



# Flora of South Australia

5th Edition | Edited by Jürgen Kellermann

## MYRTACEAE (partly)<sup>1</sup>

D. Nicolle<sup>2</sup>

This version of the *Flora of South Australia* chapter of Myrtaceae only contains the eucalypt genera *Angophora*, *Corymbia* and *Eucalyptus*. Further genera are in preparation. An updated treatment will be published in the near future. — Ed.

### 1. ANGOPHORA Cav.

*Icon.* 4: 21, t. 338 (1797).

(Greek *angos*, a goblet, vessel, and *phorus*, carrier; in reference to the fruits.)

**Trees** or mallees, 2–35 m high, lignotuberous; resprouters; bark smooth throughout and decorticating in plates and short strips, or rough throughout, hard-fibrous, moderately-fissured, grey-brown; branchlets not pruinose, pith glands absent; cotyledons relatively large (cv. *Eucalyptus*) reinform, mostly flat and appressed in embryo (slightly folded at edges); leaves dimorphic but sometimes reproductively mature in juvenile leaf phase; juvenile leaves opposite, sessile, scabrid with bristle-glands, linear to oblong or ovate, not pruinose, discolourous, dull to glossy, green; adult leaves mostly opposite, usually petiolate, usually lanceolate, glabrous, discolourous, not pruinose, dull to glossy, green, lateral veins closely-spaced. **Inflorescences** in terminal panicles; umbellasters 3 or 7 flowered, held erect; peduncles present, pedicels present, buds globular, glabrous or scabrid with bristle-glands, ribbed in most species, not pruinose, hypanthia cupular to obconical; flowers with persistent sepals and petaloid inner whorl; petals creamy-white, stamens creamy-white, numerous and showy, in several continuous rows, inflexed in bud, all fertile; anthers versatile, dorsifixed, oblong, dehiscent by longitudinal slits; ovary half-inferior, ovules in 3 or more vertical rows, ovulodes present. **Fruits** pedicellate, semi-woody (papery), cupular to globular to barrel-shaped, ribbed in most species, not pruinose, disc descending; valves 3–5, deeply enclosed; seeds shed annually, glossy, red-brown to black, flattened-ellipsoidal to saucer-shaped. **Angophoras, apples.**

About 12 species, endemic to eastern Australia from the Atherton Tableland in Qld south to east Gippsland in Vic. Three species are commonly cultivated in S.A. as ornamental trees (*A. costata* and *A. floribunda*) and shrubs (*A. hispida* (Sm.) Blaxell). Two of these are sparingly naturalised in the Mt Lofty Ranges, regenerating from seed around planted trees.

Most closely related to *Corymbia* K.D.Hill & L.A.S.Johnson and with a more distant relationship to *Eucalyptus*.

- 1. Bark rough and persistent over trunk and branches..... 2. **A. floribunda**
- 1: Bark smooth and annually decorticating throughout..... 1. **A. costata** subsp. **costata**

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1. \***Angophora costata** (Gaertn.) Britten subsp. **costata**, *J. Bot.* 54: 62 (1916). — *Metrosideros costata* Gaertn., *Fruct. Sem. Pl.* 1: 171, t. 34, fig. 2 (1788). *Eucalyptus apocynifolia* (Salisb.) Brooker, *Austral. Syst. Bot.* 13: 135 (2000). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 215 (2006).

Tree, usually single-stemmed, 10–30 m high, lignotuberous; bark smooth throughout, decorticating in plates and strips, pinkish orange to pale grey to white; cotyledons reniform; juvenile leaves opposite, sessile, scabrid, lanceolate to oblong, discolorous, green; adult leaves opposite, on petioles 9–25 mm long, lanceolate or falcate, acute to acuminate, 70–190 × 12–35 mm, discolorous, glossy and green above, paler below; penniveined. **Inflorescences** terminal panicles; umbellasters 3 or 7-flowered; peduncles 3–20 mm long, pedicels 3–8 mm long, buds globular, ribbed, 4–8 mm long, 5–7 mm diam. **Fruits** pedicellate, barrel-shaped, ribbed, 10–18 long, 8–16 mm diam.; disc descending; valves 3 or 4, deeply enclosed. **Smooth-barked apple, Sydney red gum.**

S.A.: \*SL; N.S.W.; Qld. Primarily distributed and relatively common on the central coast and adjacent ranges of N.S.W., with very scattered populations in north Qld inland of Townsville. Occurs on well-drained, often skeletal soils derived from sandstone. Widely planted as an ornamental tree in southern and eastern Australia. Recorded as sparingly regenerating around planted trees. Flowers: Summer.

2. \***Angophora floribunda** (Sm.) Sweet, *Hort. Brit.* ed. 2., 209 (1930). — *Eucalyptus florida* Brooker, *Austral. Syst. Bot.* 13: 136 (2000). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 217 (2006); D.Nicolle, *Eucalypts Victoria & Tasman.* 19 (2006).

Tree, usually single-stemmed, 10–35 m high, lignotuberous; bark rough throughout, hard-fibrous, moderately-fissured, grey-brown; cotyledons reniform; juvenile leaves opposite, sessile, scabrid, lanceolate to oblong, discolorous, green; adult leaves opposite, on petioles 6–15 mm long, narrow-lanceolate to broad-lanceolate or falcate, acute to acuminate, 55–150 × 10–40 mm, discolorous, glossy and green above, paler below; penniveined. **Inflorescences** terminal panicles; umbellasters 3 or 7-flowered; peduncles 10–30 mm long, pedicels 3–9 mm long, buds globular, ribbed, 3–6 mm long, 3–6 mm diam. **Fruits** pedicellate, cupular to barrel-shaped, ribbed, 7–12 mm long, 7–12 mm diam.; disc descending; valves 3 or 4, deeply enclosed. **Rough-barked apple.**

S.A.: ?\*SL; N.S.W.; Qld; Vic. Widespread in the Great Dividing Range of eastern Australia, from far eastern Gippsland in Vic. north to near Rockhampton in Qld, then as more scattered populations to the north between Townsville and Cairns. Widely but not commonly planted as an ornamental tree in southern and eastern Australia. Recorded as sparingly regenerating around planted trees, but doubtfully truly naturalized. Flowers: Summer.

## 2. CORYMBIA K.D.Hill & L.A.S.Johnson

*Telopea* 6: 214 (1995).

(Latin *corymbium*, a corymb; recalling the epithet *Corymbosae* used in subsectional or sectional rank under *Eucalyptus* by earlier authors, and the name *E. corymbosa* which is a synonym of the type species *C. gummifera*.)

*Eucalyptus* subg. *Corymbia* L.D.Pryor & L.A.S.Johnson, *Classif. Eucalypts* 28, 34 (1971), *nom. nud.*: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 908 (1986); *E.* subg. *Corymbia* (K.D.Hill & L.A.S.Johnson) Brooker, *Austral. Syst. Bot.* 13: 85 (2000).

Trees or mallees, 3–70 m high, lignotuberous; resprouters; bark smooth throughout to mostly rough, rough bark soft and flaky to hard and tightly held, often tessellated (stringy in one species), smooth bark decorticating in plates; branchlets rarely pruinose, pith glands absent; cotyledons relatively large (cv. *Eucalyptus*) reniform, folded in embryo in many taxa; leaves dimorphic but sometimes reproductively mature in juvenile leaf phase; juvenile leaves opposite at least initially, sessile or petiolate, sometimes peltate, glabrous, scabrid with bristle-glands, orbicular to linear, not pruinose, dull to glossy, green to blue-green; adult leaves disjunct, usually petiolate, usually lanceolate, glabrous, concolorous to strongly discolorous, not pruinose, dull to highly glossy, green to greyish, lateral veins closely-spaced. **Inflorescences** in terminal panicles or as compound axillary umbellasters; umbellasters 3–7 flowered, held erect; peduncles present, pedicels usually present, buds globular to ovoid to clavate, glabrous or scabrid with bristle-glands, sometimes ribbed, sometimes pruinose, hypanthia cupular to obconical; calyx and corolla fused into an operculum which is shed as the flowers open; opercula hemispherical to conical, shorter or equal in length to hypanthium, usually equal in width to hypanthium at join; flowers usually white but pink, red or vermilion in some taxa; stamens numerous and usually showy, in several continuous rows, inflexed in bud, all fertile; anthers versatile, dorsifixed, oblong, dehiscing by longitudinal slits; ovary half-inferior, ovules in irregularly-defined rows, ovulodes present. **Fruits** sessile or pedicellate, woody or semi-woody (papery), globular to barrel-shaped to strongly urceolate, glabrous



or somewhat scaly, sometimes ribbed, not pruinose, disc vertically descending; valves 3–5, deeply enclosed; seeds usually shed annually, dull or glossy, red-brown to black, compressed-ovoid to saucer-shaped, usually smooth, flanged or winged in some taxa. **Bloodwoods, ghost gums.**

About 100 species, mainly of tropical distribution and endemic to Australia, but with some species extending to New Guinea, and with one or two species endemic to New Guinea. Three species extend into the far north of S.A. A number of species are cultivated in S.A., with two species possibly sparingly naturalised.

Most closely related to *Angophora*, a genus of about twelve species endemic to eastern Australia, with a more distant relationship to *Eucalyptus*.

Used mainly for timber (*C. calophylla*, *C. maculata*), essential oils (citronella: *C. citriodora*) and as ornamental trees (*C. ficifolia*, *C. eximia*, *C. ptychocarpa* (F.Muell.) K.D.Hill & L.A.S.Johnson). Most species poorly known in cultivation, although a handful are commonly cultivated in Australia and a few sometimes cultivated outside Australia.

The following taxa are mentioned in the key to species, but not treated further: *C. citriodora* (Hook.) K.D.Hill & L.A.S.Johnson and *C. ficifolia* (F.Muell.) K.D.Hill & L.A.S.Johnson (see Pl. 1E) are questionably naturalising; *C. eximia* (Schauer) K.D.Hill & L.A.S.Johnson is often planted and has the potential to establish in S.A.

References: Hill & Johnson (1995); Nicolle (2013).

1. Bark smooth and seasonally decorticating throughout
  2. Leaves distinctly lemon-scented when crushed ..... **C. citriodora**
  - 2: Leaves not distinctly lemon-scented when crushed ..... 3. **C. maculata**
- 1: Bark rough and persistent on trunk and branches
  3. Adult leaves distinctly discoloured; fruits 20–40 mm diam.
    4. Adult leaves with very small visible oil glands; flowers white to pink; fruits with a constricted neck below the rim ..... 1. **C. calophylla**
    - 4: Adult leaves lacking visible oil glands; flowers red or vermilion; fruits constricted at the rim ..... **C. ficifolia**
  - 3: Adult leaves concolorous or weakly discoloured; fruits 9–23 mm diam.
    5. Adult leaves blue-green; bark yellow-brown to orange; opercula glabrous ..... **C. eximia**
    - 5: Adult leaves green; bark grey to brown; opercula scurfy
      6. Adult leaves narrow-lanceolate to lanceolate; fruits ± equidimensional.. 2. **C. eremaea** subsp. **eremaea**
      - 6: Adult leaves lanceolate; fruits longer than wide
        7. Inflorescence branches and pedicels thickened; LE ..... 5. **C. terminalis**
        - 7: Inflorescence branches and pedicels not thickened; NW ..... 4. **C. opaca**

1. \***Corymbia calophylla** (Lindl.) K.D.Hill & L.A.S.Johnson, *Telopea* 6: 240 (1995). — *Eucalyptus calophylla* Lindl., *Edwards's Bot. Reg.* 27: 72 (1841). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 237 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 60 (2001); M.French, *Eucalypts W. Australia's Wheatbelt* 25 (2012).

Tree, 8–70 m high, lignotuberous; bark rough throughout, bark rough, hard-flaky, tessellated, red-brown to grey; cotyledons reniform; juvenile leaves disjunct after 5–8 pairs, petiolate, setose for 5–8 pairs then glabrous, ovate, glossy, green; adult leaves alternate, on petioles 15–20 mm long, lanceolate to ovate, acuminate, 90–140 × 25–40 mm, strongly discoloured, slightly glossy, green; penniveined, intramarginal vein distinct from lamina margin, oil glands small but abundant. **Inflorescences** terminal panicles; umbellasters 7-flowered; peduncles 15–35 mm long, pedicels 10–30 mm long, buds broadly-clavate, not scurfy, 7–14 mm long, 7–10 mm diam.; operculum hemispherical and often apiculate, up to two thirds as long as the hypanthium; flowers cream-coloured to more rarely pink; stamens inflexed, all fertile; anthers versatile, oblong. **Fruits** pedicellate, urceolate, 30–50 mm long, 25–40 mm diam., distinctly constricted well below rim; disc descending; valves 4, deeply enclosed; seeds black, to 15 mm long, not winged. **Marri. Pl. 1A–C.**

S.A.: \*NL, \*SL; W.A. Naturally distributed in the karri and jarrah forests and wandoo woodlands of southwestern W.A. Known to sparingly regenerate from seed around planted trees in S.A. Flowers: Summer.

Closely related to *C. ficifolia*, which is widely cultivated in southern Australia, including commonly in the Adelaide

area and Mt Lofty Ranges. *Corymbia ficifolia* is distinguished from *C. calophylla* by its usually smaller form, adult leaves lacking visible oil glands, red or vermillion flowers, smaller fruits which narrow to the rim, and winged seeds. The two species commonly hybridise in cultivation, with hybrid individuals having intermediate morphology (i.e. often pink to pale-red flowered).

Harvested for timber in W.A. Cultivated for shade, shelter and as an ornamental tree, although the more colourful flowered *C. ficifolia* is preferred as an ornamental tree.

2. ***Corymbia eremaea*** (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson subsp. **eremaea**, *Telopea* 6: 309 (1995). — *Eucalyptus eremaea* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 38 (1985). *E. australis* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 41 (1985); *E. connerensis* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 45 (1985); *E. symonii* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 436 (1985). *E. terminalis* auct. non F.Muell.: J.M.Black, *Fl. S. Austral.* 3: 420 (1926); *E. dichromophloia* auct. non F.Muell.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 628 (1952); *E. aff. dichromophloia* F.Muell.: Boomsma, *Native Trees S. Austral.* 142 (1981); *E. polycarpa* var. *oligocarpa* auct. non Blakely & Jacobs: Chippend. in Jessop, *Fl. Centr. Austral.* 238 (1981); *E. lenziana* auct. non D.J.Carr & S.G.M.Carr: D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 47 (1985), partly; *E. centralis* auct. non D.J.Carr & S.G.M.Carr: Jessop, *List Vasc. Pl. S. Austral.* ed. 4, 62 (1993); *C. eremaea* subsp. *oligocarpa* auct. non (Blakely & Jacobs) K.D.Hill & L.A.S.Johnson: *Austral. Pl. Census* (2006). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 11 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 20, 21 (2013).

Tree, often several-stemmed, or several to multi-stemmed mallee, 2–10 m high, lignotuberous; bark rough to small branches, flaky, tessellated, red-brown to grey; smaller branches smooth, cream; cotyledons reniform; juvenile leaves opposite, shortly petiolate, setose for 2–4 pairs, linear to narrow-lanceolate, dull, green; adult leaves alternate, on petioles 7–15 mm long, narrow-lanceolate to lanceolate, acute to acuminate, 60–160 × 8–21 mm concolorous, dull to slightly glossy, green; penniveined, intramarginal vein confluent with lamina margin. **Inflorescences** terminal panicles; umbellasters 7-flowered; peduncles 2–15 mm long, pedicels 3–7 mm long, buds ovoid, pale to scurfy-white, 6–8 mm long, 4–5 mm diam.; operculum hemispherical, up to half as long as the hypanthium; flowers cream-coloured; stamens inflexed, all fertile; anthers versatile, oblong. **Fruits** on short but slender pedicels, globular to shortly urceolate, 12–22 mm long, 11–22 mm diam.; disc descending; valves 3 or 4, deeply enclosed; seeds 7–10 mm long, with a terminal wing; hilum often conspicuous. **Range** **bloodwood, hills bloodwood. Fig. 1A–E, Pl. 1D.**

S.A.: NW; W.A.; N.T. Restricted to the ranges and hilly areas in central Australia, extending in S.A. south to the Birksgate Range and east to the Mintabie area, Indulkana Range and Teyon Station. Occurs on skeletal soils on ridges and slopes, and occasionally on sandy soils at the foot of hills. Flowers: Apparently sporadic; possibly related to rainfall events.

*Eucalyptus eremaea* subsp. *oligocarpa* (Blakely & Jacobs) K.D.Hill & L.A.S.Johnson, of the MacDonnell Ranges of N.T., is weakly distinguished from the typical subspecies by the usually smaller and slightly narrower adult leaves and usually smaller and more prominently flared fruits. Populations of *C. eremaea* in parts of the Musgrave Ranges of S.A. (e.g. summit of Mount Morris) may be closest to subsp. *oligocarpa*. This species and the W.A. endemic *C. lenziana* (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson are very similar (the latter differing in the usually narrower adult leaves that form a more pendulous crown and in the less pronounced neck to the fruit) and the two species may be conspecific. *Corymbia lenziana* is widespread from near Shark Bay in W.A. eastwards to near the Lizzie Lightfoot Range (ca. 60 km from the S.A. border). Some populations currently included in *C. eremaea* from the Birksgate Range show some morphological approach towards *C. lenziana* and may represent intergrades between the two species.

Possibly suited for amenity plantings on well-drained soils in arid areas. Poorly known in cultivation.

3. **\**Corymbia maculata*** (Hook.) K.D.Hill & L.A.S.Johnson, *Telopea* 6: 393 (1995). — *Eucalyptus maculata* Hook., *Icon. Pl.* 7: 619 (1844). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 261 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 60 (2006); D.Nicolle, *Eucalypts Victoria & Tasman.* 23 (2006).

Tree, 20–68 m high, lignotuberous; bark smooth throughout, pale grey to pink or cream, decorticating in small plates resulting in a mottled appearance; cotyledons reniform; juvenile leaves disjunct after 2–3 pairs, petiolate, setose, ovate, glossy, green; adult leaves alternate, on petioles 10–25 mm long, narrow-lanceolate to broad-lanceolate, acuminate, 100–220 × 12–40 mm, concolorous, slightly glossy, green; penniveined, intramarginal vein distinct from lamina margin. **Inflorescences** axillary, raceme-like; umbellasters 3-flowered; peduncles 5–10 mm long, pedicels 2–7 mm long, buds ovoid, pale to scurfy-white, 8–11 mm long, 5–7 mm diam.; operculum

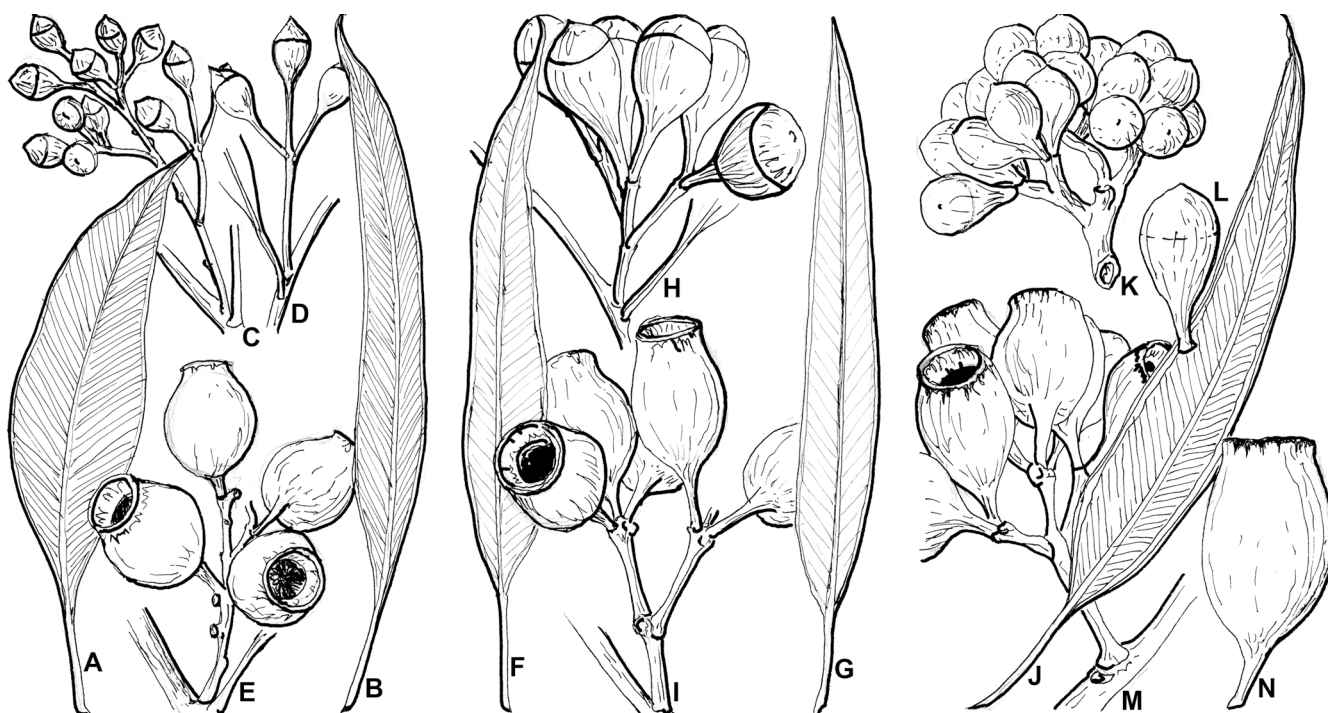


Fig. 1. A–E, *Corymbia eremaea* subsp. *eremaea*: A & B, leaves; C & D, panicle of buds; E, fruits. F–I, *C. opaca*: F & G, leaves; H, buds; I, fruits. J–N, *C. terminalis*: J, leaf; K, panicle of buds; L, bud; M & N, fruits. Illustration by G.R.M. Dashorst.

hemispherical and shortly apiculate, up to one third as long as the hypanthium; flowers cream-coloured; stamens inflexed, all fertile; anthers versatile, oblong. **Fruits** on short thickened pedicels, globoid-urceolate to ovoid-urceolate, 11–15 mm long, 8–11 mm diam.; disc descending; valves 3, deeply enclosed; seeds glossy, red-brown, 2–3 mm long. **Spotted gum.**

S.A.: \*SL; \*W.A.; N.S.W.; Vic. Naturally distributed in coastal regions in N.S.W., with an isolated occurrence in eastern Vic. Known to sparingly regenerate from seed around planted trees in S.A. Naturalised in W.A. and in Vic. outside its natural range. Flowers: Somewhat spasmodic; usually autumn to spring.

Closely related to the Queensland species *C. citriodora*, which is also widely cultivated in southern Australia, including commonly in the Adelaide area and Mt Lofty Ranges. *Corymbia citriodora* is distinguished from *C. maculata* by its more uniformly-coloured bark, slenderer branches, narrower juvenile and adult leaves, and most reliably by the distinctive lemon-scented leaves when crushed (due to the presence of citronella oil).

Widely cultivated in southern Australia for shade, shelter and timber, and as an ornamental tree.

4. ***Corymbia opaca*** (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson, *Telopea* 6: 318 (1995). — *Eucalyptus opaca* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 63 (1985). *E. centralis* D.J.Carr & S.G.M.Carr, *Eucalyptus* 1: 61 (1985). *C. eremaea* subsp. *eremaea* auct. non (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson: D.Nicolle, *Eucalypts S. Austral.* 10 (1997). *E. terminalis* auct. non F.Muell.: J.M.Black, *Fl. S. Austral.* 3: 420 (1926), partly; *Fl. S. Austral.* ed. 2, 3: 628 (1952). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 94 (2004), habit image only; D.Nicolle, *Native Eucalypts S. Austral.* 22, 23 (2013).

Tree, sometimes several-stemmed, 6–16 m high, lignotuberous; bark rough to medium-sized to small branches, flaky, tessellated, orange-brown to grey; smaller branches smooth, cream; cotyledons reniform; juvenile leaves opposite, shortly petiolate, setose for 2–4 pairs, lanceolate to broad-lanceolate, dull, green; adult leaves alternate, on petioles 5–12 mm long, lanceolate, acute to acuminate, 90–170 × 11–35 mm, concolorous, dull to slightly glossy, green; penniveined, intramarginal vein confluent with lamina margin. **Inflorescences** terminal panicles; umbellasters 7-flowered; peduncles 9–14 mm long, pedicels 10–24 mm long, buds ovoid, pale to scurfy-white, 9–13 mm long, 6–8 mm diam.; operculum hemispherical, up to half as long as the hypanthium; flowers cream-coloured; stamens inflexed, all fertile; anthers versatile, oblong. **Fruits** on short non-thickened pedicels, ovoid-urceolate, 16–29 mm long, 12–19 mm diam.; disc descending; valves 3 or 4, deeply enclosed; seeds 8–10 mm long, with a terminal wing. **Desert bloodwood.** Fig. 1F–I, Pl. 1F & G.

S.A.: NW; W.A.; N.T. Widespread in western and central Australia, extending to the range country in far north-western S.A., especially on the red-loam plains in the Tomkinson, Mann and Musgrave ranges. Occurs in deeper



red loams and sands on plains and minor creeks near major hills and ranges. Flowers: Mainly autumn–winter; possibly related to rainfall events.

Similar to both *C. terminalis* and *C. eremaea* and somewhat intermediate in morphology between these two species. *Corymbia opaca* has a similar distribution to *C. eremaea* in S.A., but the two species are almost always ecologically separated, with the latter occurring on skeletal or sandier soils on the ranges or occasionally at the footslope of hills. Hill & Johnson (1995) treated *C. terminalis*, *C. opaca* and *C. tumescens* as distinct species, but also recognised intergrades between them. A more conservative view adopted by some eucalypt systematists is to combine these and other taxa into single species (*C. terminalis*). Here, I take a somewhat intermediate approach and recognise *C. opaca*, but not *C. tumescens*, as distinct from *C. terminalis*. Extensive interbreeding occurs between *C. eremaea* and *C. opaca* (Hill & Johnson 1995).

May be suitable as a small to medium-sized shade tree in arid regions. Poorly known in cultivation.

5. ***Corymbia terminalis*** (F.Muell.) K.D.Hill & L.A.S.Johnson, *Telopea* 6: 323 (1995). — *Eucalyptus terminalis* F.Muell., *J. Linn. Soc., Bot.* 3: 89 (1859). *C. tumescens* K.D.Hill & L.A.S.Johnson, *Telopea* 6: 321 (1995); *E. pyrophora* Benth., *Fl. Austral.* 3: 257 (1867). *E. centralis auct. non* D.J.Carr & S.G.M.Carr: Jessop, *List Vasc. Pl. S. Austral.* ed. 4, 62 (1993), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 58 (2001), habit image only; D.Nicolle, *Eucalypts S. Austral.* 13 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 24, 25 (2013).

Tree, occasionally several-stemmed, 6–18 m high, lignotuberous; bark rough to large-sized to small branches, flaky, tessellated, red-brown to grey; smaller branches smooth, cream; cotyledons reniform; juvenile leaves opposite, shortly petiolate, setose for 2–8 pairs, lanceolate to broad-lanceolate, dull, green; adult leaves alternate, on petioles 12–24 mm long, lanceolate to broad-lanceolate, acute to acuminate, 70–170 × 11–35 mm, concolorous or very weakly discolorous, dull to slightly glossy, green; penniveined, intramarginal vein confluent with lamina margin. **Inflorescences** terminal panicles; umbellasters 7-flowered; peduncles 7–17 mm long, pedicels thickened, 10–24 mm long, buds ovoid to pyriform, pale to scurfy-white, 9–17 mm long, 6–13 mm diam.; operculum hemispherical, up to half as long as the hypanthium; flowers cream-coloured; stamens inflexed, all fertile; anthers versatile, oblong. **Fruits** on short thickened pedicels, ovoid-urceolate, 16–35 mm long, 12–23 mm diam.; disc descending; valves 3 or 4, deeply enclosed; seeds 8–12 mm long, with a terminal wing. **Plains bloodwood, inland bloodwood. Fig. 1J–N, Pl. 2.**

S.A.: LE; N.S.W.; N.T.; Qld. Widespread in arid areas of eastern and northern Australia, extending south-west into S.A. both north and south of Innamincka, where it occurs as sporadic populations in red loams and sands on plains. Flowers: Mainly autumn–winter; possibly related to rainfall events.

Similar to the more westerly-distributed *C. opaca*, differing from the latter in the thickened inflorescence branches and pedicels, and the generally coarser adult leaves, inflorescences and fruits. Populations of *C. terminalis* from north-eastern S.A. were included in *C. tumescens* K.D.Hill & L.A.S. Johnson by Hill & Johnson (1995). These authors distinguished *C. tumescens* from *C. terminalis* by the more slender flower buds and more fully concolorous adult leaves; however the differences appear to be very slight and extensive areas of individuals attributable to either species are known; thus the two species are considered conspecific here.

The species matures with a broad leafy crown and it may be suitable as a medium-sized shade tree in arid regions. Poorly known in cultivation.

### 3. EUCALYPTUS L'Hér.

*Sert. Angl.* 18 (1789).

(Greek *eu*, well; *kalyptos*, covered; alluding to the operculum which covers the stamens in the bud.)

*Eudesmia* R.Br. in M.Flinders, *Voy. Terra Austral.* 2: 599, t. 3 (1814); *Symphyomyrtus* Schauer in J.G.C.Lehmann, *Pl. Preiss.* 1: 126 (1844).

Trees, mallees or shrubs, <1–90+ m high, often lignotuberous; resprouters or obligate seeders; bark smooth throughout to mostly rough, rough bark varying from soft and stringy to hard and tightly held, finely to very coarsely fissured, smooth bark decorticating in plates, strips or ribbons; branchlets sometimes pruinose, pith glands sometimes present; cotyledons relatively small (cv. *Corymbia*) reniform to bilobed to bisected, folded in embryo in some taxa; leaves dimorphic but sometimes reproductively mature in juvenile leaf phase; juvenile leaves opposite at least initially, sessile or petiolate, glabrous, scabrid or hairy, orbicular to linear, sometimes pruinose, dull to glossy, green to greyish;

adult leaves usually disjunct (rarely opposite), usually petiolate, orbicular to linear, glabrous, concolorous to strongly discolorous, sometime pruinose, dull to highly glossy, green to greyish. **Inflorescences** in terminal panicles or as single or rarely paired axillary or compound axillary umbellasters; umbellasters singular up to 30+ flowered, held erectly, pendulously or rigidly down-turned; peduncles often present, pedicels usually present, buds globular to narrowly fusiform, glabrous, angular, ribbed or warty, sometimes scabrid or hairy, sometimes pruinose, hypanthia cylindrical to cupular to obconical to campanulate; calyx and/or corolla fused into an operculum which is shed as the flowers open; opercula flattened to hemispherical to conical to horn-shaped, shorter than hypanthium to at least 3 times as long as hypanthium, narrower, equal or wider than hypanthium at join; flowers usually white, but pink, red, yellow, orange, greenish-yellow or purple in some taxa; stamens numerous and usually showy, usually in several continuous rows but sometimes grouped, erect to inflexed in bud, all fertile or outer anther lacking stamens (staminodes); anthers versatile or adnate, dorsifixed to basifixed, cuneate to globoid to reniform, papilionate in one taxon, dehiscing by separate or confluent slits or pores. Ovary half-inferior, 2–7 locular, ovules in 2–8 vertical rows, ovulodes present. **Fruits** sessile or pedicellate, woody, globular to barrel-shaped to urceolate to campanulate, glabrous, angular, or ribbed, sometimes pruinose, disc vertically descending to near vertically ascending; valves 2–7, deeply enclosed to conspicuously exerted; seeds held in live fruit indefinitely or shed annually, dull or glossy, yellow to brown to reddish to grey to black, linear to spherical, smooth to deeply pitted, sometimes flanged to winged; hilum usually conspicuous. **Eucalypts, gums, mallees, boxes, stringybarks.**

About 800 species, mainly endemic to Australia, but with some extending to New Guinea, East Timor, parts of Indonesia and the southern Philippines, and with several species endemic to these islands.

Eucalypts are used for timber and wood products, essential oils, honey, shelter, shade, screening, environmental rehabilitation, ornamental trees and shrubs. Numerous species cultivated widely in Australia and worldwide, the most commonly grown being *E. camaldulensis*, *E. globulus*, *E. grandis* W.Hill and *E. saligna* Sm.

Obligate seeders consist of plants which are killed out-right by fire and recruit thereafter from banks of seed or encapsulated in woody fruits in the canopy.

The infrageneric classification of *Eucalyptus* includes ten subgenera and numerous sections and series (following Brooker 2000). The species included in this treatment fall into three subgenera (*E.* subg. *Eudesmia*, *E.* subg. *Symphomyrtus* and *E.* subg. *Eucalyptus*). These three subgenera, plus the primary sections and series within each (for the species included in this treatment) are characterised briefly below:

#### *Eucalyptus* subg. *Eudesmia*

Species included in this treatment: *E. gamophylla*, *E. gongylocarpa*.

A subgenus of about 25 species, mainly distributed in northern and western Australia, with two species extending into the north-west of South Australia.

The subgenus is distinguished by the following combination of characters: Cotyledons reniform, folded and clasping in embryo; branchlet pith glands present; inflorescences simple, axillary or rarely apparently compound; buds uni-operculate, sometimes with conspicuous sepals; stamens often in four bundles; ovules in 2, 4 or rarely 6 vertical rows.

#### *Eucalyptus* subg. *Symphomyrtus*

Species included in this treatment: Species of *E.* sect. *Exsertaria*, *E.* sect. *Bisectae*, *E.* sect. *Dumosae*, *E.* sect. *Maidenaria* and *E.* sect. *Adnataria* (see below), plus *E. botryoides* (*E.* sect. *Latoangulatae* Brooker), *E. cladocalyx* (*E.* sect. *Sejunctae* Brooker), *E. cosmophylla* and *E. paludicola* (*E.* sect. *Incognitae* (D.Nicolle) Brooker) and *E. gomphocephala* (*E.* sect. *Bolites* Brooker).

By far the largest subgenus, consisting of about 540 species distributed throughout Australia. The primary sections and series within *E.* subg. *Symphomyrtus* (for the species included in this treatment) are characterised below.

The subgenus is distinguished by the following combination of characters: Cotyledons reinform, bilobed or bisected, folded in embryo; branchlet pith glands absent or present; inflorescences simple, axillary or apparently terminal, rarely apparently compound; buds bi-operculate, rarely with sepals; stamens forming a continuous ring; ovules in 4–10 vertical rows; seeds with ventral or terminal hilum.

#### *Eucalyptus* sect. *Exsertaria*

Species included in this treatment: *E. camaldulensis*, *E. flindersii*, *E. gilleni*.

A section of about 38 species, distributed throughout all mainland states and territories in Australia. Includes the species commonly known as 'red gums'

The section is distinguished within *E.* subg. *Symphomyrtus* by the following combination of characters: Smooth bark decorticating in plates and strips; cotyledons reniform; leaves moderately dimorphic; adult leaves concolorous; branchlet pith glands absent; inflorescences axillary, unbranched; stamens all fertile, anthers versatile; ovules in 6 or 8 vertical rows; seeds with edge of inner seed-coat toothed.



### *Eucalyptus* sect. *Bisectae*

Species included in this treatment: Species of *E. ser. Subulatae*, *E. ser. Curvipterae* and *E. ser. Heterostemones* (see below), plus *E. cneorifolia* (*E. ser. Angustissimae* Brooker), *E. conferruminata* (*E. ser. Lebmannianae* (D.J.Carr & S.G.M.Carr) Brooker), *E. cornuta* (*E. ser. Cornutae* (Benth.) Brooker), *E. leptophylla* and *E. sp.* Great Victoria Desert (*E. ser. Porantherae* Benth.), *E. mannensis* (*E. ser. Micrantherae* Brooker), *E. occidentalis* (*E. ser. Erectae* Brooker), *E. stricklandii* (*E. ser. Stricklandianae* Brooker) and *E. trivalva* (*E. ser. Accedentes* Chippend.).

A large section of about 210 mallee and tree species, mainly distributed in southern Australia. The three largest series within *E. sect. Bisectae* (for the species included in this treatment) are characterised below.

The section is distinguished within *E. subg. Symphyomyrtus* by the following combination of characters: Smooth bark decorticating in plates, strips or ribbons; cotyledons bisected; leaves weakly to strongly dimorphic; adult leaves usually concolorous, rarely weakly discolorous; branchlet pith glands absent or present; inflorescences axillary; stamens all fertile or with staminodes; ovules in 4–10 vertical rows.

#### *Eucalyptus ser. Subulatae*

Species included in this treatment: *E. eremicola*, *E. gillii*, *E. oleosa*, *E. peninsularis*, *E. socialis*, *E. vokesensis*, *E. nyolensis*, *E. yalatensis*, *E. yumbarrana*.

A series of about 26 species, distributed in southern Australia (but extending to the Pilbara region of W.A.) and with greatest taxonomic diversity in southern W.A. All South Australian species are mallees.

The series is distinguished within *E. sect. Bisectae* by the following combination of characters: Resprouters or obligate seeders; bark not minniritchi-type; branchlet pith glands absent; inflorescences 7- or more-flowered; stamens inflexed or variously-flexed, all fertile; ovules in 4 vertical rows; fruits with persistent style-remnants often remaining joined at tips.

#### *Eucalyptus ser. Curvipterae*

Species included in this treatment: *E. alatissima*, *E. glomerosa*, *E. minniritchi*, *E. oxymitra*, *E. youngiana*.

A series of about 28 species, distributed in south-western half of the continent.

The series is distinguished within *E. sect. Bisectae* by the following combination of characters: Resprouters; bark minniritchi-type in some species; branchlet pith glands absent; inflorescences singular, 3- or 7–11-flowered; buds and fruits relatively large; stamens erect to inflexed, all fertile; ovules in 4–10 vertical rows; fruits lacking persistent style-remnants often remaining joined at tips.

#### *Eucalyptus ser. Heterostemones*

Species included in this treatment: *E. calycogona*, *E. gracilis*.

A series of about seven species distributed in arid and semi-arid regions of southern Australia.

The series is distinguished within *E. sect. Bisectae* by the following combination of characters: Resprouters or obligate seeders; adult leaf secondary venation relatively acute; bark not minniritchi-type; branchlet pith glands absent; inflorescences 7- or 9-flowered; stamens inflexed and twisted in flower, outer stamens lacking anthers (staminodes), ovules in 4 vertical rows; fruits lacking persistent style-remnants often remaining joined at tips.

### *Eucalyptus* sect. *Dumaria*

Species included in this treatment: Species of *E. ser. Incrassatae*, *E. ser. Corrugatae* and *E. ser. Rufispermae* (see below), plus *E. pimpiniana*.

A section of about 70 mallee and tree species, mainly restricted to the southern part of mainland Australia and with greatest taxonomic diversity in southern W.A. All South Australian species are mallees. The three largest series within *E. sect. Dumaria* (for the species included in this treatment) are characterised below.

The section is distinguished with *E. subg. Symphyomyrtus* by the following combination of characters: Smooth bark decorticating in ribbons; cotyledons reniform; leaves weakly dimorphic; branchlet pith glands present in most species, variable or absent in a few; inflorescences axillary, unbranched; stamens inflexed, all fertile, anthers versatile, oblong, opening by vertical slits; ovules in 4–8 vertical rows.

#### *Eucalyptus ser. Incrassatae*

Species included in this treatment: *E. angulosa*, *E. capitanea*, *E. incrassata*.

A series of about six species, distributed in coastal and semi-arid regions of southern Australia.

The series is distinguished within *E. sect. Dumaria* by the following combination of characters: Branchlet pith glands present or absent; ovules in 4–8 vertical rows; seeds dull, black, flanged or winged.

#### *Eucalyptus ser. Corrugatae*

Species included in this treatment: *E. brachycalyx*, *E. concinna*, *E. rugosa*.

A series of about ten species distributed in arid and semi-arid regions of southern Australia.

The series is distinguished within *E. sect. Dumaria* by the following combination of characters: Branchlet pith glands present and conspicuous; ovules in 4 vertical rows; seeds dull, grey-black, distinctly pitted, unwinged.

#### *Eucalyptus* ser. *Rufispermae*

Species included in this treatment: *E. calcareana*, *E. canescens*, *E. conglobata*, *E. cretata*, *E. cyanophylla*, *E. dumosa*, *E. gypsophila*, *E. percostata*, *E. pbenax*, *E. pileata*, *E. repullulans*, *E. woodwardii*.

A series of about 30 mallee and tree species distributed in southern Australia (but extending to the Pilbara region of W.A.) and with greatest taxonomic diversity in southern W.A. All South Australian species are mallees.

The series is distinguished within *E. sect. Dumaria* by the following combination of characters: branchlet pith glands present and conspicuous; ovules in 4 vertical rows; seeds glossy, reddish, unwinged.

#### *Eucalyptus* sect. *Maidenaria*

Species included in this treatment: *E. arcana*, *E. bicostata*, *E. cinerea*, *E. dalrympleana*, *E. globulus*, *E. goniocalyx*, *E. ovata*, *E. viminalis*.

A section of about 80 mainly forest tree species distributed in the higher-rainfall parts of south-eastern Australia.

The section is distinguished within *E. subg. Symphyomyrtus* by the following combination of characters: Smooth bark decorticating in strips or ribbons; cotyledons bilobed; leaves strongly dimorphic; adult leaves concolorous or discolorous; branchlet pith glands absent; inflorescences axillary, unbranched; stamens all fertile, anthers versatile; ovules in 4 vertical rows; seeds with ventral hilum.

#### *Eucalyptus* sect. *Adnataria*

Species included in this treatment: Species of *E. ser. Buxceales* (see below), plus *E. coolabah*, *E. fasciculosa*, *E. lansdowneana*, *E. leucoxydon*, *E. petiolaris*, *E. sideroxydon*.

A section of about 100 mallee and tree species, distributed throughout mainland Australia. Includes the species commonly known as ‘coolabahs’, ‘boxes’ and ‘ironbarks’. The largest series within *E. sect. Adnataria* (for the species included in this treatment), *E. ser. Buxceales*, is characterised below.

The section is distinguished within *E. subg. Symphyomyrtus* by the following combination of characters: Smooth bark decorticating in plates or strips; cotyledons reniform; leaves weakly to strongly dimorphic; adult leaves concolorous or discolorous, usually with dense tertiary venation; branchlet pith glands absent or present but not conspicuous; inflorescences axillary or apparently terminal and paniculate; stamens inflexed or irregularly-flexed, all fertile or with staminodes, anthers not versatile; ovules in 4 vertical rows; seeds with ventral hilum.

#### *Eucalyptus* ser. *Buxceales*

Species included in this treatment: *E. albens*, *E. alboburpurea*, *E. bebriana*, *E. cajuputea*, *E. intertexta*, *E. microcarpa*, *E. largiflorens*, *E. odorata*, *E. polybractea*, *E. porosa*, *E. sparsa*, *E. wimmerensis*.

A series of about 26 species, mainly distributed in south-eastern Australia. Includes most of the species commonly known as ‘boxes’.

The series is distinguished within *E. sect. Adnataria* by the following combination of characters: Partly or completely box-barked (finely-fissured, grey rough bark); stamens all fertile; intramarginal vein distinct from leaf edge; inflorescences axillary or apparently terminal and paniculate.

#### *Eucalyptus* subg. *Eucalyptus*

Species included in this treatment: *E. arenacea*, *E. baxteri*, *E. diversifolia*, *E. falciformis*, *E. macrorhyncha*, *E. obliqua*, *E. pauciflora*, *E. remota*.

A subgenus of about 130 species, largely restricted to the Great Dividing Range and associated ranges and with some species extending to south-western Australia. Includes the species commonly known as ‘stringybarks’, ‘ashes’ and ‘snow gums’.

The subgenus is distinguished by the following combination of characters: Cotyledons reniform, Branchlet pith glands absent; inflorescences simple, axillary; buds uni-operculate and lacking sepals; ovules in 2 or rarely 4 contiguous vertical rows; seeds cuboid, hilum terminal.

The illustrations accompanying this text must be used with care as many structures vary considerably and the specimen being compared with them may not closely resemble the illustration.

*Eucalyptus leptopoda* subsp. *elevata* L.A.S.Johnson & K.D.Hill was erroneously listed by Nicolle (1997) and Brooker *et al.* (2002) as occurring in S.A., the species is restricted to W.A. *Eucalyptus astringens* (Maiden) Maiden, *E. gardneri* Maiden, *E. woodwardii* Maiden, *E. macrandra* F.Muell. ex Benth. and *E. occidentalis* Endl. are commonly cultivated and have the potential to naturalise in the State. They are listed in the key, but no detailed description is provided.

Reference: Brooker & Kleinig (2001, 2004, 2006), Slee *et al.* (2006), Nicolle (2013).

