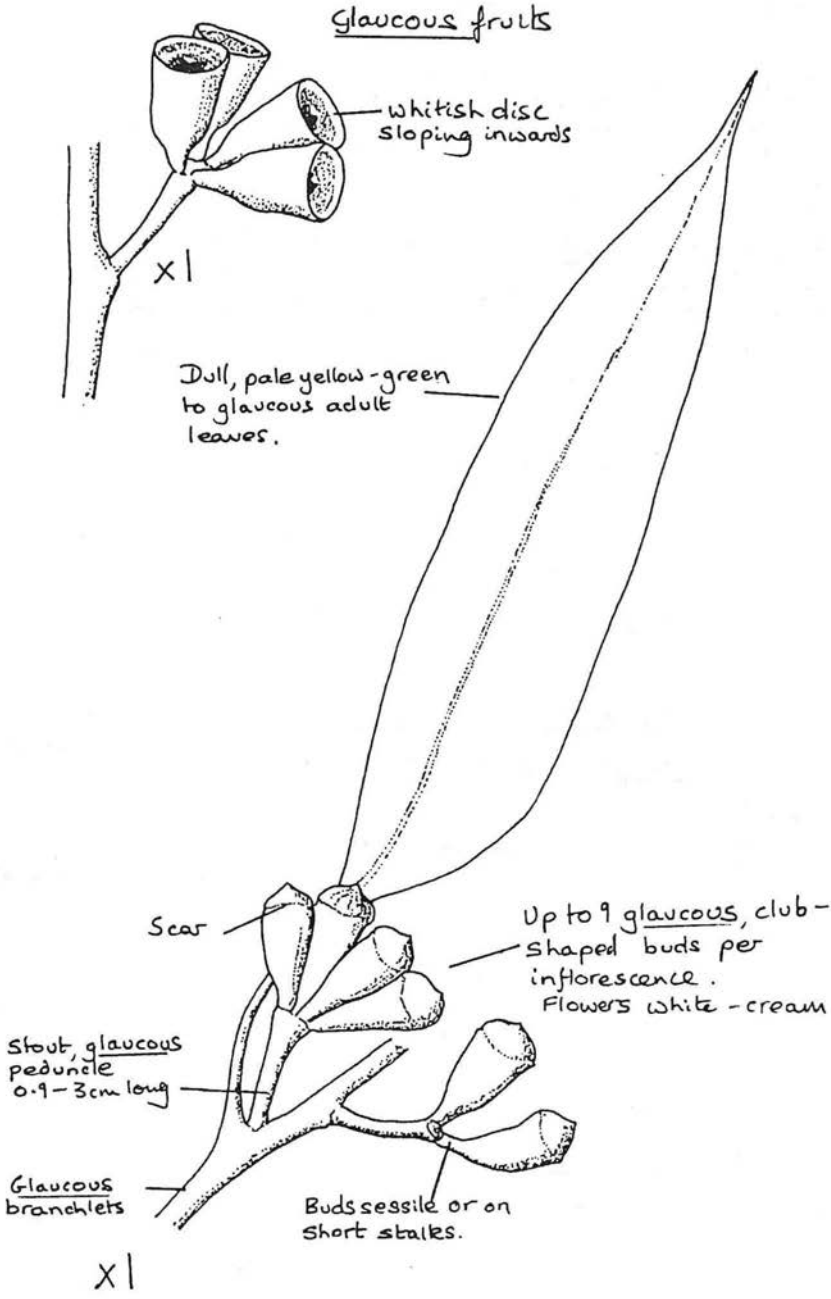
Flowering Period: January - March.

Additional Field Characteristics: A tree to 16 m with smooth whitish bark, often hanging in ribbons. Juvenile leaves are ovate to lanceolate, up to 8 x 5 cm. Adult leaves are up to 20 x 4 cm, with a dense vein pattern and numerous oil glands. The buds measure 0.9-1.4 x 0.6-0.7 cm. The operculum is hemispherical with a knob, and is shorter than the hypanthium. The fruits have short stalks and may be cup-shaped, cylindrical or slightly bell-shaped, 0.8-1.5 x 0.7-1.4 cm. The seed is shiny, ruby-red to red-brown in colour and flattish.

The species is characterised by its glaucous leaves, stems, buds and fruits and deciduous bark which peels off in ribbons. It is similar to *E. woodwardii* but the latter has yellow flowers and the buds have a beaked cap, the cap being about the same length as the hypanthium.

References: Brooker and Blaxell (1978); Elliott and Jones (1986).




Glaucous fruits
whitish disc sloping inwards
x1
Dull, pale yellow-green to glaucous adult leaves.
Scar
Up to 9 glaucous, club-shaped buds per inflorescence. Flowers white-cream
Stout, glaucous peduncle 0.9–3cm long
Glaucous branchlets
Buds sessile or on short stalks.
x1

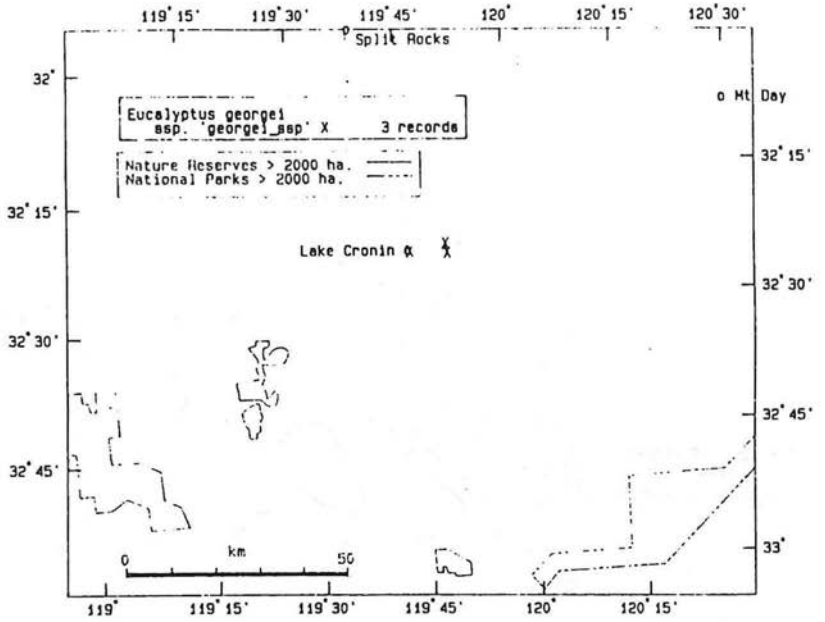
EUCALYPTUS GEORGEI subsp. 'shiny' Hopper

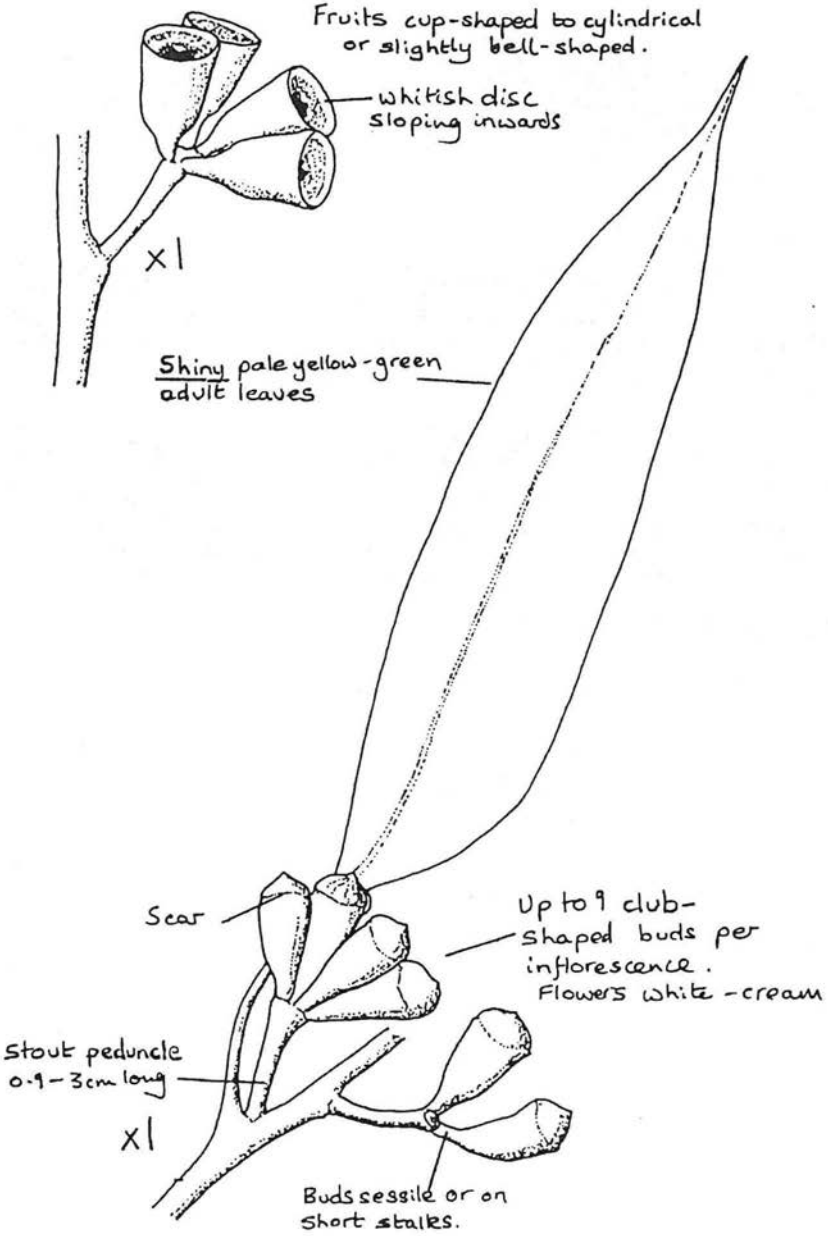
Distribution and Habitat: This possible subspecies is restricted to an area close to Lake Cronin and occurs in a clay loam depression in undulating terrain. It occurs with *E. transcontinentalis*, *E. 'exigua'* and *Daviesia* sp.

Flowering Period: Unknown.

Additional Field Characteristics: A small tree 8-9 m with straight, narrow stems. The bark is shed in long trailing ribbons uncovering yellow-brown new bark. The subspecies is very similar to *E. georgei* but can be distinguished by its very glossy adult leaves.

References: S. Hopper & S. Patrick (field notes).




Fruits cup-shaped to cylindrical or slightly bell-shaped.
whitish disc sloping inwards
x1
Shiny pale yellow-green adult leaves
Scar
Up to 9 club-shaped buds per inflorescence. Flowers white-cream
Stout peduncle 0.9-3cm long
x1
Buds sessile or on short stalks.

EUCALYPTUS GONIANTHA Turcz. subsp. GONIANTHA

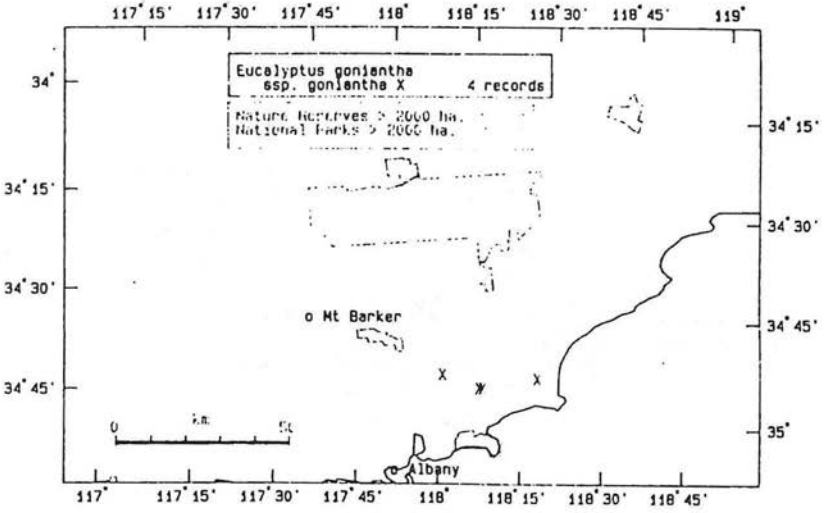
Distribution and Habitat: Has a restricted distribution north-east of Albany, where it is known from three locations over a geographical range of c.25 km. Grows in gravelly loam with massive ironstone on hills, in low woodland over heath with jarrah and marri and *E. angulosa* and *E. preissiana*.

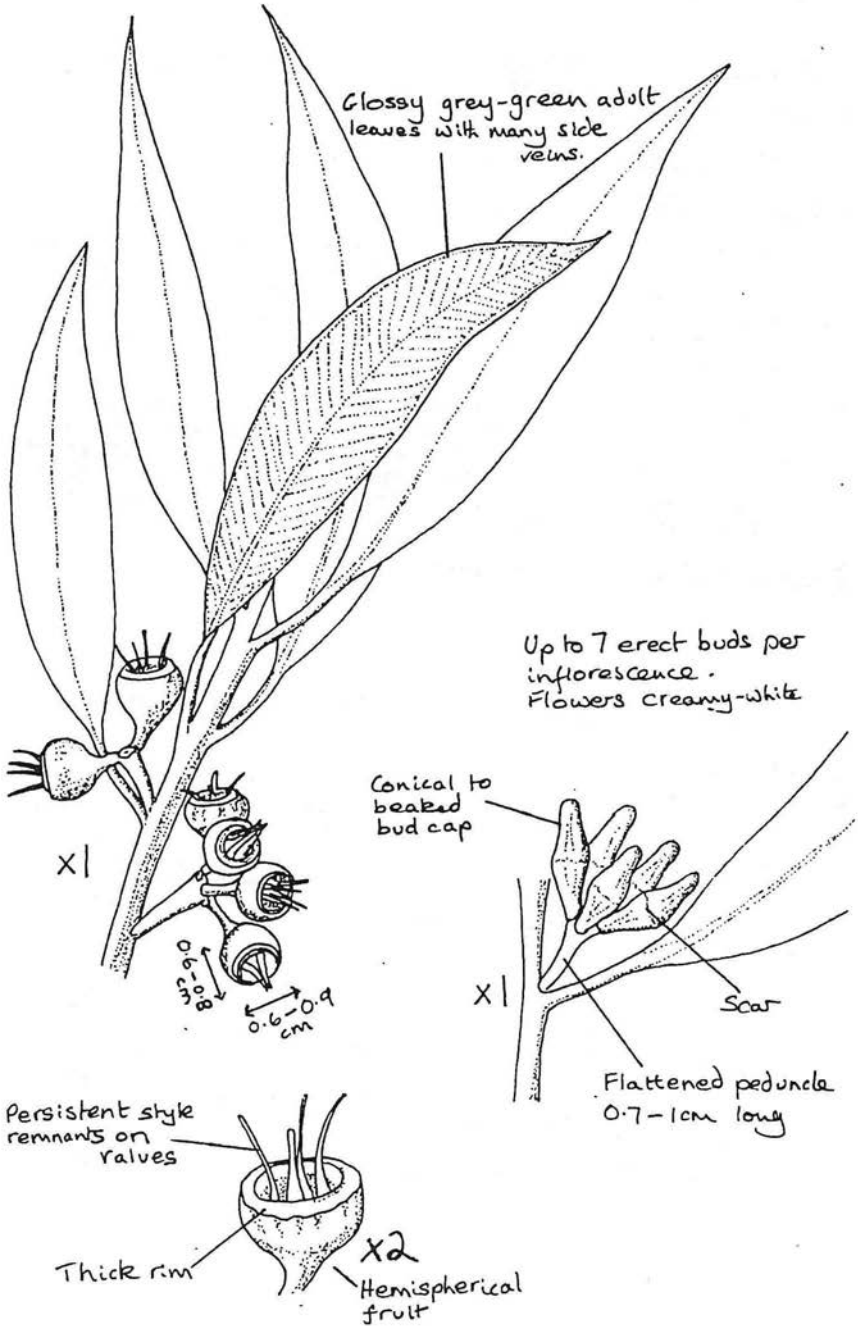
Flowering Period: November - February.

Additional Field Characteristics: A mallee, or rarely a small tree to about 6 m. Bark is smooth, mottled grey. Adult leaves are lanceolate, 8-11 x 1-1.5 cm with numerous oil glands. Buds are spindle-shaped and measure up to 1.4 x 0.5 cm. The stamens are all inflexed. Fruits are 0.6-0.8 x 0.6-0.9 cm. The seed is grey and smooth.

This subspecies may be distinguished from *E. goniantha* subsp. *'not'* by its stalked fruits ('not' - sessile). From subsp. *semiglobosa*, it differs in its erect buds with conical to beaked bud-caps. The species *E. goniantha* (including all 3 subspecies) is similar to *E. falcata*. However, the latter has pendulous buds and fruits, an acutely conical bud cap, and some sickle-shaped leaves.

References: Brooker (1974).




Glossy grey-green adult leaves with many side veins.
Up to 7 erect buds per inflorescence. Flowers creamy-white
X1
0.6-0.8 cm
0.6-0.9 cm
Conical to beaked bud cap
X1
Scar
Flattened peduncle 0.7-1cm long
Persistent style remnants on valves
Thick rim
X2
Hemispherical fruit

EUCALYPTUS GONIANTHA Turcz. subsp. 'NOT' (coastal)

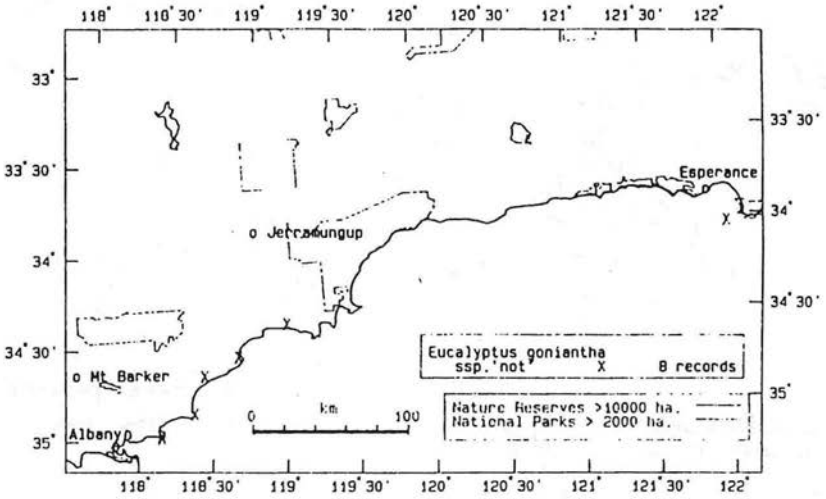
Distribution and Habitat: Occurs along the coast from Albany eastwards to Cape Le Grand. Also on Sandy Hook Island near Esperance.

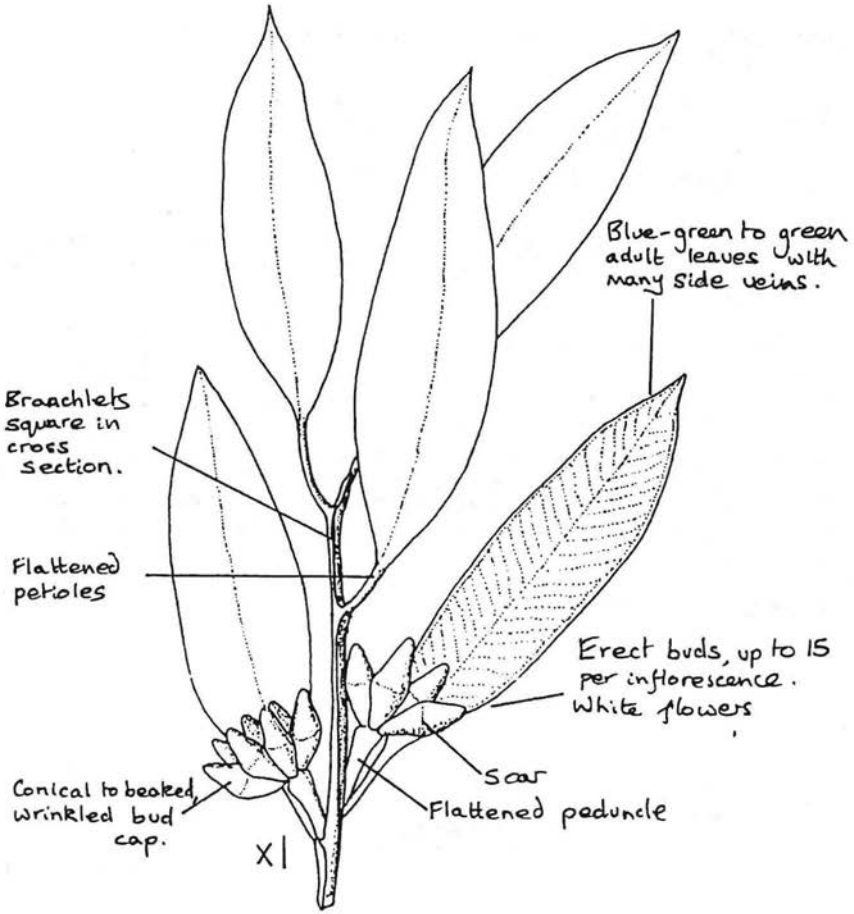
Flowering Period: February, extent not known.

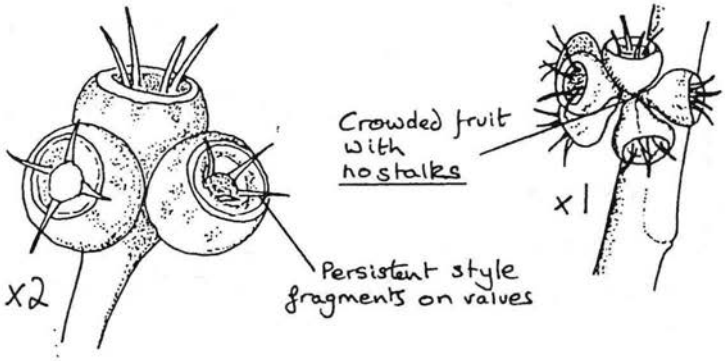
Additional Field Characteristics: A stout mallee with smooth light grey to grey brown bark. Adult leaves are lanceolate or sickle-shaped, 6.5-14 x 2.5-3.5 cm. The bud cap is narrower than the slightly ribbed hypanthium. The buds are 1-1.5 x 0.5-0.7 cm. Inside the bud, the stamens are all inflexed. Fruits are hemispherical to conical measuring 0.6-0.9 x 0.7-1.1 cm. The seed is grey and smooth or shallowly grooved.

The subsp. differs from subsp. *goniantha* in its sessile fruits. Its number of flowers per inflorescence is also greater. From subsp. *semiglobosa*, it differs in its erect buds and fruits and different shaped buds. From *E. falcata*, it may be identified by its flattened petioles, erect buds and fruits, and the sessile nature of the latter.

References: Brooker and Kleinig (ms).




Blue-green to green adult leaves with many side veins.
Branchlets square in cross section.
Flattened petioles
Erect buds, up to 15 per inflorescence. White flowers
Scar
Flattened peduncle
Conical to beaked, wrinkled bud cap.
X1


Crowded fruit with no stalks
X1
Persistent style fragments on values
X2

EUCALTPTUS GONIANTHA Turcz. subsp. SEMIGLOBOSA Brooker

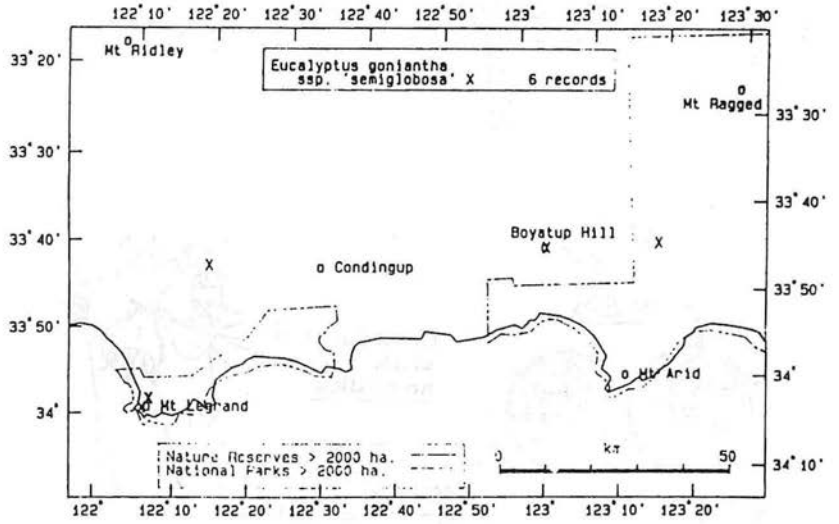
Distribution and Habitat: Has a scattered distribution from Cape Le Grand east towards Mt Ragged.

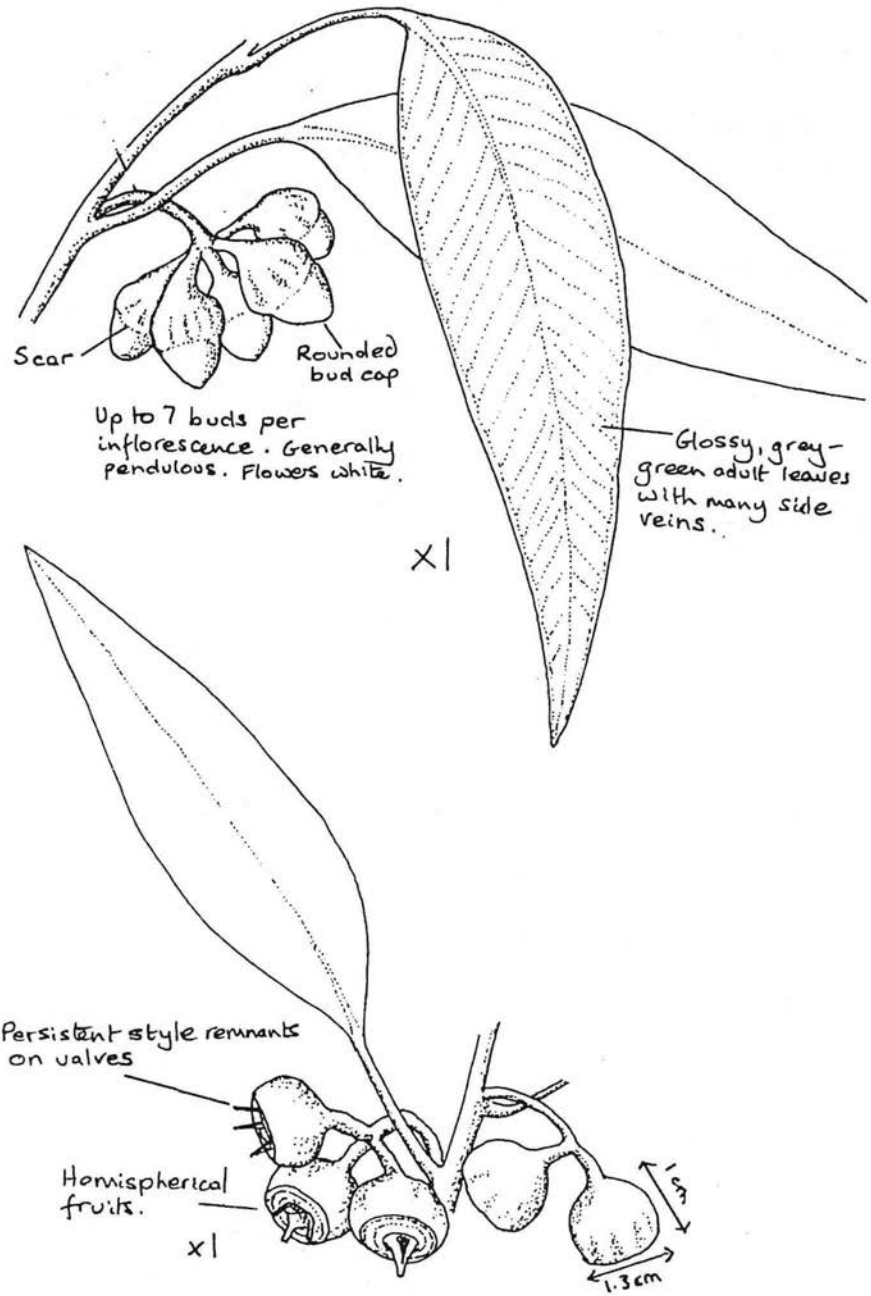
Flowering Period: April - June.

Additional Field Characteristics: A mallee or rarely a small tree to 3 m in height. The bark is smooth, mottled grey, whitish and pale coppery. The adult leaves measure 8-11 x 1-3 cm.

The subsp. differs from both other subspecies of *E. goniantha* in its pendulous buds and fruits, its slightly larger buds (to 1.3 x 1.1 cm) and its operculum being rounded rather than beaked. The shape of the operculum also distinguishes it from *E. falcata*. The latter has creamy-coloured spindle-shaped buds with acutely conical opercula. The subspecies is also similar to *E. kesselii* but *E. kesselii* has cream buds with pointed opercula, larger ribbed fruits (1-1.8 x 1.3-1.8 cm) and wide flattened peduncles.

References: Brooker (1974).




