Department of Forestry, A.N.U.

C01 FOREST ECOLOGY I

NOTES ON IDENTIFICATION OF EUCALYPTS FOR THE SOUTH COAST EXCURSION

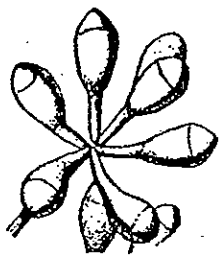
(Includes species found on Monga and Kioloa State Forests and other sites visited)

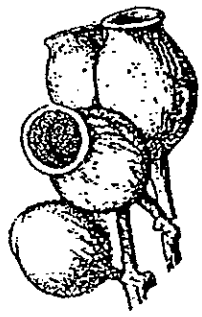
Species arranged by bark types

*Species on Kioloa State Forest

1. BLOODWOODS

*CAF GUMMIFERA RED BLOODWOOD





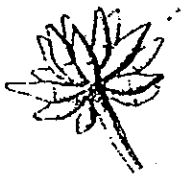
Distinctive features: Forest tree or even mallee on exposed sandstone ridges. Bark persistent throughout irregularly tessellated, brown. Leaves adult lanceolate, strongly discolorous dark green above, penniveined, juvenile petiolate opposite for few pairs, elliptical to ovate, discolorous, early leaves with simple hairs, few peltate. Inflorescence large terminal panicles, peduncles long, buds slightly beaked, fruits large woody urceolate with descending disc.

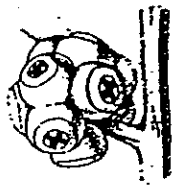
Ecology: Widespread along coastal plain, occurs in many forest types, mutually exclusive to E. maculata with which it occasionally hybridises i.e. 'E. nowarensis'.

Comment: Occurs on Kioloa S.F. with E. piperita and E. pilularis on upper slope - ridge top situations on Permian P.M. and with E. piperita and E. sieberi on Ordovician P.M.

2. STRINGYBARKS

*MAH AGGLOMERATA BLUE-LEAVED STRINGYBARK





Distinctive features: Forest tree. Bark persistent to small branches. Leaves adult straight to weakly falcate base oblique, concolorous with pearly lustre, juvenile shortly petiolate ovate to lanceolate discolorous with stellate hairs. Inflorescence 7-15 flowered, buds with elongate calyptra fruits in 'tight heads' often deformed, disc prominent convex and reddish, valves small usually 4.

Ecology: Found on near coastal slopes (usually sedimentary) less common towards Victoria, typically on upper slopes and ridges mixing with other Stringybarks downslope.

Comment: Occurs on Kioloa S.F. west of the Princes Highway.

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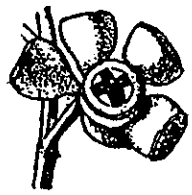
*MAH EUGENIOIDES THIN-LEAVED STRINGYBARK

Distinctive features: Forest tree. Bark persistent to small branches. Leaves adult long narrow and thin for a stringybark, base typically oblique, green concolorous, juvenile similar to E. agglomerata. Inflorescence 7-15 flowered, buds calyptra broad fusiform, fruit shortly pedicellate with prominent disc.



Ecology: One of the common stringybarks on the coast and adjacent tablelands less frequent south of Nowra.

Comment: Infrequent on Kioloa S.F. known only west of Princes Highway.

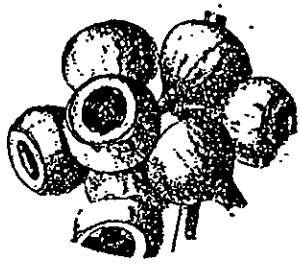
*MAH GLOBOIDEA WHITE STRINGYBARK

Distinctive features: Forest tree. Bark persistent to small bran persistent to small branches, inner bark pale brown. Leaves adult falcate with oblique base, discolorous, adaxial surface dark glossy green, small 6-10 cm for stringybarks, juvenile as for E. agglomerata. Inflorescence 7-15 flowered, buds calyptra conical, fruits small sessile crowded but not deformed.

Ecology: Occurs in coastal forests to about 600 m, common in undulating sedimentary terrain, may occur downslope from E. agglomerata.