- 1. Inflorescence occurring as singular flowers ..... 39. **E. globulus**
- 1: Inflorescence occurring as umbellaster of 3 or more flowers
  - 2. All umbellasters 3-flowered
    - 3. Flower buds and fruits pruinose
      - 4. Flower buds and fruits prominently longitudinally ribbed..... 1. **E. alatissima**
      - 4: Flower buds and fruits not longitudinally ribbed
        - 5. Opercula warty and with a distinct central knob ..... 9. **E. bicostata**
        - 5: Opercula smooth
          - 6. Mature crown primarily composed of petiolate adult leaves ..... 51. **E. leucoxyton**
          - 6: Mature crown primarily composed of sessile juvenile and intermediate leaves
            - 7. Mallee; fruits narrowly obconical to cylindrical; fruit valves enclosed..... 36. **E. gamophylla**
            - 7: Tree; fruits broadly obconical; fruit valves at rim level or exerted..... 18. **E. cinerea**
    - 3: Flower buds and fruits not pruinose
      - 8. Flower buds and fruits with multiple prominent ribs
        - 9. Fruits 35–70 mm diam.; adult leaves dull and blue-green..... 86. **E. youngiana**
        - 9: Fruits 12–25 mm diam.; adult leaves glossy and green..... 4. **E. angulosa**
      - 8: Flower buds and fruits smooth or with two opposing ribs only
        - 10. Fruit valves at rim level or exerted above rim
          - 11. Fruits 10–22 mm diam.; small tree or mallee..... 26. **E. cosmophylla**
          - 11: Fruits 5–9 mm diam.; large tree
            - 12. Juvenile leaves lanceolate, green ..... 81. **E. viminalis**
            - 12: Juvenile leaves orbicular, grey-green ..... 29. **E. dalrympleana** subsp. **dalrympleana**
        - 10: Fruit valves below rim level
          - 13. Juvenile leaves sessile; east of Spencer Gulf and KI ..... 51. **E. leucoxyton**
          - 13: Juvenile leaves petiolate; EP only ..... 65. **E. petiolaris**
- 2: At least some umbellasters 7-or more-flowered
  - 14. Adult leaves strongly discoloured
    - 15. Bark wholly smooth; fruit valves deeply enclosed..... 19. **E. cladocalyx**
    - 15: Bark rough, fibrous on trunk and larger branches; fruit valves at rim level or slightly below ..... 10. **E. botryoides**
  - 14: Adult leaves concolorous
    - 16. Inflorescences in terminal panicles
      - 17. Outer stamens lacking anthers (staminodes); bark wholly smooth, or rough on sapling-stage individuals ..... 34. **E. fasciculosa**
      - 17: All stamens fertile; bark rough on lower stems
        - 18. Adult leaves glossy, green
          - 19. Flower buds and fruits with pedicels 2–6 mm long; NW only ..... 77. **E. sparsa**
          - 19: Flower buds and fruits sessile or with pedicels to 2 mm long; southern half of SA only ..... 8. **E. behriana**
        - 18: Adult leaves dull, bluish to green
          - 20. Fruit valves exerted ..... 24. **E. coolabah**
          - 20: Fruit valves deeply enclosed in fruit
            - 21. Rough bark shaggy, on trunk and sometimes larger branches only..... 47. **E. intertexta**
            - 21: Rough bark tightly held, extending to medium to small branches
              - 22. Juvenile leaves linear; fruits 3–5 mm long ..... 49. **E. largiflorens**
              - 22: Juvenile leaves narrow-lanceolate to ovate; fruits 4–14 mm long

- 23. Branchlets, flower buds and fruits pruinose..... 2. **E. albens**
  - 23: Branchlets, flower buds and fruits not pruinose..... 54. **E. microcarpa**
  - 16: Inflorescences axillary in leaf axils
    - 24. Pith glands present
      - 25. Tree
        - 26. Stamens bundled into four quadrants..... 42. **E. gongylocarpa**
        - 26: Stamens forming a uniform ring and not bundled into four quadrants
          - 27. Obligate seeder; lignotuber absent
            - 28. Inflorescences with bud/fruit hypanthia fused into a single unit ..... 22. **E. conferruminata** subsp. **recherche**
            - 28: Inflorescences with bud/fruit hypanthia free
              - 29. Flowers white to cream
                - 30. Adult leaves with tertiary venation visible; fruits campanulate ..... **E. astringens**
                - 30: Adult leaves with tertiary venation obscured by dense oil glands; fruits barrel-shaped to cylindrical..... 80. **E. utilis**
              - 29: Flowers yellow
                - 31. Branchlets and peduncles not pruinose ..... **E. gardneri**
                - 31: Branchlets and peduncles pruinose
                  - 32. Adult leaves dull, greyish; opercula beaked..... **E. woodwardii**
                  - 32: Adult leaves glossy, olive green; opercula rounded..... 78. **E. stricklandii**
          - 27: Resprouter; lignotuber present
            - 33. Flowers creamy-white to very pale yellow or pink or purple
              - 34. Opercula horn-shaped; fruits campanulate..... **E. occidentalis**
              - 34: Opercula conical to pileate; fruits barrel-shaped to cupular to obconical
                - 35. Seeds glossy, red-brown; fruits obconical to cupular..... 13. **E. calcareana**
                - 35: Seeds dull, dark grey to brown; fruits barrel-shaped to cupular ..... 3. **E. albopurpurea**
    - 33: Flowers yellow
      - 36. Fruit valves prominently exerted, remaining joined at their tips..... 25. **E. cornuta**
      - 36: Fruit valves level with rim or slightly exerted, free at their tips..... **E. macrandra**
- 25: Mallee; stamens arranged in a uniform ring
  - 37. Flowers yellow
    - 38. Adult leaves dull greyish, tertiary venation obscured by oil glands ..... 68. **E. pimpiniana**
    - 38: Adult leaves glossy green, tertiary venation visible
      - 39. Fruit valves prominently exerted, remaining joined at their tips ..... 25. **E. cornuta**
      - 39: Fruit valves level with rim or slightly exerted, free at their tips ..... **E. macrandra**
  - 37: Flowers cream-white to pink or purple
    - 40. Seeds glossy and reddish
      - 41. Bark persistent on lower half of stems, fibrous (Great Victoria Desert)
        - 42. Fruit 6–10 mm long, 6–11 mm diam.; adult leaves predominantly lanceolate..... 45. **E. gypsophila**
        - 42: Fruit 10–16 mm long, 9–14 mm diam.; adult leaves broad-lanceolate to ovate..... 16. **E. canescens**
      - 41: Bark smooth throughout, or ribbon-rough on lower stems and not fibrous

43. Branchlets and/or flower buds pruinose
44. Branchlets, buds and fruits strongly pruinose; EP only..... 27. **E. cretata**
- 44: Branchlets, buds and fruits lightly or variably pruinose;  
NW only ..... 72. **E. repullulans**
- 43: Branchlets and flower buds not pruinose
45. Mature adult leaves glossy, dark green to olive green
46. Pedicels absent or to 1 mm long
47. Fruits wider than long, 7–12 mm wide.....  
..... 23. **E. conglobata** subsp. **conglobata**
- 47: Fruits equal to or longer than wide, 5–10 mm  
wide..... 66. **E. phenax**
- 46: Pedicels 1–6 mm long
48. Opercula wider than hypanthia at join; adult  
leaves glossy, including new growth ..... 67. **E. pileata**
- 48: Opercula  $\pm$  flush with hypanthia at join; new  
growth dull, adult leaves dull when young,  
often aging to glossy ..... 13. **E. calcareana**
- 45: Mature adult leaves dull to slightly glossy, blue-green to greyish
49. Adult leaves dull, greyish, 22–40 mm wide..... 28. **E. cyanophylla**
- 49: Adult leaves dull to slightly glossy, blue-green, 10–25 mm wide
50. Opercula wider than hypanthia at join, ribs on  
opercula > 0.8 mm high ..... 64. **E. percostata**
- 50: Opercula  $\pm$  flush with hypanthia at join, ribs  
on opercula < 0.5 mm high..... 31. **E. dumosa**
- 40: Seeds brown, grey or black
51. Adult leaves dull and blue-green to greyish, at least when  
young; flower buds, fruits and opercula smooth
52. Adult leaves dull and blue-green to greyish at all stages;  
NW, GT and far upper EP..... 79. **E. trivalva**
- 52: Adult leaves maturing glossy and green; lower EP and KI..... 3. **E. albopurpurea**
- 51: Adult leaves glossy and green at all stages; flower buds and/  
or fruits and/or opercula usually ribbed
53. Fruits barrel-shaped to cylindrical to urceolate
54. Fruits smooth to ribbed, 7–12 mm diam..... 46. **E. incrassata**
- 54: Fruits distinctly ribbed, 12–15 mm diam ..... 17. **E. capitanea**
- 53: Fruits hemispherical to cupular to obconical
55. Bark usually smooth throughout, fruits coarsely-  
angled or ribbed ..... 73. **E. rugosa**
- 55: Bark usually rough on lower stems, fruits smooth or lightly ribbed
56. Operculum narrower than hypanthium at join;  
coastal and wheatbelt areas..... 11. **E. brachycalyx**
- 56: Operculum wider than hypanthium at join; Great  
Victoria Desert ..... 21. **E. concinna**
- 24: Pith glands absent
57. Bark fibrous and stringy throughout
58. Flower buds mushroom-shaped, opercula much wider than  
hypanthia ..... 41. **E. gomphocephala**
- 58: Flower buds not mushroom-shaped, opercula about the same width as hypanthia



59. Fruit disc descending, valves enclosed..... 56. **E. obliqua**
- 59: Fruit disc level to ascending, valves at rim level or exerted
60. Opercula beaked, smooth ..... 52. **E. macrorhyncha** subsp. **macrorhyncha**
- 60: Opercula hemispherical
61. Flower buds warty; fruit disc steeply ascending..... 7. **E. baxteri**
- 61: Flower buds not warty; fruit disc slightly ascending ..... 6. **E. arenacea**
- 57: Bark not fibrous and stringy throughout
62. Fruit disc prominently ascending, valves strongly exerted
63. Inflorescences with bud/fruit hypanthia fused into a single unit;  
flowers greenish-yellow ..... 22. **E. conferruminata** subsp. **recherche**
- 63: Inflorescences with bud/fruit hypanthia free; flowers white to  
pale yellow
64. Bark ‘minniritchi’ type (peeling into thin longitudinal strips  
that curl backwards and remain partly attached to the stem)  
throughout ..... 55. **E. minniritchi**
- 64: Bark not ‘minniritchi’ type
65. Smooth bark decorticating in ribbons
66. Fruits 10–20 mm diam.; NW only
67. Opercula hemispherical; bark rough on lower  
stems..... 40. **E. glomerosa**
- 67: Opercula sharply conical to beaked; bark smooth  
throughout..... 60. **E. oxymitra**
- 66: Fruits 5–9 mm diam.; southern parts of S.A. only
68. Juvenile leaves amplexicaul (stem-clasping) ..... 81. **E. viminalis**
- 68: Juvenile leaves tapering to base (not amplexicaul) ..... 5. **E. arcana**
- 65: Smooth bark decorticating in plates or strips
69. Tree; seeds yellow..... 15. **E. camaldulensis**
- 69: Mallee; seeds black
70. Juvenile leaves ovate to orbicular; FR, EA & EP ..... 35. **E. flindersii**
- 70: Juvenile leaves lanceolate to falcate; NW only ..... 37. **E. gillenii**
- 62: Fruit disc level to descending or very slightly ascending, valves  
enclosed or near rim level
71. Outer stamens lacking anthers (staminodes), twisted and longer  
than inner fertile anthers
72. Tree; bark rough, hard and deeply furrowed (ironbark) .....  
..... 74. **E. sideroxylon** subsp. **sideroxylon**
- 72: Mallee; bark completely smooth or rough but not hard and  
deeply furrowed on lower stems
73. Flowers crimson-red..... 48. **E. lansdowneana**
- 73: Flowers white or pink
74. Flower buds and fruits square in transverse section..... 14. **E. calycogona**
- 74: Flower buds and fruits round in transverse section
75. Adult leaves 4–15 mm wide; widespread ..... 44. **E. gracilis**
- 75: Adult leaves 20–40 mm wide; western half of KI  
only ..... 71. **E. remota**
- 71: All stamens fertile
76. Adult leaves with side veins nearly parallel with primary vein  
(midrib) ..... 62. **E. pauciflora** subsp. **pauciflora**

- 76: Adult leaves with side veins at an angle from the primary vein (midrib)
- 77: Mallees; fruits usually with persistent style remnants
- 78: Crown composed of opposite or sub-opposite, sessile, ovate to orbicular (juvenile) leaves
- 79: Leaves 38–61 mm long; fruit 6–9 mm long, 6–8.5 mm diam.; LE, FR & EA ..... 38. **E. gillii**
- 79: Leaves 55–85 mm long; fruit 9–11 mm long, 9–10.5 mm diam.; NW only..... 84. **E. wyolensis**
- 78: Crown mostly composed of disjunct, petiolate, linear to ovate (adult) leaves
- 80: Whole plant strongly pruinose; adult leaves pruinose, 20–54 mm wide..... 82. **E. vokesensis**
- 80: Adult leaves not pruinose, 4–46 mm wide
- 81: Seedling leaves spiralled around a 5- or 7-sided stem..... 58. **E. oleosa**
- 81: Seedling leaves decussate on a four-sided stem
- 82: Opercula rounded to conical, about equal in length to hypanthia
- 83: Juvenile leaves elliptical to orbicular, often pruinose; adult leaves light green
- 84: Juvenile leaves elliptical, weakly or not pruinose; mature crown entirely of adult leaves ..... 50. **E. leptophylla**
- 84: Juvenile leaves ovate to orbicular, pruinose; mature crown often composed of some juvenile leaves..... **E. sp. Great Victoria Desert**
- 83: Juvenile leaves lanceolate to narrowly elliptical, not pruinose; adult leaves dark green
- 85: Pedicels 1–5 mm long; adult leaves 8–20 mm wide; NW only..... 53. **E. mannensis** subsp. **mannensis**
- 85: Pedicels absent or to 1 mm long; adult leaves 5–10 mm wide; KI and SL only..... 20. **E. cneorifolia**
- 82: Opercula conical to horn-shaped, longer than hypanthia
- 86: Opercula conical
- 87: Fruit obconical; coastal regions including Murray mallee..... 85. **E. yalatensis**
- 87: Fruit globose; Great Victoria Desert..... 32. **E. eremicola**
- 86: Opercula distinctly horn-shaped
- 88: Juvenile leaves strongly decurrent; EP only..... 63. **E. peninsularis**
- 88: Juvenile leaves not decurrent
- 89: Flower buds <6.5 mm wide; fruit 4–9.5 mm diam ..... 75. **E. socialis**
- 89: Flower buds >6.5 mm wide; fruit 8.5–11 mm diam ..... 87. **E. yumbarrana**
- 77: Trees or mallees; fruits not with persistent style remnants
- 90: Obligate seeder; lignotuber absent; flowers yellow..... **E. gardneri**

- 90: Resprouter; lignotuber present; flowers white, pink, red or purple
- 91: Fruit valves at rim level or exerted
- 92: Adult leaves usually undulate and relatively thin; poorly-drained sites (swamps) in high-rainfall areas
- 93: New adult leaves green; fruits consistently obconical..... 59. **E. ovata**
- 93: New adult leaves slightly blue-green; fruits cylindrical to obconical or slightly campanulate..... 61. **E. paludicola**
- 92: Adult leaves flat and firm; well-drained sites (hills and/or sandy soils) in high- to low-rainfall areas
- 94: Juvenile leaves strongly pruinose; fruit sessile ..... 43. **E. goniocalyx**
- 94: Juvenile leaves not pruinose; fruit sessile or pedicellate
- 95: Fruits barrel-shaped to cylindrical to urceolate
- 96: Fruits smooth to ribbed, 7–12 mm diam ..... 46. **E. incrassata**
- 96: Fruits distinctly ribbed, 12–15 mm diam ..... 17. **E. capitanea**
- 95: Fruits hemispherical to cupular to obconical to ovoid
- 97: Ovules in 2 rows; juvenile leaves opposite for many pairs; coastal sands and limestone ..... 30. **E. diversifolia**
- 97: Ovules in 6 rows; juvenile leaves disjunct after a few pairs; rocky ridges of Flinders Ranges and Olary Spur..... 35. **E. flindersii**
- 91: Fruit valves below rim level
- 98: Bark scribbles often present; ovules in 2 rows; SE only ..... 33. **E. falciformis**
- 98: Bark scribbles absent; ovules in 4 rows; widespread
- 99: Flower buds ovoid; adult leaves consistently glossy and green..... 70. **E. porosa**
- 99: Flower buds ovoid to fusiform; adult leaves often dull, at least when young
- 100: Juvenile leaves ovate; flowers white, pink or purple
- 101: Usually a mallee; fruits 6–11 mm long, 5–9 mm diam.; EP and KI ..... 3. **E. albopurpurea**
- 101: Usually a tree; fruits 4–7 mm long, 3–5 mm diam.; FR, NL, SL and SE..... 54. **E. microcarpa**
- 100: Juvenile leaves linear to narrowly-elliptical; flowers white
- 102: Branchlets usually pruinose; FR only..... 69. **E. polybractea**
- 102: Branchlets not pruinose
- 103: Juvenile leaves narrow-lanceolate to narrow-elliptical; adult leaves 7–20 mm wide..... 57. **E. odorata**
- 103: Juvenile leaves linear to narrow-lanceolate to narrow-elliptical; adult leaves 3–15 mm wide

104. Mallee; leaves 50–80 mm long; fruit 4–6 mm diam.; on sandy or loamy flats and low rises; SE only ..... 83. **E. wimmerensis**

104: Tree or mallee; leaves 60–130 mm long; fruit 3–5 mm diam.; on stony to clayey sites; FR, EA, EP, NL, MU ..... 12. **E. cajuputea**

1. **Eucalyptus alatisima** (Brooker & Hopper) D.Nicolle, *Native Eucalypts S. Austral.* 90 (2013). — *E. pyriformis* var. *kingsmillii* Maiden, *J. Proc. Roy. Soc. New S. Wales* 52: 508 (1919); *E. kingsmillii* subsp. *alatisima* Brooker & Hopper, *Nuytsia* 9: 38 (1993). *E. pachyphylla* auct. non F.Muell.: Boomsma, *Native Trees S. Austral.* 156 (1972); *E. kingsmillii* auct. non (Maiden) Maiden & Blakely: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 917 (1986). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 57 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 90, 91 (2013).

Mallee, 4–8 m high, lignotuberous; bark rough on lower stems, fibrous to ribbon, dark grey; smooth above, decortivating in ribbons, tan to cream; branchlets pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite, petiolate, glabrous, ovate to broad-lanceolate, usually pruinose, dull, blue-green; adult leaves disjunct, petiolate, ovate to lanceolate, acute to acuminate, 60–100 × 15–20 mm, concolorous, dull, green to grey-green. **Inflorescences** axillary; umbellasters 3-flowered; pendulous, 15–50 mm long, pedicels 13–20 mm long, buds with hypanthia cupular to obconical, prominently longitudinally winged, pruinose, 32–45 mm long, 15–30 mm diam.; opercula conical to beaked, prominently longitudinally winged, pruinose, longer than hypanthium; flowers pink to red or occasionally pale yellow; stamens oblique, all fertile; anthers versatile, ovoid; ovules in 6–8 vertical rows. **Fruits** tapering to pedicel, hemispherical to obconical, very prominently longitudinally winged, pruinose when young, 14–20 mm long, 25–45 mm diam.; disk ascending; valves 4, exserted; seeds dark grey, pyramidal and flanged. **Wing-fruited mallee. Fig. 2A–D, Pl. 3A–F.**

S.A.: NW; W.A. Restricted to the central part of the Great Victoria Desert, where it grows on gravely red sands and loams between sand dunes in open mallee or mulga scrub. Flowers: Mainly autumn to spring; possibly related to rainfall events.

Distinguished from the W.A. endemic *E. kingsmillii* Maiden by the pruinose branchlets, buds and fruits (not pruinose in *E. kingsmillii*), the often red flowers (consistently pale yellow in *E. kingsmillii*) and the more prominently ribbed flower buds and fruits.

The species has potential as an ornamental small-growing eucalypt in warmer and drier area. Rarely cultivated, the species requires a well-drained soil. (Rare status in S.A.)

2. **Eucalyptus albens** Benth., *Fl. Austral.* 3: 219 (1867). — *E. hemiphloia* var. *albans* (Benth.) Maiden, *Forest Fl. N.S.W.* 1: 131 (1904). *E. albens* var. *elongata* Blakely, *Key Eucalypts* 237 (1934). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 465 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 223 (2006); D.Nicolle, *Eucalypts S. Austral.* 153 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 179 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 176, 177 (2013).

Tree, 8–22 m high, lignotuberous; bark rough up to medium to small branches, hard and tightly held, very finely fissured, light grey, smooth above, decortivating in strips, tan to cream; branchlets pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, orbicular to ovate, usually pruinose, dull, greyish; adult leaves disjunct, petiolate, lanceolate to ovate, 80–160 × 20–40 mm, concolorous, sometime pruinose, dull, grey-green. **Inflorescences** terminal panicles and compound axillary umbels; umbellasters 7-flowered, held erect; peduncles 8–18 mm long, pedicels absent or to 6 mm long, buds fusiform, smooth or angular, pruinose, 8–18 mm long, 3–6 mm diam.; hypanthia obconical; opercula conical, about equal in length or shorter than hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globoid to oblong; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, barrel-shaped to slightly urceolate, smooth or slightly angular, pruinose when young, 6–14 mm long, 5–10 mm diam.; disc descending; valves 3 or 4 (5), enclosed; seeds brown to black, compressed ovoid, finely reticulate. **White box. Fig. 2E–J.**

S.A.: FR, NL; Qld.; N.S.W.; Vic. In S.A. the species is restricted to apparently relict populations in the southern Flinders Ranges, from the Wirrabara area northwards to the eastern footslopes of Mount Brown, but most common in the hills between Melrose and Murray Town. Widespread and common in the Great Dividing Range

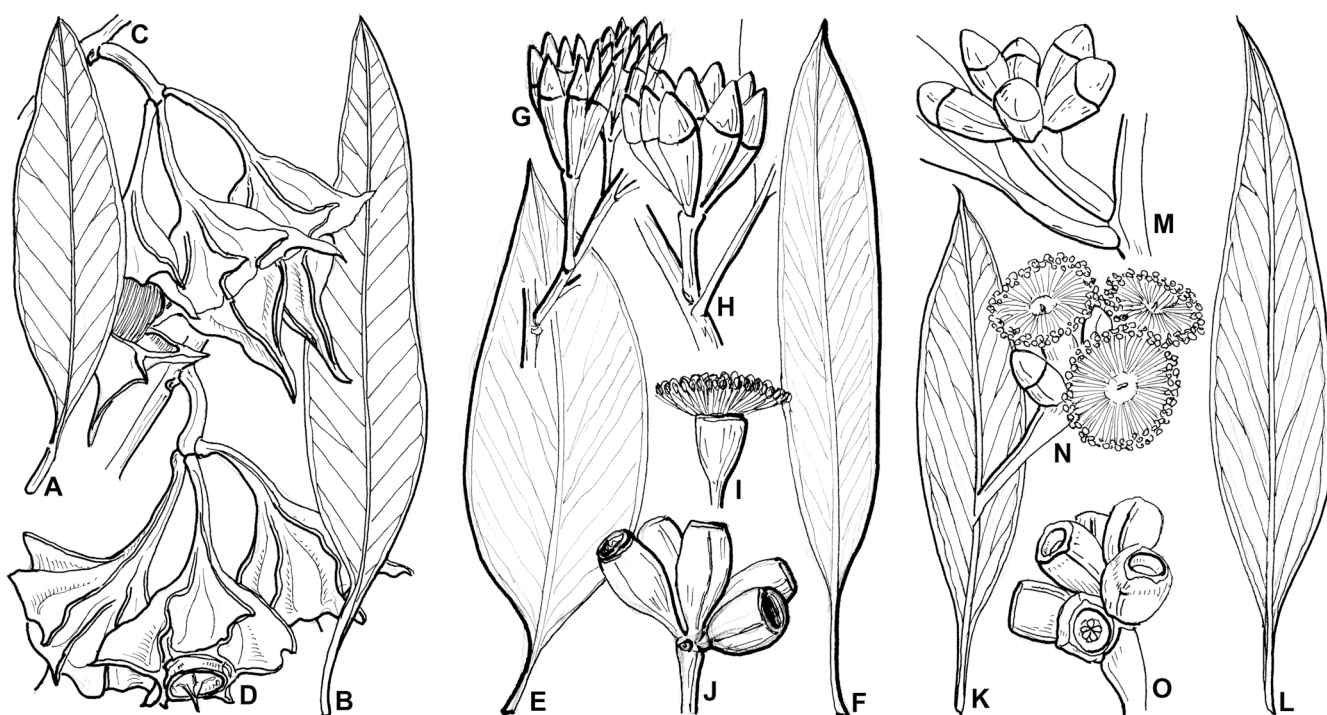


Fig. 2. A–D, *Eucalyptus alatisissima*: A & B, leaves; C, buds; D, fruits. E–J, *E. albens*: E & F, leaves; G & H, buds; I, flower; J, buds. K–O, *E. albopurpurea*: K & L, leaves; M, buds; N, flowers; O, buds. Illustrations by G.R.M. Dashorst.

of eastern Australia, from the Bunya Mountains in southern Qld southwards through N.S.W. into central-northern Vic. The species grows in grassy box woodland in undulating terrain on loam to clay soils. Flowers: Apparently sporadic.

Most closely related to *E. microcarpa*, differing from the latter in the broader, greyer and often pruinose juvenile and adult leaves, the pruinose branchlets, and the larger, pruinose buds and fruits. *Eucalyptus microcarpa* co-occurs with *E. albens* in S.A., and most S.A. populations of the latter show some degree of genetic intergression from *E. microcarpa*, particularly outside the core *E. albens* populations south of Melrose.

Produces a hard, dense timber which is excellent as a fuelwood. Occasionally cultivated as a shade tree and for woodlots, although the species has only a slow to moderate growth rate. (Rare status in S.A.)

3. ***Eucalyptus albopurpurea*** (Boomsma) D.Nicolle, *J. Adelaide Bot. Gard.* 19: 90 (2000). — *E. lansdowneana* subsp. *albopurpurea* Boomsma, *S. Austral. Naturalist* 48: 55 (1974). *E. odorata* var. *erythrandra* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 129 (1856), partly; *E. hemiphloia* var. *purpurascens* F.Muell. ex Benth., *Trans. & Proc. Roy. Soc. South Austral.* 26: 12 (1902); *E. odorata* var. *purpurascens* (F.Muell. ex Benth.) Maiden, *Trans. & Proc. Roy. Soc. South Austral.* 32: 283 (1908); *E. lansdowneana* var. *leucantha* Blakely, *Key Eucalypts* 224 (1934); *E. bebriana* var. *purpurascens* F.Muell. ex Benth., *Fl. Austral.* 3: 214 (1967). *E. lansdowneana* auct. non F.Muell. & J.E.Br.: Boomsma, *Native Trees S. Austral.* 130 (1972). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 407 (2001); D.Nicolle, *Eucalypts S. Austral.* 159 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 182, 183 (2013).

Mallee or less commonly a tree, 5–18 m high, lignotuberous; bark rough on lower stems, loose, grey-brown, becoming ribbon and then smooth above, smooth bark decorticating in strips, grey to coppery to pinkish-tan; branchlets with pith glands only at nodes; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, ovate, dull, green; adult leaves disjunct, petiolate, ovate to lanceolate, 70–130 × 22–35 mm, concolorous, dull and slightly blue-green when young, maturing glossy and green. **Inflorescences** axillary or appearing terminal through abortion of terminal leaf shoots; umbellasters 7–11-flowered, held erect; peduncles 10–14 mm long, pedicels 0.1–3 mm long; buds fusiform to clavate, not pruinose, 7–11 mm long, 3–5 mm diam.; hypanthia smooth or angled towards base, opercula conical, smooth, shorter than hypanthium; flowers white to pink (Kangaroo Island and Eyre Peninsula) to purple (Eyre Peninsula only); stamens variously flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, barrel-shaped to cupular, smooth or angular towards base of hypanthium, not pruinose, 6–11 mm long, 5–9 mm diam.; disc descending; valves 3 or 4, enclosed or to rim level; seeds dark grey-brown to brown, compressed-ovoid, fine to moderately pitted reticulum. **Purple-flowered mallee (or mallee box), Port Lincoln mallee (or gum).** Fig. 2K–O, Pl. 3G & H, 4A–D.



S.A.: EP, KI. Endemic to S.A., known only from Kangaroo Island and the southern tip of Eyre Peninsula. Often grows near the coast, sometimes occurring within a few metres of the high tide water level on sandhills, and commonly fringes seasonally wet sites includes salt-lakes. Flowers: Sporadic, but mainly winter to spring.

Most closely related to *E. odorata*, and the two species intergrade on central-eastern Kangaroo Island where their distributions overlap, and also on parts of lower Eyre Peninsula.

Sometimes grown as an ornamental small bushy tree, with the deeper purple-flowering individuals sought (although the species may not breed true to parental flower colour). Also useful for screening and shelter, especially in difficult coastal sites.

4. **Eucalyptus angulosa** Schauer, *Repert. Bot. Syst. (Walpers)* 2: 925 (1843). — *E. incrassata* var. *angulosa* (Schauer) Benth., *Fl. Austral.* 3: 231 (1867). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 353 (2001); D.Nicolle, *Eucalypts S. Austral.* 81 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 110, 111 (2013).

Mallee, 2–6 m high, lignotuberous; bark usually smooth throughout (but often with some loose, ribbony-rough bark on the lower stems), decorticating in long strips and ribbons, tan to pale grey to cream; branchlets not pruinose, pith glands absent or present; cotyledons reniform; juvenile leaves opposite for a few pairs then becoming disjunct, petiolate, glabrous, ovate to lanceolate, not pruinose, dull and blue-green soon becoming glossy and green; adult leaves disjunct, petiolate, firm, lanceolate to broad lanceolate, 80–140 × 25–40 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 3 (rarely 7)-flowered, generally held erect; peduncles usually somewhat flattened, 10–20 mm long, pedicels 3–5 mm long, buds distinctly ribbed, not pruinose, 12–25 mm long, 7–12 mm diam.; hypanthia cupular, opercula conical to beaked, about equal in length to hypanthium; flowers cream; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 to 8 vertical rows. **Fruits** sessile or tapering to pedicels, cupular to cylindrical, distinctly ribbed, not pruinose, 14–25 mm long, 12–25 mm diam.; disc descending; valves 3 or 4, enclosed below rim; seeds dark grey to black, compressed-pyramidal, ribbed. **Ridge-fruited mallee. Fig. 3A–D, Pl. 4E.**

S.A.: EP; W.A. Of coastal distribution between the Albany area and near Toolinna Cove on the south coast of W.A., and disjunctly on the southern part of Eyre Peninsula in S.A. Records from elsewhere in S.A. (e.g. Yorke and Fleurieu Peninsulas and the south-east of the State) are included in *E. incrassata* in this treatment. Occurs on sandy soils over limestone in dense mallee shrubland. Flowers: Mainly spring but somewhat sporadic.

Differs from the generally less coastal *E. incrassata* in the thicker and broader adult leaves, the mostly three-flowered inflorescences, and the larger and more strongly-ribbed buds and fruits. The two species intergrade in W.A. and possibly also on Eyre Peninsula. Some S.A. coastal populations of *E. incrassata* show some morphological approach towards *E. angulosa* (e.g. Waitpinga on Fleurieu Peninsula).

Very useful for screening and shelter in difficult coastal sites.

5. **Eucalyptus arcana** (D.Nicolle & Brooker) K.Rule, *Muelleria* 27: 230 (2009). — *E. sp.* ‘Carpenter Rocks’ D.Nicolle, *Eucalypts S. Austral.* 138 (1997); *Eucalyptus splendens* subsp. *arcana* D.Nicolle & Brooker, *J. Adelaide Bot. Gard.* 18: 103 (1998). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 139 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 75 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 152, 153 (2013).

Low scraggy tree, sometimes several-stemmed, 2–6 m tall, lignotuberous; bark rough to smaller branches, fibrous and sometimes tessellated, grey to grey-brown; smooth above, decorticating in ribbons, grey to cream; pith glands absent; cotyledons bilobed; juvenile leaves opposite for 4–12 pairs then disjunct, sessile, broad-lanceolate, tapering to base, glossy, green; adult leaves disjunct, petiolate, lanceolate and sometime falcate, 80–120 × 12–35 mm, concolorous, glossy, green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 3–5 mm long, buds sessile or pedicels to 1 mm long, buds smooth, not pruinose, 5–7.5 mm long, 3–5.5 mm diam.; hypanthia cupular to obconical, opercula maturing obtuse to bluntly conical, about equal in length to hypanthium; flowers white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile, hemispherical to slightly obconical, smooth, not pruinose, 6–7 mm long, 6–8 mm diam.; disc ascending to almost level; valves 3 or 4, exserted above rime level; seeds dark brown to almost black, lacunose. **Mallee manna gum, Carpenter Rocks gum. Fig. 3E–G.**

S.A.: SE (Carpenter Rocks); Vic. (Moonlight Head). In S.A., a single population occurs near Carpenter Rocks where it grows on low rises in red clay-loam with outcropping limestone in dense tall shrubland dominated by *Acacia longifolia* subsp. *sophorae*. A population near Moonlight Head in Vic., about 260 km to the east-south-east of

the Carpenter Rocks population, has been attributed to this species, although its taxonomic identity is not clear (see below). Flowers: Recorded flowering in Feb.

Superficially very similar to *E. viminalis* subsp. *cygnetensis*, which differs in its usually better-formed tree habit, the lanceolate, narrower and non-crenulate juvenile leaves, and the more conical opercula. *Eucalyptus splendens*, endemic to the Mt Richmond area of Victoria, differs in its usually better-formed tree habit, smaller non-crenulate juvenile leaves, smaller flower buds and fruits on short pedicels and the conical opercula. The Vic. population appears to have affinities with both the typical S.A. population of *E. arcana* and with *E. aromaphloia* L.D.Pryor & J.H.Willis, with seedlings present at this site and grown from a single tree at the site segregating to typical *E. arcana*- and *E. aromaphloia*-like seedlings. Rule (2009) considers the Vic. population to be a depauperate form of *E. aromaphloia*; however I disagree and consider it to represent *E. arcana*. *Eucalyptus aromaphloia* is distributed from the eastern Grampians to the Fryers Range in central-western Vic. and differs from *E. arcana* most prominently in its juvenile leaves, which are smaller, dull and blue-green.

Cultivated seedlings of this species were sold by Neville Bonney from his Millicent nursery as 'mallee manna gum' prior to its recognition as a distinct taxon. (Vulnerable status in S.A.)

6. ***Eucalyptus arenacea*** Marginson & Ladiges, *Austral. Syst. Bot.* 1: 163 (1988). — *Eucalyptus baxteri* auct. non (Benth.) J.M.Black: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 909 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 300 (2006); D.Nicolle, *Eucalypts S. Austral.* 185 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 210, 211 (2013).

Several to multi-stemmed tree or robust mallee, 3–9 m tall, lignotuberous; bark rough throughout, coarsely fissured, fibrous and stringy (stringybark), grey-brown; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 5–6 pairs then disjunct, sessile for 8–10 pairs then becoming petiolate, setose, ovate, not pruinose, dull to glossy, green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate to falcate, 70–125 × 18–35 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–15-flowered, held erect; peduncles 8–18 mm long, pedicels 2–5 mm long, buds ovoid, not pruinose, 5–8 mm long, 3–6 mm diam.; hypanthia obconical, opercula conical to hemispherical, smooth or slightly scurfy, about as long as hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** sessile or on short pedicels, hemispherical to globose, not pruinose, 7–9 mm long, 7–12 mm diam.; disc level to ascending; valves 3 or 4, slightly exerted or at rim level; seeds brown to black, pyramidal, smooth. **Sand stringybark, desert stringybark. Fig. 3H–J, Pl. 4F, 5A–C.**

S.A.: MU, SE; Vic. Restricted to broad ridges and rises of white sand centred in the Ninety Mile Desert in S.A. and Little Desert in Vic., from north of Kingston in S.A. eastwards into Vic. as far as the northern Grampians. Flowers: Mainly summer.

Closely related to *E. baxteri*, which differs in its seedling leaves, which become glabrous much sooner, broader adult leaves, larger warty buds, which are more well-defined from the pedicels, and larger fruits with a more steeply ascending disc. Some populations from Fleurieu Peninsula and Kangaroo Island have been included in *E. arenacea* by some authors on the basis of their mallee-like habit and occurrence on sand (e.g. at Cox Scrub). These populations are included in *E. baxteri* here on the basis of their juvenile and adult leaf, bud and fruit morphology, with *E. arenacea* restricted to eastern parts of the State.

7. ***Eucalyptus baxteri*** (Benth.) Maiden & Blakely ex J.M.Black, *Fl. S. Austral.* 415 (1926). — *E. santalifolia* var. *?baxteri* Benth., *Fl. Austral.* 3: 207 (1867). *E. capitellata* var. *latifolia* Benth., *Fl. Austral.* 3: 206 (1867); *E. baxteri* var. *pedicellata* J.M.Black, *Fl. S. Austral.* 3: 416 (1926). *E. capitellata* auct. non Sm.: Tate, *Fl. Extratrop. S. Austral.* 96 (1890); *Eucalyptus arenacea* auct. non Marginson & Ladiges: Brooker & Kleinig, *Field Guide Eucalypts* 2: 418 (1990), partly (as to some KI & SL populations). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 541 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 298 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 102 (2001); Nicolle, *Eucalypts S. Austral.* 187 (1997); Nicolle, *Eucalypts Victoria & Tasman.* 232 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 212, 213 (2013).

Tree, often several stemmed and sometimes shrub-like on more exposed sites, 2–25 m tall, lignotuberous; bark rough throughout, coarsely fissured, fibrous and stringy (stringybark), grey-brown; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite, sessile and setose for 3–9 pairs then becoming disjunct, petiolate, and glabrous, ovate, not pruinose, glossy, green; adult leaves disjunct, petiolate, ovate to lanceolate to falcate, 60–150 × 18–50 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters

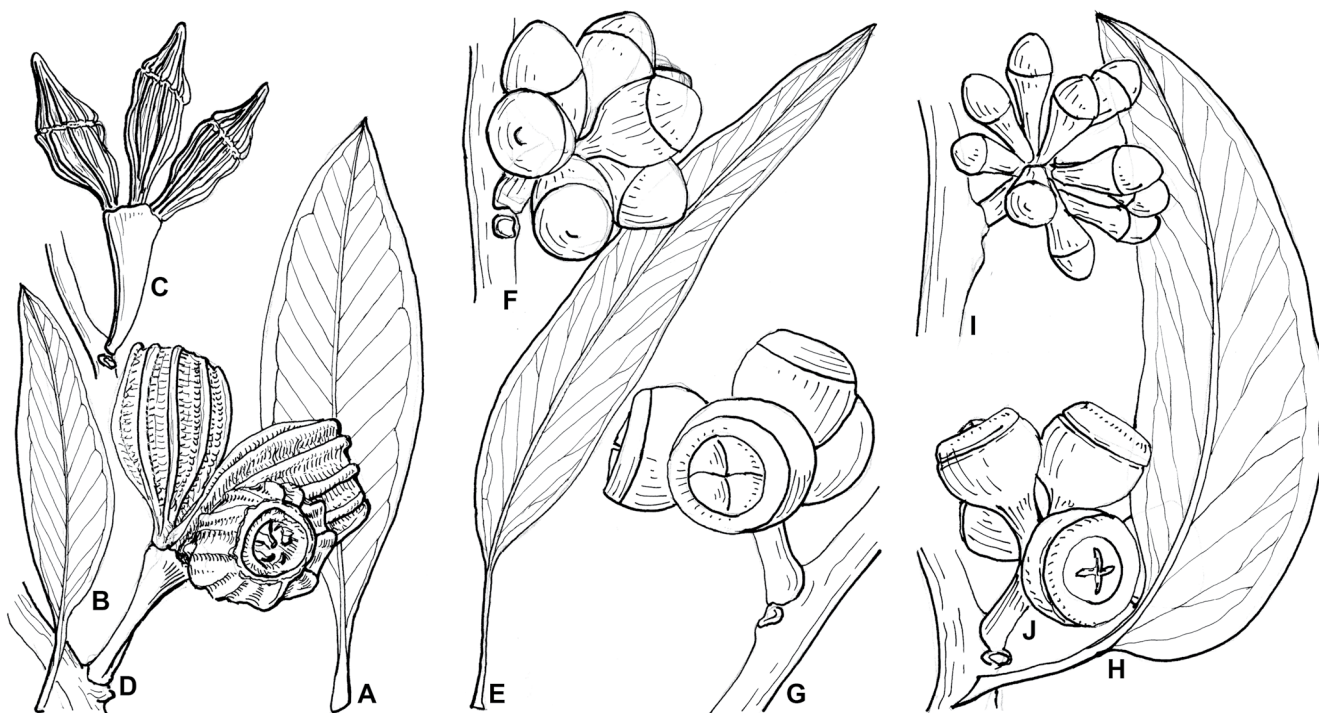


Fig. 3. A–D, *Eucalyptus angulosa*: A & B, leaves; C, buds; D, fruits. E–G, *E. arcana*: E, leaf; F, buds; G, fruits. H–J, *E. arenacea*: H, leaf; I, buds; J, fruits. Illustrations by G.R.M. Dashorst.

9–15-flowered, held erect; peduncles 2–14 mm long, pedicels absent or to 3 mm long, buds ovoid, not pruinose, 5–10 mm long, 3–6 mm diam.; hypanthia obconical, opercula conical to hemispherical to flattened, warty, about as long as hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** sessile or nearly so, hemispherical to globose, not pruinose, 8–12 mm long, 7–18 mm diam.; disc broad, ascending; valves 3 or 4 (rarely 5), slightly exerted; seeds brown to black, pyramidal, smooth. **Brown stringybark, Baxter’s stringybark. Fig. 4A–D, Pl. 5D–G.**

S.A.: MU, SL, KI, SE; N.S.W.; Vic. Widespread, but of sporadic occurrence through the higher rainfall regions of south-eastern Australia, from Nadgee Nature Reserve in the far south-east of N.S.W. westwards through southern Vic. To the south-east of S.A., and disjunctly in the Mount Lofty Ranges south from the Barossa Range and on Kangaroo Island. Occurs on well-drained, usually sandy or gravelly soils of relatively low fertility, usually in heathy scrub or low forest vegetation. Flowers: Mainly summer but also sporadic throughout the year.

*Eucalyptus baxteri* is closely related to *E. arenacea*, which differs in its seedling leaves, which remain hairy-scabrid much longer, the narrower adult leaves, the smaller and smoother buds that taper to the peduncles, and the smaller fruits with a level or less steeply ascending disc. The type specimen of *E. alpina* R.Br. ex Maiden, from the summit of Mt William in the Grampians of Vic., is very similar to *E. baxteri*, and the two names may prove to be conspecific. If so, the name *E. alpina* takes precedence over *E. baxteri* (having been named earlier, in 1838). At this stage I prefer to retain the name *E. baxteri* for the taxon treated here, pending further investigation as to the status of type of *E. alpina*. Some authors regard the type of *E. alpina* to be intermediate between *E. baxteri* and *E. serraensis* Ladiges & Whiffin (an endemic to the Grampians).

8. ***Eucalyptus behriana*** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 34 (1855). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 216 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 402 (2001); D.Nicolle, *Eucalypts S. Austral.* 149 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 177 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 174, 175 (2013).

Robust mallee, 5–12 m high, lignotuberous; bark rough on the lower 1/3 to 2/3 of the stems, subfibrous to fibrous, moderately fissured, dark grey-brown; smooth above, decorticating in strips, glossy, coppery to tan to greenish yellow to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to deltoid, sometimes pruinose, dull, green to grey-green; adult leaves disjunct, petiolate, broad-lanceolate to ovate, 50–120 × 15–45 mm, concolorous, not pruinose, glossy, dark green; intramarginal vein well in from lamina margin. **Inflorescences** terminal panicles; umbellasters 7-flowered, held erect; peduncles 3–10 mm long, pedicels absent or to 2 mm long, buds clavate to ovoid, smooth,





Fig. 4. A–D, *Eucalyptus baxteri*: A & B, leaves; C & D, buds; E, fruits. F–I, *E. behriana*: F & G, leaves; H, panicle of buds; I, fruits; J–L, *E. bicostata*: J, leaf; K, buds; L, fruits. Illustrations by G.R.M. Dashorst.

not pruinose, 3–7 mm long, 2–4 mm diam.; hypanthia cupular to obconical; opercula bluntly conical to hemispherical, about equal in length to hypanthium; flowers white; stamens variously flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, cupular to barrel-shaped, smooth, not pruinose, 3–6 mm long, 3–5 mm diam.; disc level to descending; valves 3 or 4, enclosed or to rim level; seeds brown, compressed ovoid, shallowly reticulate. **Bull mallee, broad-leaved mallee box. Fig. 4F–I, Pl. 5H & I.**

S.A.: FR, EP, NL, MU, SL, SE; N.S.W.; Vic. Of scattered distribution in S.A.; known from three main areas, namely the lower Eyre Peninsula, the northern Mount Lofty Ranges and hills north thereof (mainly between Tanunda and Hamley Bridge, but with very scattered populations northwards to the Wirrabara area and in the Pekina Range near Tarcowie), and in the south-east of the State in the area centred on Bordertown. Also occurs throughout much of the western half of Vic. and scattered in south-central N.S.W. The species grows on sites that retain soil moisture better than surrounding sites, usually on heavy soils in slight depressions or in gently undulating terrain. Flowers: Mainly spring to summer.

A distinctive box species (*E. ser. Buxaeales*) due to its robust mallee habit, rough lower bark and smooth; often coppery upper bark; broad, glossy green leaves and the small, sessile or near-sessile buds and fruits in terminal panicles.

(Rare status in S.A.)

9. ***Eucalyptus bicostata*** Maiden, Blakely & Simmonds, *Trees Other Lands, Eucalypts* 133, t. 48. (1929). — *E. globulus* var. *bicostata* (Maiden, Blakely & Simmonds) Ewart, *Fl. Victoria* 804 (1931); *E. globulus* subsp. *bicostata* (Maiden, Blakely & Simmonds) J.B.Kirkp. *Bot. J. Linn. Soc.* 69: 101 (1975). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 411 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 186 (2006); Nicolle, *Eucalypts S. Austral.* 127 (1997); Nicolle, *Eucalypts Victoria & Tasman.* 147 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 160, 161 (2013).

Tree, 6–60 m tall, lignotuberous; bark smooth throughout (or sometimes with some loose plate-like or ribbony rough bark on the lower stems up to a few metres), decorticating in ribbons, reddish-tan to grey to cream; branchlets pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite, sessile, glabrous, ovate to elliptical, often undulate, strongly pruinose, dull, greyish; adult leaves disjunct, petiolate, lanceolate to falcate, 140–400 × 20–50 mm, concolorous, not pruinose, glossy, dark green. **Inflorescences** axillary; umbellasters 3-flowered, held erect; peduncles 0–3 mm long, pedicels absent or to 2 mm long, buds pruinose, 10–18 mm long, 10–14 mm diam.; hypanthia 2-ribbed, opercula flattened and umbonate, warty, about equal in length or shorter than hypanthium; flowers cream; stamens inflexed, all fertile; anthers versatile, cuboid to oblong; ovules in 6 (8) vertical rows. **Fruits** sessile, globose, 2-ribbed, pruinose when young, 10–17 mm long, 10–20 mm diam.; disc

broad and ascending; valves 4 or 5, exerted above rim level; seeds brown to black, flattened ovoid, shallowly reticulate. **Southern blue gum, eurabbie. Fig. 4J–L, Pl. 6A & B.**

S.A.: NL, <sup>?</sup>\*SL; Vic.; N.S.W. Common in the higher and cooler parts of the Great Dividing Range of south-eastern Australia, from the Carrai Plateau in central-northern N.S.W. south-west to the Pyrenees and the Otway Ranges in Vic., with a highly disjunct population on the southern slopes of Mount Bryan north of Burra in S.A. The S.A. population consists of less than 100 apparently very old individuals and a larger number of sapling-stage individuals on steep, upper south-facing slopes of a ridge in open grassy woodland. Also widely planted in southern and eastern Australia and recorded as sparingly regenerating around planted trees in the Mt Lofty Ranges. Flowers: Mainly summer to autumn.

Opinions vary as to the level at which this taxon should be recognised. The *Australian Plant Census* treats this taxon as *E. globulus* subsp. *bicostata* (with three other subspecies: *globulus*, *pseudoglobulus* and *maidenii*). These four taxa are here recognised at specific status, which is consistent with taxonomy elsewhere in the eucalypts. The closely related *E. globulus* (from Tas. and southern Vic.) differs primarily in its single-flowered inflorescences and larger buds and fruits.

Used in forestry (timber). As an isolated tree in cultivation, it grows into a densely-crowned shade tree. (Vulnerable status in S.A.)

10. **\*Eucalyptus botryoides** Sm., *Trans. Linn. Soc. London* 3: 286 (1797). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 297 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 79 (2006); Nicolle, *Eucalypts Victoria & Tasman.* 51 (2006).