Scar
Rounded bud cap
Up to 7 buds per inflorescence. Generally pendulous. Flowers white.
Glossy, grey-green adult leaves with many side veins.
x1
Persistent style remnants on valves
Hemispherical fruits.
x1
1.3cm

EUCALYPTUS GUILFOYLEI Maiden

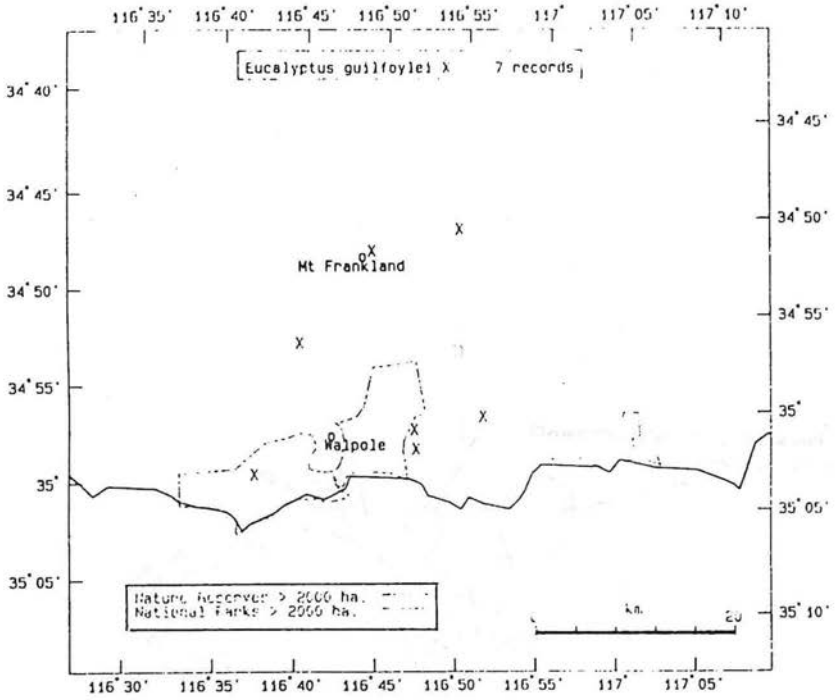
Yellow Tingle

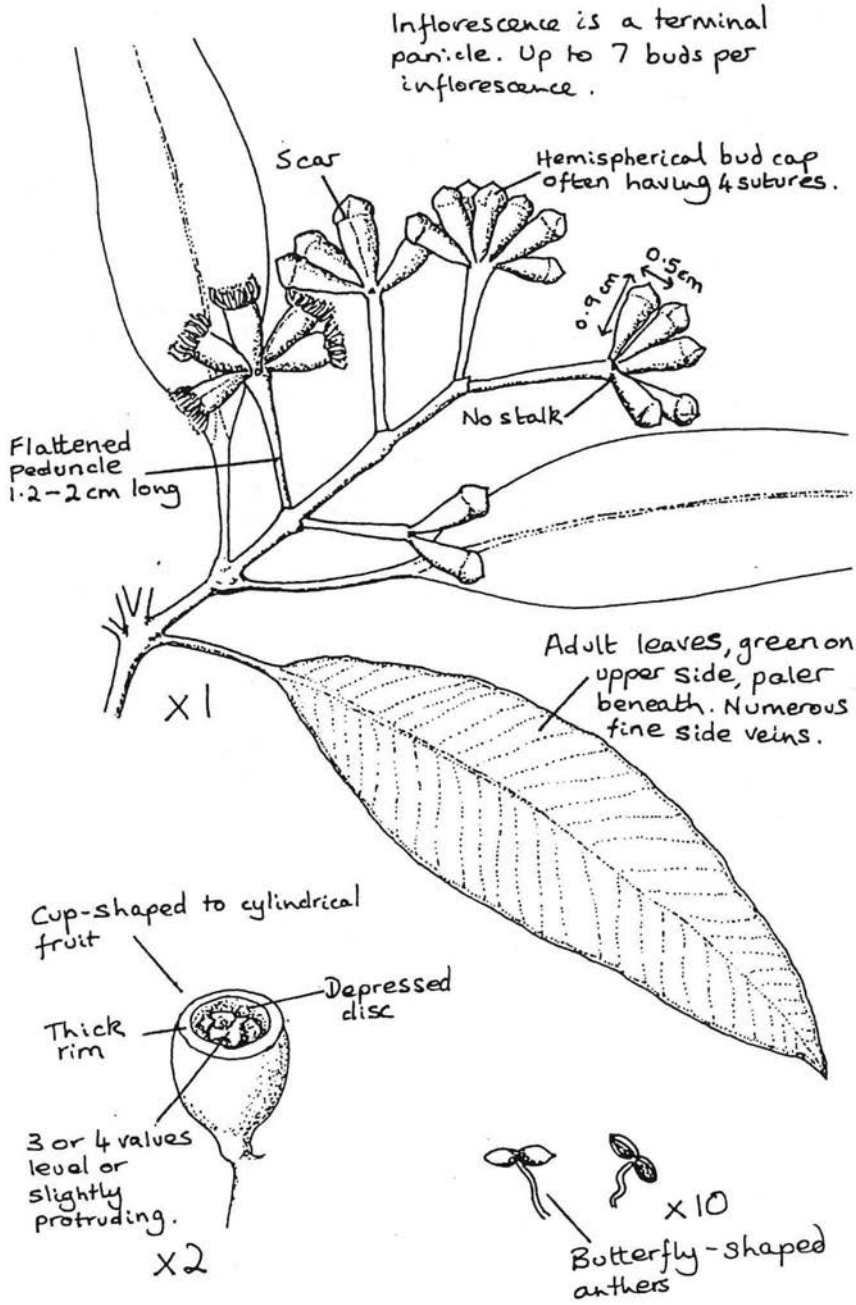
Distribution and Habitat: Has a very restricted distribution in the Walpole to Bow Bridge area and for 20 km to the north. It occurs on the edges of karri forest, in brown loams and clay soils. Associated species include *E. diversicolor, E. megacarpa, E. calophylla* and *E. marginata*.

Flowering Period: November to December.

Additional Field Characteristics: A medium to tall tree, up to 40-60 m in height. The bark is grey brown in colour, rough, short fibred and crumbly. Juvenile leaves are elliptic to ovate, green on the upper side, paler beneath, 5-13 x 3-7 cm. Adult leaves are 0-16 x 1.6-4 cm and apparently with no oil glands. Both stamens and style may be bent or twisted. The sessile fruits measure 0.7-1 x 0.8-1 cm. The seed is red-brown and roundish.

References: Maiden (1911); Gardner (1979).




Inflorescence is a terminal panicle. Up to 7 buds per inflorescence.
Scar
Hemispherical bud cap often having 4 sutures.
0.9cm
0.5cm
No stalk
Flattened peduncle 1.2–2cm long
x1
Adult leaves, green on upper side, paler beneath. Numerous fine side veins.
Cup-shaped to cylindrical fruit
Depressed disc
Thick rim
3 or 4 valves level or slightly protruding.
x2
x10
Butterfly-shaped anthers

EUCALYPTUS HALOPHILA Carr and Carr

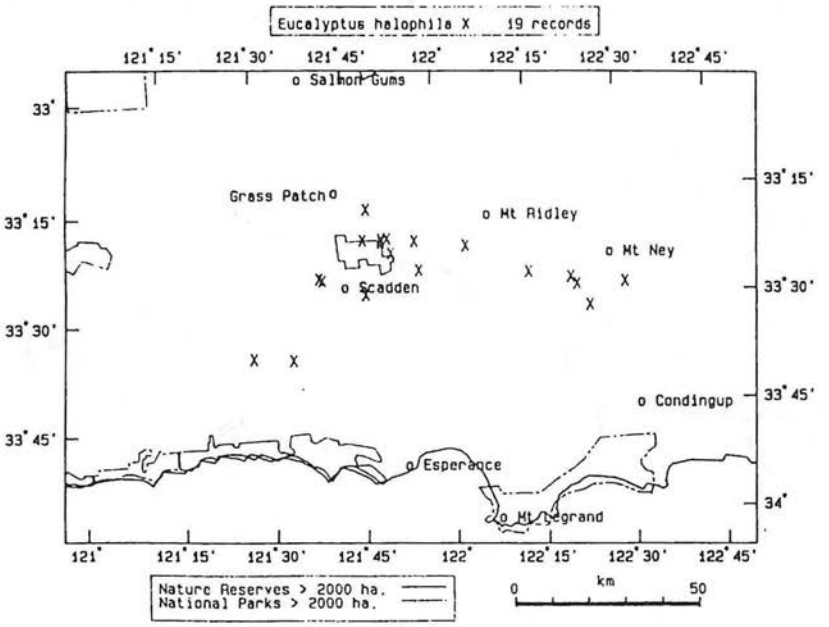
Distribution and Habitat: Occurs from the N.E. to N.W. of Esperance. Grows on highly saline flats between small salt lakes on moderately drained loams and sands. It is found scattered in patches in open shrub mallee. Associated species include *E. leptocalyx, E. uncinata, E. gracilis.*

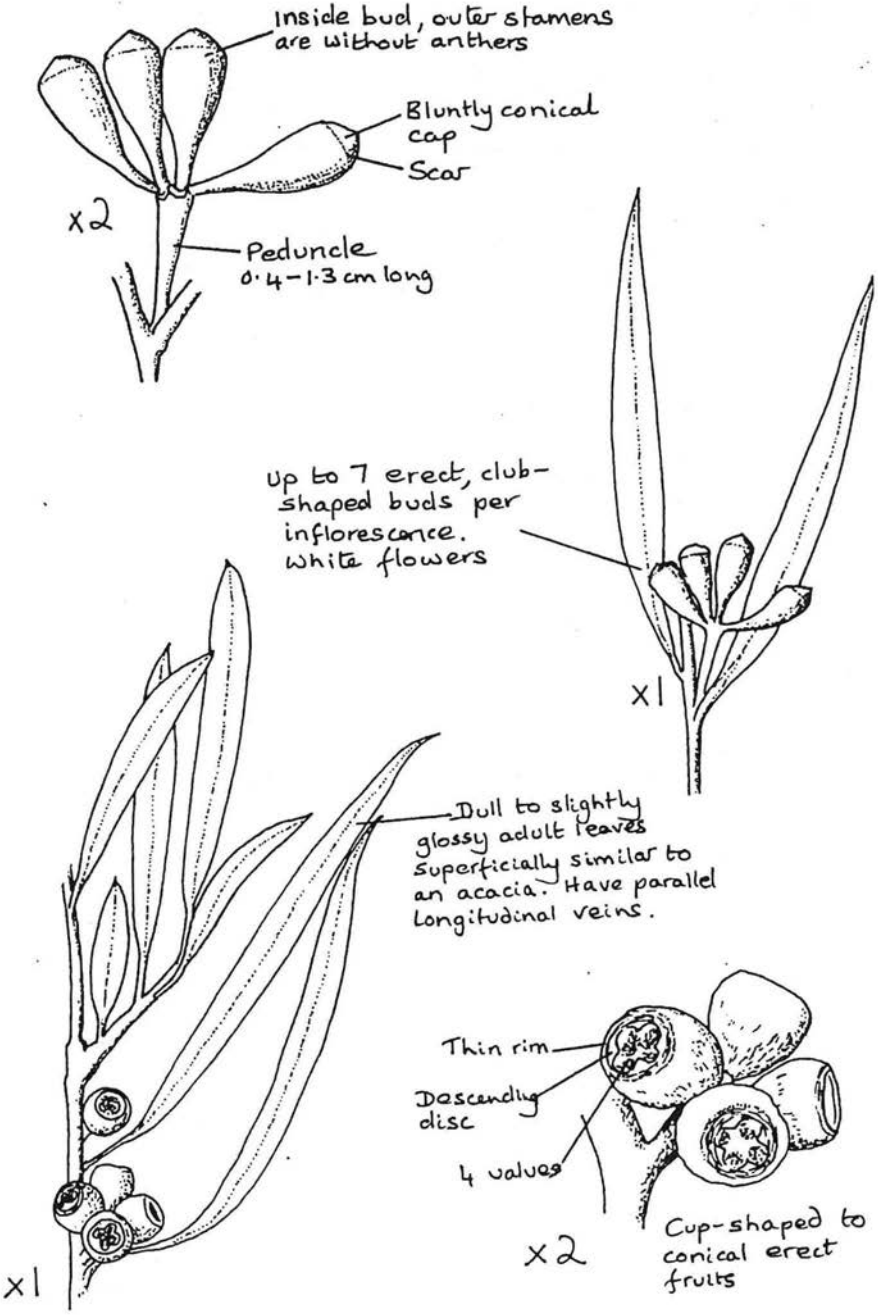
Flowering Period: January to April.

Additional Field Characteristics: A small shrubby mallee up to 2 m, with variable bark either smooth and grey or rough and light grey to brown. Due to its narrow leaves with parallel venation and small stature, the species may be easily overlooked as an *Acacia* species. Adult leaves are narrow-lanceolate, 4.5-8.5 x 0.6-1 cm, light-green to grey-green with sparse vein network and numerous oil glands. Inside the bud, the stamens are inflexed, the outer ones being sterile without anthers. The anthers are globoid, opening by lateral pores. The fruits measure 0.5-0.9 x 0.5-0.8 cm. The seed is yellowish-brown in colour, flattish to ovoid and pitted like honeycomb.

The species is similar to *E. angustissima* but differs in its saline habitat, wider adult leaves, longer peduncles and fruit with descending disc, thin rim and four valves.

References: Brooker and Kleinig (ms); Newbey (Mss notes); Carr (1980); Burgman (1985).




Inside bud, outer stamens are without anthers
Bluntly conical cap
Scar
x2
Peduncle
0.4–1.3 cm long
Up to 7 erect, club-shaped buds per inflorescence. White flowers
x1
Dull to slightly glossy adult leaves superficially similar to an acacia. Have parallel longitudinal veins.
x1
Thin rim
Descending disc
4 valves
x2
Cup-shaped to conical erect fruits

EUCALYPTUS 'HISTOPHYLLA' Brooker and Hopper ined.

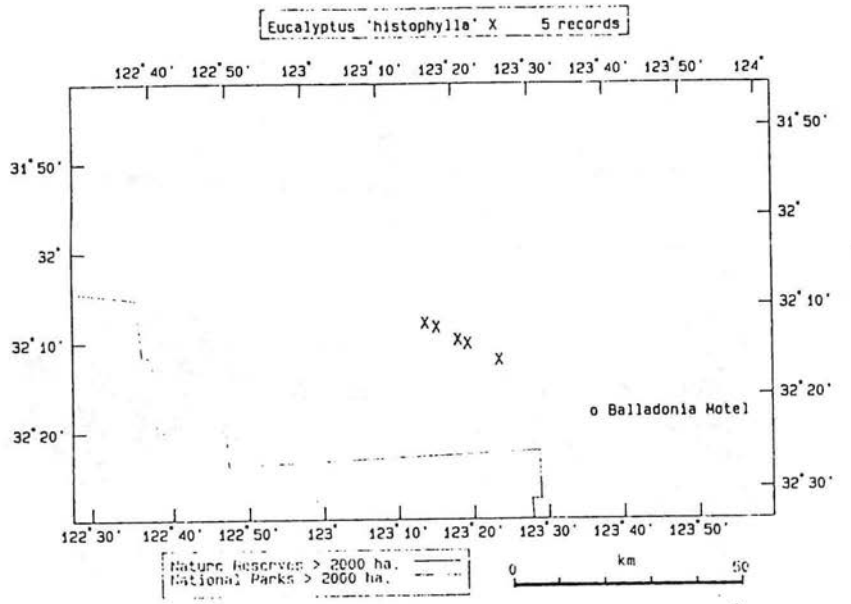
Distribution and Habitat: Known from a narrow geographical range between Balladonia and the Fraser Range. Grows with *E. effusa* and *E. leptophylla*, high in the landscape in undulating country on powdery red soil.

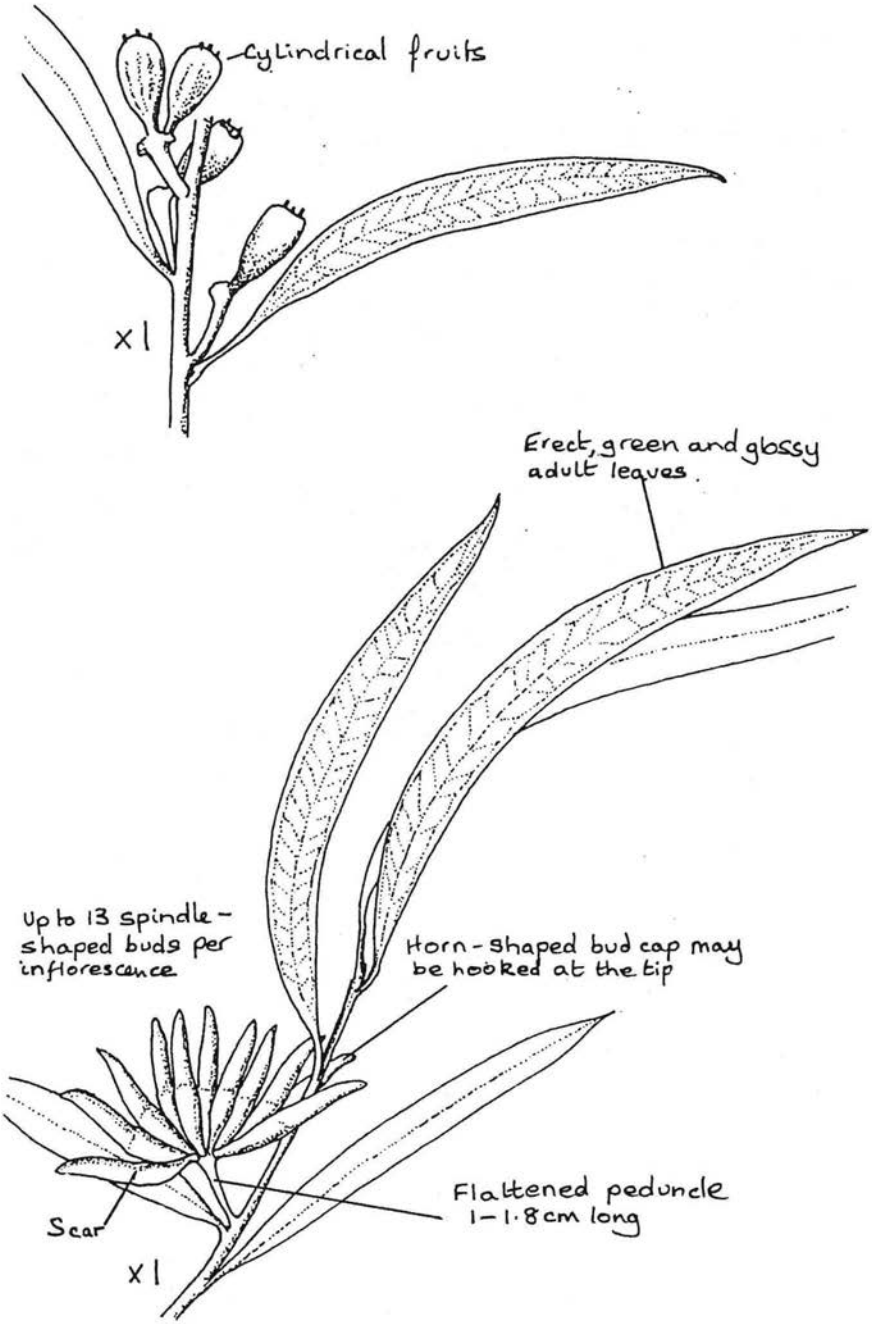
Flowering Period: November - March.

Additional Field Characteristics: A mallee to 5 m with smooth bark, either dark or light grey or pale pink in colour. Juvenile leaves are green and slightly glossy, ovate to lanceolate, 11 x 4 cm. Adult leaves are dull blue-green at first, becoming glossy green. They measure 8-11 x 0.8-1.1 cm. Buds are 2-2.5 x 0.3-0.4 cm, the cap often narrower than the hypanthium. Some of the outer stamens are erect in the bud, others are partly or wholly inflexed. The fruits are 0.8-0.9 x 0.5-0.6 cm. They have a fairly thick rim, depressed disc and three valves level to the rim. The seed is almost spherical and smooth, whitish grey to light grey-brown in colour.

The species is related to *E. redunca* differing in its erect leaves and buds which are not constricted at the join of budcap with hypanthium.

References: Brooker and Kleinig (ms).




cylindrical fruits
x1
Erect, green and glossy adult leaves.
Up to 13 spindle-shaped buds per inflorescence
Horn-shaped bud cap may be hooked at the tip
Flattened peduncle 1–1·8cm long
Scar
x1

EUCALYPTUS INCRASSATA subsp. 'Robust'

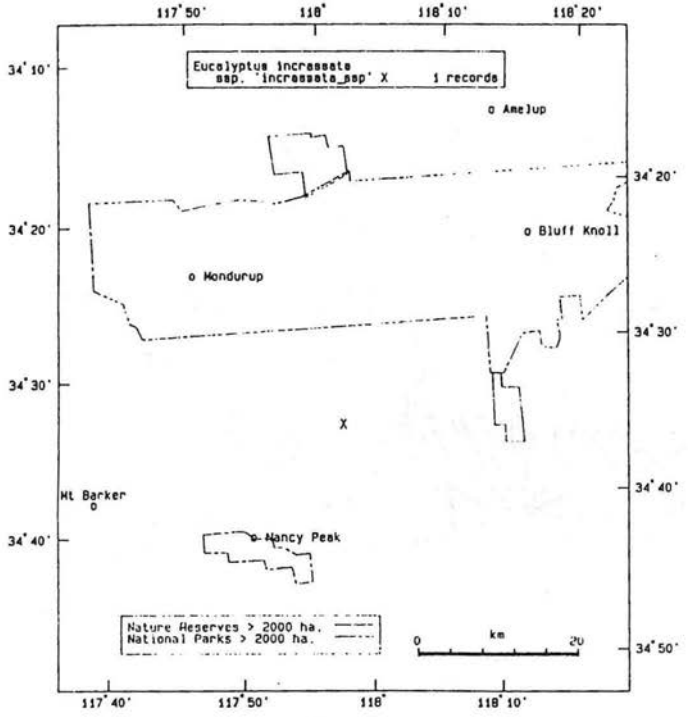
Distribution and Habitat: Observed north west of Kamballup on laterite ridges and slopes of the Kalgan River Valley. Growing in open shrub mallee vegetation with *E. falcata, E.* aff. *uncinata, E. tetragona* and scattered *E. wandoo*.

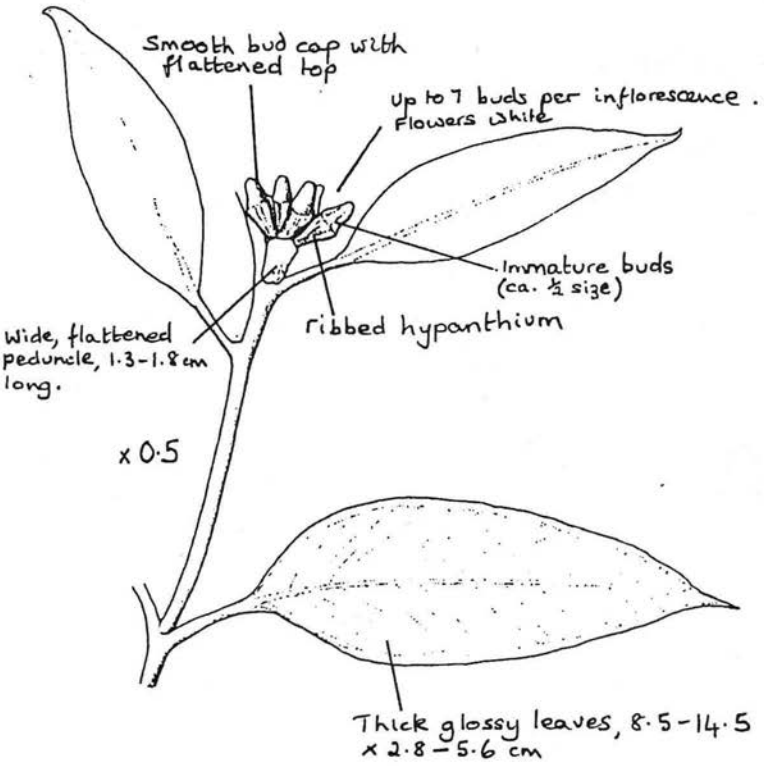
Flowering Period: Unknown.

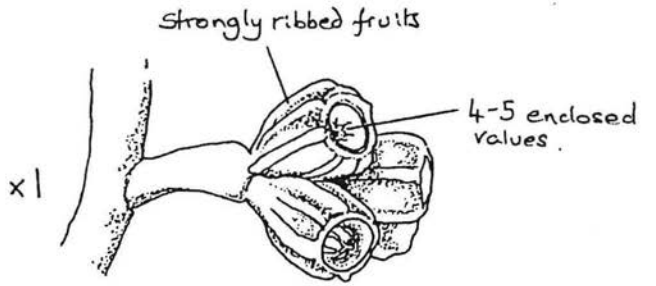
Additional Field Characteristics: An erect, thin-stemmed mallee to 4 m tall. The bark is smooth and pale coloured. The adult leaves are broad-lanceolate, thick and glossy green with the canopy confined to the top of the stems. Branchlets are angular. The buds have a ribbed hypanthium, short, broad stalk and a rounded-conical budcap. The fruits are strongly ribbed, appear almost sessile and have 4-5 included valves.

E. incrassata ssp. 'robust' is similar to *E. incrassata* but can be distinguished by its wider leaves, strongly ribbed hypanthium and fruit and smooth budcap with a flattened top (as opposed to ribbed and beaked in *E. incrassata*). This subspecies is also similar to *E. angulosa* but differs in its flattened budcap and inland habitat.

References: Hopper (field notebook).




Smooth bud cap with flattened top
Up to 7 buds per inflorescence. Flowers white
Immature buds (ca. ½ size)
ribbed hypanthium
Wide, flattened peduncle, 1·3–1·8 cm long.
x 0·5
Thick glossy leaves, 8·5–14·5 x 2·8–5·6 cm


Strongly ribbed fruits
4–5 enclosed values.
x 1

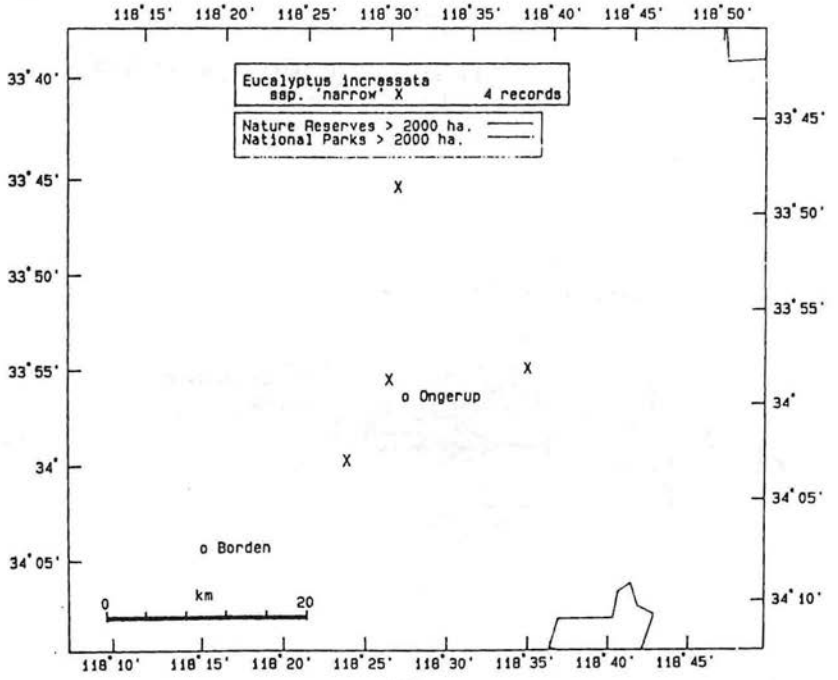
EUCALYPTUS INCRASSATA subsp."Narrow"

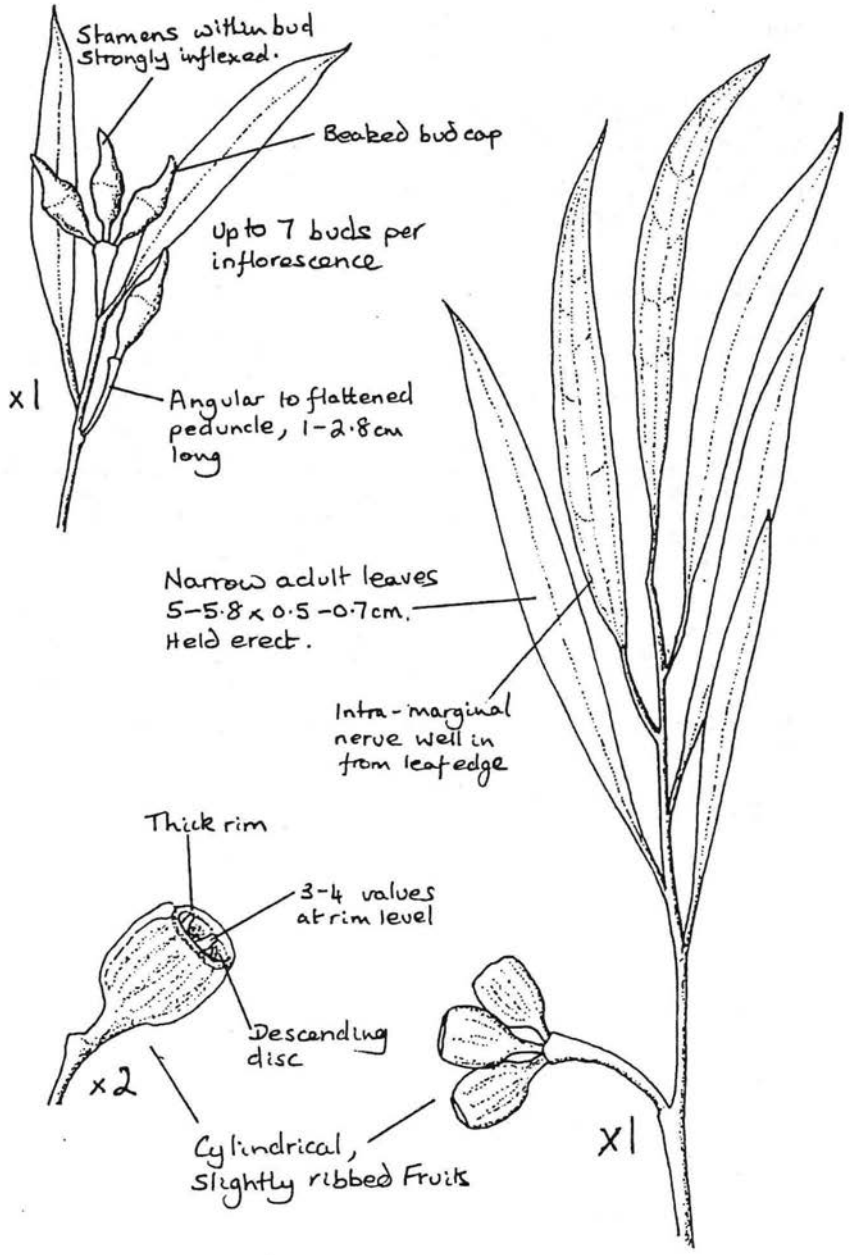
Distribution and Habitat: Collected near Ongerup over a range of approximately 30 km. The only record of habitat is for sandy flat ground.

Flowering Period: Unknown.