*MAH MUELLERANA YELLOW STRINGYBARK

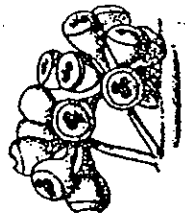
Distinctive features: Forest tree. Bark persistent to small branches, inner bark yellow. Leaves adult falcate with oblique base, glossy green concolorous or slightly paler on abaxial side, juvenile opposite slightly hairy at first. Inflorescence 7-15 flowered, buds clavate, fruits mostly hemispherical, disc narrow ascending to descending,valves rim level to slightly exserted, fruit similar to E. pilularis.



Ecology: Occurs in coastal forests to about 600 m, commonly in sheltered habitats with other stringybarks and e.g. E. cypellocarpa, E. sieberi and E. maculata. Best development on deep clay loams.

MAK FASTIGATA BROWN BARREL (CUT-TAIL)

Distinctive features: Tall forest tree. Bark persistent to smaller branches. Leaves adult long thin shiny green concolorous, juvenile opposite at first discolorous, margins often wavy. Inflorescence 7-15 flowered, typically paired axillary umbellasters, buds clavate, fruits pyriform, disc wide, level, valves level with rim.



Ecology: Principly montane species of moist slopes and gullies, found in single species stands or in mixtures with e.g. E. viminalis, E. fraxinoides and E. nitens.

Comment: Found along top of the escarpment of Clyde Mountain with E. obliqua, E. fraxinoides and E. cypellocarpa.

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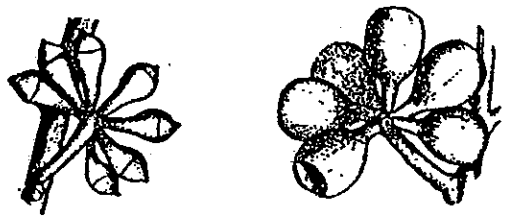
MAK OBLIQUA MESSMATE

Distinctive features: Tall forest tree. Bark persistent to smaller branches. Leaves adult asymmetrical, strongly oblique glossy dark green intermediate can be very large, juvenile small, opposite soon alternate. Inflorescence 7-15 flowered, buds clavate, fruits pyriform, pedicellate, valves enclosed.

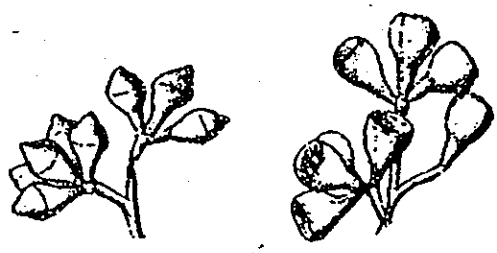


Ecology: Widely distributed in the moister forests of the foothills and mountains of south-east Australia, found along the escarpment in association with e.g. E. fastigata, E. radiata and E. cypellocarpa.

3. IRONBARKS

*SUV PANICULATA GREY IRONBARK

Distinctive features: Forest tree. Bark hard, dark grey, deeply furrowed, persistent to smaller branches. Leaves adult lanceolate slightly discolorous, dark green, juvenile broad-lanceolate petiolate, discolorous. Inflorescence in terminal panicles, buds conical, fruits pyriform, disc narrow, valves mostly enclosed.

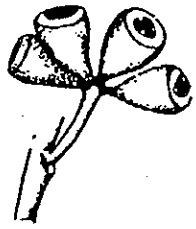


Ecology: Endemic to coastal N.S.W. to about 500 m, mostly on more fertile soils in most topographic situations.

Comment: On Kioloa S.F. restricted to moderately fertile soils of upper slopes and ridges on Ordovician P.M. associated species E. maculata.

*MAK SIEBERI SILVERTOP ASH

Distinctive features: Forest tree. Bark on mature trees ironbark-like, flaky almost tessellated on young trees, extending to larger branches, contrasting with smooth white (yellow) branches. Leaves adult concolorous shiny green, juvenile opposite soon alternate, broad thick grey-green. Inflorescence 7-15 flowered, buds clavate, fruits pyriform shiny, with reddish disc valves level to enclosed.



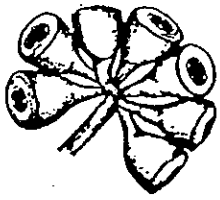
Ecology: Common in coastal forests below 1100 m extending to the dividing range (also in the A.C.T.), on drier soils over sediments and granites, often on ridges.