Tree, 8–40 m tall, lignotuberous; bark rough on trunk and larger branches, hard-fibrous, moderately-fissured, grey-brown; smooth on smaller branches, decorticating in strips and ribbons, pale brown to white; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite for 5–6 nodes then disjunct, petiolate, glabrous, ovate, not pruinose, discolorous, dull to glossy, green; adult leaves disjunct, petiolate, broad-lanceolate to falcate, 100–200 × 20–50 mm, strongly discolorous, not pruinose, glossy, dark green above, paler below. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles flattened, 7–15 mm long, pedicels absent or to 3 mm long, buds not pruinose, 7–14 mm long, 4–6 mm diam.; hypanthia usually angled, opercula conical to rounded, smooth, about equal in length or shorter than hypanthium; flowers white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile or very shortly pedicellate, cupular to barrel-shaped, sometimes longitudinally-angled, not pruinose, 6–13 mm long, 5–9 mm diam.; disc descending; valves 3 or 4, at about rim level or slightly below; seeds brown, flattened pyramidal to cuboid, shallowly reticulate to smooth. **Southern mahogany, bangalay.**

S.A.: <sup>?</sup>\*NL, \*SL, <sup>?</sup>\*SE; \*W.A.; N.S.W.; Vic. Naturally distributed in coastal and near coastal areas in eastern Australia, from near Newcastle in N.S.W. south to near Loch Sport in Vic. Widely cultivated in higher-rainfall and coastal parts of southern Australia, and sparingly naturalized in S.A. Flowers: Summer.

Similar to *E. robusta* Sm., a native to the east coast of Australia and which is also commonly cultivated as a shade tree in southern Australia. *Eucalyptus robusta* differs from *E. botryoides* in its larger leaves and larger, pedicellate buds and fruits.

Widely cultivated in higher-rainfall and coastal parts of southern Australia, mainly as a rapid-growing shade tree, especially on coastal sites with persistent salt-laden winds.

11. **Eucalyptus brachycalyx** Blakely, *Key Eucalypts* 119 (1934). — *E. incrassata* var. *protrusa* J.M.Black, *Fl. S. Austral.* 3: 421 (1926); *E. brachycalyx* var. *chindoo* Blakely, *Key Eucalypts* 119 (1934); *Eucalyptus brachycalyx* Blakely var. *protrusa* (J.M.Black) H. Eichler, *Suppl. Black's Fl. S. Austral.* 240 (1965). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 123 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 344 (2001); D.Nicolle, *Eucalypts S. Austral.* 87 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 116, 117 (2013).

Mallee, 3–8 m high, lignotuberous; bark usually rough on the lower stems, hard, fibrous-flaky, moderately fissured, grey-brown; smooth above or rarely smooth throughout, decorticating in ribbons and strips, orange-tan to pale grey to creamy-white; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, lanceolate to ovate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, narrow-lanceolate, 50–110 × 5–20 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, generally held erect; peduncles 4–15 mm long, pedicels 1–5 mm



long, buds not pruinose, 5–10 mm long, 4–6 mm diam.; hypanthia cupular to cylindrical, smooth or slightly ribbed; opercula flattened to hemispherical, ribbed, equal in length or shorter than hypanthium, usually narrower than hypanthium at join; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** usually on short pedicels, hemispherical to cupular to obconical, sometimes slightly ribbed, not pruinose, 4–8 mm long, 5–8 mm diam.; disc level to descending; valves 3 or 4, around rim level or exserted; seeds grey to brown, compressed ovoid, deeply pitted. **Gilja, Chindoo mallee. Pl. 6C & D.**

S.A.: NU, GT, FR, EA, EP, NL, MU, YP, SL; W.A. Widespread in coastal regions from the Ravensthorpe area in W.A. eastwards to Eyre Peninsula in S.A., with more inland occurrences throughout and to the north of Eyre and Yorke Peninsulas (where the species is more common) and scattered eastwards through the southern Flinders Ranges and eastern Murray Mallee to south-east of Tailem Bend. Usually occurs on thin sandy soils overlying limestone, on plains or low dunes, in mallee shrubland. Flowers: Spring to autumn.

Closely related to the desert-dwelling *E. concinna* and the more coastal *E. rugosa*, and somewhat intermediate between these two species in morphology and habitat, intergrading with both these species where the distribution of *E. brachycalyx* adjoins each. A population of mallees in the River Torrens gorge of the Mount Lofty Ranges is somewhat intermediate in characteristics between *E. brachycalyx* and *E. rugosa*.

12. **Eucalyptus cajuputea** F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 126 (1856). — ?*E. fruticetorum* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 131 (1856); ?*Eucalyptus wimmerensis* Rule, *Muelleria* 7: 193 (1990). *Eucalyptus odorata* auct. non Behr: D.Nicolle (2013), partly; *E. odorata* var. *angustifolia* auct. non Blakely: Chippendale in A.S.George, *Fl. Austral.* 19: 400 (1988); *Eucalyptus viridis* auct. non R.T.Baker: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 621 (1952); D.Nicolle, *Eucalypts S. Austral.* 160 (1997). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 187 (2013).

Tree or mallee, 4–10 m high, lignotuberous; bark variable, often rough up to medium branches, hard to somewhat flaky, moderately to moderately-finely fissured, grey-brown, smooth above or smooth throughout, decorticating in strips, coppery to pale grey to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, linear to narrow-lanceolate, not pruinose, dull, blue-green to green; adult leaves disjunct, petiolate, linear to narrow-lanceolate, 60–130 × 3–14 mm, concolorous, not pruinose, dull to glossy, slightly blue-green to green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 3–11 mm long, pedicels 2–6 mm long, buds fusiform, smooth, not pruinose, 5–8 mm long, 2–4 mm diam.; hypanthia cupular to obconical; opercula conical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globoid to cuboid; ovules in 4 vertical rows. **Fruits** tapering to pedicels, cupular to barrel-shaped, smooth, not pruinose, 3–6.5 mm long, 3–5 mm diam.; disc descending; valves 4 or 5, enclosed or to rim level; seeds brown, compressed ovoid, finely reticulate. **Narrow-leaved peppermint box.**

S.A.: FR, EA, EP, NL (between Mt Remarkable and hills NE of Burra); MU. Apparently endemic to S.A., where it is of widespread, but of scattered distribution, mainly in the Flinders Ranges from the Gammon Ranges south to the ranges around Mt Remarkable and to the hills north-east of Burra, and on northern Eyre Peninsula from the Darke Range to the Minbrie Range, as well as in the Middleback Ranges. Outlying populations occur near Mt Fairview in the Gawler Ranges and east of Yunta. It is restricted to hilly landscapes, where it occurs on rocky hillslopes and ridges as well as on deeper soils on the footslopes and undulating plains.

Very similar to, and possibly conspecific with, *E. wimmerensis*. *Eucalyptus cajuputea* can be quite variable with respect to its extent of rough bark and the size and shape of the juvenile and adult leaves, but generally the juvenile and adult leaves are longer and the buds and fruits more slender than in *E. wimmerensis*. Further research is required to ascertain the pattern of variation within and between the two species, and if the two species are indeed specifically distinct. *Eucalyptus cajuputea* has traditionally been included in the very similar *E. odorata*, which differs in its generally broader juvenile and adult leaves, shorter peduncles and pedicels, and more robust buds and fruits, often with angles extending from the pedicels. *Eucalyptus odorata* is generally distributed to the south of *E. cajuputea*, although the two species appear to have overlapping distributions, but occur on different sites (*E. odorata* on deeper soils and *E. cajuputea* on rockier, upland sites) in the Cleve to Cowell area on Eyre Peninsula and in the Southern Flinders Ranges south from the Mt Remarkable area. The distribution and the morphological differences between the two species are not fully understood and require further research, especially in the Southern Flinders Ranges.

(Rare status in S.A.)

13. ***Eucalyptus calcareana*** Boomsma, *J. Adelaide Bot. Gard.* 1: 361 (1979). — *Eucalyptus 'triangolensis'* L.A.S.Johnson ms, Centre for Plant Biodiversity Research, *EUCLID* ed. 2, (2002), partly; *E. sp. Triangolensis* (D.F.Blaxell 2059 & L.A.S.Johnson) Australian National Herbarium, Centre for Plant Biodiversity Research, *EUCLID* ed. 3, (2006), partly. *Eucalyptus dumosa* auct. non A.Cunn. ex Oxley: Nicolle (1997), partly (as to EP populations). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 331 (2001); D.Nicolle, *Eucalypts S. Austral.* 93 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 131 (2013).

Tree or mallee, 4–15 m high, lignotuberous; bark smooth throughout, decorticating in ribbons, orange-tan to grey to cream; branchlets

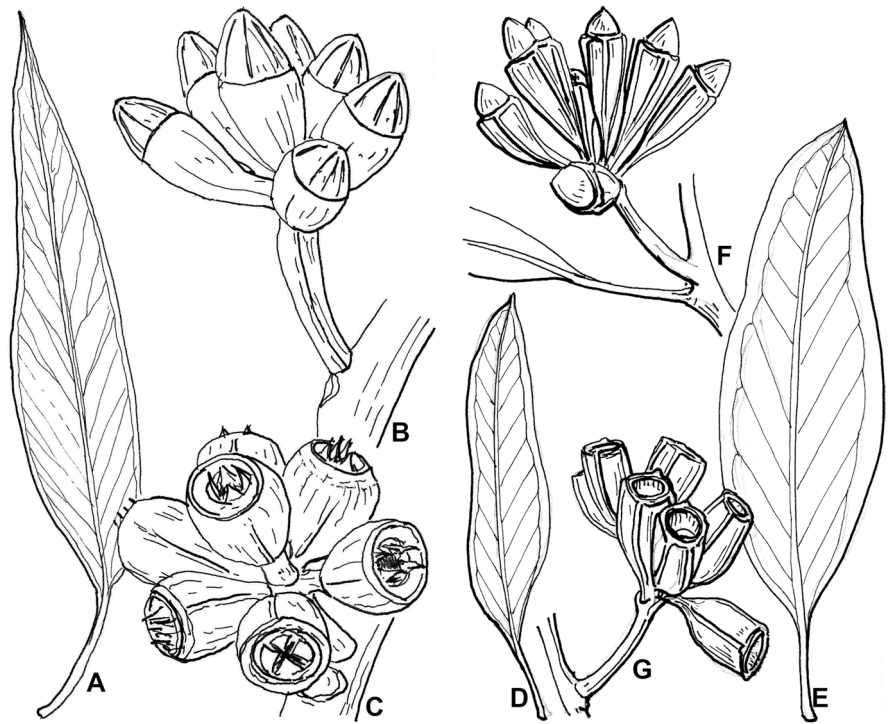
not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, ovate to broad-lanceolate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate to falcate, 75–140 × 10–25 mm, concolorous, not pruinose, dull and slightly blue-green when young, maturing glossy and green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 7–16 mm long, pedicels 1–5 mm long, buds pyriform to cylindrical, not pruinose, 7–12 mm long, 4–7 mm diam.; hypanthia cylindrical to obconical, usually smooth; opercula usually slightly ribbed, conical to pileate, equal in width to hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, obconical to cupular, smooth or slightly ribbed, not pruinose, 5–10 mm long, 5–9 mm diam.; disc usually descending; valves (3) 4, around rim level or slightly exserted; seeds glossy, red-brown, compressed ovoid, finely reticulate. **Nundroo mallee (or gum).** **Fig. 5A–C, Pl. 6E–H.**

S.A.: NU, EP; W.A. Common in coastal areas along the Great Australian Bight from the Madura area in W.A. eastwards to throughout much of Eyre Peninsula in S.A. It occurs on thin loam or sandy loam over limestone in mallee shrubland or open low woodland. Flowers: Mainly autumn.

Although a distinctive species throughout much of its natural distribution, it is closely related to a number of species in *E. ser. Rufispermae*, and tends to intergrade with the following closely related species where their distributions adjoin on Eyre Peninsula and in the Gawler Ranges, forming populations with intermediate characteristics: *E. cretata*, *E. gypsophila*, *E. phenax* and *E. pileata*. The name *E. sp. Triangolensis* has been applied to hybrids of *E. calcareana* with *E. pileata*, and possibly other species. Mallees previously attributed to *E. dumosa* from Eyre Peninsula have been included with this species in this treatment, although some populations may represent intergrades between *E. calcareana* and *E. gypsophila*.

14. ***Eucalyptus calycogona*** Turcz., *Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg* 10: 338 (1852).

Mallee, 2–6 m high, lignotuberous; bark rough on lower stems or smooth throughout, smooth bark decorticating in strips and ribbons; branchlets sometimes pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for a few pairs then becoming disjunct, shortly petiolate, elliptical to lanceolate; sometimes pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, narrow-lanceolate to broad-lanceolate, 45–110 × 7–24 mm, concolorous, sometimes pruinose, dull or glossy, green to blue-green (the three subspecies occurring in S.A. have non-pruinose, glossy and green adult leaves). **Inflorescences** axillary; umbellasters 7-flowered, generally held erect; peduncles 4–17 mm long, pedicels 2–9 mm long; buds fusiform and quadrangular, sometimes pruinose, 8–15 mm long, 3–7 mm diam.; hypanthia obconical, with four longitudinal ribs or wings; opercula conical, smooth, much shorter than hypanthium; flowers white to dark pink; stamens inflexed, outer stamens longer



**Fig. 5. A–C, *E. calcareana*: A, leaf; B, bud; C, fruits. D–G, *E. calycogona* subsp. *spaffordii*: D & E, leaves; F, bud; G, fruits. Illustrations by G.R.M. Dashorst.**

than inner stamens and twisted and lacking anthers (staminodes); anthers versatile, cuboid to globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, ovoid to cylindrical to urceolate, with four weak to prominent longitudinal ribs or wings, sometimes pruinose when young, 8–13 mm long, 4–13 mm diam.; disc descending; valves 4, deeply enclosed in fruit; seeds brown, ovoid, smooth or very finely reticulate.

Occurs in two disjunct regions, viz. the central and southern wheatbelt area of W.A., the Eyre, Yorke and Fleurieu peninsulas of S.A., eastwards into western Vic. and far southern N.S.W., with a large disjunction in the more arid Nullarbor region in between.

Four subspecies are recognized, of which three occur in S.A. (the fourth, subsp. *miracula*, is endemic to W.A.). The species shares with *E. gracilis* (and other W.A. species of *E. ser. Heterostemones*) the distinctive flowers with short fertile inner stamens and much longer and twisted outer stamens lacking anthers. *Eucalyptus gracilis* is distinguished from *E. calycogona* most easily by the non-ribbed buds and fruits, which are terete in cross section.

- 1. Adult leaves 13–24 mm wide; fruit 6–9 mm wide, ribs prominent; Eyre Peninsula only ..... 14b. ***E. calycogona* subsp. spaffordii**
- 1: Adult leaves 7–15 mm wide; fruit 4–7 mm wide, ribs less prominent
- 2. Bark smooth or rough only at base; Eyre Peninsula and Waitpinga to Lake Alexandrina..... 14a. ***E. calycogona* subsp. calycogona**
- 2: Bark rough and tessellated on lower stems; Murray Mallee, upper Yorke Peninsula and Flinders Ranges eastwards..... 14c. ***E. calycogona* subsp. trachybasis**

14a. ***Eucalyptus calycogona* Turcz. subsp. calycogona** — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 71 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 100, 101 (2013).

Bark smooth throughout, grey to pale grey to cream; branchlets not pruinose; juvenile leaves not pruinose, dull, green; adult leaves narrow-lanceolate to lanceolate, 55–100 × 7–13 mm, not pruinose, glossy, green. **Peduncles** 4–9 mm long; buds not pruinose, 8–10 mm long, 3–5 mm diam.; hypanthia with four longitudinal ribs; flowers white to dark pink. **Fruits** urceolate, not pruinose, 8–10 mm long, 4–6 mm diam.; with four longitudinal ribs. **Square-fruited mallee, gooseberry mallee. Pl. 6I, 7A–C.**

S.A.: EP, MU (Lake Alexandrina only), SL; W.A. Restricted to three disjunct localities, viz. the central and southern wheat belt areas of W.A., Eyre Peninsula in S.A., especially from Kyancutta to Cummins and eastwards to Spencer Gulf, and on Fleurieu Peninsula in S.A., from Newland Head north-eastwards to near Strathalbyn. It occurs in mallee and low woodland vegetation, generally on locally heavier soils. Flowers: Winter to spring.

Distinguished within the species by the smooth bark; the small leaves, buds and fruits; the weak to moderately prominent ribbing on the buds and fruits; and the white to dark pink staminal filaments.

14b. ***Eucalyptus calycogona* subsp. spaffordii** D.Nicolle, *Nuytsia* 13: 310 (2000). — *Eucalyptus calycogona* Turcz. var. *staffordii* Blakely, *Key Eucalypts* 265 (1934), as *staffordi*?. *Eucalyptus calycogona* auct. non Turcz.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 919 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 295 (2001); D.Nicolle, *Eucalypts S. Austral.* 75 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 104, 105 (2013).

Bark smooth throughout, grey to pale grey to cream; branchlets not pruinose; juvenile leaves not pruinose, dull, green; adult leaves lanceolate, 75–105 × 13–24 mm, not pruinose, glossy, green. **Peduncles** 10–17 mm long; buds not pruinose, 12–15 mm long, 4–7 mm diam.; hypanthia with four longitudinal sharp ribs or wings; flowers white. **Fruits** ovoid to urceolate (not including ribs), not pruinose, 11–13 mm long, 6–9 mm diam.; with four wings extending to pedicels. **Yeelanna mallee. Fig. 5D–G.**

S.A.: EP. Restricted to central Eyre Peninsula in S.A., mainly in the Yeelanna and Cummins area, but also in the nearby Koppio Hills, occurring in mallee communities. Flowers: Winter to spring.

Differs from subsp. *calycogona* in the broader juvenile leaves, the broader and thicker adult leaves, and the much larger and more prominently ribbed buds and fruit; and from subsp. *trachybasis* in the mostly smooth bark, more erect habit, broader juvenile leaves, the broader and thicker adult leaves, and the larger and more prominently ribbed buds and fruit. Blakely (1934) cited the type specimen in error as collected by W.J. Stafford instead of W.J. Spafford, and in doing so, named the variety *staffordii* Blakely. Nicolle (2000) took the opportunity to correct the epithet when he raised the variety to subspecific status (as subsp. *spaffordii*). (Rare status in S.A.)

- 14c. **Eucalyptus calycogona** subsp. **trachybasis** D.Nicolle, *Nuytsia* 13: 307 (2000). — *Eucalyptus calycogona* subsp. 'Eastern': D.Nicolle, *Eucalypts S. Austral.* 72 (1997). *Eucalyptus calycogona* auct. non Turcz.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 919 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 117 (2006); Nicolle, *Eucalypts S. Austral.* 73 (1997); Nicolle, *Eucalypts Vic. & Tas.* 33 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 102, 103 (2013).

Bark rough on lower stems, finely fissured, weakly to prominently tessellated, brown to grey, smooth above, grey to yellowish to cream; branchlets not pruinose; juvenile leaves not pruinose, dull, green; adult leaves lanceolate, 45–90 × 8–15 mm, not pruinose, glossy, green. **Peduncles** 5–11 mm long; buds not pruinose, 10–12 mm long, 3.5–5.5 mm diam.; hypanthia with four longitudinal ribs; flowers white or rarely pale pink. **Fruits** urceolate, not pruinose, 8–13 mm long, 4–7 mm diam.; with four longitudinal ribs. **Square-fruited mallee, gooseberry mallee. Pl. 7D–F.**

S.A.: FR (Tarcowie area), NL, MU, YP, SE; Vic.; N.S.W. Widespread but scattered in the mid north, including part of Yorke Peninsula and the Northern Mt Lofty Ranges, and the Murray mallee region of S.A., extending into adjacent areas of Vic. and just into N.S.W. near Koraleigh. It occurs in mallee shrubland in red-brown loams, occasionally as the dominant plant. Flowers: Winter to spring.

Differs from subsp. *calycogona* in the usually persistent, rough bark on the lower stems, the more spreading, straggly habit, the slightly broader adult leaves and the larger buds and fruits.

15. **Eucalyptus camaldulensis** Dehnh., *Cat. Pl. Horti Camald.* ed 2, 6, 20 (1832). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 103 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 385, 386 (2001); D.Nicolle, *Eucalypts S. Austral.* 121 (1997).

Tree, usually single-stemmed, 8–50 m high, sometimes lignotuberous; bark usually smooth throughout (some thick, plate-like bark may be present on the lower trunk of larger individuals), decorticating in plates and short strips, sometimes powdery, variegated pinkish-red to brown to grey to creamy-yellow to cream, or uniformly creamy-white; branchlets sometimes pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then becoming disjunct, petiolate, ovate to lanceolate; sometimes pruinose, dull, green to bluish; adult leaves disjunct, petiolate, broad-lanceolate to narrow-lanceolate or falcate, 80–300 × 8–40 mm, concolorous, sometimes pruinose, dull to glossy, green to bluish; vein reticulation sparse to very dense. **Inflorescences** axillary; umbellasters 7–11 (–13)-flowered, generally held erect; peduncles 3–26 mm long, pedicels 1–12 mm long; buds smooth, sometimes pruinose, 5–18 mm long, 3–7 mm diam.; hypanthia hemispherical; opercula hemispherical, conical, strongly beaked or horn-shaped, smooth, equal in length or longer than hypanthium; flowers creamy-white; stamens erect, variously-flexed or inflexed, all fertile; anthers versatile, oblong; ovules in 6 vertical rows. **Fruits** on slender pedicels, hemispherical to ovoid, smooth, rarely pruinose when young, 3–7 mm long, 3–10 mm diam.; disc ascending; valves 3–5, strongly exerted; seeds double-coated, yellow to yellow-brown, cuboid, smooth. **River red gum.**

Widespread but of scattered and disjunct occurrence throughout much of mainland Australia, including the tropical north and most of the arid inland areas, where it is restricted to drainage systems including the Lake Eyre basin and most of the Murray-Darling basin. Notably absent from Tas. and parts of south-western Australia. Restricted to sites subject to periodic inundation, including ephemeral watercourses and floodplains. Occasionally occurs on more elevated sites in areas of higher rainfall, e.g. parts of the southern Mt Lofty Ranges in S.A. Flowers: Generally late spring to summer.

Because there were doubts concerning the identity of the type of this species, the name *E. camaldulensis* is now conserved with a new type, preserving the usage of the name as it has been understood since 1934. A historical account regarding the typification of the species, and an overview of the proposal for the conservation of the name with a new type by Brooker & Orchard (2008) is provided by McDonald *et al.* (2009). Seven subspecies are recognised (McDonald *et al.* 2009), three of which occur in S.A., with one subspecies being endemic (subsp. *minima*).

Used for timber, especially fuelwood. Very widely cultivated in Australia and worldwide.

1. Opercula prominently beaked ..... 15b. **E. camaldulensis** subsp. **camaldulensis**  
 1: Opercula obtuse to acuminate  
 2. Opercula obtuse ..... 15a. **E. camaldulensis** subsp. **arida**  
 2: Opercula acuminate ..... 15c. **E. camaldulensis** subsp. **minima**



- 15a. **Eucalyptus camaldulensis** subsp. **arida** Brooker & M.W.McDonald, *Austral. Syst. Bot.* 22: 273 (2009). — *E. camaldulensis* Dehnh. var. *subcinerea* Blakely, *Key Eucalypts* 141 (1934). *E. rostrata* auct. non Schldl.: J.M.Black, *Fl. S. Austral.* 3: 419 (1926), partly; *E. camaldulensis* var. *obtusata* auct. non Blakely: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 923 (1986), partly. — **Illustr.:** M.W.McDonald *et al.*, *Austral. Syst. Bot.* 22: 274 (2009); D.Nicolle, *Eucalypts S. Austral.* 119 (1997), as *Eucalyptus camaldulensis* var. *obtusata*; D.Nicolle, *Native Eucalypts S. Austral.* 48, 49 (2013).

Bark smooth throughout, variegated pinkish-red to brown to grey to creamy-yellow to cream; branchlets sometimes pruinose; juvenile leaves ovate to broad-lanceolate; usually pruinose; adult leaves lanceolate to broad-lanceolate or falcate, 80–230 × 10–40 mm, rarely pruinose, dull, blue-green to bluish; vein reticulation sparse to moderate. **Umbellasters** 7 (–13)-flowered; peduncles 6–16 mm long; pedicels 2–6 mm long; buds sometimes pruinose, 5–8 mm long; opercula hemispherical, apex obtuse; stamens erect or variously flexed. **Fruits** rarely pruinose when young, 4–9 mm diam.; valves (3) 4 (5). **River red gum, inland river red gum. Fig. 6D–I, Pl. 7G & H.**

S.A.: NW, LE, GT, FR, EA; W.A.; N.T.; N.S.W.; Qld. Widespread but restricted to larger creek lines throughout much of inland Australia, from near the west coast of W.A. in the Geraldton area eastwards through the southern half of N.T. and northern parts of S.A. to central western Qld. and parts of central N.S.W. In S.A., the subspecies occurs in larger creek lines in the north-west and north-east of the State, extending southwards on both sides of the Flinders Ranges (though not in the ranges themselves where it is replaced by subsp. *minima*) to the Lake Frome and Lake Torrens drainage basins. Flowers: Generally late spring to summer.

*Eucalyptus camaldulensis* subsp. *obtusata* (Blakely) Brooker & M.W.McDonald (from tropical W.A., N.T. and north-western Qld.) shares the obtuse opercula of subsp. *arida*, but differs in the greener adult leaves with denser vein reticulation, and the less colourful smooth bark which is usually cream or white in colour. *E. camaldulensis* subsp. *arida* intergrades with subsp. *minima* along creeklines on the plains flowing to the west, north and east of the Northern Flinders Ranges (see McDonald *et al.* 2009).

- 15b. **Eucalyptus camaldulensis** Dehnh. subsp. **camaldulensis** — *E. camaldulensis* Dehnh. var. *camaldulensis*, partly. *E. longirostris* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 44: 125 (1856); *E. ×mcintyrensis* Maiden, *Crit. Rev. Eucalyptus* 6: 166 (1922); *E. rostrata* Schldl., *Linnaea* 20: 655 (1847), *nom. illeg. non Cav.* (1797). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 319, fig. 1–4, 6, 8 (2006); M.W.McDonald *et al.*, *Austral. Syst. Bot.* 22: 268 (2009); D.Nicolle, *Eucalypts Victoria & Tasman.* 43 (2006), as *Eucalyptus camaldulensis* var. *camaldulensis*; D.Nicolle, *Native Eucalypts S. Austral.* 44, 45 (2013).

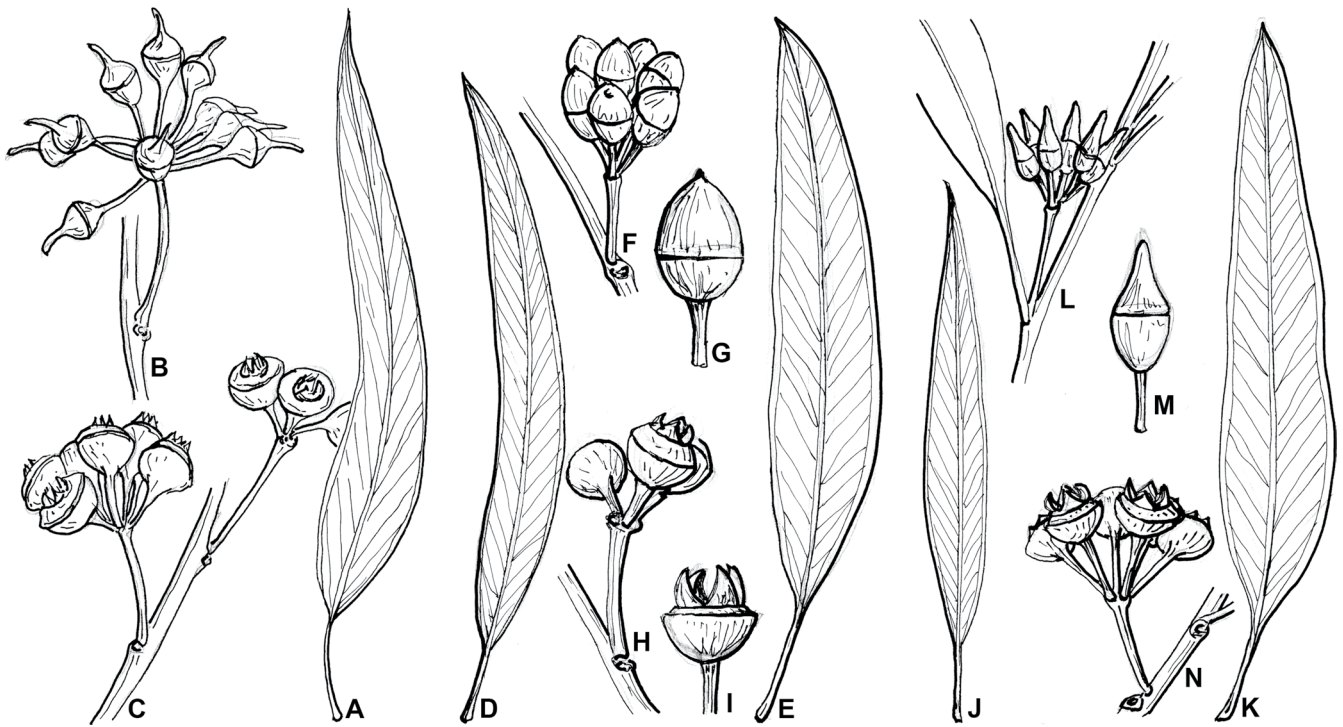
Bark usually smooth throughout (some thick, plate-like bark may be present on the lower trunk of larger individuals), streaked pinkish-red to brown to grey to creamy-yellow to cream; branchlets not pruinose; juvenile leaves lanceolate to broad-lanceolate; pruinose on growing tips only; adult leaves lanceolate to narrow-lanceolate or falcate, 100–300 × 8–25 mm, not pruinose, dull, green to blue-green; vein reticulation sparse to moderate. **Umbellasters** 7–11-flowered; peduncles 8–18 mm long, pedicels 3–10 mm long; buds not pruinose, 3–10 mm long; opercula strongly beaked; stamens inflexed. **Fruits** not pruinose, 5–10 mm diam.; valves (3) 4 or 5. **River red gum, Murray red gum. Fig. 6A–C, Pl. 7I–L.**

S.A.: EP, NL, MU, YP, SL, KI, SE; Vic.; N.S.W.; Qld. Widespread throughout the Murray-Darling basin of south-eastern Aust., from the Condamine River in southern Qld. southwards through most of N.S.W. west of the Great Dividing Range watershed (with some outliers east of the watershed) and throughout much of Vic., extending west into S.A. as far as the Mount Lofty Ranges, with populations also on Kangaroo Island and Eyre Peninsula and on Yorke Peninsula near Minlaton. Flowers: Late spring to early summer.

Distinguished from the other subspecies by its combination of lanceolate to broad-lanceolate juvenile leaves, sparse to moderate adult leaf vein reticulation, prominently beaked opercula, and inflexed stamens. *E. camaldulensis* subsp. *camaldulensis* intergrades with subsp. *minima* in the Clare to Crystal Brook area, where the distributions of these taxa adjoin (see McDonald *et al.* 2009). *Eucalyptus ×kalangadoensis* Maiden & Blakely appears to be a hybrid with *E. camaldulensis* subsp. *camaldulensis* as one parent and either *E. ovata* or *E. viminalis* subsp. *cygnetensis* as the other parent. It is known only from the type location near the township of Kalangadoo in the south-east of the State.

- 15c. **Eucalyptus camaldulensis** subsp. **minima** Brooker & M.W.McDonald, *Austral. Syst. Bot.* 22: 275 (2009). — *E. rostrata* auct. non Schldl.: J.M.Black, *Fl. S. Austral.* 3: 419 (1926), partly; *E. camaldulensis* var. *camaldulensis* auct. non Dehnh.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 923 (1986), partly; *E. camaldulensis* var. *obtusata* auct. non Blakely: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 923 (1986), partly — **Illustr.:** W.M.McDonald *et al.*, *Austral. Syst. Bot.* 22: 276 (2009); D.Nicolle, *Native Eucalypts S. Austral.* 46, 47 (2013).





**Fig. 6.** A–C, *Eucalyptus camaldulensis* subsp. *camaldulensis*: A, leaf; B, buds; C, fruits. D–I, *E. camaldulensis* subsp. *arida*: D & E, leaves; F & G, buds; H, umbel of fruits; I, fruits. J–N, *E. camaldulensis* subsp. *minima*: J–K, leaves; L, umbel of buds; M, bud; N, umbel of fruits. Illustrations by G.R.M. Dashorst.

Bark usually smooth throughout (some thick, plate-like bark may be present on the lower trunk of larger individuals), variegated pinkish-red to brown to grey to creamy-yellow to cream; branchlets not pruinose; juvenile leaves ovate to broad-lanceolate; often pruinose; adult leaves lanceolate or falcate, 85–130 × 10–20 mm, not pruinose, dull, bluish; vein reticulation sparse to moderate. **Umbellasters** 7 (9)-flowered; peduncles 3–8 mm long; pedicels 1–4 mm long; buds not pruinose, 5–7 mm long; opercula conical, apex acuminate; stamens erect or inflexed. **Fruits** not pruinose, 3–6 mm diam.; valves 3 or 4. **River red gum. Fig. 6J–N.**

S.A.: FR, EA, EP, NL. Endemic to S.A. and largely restricted to the Flinders Ranges from the Crystal Brook area northwards to the northern end of the ranges, and extending eastwards towards Lake Frome and in parts of the Olary Spur. Isolated occurrences of *E. camaldulensis* in Bascombe Well Conservation Park on Eyre Peninsula are consistent in morphology with subsp. *minima* from elsewhere. Flowers: Late spring to early summer.

Distinguished from other subspecies primarily by the relatively small buds with conical opercula and the small fruits. Intergrades with subsp. *arida* (in creeklines on the plains flowing to the west, north and east of the Northern Flinders Ranges) and subsp. *camaldulensis* (in the Clare to Crystal Brook area) are known where the distributions of these taxa adjoin (see McDonald *et al.* 2009).

#### 16. *Eucalyptus canescens* D.Nicolle, *Nuytsia* 11: 377 (1997).

Mallee, often of low and effuse habit, 2–6 m high, lignotuberous; bark rough on lower stems, thick, stringy-fibrous to flaky-fibrous, yellow-brown to grey; smooth above, decorticating in strips and ribbons; branchlets with pith glands present; cotyledons reniform; juvenile leaves opposite for 1–3 pairs then disjunct, petiolate, ovate; adult leaves disjunct, petiolate, elliptical to ovate to broad-lanceolate (to rarely lanceolate), 45–115 × 22–55 mm, concolorous. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 8–18 mm long, pedicels 2–8 mm long, buds 11–16 mm long, 8–12 mm diam.; hypanthia obconical to cupular, smooth to ribbed, opercula hemispherical, equal in width or wider than hypanthium at join, ribbed; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, broadly obconical to cupular to shortly cylindrical, smooth to strongly ribbed, 10–16 mm long, 9–14 mm diam.; disc descending to level; valves 4 or 5, at or just below rim level; seeds red-brown, compressed ovoid, finely reticulate.

Mostly restricted to the Ooldea Range, part of the Barton Dune System in the southern part of the Great Victoria Desert in S.A. and W.A., immediately north of the Nullarbor Plain, where it occurs on sand dunes or sand plains in deep red sand.

Distinguished within *E. ser. Rufispermae* by the combination of its effuse mallee habit; rough bark on the lower

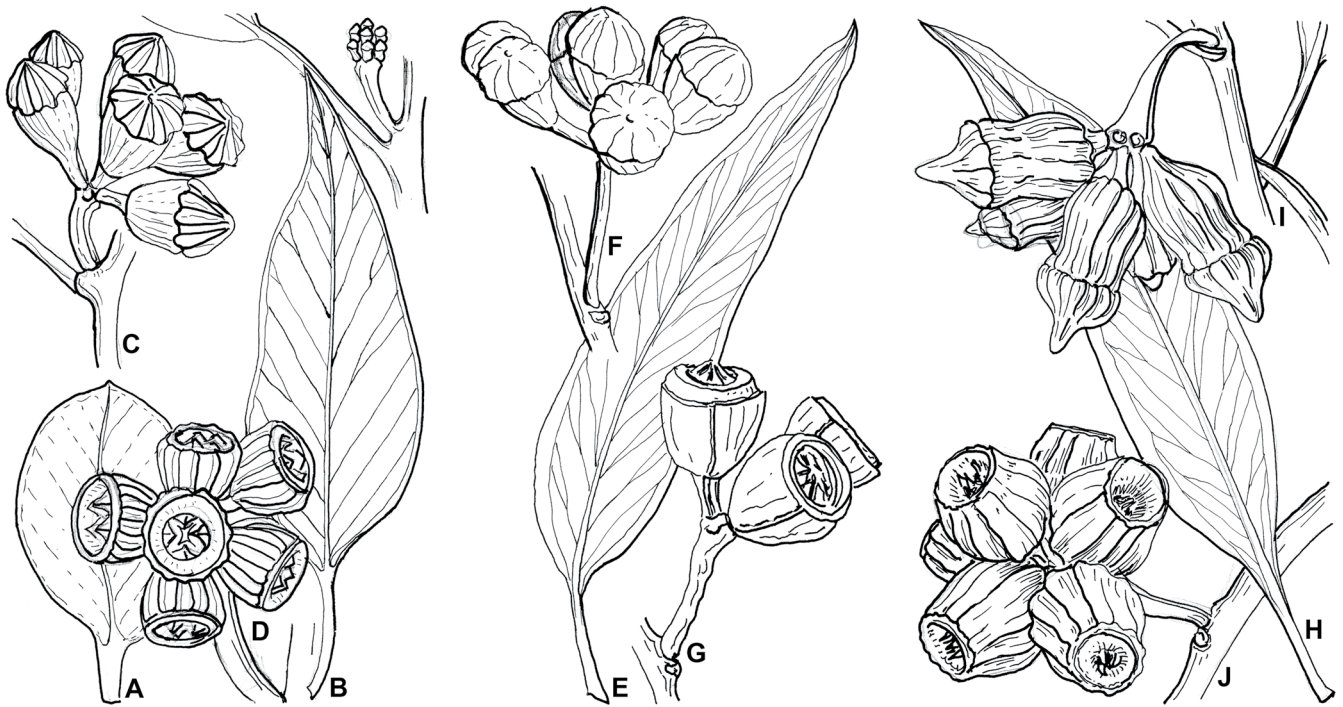


Fig. 7. A–D, *Eucalyptus canescens* subsp. *canescens*: A, juvenile leaf; B, adult leaf; C, buds; D, fruits. E–G, *E. canescens* subsp. *beadellii*: E, leaf; F, buds; G, fruits. H–J, *E. capitanea*: H, leaf; I, buds; J, fruits. Illustration by G.R.M. Dashorst.

stems; broad-lanceolate to ovate adult leaves; large, ribbed buds with hemispherical opercula; and the large fruits with 4 or 5 valves. To the north and east of its distribution, *E. canescens* is replaced by *E. gypsophila* and the two species intergrade in the area around Wyola Lake to Lake Maurice.

1. Branchlets, buds and fruits strongly pruinose; adult leaves greyish..... 16b. ***E. canescens* subsp. *canescens***  
 1: Branchlets, buds and fruits not pruinose; adult leaves green..... 16a. ***E. canescens* subsp. *beadellii***

16a. ***Eucalyptus canescens* subsp. *beadellii*** D.Nicolle, *Nuytsia* 11: 381 (1997). — *E. striatocalyx* auct. non W.Fitzg.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 921 (1986), partly; *E. concinna* auct. non Maiden & Blakely: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 922 (1986), partly; *E. pimpiniana* auct. non Maiden: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 923 (1986), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 111 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 146, 147 (2013).

Branchlets not pruinose; adult leaves not pruinose, dull to slightly glossy, green. **Buds** not pruinose. **Fruits** not pruinose, obconical to shortly cylindrical, smooth to weakly ribbed. **Beadell's mallee. Fig. 7E–G, Pl. 8A–D.**

S.A.: NW; W.A. Known only in the vicinity of the junction of the Cook to Voakes Hill Junction track and the Oak Valley to Tjuntunjara track, north of Cook in S.A., and north-west of Forrest Lakes in W.A. It occurs in open mallee vegetation in deep red sand on level topography.

No other taxa from *E. ser. Rufispermae* occur within the distribution of *E. canescens* subsp. *beadellii*, however, subsp. *canescens* occurs to the east and south and *E. gypsophila* mainly to the north. The distribution and habitat roughly parallels that of the rare *E. nyolensis*, with both species apparently restricted to a sand plain of the Ooldea Range.

(Rare status in S.A.)

16b. ***Eucalyptus canescens* D.Nicolle subsp. *canescens*** — *E. striatocalyx* auct. non W.Fitzg.: Jessop in Jessop & Toelken, *Fl. S. Austral.* ed. 4, 2: 921 (1986), partly; *E. concinna* auct. non Maiden & Blakely: Jessop in Jessop & Toelken, *Fl. S. Austral.* ed. 4, 2: 922 (1986), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 109 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 144, 145 (2013).

Branchlets strongly pruinose; adult leaves often pruinose, (at least when young) dull, blue-grey. **Buds** strongly pruinose. **Fruits** pruinose, at least when young, cupular to shortly cylindrical, smooth to strongly ribbed. **Ooldea Range mallee. Fig. 7A–D, 8E–H.**

S.A.: NW, NU; W.A. Mostly restricted to the Ooldea Range, extending to west of Forrest Lakes in W.A. It occurs on sand dunes or sand plains in deep red sand, sometimes with some limestone rubble present.

Distinguished from subsp. *beadellii* in its strongly pruinose branchlets, buds and fruits, the blue-grey, often pruinose adult leaves, and the more cupular, ribbed fruits. The type of *E. yumbarrana* subsp. *striata* represents the hybrid *E. canescens* subsp. *canescens* × *E. vokesensis*, based on seed morphology of the holotype.

17. **Eucalyptus capitanea** L.A.S.Johnson & K.D.Hill, *Telopea* 9: 270 (2001). — *E. ceratocorys* auct. non (Blakely) L.A.S.Johnson & K.D.Hill: D.Nicolle, *Eucalypts S. Austral.* 82 (1997); *E. incrassata* var. *angulosa* auct. non (Schauer) Benth.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 3: 923 (1986), partly; *E. angulosa* auct. non Schauer: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 628 (1952), partly. — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 108, 109 (2013).

Mallee, 3–7 m high, lignotuberous; bark often rough on the lower stems, loose, ribbon to flaky, pale yellow-brown to grey; smooth above or smooth throughout, decorticating in ribbons, reddish to grey to cream; branchlets not pruinose, pith glands absent or very scattered; cotyledons reniform; juvenile leaves opposite for a few pairs then becoming disjunct, petiolate, glabrous, ovate to lanceolate, not pruinose, dull and blue-green soon becoming glossy and green; adult leaves disjunct, petiolate, firm, lanceolate to broad lanceolate, 70–130 × 14–45 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters (3–) 7-flowered, usually somewhat pendulous; peduncles flattened, 18–27 mm long, pedicels 2–6 mm long, buds distinctly ribbed, not pruinose, 9–22 mm long, 6–9 mm diam.; hypanthia urceolate to campanulate, opercula conical to beaked, 0.5–1 times as long as hypanthium; flowers cream; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 to 8 vertical rows. **Fruits** pedicellate, urceolate, distinctly ribbed, not pruinose, 15–22 mm long, 12–15 mm diam.; disc descending; valves 3 or 4, deeply enclosed below rim; seeds grey-brown to black, compressed-pyramidal, narrowly winged. **Fig. 7H–J.**

S.A.: NU, EP. Endemic to S.A. and centred on Yumbarra Conservation Park, extending west to near Midgerie Rockhole and east to the western edge of the Gawler Ranges (but not in the ranges themselves). Occurs in open mallee to mallee vegetation in deep red sand on the crests and sides of sand dunes.

Distinguished from *E. incrassata* by its broader adult leaves, larger and more ribbed buds and fruits, and the consistently urceolate fruits. From *E. angulosa* it is distinguished by its generally smaller and less ribbed, urceolate fruits. The W.A. endemic *E. ceratocorys* differs in its generally less coarse adult leaves, longer pedicels, more strongly beaked opercula, and more cylindrical and less ribbed fruits.

Virtually unknown in cultivation.

18. **\*Eucalyptus cinerea** F.Muell. ex Benth., *Fl. Austral.* 3: 239 (1867). — *E. triplex* L.A.S.Johnson & K.D.Hill, *Telopea* 4: 61 (1990); *E. cinerea* subsp. *triplex* (L.A.S.Johnson & K.D.Hill) Brooker, Slee & J.D.Briggs, *Austral. Syst. Bot.* 8: 507 (1995). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 172 (2006); D.Nicolle, *Eucalypts Victoria & Tasman.* 114 (2006).

Tree, sometimes several-stemmed, 8–18 m tall, lignotuberous; bark rough throughout, fibrous (stringybark), moderately to deeply fissured, grey-brown to red-brown; branchlets usually pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite, sessile, glabrous, orbicular to cordate, strongly pruinose, dull, greyish, mature crown composed of fully juvenile leaves or mixed juvenile and adult leaves; adult leaves disjunct, petiolate, lanceolate to falcate, 90–140 × 15–50 mm, concolorous, usually pruinose, gull, grey-green. **Inflorescences** axillary; umbellasters 3-flowered, held erect; peduncles 2–9 mm long, pedicels absent or to 3 mm long, buds pruinose, 6–10 mm long, 3–5 mm diam.; hypanthia smooth, opercula conical, smooth, about equal in length or shorter than hypanthium; flowers white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile or shortly pedicellate, obconical to campanulate, smooth, pruinose when young, 4–8 mm long, 5–9 mm diam.; disc level to ascending; valves 3 or 4, at rim level or slightly exerted; seeds grey-brown to black, flattened ovoid, very shallowly reticulate. **Argyle apple, mealy stringybark.**

S.A.: \*SL, ?\*SE; N.S.W.; Vic. Naturally distributed in the Great Dividing Range of eastern Australia, from the Wattle Flat area in central N.S.W. south to the Beechworth area in northern Vic. Widely planted as an ornamental tree in higher-rainfall parts of S.A., but doubtfully naturalized in S.A. Flowers: Spring to summer.

A distinctive species due to its reddish-brown stringy bark, canopy of silvery, mainly juvenile leaves, and the three-flowered inflorescences. Closely related to other eastern Australian species including *E. alligatrix* L.A.S.Johnson & K.D.Hill, *E. conspicua* L.A.S.Johnson & K.D.Hill, *E. cephalocarpa* Blakely and *E. nova-anglica* H.Deane & Maiden;



however these species are rarely cultivated in S.A. The *Australian Plant Census* recognises two subspecies in *E. cinerea*: subsp. *triplex*, naturally distributed in the A.C.T., and subsp. *cinerea*, naturally distributed in N.S.W. and Vic. Other than their distribution, these two subspecies cannot be differentiated and it is not possible to ascertain which name applies with cultivated trees.

Occasionally cultivated for cut foliage in the floriculture industry.

19. **Eucalyptus cladocalyx** F.Muell., *Linnaea* 25: 388 (1853). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 281 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 109 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 69 (2006); D.Nicolle, *Eucalypts S. Austral.* 19 (1997).