Additional Field Characteristics: A mallee up to 6 m which is very similar to *E. incrassata* but differs in its narrower leaves. *E. incrassata* has smooth grey or grey-brown bark with some accumulation of loose rough bark at the base. Juvenile leaves are petiolate, opposite for a few pairs, then alternating, elliptical to ovate, to 10 x 5 cm, slightly discolorous, dull light green to blue-green. The adult leaves in *E. incrassata* 'narrow' are petiolate, alternating, narrow lanceolate erect 5.5-8 x 0.5-0.7 cm (*E. incrassata* 5-11 x 0.9-3 cm). They are glossy green with many side veins and the intramarginal nerve well in from the leaf edge. The inflorescence is axillary, unbranched, 3 or 7-flowered and with an angular to flattened peduncle which is sometimes downcurved. The buds are stalked with a cup-shaped to cylindrical hypanthium and a beaked budcap. Buds measure 1.5-2.3 x 0.5-1 cm, have a scar and include strongly inflexed stamens. The seed is black, irregular and flattish.

Reference: Brooker (pers. comm.).




Stamens within bud strongly inflexed.
Beaked bud cap
Up to 7 buds per inflorescence
x1
Angular to flattened peduncle, 1-2·8cm long
Narrow adult leaves 5-5·8 x 0·5-0·7cm. Held erect.
Intra-marginal nerve well in from leaf edge
Thick rim
3-4 valves at rim level
Descending disc
x2
Cylindrical, slightly ribbed Fruits
X1

EUCALYPTUS INSULARIS M.I.H. Brooker

North Twin Peak Island Mallee

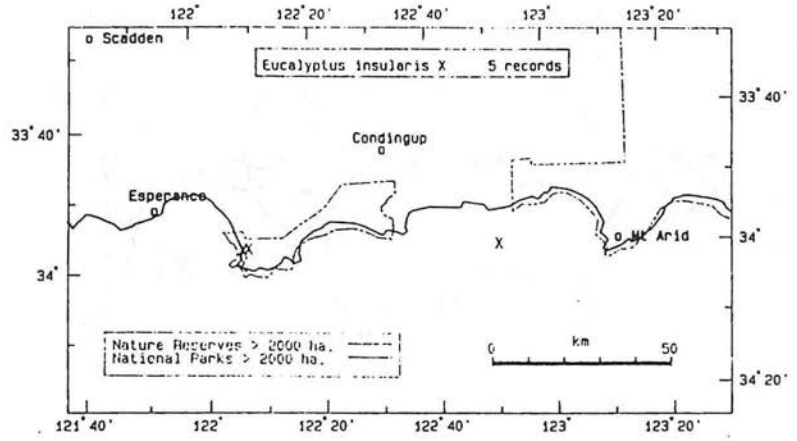
Distribution and Habitat: Occurs only on North Twin Peak Island in the Recherche Archipelago and at one locality on the nearby mainland (Cape Le Grand). Grows in crevices on granite rocks amongst dense scrub, usually on steep slopes of hills, in shallow granite loamy soils. Associated species include *Eucalyptus lehmannii*, *E. conferruminata*, *Acacia heteroclita*.

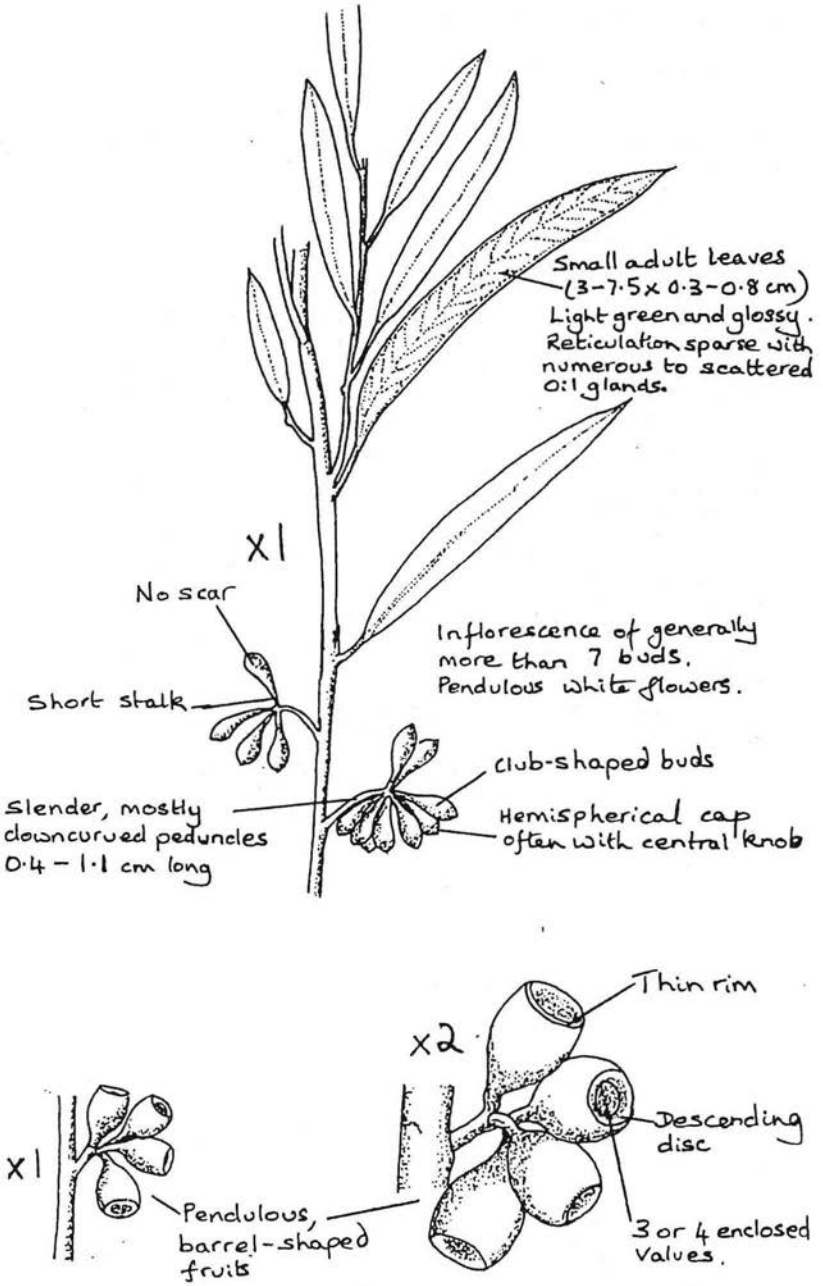
Flowering Period: Not known.

Additional Field Characteristics: A small, slender stemmed mallee (1.5 - 2 m) in the Mt. Le Grand area, a tall mallee (1.4 - 8 m) on North Twin Peak Island. Bark is smooth, red-brown, pale grey, yellowish green or greenish grey, but in the tall form there is a fibrous, red-brown basal stocking. Juvenile leaves are sessile, elliptic, with toothed edges, to 7 x 3 cm, becoming petiolate and lanceolate to 7 x 1.5 cm. They are dull and green with warty stems. The buds measure 0.6-0.7 x 0.3-0.4 cm. Fruits are 0.6-0.8 x 0.6 cm. Seeds are brown, pyramidal or elongated.

The species is superficially similar to *E. doratoxylon* whose adult leaves have a very dense vein network and are apparently glandless. Its buds are cream or yellowish-white in colour and there is a bud-cap scar. Also *E. doratoxylon* has an inflorescence of up to (not more than) 7 flowers. Its peduncles are generally longer than those of *E. insularis* measuring 1-1.2 cm.

References: Brooker and Kleinig (ms) ; Elliott and Jones (1986); Brooker (1974); Rye and Hopper (1981).




Small adult leaves
(3-7·5 x 0·3-0·8 cm)
Light green and glossy.
Reticulation sparse with
numerous to scattered
0:1 glands.
X1
No scar
Short stalk
Inflorescence of generally
more than 7 buds.
Pendulous white flowers.
Club-shaped buds
Slender, mostly
downcurved peduncles
0·4 – 1·1 cm long
Hemispherical cap
often with central knob
X1
Pendulous,
barrel-shaped
fruits
X2
Thin rim
Descending
disc
3 or 4 enclosed
Values.

EUCALYPTUS JACKSONII Maiden

Red Tingle

Distribution and Habitat: Has a very restricted distribution over a range of about 20 km in the Walpole area. Occurs with *E. diversicolor*.

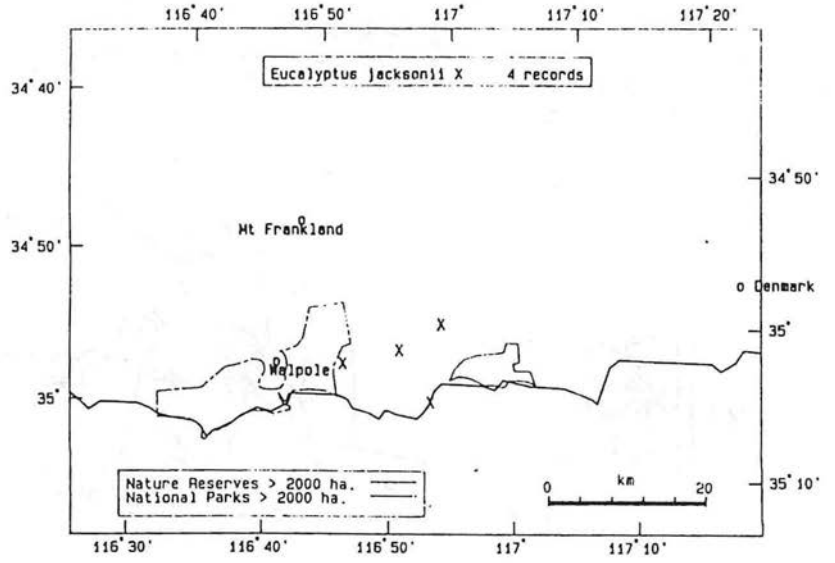
Flowering Period: January - March.

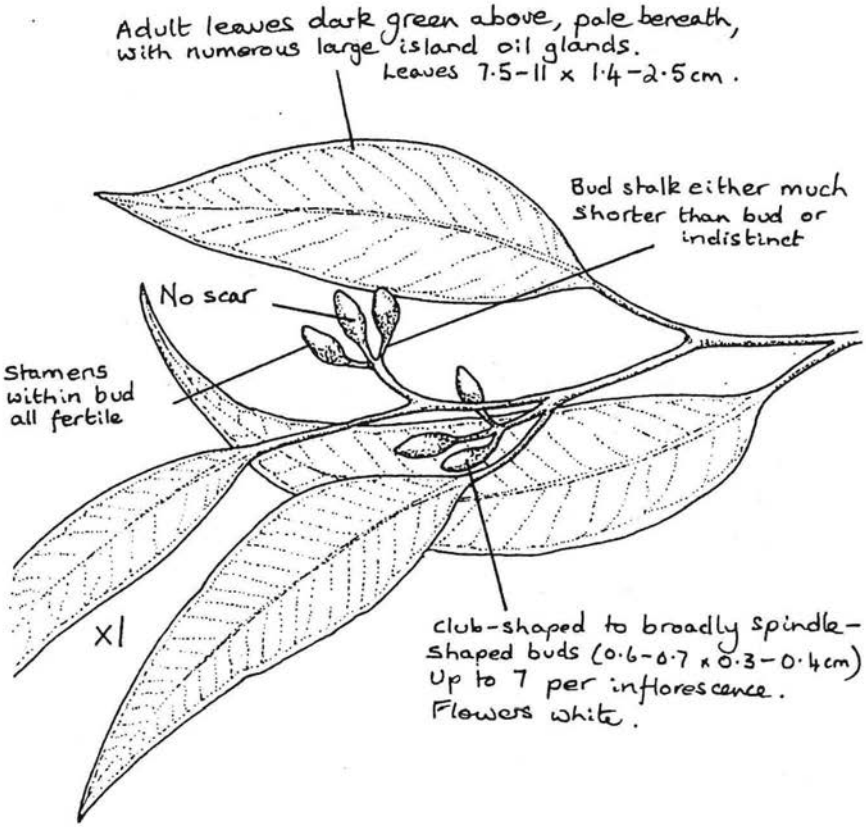
Additional Field Characteristics: A tall tree up to 65 m, with a rough stringy bark and the butt prominently buttressed. The bark is shallowly furrowed, grey over red-brown in colour. Juvenile leaves are opposite and elliptic for a few pairs, then alternating, petiolate and ovate, 6-17 x 4-10 cm, green in colour, slightly glossy, paler beneath.

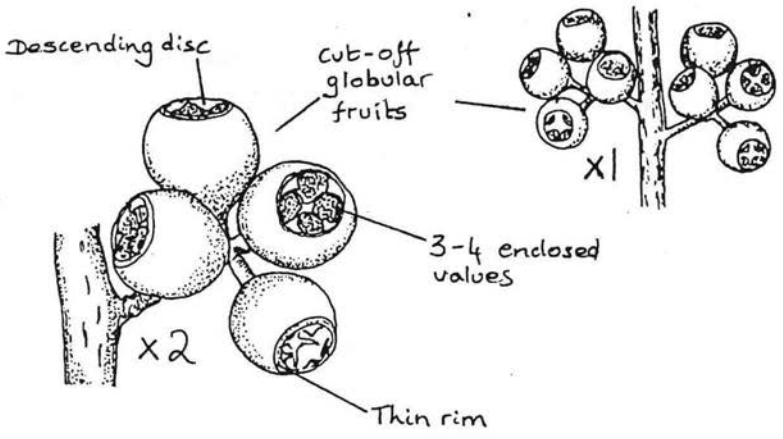
Within the buds, the stamens are all fertile and are variously flexed. Fruits are 0.6-0.8 - 0.8-1 cm. The seeds are shiny brown and pyramidal in shape.

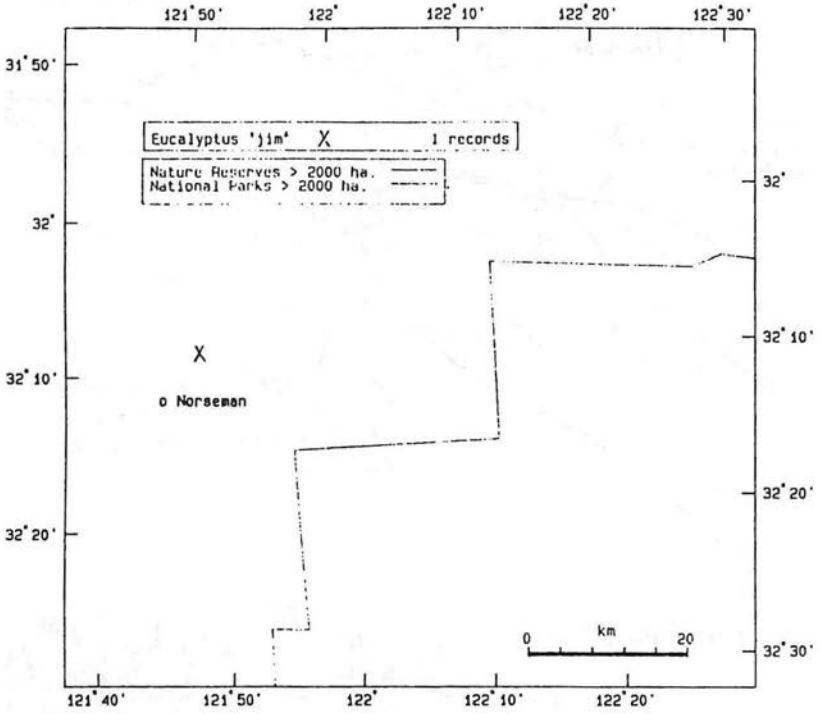
The species is similar to *E. brevistylis*, differing in its larger buds (*brevistylis* buds to 0.3 x 0.3 cm), its juvenile leaves (*brevistylis* - cordate with glaucous red stems) and its generally fewer flowers per inflorescence (*brevistylis* - 7 or more). The flowering period of *E. brevistylis* is from April-November, also its outer stamens are without anthers.

References: Blackall and Grieve (1980); Gardner (1979); Maiden (1913); Brooker and Kleinig (ms).




Adult leaves dark green above, pale beneath, with numerous large island oil glands.
Leaves 7·5–11 x 1·4–2·5 cm.
Bud stalk either much shorter than bud or indistinct
No scar
Stamens within bud all fertile
x1
club-shaped to broadly spindle-shaped buds (0·6–0·7 x 0·3–0·4 cm) up to 7 per inflorescence.
Flowers white.


Descending disc
cut-off globular fruits
x1
3–4 enclosed values
x2
Thin rim


121°50'
122°
122°10'
122°20'
122°30'
31°50'
32°
32°10'
32°20'
32°30'
Eucalyptus 'jim' X 1 records
Nature Reserves > 2000 ha.
National Parks > 2000 ha.
X
o Norseman
0 km 20
121°40'
121°50'
122°
122°10'
122°20'

EUCALYPTUS 'JIM' aff. diptera

Distribution and Habitat: Found in a restricted area about 7 km ENE of Norseman. Habitat unrecorded.

Flowering Period: Unknown.

Additional Field Characteristics: No specimen or description of field characteristics is available. The information below is from a paper on the comparison of the *E. diptera* group and does not give taxonomic detail. This species is related to *E. diptera*, *E. 'creta'* and *E. 'ter'*. It differs from *E. 'cre'* and *E. diptera* in having a 7-flowered inflorescence and smaller buds and fruits and from *E. 'ter'* in having basal wings on the fruit. *E. 'jim'* is also distinguished by its conical operculum.

References: Burgman (1985).

EUCALYPTUS X KALGANENSIS Maiden

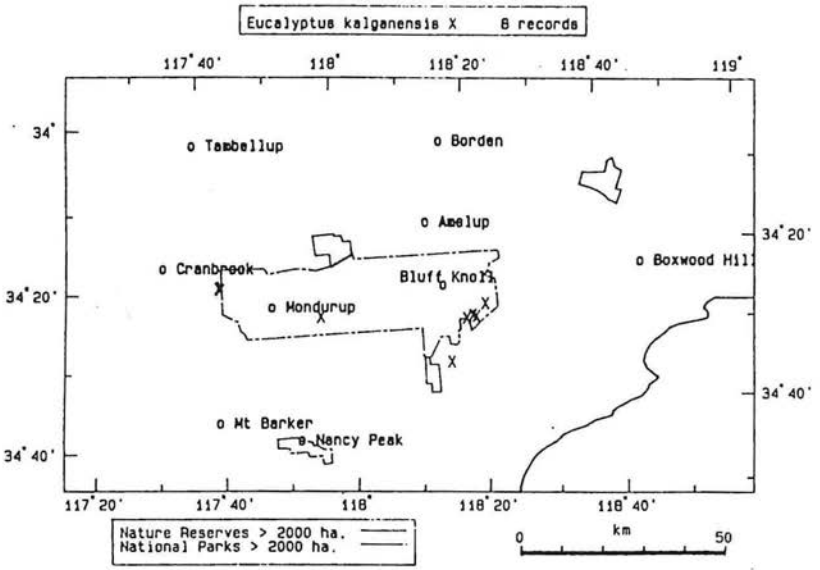
Kalgan Mallee

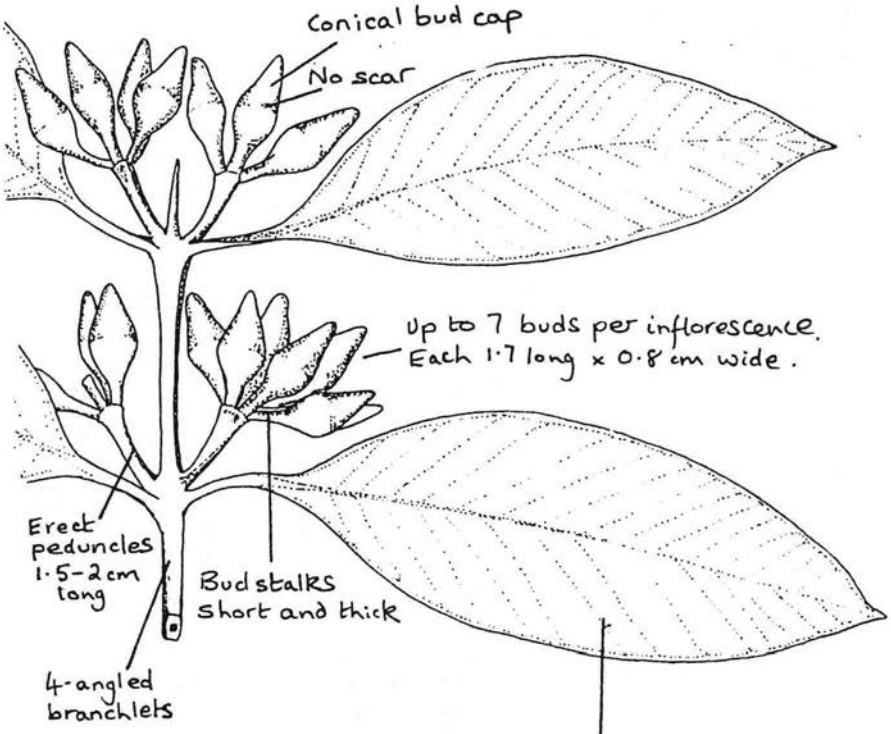
Distribution and Habitat: This is known from a number of locations in the Stirling Range National Park and a single location to the south of the Park. It occurs as an emergent mallee over low heath and is found on rises in gravelly loam.

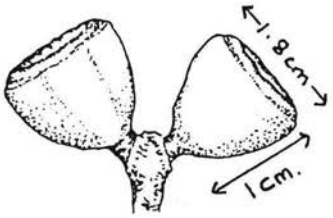
Flowering Period: September.

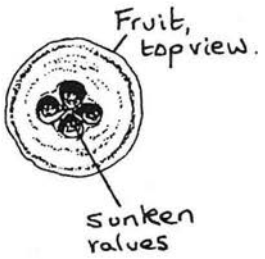
Additional Field Characteristics: A slender stemmed mallee up to 3 m tall. It is considered to be a hybrid between *E. marginata* and *E. preissiana*. From *E. preissiana* it differs in its smaller fruits (*preissiana* - 1.7-2.8 x 1.9-3.2 cm) and sometimes larger number of buds per inflorescence (*preissiana* - up to 3). *E. marginata* has up to 21 buds per inflorescence and fruits which are globose to barrel-shaped, 0.9-1.6 x 0.9-1.5 cm. *E. kalganensis* is also similar to *E. erectifolia*, but the latter has erect, glossy, dark-green leaves, up to 13 buds per inflorescnece and shorter buds (0.9-1.3 x 0.9-1.5 cm).

References: Maiden (1922); Blakely (1965).




Conical bud cap
No scar
Up to 7 buds per inflorescence.
Each 1·7 long x 0·8 cm wide.
Erect peduncles 1·5–2 cm long
Bud stalks Short and thick
4-angled branchlets
Thick adult leaves. Pale yellowish green, paler beneath.
5–8 x 1·5–3 cm.


1·8 cm
1 cm.


Fruit, top view.
Sunken valves

EUCALYPTUS KUMARLENSIS Brooker ined.

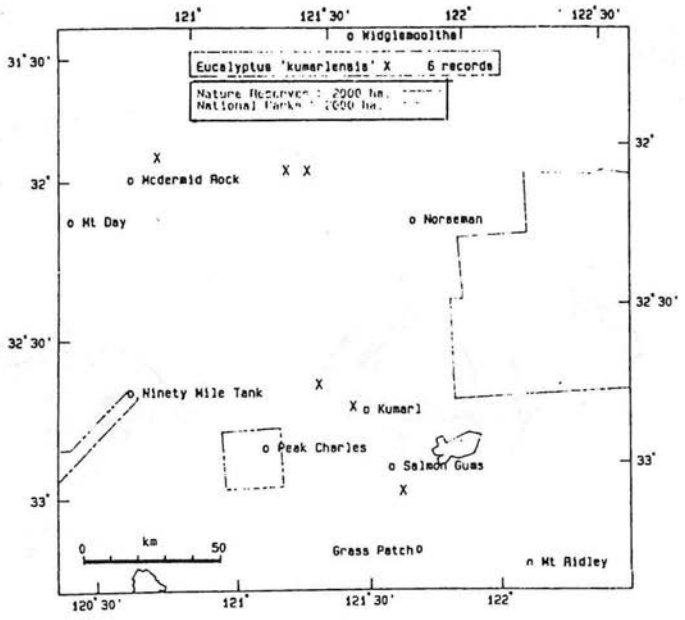
Distribution and Habitat: Known from an area south of Norseman to south-east of Salmon Gums. Habitat is unrecorded.

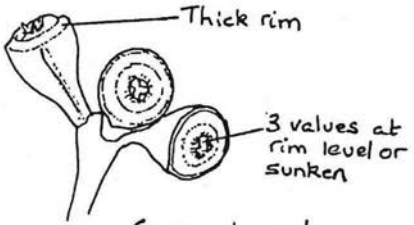
Flowering Period: Not known.

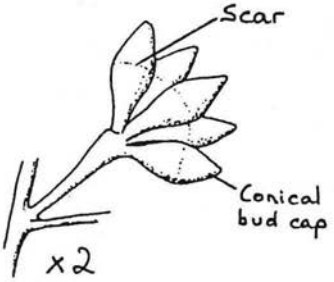
Additional Field Characteristics: A small tree looking like a small salmon gum in general appearance. The bark is smooth and whitish to salmon pink or coppery. Juvenile leaves are sessile, linear to narrow-oblong in shape and measure up to 5 x 0.5 cm. Adult leaves are 6-10 x 0.5-1 cm, with a dense vein network and numerous oil glands. Buds measure 0.5-0.7 x 0.3-0.4 cm. Seeds are pale reddish brown.

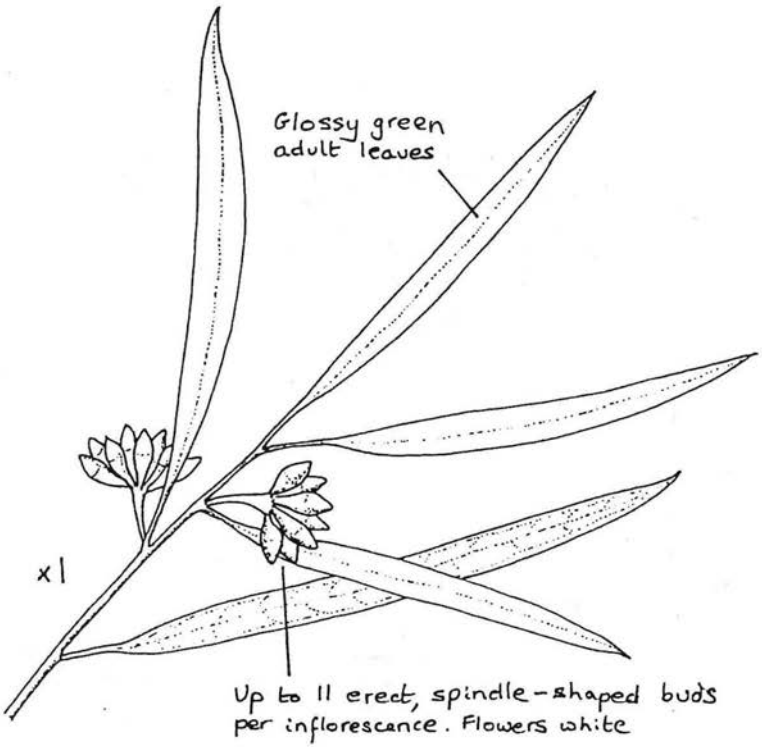
The species may be distinguished from *E. salmonophloia* by its juvenile leaves (*salmonophloia* - petiolate, ovate-lanceolate, 7-9 x 1-3 cm), and different shaped buds and fruits (*salmonophloia* - ovate-globose buds with hemispherical cap, hemispherical fruits with thin rim and 3 protruding valves). *E. kumarlensis* is also similar to *E. salicola*. However, the latter is always in the vicinity of salt lakes, may have powdery bark, has wider juvenile leaves (to 2.5 x 1.6 cm) with warty stems and has conspicuous black oil dots on the adult leaves. It has barrel-shaped fruits.

References: Brooker and Kleinig (ms).




Thick rim
3 valves at rim level or sunken
x2 Cone-shaped fruits


Scar
Conical bud cap
x2


Glossy green adult leaves
x1
Up to 11 erect, spindle-shaped buds per inflorescance. Flowers white

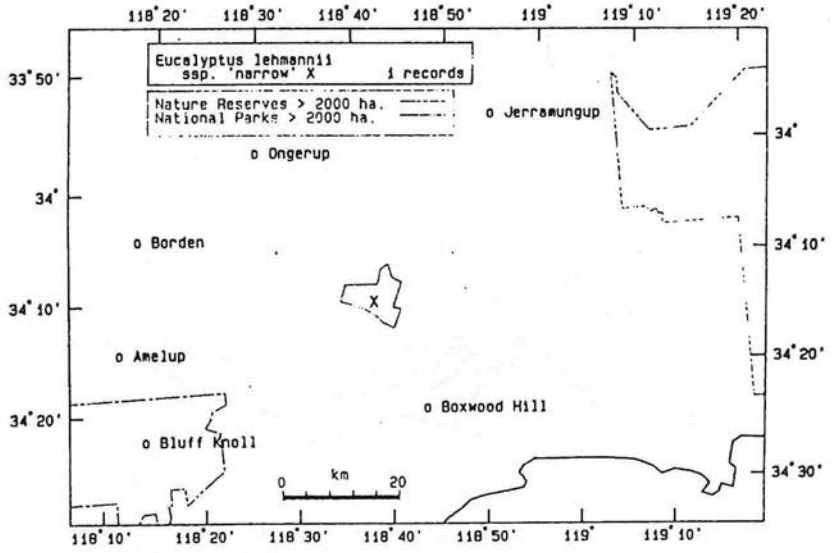
EUCALYPTUS LEHMANNII subsp. 'NARROW'

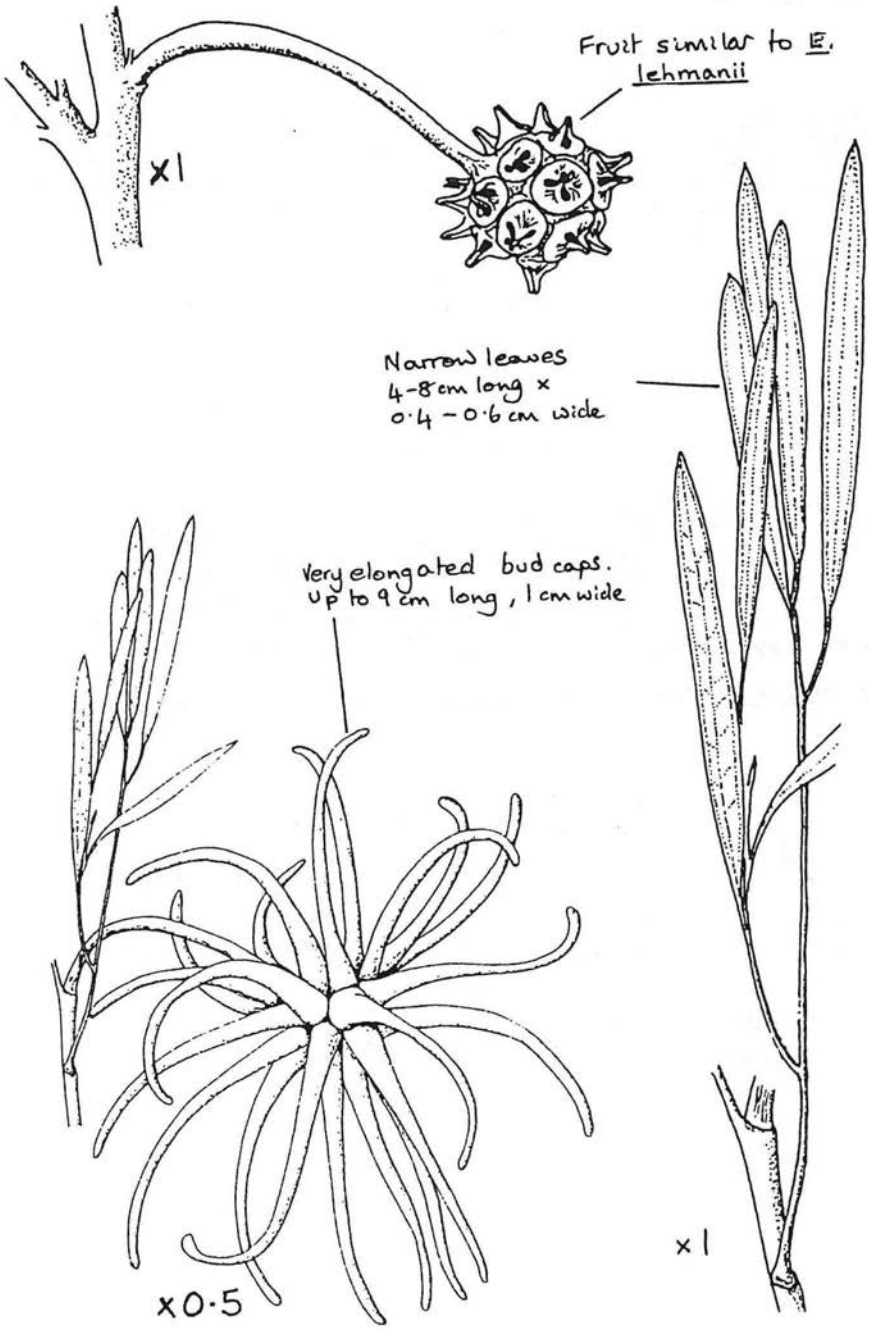
Distribution and Habitat: This variant of *E. lehmannii* has only been observed as a series of specimens at the W.A. Herbarium collected at the Corackerup Nature Reserve near Boxwood Hills. No habitat details are known.