Comment: On Kioloa S.F. restricted to lower fertility soils of the upper slopes on Ordovician P.M., associated species E. piperita, E. pellita and E. gummifera. Also in pure stands on dry exposed ridges along the escarpment of Monga S.F.

4. PEPPERMINTS - BOXES

*MAK CONSIDENIANA YERTCHUK

Distinctive features: Forest tree generally of poor form. Bark persistent to small branches, finely furrowed grey over yellow-brown. Leaves adult concolorous green to grey-green, thick, glossy, sparsely reticulate, juvenile sessile, opposite for few pairs, elliptical discolorous blue green. Inflorescence 11-15 flowered, peduncles flattened, buds clavate with small point, fruits pyriform with wide disc and valves slightly exsert.

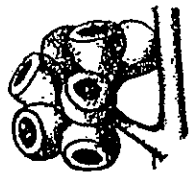


Ecology: Occurs along the coast and adjacent tablelands in southern N.S.W. and Gippsland in Victoria. This species is commonly found on poor and often skeletal soils which are usually well drained. Parent material includes sandstones, quartzites and poor shales. Also extends on to poorly drained and low nutrient status soils. Forms associations with many species and is typically only a minor component.

Comment: On Kioloa S.F. found on poorest of sites with a heath understorey, in association with E. racemosa, E. gummifera and E. sieberi.

MAT DIVES BROAD-LEAVED PEPPERMINT

Distinctive features: Forest tree of poorer form. Bark persistent over trunk and large branches, finely fibrous. Leaves adult short, thin, concolorous green, slightly glossy, sparsely reticulate and strongly aromatic, oils non-sticky, juvenile sessile opposite for many pairs, ovate glaucous. Inflorescence 11 + flowered, peduncle terete, buds clavate, fruits hemispherical to oboconical, disc wide, valve to rim level.



Ecology: Widespread on Central and Southern Tablelands in dry sclerophyll forest communities, commonly co-dominant species found from 600-1400 m on Southern Tablelands, replaced by E. radiata on better sites at high elevations and E. macrorhyncha and E. rossii on poorer sites at low elevations.

*SPI ANGOPHOROIDES APPLE-TOPPED BOX

Distinctive features: Forest tree. Bark persistent to small branches, shallow fissured grey to whitish. Leaves adult lanceolate discolorous, juvenile opposite at first then sub-opposite, sessile then shortly petiolate, ovate, amplexicaul, crenulate, strongly discolorous. Inflorescence 7-flowered, peduncles slightly flattened,buds ovoid, beaked, fruits hemispherical, rim thick, valves exserted.

Ecology: Tall forest tree of coastal plains and adjacent escarpment from Batemans Bay to east Gippsland. Rare on Kioloa S.F. occurs south of Pebbly Beach Road on Permian P.M.(study plot 12) with E. piperita, E. tereticornis, E. elata, E. gummifera and E. globoidea.

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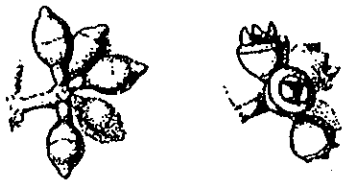
SPI BRIDGESIANA APPLE BOX

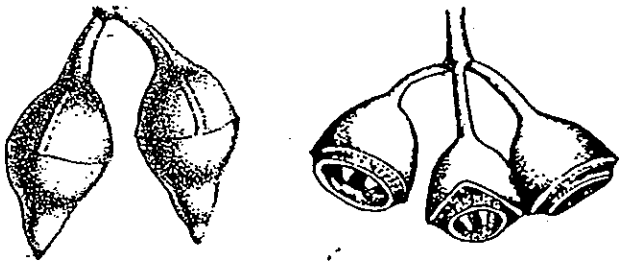
Distinctive features: Woodland or forest tree. Bark persistent over bole and larger branches, finely fibrous, tessellated, weathers whitish. Leaves adult lanceolate, concolorous, juvenile at first opposite and sessile later sub-opposite with crenulate margins, glaucous. Inflorescence 7-flowered, buds conical, fruits hemispherical, disc ascending and distinct from exsert deltoid valves.



Ecology: Tableland species overlapping woodland and forest communities, typically on alluvial soils where additional nutrient and water are available.