Tree, 2–45 m high, lignotuber absent; bark smooth throughout, decorticating in plates and very short strips, orange-yellow to tan to grey to cream; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite for 2–3 pairs then disjunct, petiolate, glabrous, orbicular, discolorous, dull, green; adult leaves disjunct, petiolate, narrow-lanceolate to broad-lanceolate to almost ovate, often slightly falcate, 65–165 × 12–40 mm, strongly discolorous, not pruinose, glossy and dark green above, paler below. **Inflorescences** axillary, usually on leafless sections of branchlets; umbellasters 7–11-flowered, held erect; peduncles 8–22 mm long, pedicels 2–7 mm long, buds smooth, not pruinose, 8–13 mm long, 4–6 mm diam.; hypanthia cylindrical to urceolate, smooth; opercula hemispherical and usually umbonate, smooth, much shorter than hypanthium; flowers cream; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** pedicellate, barrel-shaped to urceolate, smooth or lightly ribbed, not pruinose, 6.5–15 mm long, 4–10 mm diam.; disc descending; valves 3 or 4, deeply enclosed; seeds pale grey to brown, compressed-ovoid, smooth. **Sugar gum.**

Endemic to S.A. and restricted to three disjunct regions; viz. the southern Flinders Ranges between Dutchmans Stern and the Wirrabara area (subsp. *petila*), the western and central parts of Kangaroo Island (subsp. *crassa*), and the hills of southern Eyre Peninsula, including the Cleve Hills (subsp. *cladocalyx*). In all three regions it occurs in hilly terrain, including on hillslopes and rocky ridges, in woodland or open forest. Also sparingly naturalized in parts of the Mount Lofty Ranges and south-east of the State. Flowers: Summer.

A distinctive species with no close relatives, and distinctive as the only S.A. species with strongly discolorous adult leaves. Three subspecies are recognised (Nicolle 2013), each of which is endemic to S.A. The three subspecies are naturally geographically isolated, but all three are commonly cultivated, where are likely to hybridise and produce intermediate (hybrid) individuals in cultivation.

Commonly grown for shelterbelts and for fuelwood in rural areas. Also commonly grown in built-up areas as an avenue or specimen tree. Extensively cultivated in southern Australia and in some overseas countries due to its rapid growth rate in areas of low to moderate rainfall. Considered to be a woody weed in some places including south-western Western Australia (e.g. Kings Park), south-eastern Australia and South Africa.

1. Fruits 6.5–10 × 4–7 mm; peduncles 8–14 mm long; FR, EP, NL ..... 19c. **E. cladocalyx** subsp. **petila**  
 1: Fruits 8–16 × 6–11 mm; peduncles 11–22 mm long  
 2. Small, irregularly-formed tree, 2–18 m tall; EP only ..... 19a. **E. cladocalyx** subsp. **cladocalyx**  
 2: Large, widely-branching tree, 10–45 m tall; KI only ..... 19b. **E. cladocalyx** subsp. **crassa**

- 19a. **Eucalyptus cladocalyx** subsp. **cladocalyx** — *E. corynocalyx* F.Muell., *Fragm.* 2: 43 (1861), *nom. illeg.* — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 30, 31 (2013).

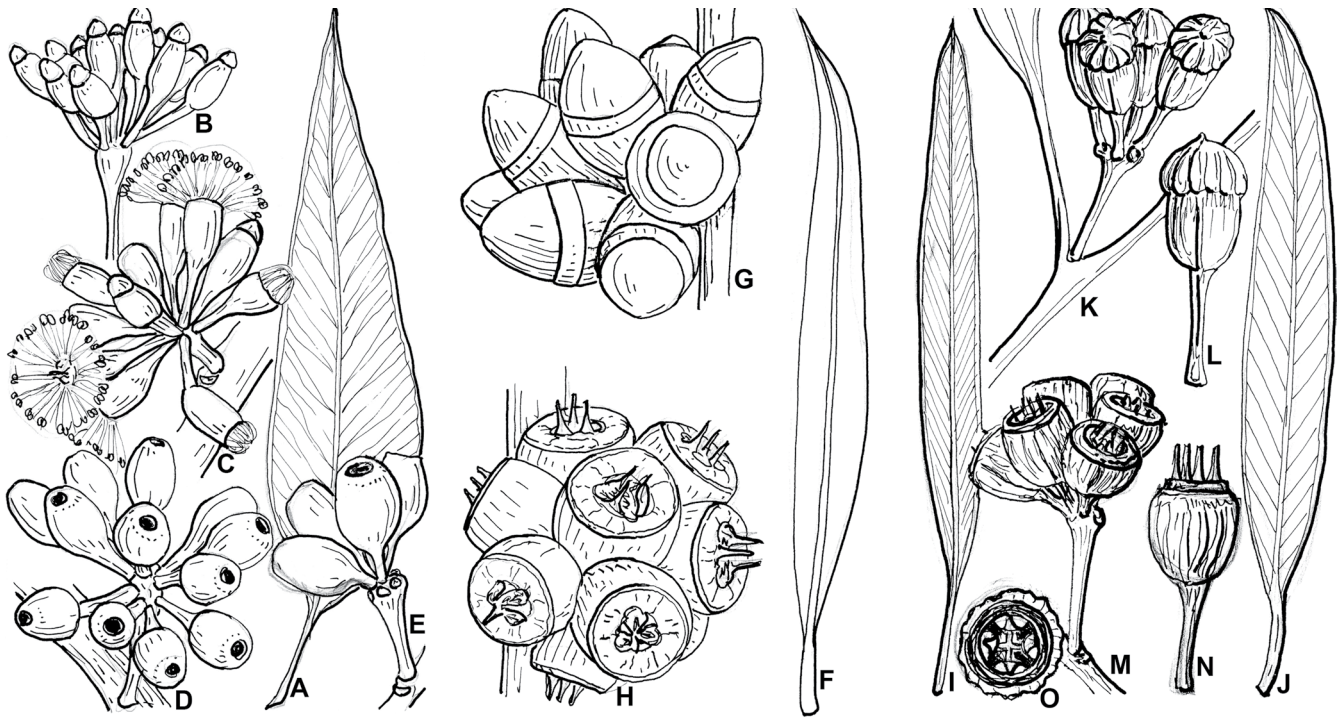
Tree, 2–18 m high, wide-spreading crown; adult leaves lanceolate to broad-lanceolate to almost ovate, 65–140 × 16–40 mm. **Peduncles** 11–22 mm long, pedicels 2–6 mm long, buds 9–10 mm long, 4–6 mm diam. **Fruits** 8–15 mm long, 6–10 mm diam. **Bushy sugar gum.**

S.A.: EP, \*SL. Endemic to S.A. and restricted to southern and eastern Eyre Peninsula, where it occurs in hilly terrain, usually on lateritic soils. Also sparingly naturalized in parts of the Mount Lofty Ranges and possibly in the south-east of the State. Flowers: Summer.

Distinguished from subsp. *crassa* and subsp. *petila* by its combination of lower-growing, spreading and wide-branching habit, relatively short and often broad adult leaves, usually long peduncles, and the relatively large fruits.

Widely cultivated in southern Australia.





**Fig. 8. A–E, *Eucalyptus cladocalyx* subsp. *petila***: A, leaf; B, buds; C, flowers in umbellasters; D & E, fruits. **F–H, *E. cneorifolia***: F, leaf; G, buds; H, fruits. **I–N, *E. concinna***: I & J, leaves; K & L, buds; M & N, fruits; O, bud from top. Illustration by G.R.M. Dashorst.

- 19b. ***Eucalyptus cladocalyx* subsp. *crassa*** D.Nicolle, *Native Eucalypts S. Austral.* 32 (2013). — *E. caldocalyx* auct. non F.Muell.: D.Nicolle, *Eucalypts S. Austral.* 18 (1997). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 32, 33 (2013).

Tree, 10–45 m high, widely-branching; adult leaves lanceolate to broad-lanceolate, 75–100 × 16–35 mm. **Peduncles** 14–20 mm long, pedicels 4–7 mm long, buds 8.5–13 mm long, 4–6 mm diam. **Fruits** 7–15 mm long, 5–10 mm diam. **Sugar gum.**

S.A.: KI, \*SL. Endemic to S.A. and restricted to the western and central parts of Kangaroo Island. It occurs on lateritic soils in undulating to hilly terrain, especially in gullies and on slopes. Also sparingly naturalized in parts of the Mount Lofty Ranges and possibly in the south-east of the State. Flowers: Summer.

Distinguished from subsp. *cladocalyx* and subsp. *petila* by its combination of usually tall, wide-branching habit, usually long and broad adult leaves, relatively long peduncles, and the relatively large fruits.

Widely cultivated in southern Australia.

- 19c. ***Eucalyptus cladocalyx* subsp. *petila*** D.Nicolle, *Native Eucalypts S. Austral.* 34 (2013). — *E. langii* Maiden & Blakely in Maiden, *Crit. Rev. Eucalyptus* 8: 72 (1929). *E. caldocalyx* auct. non F.Muell.: D.Nicolle, *Eucalypts S. Austral.* 18 (1997). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 34, 35 (2013).

Tree, 10–40 m high, erect-branching habit; adult leaves lanceolate to narrow-lanceolate, 80–165 × 12–30 mm. **Peduncles** 8–14 mm long, pedicels 2–6 mm long, buds 8–10 mm long, 4–5 mm diam. **Fruits** 6.5–10 mm long, 4–7 mm diam. **Sugar gum. Fig. 8A–E.**

S.A.: FR, EP (Dutchmans Stern, Devils Peak), NL (Wirrabara area), \*SL, \*SE. Endemic to S.A. and restricted to the southern Flinders Ranges, from the Dutchmans Stern to the Wirrabara area, where it is restricted to stony soils of the ranges, especially on hillslopes and ridges. Also possibly sparingly naturalized in parts of the Mount Lofty Ranges and in the south-east of the State. Flowers: Summer.

Distinguished from subsp. *cladocalyx* and subsp. *crassa* by its combination of usually tall, erect-branching habit, relatively narrow adult leaves, usually short peduncles, and the relatively small fruits.

Widely cultivated in southern Australia, especially for woodlots.

20. ***Eucalyptus cneorifolia*** DC., *Prodr.* 3: 220 (1828). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 228 (2001); D.Nicolle, *Eucalypts S. Austral.* 29 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 54, 55 (2013).

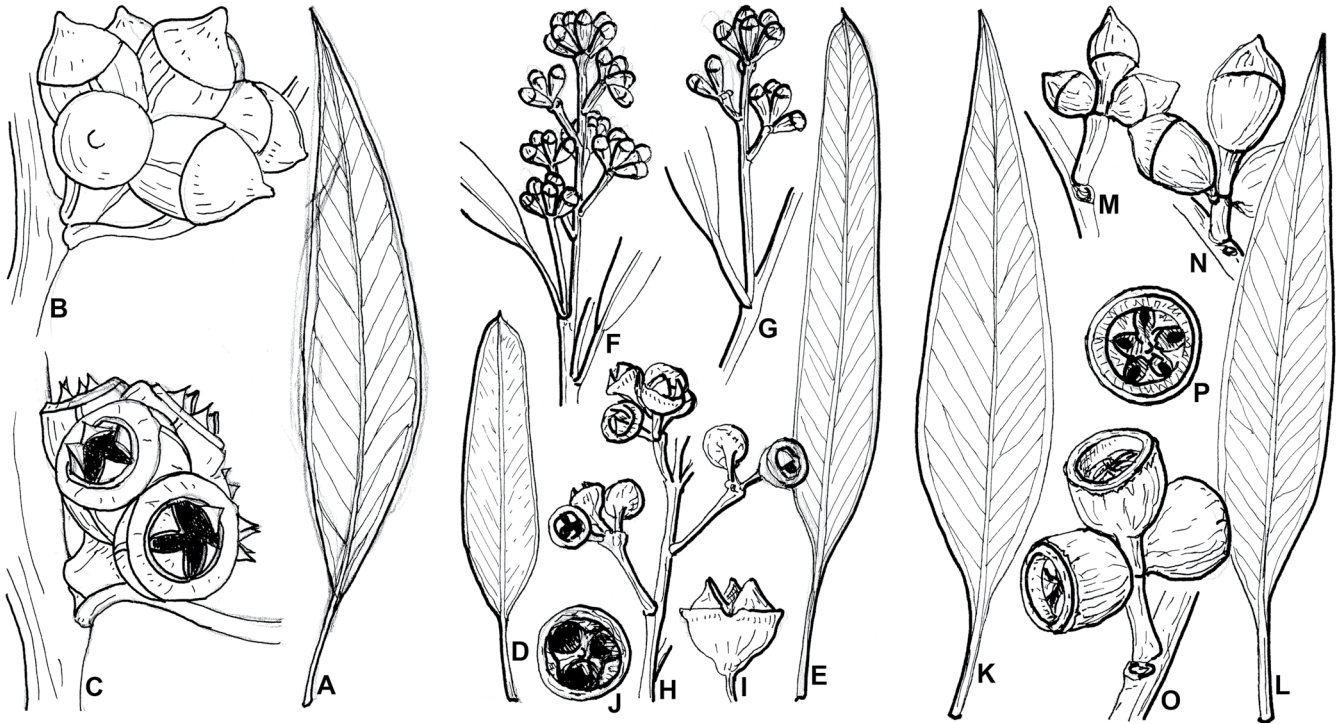


Fig. 9. A–C, *Eucalyptus conglobata* subsp. *conglobata*: A, leaf; B, buds; C, fruits. D–J, *E. coolabah*: D & E, leaves; F & G, panicle of buds; H, fruits; I–J, fruit from side and above. K–P, *E. cosmophylla*: K & L, leaves; M & N, buds; O, fruits; P, fruit from top. Illustration by G.R.M. Dashorst.

Mallee, 4–10 m high, lignotuberous; bark rough on the lower stems, tightly-held, hard-fibrous, moderately fissured, grey-brown; smooth above, decorticating in strips and ribbons, grey to tan to cream; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 3–5 pairs then disjunct, shortly petiolate, glabrous, elliptical, dull, green to green; adult leaves disjunct, petiolate, held somewhat erect, linear to narrow-lanceolate, 50–110 × 5–10 mm, concolorous, not pruinose, glossy, dark green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 3–8 mm long, pedicels absent or to 1 mm long, buds fusiform, smooth, not pruinose, 6–11 mm long, 3–6 mm diam.; hypanthia obconical to cupular; opercula conical, about equal in length to hypanthium; flowers white; stamens variously flexed, all fertile; anthers versatile, reniform; ovules in 4 vertical rows. **Fruits** sessile or nearly so, hemispherical, smooth, not pruinose, 4–7 mm long, 5–8 mm diam.; disc slightly descending to slightly ascending; valves 3 or 4, at rim level to slightly exserted; seeds grey-brown, compressed-ovoid, smooth to shallowly reticulate. **Kangaroo Island narrow-leaved mallee. Fig. 8F–H, Pl. 8I–K.**

S.A.: SL (near Waitpinga), KI (eastern half of island). Endemic to S.A. and restricted to the eastern half of Kangaroo Island and with a few scattered populations on the adjacent mainland on lower Fleurieu Peninsula between Deep Creek and Waitpinga. Occurs on well-drained soils overlying laterite or limestone in dense mallee shrubland. Flowers: Summer to autumn.

A hybrid between *E. oleosa* subsp. *ampliata* and *E. cneorifolia* has been recorded from near American River on Kangaroo Island (Nicolle *et al.* 2006).

Natural stands are harvested for eucalyptus oil (cineole) on Kangaroo Island.

21. ***Eucalyptus concinna*** Maiden & Blakely, *Crit. Rev. Eucalyptus* 8(1): 49 (1929). — *E. ochrophylla* Maiden & Blakely in Maiden, *Crit. Rev. Eucalyptus* 8(1): 50 (1929). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 347 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 227 (2004); D.Nicolle, *Eucalypts S. Austral.* 89 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 114, 115 (2013).

Mallee, 3–8 m high, lignotuberous; bark rough on the lower stems, hard, fibrous-flaky, moderately fissured, grey-brown; smooth above, decorticating in ribbons and strips, orange-tan to pale grey to creamy-white; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, lanceolate to broad-lanceolate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate, 60–130 × 8–20 mm, concolorous, not pruinose, highly glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, generally held erect; peduncles 7–15 mm long, pedicels 2–5 mm long, buds not pruinose, 6–12 mm long, 4–9 mm diam.; hypanthia cupular to cylindrical, smooth or slightly angled; opercula flattened to hemispherical, smooth or ribbed, shorter than hypanthium, wider than hypanthium at join; flowers

creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** pedicellate, hemispherical to cupular to obconical, rarely slightly ribbed, not pruinose, 6–11 mm long, 6–10 mm diam.; disc level to descending; valves 3 or 4 (5), around rim level; seeds grey to dark brown, compressed ovoid, deeply pitted. **Great Victoria Desert mallee. Fig. 8I–N, Pl. 9A–C.**

S.A.: NW, NU, GT, EP; W.A. Widespread through the western parts of S.A. and southern half of W.A., and centred on the Great Victoria Desert, extending from the northern goldfields and edge of the Little Sandy Desert in W.A. eastwards throughout the Great Victoria Desert to the Gawler Ranges (though not on the ranges themselves) in S.A. Restricted to red or rarely white sand on plains and in sand dunes, in open mallee shrubland. Flowers: Sporadic, probably relating to rainfall events.

Closely related to the more southerly *E. brachycalyx*, which differs primarily in its narrower adult leaves, opercula which are usually narrower than the hypanthia at the join, and the generally smaller buds and fruits. The two species intergrade where their distributions adjoin in the south-eastern fringes of the Great Victoria Desert.

22. \***Eucalyptus conferruminata** D.J.Carr & S.G.M.Carr, *Austral. J. Bot.* 28: 535 (1980), subsp. **recherche** D.Nicolle & M.E.French, *Nuytsia* 18: 202 (2008). — *Eucalyptus conferruminata* subsp. *conferruminata* auct. non D.J.Carr & S.G.M.Carr: *eFloraSA Census* (2009). *Eucalyptus lebmanni* auct. non (Schauer) Benth.: J.M.Black, *Fl. S. Austral* 3: 412 (1926). — **Illustr.:** D.Nicolle *et al.*, *Nuytsia* 18: 203, 205 (2008).

Tree or shrub, sometimes multi-stemmed, 2–9 m tall, non-lignotuberous (obligate seeder); bark smooth throughout, decorticating in strips and short ribbons, tan or pale grey to yellowish-cream; branchlets not pruinose, pith glands usually absent; cotyledons bisected to bilobed; juvenile leaves opposite for 1–5 pairs then disjunct, petiolate, scabrous, orbicular to ovate, not pruinose, dull, light green; adult leaves disjunct, petiolate, held somewhat erect, elongate-elliptical, 50–90 × 13–30 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 11–19-flowered; peduncles broadly flattened, 18–40 mm long, pedicels absent, buds not pruinose, 34–50 mm long, 8–20 mm diam.; hypanthia fused together, opercula finger-shaped, smooth, much longer than hypanthium; flowers yellow-green; stamens erect, all fertile; anthers versatile, narrowly oblong; ovules in 6 (8) vertical rows. **Fruits** sessile and fused together, not pruinose, infructescences up to 60 mm in diam., individual fruits 12–25 mm diam.; disc broad, ascending; valves 3, strongly exerted above rim level; seeds brown-black, ovoid to cuboid, shallowly reticulate. **Bushy yate.**

S.A.: \*SL; W.A.; \*Vic. Naturally restricted to the islands of the Archipelago of the Recherche, off the south coast of W.A. Widely planted for shelter and as an ornamental tree in coastal areas in southern Australia, and sparingly naturalised in some areas following fire. Flowers: Winter to spring.

Two subspecies are recognised in *E. conferruminata* (Nicolle, French & McQuoid 2008). Both are cultivated, although most cultivated plants of the species in S.A. and elsewhere are subsp. *recherche*. *Eucalyptus conferruminata* subsp. *conferruminata* (naturally distributed from south of Albany to Fitzgerald River National Park in W.A.) differs from subsp. *recherche* in its less coarse adult leaves, buds and fruits. The opercula at flowering in subsp. *conferruminata* are (10–) 12–21 mm wide at the base, while those of subsp. *recherche* are 8–11 mm wide at the base. This species is killed by fire and other crown-destructive events, but regenerates prolifically from seed following fire, i.e. it is an obligate seeder.

Cultivated as a rapid-growing small tree for shelter and shade in difficult coastal situations.

23. **Eucalyptus conglobata** (R.Br. ex Benth.) Maiden subsp. **conglobata**, *Crit. Rev. Eucalyptus* 6(6): 273 (1922). — *E. dumosa* var. *conglobata* R.Br. ex Benth., *Fl. Austral.* 3: 230 (1867); *E. incrassata* var. *conglobata* (R.Br. ex Benth.) Maiden, *Crit. Rev. Eucalyptus* 1: 96, 100 (1904). *E. anceps* auct. non (Maiden) Blakely: Boomsma, *Native Trees S. Austral.* ed. 2, 112 (1981), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 326 (2001); D.Nicolle, *Eucalypts S. Austral.* 95 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 128, 129 (2013).

Mallee, rarely single-stemmed (e.g. Boston Is.), 3–14 m tall, lignotuberous; bark smooth throughout, decorticating in ribbons, coppery to grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct after a few pairs, petiolate, glabrous, ovate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 70–130 × 15–40 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles absent or to 6 mm long, pedicels absent or to 1 mm long, buds not pruinose, 7–15 mm long, 5–8 mm diam.; hypanthia somewhat angled, cupular to ovoid; opercula conical to slightly beaked, weakly ribbed, equal in width to hypanthium at join, about as long as



hypanthium; flowers creamy-white; stamens inflexed, all fertile; anthers versatile, cuneate; ovules in 4 vertical rows. **Fruits** sessile, tightly clustered, hemispherical, smooth or flattened on sides due to tight clustering, not pruinose, 5–10 mm long, 7–12 mm diam.; disc descending; valves 3–5, around rim level; seeds glossy, red-brown, reticulum fine. **Cong mallee, Port Lincoln mallee. Fig. 9A–C, Pl. 9D–F.**

S.A.: EP, ?SL; W.A. The south coast of W.A. between Bremer Bay and Toolinna Cove and the southern tip of Eyre Peninsula, including Boston and Tumby Islands. A few specimens collected from Rosetta Head and Willow Creek (west of Victor Harbor on Fleurieu Peninsula) match *E. conglobata*, but I have been unable to find the species in the field at these locations, despite recent searches. Occurs in loam over limestone in mallee shrubland. Flowers: Mainly summer.

The W.A. endemic subsp. *perata* Brooker & Slee differs primarily in the narrower and generally less coarse adult leaves and the smaller buds and fruits.

(Rare status in S.A.)

24. **Eucalyptus coolabah** Blakely & Jacobs in Blakely, *Key Eucalypts* 245 (1934). — *E. coolabah* Blakely & Jacobs var. *arida* Blakely, *Key Eucalypts* 246 (1934); *E. coolabah* Blakely & Jacobs subsp. *arida* (Blakely) L.A.S.Johnson & K.D.Hill, *Telopea* 4: 66 (1990); *E. coolabah* Blakely & Jacobs subsp. *excerata* L.A.S.Johnson & K.D.Hill, *Telopea* 4: 66 (1990). *E. brachypoda* auct. non Turcz.: Benth., *Fl. Austral.* 3: 223 (1867), partly; *E. microtheca* auct. non F.Muell.: Jessop in Jessop & Toelken, *Fl. S. Austral.*, 2: 926 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 209 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 394 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 303 (2004); D.Nicolle, *Eucalypts S. Austral.* 141 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 166, 167 (2013).

Tree, often several-stemmed, 4–12 m high, lignotuberous; bark rough on trunk and larger branches, hard, finely to moderately fissured, grey-brown; smooth above, decorticating in short strips, pale grey to white; branchlets sometimes pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, narrow-lanceolate, sometimes pruinose, dull, blue-green; adult leaves disjunct, petiolate, lanceolate to falcate, 80–170 × 10–25 mm, concolorous, rarely pruinose, dull, green to bluish. **Inflorescences** mostly terminal panicles; umbellasters 7-flowered, held erect; peduncles 3–10 mm long, pedicels 1–4 mm long, buds smooth, sometimes pruinose, 3–5 mm long, 2–4 mm diam.; hypanthia cupular to obconical; opercula conical to hemispherical, about equal in length to hypanthium; flowers white; stamens variously flexed, all fertile; anthers adnate, oblong; ovules in 4 vertical rows. **Fruits** shortly pedicellate, broadly obconical to hemispherical, smooth, sometimes pruinose, 2–5 mm long, 3–5 mm diam.; disc ascending; valves 3 or 4, strongly exerted; seeds red-brown to yellow-brown, compressed ovoid, finely reticulate. **Coolabah, coolibah. Fig. 9D–J, Pl. 9G–J.**

S.A.: NW, LE, GT, EA; W.A.; N.T.; Qld; N.S.W. Widespread throughout much of inland drainage systems of Australia, extending to the Fitzroy River floodplains on the north-west coast of W.A. and the Fitzroy River system on the east coast of central Qld, and including the southern N.T. and north-western N.S.W. Restricted to the Lake Eyre and Lake Frome basins in S.A., from about Mabel Creek eastwards. Occurs on poorly drained soils or sands over clays on floodplains and watercourses subject to periodic inundation. Flowers: Mainly spring to autumn.

The tropical Australian *E. microtheca* F.Muell. differs primarily in the more extensive rough bark and the less exerted fruit valves.

Occasionally cultivated in more arid regions of Australia.

25. **\*Eucalyptus cornuta** Labill., *Voy. Rech. Pérouse* 1: 402, t. 17 (1800). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 113 (2001).

Tree, sometimes multi-stemmed, 6–25 m tall, lignotuberous; bark rough on trunk and larger branches, hard, moderately-fissured; dark grey; smooth on small to medium-sized branches, decorticating in strips and ribbons, grey-brown to cream; branchlets not pruinose, pith glands present; cotyledons bilobed; juvenile leaves opposite for 3–5 pairs then disjunct, petiolate, glabrous, orbicular to shortly ovate, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate to oblong-elliptical, 60–145 × 10–35 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 11–21+-flowered, held loosely erect; peduncles 12–30 mm long, pedicels absent or to 3 mm long, buds not pruinose, 23–42 mm long, 5–8 mm diam.; hypanthia smooth, opercula horn-shaped, smooth, much longer than hypanthium; flowers yellow; stamens erect, all fertile; anthers versatile,



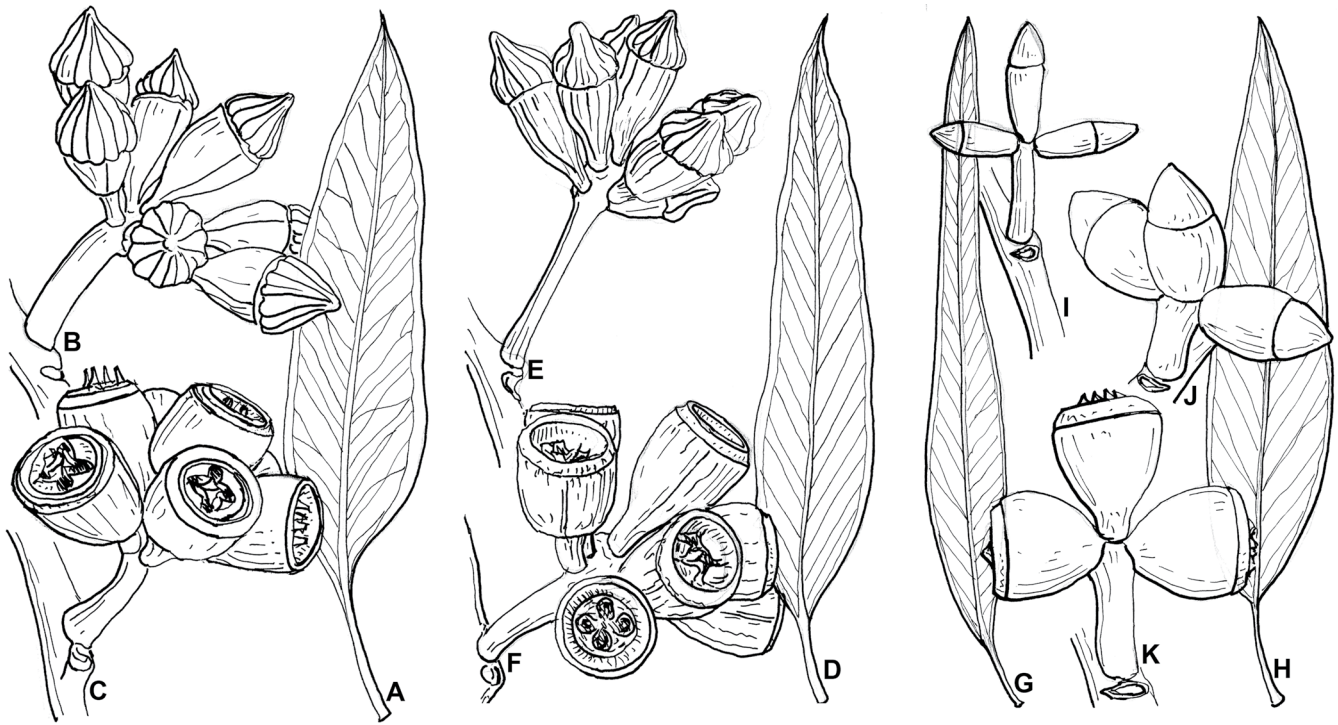


Fig. 10. A–C. *Eucalyptus cretata*: A, leaf; B, buds; C, fruits. D–F. *E. cyanophylla*: D, leaf; E, buds; F, fruits. G–K. *E. dalrympleana* subsp. *dalrympleana*: G & H, leaves; I & J, buds; K, fruits. Illustration by G.R.M. Dashorst.

narrowly oblong; ovules in 4 (6) vertical rows. **Fruits** sessile or very shortly pedicellate, obconical to cupular, smooth, not pruinose, 5–13 mm long, 6–13 mm diam.; disc broad, ascending; valves 3 or 4, strongly exerted above rim level, remaining jointed at their tips; seeds black, flattened ovoid to ovoid, very shallowly reticulate. **Yate.**

S.A.: \*NL; WA. Naturally distributed on the south coast of Western Australia from near Albany eastwards to the Recherché Archipelago. Widely planted as for shade and shelter, mainly in coastal localities in southern Australia, and recorded as sparingly regenerating around planted trees. Flowers: Winter to spring.

Most closely related to *E. macrandra* F.Muell. ex Benth., which differs from *E. cornuta* primarily in its thicker, more ovate juvenile leaves, more extensive smooth bark, and the fruits with a level disc and less prominent, free valves.

Widely cultivated in southern Australia and in Mediterranean regions worldwide for shade and shelter.

26. ***Eucalyptus cosmophylla*** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 32 (1855). — *Eucalyptus cosmophylla* f. *leprosula* Miq., *Ned. Kruidk. Arch.* 4: 135 (1856); *E. cosmophylla* var. *leprosula* (Miq.) F.Muell. ex Maiden, *Crit. Rev. Eucalyptus* 3: 17 (1914); *E. cosmophylla* var. *rostrigera* F.Muell. ex Maiden, *Crit. Rev. Eucalyptus* 3: 17 (1914). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 85 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 108 (2001); D.Nicolle, *Eucalypts S. Austral.* 23 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 38, 39 (2013).

Tree of poor form or shrub-like mallee, 2–10 m tall, lignotuberous; bark smooth throughout or sometimes becoming fibrous-platy on larger stems, decorticating in plates and short strips, yellowish to grey to cream; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite for 3–5 pairs then disjunct, petiolate, glabrous, ovate to orbicular, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, thick, 80–180 × 13–45 mm, concolorous, not pruinose, dull, green to blue-green. **Inflorescences** axillary; umbellasters 3-flowered, held erect; peduncles 1–13 mm long, pedicels absent or to 6 mm long, buds smooth, not pruinose, 11–22 mm long, 7–15 mm diam.; hypanthia obconical to copular; opercula hemispherical to conical to shortly beaked, about equal in length or shorter than hypanthium; flowers cream, rarely aging to pink; stamens inflexed, all fertile; anthers versatile, cuboid to oblong; ovules in 8–10 vertical rows. **Fruits** usually sessile, cupular to shortly cylindrical, often weakly bi-ribbed, not pruinose, 9–18 mm long, 10–22 mm diam.; disc descending; valves 4 or 5, around rim level; seeds black, pyramidal, with ragged edges. **Cup gum, bog gum. Fig. 9K–P, Pl. 10A–D.**

S.A.: SL, KI. Endemic to S.A. and restricted to Kangaroo Island and the southern Mount Lofty Ranges from Horsnell Gully southwards. Occurs in a variety of soils, usually of low fertility, including sands and poorly-drained gravely clays, in mallee shrubland, woodland or forest vegetation. Flowers: Autumn to spring.

Related to *E. paludicola*, which differs most conspicuously in the taller and more erect habit, thinner adult leaves, mostly seven-flowered inflorescences, longer peduncles and pedicels, and smaller and more cylindrical to obconical fruits.

Sometimes used as a street tree in the Adelaide area.

27. **Eucalyptus cretata** P.J.Lang & Brooker, *J. Adelaide Bot. Gard.* 13: 71 (1990). — *Eucalyptus* sp. V Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 336 (2001). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 336 (2001); D.Nicolle, *Eucalypts S. Austral.* 107 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 138, 139 (2013).

Mallee, 1.5–9 m high, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, grey to coppery to cream; branchlets strongly pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, orbicular to ovate, strongly pruinose, dull, grey-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 80–140 × 18–33 mm, concolorous, dull, blue-green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 7–16 mm long, pedicels 1–4 mm long, buds strongly pruinose, 8–14 mm long, 4–8 mm diam.; hypanthia obconical to cupular; opercula hemispherical to conical, wider than hypanthium at join, ribbed; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong-cuboid; ovules in 4 vertical rows. **Fruits** usually pedicellate, obconical to cupular to shortly cylindrical, smooth or ribbed, usually pruinose when young, 6–11 mm long, 7–11 mm diam.; disc descending; valves 4 or 5, at or just below rim level; seeds red-brown, compressed ovoid, finely reticulate. **Darke Peak mallee. Fig. 10A–C, Pl. 10E–I.**

S.A.: EP. Scattered on central Eyre Peninsula between Caralue Bluff, Lock and Cowell, and particularly common in the Darke Peak and Caraptee Hill areas. It grows in mallee communities on plains and low hills in loam to clayey soils. Flowers: Apparently sporadic.

A distinctive species on central Eyre Peninsula due to its strongly pruinose branchlets, buds and fruits. Populations with weakly pruinose branchlets, buds and fruits may represent intergrades with *E. calcareana* or *E. phenax*.

Has potential as an ornamental mallee because of its seasonally colourful smooth ribbony bark and waxy-white branchlets, buds and fruits. (Rare status in S.A.)

28. **Eucalyptus cyanophylla** Brooker, *Trans. Roy. Soc. S. Australia* 101: 15 (1977). — *E. pileata* auct. non Blakely: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 629 (1952), partly; *E. dumosa* auct. non A.Cunn. ex Oxley: Boomsma, *Native Trees S. Austral.* 104 (1972), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 121 (2006); D.Nicolle, *Eucalypts S. Austral.* 105 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 41 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 136, 137 (2013).

Mallee, 2–7 m tall, lignotuberous; bark often rough and fibrous or ribbony on lower stems, otherwise smooth, decorticating in strips and ribbons, orange-tan to pale grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, glabrous, ovate, not pruinose, green to blue-green; adult leaves disjunct, petiolate, broad-lanceolate, 100–160 × 22–40 mm, concolorous, not pruinose, dull, greyish. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 5–12 mm long, pedicels 5–13 mm long, buds not pruinose, 8–13 mm long, 5–8 mm diam.; hypanthia cylindrical to obconical; opercula hemispherical to bluntly conical, ribbed, equal in width or wider than hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, shortly cylindrical to cupular to obconical, smooth, not pruinose, 7–10 mm long, 7–9 mm diam.; disc slightly descending; valves 4 or 5, around rim level; seeds glossy, red-brown, reticulum fine. **Blue-leaved mallee, Murraylands mallee. Fig. 10D–F.**

S.A.: MU; Vic. Restricted to the Murray Mallee of S.A., extending into adjacent areas of north-western Vic. It grows in sandy soils in mallee shrubland. Flowers: Mainly winter to spring.

Closely related to both *E. dumosa* and *E. percostata*, both of which differ from this species in their thinner, narrower and less blue-grey adult leaves and generally smaller buds and fruits.

Useful for broadscale planting for shelter and screening.

29. **Eucalyptus dalrympleana** Maiden subsp. **dalrympleana**, *Forest Fl. N.S.W.* 7: 137 (1920). — *E. viminalis* auct. non Labill.: Benth., *Fl. Austral.* 3: 239 (1867), partly; *E. stuartiana* auct. non F.Muell. ex Miq.: Tate, *Fl. Extratrop.*

*S. Austral.* 95 (1890), partly; *E. viminalis* var. *microcarpa* auct. non Miq.: J.M.Black, *Fl. S. Austral.* 3: 420 (1926); *E. gunnii* var. *rubida* auct. non (H.Deane & Maiden) Maiden: J.M.Black, *Fl. S. Austral.* 3: 420 (1926); *E. rubida* auct. non H.Deane & Maiden: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 925 (1986). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 431 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 201 (2006); D.Nicolle, *Eucalypts S. Austral.* 137 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 126 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 154, 155 (2013).

Tree, 12–40 m tall, lignotuberous; bark smooth throughout or rough on the lower trunk up to a few metres then smooth above, decorticating in strips and ribbons, pinkish-tan to pale grey to white; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite, sessile, glabrous, orbicular, sometimes pruinose, dull, bluish; adult leaves disjunct, petiolate, lanceolate, often undulate, 80–220 × 10–35 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 3-flowered, held erect; peduncles 3–12 mm long, pedicels 0–3 mm long, buds smooth, not pruinose, 6–9 mm long, 3–6 mm diam.; hypanthia obconical to cupular, opercula conical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, cuboid to oblong; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, globose to hemispherical, smooth, not pruinose, 3–8 mm long, 5–9 mm diam.; disc ascending; valves 3 or 4, exerted above rim level; seeds brown to black, compressed-ovoid, lacunose. **Mountain white gum, candlebark. Fig. 10G–K, Pl. 10J–M.**

S.A.: SL; Vic.; N.S.W.; Tas. Common in the cooler areas of the Great Dividing Range from near Kandos in N.S.W. to the Daylesford area of Vic, as well as in Tas., with disjunct populations in the wettest parts of the Mount Lofty Ranges of S.A. In S.A., it is mainly restricted to the Onkaparinga River catchment, from near Gumeracha south to near Parawa, but most commonly in the Lobethal to Mylor area, where it is restricted to well-watered but well-drained soils in forest vegetation. Flowers: Mainly autumn.

Subsp. *heptantha* from the New England Tableland of N.S.W. and Qld. differs predominantly in its 7-flowered inflorescences. S.A. populations have been erroneously included in *E. rubida* (an eastern States species) in the past, which differs from *E. dalrympleana* most conspicuously in its more strongly pruinose juvenile leaves, adult branchlets, new growth, buds and fruits.

A fast-growing species requiring reliable rainfall. Prefers fertile loams to clay soil. (Rare status in S.A.)

30. **Eucalyptus diversifolia** Bonpl., *Descr. Pl. Malmaison* 3: 35 (1814).

Mallee, 0.5–10 m tall, lignotuberous; bark usually smooth throughout (sometimes with some rough, fibrous or ribbony bark on the lower stems), decorticating in strips and ribbons, grey to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite, sessile, glabrous, ovate to lanceolate, not pruinose, dull to glossy, green to blue-green; adult leaves disjunct, petiolate, lanceolate to falcate, 55–115 × 9–25 mm, concolorous, not pruinose, dull to glossy, dark green to blue-green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 5–15 mm long, pedicels 1–7 mm long, buds smooth, not pruinose, 5–12 mm long, 4–7 mm diam.; hypanthia obconical; opercula hemispherical to conical to beaked, about as long or slightly longer than hypanthium; flowers creamy-white; stamens irregularly flexed, all fertile; anthers versatile, oblong; ovules in 2 vertical rows. **Fruits** sessile or pedicellate, cupular to hemispherical to obconical, smooth, not pruinose, 5–12 mm long, 6–16 mm diam.; disc broad, level to slightly ascending; valves 3 or 4 (rarely 5), around rim level; seeds brown to reddish brown, pyramidal, smooth.

Of mainly coastal distribution in southern Australia, from near Point Culver in W.A. eastwards to Cape Nelson, near Portland in Vic. It occurs in well-drained sandy soils or on limestone. Flowers: Winter to spring.

Two subspecies are recognized, both of which occur in S.A.

Planted for coastal shelter and screening. Widely cultivated in coastal regions of southern Australia. Not tolerant of waterlogged or saline soils, despite its resistance to airborne coastal salt.

- 1. Juvenile leaves 25–55 mm wide; fruits 8–16 mm wide, disc level to ascending ..... 30a. **E. diversifolia** subsp. **diversifolia**
- 1: Juvenile leaves 20–30 mm wide; fruits 6–11 mm wide, disc level ..... 30b. **E. diversifolia** subsp. **hesperia**

30a. **Eucalyptus diversifolia** Bonpl. subsp. **diversifolia** — *E. santalifolia* F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 35 (1855); *E. diversifolia* subsp. *megacarpa* I.J.Wright & Ladiges, *Austral. Syst. Bot.* 10: 678 (1997).

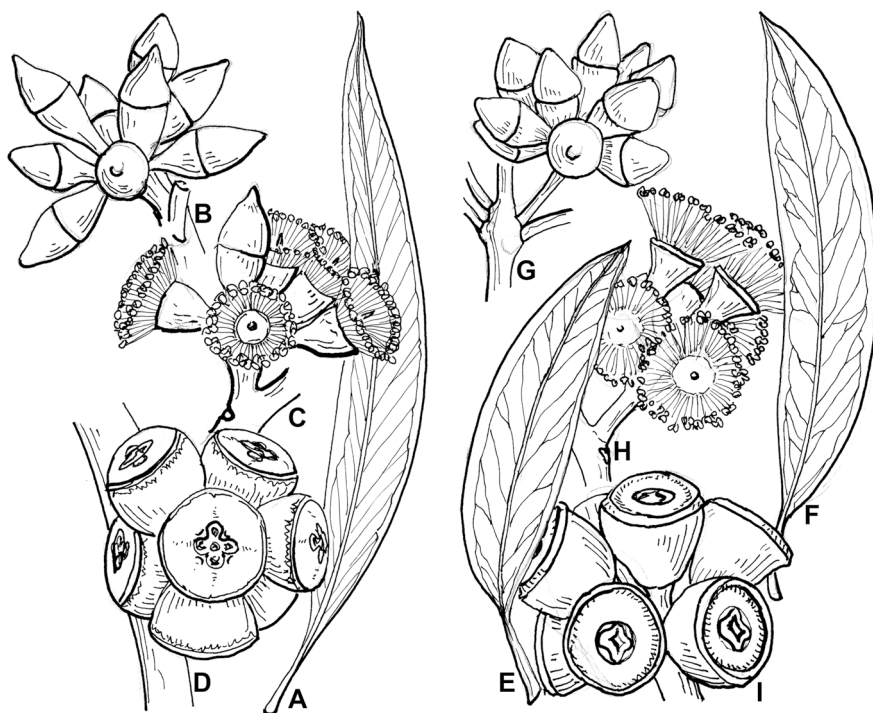


*E. viminalis* auct. non Labill.: Benth. *Fl. Austral.* 3: 239 (1867), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 343 (2006); D.Nicolle, *Eucalypts S. Austral.* 197 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 301 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 222, 223 (2013).

Mallee, 0.5–10 m tall; juvenile leaves ovate to broad-lanceolate, 25–55 mm wide; adult leaves 10–25 mm wide. **Fruits** 6–12 mm long, 8–16 mm diam.; disc level to slightly ascending. **Coastal mallee, coastal white mallee. Fig. 11A–E, Pl. 11A–D.**

S.A.: EP, ?NL, MU, YP, SL, KI, SE; Vic. Widespread in coastal areas, including much of Eyre Peninsula, southern Yorke Peninsula, Kangaroo Island and the south-east of the State, with smaller, disjunct populations in the Mount Lofty Ranges (Newland Head, Carrickalinga, Bradbury, Black Hill, and also possibly at Spring Gully) and at Cape Nelson in Vic. Restricted to well-drained sandy soils, usually overlying limestone. Flowers: Winter to spring.

Subsp. *hesperia* differs in its narrower juvenile leaves, narrower adult leaves, and smaller fruits with a less raised or level disc.



**Fig. 11. A–E. *Eucalyptus diversifolia* subsp. *diversifolia*:** A & B, leaves; C, buds; D, flowers; E, fruits. **F–J. *E. diversifolia* subsp. *hesperia*:** F & G, leaves; H, buds; I, flowers; J, buds. Illustration by G.R.M. Dashorst.

- 30b. ***Eucalyptus diversifolia* subsp. *hesperia*** I.J.Wright & Ladiges, *Austral. Syst. Bot.* 10: 677 (1997). — *Eucalyptus diversifolia* auct. non Labill.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 909 (1986), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 199 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 224, 225 (2013).

Mallee, 0.5–5 m tall; juvenile leaves ovate to broad-lanceolate, 20–30 mm wide; adult leaves 9–18 mm wide. **Fruits** 5–9 mm long, 6–11 mm diam.; disc level. **Wylie Scarp mallee, Madura mallee-ash. Fig. 11F–J.**

S.A.: NU; W.A. Restricted to the coastal escarpments of the Nullarbor Plain in the far west of S.A. extending westwards along the Wylie Scarp to near Point Culver in W.A. It occurs on well-drained sites on limestone. Flowers: Winter to spring.

Subsp. *diversifolia* differs from subsp. *hesperia* in its broader juvenile leaves, broader adult leaves, and larger fruits with an often more steeply ascending disc.

(Rare status in S.A.)

31. ***Eucalyptus dumosa*** A.Cunn. ex J.Oxley, *J. Two Exped. Interior N.S.W.* 63 (1820). — *E. incrassata* var. *dumosa* (A.Cunn. ex J.Oxley) Maiden, *Crit. Rev. Eucalyptus* 1: 96 (1904). *E. lamprocarpa* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 129 (1856); *E. muelleri* Miq. *Ned. Kruidk. Arch.* 4: 130 (1856). *E. anceps* auct. non (Maiden) Blakely: Boomsma, *Native Trees S. Austral.* ed. 2, 112 (1981), partly. — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 365 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 119 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 333 (2001); D.Nicolle, *Eucalypts S. Austral.* 101 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 39 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 132, 133 (2013).