Flowering Period: Unknown but specimens were in late bud when collected in February.

Additional Field Characteristics: Distinguishable from *E. lehmannii* by its very narrow leaves (0.4-0.6 cm wide as opposed to 1-2 cm) and its extremely large opercula (9 cm long as opposed to 2-3.3 cm in *E. lehmannii*).

No information on bark, habit or habitat is available but the very distinctive opercula should identify this possible subspecies of *E. lehmannii*.




Fruit similar to E. lehmanii
x1
Narrow leaves
4-8cm long x
0·4 - 0·6 cm wide
Very elongated bud caps.
up to 9 cm long, 1 cm wide
x0·5
x1

EUCALYPTUS LIGULATA M.I.H. Brooker

Lucky Bay Mallee

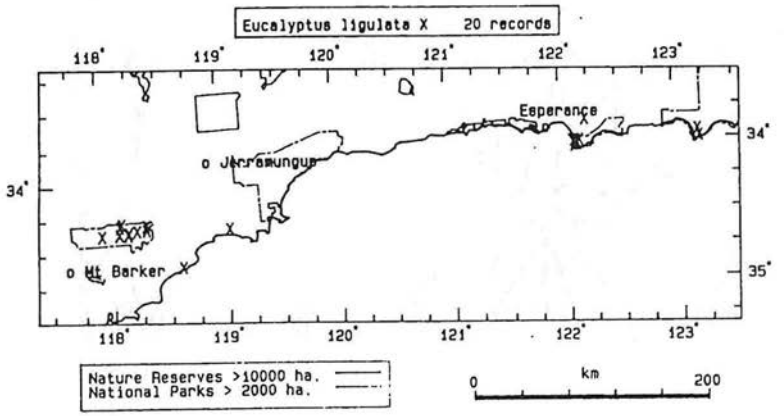
Distribution and Habitat: Has a scattered distribution mainly from Cape Le Grand to Cape Arid, with disjunct occurrences in the Stirling Range and nearby coastal area at Haul-Off Rocks. Generally grows on hill slopes, in shallow loam or sandy soil over granite, in mallee or low woodland over low heath. Often associated with *E. marginata, E. calophylla, E. preissiana.*

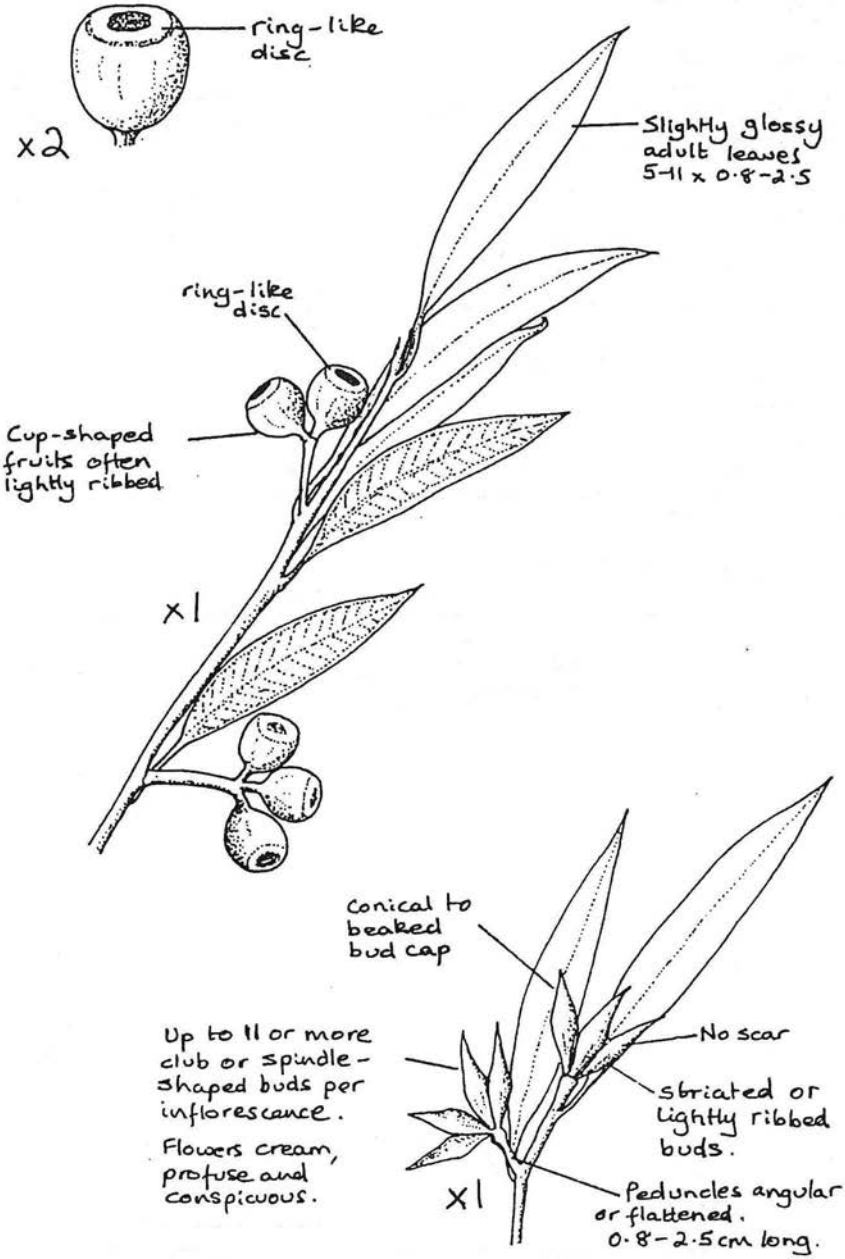
Flowering Period: February - April.

Additional Field Characteristics: An erect mallee 2-3 m in height with smooth bark, pinkish to whitish grey. Juvenile leaves are dull blue-green, with toothed edges and measure up to 11 x 5 cm. The buds are 0.7-1.5 x 0.3-0.6 cm and the fruits 0.8-1.5 x 0.8-1.4 cm. The seed is shining, dark in colour and pyramidal in shape.

The species is similar to *E. calcicola,* but the latter has up to only 7 flowers per inflorescence, may have wider buds (up to 1 cm wide) and has glossy, bright green juvenile leaves. It is also similar to jarrah (*E. marginata*) but differs in its smooth bark, concolorous leaves and lightly ribbed buds and fruits. When the latter have a ring-like disc they are very distinctive.

References: Brooker and Kleinig (ms); Brooker (1974).




ring-like disc
x2
Slightly glossy adult leaves 5-11 x 0·8-2·5
ring-like disc
Cup-shaped fruits often lightly ribbed
x1
Conical to beaked bud cap
Up to 11 or more club or spindle-shaped buds per inflorescence.
Flowers cream, profuse and conspicuous.
No scar
striated or lightly ribbed buds.
x1
Peduncles angular or flattened. 0·8-2·5 cm long.

EUCALYPTUS 'LITOREA' Brooker & Hopper ined.

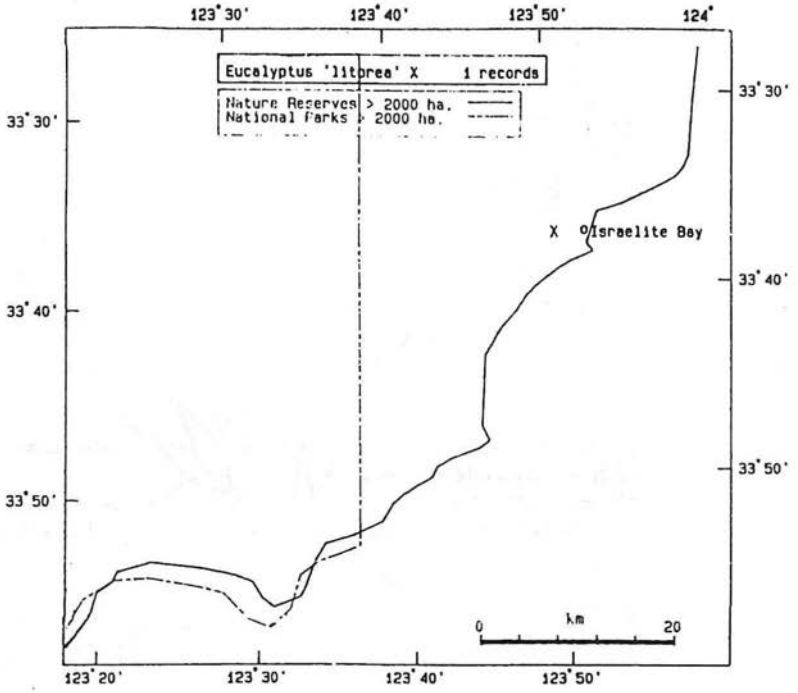
Distribution and Habitat: Known only from the Israelite Bay area, where it occurs bordering salt lakes.

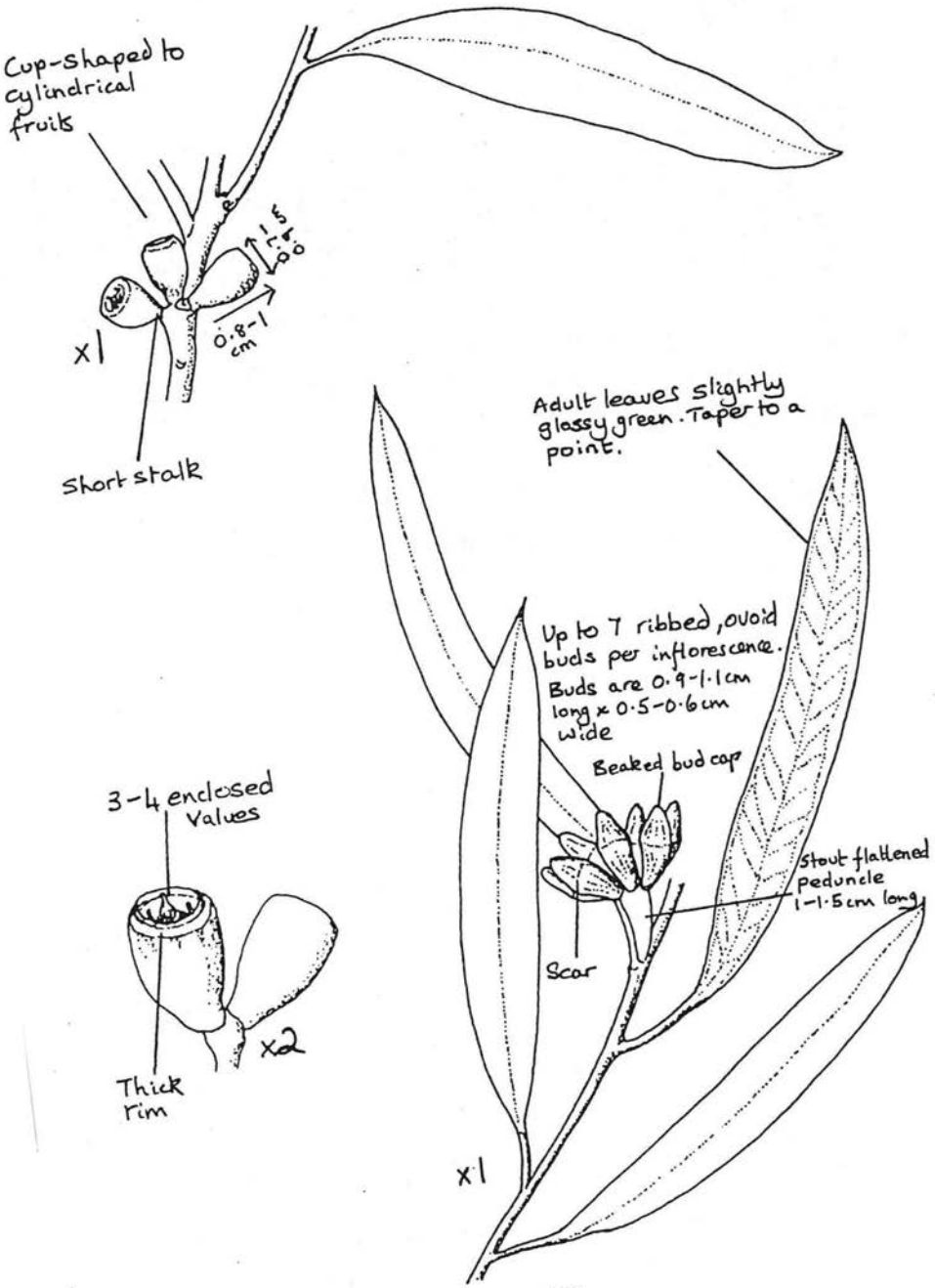
Flowering Period: Not known.

Additional Field Characteristics: A mallee to 6m tall with rough, hard bark with shallow longitudinal furrows, grey over most of the stems, smooth grey over cream above. Juvenile leaves petiolate, alternating, ovate, to 12 x 3.5 cm, dull blue green. Adult leaves petiolate, alternating, lanceolate tapering to a large, narrow point, 6.5-10 x 1-1.5 cm, slightly glossy green. Reticulation is dense with scattered to sparse and irregular oil glands or sometimes apparently lacking. Infloresences axillary, 7-flowered and peduncles stout, flattened, 1-1.5 cm long. The stamens within the bud are strongly inflexed. The fruit is cupular to cylindrical with 3 or 4 enclosed valves. Seed is brown, shallowly pyramidal and with the ventral side ribbed.

This species is related to *E. 'rigens'* and *E. 'famelica'*. It can be distinguished from *E. 'rigens'* by its 7-flowered inflorescence, smaller buds and from *E. 'famelica'* by its rough bark and saline habitat.

References: Brooker & Kleinig (ms), Brooker & Hopper (ms).




Cup-shaped to cylindrical fruits
1·5-2·0 cm
0·8-1 cm
x1
Short stalk
Adult leaves slightly glossy green. Taper to a point.
Up to 7 ribbed, ovoid buds per inflorescence. Buds are 0·9-1·1cm long x 0·5-0·6cm wide
Beaked bud cap
Stout flattened peduncle 1-1·5cm long
Scar
x1
3-4 enclosed Values
x2
Thick rim

EUCALYPTUS AFF. LONGICORNIS

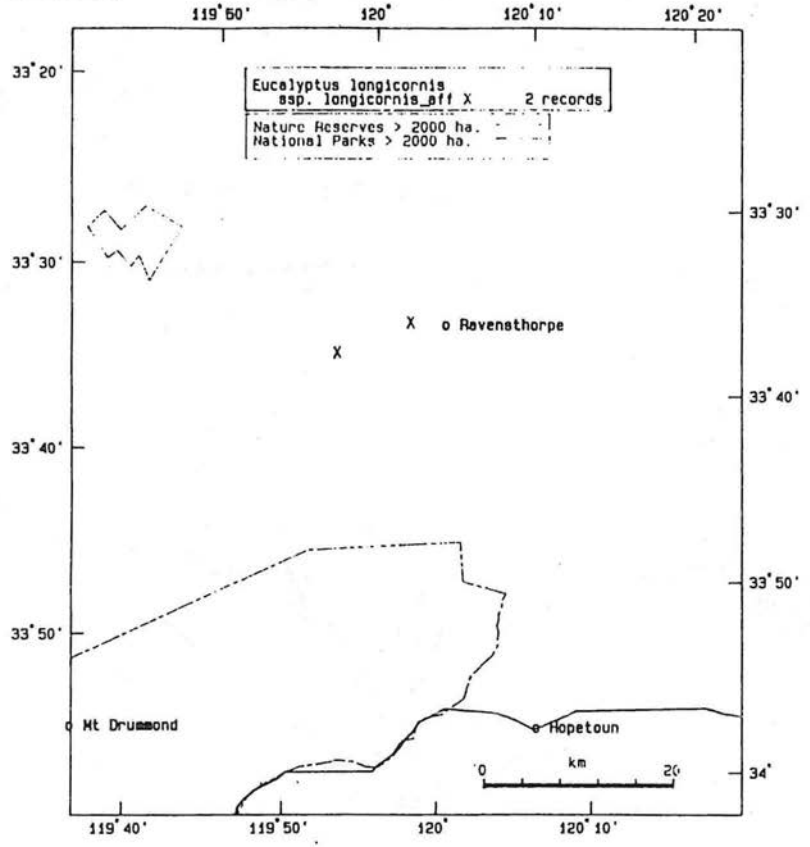
Distribution and Habitat: Observed just west and north-west of Ravensthorpe in rich, heavy soil with *E. brachycalyx*.

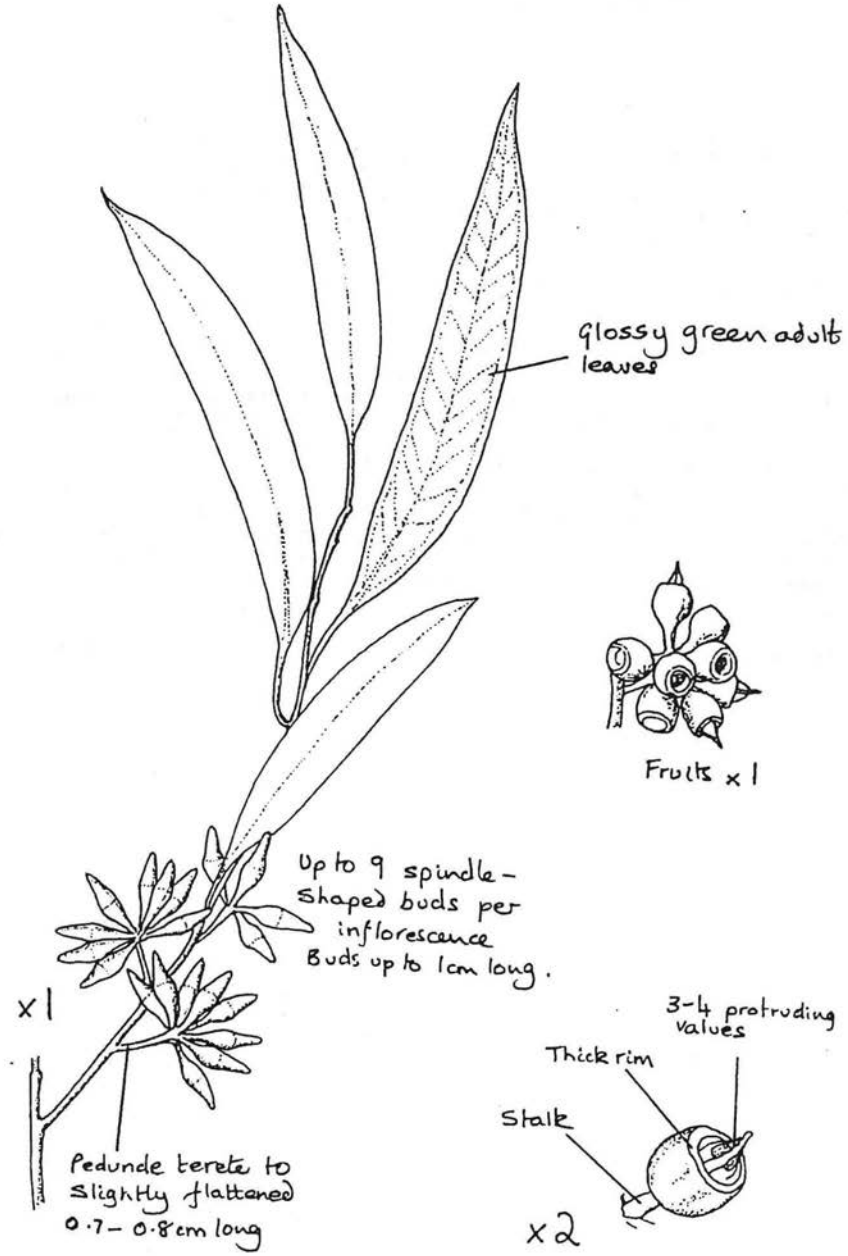
Flowering Period: Unknown.

Additional Field Characteristics: A thick-trunked mallee to approximately 6 m with glossy green leaves and rough bark. Adult leaves 5-10 x 0.9-1.5 cm, lanceolate and petiolate. Inflorescence up to 9-flowered, unbranched and axillary. The peduncle is terete to slightly flattened and 0.7-0.8 cm (only one specimen closely examined). The spindle-shaped buds are up to 1 cm long. The fruits are stalked with a thick rim and 3-4 protruding valves.

E. aff. *longicornis* differs from *E. longicornis* in that the latter is a tree to 30 m and has longer bud caps (~8 mm), (*E.* aff. *longicornis* 4-5 mm).

References: Brooker and Hopper (pers. comm.).




glossy green adult leaves
Fruits x 1
Up to 9 spindle-shaped buds per inflorescence
Buds up to 1cm long.
x 1
Peduncle terete to slightly flattened
0.7 – 0.8cm long
3-4 protruding values
Thick rim
Stalk
x 2

EUCALYPTUS MACRANDRA F. Muell. ex Benth.

River Yate
Long Flowered Marlock

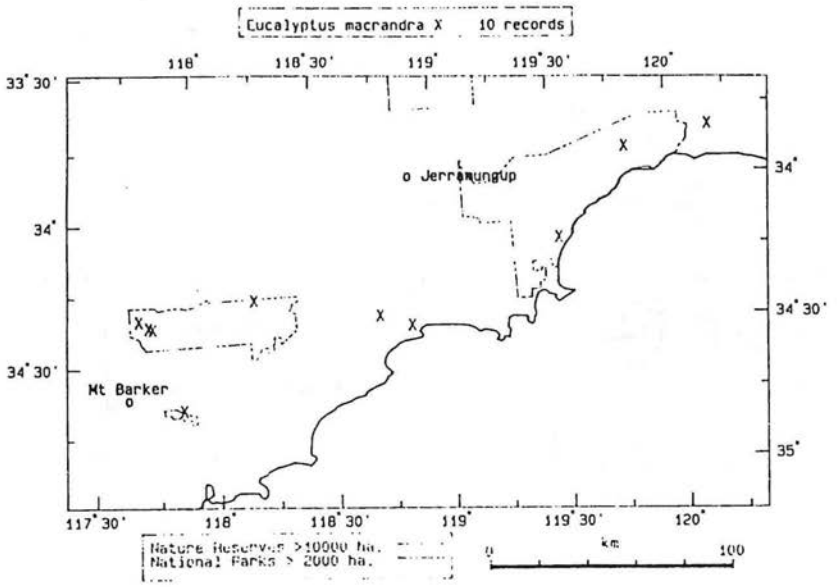
Distribution and Habitat: Occurs from the Stirling Range eastwards to the Hammersley River. Grows in clayey depressions or on river flats, usually on sandy or loamy soil. Occurs in open low woodland, often with *E. calophylla, E. decurva, E. marginata.*

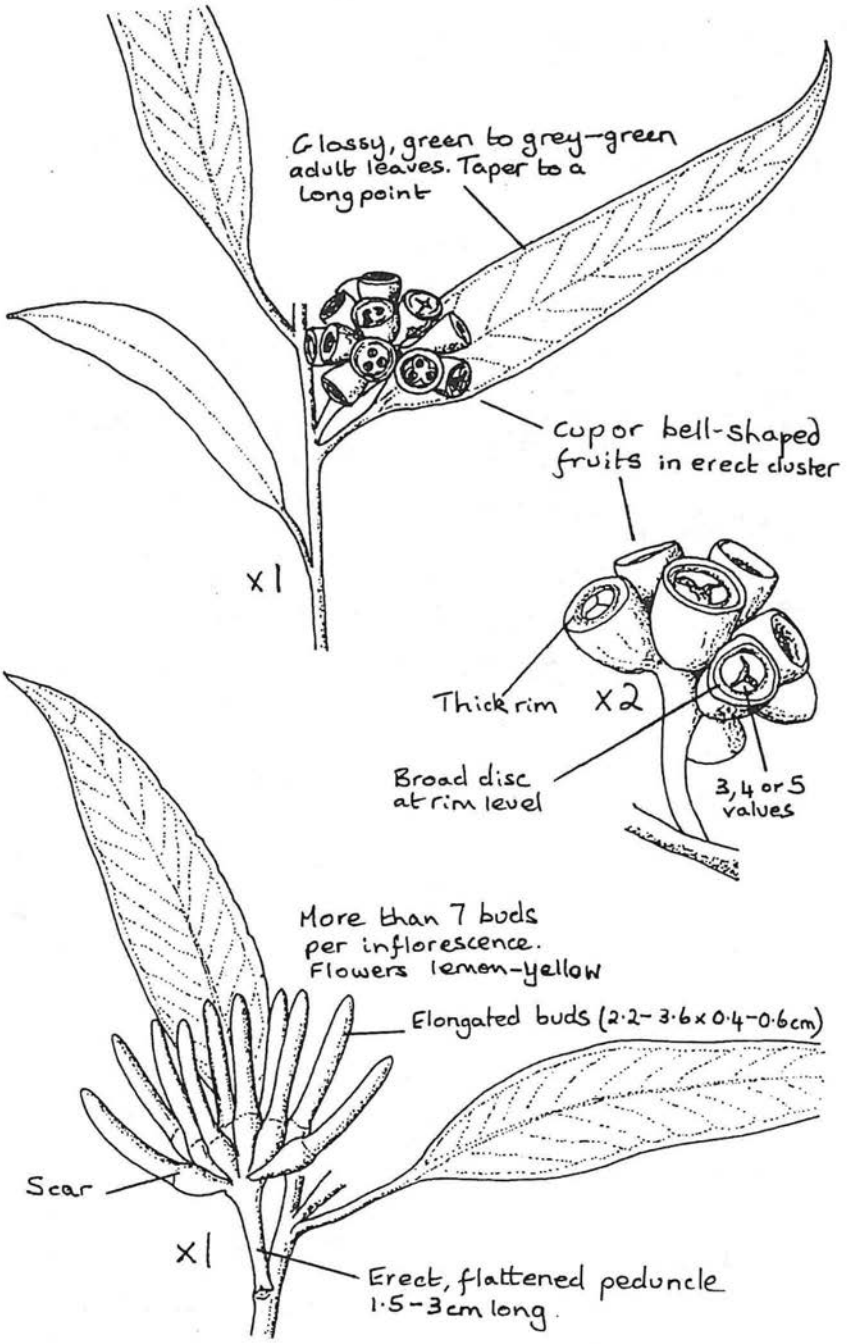
Flowering Period: December - April.

Additional Field Characteristics: A smooth barked mallee, 2-5 m in height, occasionally a tree up to 6 m. The bark is grey over whitish or pinkish grey. Juvenile leaves are glossy green, ovate, and 7-9 x 3-4 cm. Adult leaves measure 7-12 x 1.2-2 cm. The seed is red-brown to grey-black.

The species has similarities with *E. cornuta, E. lehmannii* and *E. occidentalis*. *E. cornuta* has different shaped fruits, the valves being prominently exserted and joined across the opening. The disc is ascending as it extends over the valves. *E. lehmannii* has fused buds and fruits, whilst *E. occidentalis* has rough bark on the lower trunk, pendulous buds and fruits, and creamy-white flowers.

References: Chippendale (1973); Gardner (1979); Brooker and Kleinig (ms).




Glossy, green to grey-green adult leaves. Taper to a long point
Cup or bell-shaped fruits in erect cluster
x1
Thick rim
x2
Broad disc at rim level
3, 4 or 5 valves
More than 7 buds per inflorescence. Flowers lemon-yellow
Elongated buds (2·2–3·6 x 0·4–0·6cm)
Scar
x1
Erect, flattened peduncle 1·5–3cm long.