*SEC LONGIFOLIA WOOLLYBUTT

Distinctive features: Forest tree. Bark persistent to larger branches, sub-fibrous, thin and flaky. Shed from smaller branches in irregular flakes leaving a smooth fawn or greenish surface. Leaves adult, lanceolate often falcate, long greyish green, juvenile opposite for few pairs, petiolate, ovate, weakly discolorous. Inflorescence 3-flowered with long slender peduncles and pedicels, buds double conic, hypanthia often faintly ribbed, fruits large, woody with strong valves just below rim level.



Ecology: Typically in near-coastal forests mostly on moist heavier soils, but not swampy alluvials. On Kioloa found adjacent to E. botryoides but off dunes in association with E. tereticornis.

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*MAT PIPERITA SYDNEY PEPPERMINT

Distinctive features: Small to medium-sized tree. Bark persistent to smaller branches, finely fibrous grey, smooth grey to white on smallest branches. Leaves adult falcate often oblique, concolorous, bluish green, juvenile sessile opposite for few pairs broadly lanceolate, discolorous. Inflorescence 7 + flowered in stellate clusters on slender peduncle, buds fusiform often curved, fruits barrel-shaped to urceolate, disc descending valves enclosed.

Ecology: Widespread along the coast and adjacent tablelands in N.S.W., on a variety of soils ranging from poor sandstones to heavy clays and shales. On Kioloa S.F. found on structureless clays with E. sieberi, E. globoidea and E. pellita to deep well-structured soils with E. pilularis and E. gummifera.

MAT RADIATA SSP. RADIATA NARROW-LEAVED PEPPERMINT

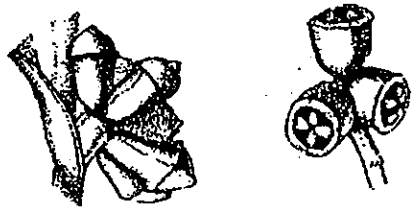
Distinctive features: Medium to large forest tree with fine textured crown. Bark persistent to small branches, sub-fibrous fine textured, shed in ribbons from smallest branches. Leaves adult long, narrow, thin, dull grey-green with numerous oil dots, oil aromatic, non-sticky, double marginal vein, juvenile opposite and sessile for many pairs on glandular branches. Inflorescence 8-16 flowered, buds clavate, fruits pyriform disc flat or slightly raised, valves enclosed.

Ecology: Species of wet sclerophyll forests along the escarpment and along the Great Dividing Range. Inland forms ssp. robertsonii have longer sharper buds with glaucous bloom on young growth and buds.

Comment: Replaced by E. elata on the coast.

5. MISCELLANEOUS BARKS

*SEC BOTRYOIDES SOUTHERN MAHOGANY



Distinctive features: Medium-sized tree. Bark persistent to smaller branches, thick short fibred, coarsely fissured longitudinally. Leaves adult lanceolate, strongly discolorous, transverse venation, juvenile opposite for few pairs, petiolate discolorous, thin. Inflorescence 7-11 flowered, peduncles flattened, buds cylindrical to spindle-shaped, hypanthium sometimes ribbed, outer calyptra shed early, fruit cylindrical with stout valves below rim level.

Ecology: Coastal N.S.W. and Gippsland, often the seaward eucalypt on dunes with low statue and poorer form, away from the sea of forest form and with less persistent bark, deciduous bark pinkish. At Kioloa S.F. forms pure stands along the coast introgressed (?) with E. saligna.

Comment: Foliage very similar to that of E. saligna, fruits more robust with enclosed valves.

*AAA FLORIBUNDA ROUGH-BARKED APPLE

Distinctive features: Medium-sized tree with twisting branches and open crown. Bark persistent to smaller branches, shortly fibrous, fissured. Leaves adult opposite petiolate discolorous, penniveined, juvenile opposite and sessile amplexicaul at first with simple hairs. Inflorescence terminal, buds hairy, 4-5 prominent sepals, fruits ribbed with calcine teeth.

Ecology: Widespread on coast extending to the foothills, typically a minor species with E. tereticornis on river flats. On Kioloa S.F. never common found mostly in non-spotted gum communities.

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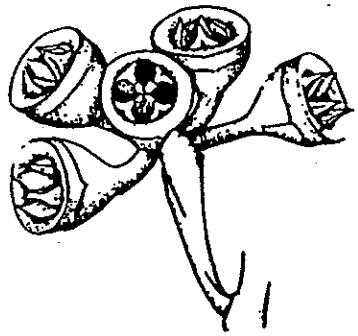
*SEC PELLITA LARGE-FRUITED RED MAHOGANY

Umbrella-shaped leaf arrangement.