Mallee, 3–8 m high, lignotuberous; bark often rough on lower stems, loosely fibrous to ribbon, tan to grey; smooth above or smooth throughout, decorticating in strips and ribbons, orange-tan to grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, ovate, not pruinose, dull, blue-green; adult leaves disjunct, petiolate, lanceolate to falcate, 55–120 × 10–25 mm, concolorous, not pruinose,



dull or rarely maturing glossy, green to blue-grey. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 5–20 mm long, pedicels 2–5 mm long, buds cylindrical, not pruinose, 8–11 mm long, 4–5 mm diam.; hypanthia cylindrical to cupular, smooth; opercula often slightly ribbed, conical to slightly beaked, equal in width to hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** usually tapering to pedicel, obconical to cupular to barrel-shaped, smooth or slightly ribbed, not pruinose, 4–9 mm long, 5–8 mm diam.; disc descending; valves 3 or 4, around rim level or slightly exerted; seeds glossy, red-brown, compressed ovoid, finely reticulate. **White mallee, dumosa mallee.**

S.A.: FR, EA, NL, MU, YP, SL, SE; N.S.W.; Vic. Widespread from the Flinders Ranges and upper half of Yorke Peninsula in S.A. eastwards into western Vic. and central N.S.W. It usually occurs on heavier soils in mallee communities, and occurs on skeletal clayey soils on slopes in the Flinders Ranges. Flowers: Mainly summer to autumn.

Similar to *E. phenax*, which differs in its glossy and green adult leaves, generally shorter peduncles and pedicels and often somewhat smaller buds and fruits. Mallees previously attributed to this species from Eyre Peninsula have been included with *E. calcareana* in this treatment.

Commonly cultivated for broadscale planting in the low to moderate-rainfall areas of southern Australia.

32. **Eucalyptus eremicola** Boomsma, *J. Austral. Naturalist* 50: 28 (1975). — *E. oleosa* auct. non F.Muell. ex Miq.: J.M.Black, *Fl. S. Austral.* 3: 624 (1952), partly.

Mallee, 2–9 m high, lignotuberous; bark smooth throughout or rough on lower stems, stringy-fibrous, often loose, grey to dark grey, smooth bark decorticating in long strips and ribbons, pinkish grey to very pale grey over cream to white, often powdery; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for a few pairs then becoming disjunct, sessile or shortly petiolate, elliptical at first, soon becoming linear, dull to rarely slightly glossy, green to slightly blue-green, not pruinose; adult leaves disjunct, petiolate, narrow-lanceolate, 60–133 × 8–21 mm, concolorous, not pruinose, dull to glossy, green to blue-green. **Inflorescences** axillary; umbellasters (7–) 9–13-flowered, held erect; peduncles 5–12 mm long, pedicels 1–5 mm long, buds smooth, not pruinose, 6.5–8 mm long, 2.5–4 mm diam.; hypanthia cupular, opercula long-conical, 1.6–2.2 times longer than hypanthium; flowers white; stamens variously flexed, all fertile; anthers versatile, globose; ovules in 4 vertical rows. **Fruits** distinct from pedicel, globose, smooth, not pruinose, 3.5–5.5 mm long, 4.5–7 mm diam.; disc descending; valves 3 or 4, enclosed or exerted due to split style remnants; seeds dark grey, compressed ovoid.

A widespread species of the Great Victoria Desert of S.A. and W.A., extending north-west into the Little Sandy Desert (W.A.) as far as Lake Kerrylyn. Flowers: Apparently sporadic and probably dependent on rainfall events.

Two subspecies are recognised, differing in adult leaf colour and sheen. They intergrade extensively in contact areas through the central Great Victoria Desert of S.A. and W.A.

1. Adult leaves highly glossy, green ..... 32a. **E. eremicola** subsp. **eremicola**  
 1: Adult leaves dull to slightly glossy, blue-green ..... 32b. **E. eremicola** subsp. **peeneri**

- 32a. **Eucalyptus eremicola** Boomsma subsp. **eremicola** — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 243 (2001); D.Nicolle, *Eucalypts S. Austral.* 37 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 60, 61 (2013).

Adult leaves highly glossy, green. **Voakes Hill mallee, nawa mallee. Fig. 12A–D.**

S.A.: NW, NU, GT; W.A. Distributed in the southern and central Great Victoria Desert from the Laverton area in W.A. eastwards to the Ooldea area in S.A. It occurs in open mallee vegetation on low dunes and in swales and flats in deep red sand, usually over limestone. Flowers: Apparently sporadic, probably dependent on rainfall events.

Distinguished within the species by the highly glossy, green adult leaves. Subsp. *eremicola* is generally distributed to the south of subsp. *peeneri*. Intergrades between the two subspecies are common in areas where they adjoin, such as in the Serpentine Lakes area of S.A.

- 32b. **Eucalyptus eremicola** Boomsma subsp. **peeneri** (Blakely) D.Nicolle, *Austral. Syst. Bot.* 18: 542 (2005). — *Eucalyptus oleosa* var. *peeneri* Blakely, *Key Eucalypts* 270 (1934); *Eucalyptus peeneri* (Blakely) L.D.Pryor & L.A.S.Johnson ex Boomsma, *J. Adelaide Bot. Gard.* 1: 368 (1979). ?*Eucalyptus* sp. N Brooker & Kleinig (1990); *Eucalyptus* sp. O

Brooker & Kleinig, *Field Guide Eucalypts* 2: 244 (1990); *Eucalyptus* sp. PP Brooker & Kleinig, *Field Guide Eucalypts* 3: 211 (1994); *Eucalyptus subglucida* L.A.S.Johnson & K.D.Hill, *Telopea* 8: 186 (1999). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 244, 245 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 210 (2004); D.Nicolle, *Eucalypts S. Austral.* 39 (1997); all as *E. peeneri*; D.Nicolle, *Native Eucalypts S. Austral.* 62, 63 (2013).

Adult leaves dull to slightly glossy, blue-green. **Peeneri mallee, water mallee. Pl. 11E & F.**

S.A.: NW, NU, GT; W.A. Distributed from Lake Kerrylyn in the Little Sandy Desert in W.A., south-east through the central part of the Great Victoria Desert to near Barton in S.A. It occurs in mallee vegetation on flat topography or in swales in sand dune habitats. Soils are generally deep red loams or red sand over limestone. Flowers: Apparently sporadic and probably dependent on rainfall events.

Distinguished within the species by the dull to slightly glossy, blue-green adult leaves. Subsp. *peeneri* is generally distributed to the north of subsp. *eremicola*. Intergrades between the two subspecies are common in areas where they adjoin, such as in the Serpentine Lakes area of S.A.

33. **Eucalyptus falciformis** (Newnham, Ladiges & Whiffin) K.Rule, *Muelleria* 26: 94 (2008). — *E. willisii* subsp. *falciformis* Newnham, Ladiges & Whiffin, *Austral. J. Bot.* 34: 348 (1986). *E. virgata* auct. non Sieber ex Spreng.: Benth., *Fl. Austral.* 3: 202 (1867), partly; *E. amygdalina* auct. non Labill: Tate, *Fl. Extratrop. S. Austral.* 94 (1890), partly; *E. vitrea* auct. non R.T.Baker: J.M.Black, *Fl. S. Austral.* 3: 415 (1926); *E. nitida* auct. non Hook.f.: Boomsma, *Native Trees S. Austral.* ed. 2, 200 (1981); *E. willisii* subsp. *willisii* auct. non Newnham, Ladiges & Whiffin: Jessop, *List Vasc. Pl. S. Austral.* ed. 4, 64 (1993), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 268 (2006); D.Nicolle, *Eucalypts S. Austral.* 191 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 263 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 216–217 (2013).

Tree, often several-stemmed, 5–14 m tall, lignotuberous; bark usually rough on the lower stems or up to the smaller branches, finely-fissured to plate-like, grey; smooth above or rarely completely smooth, decorticating in strips and ribbons, pale grey to yellow-cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for many pairs then becoming disjunct, sessile for 10–13 pairs then petiolate, glabrous, lanceolate to broad-lanceolate, 15–70 mm wide, not pruinose, dull, blue-green; adult leaves disjunct, petiolate, lanceolate, 75–220 × 18–35 mm, concolorous, not pruinose, dull to glossy, green to slightly blue-green. **Inflorescences** axillary; umbellasters 11–21-flowered, generally held erect; peduncles 4–12 mm long, pedicels 2–7 mm long, buds clavate, smooth, not pruinose, 6–9 mm long, 3–5 mm diam.; hypanthia obconical, opercula hemispherical to bluntly conical, shorter than hypanthium; flowers white; stamens inflexed, all fertile; anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** tapering to pedicels, cupular to shortly cylindrical, smooth, not pruinose, 6–9 mm long, 6–9 mm diam.; disc slightly ascending to slightly descending; valves 3 or 4, around rim level; seeds dark brown to black, pyramidal. **Western peppermint, Grampians peppermint. Fig. 12E–K, Pl. 11G.**

S.A.: SE; Vic. Occurs from near Millicent in S.A. eastwards into Vic. to the Otway Ranges and the Grampians. It occurs on sandy soils in well-watered regions, occurring in forest, woodland or heath vegetation. Flowers: Mainly spring.

Not closely related to any other taxa in S.A., but very similar to a number of species from eastern Australia, including *E. arenicola* (Gippsland Lakes, Vic.), *E. dives* (Great Dividing Range, Vic and N.S.W.), *E. molyneuxii* (Little Desert, Vic.) and *E. willisii* (Wilsons Promontory, Vic.).

Poorly known in cultivation, it requires a well-drained soil and moderate to high rainfall.

34. **Eucalyptus fasciculosa** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 34 (1855). — *E. paniculata* var. *fasciculosa* (F.Muell.) Benth., *Fl. Austral.* 3: 212 (1867). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 238 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 415 (2001); D.Nicolle, *Eucalypts S. Austral.* 171 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 197 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 196, 197 (2013).

Tree, sometimes several-stemmed, 6–20 m high, lignotuberous; bark sometimes rough on lower trunk(s), especially in saplings, loose, plate-like to slightly fibrous, grey-brown; smooth above or often completely smooth, decorticating in strips and plates, yellowish to grey to cream; branchlets sometimes pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 80–140 × 15–30 mm, concolorous, not pruinose, dull to slightly glossy, green. **Inflorescences** terminal panicles; umbellasters 7-flowered, held erect; peduncles 5–10 mm long, pedicels 2–7 mm long, buds smooth, sometimes pruinose,

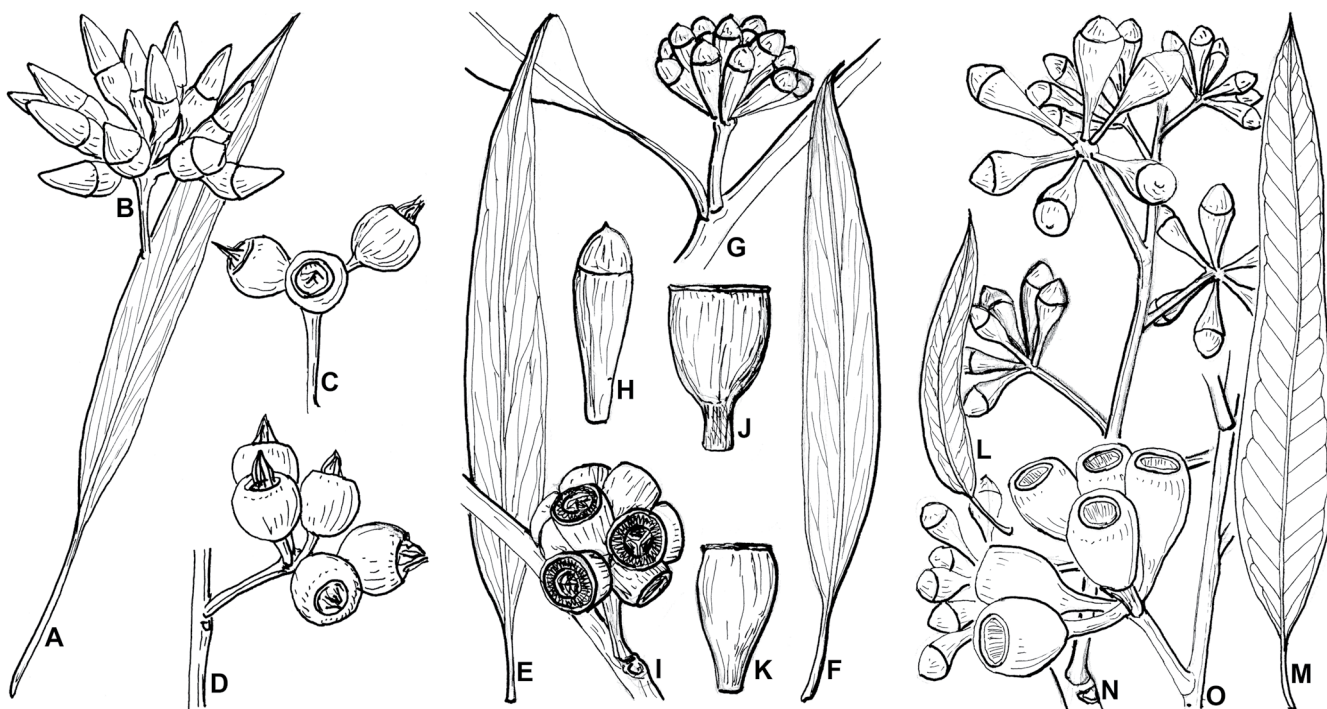


Fig. 12. A–D, *Eucalyptus eremicola* subsp. *eremicola*: A, leaf; B, buds; C & D, buds. E–K, *E. falciformis*: E & F, leaves; G & H, buds; I–K, fruit. L–O, *E. fasciculosa*: L & M, leaf; N, panicle of bud. O, fruit. Illustration by G.R.M. Dashorst.

4–7 mm long, 3–4 mm diam.; hypanthia cupular to obconical; opercula conical to hemispherical, shorter than hypanthium; flowers white; stamens inflexed, outer stamens lacking anthers (staminodes); anthers adnate, cuboid; ovules in 4 vertical rows. **Fruits** pedicellate, obconical to barrel-shaped, smooth, sometimes pruinose when young, 6–9 mm long, 5–6 mm diam.; rim thin; disc descending; valves 3 or 4, enclosed; seeds brown, compressed ovoid, shallowly reticulate. **Pink gum, hill gum. Fig. 12L–O, Pl. 11H–K.**

S.A.: MU, SL, KI, SE; Vic. Almost restricted to S.A., with three areas of occurrence, viz. the Mount Lofty Ranges south from the Barossa Valley, Kangaroo Island, and the south-east of the State from near Meningie south-east to just over the Vic. border in the Little Desert and near Langkoop. Occurs in well-drained sandy soils of low fertility, in woodland or as an emergent in low shrubland. Flowers: Autumn to spring.

Closest to the eastern Australian but commonly cultivated *E. polyanthemos* Schauer, which differs from *E. fasciculosa* most conspicuously in its orbicular juvenile leaves and broader and greyish adult leaves.

Used for fuelwood (heartwood dark pink and very hard), honey, and amenity. Occasionally but increasingly cultivated as an ornamental small tree for gardens, parks and street plantings. Will grow well in sandy soils of very low fertility. (Rare status in S.A.)

35. ***Eucalyptus flindersii*** Boomsma, *J. Adelaide Bot. Gard.* 2: 293 (1980). — *Eucalyptus morrisii* auct. non R.T.Baker: J.M.Black, *Fl. S. Austral.* ed. 2, 631 (1952), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 97 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 384 (2001); D.Nicolle, *Eucalypts S. Austral.* 115 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 40, 41 (2013).

Mallee, 1–5 m high, lignotuberos; bark smooth throughout, decorticating in strips, pinkish-grey to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to orbicular, dull, green to blue-green; adult leaves disjunct, petiolate, narrow-lanceolate to lanceolate to falcate, 55–180 × 10–30 mm, concolorous, not pruinose, dull to slightly glossy, green to blue-green. **Inflorescences** axillary; umbellasters (3–) 7-flowered, held erect; peduncles 4–183 mm long, pedicels absent or to 5 mm long, buds ovoid, smooth, not pruinose, 7–13 mm long, 4–6 mm diam.; hypanthia obconical to cupular; opercula conical to hemispherical, about equal in length to hypanthium; flowers creamy-white; stamens variously flexed, all fertile; anthers versatile, cuboid to oblong; ovules in 6 vertical rows. **Fruits** sessile or tapering to pedicel, obconical to hemispherical to ovoid, smooth, not pruinose, 4–8 mm long, 4–10 mm diam.; disc broad, level to ascending; valves 3 or 4, exserted; seeds black, cuboid to pyramidal, often with toothed edges. **Mallee red gum, South Australian grey mallee. Fig. 13A–F, Pl. 11L.**





Fig. 13. A–F, *Eucalyptus flindersii*: A & B, leaves; C & D, buds; E & F, fruits. G–J, *E. gamophylla*: G, young branch; H, leaf outline; I, buds; J, fruits. K–O, *E. gillenii*: K, leaf; L & M, buds; N & O, fruits. Illustration by G.R.M. Dashorst.

S.A.: FR, EA (Pualco Hill), EP (Devils Peak). Endemic to S.A. and restricted to the Flinders Ranges north from Devils Peak, with an outlying population in the Pualco Range on the Olary Spur. Restricted to the upper rocky slopes and ridges of higher hills, usually above 700 m attitude. Flowers: Spring.

The closely-related *E. gillenii* differs primarily in its longer, lanceolate juvenile leaves. The buds and fruits of *E. gillenii* also tend to be larger than those of *E. flindersii*. Not commonly grown in cultivation.

36. ***Eucalyptus gamophylla*** F.Muell., *Fragm.* 11: 40 (1878). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 63 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 136 (2004); D.Nicolle, *Eucalypts S. Austral.* 15 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 26, 27 (2013).

Mallee, 1–7 m high, lignotuberosus; bark often rough on lower stems, hard, stringy-fibrous, yellow-brown to grey; smooth above or completely smooth, decorticating as strips, yellow-tan to pale grey to cream; branchlets pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite, sessile, glabrous, ovate, pruinose, dull, blue-green to greyish; mature crown composed of juvenile leaves that are opposite to subopposite, sessile or on petioles to 6 mm long, ovate to lanceolate and often in connately-joined pairs, 40–100 × 9–20 mm, concolorous, pruinose, dull, greyish. **Inflorescences** axillary, often compound axillary and apparently compound terminal; umbellasters 3-flowered, held erect; peduncles 5–10 mm long, pedicels 1–3 mm long, buds clavate to pyriform, smooth, pruinose, 4–7 mm long, 3–4.5 mm diam.; hypanthia obconical; opercula hemispherical to slightly flattened, shorter than hypanthium; flowers white; stamens arranged in 4 clusters, variously flexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, narrowly obconical to cylindrical, smooth, pruinose, 6–16 mm long, 4–7 mm diam.; disc descending and often conspicuously white; valves 3 (4), enclosed; seeds black, saucer-shaped, often slightly flanged. **Blue mallee, twin-leaved mallee. Fig. 13G–J, Pl. 12A–C.**

S.A.: NW; W.A.; N.T.; Qld. Widespread from the Hamersley Ranges in W.A. eastwards through the southern half of the N.T. into western Qld, south of Mt Isa, extending into the far north-west of S.A., where it occurs on red sand plains and on rocky hillslopes in mallee shrubland. Flowers: Apparently sporadic, possibly relating to rainfall events.

37. ***Eucalyptus gillenii*** Ewart & L.R.Kerr, *Proc. Roy. Soc. Victoria ser. 2*, 39: 7 (1926). — *E. incurva* Boomsma, *S. Austral. Naturalist* 50: 31 (1975). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 388 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 262 (2004); Nicolle, *Eucalypts S. Austral.* 117 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 42, 43 (2013).



Mallee, 2–6 m high, lignotuberous; bark smooth throughout, decorticating in strips, grey to pinkish-tan to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, lanceolate to falcate, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate, 70–180 mm × 10–28 mm, concolorous, not pruinose, dull, green to blue-green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 4–13 mm long, pedicels 1–4 mm long, buds smooth, not pruinose, 7–16 mm long, 4–7 mm diam.; hypanthia obconical to cupular; opercula conical to hemispherical, slightly longer in length than hypanthium; flowers creamy-white; stamens mostly erect with a few inner stamens variously flexed, all fertile; anthers versatile, oblong; ovules in 6–8 vertical rows. **Fruits** sessile or pedicellate, globose, smooth, not pruinose, 5–10 mm long, 6–12 mm diam.; disc broad, ascending; valves (3) 4 (5), exerted; seeds dark brown to black, cuboid to pyramidal, often with toothed edges. **Mallee red gum, Mount Lindsay mallee (or gum). Fig. 13K–O.**

S.A.: NW (Mount Wooltarlinna and Mount Lindsay); N.T.; W.A. Of scattered occurrence in central Australia, from Mount Leichhardt in the N.T. south through the MacDonnell Ranges and east to the Petermann Ranges on the N.T./W.A. border and with an outlying population at Skirmish Hill in W.A.; always occurring on rocky hills. In S.A. known only from Mount Wooltarlinna and Mount Lindsay in the Birksgate Range, where it occurs in crevices on, and at the base of, massive rock domes where rainfall runoff supplements soil moisture.

The closely-related *E. flindersii* differs primarily in its ovate to orbicular juvenile leaves. The buds and fruits of *E. flindersii* also tend to be smaller than those of *E. gillienii*.

Poorly known in cultivation. (Rare status in S.A.)

38. **Eucalyptus gillii** Maiden, *Crit. Rev. Eucalyptus* 2(5): 177 (1912). — *E. gillii* var. *petiolaris* Maiden, *J. Proc. Roy. Soc. New S. Wales* 53: 69 (1919). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 255 (2001); D.Nicolle, *Eucalypts S. Austral.* 47 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 80, 81 (2013).

Mallee, 4–8 m high, lignotuberous; bark smooth throughout or rough on lower stems, stringy-fibrous to loose and flaky-fibrous, pale grey to dark grey-brown; smooth bark decorticating in ribbons, pinkish-grey to tan; branchlets pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite, sessile, glabrous, ovate, pruinose; mature crown composed of juvenile leaves that are opposite to subopposite, sessile or on petioles to 4 mm long, orbicular to ovate, 38–61 × 20–45 mm, concolorous, pruinose, dull, greyish. **Inflorescences** axillary; umbellasters 7- or 9-flowered, generally held erect; peduncles 4–13 mm long, pedicels 2–4 mm long, buds smooth, strongly pruinose, 9–18 mm long, 3–5 mm diam.; hypanthia cupular, opercula horn-shaped, longer than hypanthium; flowers pale creamy-yellow; stamens variously flexed, all fertile; anthers weakly versatile, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, barrel-shaped to globose, smooth, strongly pruinose when young, 6–9 mm long, 6–8.5 mm diam.; disc descending; valves 3 or 4, enclosed or exerted due to split style remnants; seeds grey to dark grey-brown, compressed ovoid, smooth. **Curly mallee, Arkaroola mallee. Fig. 14A–C.**

S.A.: LE (far south), FR, EA; N.S.W. Mainly distributed in S.A., where it occurs mainly in the northern Flinders Ranges, particularly from the Arkaroola area south to Nepabunna, but also with scattered populations south as far as Tattawuppa Hill near Yunta. The species is much more restricted in N.S.W., where it occurs in the Barrier Range north of Broken Hill. It occurs in open mallee vegetation in gullies, slopes and ridges of undulating hills. Soils are calcareous shallow grey to gravely red loams over limestone and slate. Flowers: Mainly winter to spring.

Hybrids, hybrid swarms and limited intergradation with *E. socialis* subsp. *socialis* occurs where the two species are locally sympatric.

Commonly cultivated in the low to moderate rainfall regions of southern Australia as an ornamental bushy tree or shrub with its crown of greyish leaves and creamy-yellow flowers.

39. **\*Eucalyptus globulus** Labill., *Voy. Rech. Pérouse* 1: 153, t. 13 (1800). — *Eucalyptus gigantea* Dehnh., *Cat. Hort. Camald.* ed. 2, 6, 20 (1832). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 413 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 187 (2006); D.Nicolle, *Eucalypts Victoria & Tasman.* 145 (2006).

Tree, 16–90 m tall, lignotuberous; bark smooth throughout (or sometimes with some loose plate-like or ribbony rough bark on the lower trunk), decorticating in ribbons, tan to cream; branchlets sometimes pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite, sessile, glabrous, ovate to oblong, often undulate, strongly pruinose, dull, greyish; adult leaves disjunct, petiolate, lanceolate to falcate, 120–300 × 18–30 mm, concolorous, not pruinose, glossy, dark green. **Inflorescences** axillary; umbellasters single-flowered, peduncles

absent or to 5 mm long, pedicels absent, buds pruinose, 14–25 mm long, 14–20 mm diam.; hypanthia 4-ribbed, opercula flattened and umbonate, warty, shorter than hypanthia; flowers white; stamens inflexed, all fertile; anthers versatile, cuboid to oblong; ovules in 6 (8) vertical rows. **Fruits** sessile, hemispherical to obconical, 4-ribbed, pruinose when young, 10–20 mm long, 14–27 mm diam.; disc broad, level to ascending; valves 4 or 5, at rim level; seeds brown to black, flattened ovoid, shallowly reticulate. **Tasmanian blue gum.**

S.A.: \*NL, \*SL, \*KI, \*SE; Tas.; Vic. Naturally distributed in Tas. and southern Vic. (south Gippsland and the Otway coast). Sparingly naturalized near plantations and cultivated trees in high-rainfall parts of S.A. Flowers: Spring-summer.

Opinions vary as to the level at which this taxon should be recognised. The *Australian Plant Census* treats this taxon as *E. globulus* subsp. *globulus*, with three other subspecies: subsp. *bicostata* (Maiden, Blakely & Simmonds) J.B.Kirkp., subsp. *pseudoglobulus* (Naudin) J.B.Kirkp. and subsp. *maidenii* (F.Muell.) J.B.Kirkp. These four taxa are here recognised at specific status. The closely related *E. bicostata*, which is rarely grown as a plantation species, differs primarily in its 3-flowered inflorescences and smaller buds and fruits.

Extensively planted in the higher rainfall parts of southern Australia for short-rotation timber used for paper-pulp. Also widely planted as a quick-growing shade and shelter tree.

40. **Eucalyptus glomerosa** Brooker & Hopper, *Nuytsia* 9: 32 (1993). — *E. ewartiana* auct. non Maiden: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 917 (1986); *E. oldfieldii* auct. non F.Muell.: J.M.Black, *Fl. S. Austral.* 3: 418 (1926). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 262 (2001); D.Nicolle, *Eucalypts S. Austral.* 63 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 84, 85 (2013).

Mallee, 4–7 m high, lignotuberous; bark rough on lower stems, fibrous to flaky, yellow-brown to dark grey; smaller branches smooth and decorticating in ribbons, pale pink to coppery; branchlets sometimes pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 5–7 pairs, petiolate, glabrous, orbicular to ovate, pruinose; adult leaves alternate, petiolate, elliptical to lanceolate, acute, 50–90 × 10–18 mm, concolorous, dull, grey-green, new growth often pruinose. **Inflorescences** axillary; umbellasters 7 (9)-flowered, held erect; peduncles terete, 10–17 mm long, pedicels 7–10 mm long, buds globose, smooth, rarely pruinose, 4–5 mm long, 3–5 mm diam.; opercula hemispherical, about equal in length to hypanthium; flowers cream; stamens oblique, all fertile; anthers versatile, ovoid; ovules in 4 vertical rows. **Fruits** distinct from pedicels, globose, smooth, not pruinose, 8–11 mm long, 10–15 mm diam.; disc broad, ascending; valves (3) 4 (5), exserted; seeds pale brown, boat-shaped and flanged. **Jinjulu. Fig. 14D–G, Pl. 12D–F.**

S.A.: NW; W.A. Mainly restricted to the central and northern parts of the Great Victoria Desert in S.A. and W.A., but extending north to within 20 km of the S.A./N.T. border near the Mann Ranges in S.A. The species is restricted to red sands in dune formations. Flowers: Sporadic and probably related to rainfall events.

Similar to and previously included in *Eucalyptus ewartiana*, a W.A. endemic species which differs from *E. glomerosa* in the field most conspicuously by the minniritchi-type bark (peeling into thin longitudinal strips that curl backwards and remain partly attached to the stem).

Poorly known in cultivation.

41. \***Eucalyptus gomphocephala** DC., *Prodr.* 3: 220 (1828). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 285 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 110 (2001).

Tree, 10–40 m tall, lignotuberous; bark rough throughout, finely to moderately-fissured, grey; branchlets not pruinose, pith glands absent; cotyledons bisected to bilobed; juvenile leaves opposite for 4–8 pairs then disjunct, petiolate, glabrous, ovate to deltoid, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate to falcate, 100–180 × 15–30 mm, concolorous to very weakly discolorous, not pruinose, glossy, dark green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles broadly-flattened, 10–30 mm long, pedicels absent or to 2 mm long, buds mushroom-shaped, not pruinose, smooth, 15–24 mm long, 9–14 mm diam.; hypanthia obconical, opercula hemispherical, much wider than hypanthium at join, about equal in length or slightly shorter than hypanthia; flowers cream; stamens irregularly-flexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile or shortly pedicellate, campanulate to obconical, sometimes weakly 2-ribbed, not pruinose, 10–20 mm long, 12–18 mm diam.; disc slightly ascending to slightly descending; valves (3) 4 (5), at rim level or slightly exserted above rim level; seeds dark brown to black, saucer-shaped to flattened-ovoid, shallowly reticulate. **Tuart.**

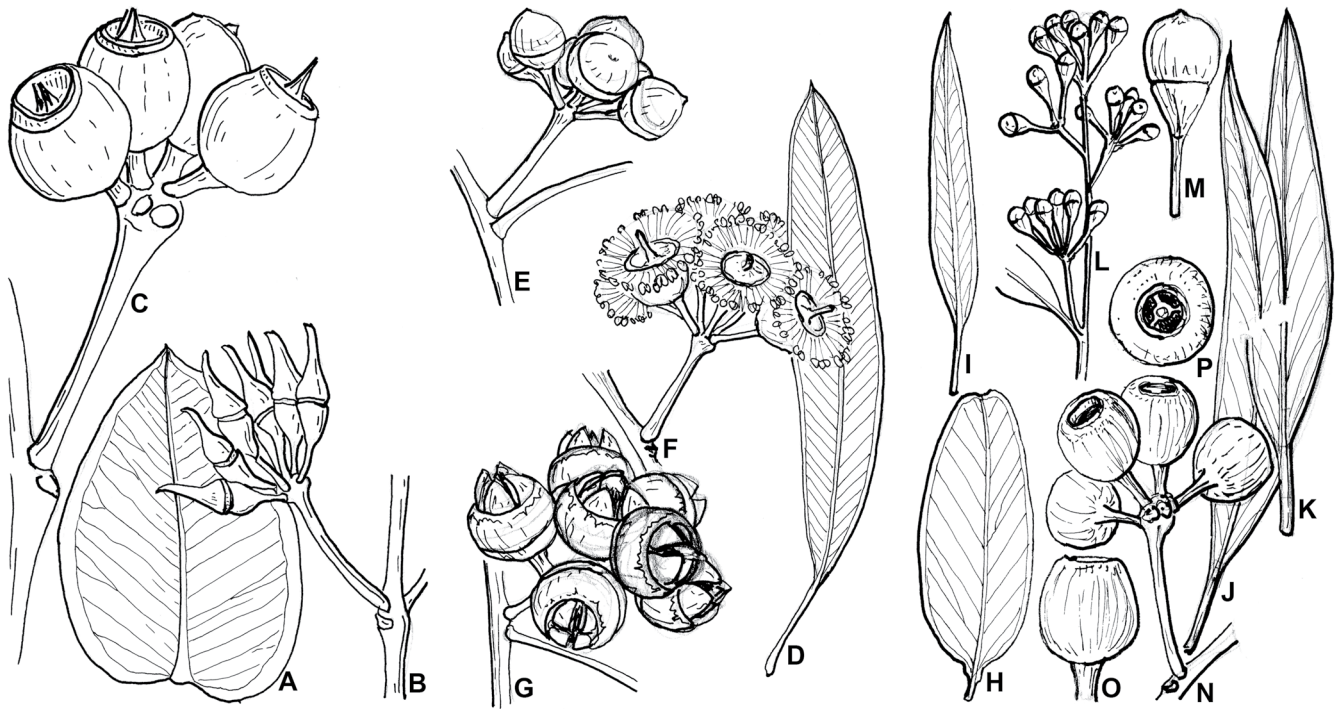


Fig. 14. A–C, *Eucalyptus gillii*: A, leaves; B, buds; C, fruits. D–G, *E. glomerosa*: D, leaf; E, buds; F, flowers; G, fruits. H–P, *E. gongylocarpa*: H, intermediate leaf; I–K, adult leaves; L & M, buds; N, fruits; O & P, fruits from side and above. Illustration by G.R.M. Dashorst.

S.A.: \*EP, \*YP, \*SL, \*KI; WA, \*Vic. Naturally restricted to coastal plains and sand dunes north and south of Perth in W.A., but widely cultivated for shade and shelter in coastal areas in S.A. Known to regenerate from seed around planted trees, and possibly sparingly naturalized in S.A. Flowers: Summer to autumn.

Not closely related to any other species, and easily recognized by the large mushroom-shaped buds and obconical fruits.

42. ***Eucalyptus gongylocarpa*** Blakely, *Trans. & Proc. Roy. Soc. South Australia* 60: 153 (1936). — *E. endesmioides auct. non* F.Muell.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 632 (1952). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 265 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 64 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 138 (2004); D.Nicolle, *Eucalypts S. Austral.* 17 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 28, 29 (2013).

Tree, 6–16 m high, lignotuberous; bark smooth throughout, often glossy, pale grey to white, decorticating as small red-brown flakes which often remain partially attached resulting in an apparently rough bark; branchlets pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite, sessile, hairy, ovate to orbicular, pruinose, dull, greyish; adult leaves opposite to disjunct, petiolate, elliptical to lanceolate, 35–80 × 9–18 mm, concolorous, usually pruinose, dull, blue-grey. **Inflorescences** axillary; umbellasters (3–) 7-flowered, held erect; peduncles 8–19 mm long, pedicels 3–6 mm long, buds clavate, smooth, pruinose, 5–6 mm long, 3–5 mm diam.; hypanthia obconical; opercula hemispherical to slightly flattened, shorter than hypanthium; flowers white; stamens arranged in 4 clusters, inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** distinct from pedicels, globose, smooth, pruinose when young, 6–11 mm long, 6–12 mm diam.; disc descending and often conspicuously white; valves (3) 4, enclosed; seeds black, saucer-shaped, flanged. **Marble gum, desert gum.** Fig. 14H–P, Pl. 12G–L.

S.A.: NW; W.A.; N.T. Common in the northern part of the Great Victoria Desert of S.A. (but not the ranges in the NW of the State), extending westwards towards Sandstone and to near Kumarina in W.A. and north to the Lake Amadeus basin in the N.T. Restricted to deep red sand on plains and on sand dunes where it is usually the dominant tree forming open woodland or mixed woodland-mallee communities. Flowers: Sporadic, probably related to rainfall events.

43. ***Eucalyptus goniocalyx*** F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 134 (1856).

Tree, often several-stemmed, or mallee, 3–16 m tall, lignotuberous; bark usually rough to the smaller branches, hard, moderately fissured, grey; smooth above or rarely completely smooth in smaller plants, decorticating in strips and ribbons, grey to cream; branchlets with pith glands absent; cotyledons bilobed; juvenile leaves opposite,



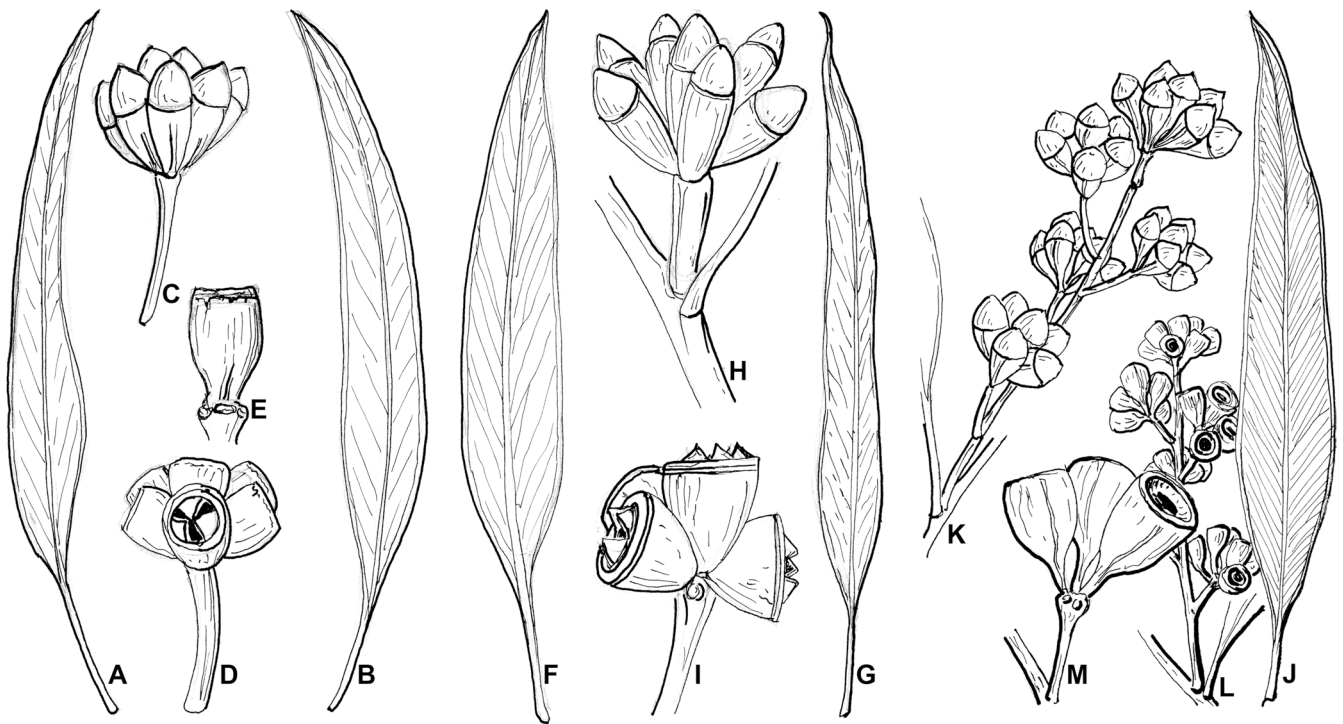


Fig. 15. A–E, *Eucalyptus goniocalyx* subsp. *goniocalyx*: A & B, leaves; C, buds; D & E, fruits. F–I, *E. goniocalyx* subsp. *exposita*: F & G, leaves; H, buds; I, fruits. J–M, *E. intertextata*: J, leaf; K, panicle of buds; L–M, fruits. Illustration by G.R.M. Dashorst.

sessile, glabrous, orbicular, pruinose, dull, greyish; adult leaves disjunct, petiolate, lanceolate to falcate, 55–250 × 10–40 mm, concolorous, not pruinose, dull to glossy, green to blue-green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 5–15 mm long, pedicels absent or rarely to 3 mm long, buds 6–11 mm long, 3–7 mm diam.; hypanthia often slightly angular, conical to cupular, opercula smooth, conical to hemispherical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, cuboid to cuneate; ovules in 4 vertical rows. **Fruits** sessile, cupular to cylindrical to slightly campanulate, smooth, 5–10 mm long, 6–10 mm diam.; disc slightly descending to slightly ascending; valves 3 or 4, around rim level or slightly exserted; seeds brown to black, flattened ovoid, lacunose.

Widespread in eastern Australia, from the Mudgee area in central N.S.W. southwards to central regions of Vic. as far west as Black Range near Balmoral. Disjunct populations occur in S.A., scattered in the northern part of the Mount Lofty Ranges from Black Hill Conservation Park to the Clare area, including the Tothill Range, and in the Flinders Ranges from Wirrabara north to Wilpena Pound. Occurs in hilly terrain on well-drained, usually skeletal soils in woodland or open mallee vegetation.

Three subspecies are recognised, two of which occur in S.A. (the third, subsp. *viridissima* Rule, is endemic to western Vic.).

- 1. Adult leaves glossy, dark green; adult branchlets not pruinose..... 43b. **E. goniocalyx** subsp. **goniocalyx**
- 1: Adult leaves dull, green to bluish; adult branchlets often slightly pruinose..... 43a. **E. goniocalyx** subsp. **exposita**

43a. **Eucalyptus goniocalyx** subsp. **exposita** D.Nicolle, *J. Adelaide Bot. Gard.* 19: 87 (2000). — *E. goniocalyx* auct. non F.Muell. ex Miq.: Jessop in Jessop & Toelken *Fl. S. Austral* 3: 925 (1986), partly. — **Illustr.**: Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 102 (2001), habit and bark image; D.Nicolle, *Eucalypts S. Austral.* 131 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 164, 165 (2013).

Mallee, 3–6 m tall; bark variable, depending on the size of the plant, completely smooth on smaller mallees, decorticating in strips and ribbons; larger mallees with some rough, thin, dark grey to grey bark for 1–2 metres then smooth above; branchlets weakly to strongly pruinose; adult leaves 55–170 × 10–20 mm, dull to slightly glossy, blue-green. **Buds** often pruinose. **Fruits** often pruinose. **South Australian mountain box. Fig. 15F–I.**

S.A.: FR (Wilpena Pound Range and Elder Range). Known only from the Elder Range and Wilpena Pound Range in the northern Flinders Ranges of S.A. It occurs on the upper slopes and summit of peaks above about 1000 m altitude, such as Mt Aleck in the Elder Range and Point Bonny and St Mary Peak in the Wilpena Pound Range, where it is often the dominant eucalypt.



Subsp. *exposa* is somewhat variable in waxiness and in adult leaf colour but the adult leaves are never the glossy, green colour characteristic of subsp. *goniocalyx*. Distinguished from subsp. *goniocalyx* by the mallee habit; absence of, or less extensive, rough bark; smaller juvenile leaves with shorter internodes; smaller and duller adult leaves; and variably pruinose branchlets, buds and fruits.

(Vulnerable status in S.A.)

- 43b. **Eucalyptus goniocalyx** F.Muell. ex Miq. subsp. **goniocalyx** — *E. elaeophora* F.Muell., *Fragm.* 4: 52 (1864). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 194 (2006); D.Nicolle, *Eucalypts S. Austral.* 129 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 165 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 162, 163 (2013).

Tree, often several-stemmed, 6–16 m tall; bark rough to the smaller branches, hard, moderately fissured, grey; smooth above, decorticating in strips and ribbons, grey to cream; branchlets not pruinose; adult leaves 60–250 × 15–40 mm, glossy, green. **Buds** not pruinose. **Fruits** not pruinose. **Long-leaved box, bundy. Fig. 15A–E.**

S.A.: FR, NL, MU (Mt Pleasant area only), SL; Vic.; N.S.W. Widespread in eastern Australia, from the Mudgee area in central N.S.W. southwards to central regions of Vic. as far west as Black Range near Balmoral. Disjunct populations occur in S.A., scattered in the northern part of the Mount Lofty Ranges north from the Torrens Gorge to the Clare area, including the Tothill Range, and the southern Flinders Ranges from Wirrabara to Mount Brown. Occurs in hilly terrain, usually on rocky slopes and ridges, on well-drained, usually skeletal soils in woodland.

Distinguished from subsp. *exposa* by the often tree habit, more extensive rough bark, larger juvenile leaves with longer internodes, larger and consistently glossy green adult leaves and non-pruinose branchlets, buds and fruits.

44. **Eucalyptus gracilis** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 35 (1855). — *E. calycogona* var. *gracilis* (F.Muell.) Maiden, *Crit. Rev. Eucalyptus* 1: 79 (1903). *E. gracilis* var. *breviflora* Benth., *Fl. Austral.* 3: 211 (1867); *E. gracilis* var. *erecta* Blakely, *Key Eucalypts* 266 (1934). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 116 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 291 (2001); D.Nicolle, *Eucalypts S. Austral.* 69 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 31 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 98, 99 (2013).

Mallee, 3–8 m high, lignotuberous; bark rough on lower stems, hard, flaky-tessellated, grey-brown; smooth above or rarely completely smooth, decorticating in strips and ribbons, tan to olive green to cream; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 6–10 pairs then becoming disjunct, shortly petiolate, elliptical to narrow-lanceolate; not pruinose, dull, blue-green; adult leaves disjunct, petiolate, narrow-lanceolate, 45–110 × 4–15 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 5–16 mm long, pedicels 2–5 mm long; buds clavate, not pruinose, 3–7 mm long, 3–5 mm diam.; hypanthia obconical, smooth or weakly angled; opercula bluntly conical to flattened, smooth, much shorter than hypanthium; flowers white; stamens inflexed, outer stamens longer than inner stamens and twisted and lacking anthers (staminodes); anthers versatile, cuboid to globose; ovules in 4 vertical rows. **Fruits** on slender pedicels, barrel-shaped, smooth, not pruinose, 4–8 mm long, 3–7 mm diam.; disc descending; valves 3 or 4, deeply enclosed; seeds brown, ovoid, smooth or very finely reticulate. **White mallee, yorrell. Pl. 13A–E.**

S.A.: NW, NU, GT, FR, EA, EP, NL, MU, YP, SL, KI, SE; W.A.; N.S.W.; Vic. Widespread throughout much of southern Australia, from the Norseman area of W.A. eastwards along the Nullarbor coast and southern fringe of the Great Victoria Desert into the agricultural areas of S.A., and into south-western N.S.W. and north-western Vic. Occurs on a variety of soils but often thin and overlying limestone, in mallee shrubland vegetation. Flowers: Mainly autumn to spring.

Shares with *E. calycogona* (and other W.A. species of *E. ser. Heterostemones*) the distinctive flowers with short fertile inner stamens and much longer and twisted outer stamens lacking anthers. *Eucalyptus calycogona* is distinguished from *E. gracilis* most easily by the four-ribbed buds and fruits.

45. **Eucalyptus gypsophila** D.Nicolle, *Nuytsia* 11: 373 (1997). — *E. pileata* auct. non Blakely: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 629 (1952), partly; *E. helmsii* auct. non Maiden & Blakely in Maiden: Eichler, *Suppl. J.M.Black's Fl. S. Austral.* 240 (1965); *E. striatocalyx* auct. non W.Fitzg.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 921 (1986), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 113 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 142, 143 (2013).

Mallee, 3–6 m high, lignotuberous; bark rough on the lower stems, fibrous to flaky-fibrous, grey-brown to dark grey, smooth above, decorticating in strips and ribbons, tan to pale grey to cream; branchlets sometimes pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for 1–4 pairs then disjunct, petiolate, usually pruinose, ovate, dull, blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 90–130 × 18–25 mm, concolorous, sometimes slightly pruinose, dull, blue-green to blue-grey. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 4–18 mm long, pedicels 2–4 mm long, buds sometimes pruinose, 7–12 mm long, 5–7 mm diam.; hypanthia cupular, smooth; opercula conical to hemispherical, equal in width or very slightly wider than hypanthium at join, smooth or lightly ribbed; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** usually tapering to pedicels, cupular to shortly cylindrical, sometimes pruinose, smooth to weakly ribbed, 6–10 mm long, 6–11 mm diam.; disc level to descending; valves 4 or rarely 3, around rim level; seeds glossy, red-brown, compressed ovoid, finely reticulate **Kopi mallee. Pl. 13F & G.**

S.A.: NW, LE (Commonwealth Hill Station), NU, GT, EP; W.A. Widespread in the Great Victoria Desert of W.A. and S.A., scattered from east of Laverton and Queen Victoria Spring in W.A. to the western edge of the Gawler Ranges in S.A. It grows on red sand over shallow powdery limestone throughout most of its range, often near or around salt or playa lakes. Flowers: Apparently sporadic and probably related to rainfall events.