EUCALYPTUS MEGACORNUTA Gardner

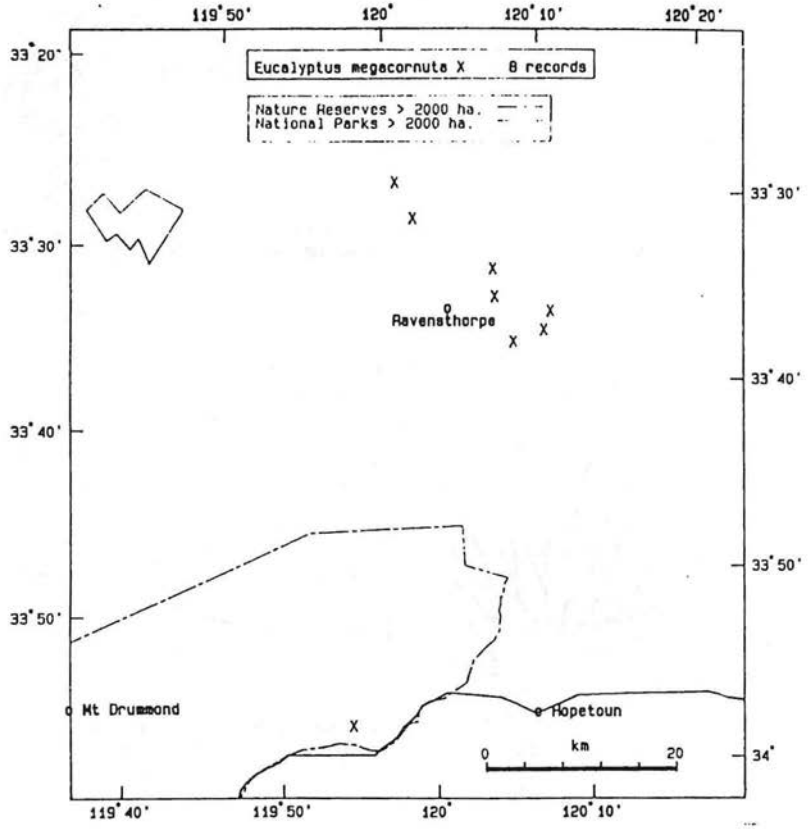
Warted Yate

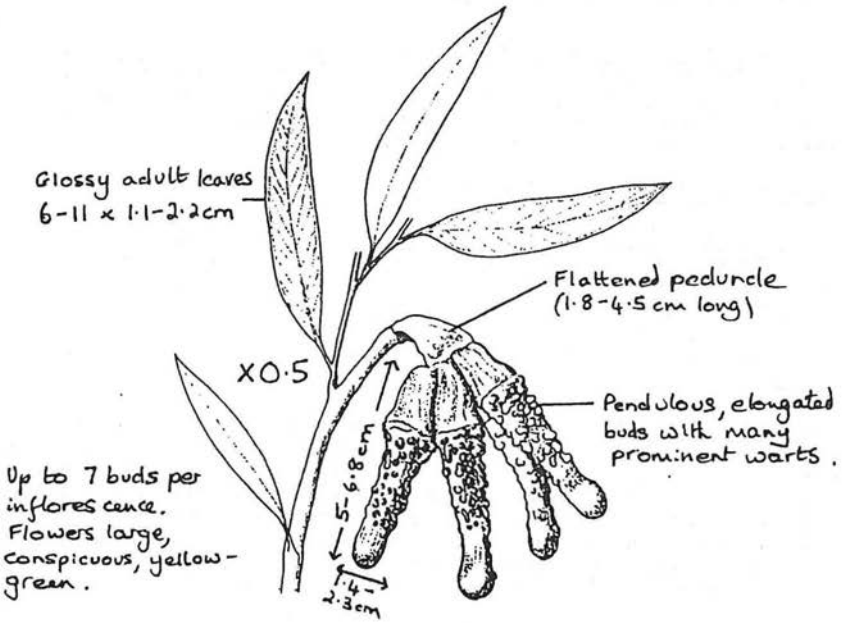
Distribution and Habitat: Known from a few locations in the Ravensthorpe Range and a single location in the Whoogarup Range. Grows in lateritic loams on low hills. It sometimes occurs in association with *E. lehmannii*.

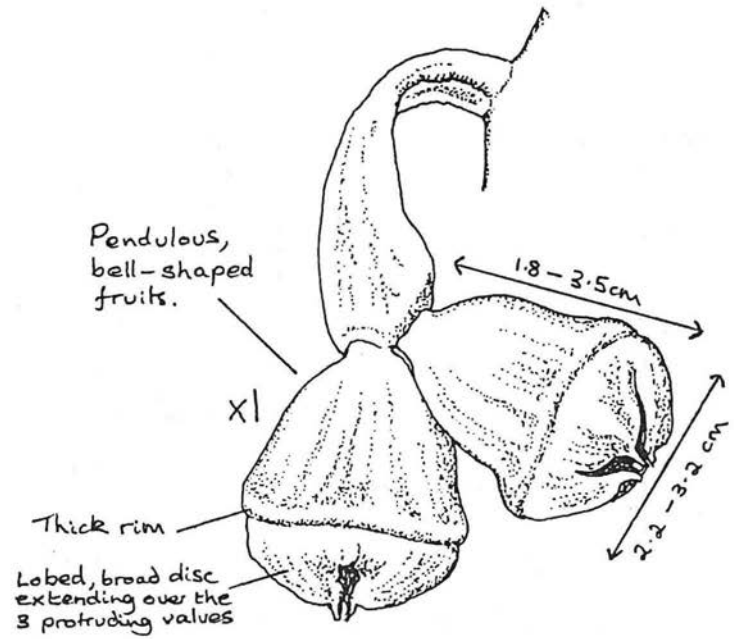
Flowering Period: July - December.

Additional Field Characteristics: A small tree up to 12 m in height with a sparse spreading crown and smooth bark, grey over brownish grey or orange. The pendulous, elongated buds with prominent warts covering the bud cap are distinctive. Related species, such as *E. newbyi* and *E. talyuberlup* have smooth bud caps, whilst *E. burdettiana* may have a smooth or slightly warty bud cap. Also, the latter is generally of smaller stature, and has smaller fruits.

References: Chippendale (1973); Gardner (1942); Gardner (1979); Brooker and Kleinig (ms).




Glossy adult leaves
6-11 x 1·1-2·2cm
Flattened peduncle
(1·8-4·5 cm long)
X0·5
Pendulous, elongated buds with many prominent warts.
Up to 7 buds per inflorescence. Flowers large, conspicuous, yellow-green.
5-6·8cm
1·4-2·3cm


Pendulous, bell-shaped fruits.
X1
1·8-3·5cm
2·2-3·2 cm
Thick rim
Lobed, broad disc extending over the 3 protruding valves

EUCALYPTUS 'MELANOPHITRA' Brooker and Hopper ined.

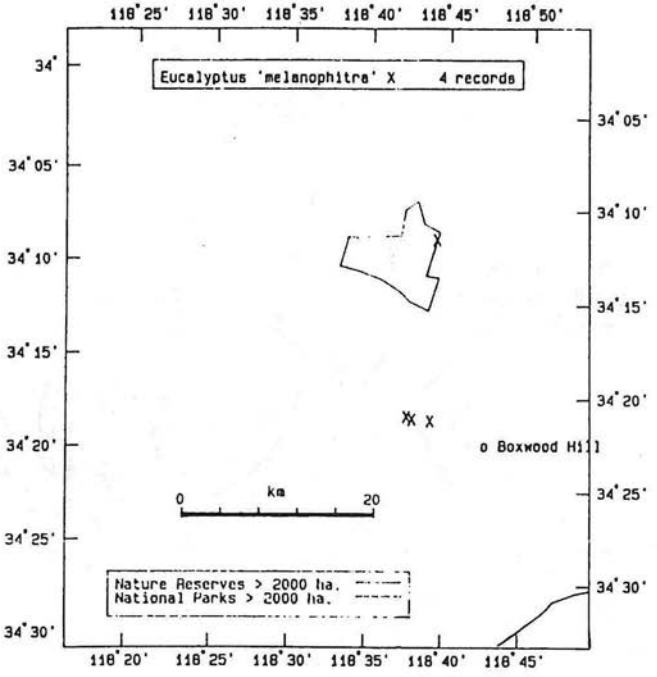
Distribution and Habitat: Known from only two populations near the Pallinup River and Corackerup Nature Reserve. Grows on steep stony (spongolite) breakaways and screes in low woodland. Has been found in association with *E. astringens* and *E. platypus*.

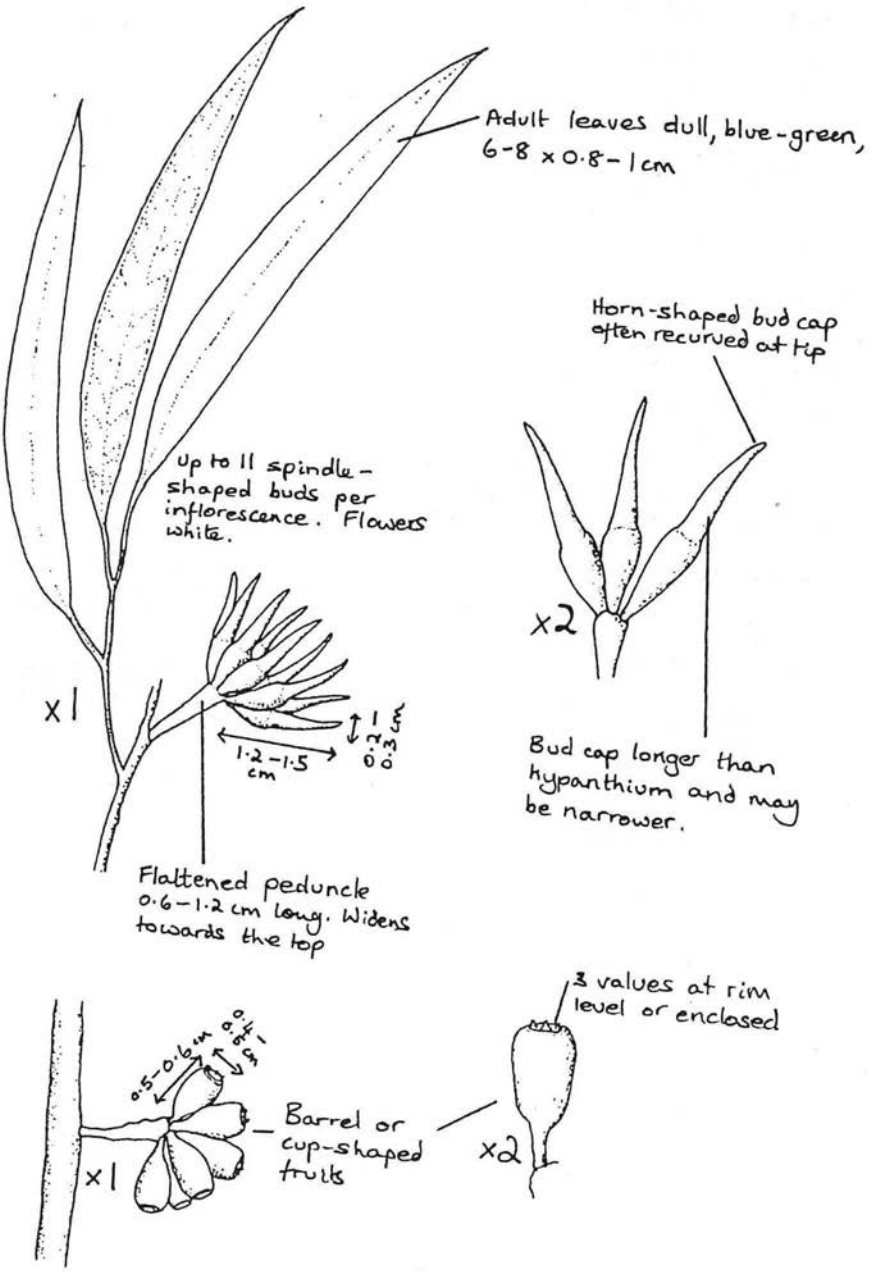
Flowering Period: February.

Additional Field Characteristics: A small tree of 6-7 m with rough grey-brown flaky bark at the base of the trunk and smooth grey bark above. Juvenile leaves are green and slightly hairy, up to 10 x 4 cm. The fruits are on short stalks and measure 0.5-0.6 x 0.4-0.5 cm. They have a thin rim, depressed disc, and 3 valves which are at rim level or enclosed.

The species is similar to *E. xanthonema*, *E. gardneri* and *E. redunca*. However, *E. xanthonema* is a smooth-barked mallee with very narrow leaves and *E. gardneri* is smooth barked apart from some imperfectly shed, curling, red-brown flakes and has larger buds and fruits (*E. gardneri* buds 1.4-2.6 x 0.3-0.5 cm, fruits, 0.7-1.1 x 0.5-0.7 cm). *E. redunca* is also a mallee with smooth bark and differs further in its wider leaves (1.3-2 cm wide) and larger buds and fruits.

References: Brooker and Kleinig (ms).




Adult leaves dull, blue-green, 6-8 x 0.8-1 cm
Up to 11 spindle-shaped buds per inflorescence. Flowers white.
x1
1.2-1.5 cm
1 mm
Flattened peduncle 0.6-1.2 cm long. Widens towards the top
Horn-shaped bud cap often recurved at tip
x2
Bud cap longer than hypanthium and may be narrower.
0.5-0.6 cm
0.4-0.5 cm
x1
Barrel or cup-shaped fruits
3 values at rim level or enclosed
x2

EUCALYPTUS MERRICKIAE Maiden & Blakely

Narrow leaved mallee
Goblet mallee

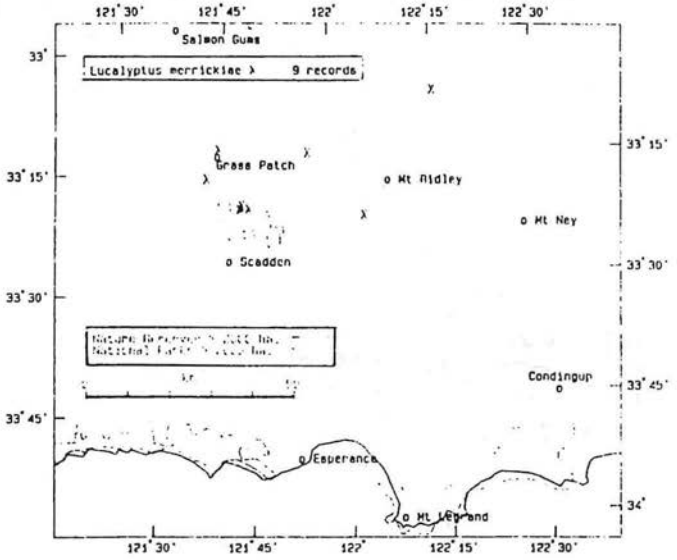
Distribution and Habitat: Known only from an area north of Esperance over a range of c. 55 km. It grows in low lying area near salt lakes, often in sand or sandy clay, often on slightly sloping ground. Occurs in open shrub mallee, with scrub beneath.

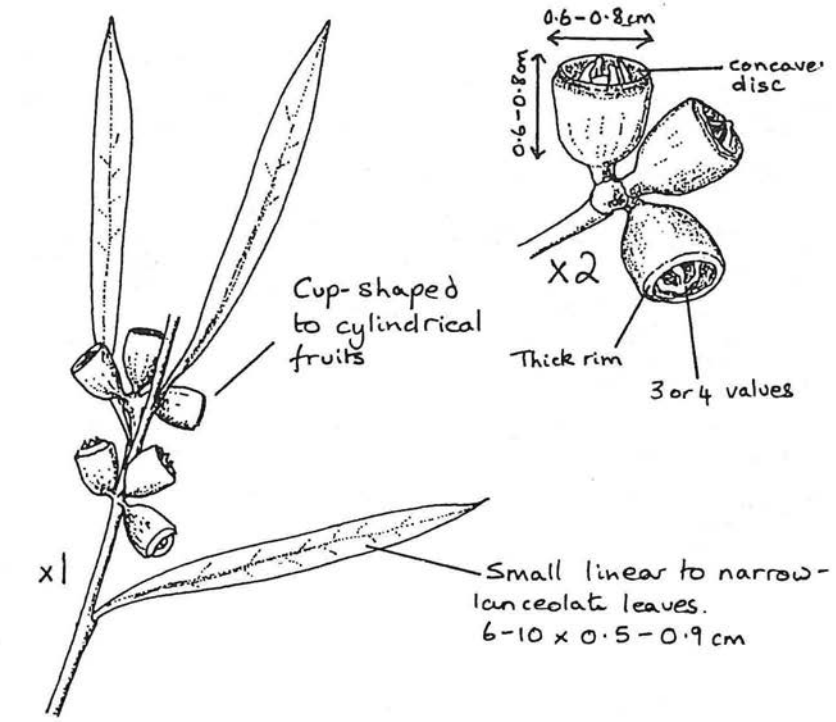
Flowering Period: August - November.

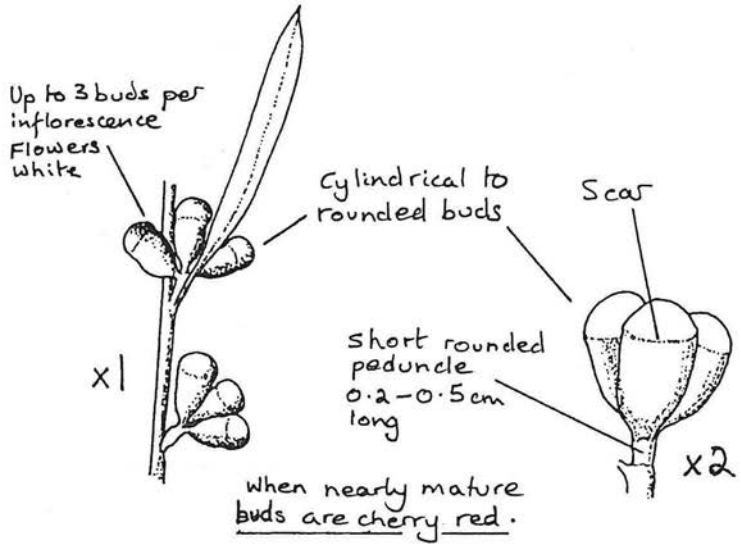
Additional Field Characteristics: A mallee 2-6 m in height with rough grey brown over white bark and a dense crown. The adult leaves are light green to grey-green in colour with moderate venation and numerous oil glands. The buds are cylindrical to rounded on short stalks, measure 0.7-1 x 0.4-0.6 cm and the stamens within the bud are in a continuous ring and are strongly inflexed. The buds are cherry red when near maturity and the flowers are white. The seed is whitish grey and ovoid.

The species is superficially similar to *E. scyphocalyx* and *E. leptocalyx*. It can be distinguished from these species by its rough bark, narrower leaves and 3-flowered inflorescence (*scyphocalyx* and *leptocalyx* are 7+ flowered) and short, rounded peduncle.

References: Elliott and Jones (1986); Maiden and Blakely (1925); Gardner (1979); Chippendale (1973); Burgman (1985); Brooker and Kleinig (ms) .







When nearly mature buds are cherry red.

EUCALYPTUS 'MIS' aff. angustissima

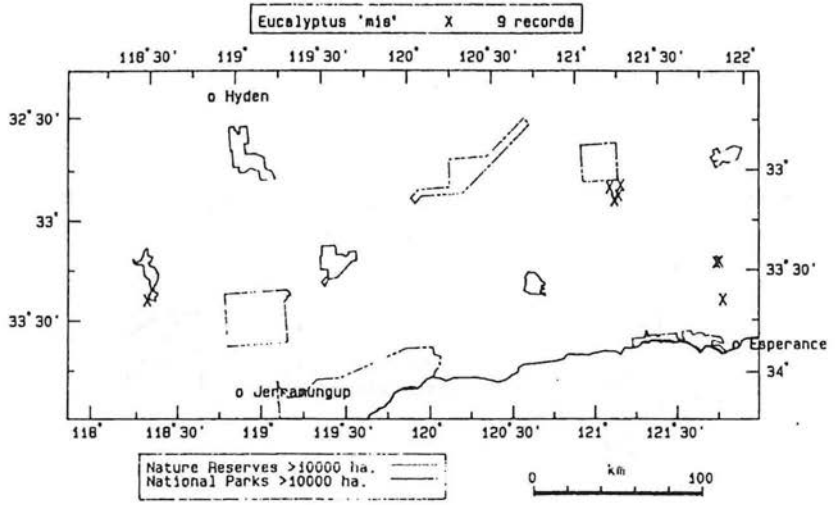
Distribution and Habitat: Occurs from Lake Chinokup to east of Scaddan, a geographic range of 325 km. Grows on sandy clays and loams, often near salty ground such as the edges of lakes, or on alluvial flats near saline creeks.

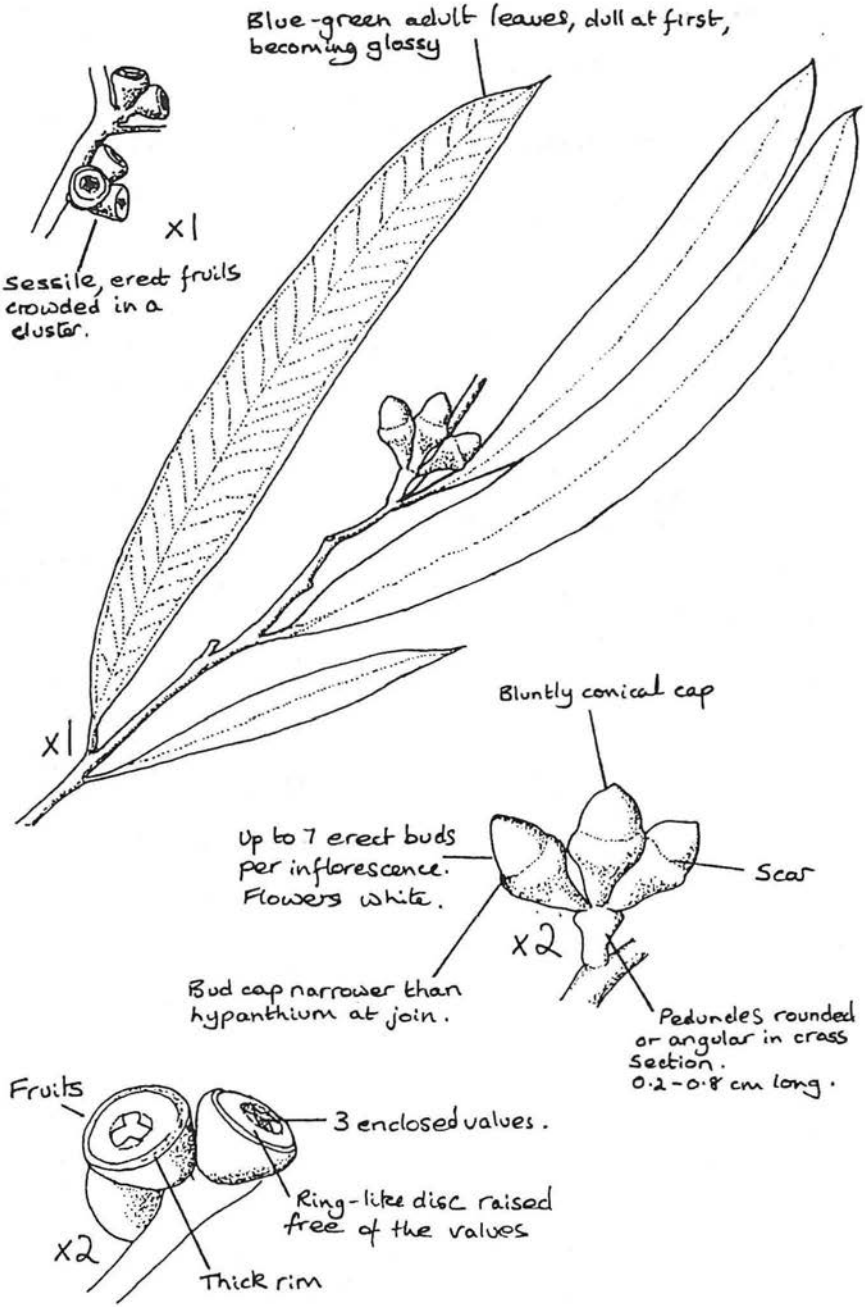
Flowering Period: August. Full period not known.

Additional Field Characteristics: A low dense mallee with smooth or matt bark, variable in colour - either light grey-brown, pink-green or white-grey. The adult leaves measure 6-10 x 0.7-1.5 cm. They have a dense vein network and numerous oil glands. The ovoid buds are 0.5-0.7 x 0.3-0.5 cm. The fruits are hemispherical to conical in shape, 0.4-0.5 x 0.6-0.7 cm. The seed is reddish brown, smooth and with longitudinal grooves.

The species is similar to *E. angustissima* but differs in its wider leaves, longer peduncles and enclosed valves.

References: Burgman (1985); Brooker and Kleinig (ms); Newbey (ms).




Blue-green adult leaves, dull at first, becoming glossy
x1
Sessile, erect fruits crowded in a cluster.
x1
Bluntly conical cap
Up to 7 erect buds per inflorescence. Flowers white.
Scar
x2
Bud cap narrower than hypanthium at join.
Peduncles rounded or angular in cross section. 0.2-0.8 cm long.
Fruits
3 enclosed valves.
Ring-like disc raised free of the valves
x2
Thick rim

EUCALYPTUS NEWBEYI Carr and Carr

Beaufort Inlet Mallet

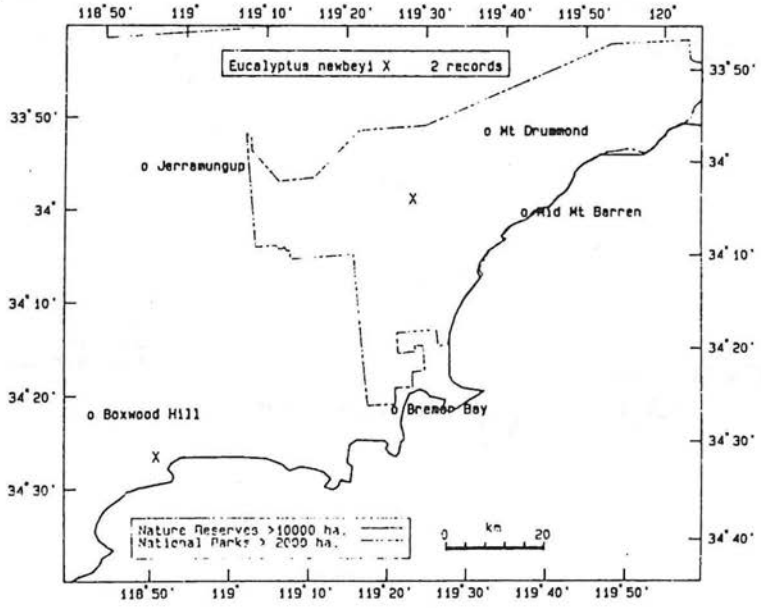
Distribution and Habitat: Known from only two populations, from near the Beaufort Inlet and in the Fitzgerald River National Park, over a geographic range of 70 km. Grows in spongolitic loam in dense low forest with *E. falcata, E. angulosa* and *E. redunca*

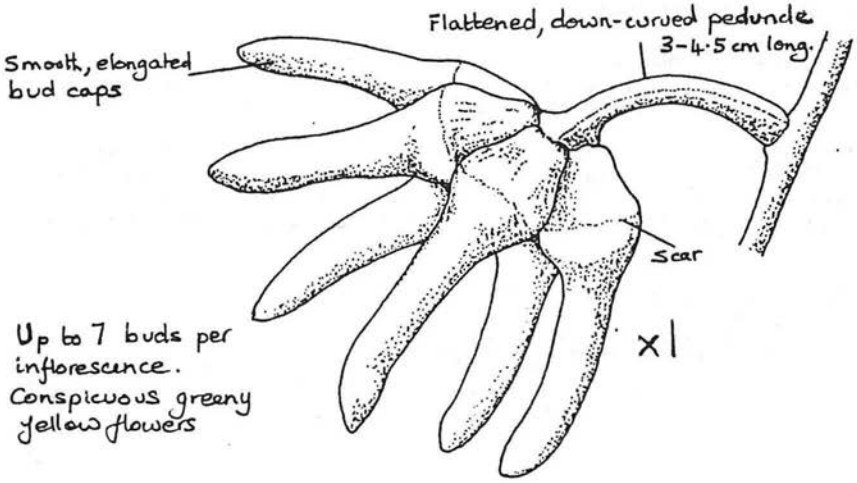
Flowering Period: September - February.

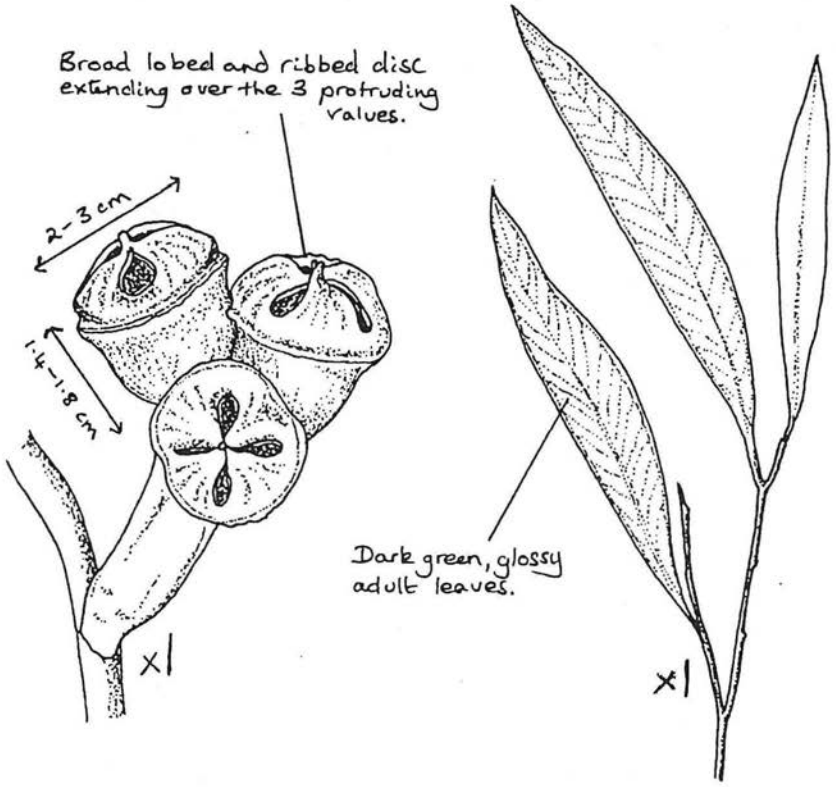
Additional Field Characteristics: A small tree to 8 m with smooth bark, dark or light grey or coppery in colour. Adult leaves measure 6-7 x 1-1.5 cm. The buds are stalkless and measure 4.5-7 x 1-1.7 cm. Fruits are also stalkless, conical to bell-shaped and with a thick rim. The seed is black, irregular to ovoid in shape.