Distinctive features: Tree with large heavily branched crown. Bark persistent to smaller branches, shortly fibrous, coarsely fissured, thick reddish brown. Leaves adult broad-lanceolate to lanceolate tapering to a long fine point, discolorous with transverse venation, juvenile opposite for few pairs, petiolate discolorous, stems of seedling quadrangular. Inflorescence 7(3-9) flowered with broad fattened peduncles, buds sessile calyptra rostrate, hypanthia ribbed, fruit mostly hemispherical ribbed with wide disc and prominent concave calyptra scar, valves usually 4 stout, exsert.



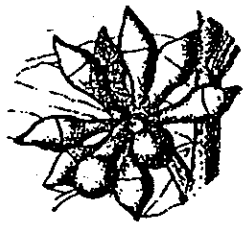
Ecology: One of the few Symphyomyrtus species to occur on poorer soils along the coast, may be a bushy shrub on rocky outcrops close to the coast. On Kioloa S.F. occur with Monocalyptus species on some of the least fertile and physically poor soils.

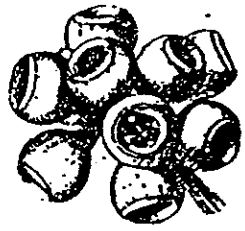
TRANSVERSIA (Bicycles + sulphur)

6. HALF-BARKS

*MAI PILULARIS BLACKBUTT

Distinctive features: Tall slender forest trees. Bark persistent over all or part of the bole, fibrous, shed in short ribbons. Leaves adult falcate, slightly oblique, glossy dark green, faintly discolorous, juvenile opposite and sessile oblong, amplexicaul, purplish beneath. Inflorescence 9-16 flowered peduncle flattened, buds conical, fruits hemispherical to globular, disc level to descending, valves enclosed.





Ecology: Widespread along the coast in mixed and pure stands extending out on to dunes e.g. Broulee. Always associated with deep well-structured soils. On Kioloa S.F. occurs with E. maculata, or E. piperita and E. gummifera.

Comment: Hybridises with other stringybarks and Sydney Peppermint, some populations in Batemans Bay district described as E. bottii. Fruits similar to those of E. muellerana.

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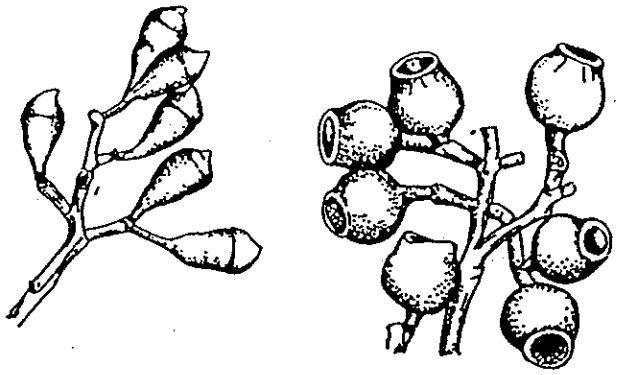
7. SPOTTED GUMS

*CCC MACULATA SPOTTED GUM

Distinctive features: Tall forest tree. Bark decorticating in small irregular flakes, cream becoming grey with exposure, conspicuously spotted. Leaves adult lanceolate, green, slightly glossy, penniveined, juvenile elliptical to ovate, discolorous, few peltate, first formed leaves with simple hairs. Inflorescence terminal panicles, peduncles flattened, 3-7 flowered, buds pedicellate, ovoid, no scar on hypanthium, fruits barrel-shaped with broad descending disc.



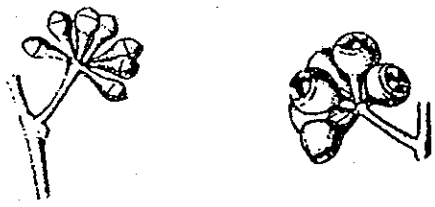
Ecology: Common in coastal forests on both shales and granites, typically dominant or co-dominant species on ridges, slopes and less commonly in drainage lines.

Comment: One of the most easily recognised of all eucalypts, its bark being distinctive.