Distinguished within the *E. striatocalyx* group by the combination of mallee habit; persistent rough bark on lower stems; variably pruinose branchlets, buds and fruits; blue-green to grey-green lanceolate leaves; slightly ribbed, medium-sized buds with conical to hemispherical opercula; and medium-sized smooth to weakly ribbed fruits. On sand dunes where the Great Victoria Desert extends into the western Gawler Ranges, *E. gypsophila* appears to intergrade with *E. calcareana*.

46. ***Eucalyptus incrassata*** Labill., *Nov. Holl. Pl.* 2: 12 (1806). — *E. costata* F.Muell. & Behr ex F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 33 (1855); *E. incrassata* var. *costata* (F.Muell. & Behr ex F.Muell.) N.T.Burb., *Trans. Roy. Soc. South Australia* 71: 150 (1947); *E. incrassata* subsp. *costata* (F.Muell. & Behr ex F.Muell.) F.C.Johnstone & Hallam, *Proc. Roy. Soc. Victoria* 91: 204 (1980); *Eucalyptus costata* subsp. *murrayana* L.A.S.Johnson & K.D.Hill, *Telopea* 9: 269 (2001). *E. angulosa* auct. non Schauer: J.M.Black, *Fl. S. Austral.* 3: 420 (1926), partly; W.R.Barker *et al.*, *J. Adelaide Bot. Gard. Suppl.* 1: 100 (2005), partly; *E. incrassata* var. *angulosa* auct. non (Schauer) Benth.: Jessop, *List Vasc. Pl. S. Austral* 65 (1983), partly; both misapplications as to specimens from YP, SL & SE. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 125 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 352 (2001); D.Nicolle, *Eucalypts S. Austral.* 79 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 35 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 112, 113 (2013).

Mallee, 4–8 m high, lignotuberous; bark often rough on the lower stems, loose, ribbony to flaky, pale yellow-brown to grey; smooth above or smooth throughout, decorticating in ribbons, reddish-tan to yellowish-tan to grey to cream; branchlets not pruinose, pith glands absent or present; cotyledons reniform; juvenile leaves opposite for a few pairs then becoming disjunct, petiolate, glabrous, ovate to lanceolate, not pruinose, dull and blue-green soon becoming glossy and green; adult leaves disjunct, petiolate, lanceolate, 50–150 × 10–30 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters (rarely 3) 7-flowered, held erect to slightly pendulous; peduncles 10–28 mm long, pedicels 1–8 mm long, buds smooth or ribbed, not pruinose, 11–23 mm long, 5–11 mm diam.; hypanthia cylindrical to obconical, opercula conical to beaked, about equal in length to hypanthium; flowers cream; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 to 8 vertical rows. **Fruits** tapering to pedicels, barrel-shaped to cylindrical to slightly urceolate, smooth or ribbed, not pruinose, 9–18 mm long, 7–12 mm diam.; disc descending; valves 3 or 4, enclosed or to rim level; seeds dark grey to black, flattened-pyramidal, ribbed. **Ridge-fruited mallee, yellow mallee. Pl. 13H–K.**

S.A.: EP, NL, MU, YP, SL, SE; W.A.; Vic.; N.S.W. Widespread and common through the mallee shrublands of southern Australia, including most of the wheatbelt of south-western W.A. and disjunctly from the Gawler Ranges and near Streaky Bay in S.A. eastwards throughout much of Eyre, Yorke and Fleurieu Peninsulas, the Murray mallee, and upper south-east of S.A. to western Vic. and far south-western N.S.W. Notably absent from Kangaroo Island and the foot of Yorke Peninsula. Restricted to well-drained sandy soils usually overlying limestone, often on sand dunes or otherwise deep sand. Flowers: Mainly winter to summer.

Closely related to *E. angulosa* and *E. capitanea*, and probably intergrading with each of these species where their distributions adjoin. *Eucalyptus incrassata* is a widespread and variable species (particularly in WA.), especially with respect to bud and fruit shape, size and degree of ribbing. The species requires further study to investigate the pattern of variation in the species and ascertain if any of the variants warrant formal taxonomic recognition.

47. **Eucalyptus intertexta** R.T.Baker, *Proc. Linn. Soc. New South Wales* 25: 308 (1900). — *E. intertexta* var. *diminuta* Blakely, *Key Eucalypts* 169 (1934); *E. intertexta* var. *fruticosa* Blakely & Jacobs in Blakely, *Key Eucalypts* 168 (1934). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 457 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 213 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 403 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 309 (2004); D.Nicolle, *Eucalypts S. Austral.* 145 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 170, 171 (2013).

Tree, often several-stemmed and sometimes mallee-like, 2–20 m high, lignotuberous; bark usually rough on lower trunk(s) and sometimes to larger branches, fibrous to flaky, moderately to coarsely fissured, grey to red-brown; smooth above, decorticating in short strips and flakes, pale grey to white; branchlets sometimes pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 4–8 pairs then disjunct, petiolate, glabrous, ovate to linear, sometimes pruinose, dull, bluish; adult leaves disjunct, petiolate, broad-lanceolate to narrow-lanceolate, 50–160 × 8–25 mm, concolorous, rarely slightly pruinose, dull, blue-green to grey-green. **Inflorescences** mostly terminal panicles, some axillary; umbellasters 7-flowered, held erect; peduncles 5–17 mm long, pedicels 2–8 mm long, buds smooth, sometimes pruinose, 4–8 mm long, 2–4 mm diam.; hypanthia cupular to obconical; opercula bluntly conical, shorter than hypanthium; flowers white; stamens inflexed or irregularly flexed, all fertile; anthers adnate to subversatile, cuboid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, hemispherical to cupular to barrel-shaped, smooth, rarely pruinose, 3–9 mm long, 4–8 mm diam.; disc descending; valves 4 or 5, enclosed; seeds brown, compressed ovoid, finely reticulate. **Gum-barked coolabah, inland red box. Fig. 15J–M.**

S.A.: NW, LE, ?GT (Webbs Dam), FR, EA, EP; W.A.; N.T.; Qld.; N.S.W. Widespread from the MacDonnell Ranges (N.T.) and Gibson Desert (W.A.) through S.A. to central N.S.W. and to the Charleville area in southern Qld. Common throughout the northern Flinders Ranges and Olary Spur areas, and in the ranges of north-western S.A., with scattered population on north-eastern Eyre Peninsula centred on the Baxter Range, and possibly northwards in the Gardner-Torrens region (e.g. Webbs Dam near Bon Bon). Although the species occurs in arid regions, it is restricted to habitats receiving supplementary moisture from runoff rainfall, such as creek lines and soaks, or rocky sites in hilly terrain (including the summit of Mt Zeil in the N.T. – at 1531 m, the highest point on the Australian mainland west of the Great Dividing Range). Flowers: Mainly autumn to spring.

There is some regional variation in the species, with central Australian populations (including the ranges of north-western S.A.) often having pruinose branchlets and relatively short and broad juvenile leaves while eastern populations (e.g. Qld and N.S.W.) are rarely pruinose and have relatively narrow juvenile leaves.

Used as fuelwood.

48. **Eucalyptus lansdowneana** F.Muell. & J.E.Br. in J.E.Br., *Forest Fl. S. Australia* 9: t. 31 (1890). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 406 (2001); D.Nicolle, *Eucalypts S. Austral.* 143 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 194, 195 (2013).

Mallee of straggly habit, 2–6 m high, branches flexuous and pendulous, lignotuberous; bark rough and loose on lower stems or smooth throughout, smooth bark decorticating in strips, tan to grey to cream; branchlets lacking pith glands; cotyledons reniform; juvenile leaves opposite for a few pairs then becoming disjunct, petiolate, ovate to broad-lanceolate, dull, green; adult leaves disjunct, petiolate, lanceolate to falcate, 90–180 × 14–30 mm, concolorous, very glossy, green to yellow-green. **Inflorescences** appearing terminal through the abortion of terminal leaf shoots, often on leafless sections of branchlets; umbellasters 7-flowered, held erect; peduncles 5–16 mm long, pedicels 2–5 mm long; buds clavate, 10–14 mm long, 5–7 mm diam.; hypanthia with a few longitudinal ribs or angles; opercula conical, smooth or sometimes with ribs or angles extending from hypanthium, shorter than hypanthium; flowers crimson-red fading to pink; stamens inflexed, outer stamens longer and lacking anthers (staminodes); anthers adnate, globose; ovules in 4 vertical rows. **Fruits** sessile or nearly so, cylindrical to slightly urceolate, with 1–3 longitudinal ribs or angles, 8–12 mm long, 7–12 mm diam.; disc descending; valves 4 or 5, enclosed in fruit; seeds dark grey-brown to black, angular-compressed-ovoid, fine to moderately pitted reticulum. **Red-flowered mallee box, crimson mallee. Fig. 16A–E, Pl. 14A–D.**

S.A.: EP. Restricted to the higher, south-western part of the Gawler Ranges on upper Eyre Peninsula, endemic to S.A. It grows on the slopes and tops of various hills bounded by Kododo Hill, Conical Hill, Paney Bluff and the hills south-west of Scrubby Peak. Flowers: Mainly winter to spring.

Isolated in *E.* sect. *Adnataria*, with no known close relatives. It is distinctive within the section because of its very open, pendulous crown and crimson flowers.

Ornamental mallee. Occasionally cultivated for its red flowers; the species has an open and scraggy habit and requires periodic hard pruning to maintain a bushy plant.

49. **Eucalyptus largiflorens** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 54 (1855). — *E. bicolor* A.Cunn. ex T.Mitch., *J. Exped. Trop. Austral.* 390 (1848), ?*nom. nud.* — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 453 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 214 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 398 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 315 (2004); D.Nicolle, *Eucalypts S. Austral.* 151 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 175 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 168, 169 (2013).

Tree, 6–20 m high, lignotuberos; bark rough to small branches, hard, finely to moderately fissured, grey; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 5–10 pairs then disjunct, petiolate, glabrous, linear, not pruinose, dull, bluish; adult leaves disjunct, petiolate, lanceolate to narrow-lanceolate, 60–180 × 8–20 mm, concolorous, not pruinose, dull or rarely glossy, bluish or rarely green. **Inflorescences** terminal panicles; umbellasters 7–11-flowered, held erect; peduncles 1–11 mm long, pedicels 1–5 mm long, buds smooth, not pruinose, 3–5 mm long, 2–3 mm diam.; hypanthia cupular to obconical; opercula conical to hemispherical, shorter than hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** on short pedicels, hemispherical to cupular to barrel-shaped, smooth, not pruinose, 3–5 mm long, 3–5 mm diam.; disc descending; valves 3 or 5, enclosed; seeds brown to black, compressed ovoid, finely reticulate. **Black box, river box. Fig. 16F–I, Pl. 14E–I.**

S.A.: LE, FR, EA, NL, MU, SL, SE; Qld.; N.S.W.; Vic. Widespread throughout the Murray-Darling basin east of the Great Dividing Range, from south of Roma in southern Qld, southwards through N.S.W. and north-western Vic. to Lake Alexandrina and watercourses flowing into the eastern side of Gulf St Vincent in S.A. Also scattered in the Lake Frome basin and with an outlying population in the Lake Eyre basin on the Cooper Creek floodplain near Etadunna Homestead. Restricted to heavy soils subject to periodic inundation, usually floodplains, including black cracking clays. Flowers: Mainly winter to summer.

A distinctive box species (*E. ser. Buxceales*) due to its long and very narrow bluish juvenile leaves, completely rough but finely-textured grey bark; crown of usually dull bluish leaves, and the small buds and fruits in terminal panicles. Rare hybrids between *E. largiflorens* and the distantly-related *E. gracilis* have been recorded at various localities along the Murray River floodplain. These hybrids have been studied extensively in the Chowilla area, north of Renmark, and are known locally as ‘green box’ (Parsons & Zubrinich 2010). The hybrids usually occur on the clay floodplain with *E. largiflorens* (whereas *E. gracilis* occupies sandier soils on more upland sites) and can be distinguished from *E. largiflorens* most conspicuously by their green adult leaves, a characteristic in common with *E. gracilis* (other characteristics of the hybrid are generally intermediate between the two species).

Prefers clay soils.

50. **Eucalyptus leptophylla** F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 123 (1856). — *E. foecunda* auct. non Schauer: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 919 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 115 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 302 (2001); Nicolle, *Eucalypts Victoria & Tasman.* 29 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 94, 95 (2013).

Mallee, 2–6 m high, lignotuberos; bark usually smooth throughout (sometimes with a small amount of rough and loose on the lower stems) coppery to grey to cream; decorticating in strips; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for many pairs then becoming disjunct, sessile, elliptical; sometimes weakly pruinose, dull, bluish; adult leaves disjunct, petiolate, narrow-lanceolate to linear, 40–90 × 4–12 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–13-flowered, held erect; peduncles 3–10 mm long, pedicels 0–4 mm long; buds ovoid, not pruinose, 4–7 mm long, 3–5 mm diam.; hypanthia obconical, smooth; opercula bluntly conical to rounded, smooth, about equal in length to hypanthium, becoming orange to red before flowering; flowers white; stamens strongly inflexed, all fertile; anthers adnate, cuboid to globoid; ovules in 4 vertical rows. **Fruits** sessile or pedicellate, cupular to shortly barrel-shaped, smooth, not pruinose, 3–6 mm long, 3–6 mm diam.; disc descending, whitish; valves 3 (or 4), enclosed but sometimes with split style remnants remaining; seeds grey to brown, compressed ovoid, smooth or very finely reticulate. **Narrow-leaved red mallee, March mallee. Fig. 16J–M, Pl. 15A–G.**

S.A.: NU, FR, EA, EP, NL, MU, YP, SL, KI, SE; N.S.W.; Vic.; W.A. Widespread throughout much of southern Australia, from southern W.A. eastwards along the Nullarbor coast into the agricultural areas of S.A., including Kangaroo Island and parts of the Mount Lofty Ranges, and into south-western N.S.W. and north-western Vic. Occurs on a variety of soils (but often on sandy soils) in mallee shrubland vegetation. Flowers: Nov.–Mar.

Differs from *Eucalyptus* sp. Great Victoria Desert (*D.Nicolle 3877 & M.French*) in the usually smooth bark, less pruinose, elliptical seedling leaves, mature crown of fully adult leaves, and the more rounded opercula. Populations



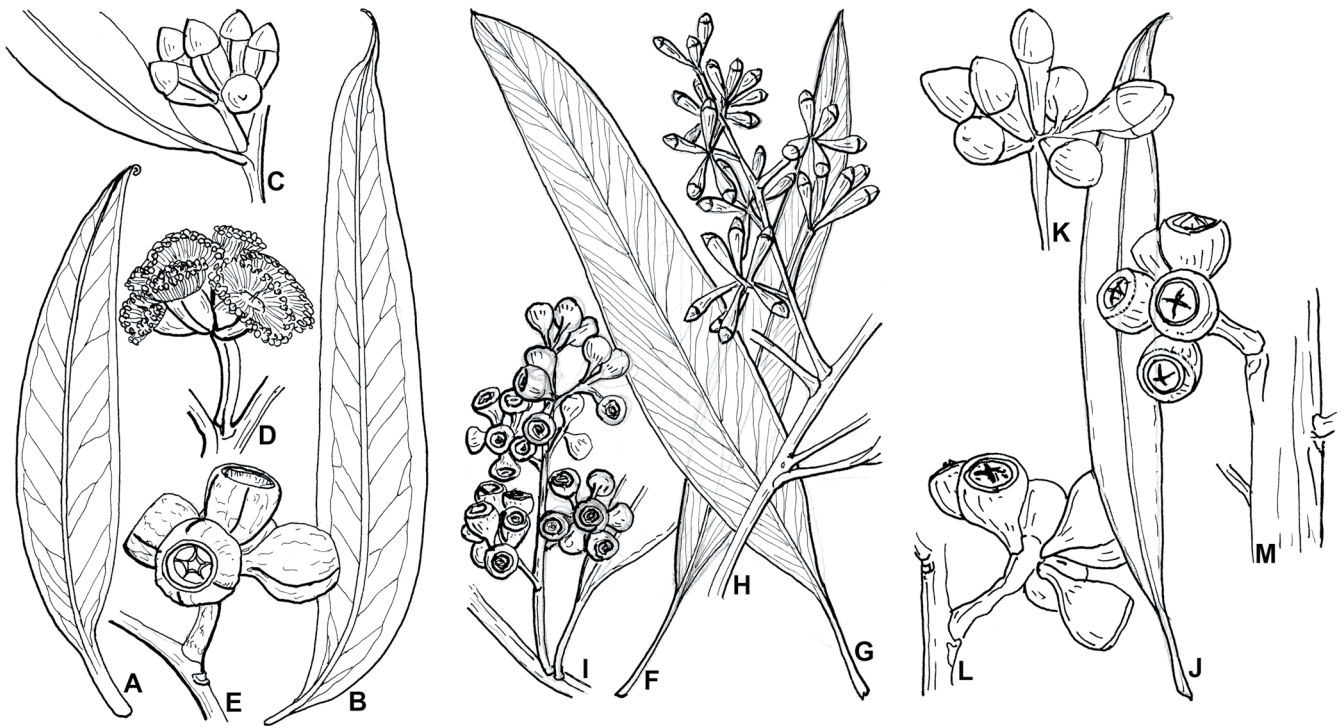


Fig. 16. A–E, *Eucalyptus lansdowneana*: A & B, leaves; C, buds; D, flowers; E, fruits. F–I, *E. largiflorens*: F & G, leaves; H, panicle of buds; I, fruits. J–M, *E. leptophylla*: J, leaf; K, buds; L & M, fruits. Illustration by G.R.M. Dashorst.

in the far south-eastern fringe of the Great Victoria Desert, in a thin band from north of Wudinna to north of Ceduna, display morphology which is intermediate between *E. leptophylla* and *E. sp.* Great Victoria Desert, and may represent intergrades between the two species. *Eucalyptus leptophylla* and *E. sp.* Great Victoria Desert are not closely related to any other species in S.A., but are similar to a number of species from southern W.A., including *E. foecunda* from the Perth area, with which these two species were previously included.

Grown as an ornamental mallee for its crown of fine, glossy green leaves. Widely cultivated in low to moderate rainfall regions of southern Australia; it requires a well-drained soil, is drought tolerant and will tolerate limestone.

51. ***Eucalyptus leucoxylon*** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 33 (1855).

Tree, sometimes several-stemmed, 4–30 m high, lignotuberous; bark sometimes rough on lower trunk(s), loose, fibrous to plate-like, dark yellow-brown to grey; smooth above or completely smooth, decorticating in strips and plates, yellowish to grey to cream; branchlets sometimes pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for numerous pairs, sessile, glabrous, cordate or ovate to lanceolate, sometimes pruinose, dull, green to blue-grey; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 48–200 × 8–45 mm, concolorous, dull to slightly glossy, green to blue-green. **Inflorescences** axillary; umbellasters 3-flowered; peduncles 2–20 mm long, held erect to slightly pendulous, pedicels 2–20 mm long, buds ovoid to globular, smooth, 5–18 mm long, 4–9 mm diam.; hypanthia cupular to obconical; opercula conical to beaked, equal in length or slightly shorter than hypanthium; flowers creamy-white to pink to red; stamens inflexed, outer stamens lacking anthers (staminodes), rarely all fertile; anthers adnate, cuboid; ovules in 4–6 vertical rows. **Fruits** hemispherical to truncate globose to barrel-shaped to cylindrical, smooth, 5–17 mm long, 6–14 mm diam.; disc descending; valves 5 or 6 (or 7), enclosed; seeds brown to dark grey, compressed ovoid, shallowly reticulate. **South Australian blue gum, yellow gum.**

Widespread in medium-rainfall areas of S.A., from the Dutchmans Stern in the Flinders Ranges southwards throughout the Mount Lofty Ranges and adjacent areas to Kangaroo Island and eastwards into the western half of Vic. and just over the Murray River into N.S.W. Flowers: Autumn to spring.

Five subspecies are recognized, of which four occur in S.A (none endemic), and the fifth (subsp. *bellarinensis*) occurs mainly on the Bellarine Peninsula near Geelong in Vic. Commonly hybridises with the eastern Australian *E. sideroxylon* in cultivation.

Timber is mainly used for fuelwood; the species is also an excellent honey tree. Commonly cultivated as an ornamental tree in southern Australia.

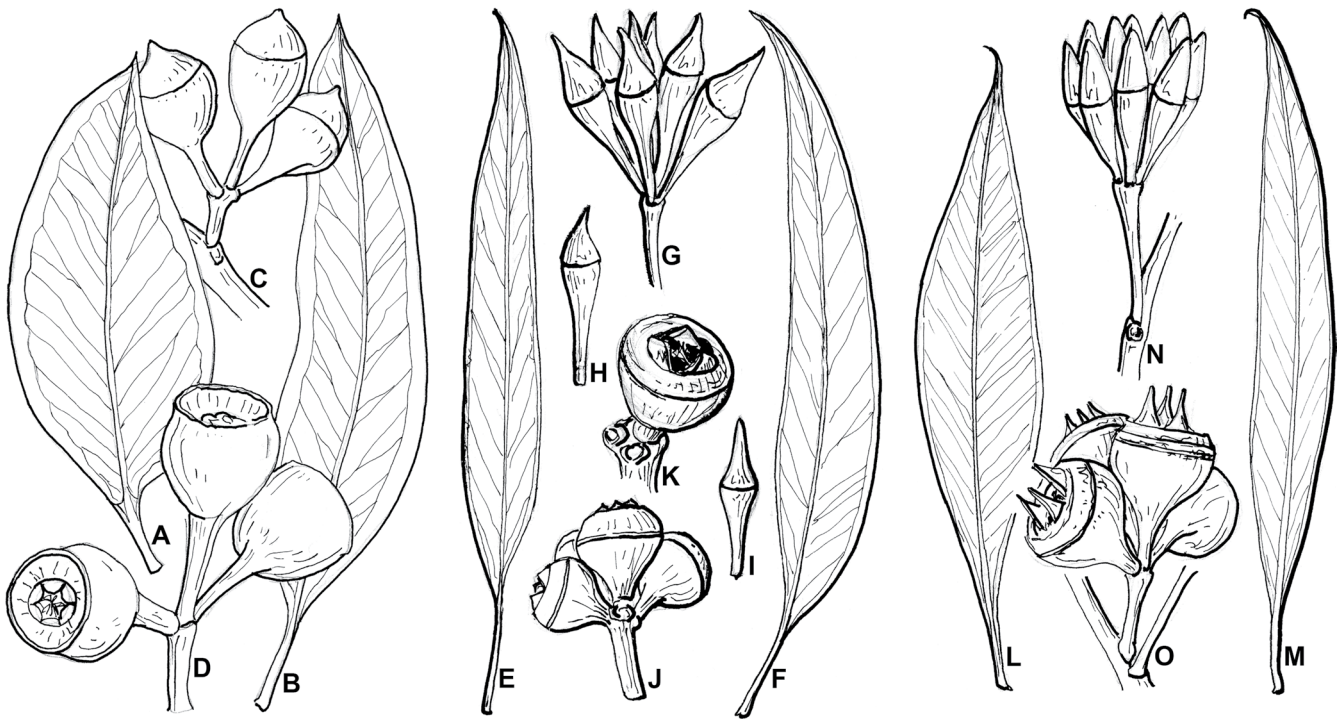


Fig. 17. A–D, *Eucalyptus leucoxylon* subsp. *pruinosa*: A, intermediate leaf; B, adult leaf; C, buds; D, fruits. E–J, *E. macrorhyncha*: E & F, leaves; G–I, buds; J & K, buds. L–O, *E. mannensis*: L & M, leaves; N, buds; O, fruits. Illustration by G.R.M. Dashorst.

1. Juvenile leaves pruinose; branchlets, flower buds and fruits often pruinose.. 51c. *E. leucoxylon* subsp. *pruinosa*
- 1: Juvenile leaves not pruinose; branchlets, flower buds and fruits not pruinose
  2. Pedicels shorter than fruit length..... 51d. *E. leucoxylon* subsp. *stephaniae*
  - 2: Pedicels equal or longer than fruit length
    3. Adult leaves mostly <25 mm wide; fruits 6–13 mm long, 7–12 mm diam.....  
..... 51a. *E. leucoxylon* subsp. *leucoxylon*
    - 3: Adult leaves mostly 16–45 mm wide; fruits 12–17 mm long, 10–14 mm diam. ....  
..... 51b. *E. leucoxylon* subsp. *megalocarpa*

51a. ***Eucalyptus leucoxylon*** F.Muell. subsp. ***leucoxylon*** — *E. leucoxylon* var. *erythrostroma* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 127 (1856); *E. leucoxylon* var. *rugulosa* Miq., *Ned. Kruidk. Arch.* 4: 127 (1856); *E. leucoxylon* var. *rostellata* Miq., *Ned. Kruidk. Arch.* 4: 127 (1856); *E. leucoxylon* var. *angulata* Benth., *Fl. Austral.* 3: 210 (1867). *E. leucoxylon* subsp. *megalocarpa* auct. non Boland: W.R.Barker *et al.*, *J. Adelaide Bot. Gard. Suppl.* 1: 102 (2005), partly, as to KI & SL records only. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 252 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 416 (2001); D.Nicolle, *Eucalypts S. Austral.* 177 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 215 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 198, 199 (2013).

Tree 8–30 m high; bark smooth throughout or with some rough, loose plate-like bark on the lower trunk; branchlets not pruinose; juvenile leaves cordate to broad-lanceolate, not pruinose, green to blue-green; adult leaves 60–185 × 10–26 mm, not pruinose, green. **Peduncles** 4–12 mm long, pedicels 5–13 mm long, buds ovoid, 6–17 long, 5–7 mm diam., not pruinose; flowers creamy-white to pink to red. **Fruits** usually tapering to pedicel, truncate-globose to barrel-shaped to cylindrical, not pruinose, 6–13 mm long, 7–12 mm diam. **South Australian blue gum. Pl. 15H–L, 16A & B.**

S.A.: ?FR, ?EP, NL, MU, SL, KI, SE; Vic. Common in the Mount Lofty Ranges south from the Barossa Valley, on Kangaroo Island, and with disjunct occurrences in the Wirrabara area of the southern Flinders Ranges and in the far south-east of the State, where it extends into Vic. The subspecies is largely replaced by subsp. *pruinosa* in the northern Mount Lofty Ranges and southern Flinders Ranges (from the Barossa area northwards) and in parts of the south-east of the State. The occurrence of the taxon in the EP and FR regions needs to be confirmed. Flowers: Mainly winter to spring.

Distinguished within the species by the non-pruinose juvenile and adult morphology, the relatively long peduncles and pedicels (pedicels equal to or longer than, and tapering to, fruit), and the medium-sized, truncate-globose to barrel-shaped or cylindrical fruits.

Extensively cultivated in southern Australia as an ornamental tree in urban areas and for shade, shelter, fuelwood and honey in rural regions.

- 51b. **Eucalyptus leucoxylon** subsp. **megalocarpa** Boland, *Austral. Forest Res.* 9: 68 (1979). — *E. leucoxylon* var. *macrocarpa* J.E.Br., *Forest Fl. S. Austral.* 2: t. 7 & 8 (1883). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 253 (2006); D.Nicolle, *Eucalypts S. Austral.* 179 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 217 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 204, 205 (2013).

Tree, often of poor or tumbledown form, 4–12 m high; bark smooth throughout or with some rough, loose plate-like bark on the lower trunk; branchlets not pruinose; juvenile leaves cordate to ovate, not pruinose, green to blue-green; adult leaves 80–190 × 15–45 mm, not pruinose, green. **Peduncles** 5–20 mm long, pedicels 5–20 mm long, buds ovoid, 12–18 long, 6–9 mm diam., not pruinose; flowers creamy-white to pink to red. **Fruits** tapering to pedicel, truncate-globular to barrel-shaped to subcylindrical, not pruinose, 12–17 mm long, 10–14 mm diam. **Large-fruited South Australian blue gum.**

S.A.: SE; Vic. Restricted to coastal areas from near Robe in S.A. south-east to the Glenelg River estuary in Vic. Flowers: Mainly winter to spring.

Distinguished within the species by the non-pruinose juvenile and adult morphology, the relatively broad adult leaves, the relatively long peduncles and pedicels (pedicels equal to or longer than, and tapering to, fruit), and the large, truncate-globose to barrel-shaped or subcylindrical fruits. Specimens of *E. leucoxylon* subsp. *leucoxylon* with large buds and fruits that approach the bud and fruit dimensions of subsp. *megalocarpa* occur sporadically on Kangaroo Island, the southern Mt Lofty Ranges in parts of the south east of the State. Such individuals can be distinguished from subsp. *megalocarpa* by their taller habit and narrower adult leaves.

Extensively cultivated in southern Australia as an ornamental tree, this subspecies has a smaller habit than the other subspecies, with cultivated trees forming a dense bushy crown. (Rare status in S.A.)

- 51c. **Eucalyptus leucoxylon** subsp. **pruinosa** (F.Muell. ex Miq.) Boland, *Australian Forest Res.* 9: 68 (1979). — *E. leucoxylon* var. *pruinosa* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 127 (1856). *E. leucoxylon* var. *pauperita* J.E.Br., *Forest Fl. S. Austral.* 2: t. 9 (1883). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 253 (2006); D.Nicolle, *Eucalypts S. Austral.* 175 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 211 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 202, 203 (2013).

Tree, sometimes of poor form, 4–22 m high; bark smooth throughout or with some rough, loose plate-like bark on the lower trunk; branchlets pruinose, especially on drying; juvenile leaves cordate to ovate, pruinose, bluish; adult leaves 60–200 × 10–25 mm, sometimes pruinose, blue-green. **Peduncles** 3–10 mm long, pedicels 3–9 mm long, buds globular, 7–10 long, 5–8 mm diam., usually pruinose; flowers creamy-white to rarely pink. **Fruits** usually distinct from pedicel, truncate-globose to hemispherical (to subcylindrical), usually pruinose when young, 5–10 mm long, 7–14 mm diam. **Blue gum, yellow gum. Fig. 17A–D.**

S.A.: FR, EP (Flinders Ranges only), NL, MU, SL, SE; Vic.; N.S.W. Extending from the Dutchmans Stern in the Flinders Ranges southwards to the Barossa Valley, and disjunctly in the south-east of the State extending eastwards into Vic. and just over the Murray River into N.S.W. Flowers: Mainly winter to spring.

Distinguished within the species by the pruinose juvenile leaves, the variably pruinose adult morphology (often becoming apparent on specimens after drying), the relatively short peduncles and pedicels (pedicels equal to or shorter than, and usually distinct from, fruit), and the relatively small, truncate-globose to hemispherical fruits.

- 51d. **Eucalyptus leucoxylon** F.Muell. subsp. **stephaniae** K.Rule, *Muelleria* 7: 391 (1991). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 173 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 209 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 200, 201 (2013).

Tree, usually of poor form and often several-stemmed, 4–20 m high; bark smooth throughout or rough on lower trunk(s), loose fibrous to plate-like; branchlets not pruinose; juvenile leaves ovate to lanceolate, not pruinose, green to blue-green; adult leaves 48–160 × 8–20 mm, not pruinose, green. **Peduncles** 2–11 mm long (usually shorter than fruit length), pedicels 2–8 mm long, buds globular, 5–9 long, 4–8 mm diam., not pruinose; flowers creamy-white to rarely pink. **Fruits** usually distinct from pedicel, hemispherical to truncate-globular, not pruinose, 5–9 mm long, 6–11 mm diam. **Scrubby blue gum, desert blue gum. Pl. 16C–E.**



S.A.: MU, SL, SE; Vic. From Meningie eastwards and south-eastwards, both coastal (e.g. Salt Creek) and inland, across the Vic. border into the Big and Little Deserts. Flowers: Mainly winter to spring.

Distinguished within the species by the non-pruinose juvenile and adult morphology, the relatively short peduncles and pedicels (pedicels equal to or shorter than, and usually distinct from, fruit), and the relatively small, truncate-globose to hemispherical fruits.

52. **Eucalyptus macrorhyncha** F.Muell. ex Benth. subsp. **macrorhyncha**, *Fl. Austral.* 3: 207 (1867) — *E. macrorhyncha* var. *minor* Blakely, *Key Eucalypts* 184 (1934), as *macrorrhyncha*. — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 539 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 279 (2006); D.Nicolle, *Eucalypts S. Austral.* 183 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 221 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 208, 209 (2013).

Tree, 7–30 m tall, lignotuberous; bark rough to small branches, stringy, moderately to deeply fissured, grey-brown to red-brown; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 4 to 5 pairs then disjunct, petiolate, scabrid, ovate to broad-lanceolate, not pruinose, dull to glossy, green; adult leaves disjunct, petiolate, lanceolate to falcate, 75–150 × 12–35 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 7–18 mm long, pedicels 3–6 mm long, buds diamond-shaped, smooth, not pruinose, 5–9 mm long, 4–5 mm diam.; hypanthia obconical; opercula beaked, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** usually distinct from pedicel, hemispherical to globose, smooth, not pruinose, 5–10 mm long, 6–12 mm diam.; disc broad, ascending; valves 3 or 4, strongly exerted; seeds brown to black, pyramidal. **Red stringybark. Fig. 17E–J, Pl. 16H.**

S.A.: NL; Vic.; N.S.W. Widespread on the western and northern slopes of the Great Dividing Range in N.S.W. and Vic., from near Stawell in Vic. to the New England Tableland in N.S.W. A highly disjunct population occurs west of Sevenhill in the Mid North of S.A., where it grows on gravely loams in hilly terrain in woodland. Flowers: Mainly autumn to winter.

Subsp. *cannonii*, from the Rylstone area of N.S.W., differs in its larger, angular buds and larger fruits with a flared disc.

(Rare status in S.A.)

53. **Eucalyptus mannensis** Boomsma subsp. **mannensis**, *Trans. Roy. Soc. South Australia* 88: 115 (1964). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 231 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 206 (2004); D.Nicolle, *Eucalypts S. Austral.* 27 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 52, 53 (2013).

Mallee, 3–8 m high, lignotuberous; bark rough on the lower stems, hard-fibrous, moderately to coarsely fissured, grey-brown; smooth above, decorticating in strips, grey to tan to white; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 6–9 pairs then disjunct, petiolate, glabrous, lanceolate, dull, green to blue-green; adult leaves disjunct, petiolate, narrow-lanceolate, 60–125 × 8–20 mm, concolorous, not pruinose, very glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 3–10 mm long, pedicels 1–5 mm long, buds smooth, not pruinose, 6–9 mm long, 3–5 mm diam.; hypanthia obconical to cupular; opercula rounded to conical, about equal in length to hypanthium; flowers white; stamens variously flexed, all fertile; anthers versatile, oblong to reniform; ovules in 4 vertical rows. **Fruits** tapering to pedicel, hemispherical, smooth, not pruinose, 3–7 mm long, 5–9 mm diam.; disc broad, level; valves 3 or 4, apically notched, slightly exerted; seeds grey-brown, compressed-ovoid, shallowly reticulate. **Mann Ranges mallee. Fig. 17L–O, Pl. 16F & G.**

S.A.: NW; W.A.; N.T. Widespread, but of scattered occurrence in the far north-west of the State, from near Mintabie westwards to the western fringes of the Great Victoria Desert in W.A. and north towards the MacDonnell Ranges in the N.T. Occurs on red sand on plains and on low dunes in open mallee shrubland. Flowers: Sporadic; probably related to rainfall events.

Subsp. *vespertina*, which occurs to the west of subsp. *mannensis* and is centred near Shark Bay in W.A., differs primarily in the crown of adult leaves which are dull and blue-green when young.

54. **Eucalyptus microcarpa** (Maiden) Maiden, *Crit. Rev. Eucalyptus* 6(8): 438 (1923). — *E. hemiphloia* var. *microcarpa* Maiden, *Trans. & Proc. Rep. Roy. Soc. South Australia* 26: 11 (1902); *E. odorata* var. *refracta* Blakely, *Key Eucalypts* 226



(1934). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 463 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 220 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 410 (2001); D.Nicolle, *Eucalypts S. Austral.* 155 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 181 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 178–181 (2013).

Tree, 8–25 m high, lignotuberous; bark rough up to large to small branches, hard and tightly held, finely fissured, grey, smooth above, decorticating in strips, tan to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to broad-lanceolate, rarely pruinose, dull to slightly glossy, blue-green; adult leaves disjunct, petiolate, lanceolate, 65–150 × 12–25 mm, concolorous, not pruinose, dull to glossy, green. **Inflorescences** terminal panicles and compound axillary umbels; umbellasters 7-flowered, held erect; peduncles 3–10 mm long, pedicels absent or to 5 mm long, buds fusiform, smooth or slightly angular, not pruinose, 6–10 mm long, 2–4 mm diam.; hypanthia obconical; opercula conical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globose; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, copular to barrel-shaped, smooth or slightly angular, not pruinose, 4–7 mm long, 3–5 mm diam.; disc descending; valves 3 or 4, enclosed; seeds brown to black, compressed ovoid, finely reticulate. **Grey box, green box. Fig. 18A–F, Pl. 16I–L.**

S.A.: FR, EP (Pichi Richi area only), NL, ?MU (north of Burra), SL, SE; N.S.W.; Vic. Of disjunct distribution in S.A., with three main areas of distribution, namely the Adelaide Plains and adjacent western slopes of the Southern Mount Lofty Ranges, the northern Mount Lofty Ranges and southern Flinders Ranges, mainly between Wirrabara and the Pichi Richi Pass, but also scattered more widely (e.g. Tothill Range and Narrien Range), and in the south-east of the State in the Bordertown to Frances area. The species grows in grassy box woodland in undulating or hilly terrain in loam to clay soils. Flowers: Mainly summer to winter.

Regional variation is evident in the species in S.A. Populations on the Adelaide Plains and adjacent western slopes of the Southern Mount Lofty Ranges (which includes the type of *E. odorata* var. *refracta* collected from Beaumont and are referred to as the ‘Adelaide Variant’ in Nicolle 2013) are atypical and display some morphological approach towards *E. odorata*. Populations in the southern Flinders Ranges are somewhat aberrant compared to populations in the south-east of the State (which extend eastwards into Vic.). In S.A., *E. microcarpa* appears to be genetically swamping the much rarer *E. albens* in the southern Flinders Ranges, with populations and individuals displaying morphology intermediate between the two species scattered in the Wirrabara to Mt Brown area. *Eucalyptus microcarpa* and *E. odorata* are mostly distinct throughout their distributions (with the latter differing in the generally smaller habit, coarser rough bark, narrowly elliptical and greener juvenile leaves, consistently axillary inflorescences and more cupular fruits) although some intergrading populations are known (e.g. Sellicks Hill Range, Clare Hills, and near Bordertown).

55. **Eucalyptus minniritchi** D.Nicolle, *Nuytsia* 13: 489 (2001). — *E. orbifolia* auct. non F.Muell.: D.Nicolle, *Eucalypts S. Austral.* 64 (1997); *E. websteriana* auct. non Maiden: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 918 (1986), as ‘*websterana*’. — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 92, 93 (2013).

Mallee of spreading and often dense habit, 2–3 m high, lignotuberous; bark ‘minniritchi’ type throughout, i.e. glossy, reddish-brown, decorticating in thin longitudinal strips that curl back and remain partially attached to reveal greenish to yellowish-brown bark beneath; branchlets pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, orbicular and emarginate, usually pruinose, dull, blue-green; adult leaves disjunct, on petioles 7–20 mm long, elliptical to obovate and emarginate, 18–46 × 10–35 mm, concolorous, pruinose when new, dull, blue-grey. **Inflorescences** axillary; umbellasters mostly 7-flowered, usually held erect; peduncles 6–20 mm long, pedicels 2.5–8 mm long, buds smooth, pruinose, 6–10 mm long, 5–8 mm diam.; hypanthia cupular; opercula bluntly conical when immature, maturing hemispherical, equal in length or longer than hypanthium; flowers pale creamy yellow; stamens variously flexed, all fertile; anthers versatile, dorsifixed, ovoid; ovules in 4 vertical rows. **Fruits** pedicellate, broadly obconical to hemispherical, smooth, pruinose at least when young, 7–10 mm long, 8–16 mm diam.; disc slightly to strongly ascending; valves 4 or 5, exserted; seeds dark grey-brown, angular-ovoid, finely reticulate. **Round-leaved mallee. Fig. 18F–I, Pl. 17A–D.**

S.A.: NW; W.A.; N.T. Occurs as very scattered populations on high ridges in the MacDonnell Ranges and Petermann Ranges of the N.T., just extending into W.A. in the Dean Range and in S.A. only on the highest parts of the Musgrave Ranges, such as Mt Woodroffe and Mt Everard. It occurs on the slopes and ridges of sandstone hills in skeletal soils between boulders in open mallee shrubland with a *Triodia* understorey. Flowers: Poorly known and probably related to rainfall events.

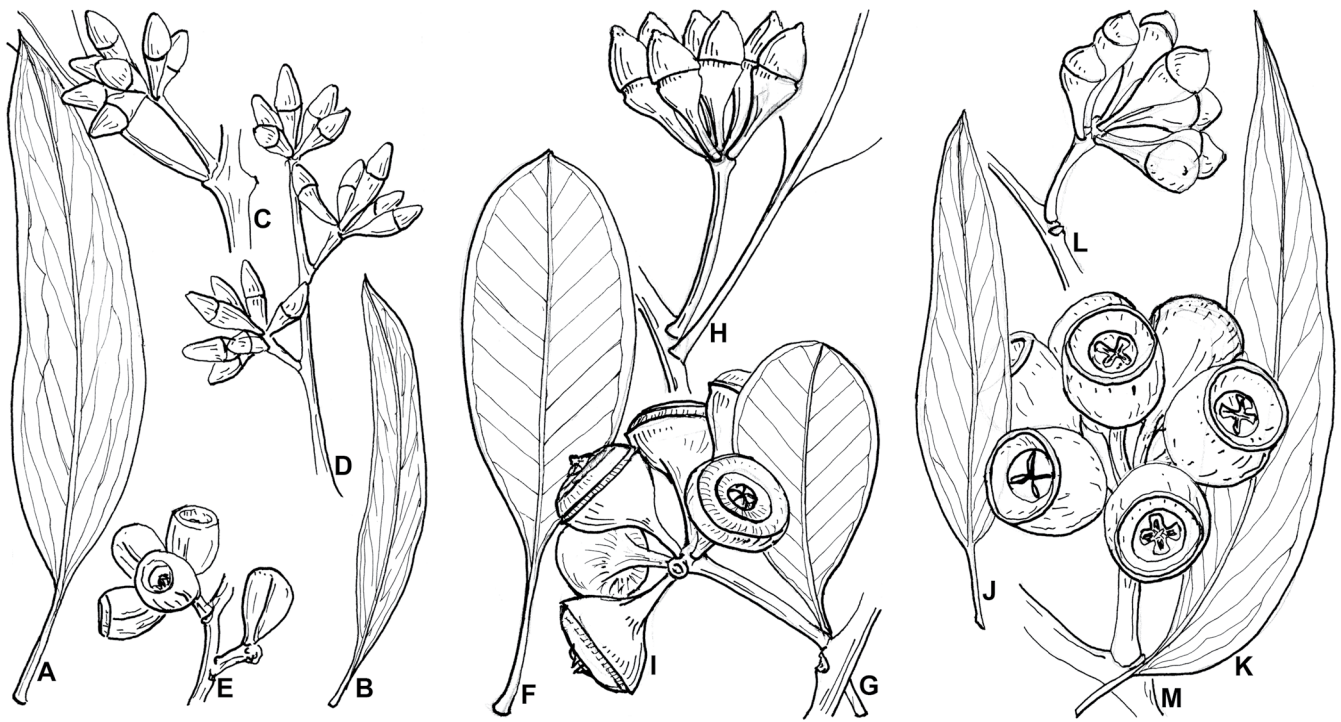


Fig. 18. A–F, *Eucalyptus microcarpa*: A & B, leaves; C & D, panicle of buds; E, fruits. F–I, *E. minniritchi*: F & G, leaves; H, buds; I, fruits. J–M, *E. obliqua*: J & K, leaves; L, buds; M, fruits. Illustration by G.R.M. Dashorst.

Somewhat intermediate in morphology between the W.A. endemic species *E. orbifolia* and *E. websteriana*, although distinct from both. In the strongly pruinose adult morphology, *E. minniritchi* is closest to *E. orbifolia*, while the bud morphology is closer to *E. websteriana*. Leaf and fruit morphology of *E. minniritchi* is intermediate between these two species.

Highly ornamental with its reddish ‘minniritchi’ type bark, crown of rounded greyish leaves and pale yellow flowers, and suitable for smaller gardens due to its small habit and non-competitive root system. Rarely cultivated.

56. ***Eucalyptus obliqua*** L’Hér., *Sert. Angl.* 18 (1789). — *E. falcifolia* Miq., *Ned. Kruidk. Arch.* 4: 136 (1856); *E. obliqua* var. *degressa* Blakely, *Key Eucalypts* 195 (1934); *E. obliqua* var. *megacarpa* Blakely, *Key Eucalypts* 194 (1934); *E. nervosa* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 139 (1856), *nom. illeg.* non Hoffmanns. (1824). — **Illustr.**: Boland *et al.*, *Forest Trees Austral.* ed. 5, 561 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 307 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 103 (2001); D.Nicolle, *Eucalypts S. Austral.* 189 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 241 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 214, 215 (2013).

Tree, sometimes several-stemmed on poorer sites and occasionally shrubby on very exposed coastal sites, 2–90 m tall, lignotuberous; bark rough throughout, moderately to coarsely fissured, fibrous and stringy (stringybark), grey-brown; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to broad-lanceolate, not pruinose, glossy, green; adult leaves disjunct, petiolate, broad-lanceolate to lanceolate to falcate, 65–220 × 16–60 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 11–21-flowered, held erect; peduncles 4–15 mm long, pedicels 2–8 mm long, buds clavate, smooth, not pruinose, 4–9 mm long, 3–5 mm diam.; hypanthia obconical; opercula hemispherical to conical, shorter than hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** pedicellate, cupular to barrel-shaped, smooth, not pruinose, 6–12 mm long, 5–11 mm diam.; disc descending; valves 3 or 4, enclosed below rim level; seeds brown, pyramidal, smooth. **Messmate stringybark, messmate.** Fig. 18J–M.

S.A.: SL, KI, SE; Vic.; N.S.W.; Tas.; Qld. Widespread on more fertile soils in the cooler, higher rainfall parts of the Great Dividing Range in south-eastern Australia, from near the N.S.W. border in southern Qld, southwards sporadically through the tablelands of N.S.W. to the southern half of Vic., much of Tas., and into the wettest parts of S.A. In S.A., it occurs in the higher rainfall parts of the Mount Lofty Ranges south from near Lyndoch, on Kangaroo Island, and in the south-east of the State from near Cape Jaffa south-east into Vic. The species always occurs on well-drained soils in areas of reliable rainfall, in forest or health vegetation. Flowers: Mainly late spring to early autumn.