The species is related to *E. burdettiana, E. megacornuta* and *E. talyuberlup*. It can be distinguished from the two former species by its smooth operculum and from *E. talyuberlup* by its wider fruits and its generally fewer flowers per inflorescence (*talyuberlup* - up to 13 buds). These 4 species are all distinguished from *E. lehmannii* by their free flowers and fruits (in *lehmannii* flowers and fruits are fused at the base).

References: Carr and Carr (1980); Brooker and Kleinig (ms).




Flattened, down-curved peduncle
3–4·5 cm long.
Smooth, elongated bud caps
Scar
Up to 7 buds per inflorescence.
Conspicuous greeny yellow flowers
x1


Broad lobed and ribbed disc extending over the 3 protruding values.
2–3 cm
1·4–1·8 cm
x1
Dark green, glossy adult leaves.
x1

EUCALYPTUS "NUTANS"

Red-flowered Moort
(Note: This is an unnamed species to which the name "*nutans*" has been applied for many years).

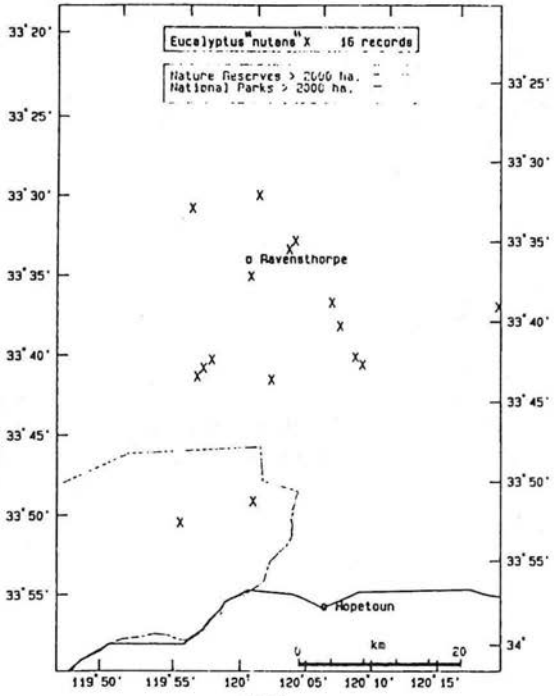
Distribution and Habitat: Occurs only in the Ravensthorpe Range area and eastern parts of the Fitzgerald River National Park. Grows in sand amongst gravel rocks or on clay or gravel soils. Is sometimes associated with *E. annulata* and *E. flocktoniae*.

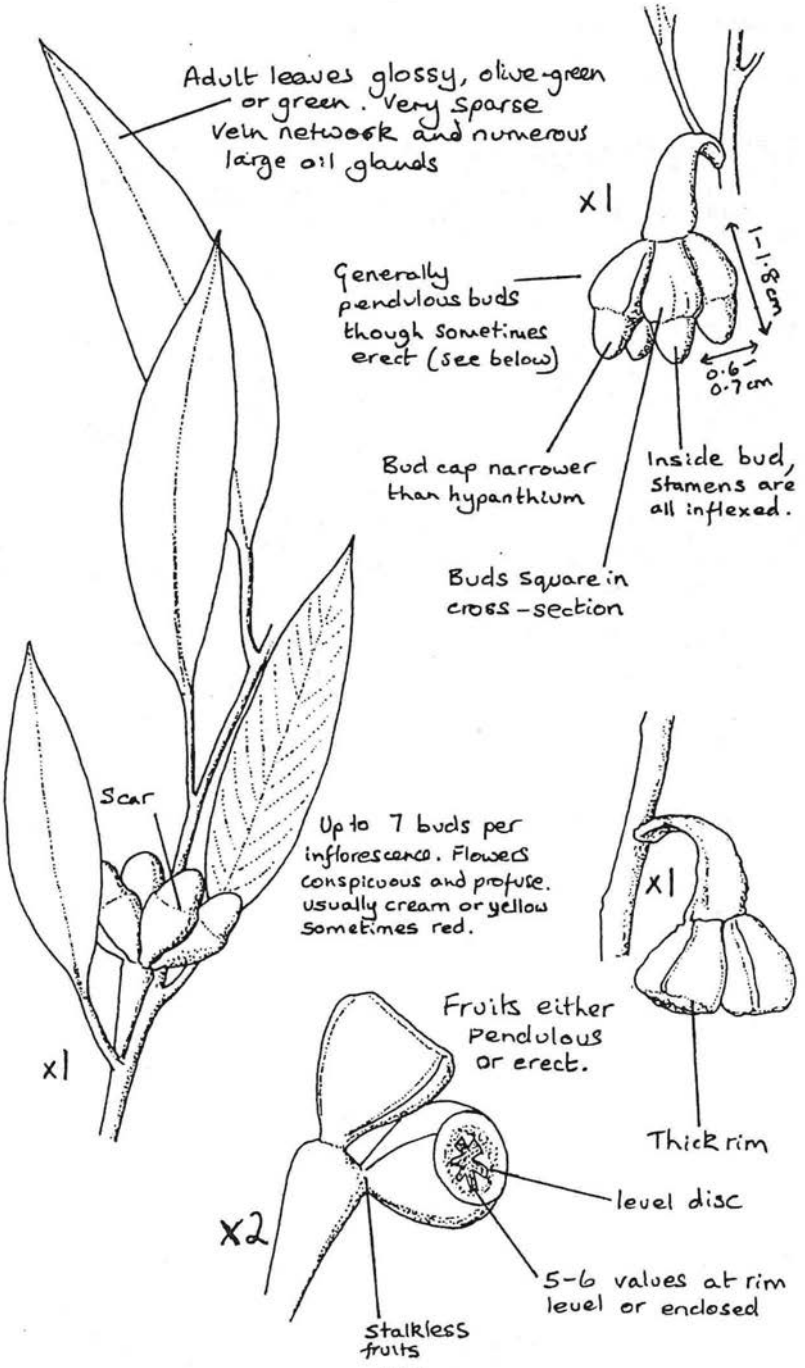
Flowering Period: September - December.

Additional Field Characteristics: A low mallee or small tree up to 4 m in height with smooth, often shiny bark, grey, yellowish-green or coppery. The trunk or stems may be slightly fluted. Adult leaves measure 5-10 x 1.5-2.5 cm. The fruits are cup-shaped and measure 0.8-1.3 x 0.8-1.3 cm. The seed is brown.

The species is similar to *E. 'recondita'* but differs in its bud size and shape and its sometimes red flowers. It is also similar to *E. platypus* but the latter has elongated buds with horn-shaped bud caps and a hypanthium which is often 2-winged. Inside the buds, its stamens are all erect.

References: Burgman (1985); Brooker and Kleinig (ms).




Adult leaves glossy, olive-green or green. Very sparse vein network and numerous large oil glands
x1
1-1.8cm
0.6-0.7cm
Generally pendulous buds though sometimes erect (see below)
Bud cap narrower than hypanthium
Inside bud, stamens are all inflexed.
Buds square in cross-section
Scar
x1
Up to 7 buds per inflorescence. Flowers conspicuous and profuse. usually cream or yellow sometimes red.
x1
Fruits either pendulous or erect.
Thick rim
level disc
x2
5-6 valves at rim level or enclosed
Stalkless fruits

EUCALYPTUS OVULARIS Maiden and Blakely

Small-fruited mallee

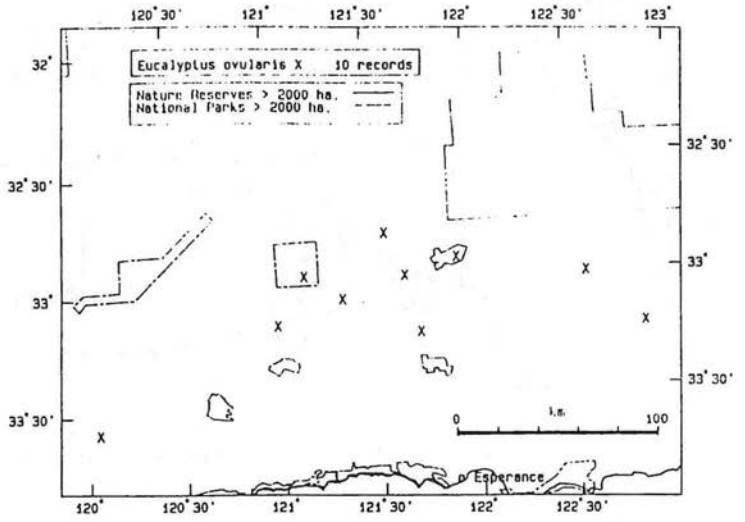
Distribution and Habitat: Has a scattered distribution from east of Ravensthorpe to Clyde Hill over a geographic range of about 260 km. Grows in open shrub mallee over low scrub, on sandy loams or clays. Associated species include *E. flocktoniae, E. eremophila* and *E. pileata*

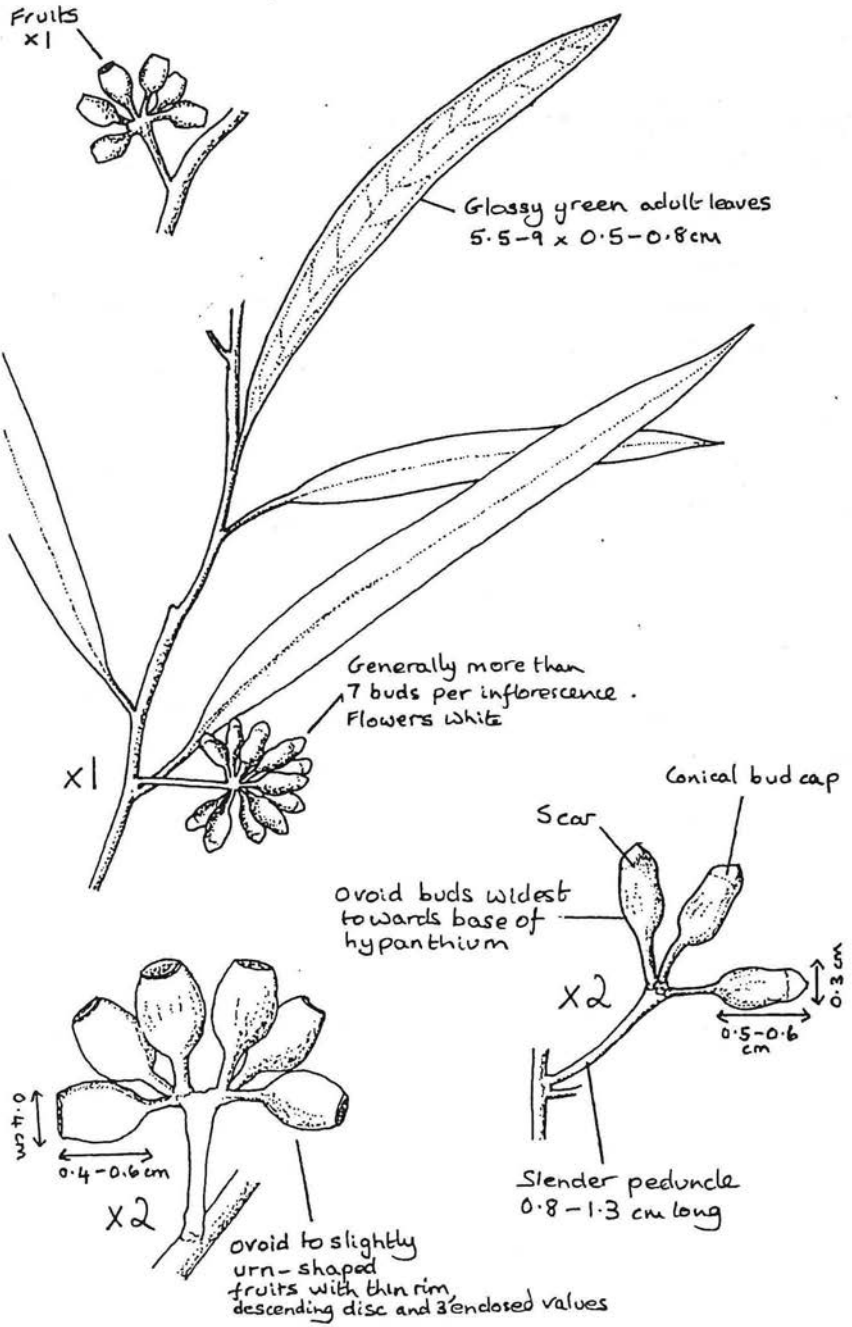
Flowering Period: September - April.

Additional Field Characteristics: A mallee of 9 m, generally having stems with grey-brown rough bark on the lower half and smooth pinkish grey bark above. The rough stocking may be absent on plants growing to the north-east of Esperance. The seed is brown and compressed-ovoid.

The species is similar to *E. myriadena, E. aequioperta* and *E. brachycorys*, the four species differing mainly in bud size and bud shape (see below). *E. myriadena* is found from Bullfinch and Southern Cross to Ravensthorpe, *aequioperta* from Narembeen to Coolgardie and *brachycorys* in the northern and central wheatbelt.

References: Brooker (1981); Brooker and Kleinig (ms) .




Fruits
x1
Glossy green adult leaves
5·5–9 x 0·5–0·8cm
Generally more than
7 buds per inflorescence.
Flowers white
x1
Conical bud cap
Scar
Ovoid buds widest
towards base of
hypanthium
x2
0·3 cm
0·5–0·6
cm
Slender peduncle
0·8–1·3 cm long
0·4
cm
0·4–0·6 cm
x2
Ovoid to slightly
urn-shaped
fruits with thin rim,
descending disc and 3 enclosed valves

EUCALYPTUS 'PLA' aff. diversifolia

Jimberlana mallee

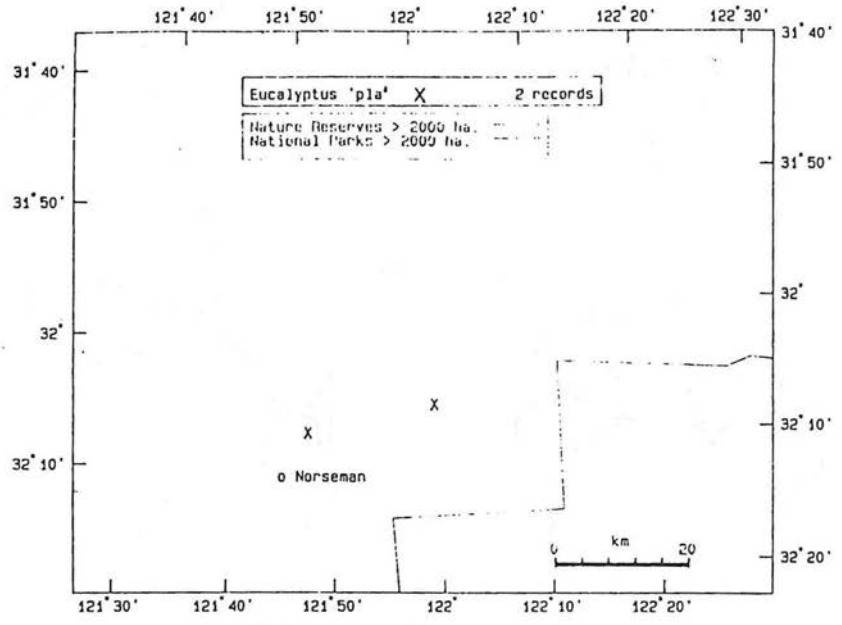
Distribution and Habitat: Known only from Jimberlana Hill and Mt Norcott north-east of Norseman, a geograhpic range of about 18 km. Grows in dark brown sandy loam on rocky slopes amongst granite boulders. Occurs in open shrub-mallee with *E. oleosa*.

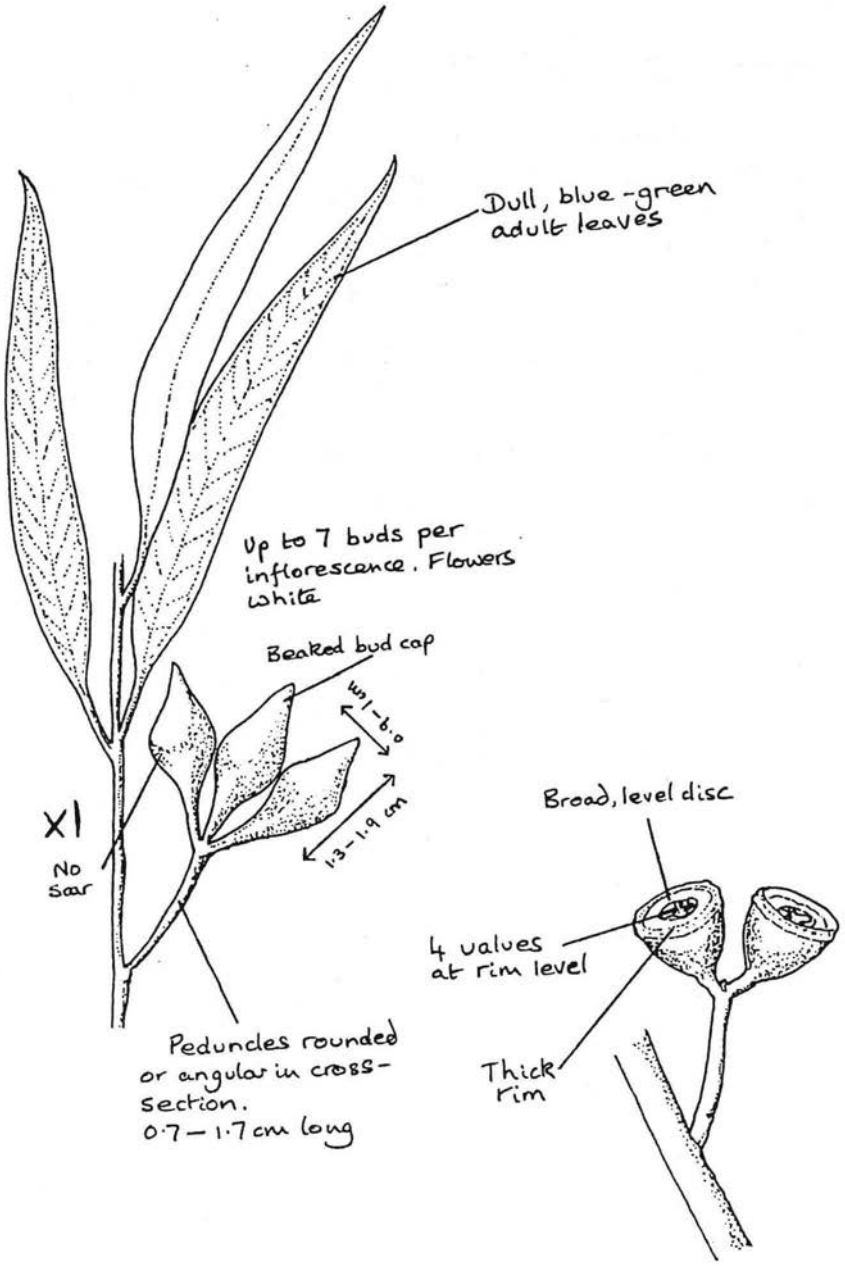
Flowering Period: March - May.

Additional Field Characteristics: A mallee with adult grey bark. The juvenile leaves are elliptic, dull blue-green in colour and to 11 x 5 cm. The adult leaves are dull blue-green, lanceolate, 5-11 x 0.6 - 1.1 cm with a moderate vein network and scattered to numerous, often obscure oil glands. The stamens are variously flexed within the bud. The seed is shining, brown and 'D' shaped.

This species is similar to *E. diversifolia* but differs in its level disc (*diversifolia* level to slightly ascending), larger buds, (*diversifolia* 0.7-1 x 0.5-0.6 cm) and in its very restricted habitat.

References: Brooker and Kleinig (ms); Hopper (field notes).




Dull, blue-green adult leaves
Up to 7 buds per inflorescence. Flowers white
Beaked bud cap
w 1-1.6 cm
1.3-1.9 cm
X1
No scar
Peduncles rounded or angular in cross-section. 0.7-1.7 cm long
Broad, level disc
4 valves at rim level
Thick rim

EUCALYPTUS 'PLE' aff. brachycalyx

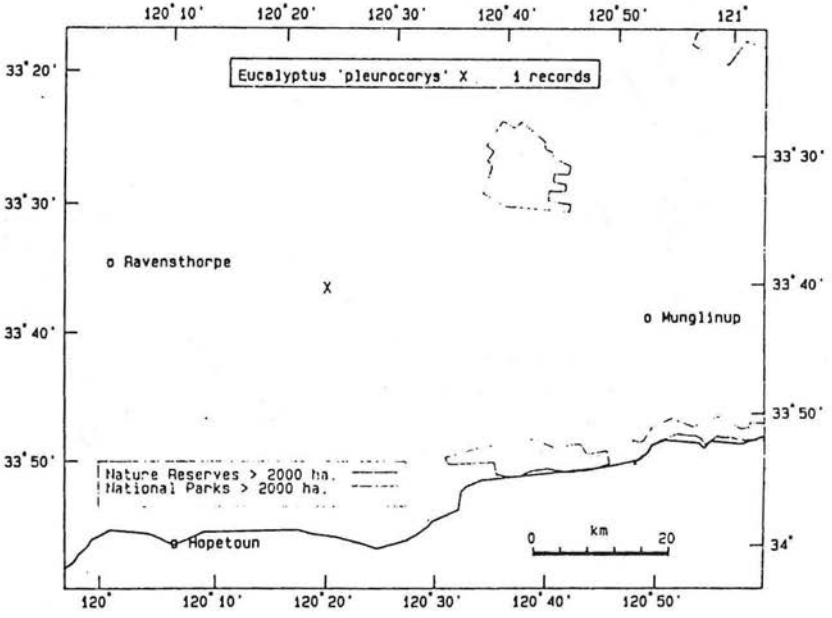
Distribution and Habitat: Only known from the Ravensthorpe Range and Mt. Ragged with no details of habitat available.

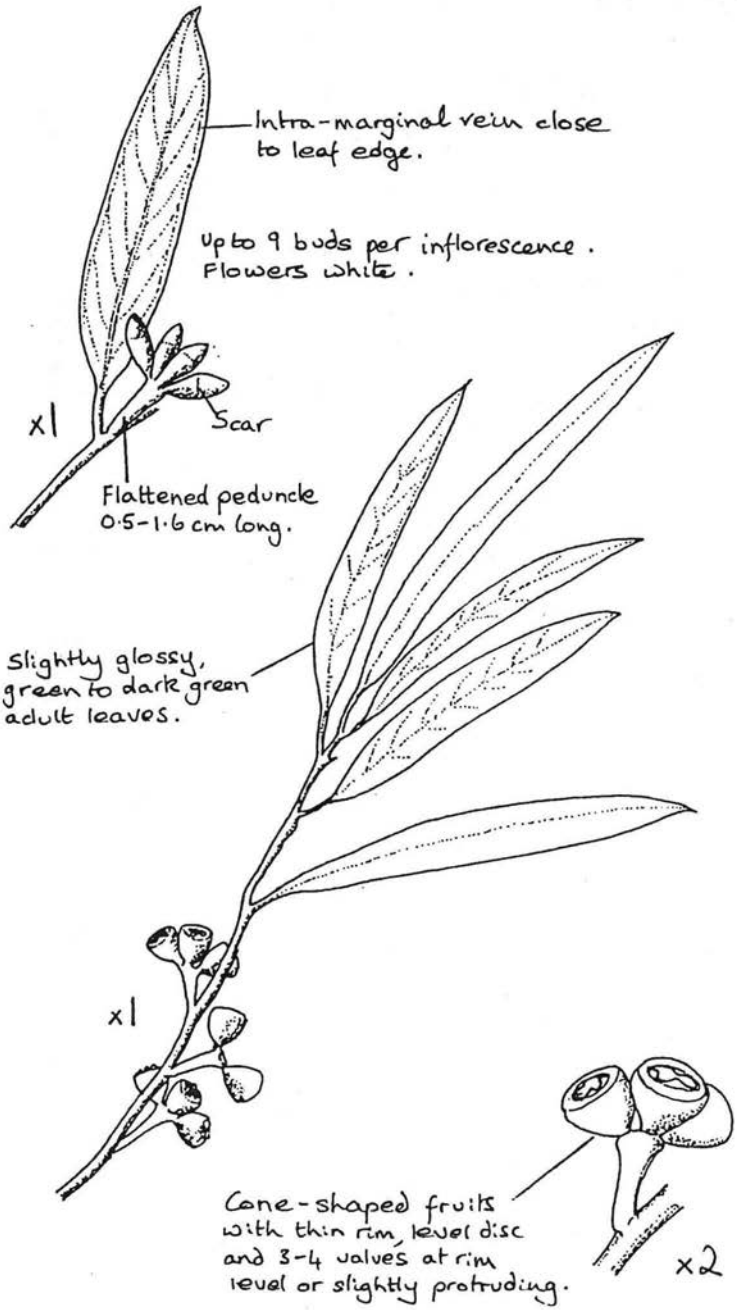
Flowering Period: Unknown.

Additional Field Characteristics: A mallee with smooth bark. Adult leaves approximately 6-9 x 2-2.5 cm with dense reticulation. The inflorescence is up to 11-flowered with a stout, flattened peduncle. The buds are ovoid and often angular or ribbed. The anthers are distinctive in being large, square and chunky. Seed is deeply honeycombed.

The species is similar to *E. rugosa* (found only from the western end of the Great Australian Bight eastwards) and *E. brachycalyx*, differing in its wider leaves (*E. brachycalyx* 6-10.5 x 0.7-1.7 cm), with buds and fruit smaller than those of *E. rugosa*, and its occurrence in heavy, non-calcareous soils inland from the coast.

References: Brooker & Kleinig (ms).




Intra-marginal vein close to leaf edge.
Up to 9 buds per inflorescence. Flowers white.
x1
Scar
Flattened peduncle 0.5-1.6 cm long.
Slightly glossy, green to dark green adult leaves.
x1
Cone-shaped fruits with thin rim, level disc and 3-4 valves at rim level or slightly protruding.
x2

EUCALYPTUS 'PTEROCARPA' Gardner ex. Lang ined.

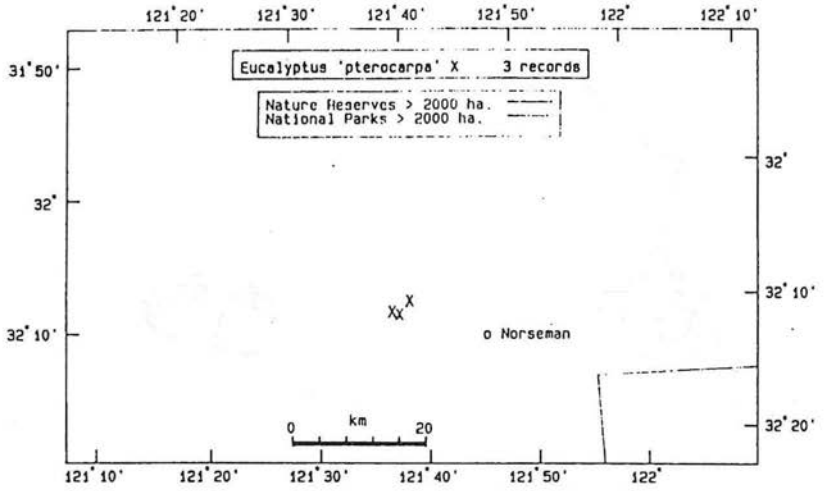
Distribution and Habitat: Has a very restricted distribution in one locality about 15-20 km NW of Norseman. It occurs as scattered individuals in low woodland with *E. salmonophloia, E. dundasii, E. calycogona* and *E. flocktoniae* and with an understorey of open dwarf scrub. It grows in red-brown soil with quartz gravel on gentle slopes.

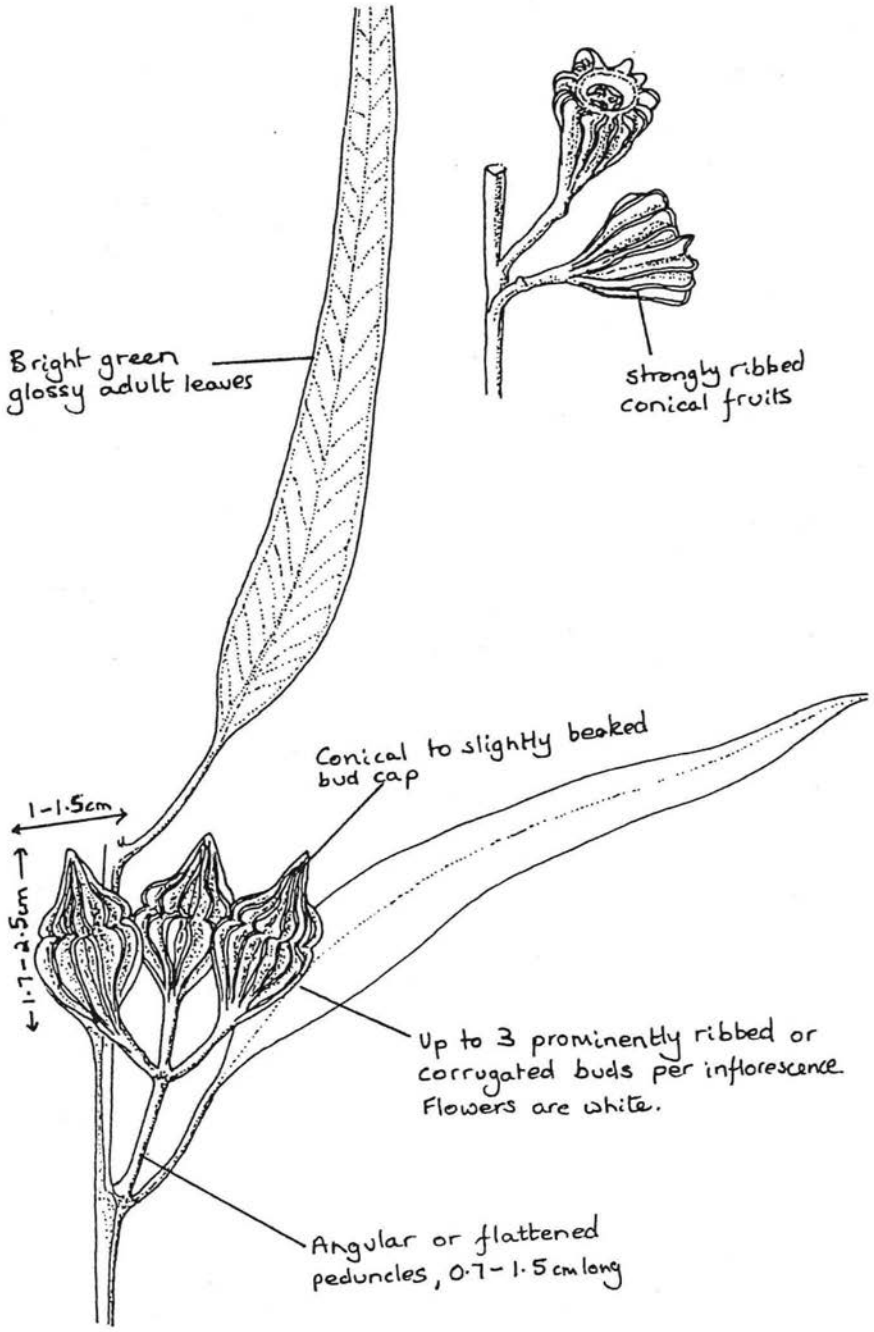
Flowering Period: September - November.