8. SCRIBBLY GUMS

*MAT RACEMOSA SCRIBBLY GUM

Distinctive features: Medium tree usually of poor form with relatively large crown. Bark shed to ground level, commonly with scribbles. Leaves adult thick, hard, veins faint, juvenile opposite for few pairs, sub-glaucous. Inflorescence 5-12 flowered, buds conical, fruits pyriform, disc flat to slightly raised, broad reddish, valves small enclosed.

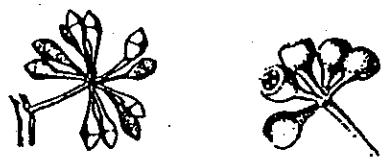


Ecology: Common in coastal forests from Batemans Bay to Hunter River. One of the Monocalyptus species of the poorer sites, associates include E. consideniana, understorey heathy.

Comment: Closely related to E. haemastoma and E. sclerophylla, distinguished by having smaller buds and fruit and somewhat thinner leaves.

MAT ROSSII SCRIBBLY GUM

Distinctive features: Small to medium-sized tree of poor form. Bark shed to ground level, commonly with scribbles. Leaves adult lanceolate to narrow-lanceolate falcate greyish green concolorous, juvenile opposite and shortly petiolate for few pairs lanceolate. Inflorescence 9-15 flowered on slender peduncles and pedicels, buds clavate, fruit globular to hemispherical disc broad convex valves to rim level.

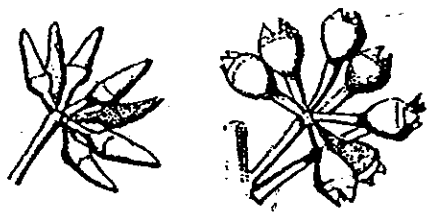


Ecology: Confined to western side of Central and Southern Tablelands typically dominant of dry sclerophyll forests occurring with E. mannifera and E. macrorhyncha.

9. RED GUMS

SNE BLAKELYI BLAKELY'S RED GUM

Distinctive features: Medium to large woodland tree. Bark shed in large irregular flakes in summer leaving a smooth or mottled surface. Leaves adult lanceolate, veins conspicuous, concolorous, juvenile ovate grey-green thick. Inflorescence 7(5-10) flowered, buds elongated conical, fruits generally smaller than E. tereticornis, hemispherical, disc wide ascending, valves exserted.



Ecology: Tableland species, commonly associated with E. melliodora in woodland formations. Typically on duplex soils - yellow and red podzolics. May form pure stands on sites close to grasslands where watertable is close to the surface, e.g. A.N.U. campus.

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*SNE TERETICORNIS FOREST RED GUM

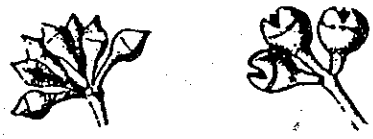
Distinctive features: Forest tree with open coarse textured crown. Bark similar to E. blakelyi, shed in large irregular flakes leaving a smooth surface. Leaves adult long narrow with conspicuous venation, concolorous, juvenile opposite for few pairs ovate, stems squared. Inflorescence 5-12 flowers, calyptra elongate, fruits hemispherical disc broad ascending, valves strongly exsert.

Ecology: Widespread in coastal forests from Victoria to New Guinea. Favours moist alluvial soils on flats, commonly with clay subsoil also on foot hills on shallower soils. On Kioloa S.F. confined to flats with heavy clay subsoils typically in association with E. longifolia close to the coast.

10. RIBBON GUMS

*SPI SMITHII GULLY GUM

Distinctive features: Medium sized forest tree with open crown. Bark smooth white decorticating in long ribbons with persistent stocking. Leaves adult narrow-lanceolate, concolorous, veins faint, oils sticky, juvenile opposite and sessile for many pairs often glaucous. Inflorescence 7(4-9) flowered, buds conical with short point, fruits hemispherical, distinctly domed disc, valves short exsert.



Ecology: Species of coast and adjacent tableland forests below 900 m, typically on valley slopes moist flats and along stream lines. On Kioloa S.F. found along streams with E. elata, E. x botryoides and other species.