Extensively harvested in Vic. and Tas. (for timber and wood chips), with the timber marked as Australian or Tasmanian oak. Requires a relatively high and reliable rainfall and a well-drained soil. The species is susceptible to the fungal root rot disease *Phytophthora*.

57. ***Eucalyptus odorata*** Behr ex Schldl., *Linnaea* 20: 657 (1847). — *E. odorata* var. *erythrandra* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 129 (1856), partly; *E. odorata* var. *angustifolia* Blakely, *Key Eucalypts* 226 (1934). *E. polybractea* auct. non R.T.Baker: D.Nicolle, *Eucalypts S. Austral.* 166 (1997); *E. woollsiiana* auct. non R.T.Baker: Maiden, *Crit. Rev. Eucalyptus* 5: 199–204 (1921); *Eucalyptus viridis* auct. non R.T.Baker: J.M.Black, *Fl. S.*

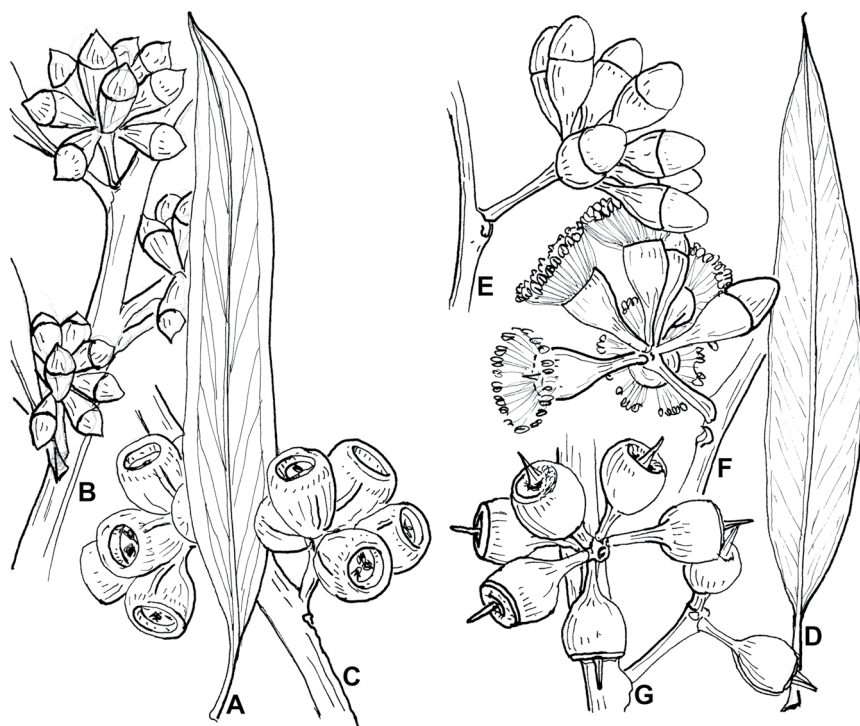


Fig. 19. A–C, *Eucalyptus odorata*: A, leaves; B, buds; C, fruits. D–G, *E. oleosa* subsp. *oleosa*: D, leaf; E, buds; F, flowers; G, fruits. Illustration by G.R.M. Dashorst.

*Austral.* ed.2, 3: 621 (1952); D.Nicolle, *Eucalypts S. Austral.* 160 (1997). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 219 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 409 (2001); D.Nicolle, *Eucalypts S. Austral.* 157 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 183 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 185 (2013).

Tree, often multi-stemmed and mallee-like, 2–12 m high, lignotuberous; bark variable, usually rough up to medium to small branches, hard to somewhat flaky, moderately to moderately-finely fissured, grey-brown, smooth above or rarely smooth throughout in smaller plants, decorticating in strips, coppery to pale grey to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, narrow-lanceolate to narrowly-elliptical, not pruinose, dull, blue-green to green; adult leaves disjunct, petiolate, linear to lanceolate, 45–115 × 7–20 mm, concolorous, not pruinose, dull to glossy, slightly blue-green to green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 4–7 mm long, pedicels 0–4 mm long, buds ovoid, smooth or slightly angular, rarely slightly pruinose, 4–8 mm long, 3–4 mm diam.; hypanthia cupular to obconical; opercula conical, about equal in length or slightly shorter than hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globose to cuboid; ovules in 4 vertical rows. **Fruits** near-sessile or on short pedicels, round to cupular to barrel-shaped, smooth, not pruinose, 5–8 mm long, 5–7 mm diam.; disc descending; valves 4 or 5, enclosed or to rim level; seeds brown, compressed ovoid, finely reticulate. **Peppermint box.** Fig. 19A–C, Pl. 17E–G.

S.A.: FR, EP, NL, MU, YP, SL, KI, SE; Vic. Occurs from Eyre Peninsula in S.A., eastwards to the Yanac area in western Vic., including parts of Kangaroo Island. Widespread through much of the Mt Lofty Ranges and north to the Wirrabara and Booleroo areas. Not known from Yorke Peninsula south of Thrington. It occurs in a variety of habitats, soils and vegetation types, but most commonly on loamy soils on undulating plains and on rolling hills. Flowers: Autumn to spring.

The very similar *E. cajuputea* is generally distributed in more arid regions to the north of *E. odorata*, and differs in its generally narrower juvenile and adult leaves, longer, tapering peduncles and pedicels, and slenderer buds and fruits. The distribution and the morphological differences between the two species are not fully understood and require further research, especially in the Southern Flinders Ranges. Closely related to *E. wimmerensis* which differs from *E. odorata* in its consistently mallee habit, less extensive rough bark, generally narrower adult leaves and generally smaller buds and fruits. *Eucalyptus odorata* is also closely related to *E. albopurpurea* and *E. microcarpa* and intergrades with both of these species are known (see notes under the latter two species). The relationship and taxonomic status of the ‘mallee boxes’ (*E. odorata*, *E. cajuputea*, *E. polybractea*, *E. wimmerensis* and *E. viridis*, as well as a number of very similar mallee box species from Vic. and N.S.W.) is complex and requires further study.



58. **Eucalyptus oleosa** F.Muell. ex Miq., *Nedl. Kruidk. Arch.* 4: 128 (1856). — ?*Eucalyptus* sp. N Brooker & Kleinig (1990). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 57, 59 (2013).

Mallee, 1.5–14 m high, lignotuberous; bark rough on lower stems, flaky-fibrous to stringy-fibrous, grey to dark grey-brown, smooth above, decorticating in long strips and ribbons, not powdery; branchlets very rarely pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for a few pairs then becoming spirally arranged around a five or seven-sided stem, sessile or with petiole to 4 mm long, linear to elliptical, dull, green to slightly blue-green, not pruinose; adult leaves disjunct, on petioles 7–20 mm long, narrow-lanceolate to broad-lanceolate, 65–130 × 7–23 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–11 (–13)-flowered, held erect; peduncles 4.5–14 mm long, pedicels 2–6 mm long, buds not pruinose, 6–14.5 mm long, 3–6 mm diam.; hypanthia hemispherical to cylindrical, opercula cylindrical to hemispherical to conical, slightly narrower to slightly wider than hypanthium at join, 0.7–2.4 times longer than hypanthium; flowers white; stamens variously flexed, all fertile; anthers adnate or weakly versatile, globose; ovules in 4 vertical rows. **Fruits** tapering to pedicel, barrel-shaped to globose, smooth, not pruinose, 4–8 mm long, 4–8 mm diam.; disc descending; valves 3 or 4, enclosed or exerted due to split style remnants; seeds grey-brown, compressed ovoid, smooth.

Distributed from the Ravensthorpe area and Lake Barlee in W.A. eastwards along the Nullarbor coast and southern Great Victoria Desert to Eyre, Yorke and Fleurieu Peninsulas, Kangaroo Island, the Flinders Ranges, through the Murray mallee into south-western N.S.W. and north-western Vic. Flowers: Mainly summer to autumn.

Four subspecies are recognized (two of them in S.A.); they differ from one another in seedling morphology and, to a lesser and variable extent, in adult morphology. The four subspecies form a geographic replacement pattern and intergrade in intervening zones. It may not be possible to distinguish specimens of subsp. *ampliata* from subsp. *oleosa* without seedling material. *Eucalyptus oleosa*, and in particular subsp. *ampliata*, can be easily confused with the superficially similar, but not closely related, *E. brachycalyx*, because of convergence in habit, bark, leaf, bud and fruit morphology. The two species are sympatric over much of the mallee shrublands on Eyre and Yorke Peninsulas. *Eucalyptus brachycalyx* can be immediately distinguished from *E. oleosa* in the field by its presence of pith glands in the branchlets. The deeply pitted seeds of *E. brachycalyx* are also quite distinctive from the almost smooth seeds of all members of *E. ser. Subulatae*. *Eucalyptus brachycalyx* also differs from *E. oleosa* in characters of the cotyledons, seedling leaves, internal bud characteristics (anthers, stamen arrangement, etc.) and in subtle fruit characteristics.

1. Seedling leaves linear, 4–20 times longer than wide; adult leaves 70–130 × 7–19 mm ..... 58b. **E. oleosa** subsp. **oleosa**
- 1: Seedling leaves elliptical, 1.8–5 times longer than wide; adult leaves 65–120 × 9–23 mm ..... 58a. **E. oleosa** subsp. **ampliata**

- 58a. **Eucalyptus oleosa** subsp. **ampliata** L.A.S.Johnson & K.D.Hill, *Telopea* 8: 179 (1999). — *E. oleosa* subsp. 'Coastal': D.Nicolle, *Eucalypts S. Austral.* 34 (1997); *E. oleosa* subsp. *victima* L.A.S.Johnson & K.D.Hill, *Telopea* 8: 179 (1999); *E. oleosa* subsp. *nyliciana* L.A.S.Johnson & K.D.Hill, *Telopea* 8: 180 (1999). *E. oleosa* F.Muell. ex Miq., partly: J.M.Black, *Fl. S. Austral.* 3: 417 (1926). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 35 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 59 (2013).

Juvenile leaves opposite for a few pairs then becoming spirally arranged around a five-sided stem, elliptical, 11–57 × 4.2–15 mm (length-width ratio 1.8:1–5.2:1); adult leaves narrow-lanceolate to broad-lanceolate, 65–120 × 9–23 mm. **Umbellasters** 7–11 (–13)-flowered; buds 6–10.5 mm long, 3–5 mm diam., opercula hemispherical to conical, narrower to equal (to very slightly wider) in width than hypanthium at the join, 0.7 to 2.4 times as long as hypanthium. **Fruits** barrel-shaped to globose, 4–7 mm long, 4.5–7 mm diam. **Red mallee; giant mallee.**

S.A.: NU, FR, EP, NL, MU, YP, SL, KI; W.A. Distributed from the Israelite Bay area of W.A. in the west, eastwards along the coast of the Great Australian Bight to Eyre, Yorke and Fleurieu Peninsulas and Kangaroo Island in S.A. It occurs as an often common component of mallee vegetation on level to slightly undulating topography. Soils are often shallow, calcareous red, brown or pale grey loams overlying limestone.

Seedling morphology alone will enable this subspecies to be distinguished from the other three subspecies of *E. oleosa*.



58b. **Eucalyptus oleosa** F.Muell. ex Miq. subsp. **oleosa**. — *E. oleosa* var. *angustifolia* Maiden, *Crit. Rev. Eucalyptus* 4(39): 278 (1919); *E. oleosa* subsp. 'Desert': D.Nicolle, *Eucalypts S. Austral.* 32 (1997); *E. oleosa* subsp. *repleta* L.A.S.Johnson & K.D.Hill, *Telopea* 8: 176 (1999). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 239 (2001); D.Nicolle, *Eucalypts S. Austral.* 31, 33 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 25 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 57 (2013).

Juvenile leaves opposite for a few pairs then becoming spirally arranged around a five-sided stem, linear, 16–77 × 1.3–8.5 mm (length-width ratio 4.3:1 – 20:1); adult leaves narrow-lanceolate to lanceolate, 70–130 × 7–19 mm. **Umbellasters** 7–11-flowered; buds 6–10 mm long, 3–4.5 mm diam., opercula cylindrical to conical, narrower to equal (to very slightly wider) in width than hypanthium at the join, 0.7 to 1.7 times as long as hypanthium. **Fruits** barrel-shaped to globose, 4–7 mm long, 4.5–7 mm diam. **Red mallee; giant mallee. Fig. 19D–G, Pl. 17H–L.**

S.A.: NW, NU, GT, FR, EA, EP, MU, SE; W.A.; Vic.; N.S.W. Distributed from the Kalgoorlie area in W.A. in the west, eastwards through the southern part of the Great Victoria Desert and the Murray Mallee to south-western N.S.W. and Vic. in the east. It occurs as a common to dominant component of open mallee to tall mallee vegetation on flat to slightly undulating topography, often in the swales between dunes or low ridges. Soils are calcareous orange to red sands to loams over limestone.

Subsp. *oleosa* cannot be reliably distinguished from subsp. *ampliata* using adult morphology alone. The two subspecies can be readily distinguished on the basis of seedling morphology.

59. **Eucalyptus ovata** Labill., *Nov. Holl. Pl.* 2: 13 (1806). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 148–151 (2013).

Tree, sometimes several-stemmed, 6–25 m tall, lignotuberous; bark often rough on the lower trunk(s) up to about 3 m, loosely fibrous, grey-brown; smooth above or sometimes completely smooth, decorticating in strips and ribbons, tan to grey to cream; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite for 5–7 pairs then becoming disjunct, petiolate, glabrous, ovate to elliptical, not pruinose, dull, green; adult leaves disjunct, petiolate, ovate to lanceolate, usually undulate, 60–185 × 16–55 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 3–20 mm long, pedicels 2–7 mm long, buds diamond-shaped to ovoid, smooth, not pruinose, 4–15 mm long, 4–9 mm diam.; hypanthia obconical, opercula conical to beaked (rarely hemispherical), about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, cuboid to cuneate; ovules in 4 vertical rows. **Fruits** tapering to pedicel, obconical, smooth, not pruinose, 3–10.5 mm long, 4–13 mm diam.; disc level to less commonly slightly ascending; valves 3 or 4, around rim level (slightly enclosed to slightly exerted); seeds brown to black, flattened ovoid, lacunose. **Swamp gum.**

Widespread in south-eastern Australia from near Mittagong in N.S.W., south throughout the southern half of Vic. and much of Tas., and east into south-eastern S.A. to near Robe, with disjunct populations occurring in the southern Mount Lofty Ranges south from about Kyeema Conservation Park, and in the south-western part of Kangaroo Island. Restricted to poorly drained sites subject to seasonal waterlogging or periodic inundation, such as broad creeks, swamps and well-watered floodplains. Flowers: Winter to spring.

Two subspecies are recognised, both of which occur in S.A.

1. Peduncles 3–12 mm long; fruits 4–7.5 mm diam. .... 59b. **E. ovata** subsp. **ovata**  
1: Peduncles 10–20 mm long; fruits 7.5–13 mm diam., often flared at rim ..... 59a. **E. ovata** subsp. **grandiflora**

59a. **Eucalyptus ovata** Labill. subsp. **grandiflora** (Maiden) D.Nicolle, *Native Eucalypts S. Austral.* 150 (2013). — *Eucalyptus ovata* Labill. var. *grandiflora* Maiden, *Crit. Rev. Eucalyptus* 3(7): 146 (1916). *Eucalyptus ovata* auct. non Labill., partly: J.M.Black, *Fl. S. Austral.* 3: 422 (1926). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 131 (2006); D.Nicolle, *Eucalypts S. Austral.* 125 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 59 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 150, 151 (2013).

Adult leaves 85–185 × 22–56 mm. **Peduncles** 10–20 mm long; buds 9–15 mm long, 5–9 mm diam. **Fruits** 8–10.5 mm long, 7.5–13 mm diam. **Large-flowered swamp gum. Fig. 20G–I.**

S.A.: SE; Vic. Restricted to the south-east of S.A., from Furner and Big Heath conservation parks south-east to near Portland in Vic. The subspecies has a more inland distribution compared to subsp. *ovata* in the south-east of S.A.

Distinguished within the species primarily by the relatively large adult leaves, longer peduncles, larger buds and larger, flared fruits.

- 59b. **Eucalyptus ovata** Labill. subsp. **ovata**. — *E. gunnii* var. *ovata* (Labill.) H.Deane & Maiden, *Proc. Linn. Soc. New South Wales*, 26: 136 (1901), *nom. illeg.*; *E. stuartiana* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 131 (1856), partly; *E. paludosa* R.T.Baker, *Proc. Linn. Soc. New South Wales ser. 2*, 23: 167 (1898). *Eucalyptus acervula* auct. non Sieber ex DC.: J.D.Hook., *Fl. Tasman.* 1: 135 (1856); *Eucalyptus gunnii* auct. non Hook.f.: F.Muell., *Fragm.* 2: 63 (1860); J.E.Brown, *Forest Fl. S. Austral.* 1: pl. 1 (1883), partly. — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 389 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 130 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 390 (2001); D.Nicolle, *Eucalypts S. Austral.* 123 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 57 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 148, 149 (2013).

Adult leaves 60–130 × 16–45 mm. **Peduncles** 3–12 mm long; buds 4–9 mm long, 4–6 mm diam. **Fruits** 3–7 mm long, 4–7.5 mm diam. **Swamp gum, black gum. Fig. 20A–F, Pl. 18A–C.**

S.A.: SL, KI, SE; Vic.; N.S.W.; Tas. Occurs throughout the range of the species, except in the south-east of S.A., where it occurs more coastally compared to subsp. *grandiflora*.

Distinguished within the species primarily by the relatively small adult leaves, shorter peduncles, smaller buds and smaller, non-flared fruits.

60. **Eucalyptus oxymitra** Blakely, *Trans. & Proc. Roy. Soc. South Australia* 60: 155 (1936). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 278 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 217 (2004); D.Nicolle, *Eucalypts S. Austral.* 55 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 86, 87 (2013).

Mallee, 2–6 m high, lignotuberous; bark sometimes ribbonly rough at base, otherwise smooth throughout, decorticating in strips and ribbons, pinkish-grey to cream; branchlets usually pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 3–9 nodes then becoming disjunct, petiolate, ovate, often pruinose, dull, green to grey-green; adult leaves disjunct, petiolate, lanceolate to ovate, 55–125 × 16–40 mm, concolorous, dull, blue-green to blue-grey. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 7–15 mm long, pedicels 0–7 mm long, buds smooth, usually pruinose, 12–18 mm long, 7–12 mm diam.; hypanthia cupular; opercula strongly beaked, longer than hypanthium, smooth; flowers pale creamy-yellow; stamens erect to variously flexed, all fertile; anthers versatile, globose; ovules in 6 vertical rows. **Fruits** sessile or distinct from pedicels, hemispherical to truncate-globose, smooth, usually pruinose when new, 6–13 mm long, 10–20 mm diam.; smooth, disc ascending; valves (3) 4–5, exserted; seeds dark brown to black, narrowly pyramidal, very finely reticulate to smooth. **Sharp-capped mallee. Fig. 20J–M.**

S.A.: NW; W.A.; N.T. Widespread and fairly common in the north-west of the State, from the Everard Ranges westwards into the arid ranges of adjacent areas in W.A. and northwards to the MacDonnell Ranges in the N.T. It occurs on red sands on plains and lower parts of dunes and also occurs on rocky rises and hill slopes, usually in open mallee shrubland. Flowers: Sporadic; probably related to rainfall events.

Similar to *E. glomerosa* with which it sometimes grows. *E. glomerosa* differs from *E. oxymitra* mainly in the non-ribbonly basal bark, narrower adult leaves, non-pruinose branchlets and rounded opercula. A single specimen in AD (*Helms s.n.*, collected 1891, E of Birksgate Ranges), which has in the past been variously determined as each of *E. pachyphylla*, *E. burracoppinensis* and *E. oldfieldii*, is here considered to represent the hybrid *E. oxymitra* × *E. youngiana*. The specimen consists of four loose fruits, and the locality in which the specimen was collected is both imprecise and possibly erroneous. The specimen does not match known material of *E. pachyphylla* (widespread in the subtropical arid region of W.A., N.T. and Qld.), *E. burracoppinensis* (endemic to the wheatbelt of W.A.) or *E. oldfieldii* (widespread in the arid and semiarid regions of southern W.A.) and none of these three species are known to occur naturally in S.A.

61. **Eucalyptus paludicola** D.Nicolle, *J. Adelaide Bot. Gard.* 16: 75 (1995). — *E. viminalis* auct. non Labill.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 627 (1952), partly; *E. viminalis* subsp. *cygnetensis* auct. non Boomsma: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 926 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 86 (2006); D.Nicolle, *Eucalypts S. Austral.* 21 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 36, 37 (2013).

Tree, sometimes several or multi-stemmed, 4–10 m tall, lignotuberous; bark rough on trunk(s) up to 3 metres

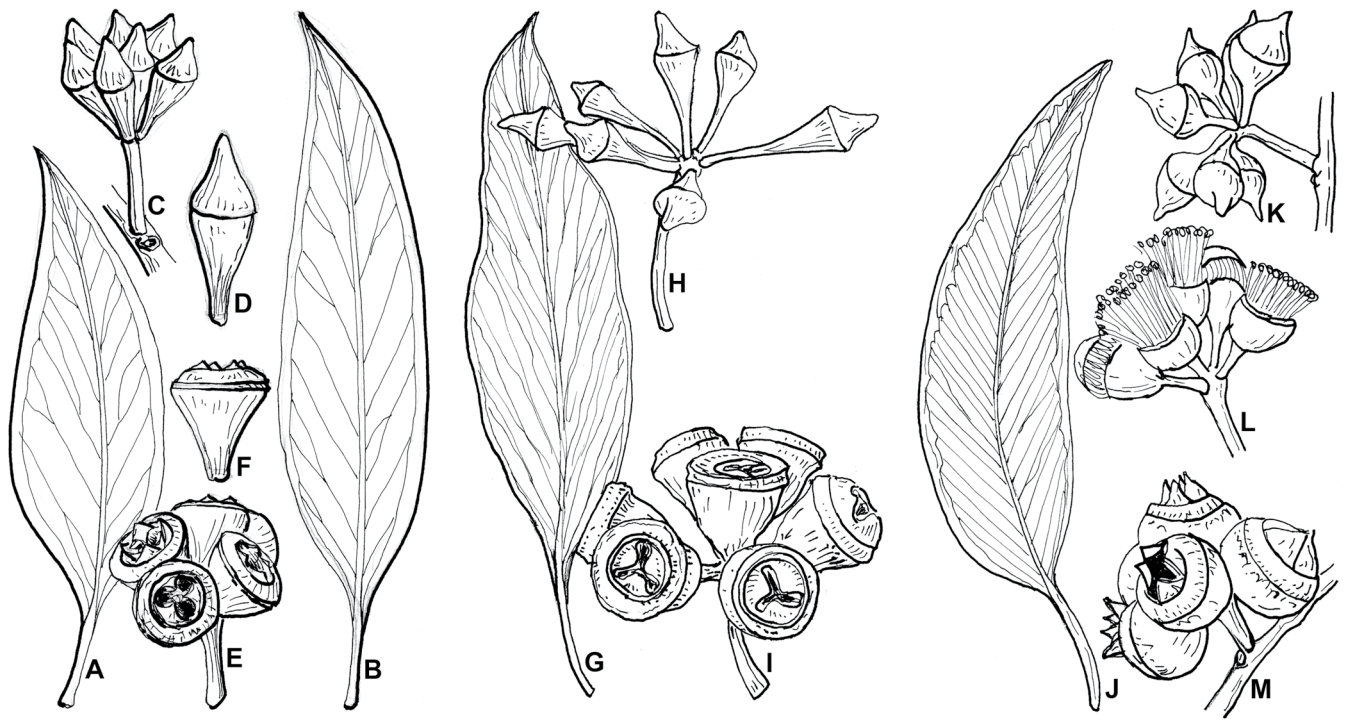


Fig. 20. A–F, *Eucalyptus ovata* subsp. *ovata*: A & B, leaves; C & D, buds; E & F, fruits. G–I, *E. ovata* subsp. *grandiflora*: G, leaf; H, buds; I, fruits. J–M, *E. oxymitra*: J, leaf; K, buds; L, flowers; M, fruits. Illustration by G.R.M. Dashorst.

high, coarsely fissured, fibrous, dark brown, smooth above, decorticating in strips, grey to cream; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite for 4–6 pairs then disjunct, petiolate, glabrous, elliptical to orbicular, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 80–210 × 20–40 mm, concolorous, not pruinose, dull when young, becoming slightly glossy with age, green to slightly blue-green. **Inflorescences** axillary; umbellasters (3) 7-flowered, held erect; peduncles 7–15 mm long, pedicels 1–5 mm long, buds not pruinose, smooth, 10–17 mm long, 7–9 mm diam.; hypanthia obconical; opercula shortly conical to hemispherical, equal in width to hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4–8 vertical rows. **Fruits** usually pedicellate, cylindrical to obconical or slightly campanulate, not pruinose, smooth, 8–14 mm long, 9–12 mm diam.; disc level to descending; valves (3) 4 (5), around rim level or slightly exerted; seeds black, somewhat pyramidal. **Marsh gum, Fleurieu swamp gum. Fig. 21A–G.**

S.A.: SL, KI. Endemic to S.A. and restricted to eastern and southern watershed of the southern Mount Lofty Ranges on Fleurieu Peninsula, predominantly east and south of Mount Compass, but as far south as near Waitpinga, and with a few small populations recorded in Flinders Chase N.P. and Kelly Hill C.P. on Kangaroo Island. It occurs in seasonally swampy sites, such as in broad gullies, depressions and creeks. Flowers: Spring.

*Eucalyptus paludicola* may be of hybrid origin (*E. cosmophylla* × *E. ovata*), although populations of the species are generally uniform and self-sustaining, with little evidence of recent hybridisation or backcrossing. *Eucalyptus cosmophylla* differs most conspicuously in the smaller and bushier habit, thicker adult leaves, consistently three-flowered inflorescences, shorter peduncles and pedicels, and larger and more cupular fruits.

(Endangered status in S.A.)

62. ***Eucalyptus pauciflora*** Sieber ex Spreng. subsp. ***pauciflora***, *Syst. Veg.* 4(2): 195 (1827). — *E. coriacea* Cunn. ex Schauer in Walp., *Repert. Bot. Syst.* 2: 925 (1843); *E. pblebophylla* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 140 (1856); *E. submultiplinervis* Miq., *Ned. Kruidk. Arch.* 4:138 (1856). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 326 (2006); D.Nicolle, *Eucalypts S. Austral.* 193 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 295 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 218, 219 (2013).

Tree, sometimes several stemmed, 6–30 m tall, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, streaked grey to tan and olive to yellowish cream; branchlets rarely pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to elliptical, sometimes pruinose, dull, bluish; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate to falcate, 70–220 × 15–40 mm, concolorous, not pruinose, glossy, green to blue-green; side veins nearly parallel. **Inflorescences**



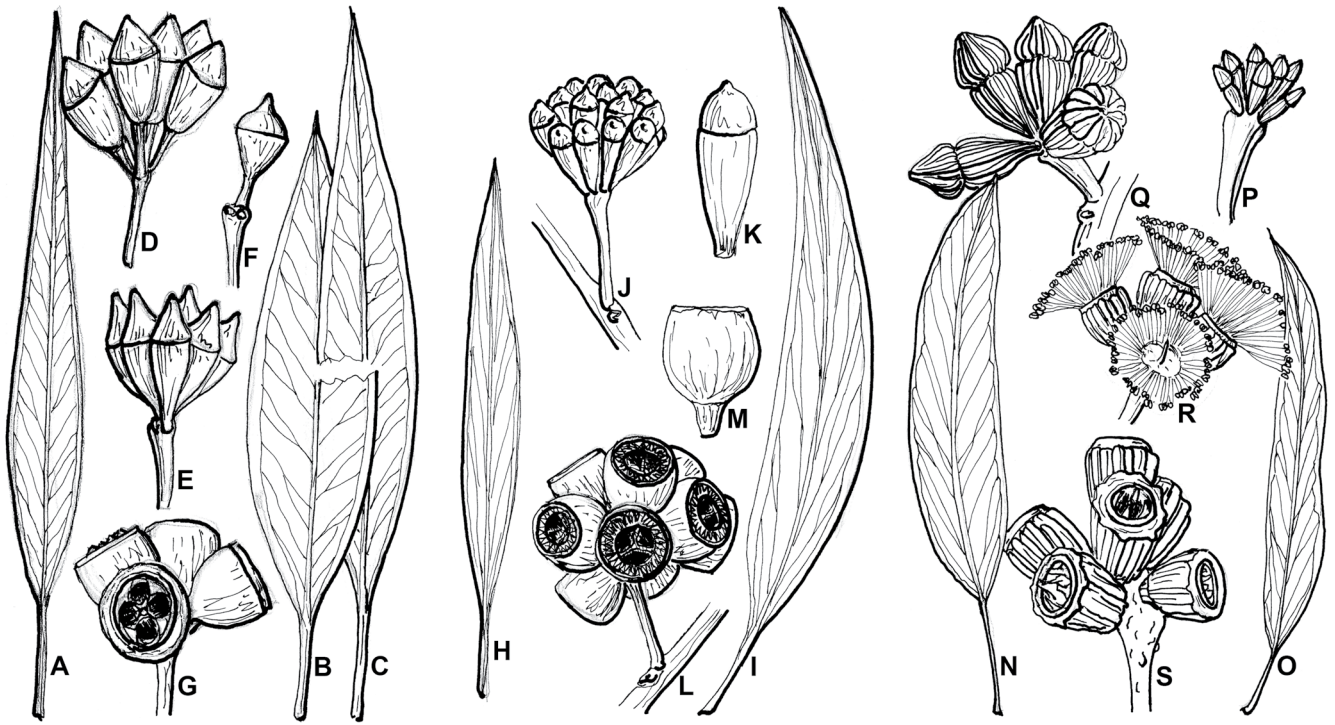


Fig. 21. A–G, *Eucalyptus paludicola*: A–C, leaves; D–F, buds; G, fruits. H–M, *E. pauciflora* subsp. *pauciflora*: H & I, leaves; J & K, buds; L & M, fruits; N–S, *E. percostata*: N & O, leaves; P, immature buds; Q, mature buds; R, flowers; S, fruits. Illustration by G.R.M. Dashorst.

axillary; umbellasters 9–21-flowered, held erect; peduncles 3–15 mm long, pedicels 1–6 mm long, buds clavate, smooth, sometimes weakly pruinose, 4–8 mm long, 3–5 mm diam.; hypanthia obconical to cupular; opercula hemispherical to conical, shorter than hypanthium; flowers white; stamens inflexed or irregularly flexed, all fertile; anthers versatile, reniform; ovules in 2 (rarely 4) vertical rows. **Fruits** usually pedicellate, obconical to cupular to hemispherical, smooth, sometimes weakly pruinose when fresh, 6–12 mm long, 7–11 mm diam.; disc usually broad, slightly ascending to level to descending; valves 3 (rarely 4), enclosed below rim level; seeds dark brown to black, pyramidal. **Snow gum, cabbage gum.** Fig. 21H–M.

S.A.: \*SL, SE; Vic.; N.S.W.; Tas.; Qld. Widespread but of scattered occurrence throughout the cooler parts of south-eastern Australia, from near Stanthorpe in Qld. (close to the N.S.W. border) southwards through the tablelands of N.S.W. (including the A.C.T.) and colder regions of Vic. and Tas., with a single occurrence known in S.A. in the Caroline State Forest south-east of Mt Gambier, where it grows on sand in low forest vegetation. Possibly also grows near Nangwarry in S.A. Flowers: Spring to summer.

Subsp. *pauciflora* is the common, lowland variant of the species, occurring from near sea level (including the S.A. population) up to 1000+ m throughout the colder parts of the Great Dividing Range in south-eastern Australia. The other five recognised subspecies (subsp. *acerina* Rule, *debenzevillei* (Maiden) L.A.S. Johnson & Blaxell, *hedraia* Rule, *niphophila* (Maiden & Blakely) L.A.S. Johnson & Blaxell and *parvifruca* Rule; the last subspecies recognised here as distinct, but often subsumed into subsp. *pauciflora* by other botanists) are each of relatively restricted distribution in N.S.W. and/or Vic., with each subspecies occurring at relatively high altitudes (usually forming the tree line) and above that of subsp. *pauciflora*.

(Vulnerable status in S.A.)

63. ***Eucalyptus peninsularis*** D.Nicolle, *Austral. Syst. Bot.* 12: 230 (1999). — *E. flocktoniae* auct. non (Maiden) Maiden: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 914 (1986). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 53 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 82, 83 (2013).

Mallee 4–7 m high, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, tan to pale grey; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for numerous pairs, sessile and strongly decurrent, glabrous, elliptical to ovate, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate, 90–130 × 14–22 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, usually pendulous; peduncles 8–15 mm long, pedicels 5–10 mm long, buds not pruinose, 15–20 mm long, 4.5–7 mm diam.; hypanthia urceolate, ribbed, opercula smooth or ribbed, horn-shaped, wider than hypanthium at join, 2–2.8 times as long as hypanthium; flowers pale creamy-yellow; stamens variously



flexed, all fertile; anthers weakly versatile, globose; ovules in 4 vertical rows. **Fruits** usually tapering to pedicel, erect to pendulous, smooth or slightly ribbed, urceolate, not pruinose, smooth, 9–11 mm long, 7–9 mm diam.; disc descending; valves 3 or 4, deeply enclosed or exerted due to split style remnants; seeds grey, compressed ovoid, smooth. **Cummins mallee.**

S.A.: EP. Restricted to south-central Eyre Peninsula, particularly in the Cummins and Yeelanna areas, where it occurs as a component of mallee or open woodland vegetation of level topography or, in the Koppio Hills, on somewhat hilly terrain. Soils are calcareous loams. Flowers: Poorly known.

Populations from the northern part of the distribution of *E. peninsularis* on central Eyre Peninsula appear to intergrade with *E. socialis* subsp. *viridans*.

64. **Eucalyptus percostata** Brooker & P.J.Lang, *J. Adelaide Bot. Gard.* 13: 65 (1990). — *E. dumosa* auct. non A.Cunn. ex Schauer: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 921 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 120 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 334 (2001); D.Nicolle, *Eucalypts S. Austral.* 103 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 134, 135 (2013).

Mallee, 3–6 m high, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, grey to coppery to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, broad-lanceolate to ovate, not pruinose, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate, 75–120 × 14–24 mm, concolorous, not pruinose, dull, slightly blue-green to bluish. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 10–20 mm long, pedicels absent or to 2 mm long, buds pyriform, not pruinose, 8–12 mm long, 6–7 mm diam.; hypanthia obconical to cupular; opercula ribbed, hemispherical to conical, wider than hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong-cuboid; ovules in 4 vertical rows. **Fruits** sessile or shortly pedicellate, obconical to cupular, smooth or ribbed, not pruinose, 6–9 mm long, 5–8 mm diam.; disc descending; valves 3–5, at or just below rim level; seeds glossy, red-brown, compressed ovoid, finely reticulate. **Rib-capped mallee, Devils Peak mallee. Fig. 21N–S, Pl. 18D–G.**

S.A.: FR, EP (Devils Peak), NL. Endemic to S.A. Scattered in the southern Flinders Ranges, from Devils Peak south to about The Bluff. It occurs in mallee vegetation on the slopes and at the foot of rocky hills in well-drained clay-loams. Flowers: Mainly winter.

Distinguished from *E. dumosa* in its strongly ribbed operculum that is wider than the hypanthium at the join. Some populations in the Flinders Ranges, outside the recognised distribution of the species, require further investigation to ascertain their taxonomic status, e.g. on the Mawson Plateau.

(Rare status in S.A.)

65. **Eucalyptus petiolaris** (Boland) Rule, *Muelleria* 7: 503 (1992). — *E. leucoxylon* subsp. *petiolaris* Boland, *Austral. Forest Res.* 9: 70 (1979). *E. leucoxylon* auct. non F.Muell.: J.M.Black, *Fl. S. Austral.* 3: 622 (1952). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 417 (2001); D.Nicolle, *Eucalypts S. Austral.* 181 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 206, 207 (2013).

Tree, sometimes several-stemmed, 6–20 m high, lignotuberous; bark rough on lower stems to branches, loose and flaky, yellow-brown to grey; smooth above or completely smooth, decorticating in plates and strips, grey to yellow-cream; branchlets not pruinose, pith glands absent; cotyledons reniform to bilobed; juvenile leaves opposite for 5–10 pairs then disjunct, petiolate, glabrous, ovate, dull, green; adult leaves disjunct, petiolate, lanceolate to falcate, 65–170 × 10–25 mm, concolorous, not pruinose, slightly glossy, green. **Inflorescences** axillary; umbellasters 3-flowered, pendulous; peduncles 9–22 mm long, pedicels 6–17 mm long, buds not pruinose, 11–17 mm long, 7–10 mm diam.; hypanthia obconical, with two longitudinal ribs; opercula conical to beaked, smooth, shorter in length than hypanthium; flowers creamy-white, yellow, apricot, or pink to red; stamens strongly inflexed, outer stamens lacking anthers (staminodes); anthers adnate, cuboid; ovules in 4 (6) vertical rows. **Fruits** tapering to pedicel, cupular to barrel-shaped, usually with two longitudinal ribs, 12–22 mm long, 10–15 mm diam.; disc descending; valves 5–7, enclosed; seeds dark grey-brown, compressed-ovoid, shallow reticulum. **Eyre Peninsula blue gum, water gum. Fig. 22A–D.**

S.A.: EP. On southern and eastern Eyre Peninsula, endemic to hilly areas such as the Koppio and Cleve Hills and as far inland as Carappee Hill, and often along creeks in open woodland. Flowers: Mainly spring but somewhat sporadic.

Closely related to *E. leucoxydon* (especially subsp. *leucoxydon* and subsp. *megalocarpa*), which differs from *E. petiolaris* primarily in its sessile juvenile leaves which remain opposite for longer, and the often smaller, non-ribbed or less ribbed buds and fruits.

Commonly cultivated as an ornamental tree in southern Australia, where it is often erroneously sold under the name *E. leucoxydon* 'Rosea'.

66. **Eucalyptus phenax** Brooker & Slee, *Muelleria* 9: 77 (1996). — *E. anceps* auct. non (R.Br. ex Maiden) Blakely: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 629 (1952), partly.

Mallee, 2–7 m high, lignotuberous; bark smooth throughout, decorticating in ribbons, coppery to grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct after a few pairs, petiolate, glabrous, ovate, not pruinose, dull, green to slightly blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 50–140 × 8–35 mm, concolorous, not pruinose, maturing glossy, green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 3–16 mm long, pedicels 0–1 mm long, buds not pruinose, 7–13 mm long, 4–6 mm diam.; hypanthia cupular to ovoid; opercula rounded to conical to slightly beaked, usually weakly ribbed, equal in width or slightly wider than hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens inflexed, all fertile; anthers versatile, cuboid; ovules in 4 vertical rows. **Fruits** sessile or nearly-so, cupular to barrel-shaped, smooth or flattened on sides due to clustering, not pruinose, 4–10 mm long, 5–10 mm diam.; disc descending; valves 3–5, around rim level; seeds glossy, red-brown, compressed ovoid, finely reticulate.

Widespread throughout much of Eyre and Yorke Peninsulas in S.A., extending eastwards through the Murray Mallee and upper south-east of the State into western Vic. Also on Kangaroo Island and throughout the southern and central wheatbelt of W.A. Occurs in mallee shrubland on loamy soils.

Similar to *E. dumosa*, which differs from *E. phenax* in its dull and usually bluish adult leaves, generally longer peduncles and pedicels and often somewhat larger buds and fruits. Two subspecies are recognised, both occurring in S.A and one, subsp. *compressa*, is endemic.

1. Peduncles 3–10 mm long; fruit longer than wide ..... 66b. **E. phenax** subsp. **phenax**  
1: Peduncles 8–16 mm long; fruit equal in length and width or wider than long 66a. **E. phenax** subsp. **compressa**

- 66a. **Eucalyptus phenax** Brooker & Slee subsp. **compressa** D.Nicolle, *J. Adelaide Bot. Gard.* 19: 84 (2000). — *E. phenax* subsp. 'Kangaroo Island': D.Nicolle, *Eucalypts S. Austral.* 96 (1997). *E. anceps* auct. non (R.Br. ex Maiden) Blakely: Boomsma, *Native Trees S. Austral.* ed. 2, 112 (1981), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 97 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 126, 127 (2013).

Adult leaves lanceolate to broad-lanceolate, 60–140 × 15–35 mm. **Peduncles** thick, 8–16 mm long, pedicels absent or to 1 mm long, buds 9–13 mm, 4–6 mm diam. **Fruits** sessile, crowded, 6–8 mm long, 6–10 mm diam. **Kangaroo Island mallee.**

S.A.: SL, KI. Endemic to S.A. and common on northern and eastern Kangaroo Island, extending to southern Fleurieu Peninsula around Waitpinga. It occurs in mallee vegetation or mixed mallee-woodland in gravely clays to loams. Flowers: Mainly spring to summer.

Somewhat intermediate in bud and fruit morphology between *E. phenax* subsp. *phenax* and *E. conglobata*, but distinctive from both in its thick, flattened, long peduncles. Intergrades between *E. phenax* subsp. *phenax* and subsp. *compressa* are common where they overlap in an area from around Goolwa to north-east of Finnis.

(Rare status in S.A.)

- 66b. **Eucalyptus phenax** Brooker & Slee subsp. **phenax** — *E. 'anceps' auct. non* (R.Br. ex Maiden) Blakely: Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 327 (2001); *E. anceps* auct. non (R.Br. ex Maiden) Blakely: Boomsma, *Native Trees S. Austral.* ed. 2, 112 (1981), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 122 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 327 (2001); D.Nicolle, *Eucalypts S. Austral.* 99 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 37 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 123–125 (2013).

Adult leaves lanceolate, 50–120 × 8–28 mm. **Peduncles** 3–10 mm long, pedicels absent or to 3 mm long, buds 7–11 mm long, 4–5 mm diam. **Fruits** sessile or shortly pedicellate, 4–10 mm long, 5–8 mm diam. **White mallee.** **Fig. 22H–N.**

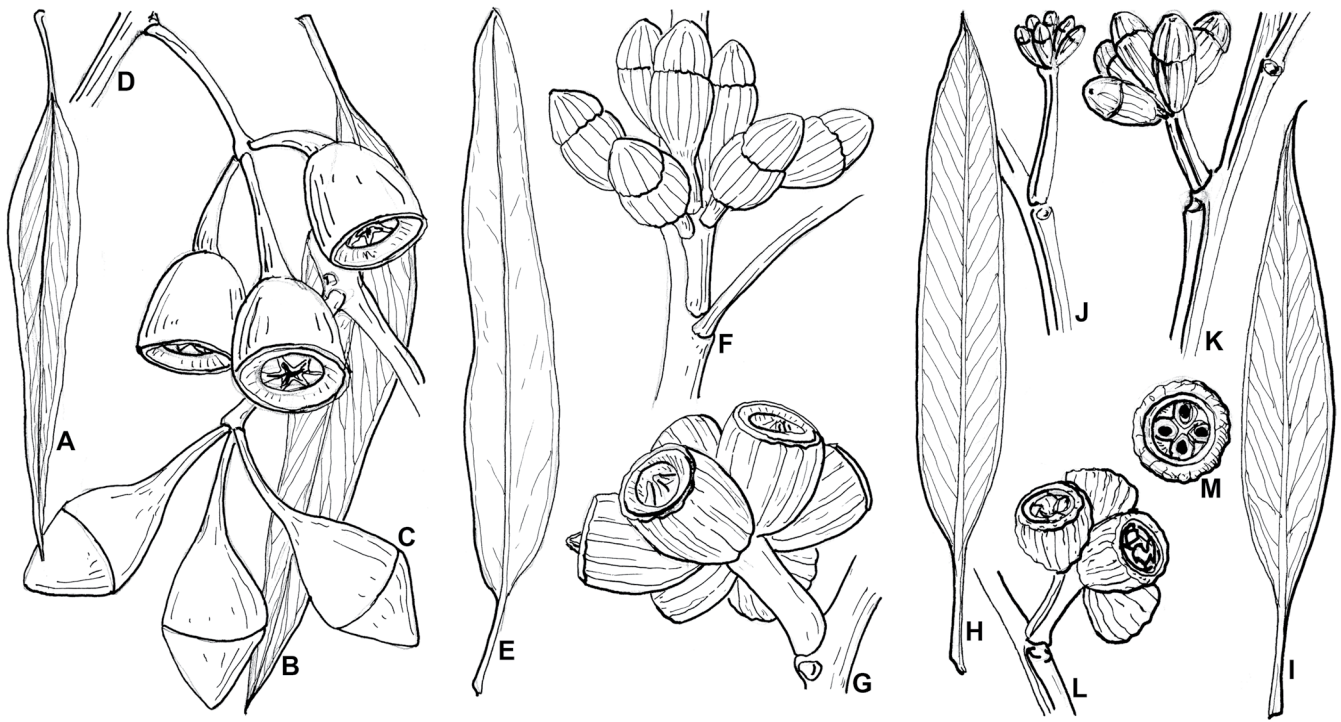


Fig. 22. A–D, *Eucalyptus petiolaris*: A & B, leaves; C, buds; D, fruits. E–G, *E. pileata*: E, leaf; F, buds; G, fruits. H–N, *E. phenax* subsp. *phenax*: H & I, leaves; J, immature buds; K, mature buds; L, fruits; M, fruit from top. Illustration by G.R.M. Dashorst.

S.A.: EP, NL, MU, YP, SL, SE; W.A.; Vic. Widespread throughout much of Eyre and Yorke Peninsulas in S.A., extending eastwards through the Murray mallee and upper south-east of the State into western Vic. and disjunctly through the southern and central wheatbelt of W.A. Flowers: Spring to autumn.

Closely related to *E. dumosa*, which differs in its dull, bluish adult leaves, longer peduncles and pedicels and often slightly larger buds and fruits. Some populations of *E. phenax* subsp. *phenax* occurring on hills in the Gawler Ranges and north-eastern Eyre Peninsula differ somewhat in their finer crown of narrower adult leaves and their smaller, consistently sessile buds and fruits. These populations are referred to as the ‘Hills Variant’ in Nicolle (2013); *D.Nicolle 5924*, from the Darke Range, is representative of this variant.

67. ***Eucalyptus pileata*** Blakely, *Key Eucalypts* 120 (1934). — *E. 'triangolensis'* L.A.S.Johnson ms, Centre for Plant Biodiversity Research, *EUCLID* ed. 3, (2006), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 91 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 120, 121 (2013).