Additional Field Characteristics: A small tree with smooth bark, grey or whitish over salmon pink to copper. Juvenile leaves are ovate to curved, up to 14 x 8 cm in size. Adult leaves are lanceolate, 8.5-17 x 1.2-3 cm with numerous side veins and a dense vein network. The fruits are 1.3-1.8 x 1.4-1.7 cm with a thick rim, descending disc and four valves at rim level. The seed is ruby-red to red-brown and shiny.

The species is similar to *E. lesouefii*, but the latter has rough basal bark and up to 9 buds per inflorescence. It also resembles *E. 'tenuis'*, but may be distinguished by its more strongly ribbed and larger buds (*'tenuis'* - buds are 0.8-1.1 x 0.5-0.8 cm). Its smooth trunk distinguishes it from *E. corrugata* which has rough bark at the base. The latter also has flattened bud caps and grey seed.

References: Chippendale (1973); Elliott and Jones (1986); Brooker and Kleinig (ms) .




Bright green glossy adult leaves
strongly ribbed conical fruits
Conical to slightly beaked bud cap
1-1.5cm
1.7-2.5cm
Up to 3 prominently ribbed or corrugated buds per inflorescence. Flowers are white.
Angular or flattened peduncles, 0.7-1.5cm long

EUCALYPTUS 'RECONDITA' Brooker and Hopper ined.

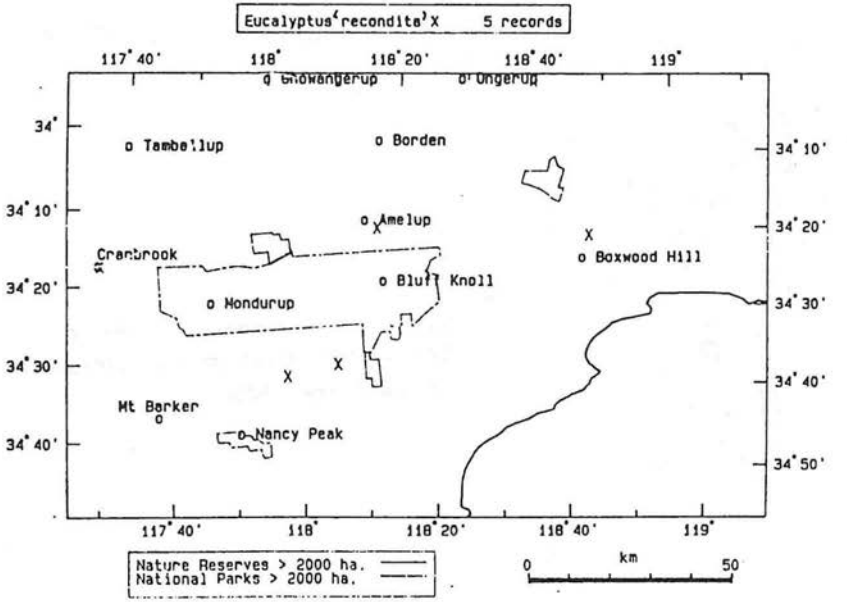
Distribution and Habitat: Occurs in the Stirling Range area and east to Jerramungup.

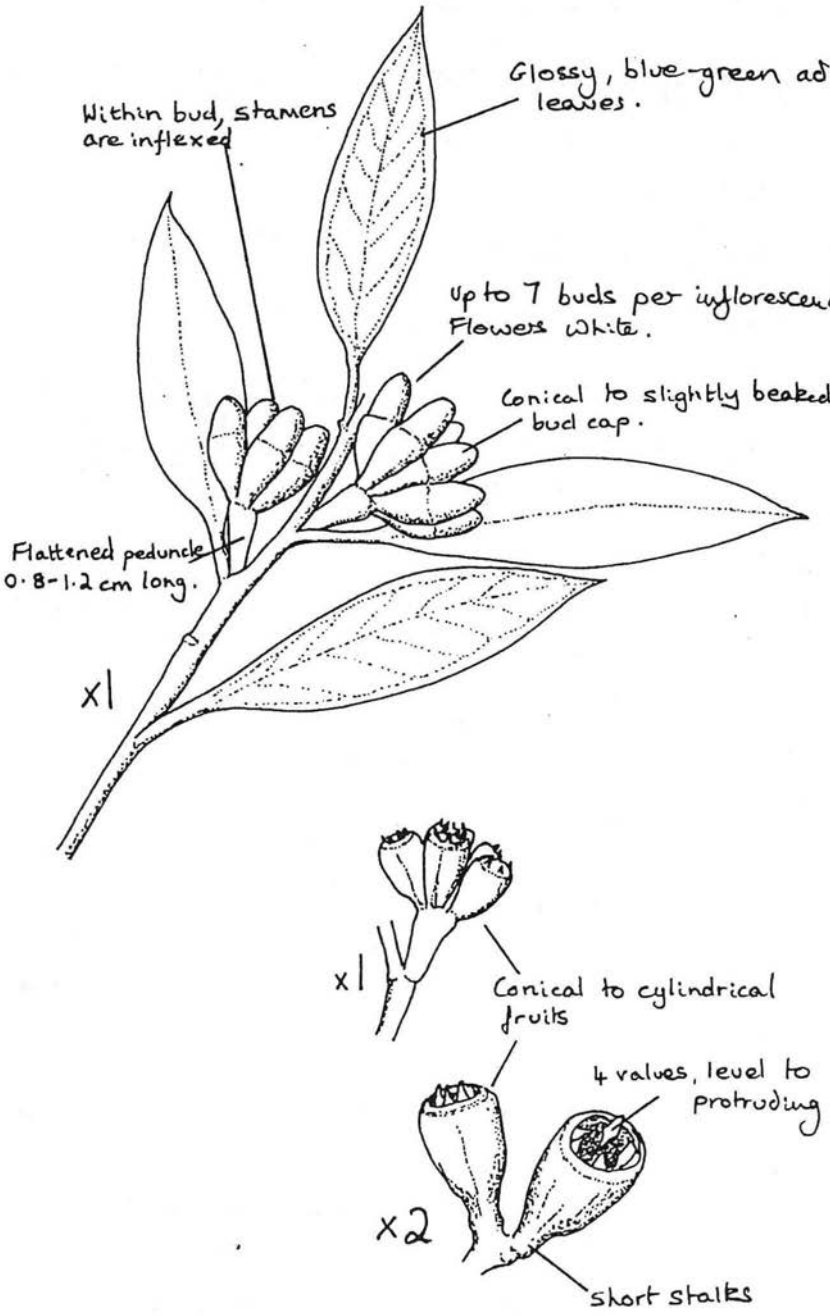
Flowering Period: Not known.

Additional Field Characteristics: A small mallee with smooth bark, grey over pinkish in colour. The juvenile leaves are ovate, 6-9 x 2-5 cm, slightly glossy and blue or blue-green. The adult leaves are alternating elliptic, glossy and blue-green with a sparse vein network and numerous oil glands. The peduncle is flattened and 0.8-1.2 cm long and the inflorescence is axillary, unbranched and 7-flowered. The flowers are white. Fruits are shortly stalked, conical to cylindrical in shape measuring 0.6-0.8 x 0.5-0.8. The disc is concave, the rim thin or moderately thick and there are 4 level to protruding valves. The seed is brown and compressed-ovoid in shape.

The species is similar to *E. 'nutans'* but differs in its white flowers, rounded buds in cross section (*'nutans'* is square) and in having 4 valves level to protruding (*'nutans'* has 5-6 valves level to enclosed). It is also similar to *E. platypus* but differs in its concial (not elongated) bud cap, wingless hypunthium and inflexed stamens in the bud (*platypus* has erect stamens).

References: Brooker & Klenig (ms).




Glossy, blue-green adult leaves.
Within bud, stamens are inflexed
Up to 7 buds per inflorescence. Flowers white.
Conical to slightly beaked bud cap.
Flattened peduncle 0·8-1·2 cm long.
x1
x1
Conical to cylindrical fruits
4 valves, level to protruding
x2
short stalks

EUCALYPTUS 'REDACTA' Brooker and Hopper ined.

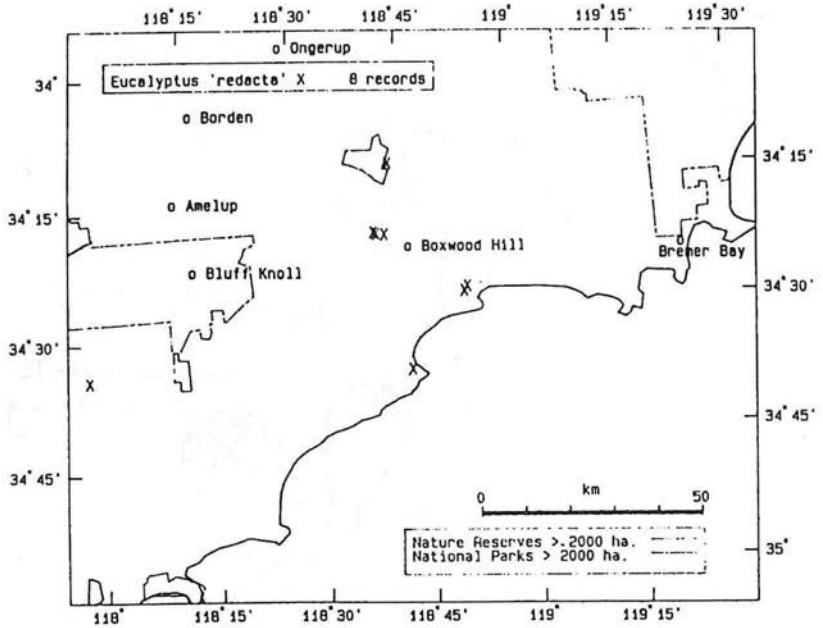
Distribution and Habitat: Occurs in scattered localities between Kamballup and Bremer Bay with a geographic range of 85 km. Grows on stony slopes, in clay loams, sometimes associated with *E.* aff. *redunca*.

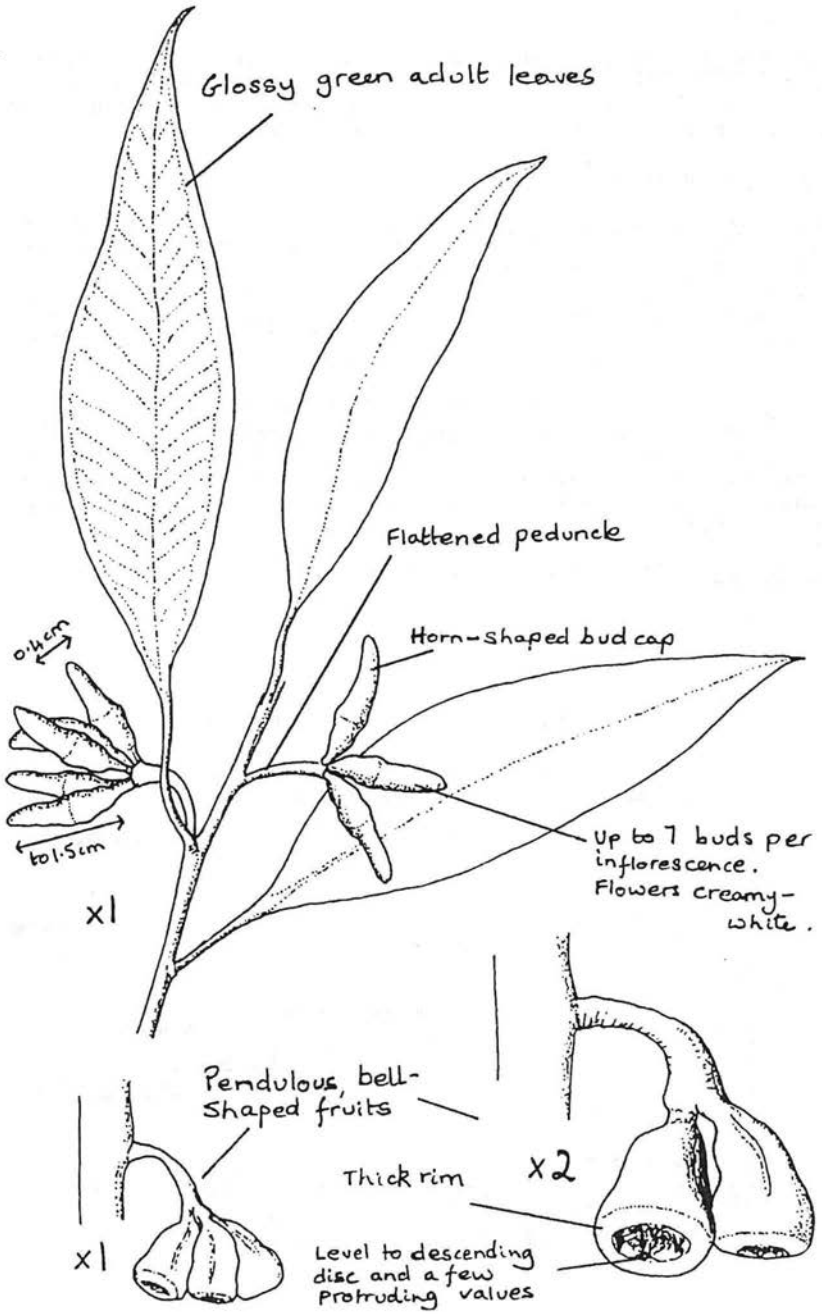
Flowering Period: November - January.

Additional Field Characteristics: A mallet up to 10 m in height with smooth white or pink bark throughout. Juvenile leaves are ovate, 6-14 x 3-7 cm, dull and blue-green in colour. Adult leaves measure 6-16 x 1-3.3 cm. The vein network is sparse and there are numerous oil glands.

The species is similar to *E. astringens* and *E. occidentalis*. From the former it differs in its smaller buds and fruit and in its bark. *E. astringens* has mostly smooth bark, grey over orange, becoming brown or coppery with distinctive curling, partly detached flakes of black bark on the trunk. *E. occidentalis* is generally a larger tree (up to 20 m), with a stocking of rough bark and larger buds (1.6-3.3 x 0.5-0.7 cm) and fruits (0.8-1.5 x 0.6-1.2 cm). Also, *E. occidentalis* generally occurs in wet clayey depressions, whereas both *E. 'redacta'* and *E. astringens* are generally on stony slopes. A smooth barked form of *E. occidentalis* is also similar but differs in occurring only as a low mallee.

References: Brooker and Kleinig (ms).




Glossy green adult leaves
Flattened peduncle
Horn-shaped bud cap
0.4cm
to 1.5cm
x1
Up to 7 buds per inflorescence. Flowers creamy-white.
Pendulous, bell-shaped fruits
Thick rim
x2
x1
Level to descending disc and a few protruding values

EUCALYPTUS 'REDIMICULIFERA' Brooker and Hopper ined.

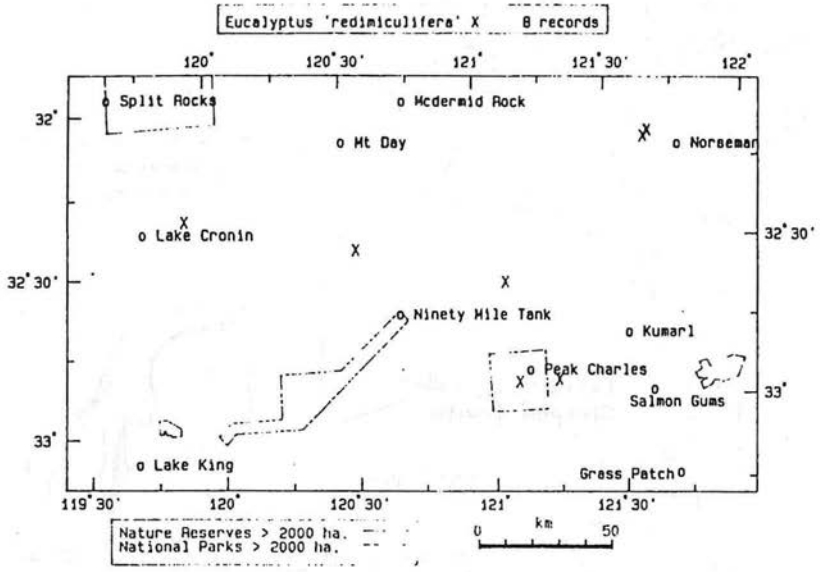
Distribution and Habitat: Occurs between Hyden and Norseman and south to Peak Charles, in open low woodland with scrub beneath, on loamy soils in flat country. Sometimes associated with *E. salubris* or *E. salmonophloia*.

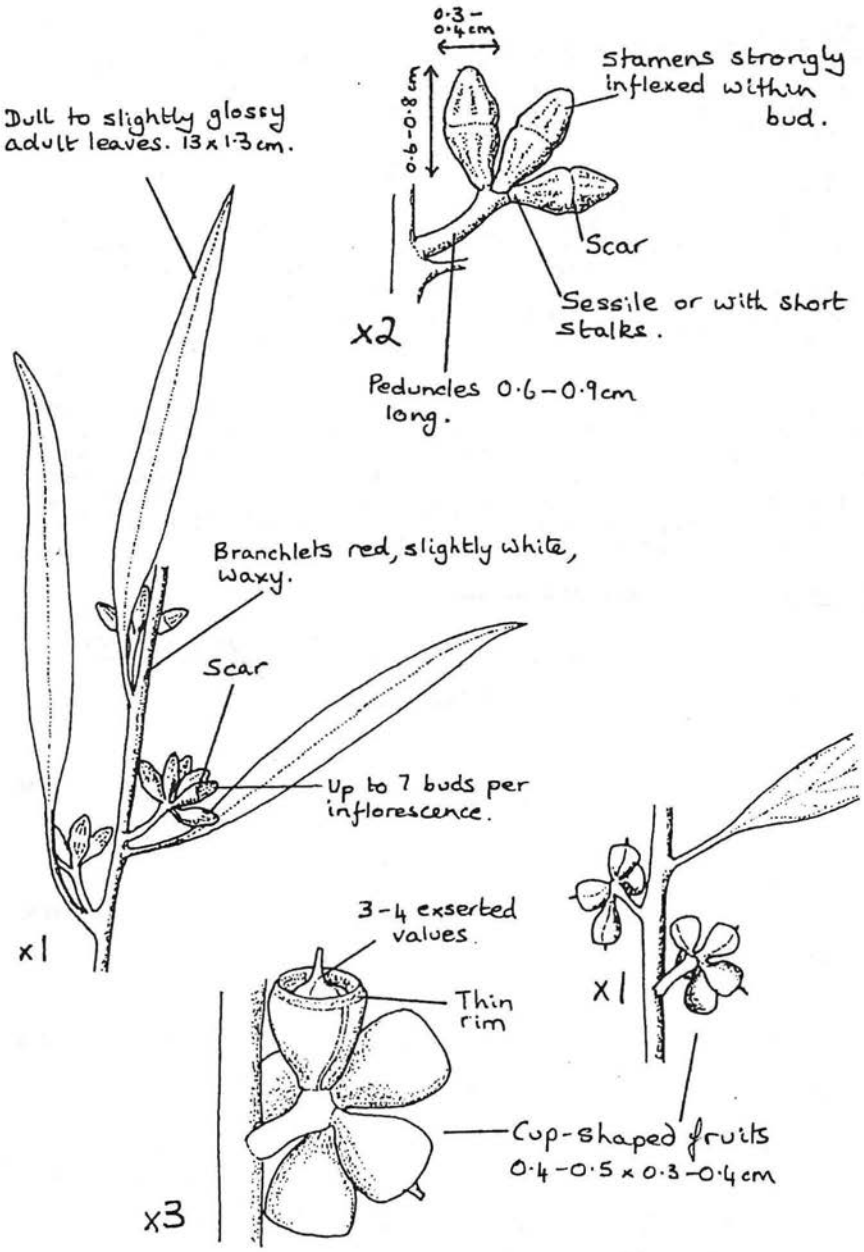
Flowering Period: Not Known.

Additional Field Characteristics: A whipstick mallee or small tree, 5-10 m in height. The bark is smooth and either whitish grey to pinkish grey or yellowish green over salmon pink to coppery. Juvenile leaves are ovate, up to 10 x 6 cm, dull and blue-green to glaucous. The ovoid buds have a conical or slightly beaked cap. The seed is shiny and ruby red to red-brown in colour and flattish.

The species is similar to *E. kondininensis* but differs in its smooth bark, longer juvenile leaves, and dull to slightly glossy adult leaves. *E. kondininensis* has a distinctive rough, black, stocking on the lower half of its trunk, juvenile leaves to only 3 x 1.5 cm and glossy green adult leaves.

References: Brooker and Kleinig (ms) .




0·3–0·4 cm
0·6–0·8 cm
Stamens strongly inflexed within bud.
Scar
Sessile or with short stalks.
x2
Peduncles 0·6–0·9 cm long.
Dull to slightly glossy adult leaves. 13 x 1·3 cm.
Branchlets red, slightly white, waxy.
Scar
Up to 7 buds per inflorescence.
x1
3–4 exserted values.
Thin rim
x3
x1
Cup-shaped fruits 0·4–0·5 x 0·3–0·4 cm

EUCALYPTUS 'RIGENS' Brooker and Hopper ined.

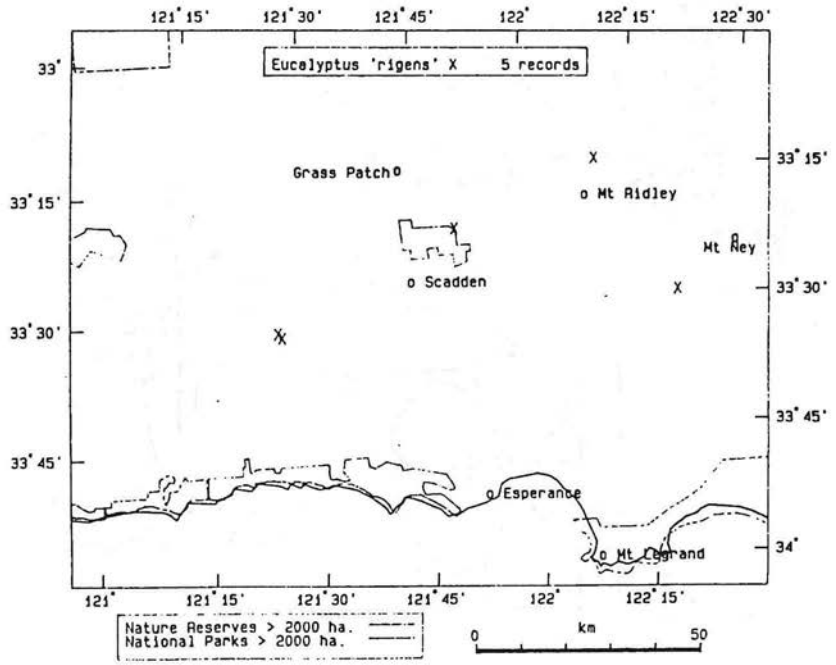
Distribution and Habitat: Occurs from north-west to north-east of Esperance where it grows around salt lakes, in white or pale brown sand over clay, on flat or slightly sloping ground. Forms part of an open shrub mallee with eucalypt trees over dense scrub.

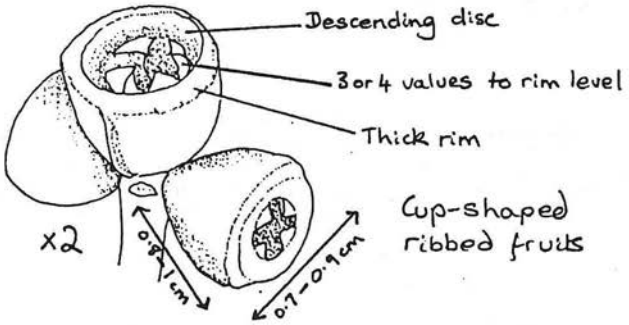
Flowering Period: July - September.

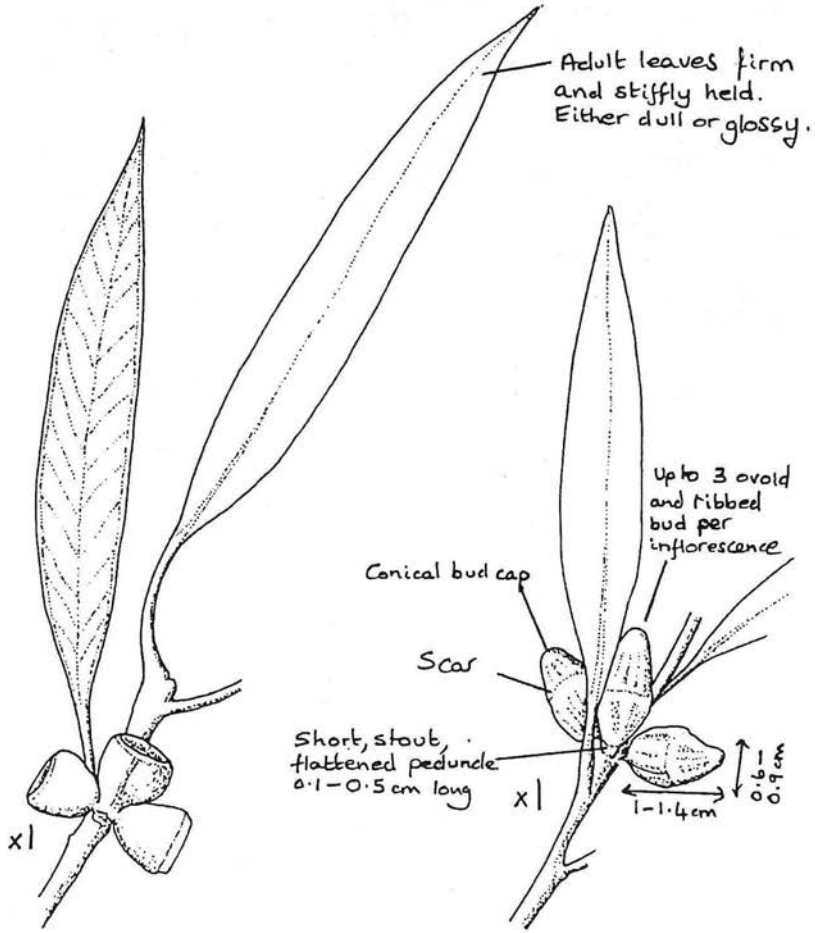
Additional Field Characteristics: A low sprawling mallee 1-3 m in height. Bark is smooth, reddish brown, greenish grey and whitish grey. Juvenile leaves are ovate to broad-lanceolate, 10-13 x 3.5-5 cm, dull and green to blue-green. Adult leaves are light green to blue-green and up to 11x1.3-5 cm in size. The seed is brown and shallowly pyramidal in shape.

The species is similar to *E. 'famelica'* and *E. 'litorea'*. From the former it differs in its saline habit, fewer flowers per inflorescence and larger buds and fruits. *E. 'litorea'* also occurs around salt lakes, but has up to 7 flowers per inflorescence, longer peduncles (up to 1-1.5 cm long), a beaked bud cap, and its basal bark is rough with shallow longitudinal furrows, though smooth above.

References: Brooker and Kleinig (ms) .




Descending disc
3 or 4 valves to rim level
Thick rim
x2
0.9-1 cm
0.7-0.9 cm
Cup-shaped ribbed fruits


Adult leaves firm and stiffly held. Either dull or glossy.
Up to 3 ovoid and ribbed bud per inflorescence
Conical bud cap
Scar
Short, stout, flattened peduncle 0.1-0.5 cm long
x1
x1
1-1.4 cm
0.6-0.9 cm

EUCALYPTUS SEPULCRALIS F. Muell.

Weeping Mallee

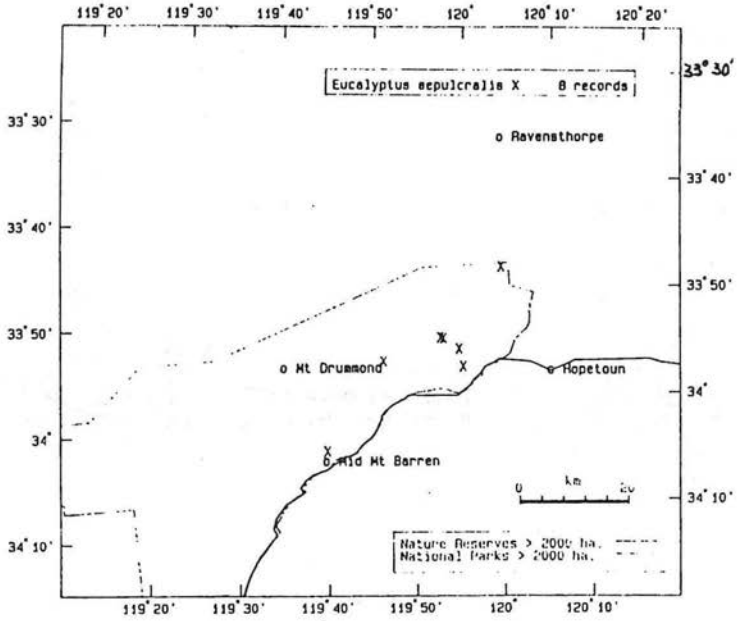
Distribution and Habitat: Now known only from the eastern end of the Fitzgerald River National Park and nearby hills. Was originally collected from the Thomas River east of Esperance. Grows on lateritic sandplains and low hills where it is conspicuous as an emergent above a low heath understorey.