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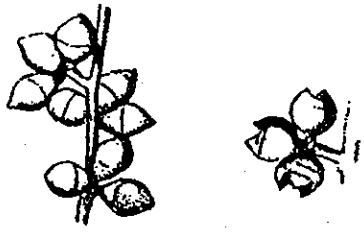
SPI VIMINALIS SSP. VIMINALIS MANNA GUM

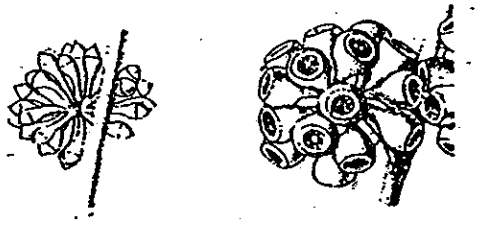


Distinctive features: Forest or woodland tree. Bark shed in long ribbons with variable stocking. Leaves adult narrow-lanceolate, concolorous, rich in oil, sticky on crushing, juvenile opposite and sessile for many pairs. Inflorescence 3-flowered, buds shortly pedicellate, ovoid, fruits cupular to hemispherical, rim thick, disc ascending, valves exsert.

Ecology: Widespread species from coastal dunes near Eden to subalpine forests, restricted to deep well-drained alluvial soils, typically near watercourses. Occurs in both forest and woodland formations.

Comment: Forest form common along watercourses in Brindabella and Gurock Ranges, woodland forms found on granites over the tablelands for example between Shoalhaven River and Braidwood. Replaced by E. smithii in coast and escarpment forests.

*MAT ELATA RIVER PEPPERMINT



Distinctive features: Medium to tall forest tree. Bark shed in long ribbons leaving a smooth grey cream or whitish bark in the crown and upper trunk, bark persistent on lower bole, fissured, finely fibrous. Leaves adult narrow-lanceolate concolorous thin with double marginal vein and numerous oil dots, oil aromatic non-sticky, juvenile opposite and sessile for many pairs, amplexicaul. Inflorescence up to 30 flowers on slender peduncles and pedicels, buds clavate, fruits truncate globose, valves insert.

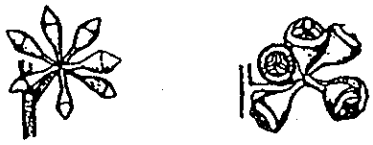
Ecology: Species of near coast and adjacent ranges in southern New South Wales, typically along watercourses but also upslope. On Kioloa S.F. restricted to lower slopes and along watercourses.

Comment: Readily distinguished by fine textured crown, ribbon bark and aromatic foliage.

11. POWDER BARKS

SPE MANNIFERA SSP. MACULOSA BRITTLE GUM

Distinctive features: Small or medium-sized tree. Bark shed in flakes to ground level, smooth powdery white, cream or grey, patches of red in summer. Adult leaves lanceolate dull grey-green concolorous veins faint, juvenile opposite sessile for few pairs narrow-lanceolate grey-green. Inflorescence 4-7 flowered, buds ovoid to fusiform, fruits hemispherical, rim thick, disc ascending valves deltoid exsert.



Ecology: Widespread in poorer dry sclerophyll forests of the Central and Southern Tablelands on low fertility soils derived from granites and sedimentary rocks. Common in foothill forests growing in association with E. macrorhyncha, E. rossii and E. dives.

Comment: Common in dry sclerophyll forests west of the Great Dividing Range.

12. MISCELLANEOUS

SEC SALIGNA SYDNEY BLUE GUM

Distinctive features: Forest tree of wet sclerophyll forests. Bark shed uniformly in long thin flakes leaving a short basal stocking, white to bluish green. Leaves adult lanceolate, discolorous with transverse venation,juvenile opposite for few pairs, shortly petiolate, thin, strongly discolorous. Inflorescence 7-11 flowered, peduncles flattened, buds sessile spindle-shaped, outer calyptra shed early, fruits cylindrical to pyriform disc descending, valves narrow elongated and exsert.

Ecology: Widespread in coastal and foothill forests from southern Queensland to south coast of New South Wales around Batemans Bay. South of Nowra restricted to foothills, populations along the coastal plain have large and variable basal stockings and pinkish bark. These are believed to be introgressed with E. botryoides which is found on the adjacent coastal dunes.