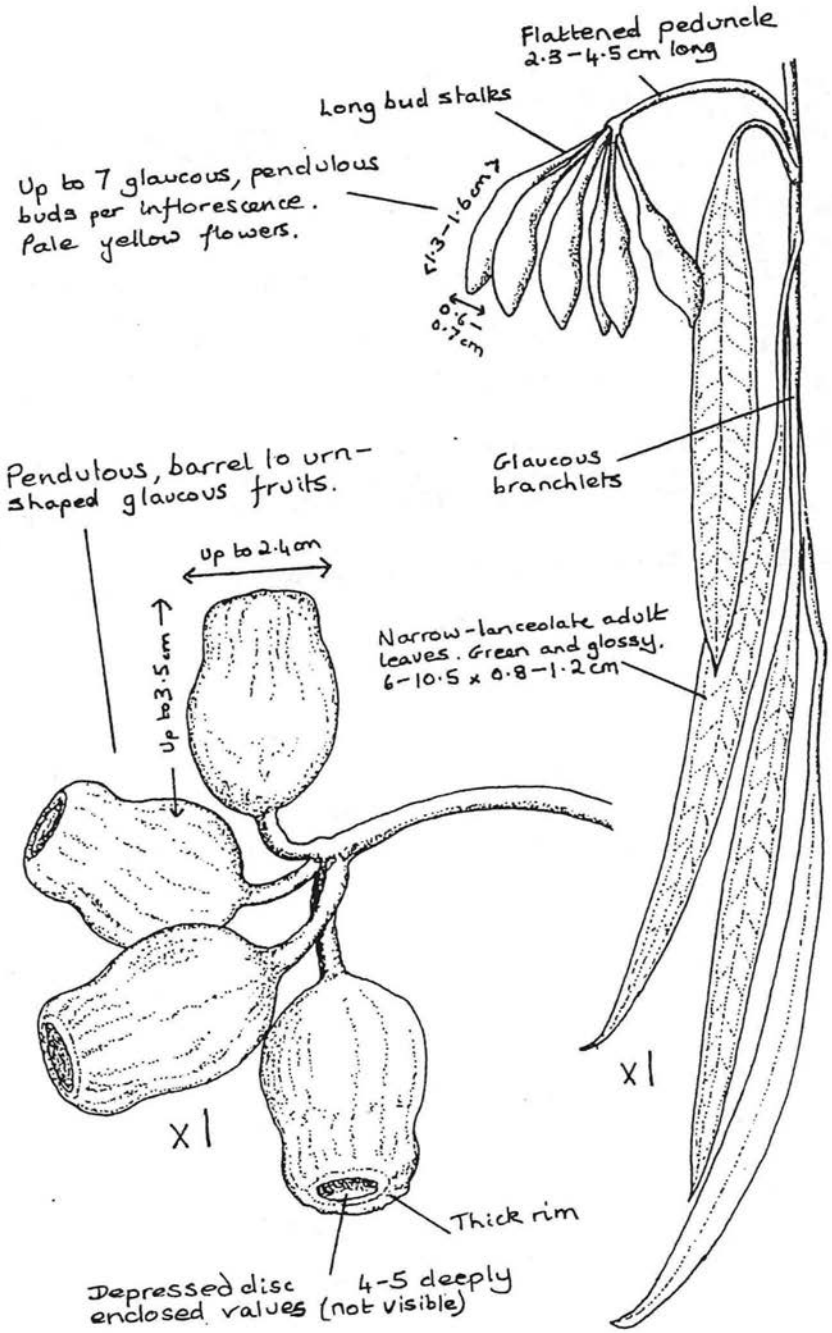
Flowering Period: September - January.

Additional Field Characteristics: A tall, slender stemmed mallee with a thin drooping crown. Bark is smooth, grey and pinkish grey. The juvenile leaves are at first sessile and opposite for many pairs, elliptic and flat. Later they are petiolate and vertical. Seed is black and somewhat shiny.

The species is similar to *E. pendens* but differs in its longer buds (*pendens* - 1 x 0.8 cm) and larger urn-shaped fruit (*pendens* - truncate ovoid, 2 x 2 cm). *E. pendens* is also only known from the Badgingarra area. *E. sepulcralis* is also similar to *E. exilis*, but the latter has an erect habit, and smaller leaves, buds and fruits.

References: Brooker and Kleinig (ms) ; Chippendale (1973); Gardner (1963).




Flattened peduncle
2·3–4·5 cm long
Long bud stalks
Up to 7 glaucous, pendulous buds per inflorescence. Pale yellow flowers.
1·3–1·6 cm
0·7–1·0 cm
Glaucous branchlets
Pendulous, barrel to urn-shaped glaucous fruits.
up to 2·4 cm
up to 3·5 cm
Narrow-lanceolate adult leaves. Green and glossy. 6–10·5 × 0·8–1·2 cm
X1
X1
Thick rim
Depressed disc enclosed valves
4–5 deeply (not visible)

EUCALYPTUS 'SPR' aff. pileata

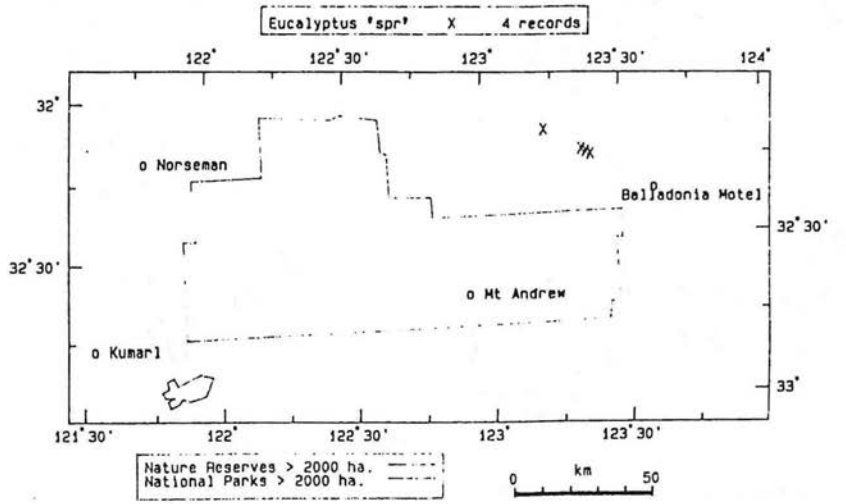
Distribution and Habitat: Has a scattered distribution from north-west of Balladonia to south of Norseman. Can occur in open low woodland with *E. calycogona*, over open low scrub, in gently undulating terrain on powdery red loam.

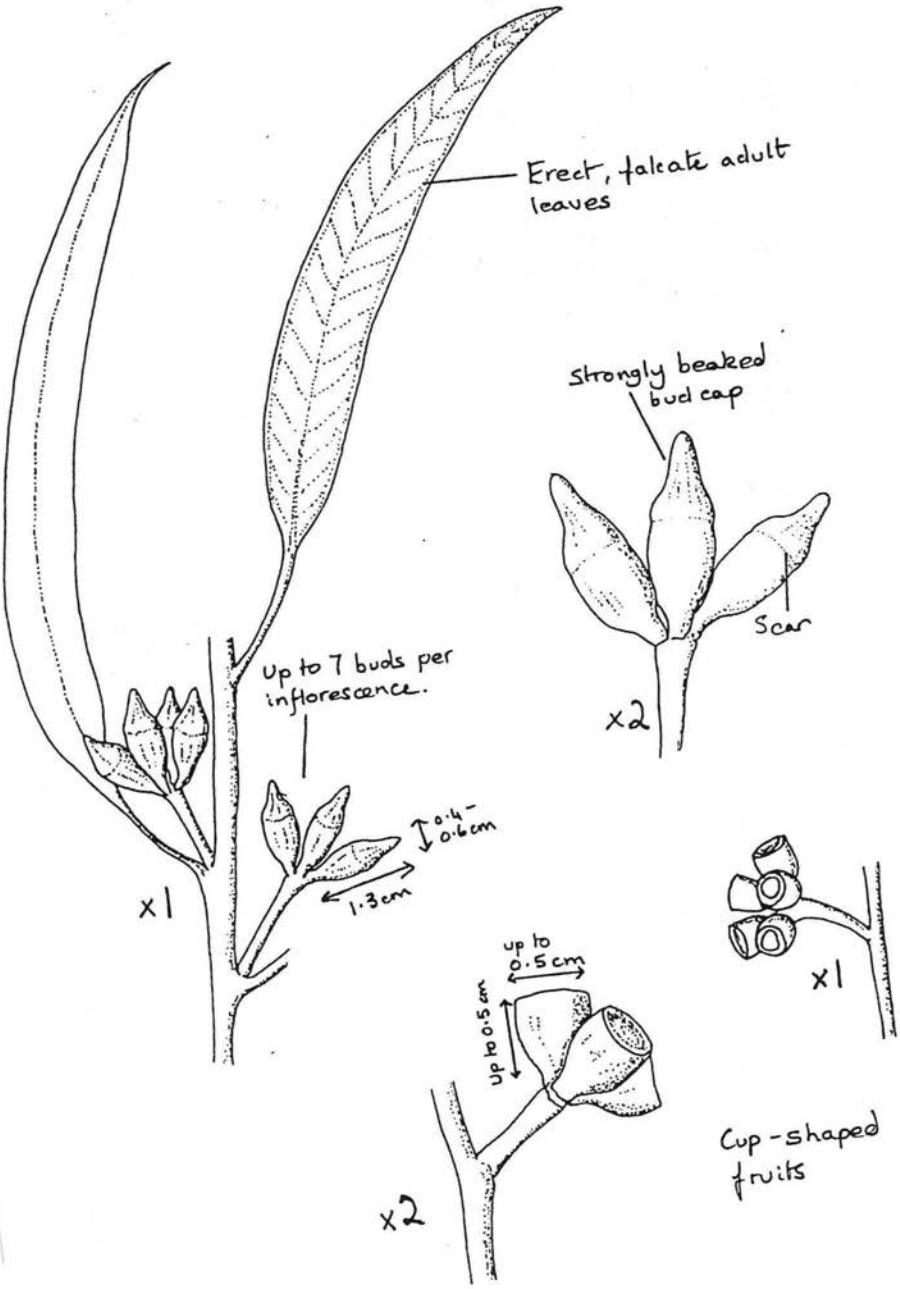
Flowering Period: Not known.

Additional Field Characteristics: A tree to 10 m in height with a steeply branching habit and with smooth bark. The adult leaves are falcate, semi-glossy, up to 11 cm x 1.0-1.3 cm and are held erect. The inflorescences are axillary, up to 7-flowered with buds of 1.3 x 0.4-0.6 cm. An bud cap scar is present and stamens are inflexed in the bud.

This species is related to *E. pileata* and *E. 'redimiculifera'* but can be distinguished from them by its strongly beaked bud cap and from the latter by its larger buds.

References: Brooker & Kleinig (ms); Hopper (field notes).




Erect, falcate adult leaves
Strongly beaked bud cap
Scar
x2
Up to 7 buds per inflorescence.
0.4-0.6cm
1.3cm
x1
up to 0.5cm
up to 0.5cm
x2
x1
Cup-shaped fruits

EUCALYPTUS 'STENOPHYLLA' Brooker and Hopper ined.

Narrow leaved mallee

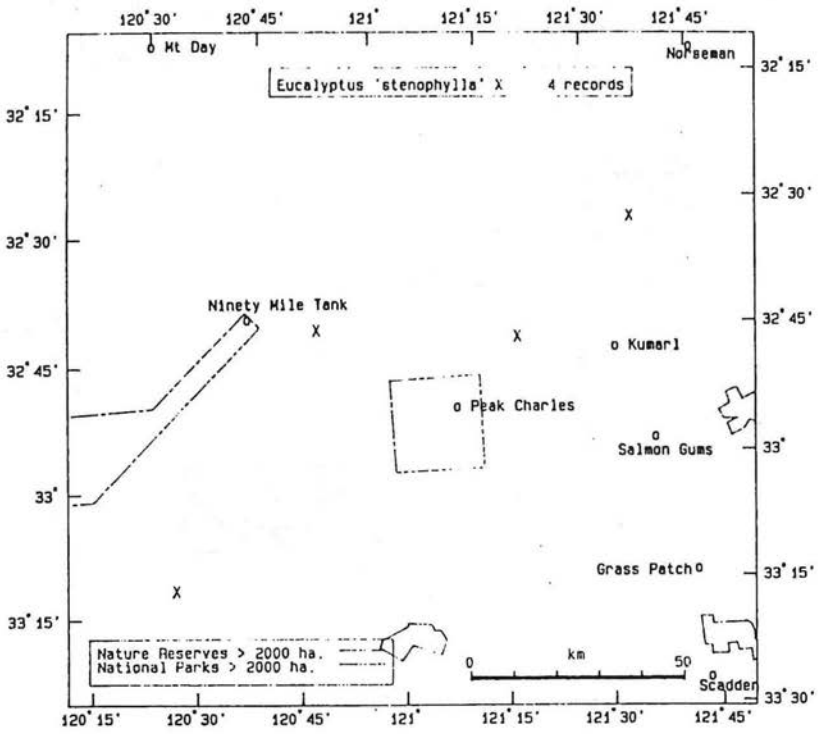
Distribution and Habitat: Has a scattered distribution between Coujinup Hill and Norseman.

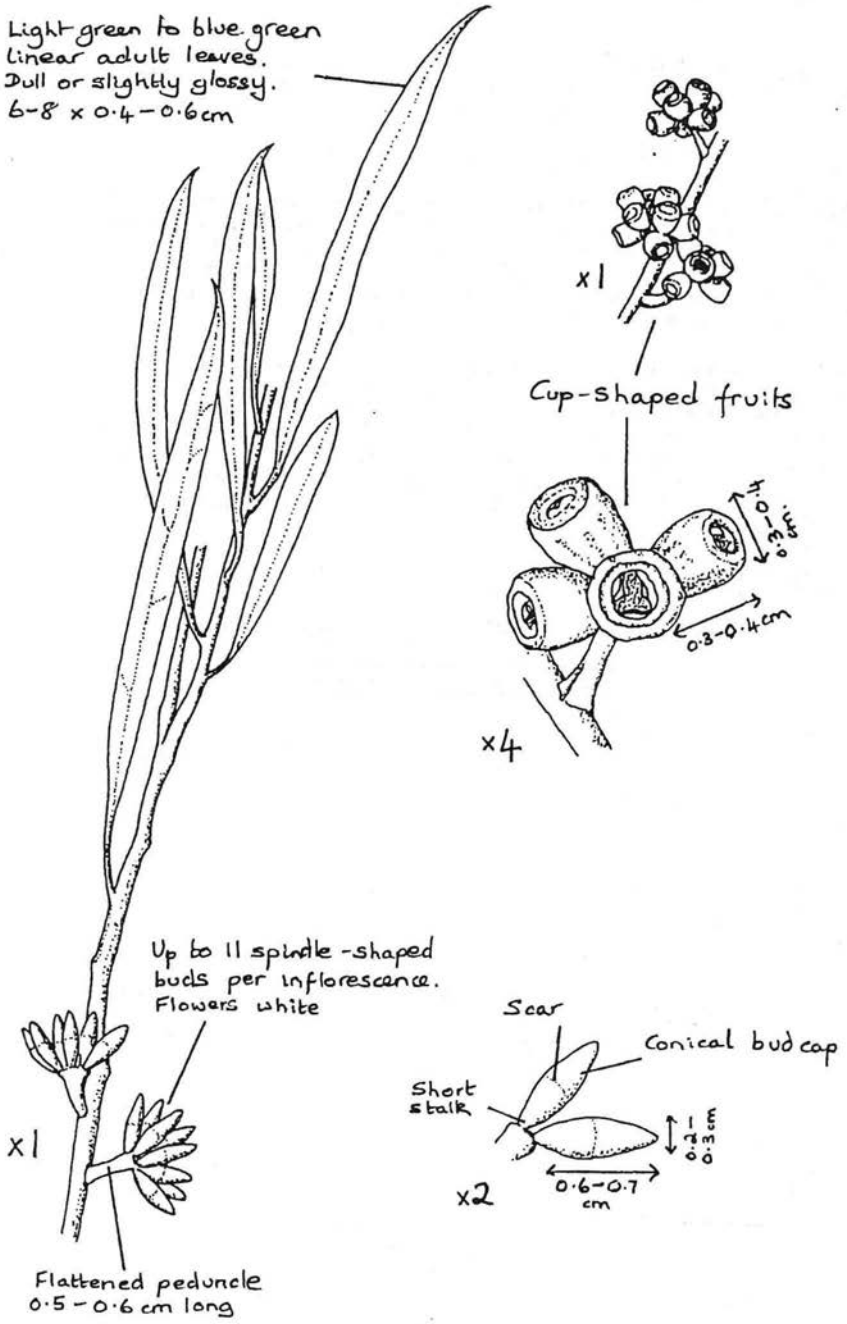
Flowering Period: February - extent not known.

Additional Field Characteristics: A mallee with smooth dark grey or pinkish grey bark, up to 3 m in height. Juvenile leaves are green and lanceolate, up to 8 x 2 cm. Fruits have a thin rim, depressed disc and three valves level to the rim. The seed is pale grey or reddish brown, roundish to cuboid.

The species is similar to *E. 'subangusta'* but the latter has wider leaves (6-11 x 0.8-1 cm), up to 17 flowers per inflorescence, longer peduncles (0.8-1 cm) and a horn-shaped bud cap.

References: Brooker & Hopper (ms).




Light green to blue green linear adult leaves. Dull or slightly glossy. 6-8 x 0·4-0·6cm
x1
Cup-shaped fruits
0·3-0·4cm
0·3-0·4cm
x4
Up to 11 spindle-shaped buds per inflorescence. Flowers white
x1
Flattened peduncle 0·5-0·6 cm long
Scar
Conical bud cap
Short stalk
0·2-0·3 cm
0·6-0·7 cm
x2

EUCALYPTUS TALYUBERLUP Carr and Carr

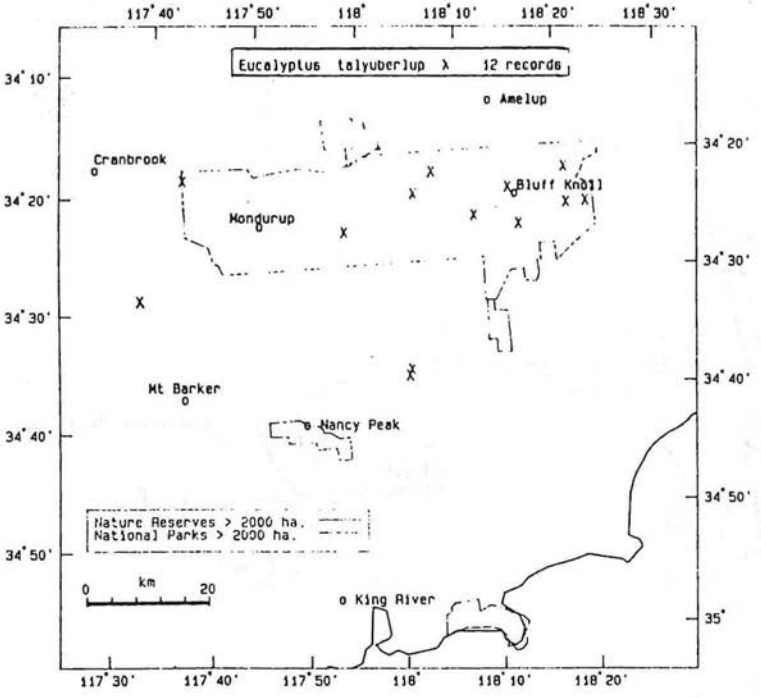
Distribution and Habitat: Occurs in the foothills of the Stirling Range and undulating areas near the Kalgan River. Grows in association with *E. cornuta*.

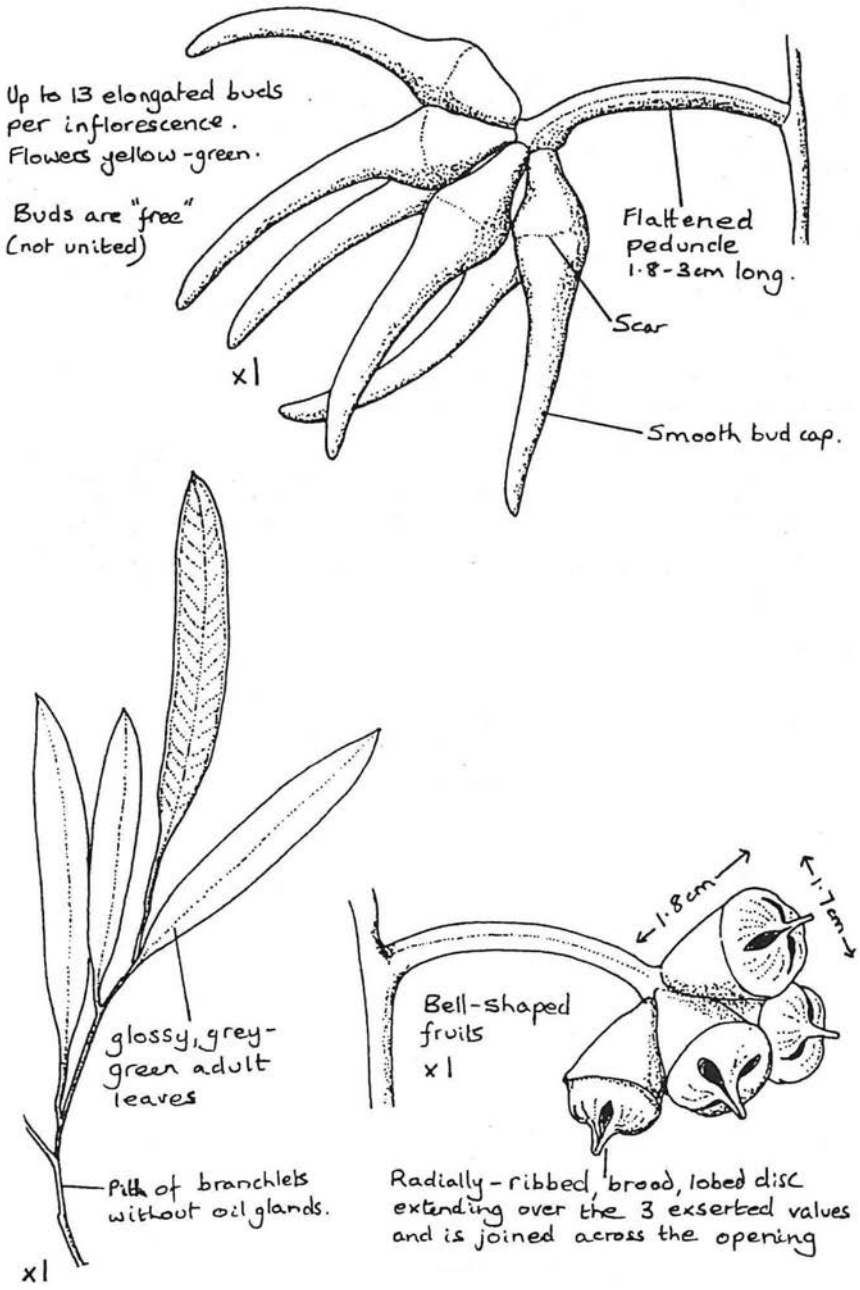
Flowering Period: May - September.

Additional Field Characteristics: A mallee up to 6 m with smooth bark, grey or red brown in colour, over yellow brown or pale pink. Juvenile leaves are broadly elliptic to ovate, 5-8 x 3.5-6 cm, with prominent veins. Adult leaves measure 5-11 x 0.7-2 cm. The buds are 3-5.3 x 0.8-1 cm. Seed is black, irregular or rounded in shape.

The species is similar to *E. cornuta* which is a larger tree (6-12 m) with rough bark on its lower trunk and glandular pith in its branchlets. Generally it has smaller buds (2-4.2 x 0.4-0.8 cm) and fruits (0.6-1.3 x 0.6-1.3 cm) than *E. talyuberlup*. The latter is also similar to *E. newbeyi*, *E. megacornuta*, *E. burdettiana*. The last two species are distinguished by their warty bud caps and *E. newbeyi* has larger fruits.

References: Carr & Carr (1980).




Up to 13 elongated buds per inflorescence. Flowers yellow-green.
Buds are "free" (not united)
Flattened peduncle 1·8-3cm long.
Scar
x1
Smooth bud cap.
glossy, grey-green adult leaves
Pith of branchlets without oil glands.
x1
1·8cm
1·7cm
Bell-shaped fruits
x1
Radially-ribbed, broad, lobed disc extending over the 3 exserted valves and is joined across the opening

EUCALYPTUS 'TER' aff. diptera

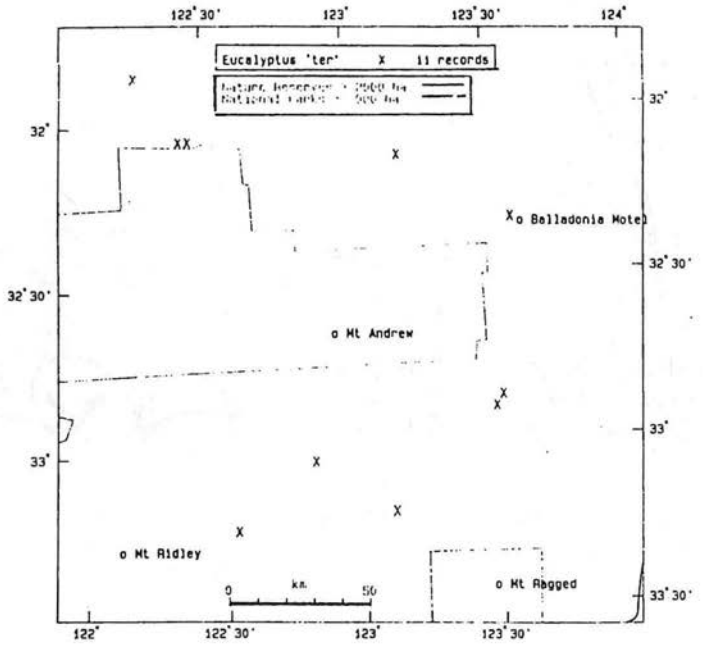
Distribution and Habitat: Occurs south and south west of Balladonia in a restricted area. Grows in mallee scrub or low woodland, on flat or gently sloping country in calcareous or sandy loam. It is often associated with *E. flocktoniae, E. oleosa, E. calycogona, E. salmonophloia*.

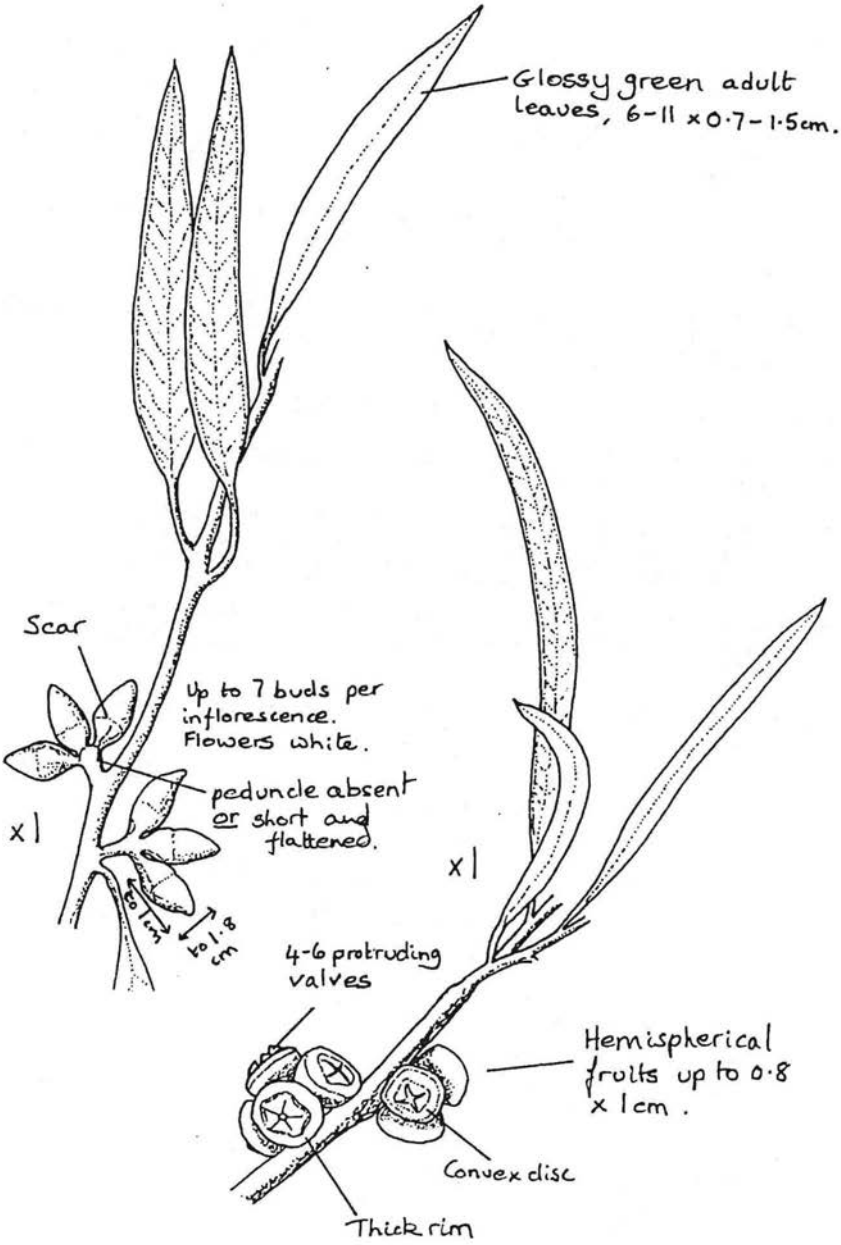
Flowering Period: February to May.

Additional Field Characteristics: A mallee of 3-11 m with smooth bark, grey to deep coppery in colour. The stems are fluted. The buds are squat, ovoid to semi-globose and with a hemispherical or broadly conical cap. The inflorescence may be sessile or on short flat peduncles. Fruits are always sessile. The seeds are yellow-brown, flattish or ovoid or cuboid, and pitted like honeycomb.

The species is similar to *E. diptera*, but the latter has up to 3 buds per inflorescence, and larger buds (1-1.4 x 0.7-1.1 cm) and fruits (0.7-1.1 x 1-1.5 cm). Both buds and fruits of *E. diptera* are 2-winged. *E. 'ter'* also resembles *E. 'cre'*, differing in its smaller buds and fruits. From *E. 'jim'* it is distinguished by its wingless fruit and its bud cap which is rounded with a sharp point.

References: Burgman (1985); Brooker & Kleinig (ms).




Glossy green adult leaves, 6-11 x 0·7-1·5cm.
Scar
Up to 7 buds per inflorescence. Flowers white.
peduncle absent or short and flattened.
x1
to 1cm
to 1·8 cm
x1
4-6 protruding valves
Hemispherical fruits up to 0·8 x 1cm.
Convex disc
Thick rim

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