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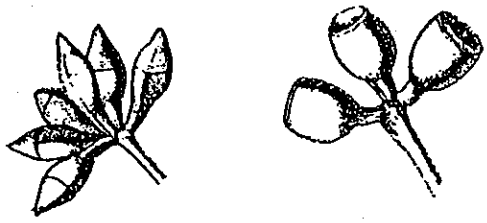
SPI CYPELLOCARPA MOUNTAIN GREY GUM

Distinctive features: Medium to tall forest tree. Bark smooth, grey, often with yellow and whitish patches, shed in plates, basal stocking sometimes, often with horizontal 'cuts' (insect larvae). Leaves adult long, dark green, veins regular distinct, concolorous, juvenile opposite sessile for many pairs, glaucous, on square stems. Inflorescence 7-flowered, peduncles flattened, buds sessile, ovoid, fruits cupular to barrel-shaped, disc descending, valves level to just exsert.

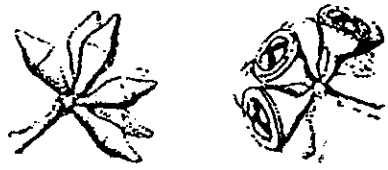


Ecology: Tall forest trees of wet sclerophyll forests of Gippsland and Southern Tablelands and adjacent escarpment and coastal plain. Occurs in mixed stands with E. obliqua, E. radiata, E. viminalis and E. bicostata.

Comment: Component of the high quality eucalypt forests along the escarpment and in the valleys of the foothills. Absent from Kioloa S.F. east of the Princes Highway.

*SPE OVATA SWAMP GUM

Distinctive features: Small to medium-sized woodland tree. Bark decorticating over most of the trunk leaving smooth whitish or pinkish grey surface with a basal stocking usually present. Leaves adult broad-lanceolate to ovate, thick, dark green sub-glossy and concolorous, juvenile elliptical to ovate, discolorous. Inflorescence 7(4-8) flowered, buds diamond shaped, fruits funnel-shaped rim thick disc level valves slightly exsert.



Ecology: Species of coastal and foothill forests in Victoria and southern New South Wales, typically in valleys or poorly-drained flats.

Comment: Woodland trees on heavy clay soils east of Braidwood near Goulburn turnoff. A small stand occurs in a swamp in the northern part of Kioloa S.F., this may be a relict left over from the last ice age.

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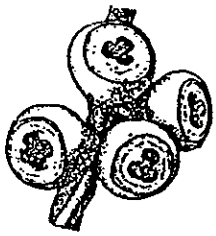
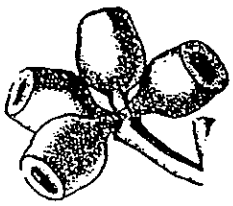
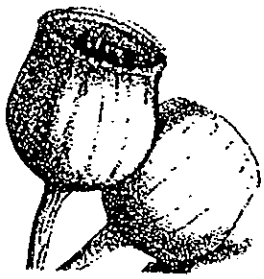
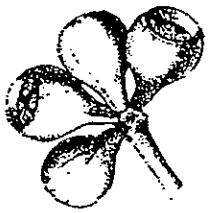
MAK PAUCIFLORA SSP. PAUCIFLORA SNOW GUM

Distinctive features: Forest or woodland tree. Bark smooth off-white cream or greyish, often wih scribbles,decorticating to ground level. Adult leaves lanceolate, thick, with parallel veins glossy or grey-green with yellowish twigs in forest forms, glossy dark green with reddish stems in most tableland woodland forms, juvenile sessile and opposite for few pairs discolorous. Inflorescence 11 to many flowers on robust peduncles, buds sessile or almost so, clavate, often with granular surface, fruits cupular with wide level disc, valves at or below rim, buds and fruits glaucous in some populations.



Ecology: Species of cold habitats. In subalpine forests occurs with E. dalrympleana and in pure stands towards the timberline where it grades into ssp. niphophila and ssp. de beuzevillei. At lower elevations it occurs along cold air drainage valleys often forming inverted timberlines. On the tablelands it occurs in narrow bands adjacent to grasslands abutting woodland or dry sclerophyll forest and forms woodlands on poorer soils typically on granites. Extends to the coastal forests on granites in southern N.S.W. and Vic. S.A. and Tas.

Comment: A strongly weeping form with glaucous stems and buds is found in rainfall shadow valleys in the Snowy Mountains and Tasmania. A true mallee E. gregsoniana is closely related and occurs on the Central and Southern Tablelands of N.S.W.

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