Mallee, 3–7 m high, lignotuberous; bark smooth throughout, decorticating in ribbons, orange-tan to pale grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves disjunct, petiolate, ovate to broad-lanceolate, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate, 60–140 × 8–25 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 5–15 mm long, pedicels 1–6 mm long, buds not pruinose, 7–12 mm long, 5–8 mm diam.; hypanthia cylindrical to cupular to obconical, smooth; opercula ribbed, conical to pileate to hemispherical, usually wider than hypanthium at join, about as long as hypanthium; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** pedicellate, cupular to obconical, smooth, not pruinose, 6–10 mm long, 6–9 mm diam.; disc descending; valves 4 or 5, around rim level or slightly exserted; seeds glossy, red-brown, compressed-ovoid, finely reticulate. **Capped mallee. Fig. 22E–G.**

S.A.: EP; W.A. Mainly distributed in the southern wheatbelt of W.A., in an area bounded approximately by Lake Grace in the west, Ravensthorpe in the south, Norseman in the east and Boorabbin in the north, and with some populations known on Eyre Peninsula in S.A. in the area between Hincks Conservation Park and the Cummins area. It occurs on clay-loams to sandy-loams in mallee shrubland or mixed mallee-woodland. Flowers: Mainly spring to summer.

Very similar to *E. calcareana*, which differs from *E. pileata* in its adult leaves being dull at least when young, and the operculum being flush with the hypanthium at the join. Populations of this species from S.A. have been considered to represent an unnamed species (*E. 'triangolensis'*) by some authors. Intergrades with *E. calcareana* are common where the distribution of the two species overlap on central Eyre Peninsula.



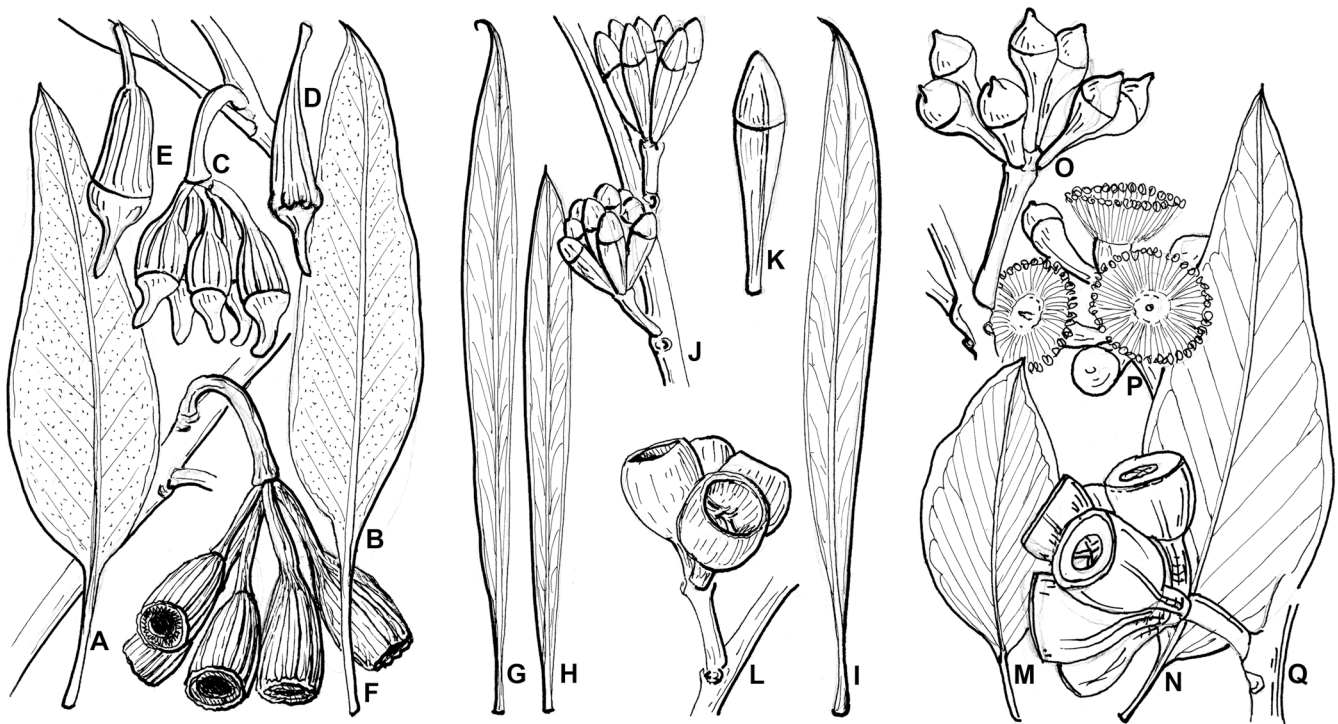


Fig. 23. A–E, *Eucalyptus pimpiniana*: A & B, leaves; C–E, buds; F, fruits. G–I, *E. polybractea*: G–I, leaves; J & K, buds; L, fruits. M–Q, *E. remota*: M, intermediate leaf; N, leaf; O, buds; P, flowers; Q, fruits. Illustration by G.R.M. Dashorst.

68. ***Eucalyptus pimpiniana*** Maiden, *Crit. Rev. Eucalyptus* 2(6): 211 (1912). — *Eucalyptus isingiana* Maiden, *Crit. Rev. Eucalyptus* 6(7): 353 (1922). — **Illustr.**: Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 350 (2001); D.Nicolle, *Eucalypts S. Austral.* 77 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 106, 107 (2013).

Mallee, of low shrubby form, 0.5–2 m high, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, pinkish-grey to tan to white; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate to lanceolate, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, thick, 60–140 × 16–33 mm, concolorous, not pruinose, dull, blue-grey; venation obscured by dense island oil glands. **Inflorescences** axillary; umbellasters 7–19-flowered, pendulous; peduncles 12–35 mm long, pedicels 6–13 mm long, buds not pruinose, 20–33 mm long, 8–11 mm diam.; hypanthia cylindrical to narrowly obconical, sometimes weakly ribbed; opercula beaked, smooth, shorter or equal in length to hypanthium; flowers yellow; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, cylindrical to barrel-shaped, sometimes weakly ribbed, not pruinose, 14–22 mm long, 9–13 mm diam.; disc descending; valves 3 or 4, enclosed; seeds dark grey-brown, compressed-ovoid, with shallow ribs. **Pimpin mallee**. **Fig. 23A–E, Pl. 18H–K.**

S.A.: NW, NU; W.A. Endemic to the Great Victoria Desert, from near Barton in S.A. westwards to near Lake Minigwal in W.A. Restricted to red sand on plains and dunes in open mallee shrubland. Flowers: Sporadic; probably related to rainfall events.

Quite ornamental with its low bushy crown of bluish leaves and its yellow flowers. Occasionally cultivated as an ornamental shrub in areas of low to moderate rainfall.

69. ***Eucalyptus polybractea*** R.T.Baker, *Proc. Linn. Soc. New South Wales ser. 2*, 25: 692 (1901). — *E. sp.* 'Flinders Ranges': D.Nicolle, *Eucalypts S. Austral.* 164 (1997); *E. sp.* *Flinders Ranges* (D.Nicolle 562) D.Nicolle in Barker *et al.*, *J. Adelaide Bot. Gard. Suppl.* 1: 104 (2005); *E. 'illucens'* L.A.S.Johnson ms, Brooker *et al.*, *EUCLID* ed. 2, (2002); *E. sp.* Y: Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 413 (2001). — **Illustr.**: Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 216 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 413 (2001); D.Nicolle, *Eucalypts S. Austral.* 165 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 187 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 190, 191 (2013).

Mallee, 2–7 m high, lignotuberous; bark sometimes rough on lower part of stems, thin, hard-fibrous, moderately-fissured, grey to dark grey-brown, smooth above or completely smooth, decorticating in strips, coppery to pale grey to cream; branchlets pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, linear to narrow-lanceolate, usually pruinose, dull, grey-green; adult leaves disjunct, petiolate, linear to narrow-lanceolate, 70–160 × 5–15 mm, concolorous, sometime pruinose, especially



when young, dull, blue-green to grey-green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 3–12 mm long, pedicels absent or to 3 mm long, buds pruinose, clavate to diamond-shaped, smooth, 5–7 mm long, 3–4 mm diam.; hypanthia obconical; opercula conical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, cupular to barrel-shaped, smooth, often pruinose when young, 4–6 mm long, 3–6 mm diam.; disc descending; valves 4, enclosed; seeds brown, compressed ovoid, finely reticulate. **Blue mallee, Flinders Ranges mallee box. Fig. 23G–L.**

S.A.: FR, EP (Devils Peak only); Vic.; N.S.W. Scattered in the northern parts of Flinders Ranges, between Devils Peak in the south and the Gammon Ranges in the north. Also occurs on undulating low hills in central northern Vic. and around West Wyalong in southern N.S.W., where it is a component of mixed mallee shrubland. In S.A., the species is restricted to the slopes and ridges of rocky hills and ranges, where it occurs as dominant overstorey species in mallee shrubland or in *Triodia* grasslands. Flowers: Poorly known, but recorded in autumn to spring.

Closest to *E. cajuputea*, which differs in the non-pruinose branchlets, new growth, buds and fruits. The two species appear to intergrade where their distributions adjoin in parts of the Flinders Ranges, especially at the footslope of hills, such as at Devils Peak near Quorn. Although the S.A. populations of *E. polybractea* have been referred to an undescribed species (*E. sp.* ‘Flinders Ranges’, *E. ‘illucens’* and *E. sp. Y*) and forms in Vic. have been segregated by other authors (e.g. *E. filiformis* Rule), there appears to be no discernable and consistent morphological characteristics that distinguish these populations from *E. polybractea* occurring in Vic. and N.S.W. Reports of *E. polybractea* from Para Wirra in the Mount Lofty Ranges (Nicolle 1997) are now considered to represent an aberrant population of *E. odorata*.

Harvested in N.S.W. and Vic. for the essential oil cineole. (Rare status in S.A.)

70. **Eucalyptus porosa** F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 132 (1856). — *E. calcicultrix* var. *porosa* (F.Muell. ex Miq.) Blakely, *Key Eucalypts* 224 (1934). *E. odorata* var. *calcicultrix* F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 129 (1856); *E. calcicultrix* (F.Muell. ex Miq.) F.Muell. ex Blakely, *Key Eucalypts* 224 (1934). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 224 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 408 (2001); D.Nicolle, *Eucalypts S. Austral.* 169 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 193 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 192, 193 (2013).

Mallee or several-stemmed tree, 2–14 m high, lignotuberous; bark rough on lower stems or to branches, hard, moderately-fissured, grey-brown to dark grey; smooth above, decorticating in strips, coppery to grey to cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 2–8 pairs then disjunct, petiolate, glabrous, elliptical to ovate, dull, green; adult leaves disjunct, petiolate, lanceolate, 50–130 × 8–22 mm, concolorous, not pruinose, glossy, green; intramarginal vein well-distanced from leaf margin. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles 2–12 mm long, pedicels 0–7 mm long, buds ovoid, smooth, not pruinose, 5–7 mm long, 3–5 mm diam.; hypanthia cupular to obconical, smooth; opercula hemispherical to conical, smooth, slightly shorter or equal in length to hypanthium; flowers white (very rarely red); stamens inflexed or variously flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** usually pedicellate, truncate-globose to barrel-shaped, smooth, not pruinose, 4–8 mm long, 4–8 mm diam.; disc descending; valves 4 or 5 (6), enclosed; seeds grey-brown, compressed-ovoid, shallow reticulum. **Mallee box, South Australian mallee box. Pl. 19A–C.**

S.A.: GT, FR, EA, EP, NL, MU, YP, SL, SE; N.S.W.; Vic. Widespread in semi-arid regions of S.A., from Streaky Bay and Eba Island on the west coast of Eyre Peninsula, eastwards throughout most of southern S.A. (excluding Kangaroo Island and the south-east of the State) into western N.S.W. and north-western Vic. Occurs in a variety of habitats, including poorly-drained shallow depressions on clay over limestone (e.g. throughout the wheatbelt), loamy soils at the base of granite monoliths (e.g. western Eyre Peninsula), exposed rocky ridges (e.g. Flinders Ranges and Olary Spur), and coastal limestone bluffs (e.g. Fleurieu and Yorke Peninsulas). Flowers: Sporadic.

Often confused with *E. odorata*, which differs from *E. porosa* in its less glossy, usually narrower adult leaves with the intramarginal vein closer to the leaf margin, the narrower buds and the smaller, more barrel-shaped fruits. *Eucalyptus porosa* often has a more spreading habit than *E. odorata*, although this is not a reliable characteristic to distinguish the two species. The species commonly hybridises with *E. leucoxylon*, with hybrids being distinguishable by their intermediate morphology, especially with respect to bark and umbellaster number. The name *E. leucoxylon* var. *pluriflora* F.Muell. ex Miq., probably refers to one of these hybrids (Chippendale 1988).

Commonly cultivated in S.A.

71. **Eucalyptus remota** Blakely, *Key Eucalypts* 197 (1934). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 104 (2001); D.Nicolle, *Eucalypts S. Austral.* 195 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 220, 221 (2013).

Mallee or several-stemmed tree, 3–15 m tall, lignotuberous; bark usually rough on the lower stems or up to the smaller branches, fibrous, finely-fissured, grey; smooth above or rarely completely smooth, decorticating in strips and ribbons, grey to yellow-cream; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for 4 to 6 pairs then disjunct, petiolate, glabrous, ovate, not pruinose, dull, blue-green; adult leaves disjunct, petiolate, lanceolate, 75–150 × 20–40 mm, concolorous, not pruinose, glossy, green to blue-green. **Inflorescences** axillary; umbellasters 9–21-flowered, held erect; peduncles 6–18 mm long, pedicels 1–6 mm long, buds clavate, smooth, not pruinose, 4–6 mm long, 3–4 mm diam.; hypanthia obconical; opercula hemispherical, shorter than hypanthium; flowers white; stamens inflexed, all fertile or outer stamens lacking anthers (staminodes); anthers versatile, reniform; ovules in 2 vertical rows. **Fruits** tapering to pedicel, obconical to hemispherical, smooth, not pruinose, 6–10 mm long, 5–10 mm diam.; disc level; valves 3–5, around rim level; seeds dark brown to black, pyramidal. **Kangaroo Island mallee ash. Fig. 23M–Q, Pl. 19D–F.**

S.A.: KI. Endemic to the higher-rainfall western half of Kangaroo Island (west of about Mount Taylor), where it grows in gravelly sands and loams over laterite in mallee shrubland. Flowers: Summer.

Not closely related to any other taxa from S.A., but very similar to a number of eastern states species including *E. consideriana* Maiden and *E. multicaulis* Blakely.

72. **Eucalyptus repullulans** D.Nicolle, *Nuytsia* 11: 376 (1997). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 225 (2004); D.Nicolle, *Native Eucalypts S. Austral.* 140, 141 (2013).

Mallee, slender-stemmed habit, 3–6 m tall, lignotuberous; bark smooth throughout, decorticating in strips and ribbons, pinkish to pale grey to cream; branchlets sometimes pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, ovate, dull, blue-green; adult leaves disjunct, petiolate, narrow-lanceolate to lanceolate (to broad-lanceolate), 70–125 × 12–30 mm, concolorous, sometimes slightly pruinose, dull, blue-green. **Inflorescences** axillary; umbellasters 7–9-flowered, held erect; peduncles 12–14 mm long, pedicels 2–4 mm long, buds usually pruinose, 7–11 mm long, 5–6 mm diam.; hypanthia cupular, smooth to weakly ribbed; opercula slightly beaked to conical to rounded, equal in width or wider than hypanthium at join, ribbed; flowers creamy-white; stamens strongly inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel, cupular to slightly campanulate, smooth to weakly ribbed, often pruinose when young, 6–9 mm long, 6–9 mm diam.; disc descending; valves 3 or 4, at or just below rim level; seeds glossy, red-brown, compressed ovoid, finely reticulate. **Chrysoprase mallee. Pl. 19G–I.**

S.A.: NW; W.A. Mainly distributed in the Pilbara and Gascoyne regions of W.A., where it occurs as scattered populations in shallow skeletal soils on the slopes and summits of mountains and the surrounding undulating areas, in open mallee shrubland. Outlying populations occur in the Tomkinson Ranges, near Wingelina in W.A. and on Dulgundja Hill in S.A., where the species grows in small pure stands on rocky hillslopes with outcropping chrysoprase.

Distinguished within *E. ser. Rufispermae* by the combination of rocky habitat; mallee habit; smooth bark; pruinose branchlets, buds and fruits; lanceolate leaves; medium-sized, faintly ribbed buds and fruits; and conical to beaked opercula. Before this name was published the species was usually referred to *E. striatocalyx* W.Fitzg. in W.A. (Nicolle 1997).

Virtually unknown in cultivation.

73. **Eucalyptus rugosa** R.Br. ex Blakely, *Key Eucalypts* 120 (1934). — *E. conglobata* var. *anceps* R.Br. ex Maiden, *Crit. Rev. Eucalyptus* 6: 275 (1922); *E. anceps* (R.Br. ex Maiden) Blakely, *Key Eucalypts* 118 (1934). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 124 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 345 (2001); D.Nicolle, *Eucalypts S. Austral.* 85 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 118, 119 (2013).

Mallee, 2–10 m high, lignotuberous; bark smooth throughout, decorticating in ribbons and strips, pink to yellow-grey to cream; branchlets not pruinose, pith glands present; cotyledons reniform; juvenile leaves opposite for 5–8 pairs then disjunct, petiolate, glabrous, ovate, not pruinose, dull, green to slightly blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 65–120 × 10–30 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 6–20 mm long, pedicels absent or to 5 mm long, buds not pruinose, 8–15 mm long, 5–8 mm diam.; hypanthia obconical to cylindrical, angled or ribbed; oper-

cula flattened to hemispherical, usually ribbed, shorter than hypanthium, usually narrower than hypanthium at join; flowers white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** tapering to pedicel or sessile, cupular to obconical, angled or ribbed, not pruinose, 6–15 mm long, 6–10 mm diam.; disc descending; valves 3 or 4, around rim level to slightly exerted; seeds grey, compressed ovoid, deeply pitted. **Kingscote mallee.** Fig. 24A–C, Pl. 19J–L.

S.A.: EP, MU, YP, SL, KI, SE. Endemic to S.A. and restricted to coastal sites on Eyre Peninsula (eastwards from near Ceduna), Yorke Peninsula, Kangaroo Island and drier regions of the south-east coast (eastwards to east of Salt Creek). It occurs on thin well-drained soils overlying limestone in mallee shrubland. Flowers: Spring to autumn.

Closely related to the less coastal *E. brachycalyx*, which differs in the often rough bark on the lower stems, the thinner, narrower adult leaves and the smaller, less coarsely ribbed buds and fruits.

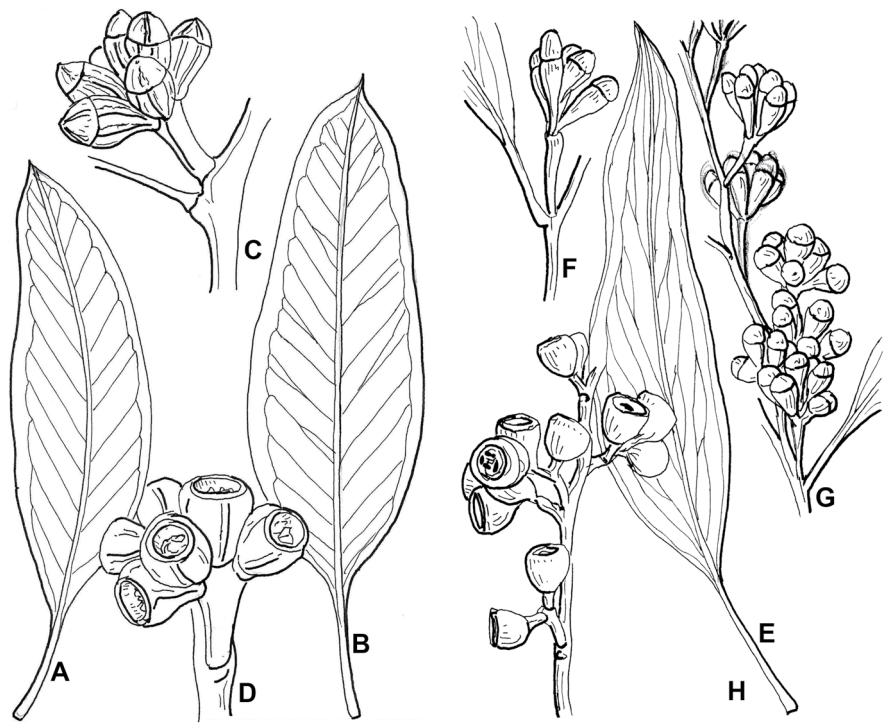


Fig. 24. A–C, *Eucalyptus rugosa*: A & B, leaves; C, buds; D, fruits. E–H, *E. sparsa*: E, leaf; F & G, panicle of buds; H, fruits. Illustration by G.R.M. Dashorst.

74. \****Eucalyptus sideroxyton*** A.Cunn. ex Woolls subsp. ***sideroxyton***, *Proc. Linn. Soc. New South Wales* 11: 859 (1887). — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 501 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 249 (2006); D.Nicolle, *Eucalypts Victoria & Tasman.* 204 (2006).

Tree, usually single-stemmed, 8–25 m high, lignotuberous; bark rough on trunk and large to medium-sized branches, hard, deeply furrowed (ironbark), dark grey-black; smooth on smaller branches, decorticating in strips, pale grey to yellow-cream; branchlets sometimes pruinose, pith glands absent; cotyledons reniform to bilobed; juvenile leaves opposite for 4–7 pairs then disjunct, petiolate, glabrous, linear to narrow-lanceolate, often pruinose, dull, green to grey-green; adult leaves disjunct, petiolate, lanceolate to falcate, 50–140 × 10–30 mm, concolorous, sometimes pruinose, dull, grey-green. **Inflorescences** axillary; umbellasters 7-flowered, loosely-held and often pendulous; peduncles 7–28 mm long, pedicels 3–15 mm long, buds sometimes pruinose, 6–13 mm long, 4–6 mm diam.; hypanthia cupular, smooth; opercula conical to beaked, smooth, about equal in length to hypanthia; flowers white to pink to red; stamens inflexed, outer stamens lacking anthers (staminodes); anthers adnate, cuboid; ovules in 4 vertical rows. **Fruits** pedicellate, cupular to truncate-globose, smooth, 5–10 mm long, 5–10 mm diam.; disc descending; valves usually 5, enclosed; seeds dark brown, compressed-ovoid, shallow reticulum. **Red ironbark.**

S.A.: ?\*SL; N.S.W.; Vic.; Qld. Widespread on the western slopes and plains to the west of the Great Dividing Range from southern Queensland to northern Vic. Widely planted as an ornamental tree in southern and eastern Australia. Occasionally sparingly regenerates around planted trees, but doubtfully truly naturalised. Flowers: Autumn to spring.

Two subspecies are recognized in *E. sideroxyton*, with only subsp. *sideroxyton* known in cultivation (and possibly sparingly naturalised) in S.A. The rare *E. sideroxyton* subsp. *improcera* A.R.Bean is endemic to Barakula State Forest in southern Qld, however its taxonomic status requires further research. A single large and presumably old tree displaying morphology intermediate between *E. intertexta* and *E. sideroxyton* occurs in *E. intertexta* open woodland on Oulnina Park station, near Yunta (*A.G.Spooner 15238*). This tree is presumably a phantom hybrid, most likely with *E. intertexta* as the female (seed) parent and *E. sideroxyton* as the male parent via long-distance pollen dispersal.

Widely planted as an ornamental tree in southern and eastern Australia. Variable in flower colour, with pink-flowered individuals usually selected for as an ornamental tree.



75. **Eucalyptus socialis** F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4: 132 (1856).

Mallee 2.5–12 m high, lignotuberos; bark rarely smooth throughout, more commonly rough on lower stems, stringy-fibrous to flaky-fibrous, pale grey to grey-brown; smooth above, decorticating in strips and ribbons, tan to pinkish-grey to cream; branchlets sometimes pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for numerous pairs, sessile, glabrous, ovate to lanceolate, not decurrent, sometimes pruinose, dull to slightly glossy, green to blue-grey; adult leaves disjunct, petiolate, narrow-lanceolate to lanceolate, 65–152 × 10–35 mm, concolorous, not pruinose, dull to glossy, green to blue-green. **Inflorescences** axillary; umbellasters 7–11 (–13)-flowered, held erect; peduncles 4–18 mm long, pedicels 2–8.5 mm long, buds smooth, sometimes pruinose, 8–19 mm long, 3–6.5 mm diam.; hypanthia cupular; opercula horn-shaped, equal in width to very slightly wider than hypanthium at join, 1.0–3.3 times as long as hypanthium; flowers creamy-white to pale yellow; stamens variously flexed, all fertile; anthers weakly versatile, globose; ovules in 4 vertical rows. **Fruits** usually tapering to pedicel, barrel-shaped to urceolate to globose, smooth, sometimes pruinose when young, 4.5–18 mm long, 4–9.5 mm diam.; disc descending; valves 3–5, enclosed or exerted due to split style remnants; seeds grey, compressed ovoid, smooth. **Red mallee.**

Widespread from the Hamersley Range and upper Gascoyne River catchment in W.A. eastwards to near Nyngan in central N.S.W., south-east to the drier parts of Vic. and south to the coast on Eyre, Yorke and Fleurieu Peninsulas in S.A. Disjunct populations occur in central Qld.

A very widespread and variable species of four subspecies recognized primarily on the basis of bud and fruit size, adult leaf sheen and colour and the extent and degree of waxiness (pruinosity) on all parts. Closely related to a number of species of *E. ser. Subulatae*, including *E. gillii*, *E. peninsularis*, *E. vokesensis* and *E. yumbarrana*, all of which intergrade or will hybridise with *E. socialis* where their distributions adjoin.

- 1. Seedling leaves green; adult leaves maturing glossy, green..... 75d. **E. socialis** subsp. **viridans**
- 1: Seedling leaves blue-green to greyish; adult leaves dull, blue-green
  - 2. Fruit 7–11 × 6.5–9.5 mm; flower buds 12.5–19 mm long..... 75c. **E. socialis** subsp. **victoriensis**
  - 2: Fruit 5–8 × 4.5–7.5 mm; flower buds 10–13 (–17) mm long
    - 3. Branchlets and flower buds not pruinose; flowers creamy-white..... 75b. **E. socialis** subsp. **socialis**
    - 3: Branchlets and flower buds usually pruinose; flowers cream to pale yellow .....  
..... 75a. **E. socialis** subsp. **eucentrica**

75a. **Eucalyptus socialis** subsp. **eucentrica** (L.A.S.Johnson & K.D.Hill) D.Nicolle, *Austral. Syst. Bot.* 18: 502 (2005). — *E. eucentrica* L.A.S.Johnson & K.D.Hill, *Telopea* 4: 326 (1991). *E. socialis* auct. non F.Muell. ex Miq.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 915 (1986), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 209 (2004); D.Nicolle, *Eucalypts S. Austral.* 43 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 70, 71 (2013).

Branchlets non-pruinose to strongly pruinose; juvenile leaves pruinose, dull, blue-green; adult leaves 70–125 × 15–26 mm, dull, blue-green. **Buds** slightly to strongly pruinose, 10–13 (–17) mm long, 4–5.5 mm diam.; flowers creamy to pale yellow. **Fruits** 5–8 mm long, 4.5–7.5 mm diam **Red mallee, inland red mallee.**

S.A.: NW, LE; W.A.; N.T.; Qld. Widespread in the arid region of central Australia from the Hamersley Range and upper Gascoyne River catchment in W.A. eastwards to the southern N.T. and in the range country of north-eastern part of S.A (including the summit of Mt Woodroffe), with outlying populations in central Qld. It occurs in open mallee vegetation on level to undulating topography, often on stony or sandy rises. Soils are locally calcareous stony red sandy-loams, often overlying limestone. **Fig. 25E–H, Pl. 20C.**

Distinguished within the species by the pruinose branchlets and flower buds, the dull, blue-green adult leaves, the medium-sized buds and fruits and the cream to pale yellow flowers.

75b. **Eucalyptus socialis** F.Muell. ex Miq. subsp. **socialis**. — *E. turbinata* Behr & F.Muell. ex Miq., *Ned. Kruidk. Arch.* 4:137 (1856). *E. oleosa* var. *glauca* auct. non Maiden: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 624 (1952), partly; *E. transcontinentalis* auct. non Maiden: Blakely, *Key Eucalypts* 284 (1965), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 113 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 253 (2001); D.Nicolle, *Eucalypts S. Austral.* 49 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 27 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 66, 67 (2013).

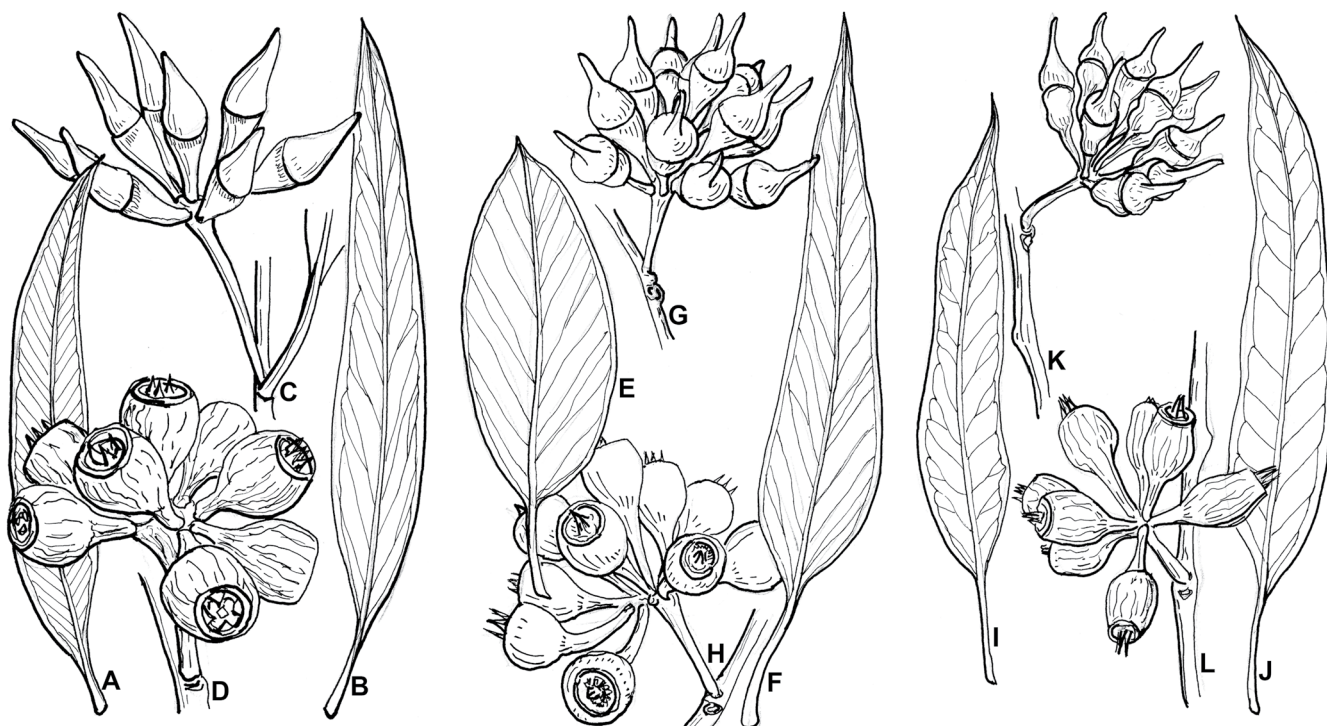


Fig. 25. A–D, *Eucalyptus socialis* subsp. *socialis*: A & B, leaves; C, buds; D, fruits. E–H, *E. socialis* subsp. *eucentrica*: E, intermediate leaf; F, leaf; G, buds; H, fruits. I–L, *E. socialis* subsp. *viridans*: I & J, leaves; K, buds; L, fruits. Illustration by G.R.M. Dashorst.

Branchlets not pruinose; juvenile leaves not pruinose to slightly pruinose, dull, slightly blue-green to blue-grey; adult leaves 65–127 × 10–21 (–24) mm, dull and blue-green at first, maturing dull (to slightly glossy), (slightly blue-green to) blue-green. **Buds** usually non-pruinose, 8–12.5 mm long, 3–5 mm diam.; flowers creamy-white. **Fruits** 4.5–7 (–8) mm long, 4.5–7 mm diam. **Red mallee, summer red mallee. Fig. 25A–D, Pl. 20A & B.**

S.A.: LE, GT, FR, EA, EP, NL, MU, YP, SL, SE; N.S.W.; Vic. Widespread in drier regions throughout the eastern half of S.A., as far north as near Coober Pedy, Oodnadatta and Lake Eyre South, north and west of which it is replaced by subsp. *eucentrica*. It occurs as a common component of mallee vegetation in level to undulating topography, often on rises. Soils are often locally highly calcareous, pale grey sandy loams to red loams over limestone. Flowers: Mainly spring.

Distinguished within the species by the small, dull, blue-green adult leaves; the creamy-white flowers; the relatively small buds and fruits and the non-pruinose adult morphology.

75c. ***Eucalyptus socialis* subsp. *victoriensis*** D.Nicolle, *Aust. Syst. Bot.* 18:503 (2005). — *E. socialis* subsp. *South Great Victoria Desert* (D.Nicolle 2667) D.Nicolle: Barker *et al.*, *J. Adelaide Bot. Gard. Suppl.* 1: 104 (2005); *E. sp. aff. socialis* (southern GVD) Brooker *et al.*, *Euclid* ed. 2 (2002). *E. socialis* auct. non F.Muell. ex Miq.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 915 (1986), partly; *Eucalyptus yumbarrana* auct. non Boomsma: D.Nicolle, *Eucalypts S. Austral.* 40 (1997), partly; *Eucalyptus eucentrica* auct. non L.A.S.Johnson & K.D.Hill: L.A.S.Johnson & K.D.Hill, *Telopea* 8: 193 (1999), partly; *E. transcontinentalis* auct. non Maiden: Blakely, *Key Eucalypts* 284 (1965), partly. — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 72, 73 (2013).

Branchlets rarely pruinose; juvenile leaves not pruinose to strongly pruinose, dull, blue-green; adult leaves 80–152 × 20–35 mm, dull, very slightly blue-green to blue-green. **Buds** not or slightly pruinose, 12.5–19 mm long, 4–6.5 mm diam.; flowers creamy to pale yellow. **Fruits** 7–11 mm long, 6.5–9.5 mm diam. **Red mallee. Fig. 25I–L.**

S.A.: NW, LE (Commonwealth Hill Station), NU, GT, EP; W.A. Restricted to the Great Victoria Desert of S.A. and W.A. where it occurs in open mallee vegetation on sand plains and in the swales between sand dunes. Soils are calcareous red sands, usually overlying limestone. Flowers: Poorly known.

Distinguished within the species by the large, dull, very slightly blue-green to blue-green adult leaves and the large buds and fruits and the cream to pale yellow flowers. This subspecies is usually non-pruinose on branchlets and flower buds.

- 75d. **Eucalyptus socialis** F.Muell. ex Miq. subsp. **viridans** D.Nicolle, *Austral. Syst. Bot.* 18: 505 (2005). — *E. socialis* subsp. *Glossy green* (P.J.Lang 804) D.Nicolle: Barker *et al.*, *J. Adelaide Bot. Gard. Suppl.* 1: 104 (2005); *E. socialis* subsp. *'glossy leaves'* Brooker *et al.*, *Euclid* ed. 2 (2002). *E. socialis* auct. non F.Muell. ex Miq.: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 915 (1986), partly; *E. oleosa* var. *glauca* auct. non Maiden: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 624 (1952), partly; *E. transcontinentalis* auct. non Maiden: Blakely, *Key Eucalypts* 284 (1965), partly. — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 69 (2013).

Branchlets not pruinose; juvenile leaves not pruinose, except sometimes new growth, dull to slightly glossy, green to slightly blue-green; adult leaves 75–132 × 15–28 mm, dull to glossy and green to slightly blue-grey at first, maturing slightly glossy to very glossy, green. **Buds** not pruinose, 9–18 mm long, 4–6 mm diam.; flowers creamy-white to pale creamy-yellow. **Fruits** 9–18 mm long, 4–6 mm diam. **Green-leaved red mallee.**

S.A.: EP, NL, MU, YP, SL, KI, SE. Distributed from Eyre Peninsula eastwards through Yorke Peninsula to the southern Murray mallee and with a few records from Kangaroo Island; apparently endemic to S.A. Generally occurs to the south and west of subsp. *socialis*. It occurs in mallee vegetation on level to slightly undulating topography. Soils are calcareous shallow grey sands to loams, overlying limestone.

Distinguished within the species primarily by the glossy green adult leaves and also by the combination of non-pruinose features and cream-coloured flowers. Adult leaves, buds and fruits are often larger than in subsp. *socialis* and the buds and fruits usually smaller than in subsp. *eucentrica*, although bud and fruit dimensions of subsp. *viridans* overlap significantly with the other two subspecies because of the variability in all three subspecies.

76. **Eucalyptus sp. Great Victoria Desert** (D.Nicolle 3877 & M.French) D.Nicolle, *Native Eucalypts S. Austral.* 96 (2013). — *E. foecunda* auct. non Schauer: Jessop in Jessop & Toelken, *Fl. S. Austral.* 2: 919 (1986), partly; *E. leptophylla* auct. non F.Muell. ex Miq.: *Eucalypts S. Austral.* 66 (1997), partly. — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 96, 97 (2013).

Mallee, 3–6 m high, lignotuberous; bark often rough on lower stems, thick and somewhat loose, grey, smooth above or less commonly smooth throughout, coppery to cream; decorticating in strips; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for many pairs then becoming disjunct, sessile, ovate to orbicular; pruinose, dull, bluish; adult leaves disjunct, petiolate, narrow-lanceolate to linear, 40–90 × 4–12 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 7–13-flowered, held erect; peduncles 3–10 mm long, pedicels 0–4 mm long; buds fusiform, not pruinose, 4–7 mm long, 3–5 mm diam.; hypanthia obconical, smooth; opercula conical, smooth, about equal in length to hypanthium, becoming orange to red before flowering; flowers white; stamens strongly inflexed, all fertile; anthers adnate, cuboid to globoid; ovules in 4 vertical rows. **Fruits** sessile or pedicellate, cupular to shortly barrel-shaped, smooth, not pruinose, 3–6 mm long, 3–6 mm diam.; disc descending, whitish; valves 3 (or 4), enclosed but sometimes with split style remnants remaining; seeds grey to brown, compressed ovoid, smooth or very finely reticulate. **Narrow-leaved red mallee.**

S.A.: NW, NU, GT, EP; W.A. Widespread throughout the central and southern Great Victoria Desert in S.A. and W.A., extending south-west to near the Fraser Range in W.A. and south-east to Yumbarra and Pureba conservation parks in S.A., east of which it appears to grade into *E. leptophylla*.

Differs from *E. leptophylla* in the more persistent rough bark, sometimes pruinose, more orbicular seedling leaves, greater persistence of juvenile leaves in the mature crown, and more pointed opercula. Populations in the far south-eastern fringe of the Great Victoria Desert, in a thin band from north of Wudinna to north of Ceduna, display morphology which is intermediate between *E. leptophylla* and *E. sp. Great Victoria Desert*, and may represent intergrades between the two species.

Possibly cultivated under the name *E. leptophylla*.

77. **Eucalyptus sparsa** Boomsma, *J. Adelaide Bot. Gard.* 1: 363 (1979). — *E. bicolor* A.Cunn. ex T.Mitch. var. *xanthophylla* auct. non Blakely: J.M.Black, *Fl. S. Australia* ed. 2, 3: 619 (1952), partly; *E. intertexta* auct. non R.T.Baker: Boomsma, *Native Trees S. Austral.* 128 (1972), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 397 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 314 (2004); D.Nicolle, *Eucalypts S. Austral.* 147 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 172, 173 (2013).

Mallee, 2–6 m high, lignotuberous; bark rarely smooth throughout, more commonly rough on lower stems,



fibrous to loose, grey-brown; smooth above, decortivating in strips, pale brown to creamy-white; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves opposite for a few pairs then disjunct, petiolate, glabrous, ovate, not pruinose, dull, green; adult leaves disjunct, petiolate, lanceolate to ovate, 50–120 × 15–35 mm, concolorous, not pruinose, very glossy, green. **Inflorescences** terminal panicles; umbellasters 7 (9)-flowered, held erect; peduncles 3–15 mm long, pedicels 2–6 mm long, buds smooth, not pruinose, 3–6 mm long, 3–4 mm diam.; hypanthia cupular to obconical; opercula bluntly conical to hemispherical, shorter than hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers adnate, globoid to cuboid; ovules in 4 vertical rows. **Fruits** pedicellate, truncate-globose to hemispherical, smooth, not pruinose, 4–7 mm long, 4–8 mm diam.; disc descending; valves 4 (rarely 5), enclosed; seeds dark brown, compressed ovoid, finely reticulate. **Northern ranges box. Fig. 24E–H.**

S.A.: NW; W.A.; N.T. Of scattered occurrence throughout the range country in the north-west of the State, where it usually occurs in small populations near the base of rocky hills where rainfall is supplemented by runoff, but also occurring on ridges and mountains including near the summit of Mount Woodroffe (Musgrave Ranges) and Mount Sir Thomas (Birksgate Range). Flowers: Apparently sporadic and probably associated with rainfall events.

The more southern *E. porosa* is very similar, at least superficially, and it occupies a similarly varied range of habitats, but differs from *E. sparsa* most prominently in the axillary inflorescences.

Not commonly cultivated.

78. \***Eucalyptus stricklandii** Maiden, *J. Western Austral. Nat. Hist. Soc.* 3: 175 (1911). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 189 (2001).

Tree, 5–10 m high, non-lignotuberous (obligate seeder); bark rough on the lower part of the trunk, hard-tessellated to flaky, dark grey-black; smooth on upper trunk and branches, decortivating in ribbons and strips, pale grey to orange-tan; branchlets pruinose, pith glands present; cotyledons bisected; juvenile leaves opposite for 4–7 pairs then disjunct, petiolate, glabrous, ovate, dull, green to blue-green; adult leaves disjunct, petiolate, lanceolate, 20–42 × 100–185 mm, concolorous, not pruinose, glossy, green to dark blue-green. **Inflorescences** axillary; umbellasters 7-flowered, held erect; peduncles pruinose, broadly-flattened, 9–28 mm long, pedicels 0–1 mm long, buds not pruinose, 18–25 mm long, 8–12 mm diam.; hypanthia angular, cylindrical, opercula smooth, rounded to bluntly conical, about as long or shorter than hypanthium; flowers yellow; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile, campanulate, smooth, usually pruinose when young, 10–18 mm long, 10–15 mm diam.; disc level to descending; valves 3 (4), at rim level or exerted; seeds glossy, brown to red-brown, pyramidal, smooth. **Strickland's gum.**

S.A.: ?\*NL; W.A.; \*Vic. Naturally distributed in the semi-arid goldfields region of southern W.A., but occasionally planted as an ornamental small tree in S.A., particularly in towns through the mid-north, Flinders and Murray regions. Known to sparingly regenerate from seed around planted trees, but doubtfully naturalized in S.A. Also listed as sparingly naturalized in Vic. Flowers: Summer.

A distinctive species not closely related to any other species native to S.A.

Occasionally planted as a small ornamental tree in areas of low to moderate rainfall.

79. **Eucalyptus trivalva** Blakely, *Trans. & Proc. Roy. Soc. South Austral.* 60: 155 (1936). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 129 (2001); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 3: 200 (2004); D.Nicolle, *Eucalypts S. Austral.* 25 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 50, 51 (2013).

Mallee, 2–5 m high, lignotuberous; bark rarely smooth throughout, more commonly rough on lower stems, fibrous, often loose, grey to dark grey-brown; smooth above, decortivating in ribbons and strips, coppery to grey to cream; branchlets rarely pruinose, pith glands present; cotyledons bisected; juvenile leaves opposite for 5–8 pairs then disjunct, petiolate, glabrous, ovate to broad-lanceolate, dull, grey-green; adult leaves disjunct, petiolate, lanceolate to elliptical, 60–130 × 15–30 mm, concolorous, rarely slightly pruinose, dull, blue-green to greyish. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 5–18 mm long, pedicels 1–4 mm long, buds smooth, rarely pruinose, 5–12 mm long, 3–6 mm diam.; hypanthia cupular to cylindrical, opercula conical to hemispherical, about as long or shorter than hypanthium; flowers creamy-white; stamens inflexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** usually pedicellate, cupular to cylindrical to slightly obconical, smooth, rarely pruinose when young, 5–10 mm long, 5–8 mm diam.; disc descending; valves

3 (4), enclosed or near rim level; seeds pale brown, compressed ovoid, finely reticulate. **Desert mallee, Victoria Spring mallee. Fig. 26A–D, Pl. 20D.**

S.A.: NW, GT, EP; W.A.; N.T. Widespread but of very scattered occurrence in arid regions of central-western Australia (W.A. and N.T.), extending south-east to the western part of the Gawler Ranges in S.A. Grows on gravelly sands and on rocky rises and hills, in open mallee vegetation. Flowers: Apparently sporadic.

Not closely related to any other species from S.A., but allied to a number of W.A. endemic species such as *E. pilbarensis* Brooker & Edgecombe and *E. prominens* Brooker. The original spelling of the name is *trivalva*. This has been changed to *trivalvis* by most recent authors in the belief that the original spelling was not “grammatically correct”. This change is unnecessary and the original spelling is retained here; the name is treated as a noun in apposition.

Not commonly cultivated.

80. **\*Eucalyptus utilis** Brooker & Hopper, *Nuytsia* 14: 349 (2002). — *E. platypus* var. *heterophylla* auct. non Blakely: Chippendale (1988). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 140 (2001), habit and bark images only (the bud and fruit images are not *E. utilis*); *Nuytsia* 14: 351 (2002), although the caption for Fig. 7 states that both images of Fig. 7A are *E. utilis* and both images of Fig. 7B are *E. platypus* subsp. *congregata*, the images appear to be positioned erroneously in the plate, with only the left-hand-side image of both Fig. 7A and 7B being *E. utilis* (the right-hand-side image of both Fig. 7A and 7B is *E. platypus* subsp. *congregata*).

Tree or shrub, sometimes multi-stemmed, 3–9 m tall, non-lignotuberous (obligate seeder); bark smooth throughout, decorticating in strips and short ribbons, pale grey to coppery-orange; branchlets not pruinose, pith glands present; cotyledons bisected; juvenile leaves opposite for a few pairs then disjunct, petiolate, scabrid, ovate, not pruinose, dull, green; adult leaves disjunct, petiolate, broad-lanceolate to elliptical, 45–90 × 10–30 mm, concolorous, not pruinose, glossy, green to olive green, tertiary venation obscured by numerous oil glands. **Inflorescences** axillary; umbellasters 7-flowered, held loosely erect; peduncles strongly flattened, 10–26 mm long, pedicels absent or to 5 mm long, buds not pruinose, 12–28 mm long, 4–7 mm diam.; hypanthia smooth, opercula cylindrical to horn-shaped, smooth, narrower than hypanthium at join, much longer than hypanthium; flowers cream; stamens erect, all fertile; anthers versatile, narrowly oblong; ovules in 4 vertical rows. **Fruits** sessile or shortly pedicellate, obconical to barrel-shaped, smooth, not pruinose, 7–12 mm long, 6–10 mm diam.; disc level to descending; valves 3 or 4, around rim level, often remaining jointed at their tips; seeds dark grey to black, flattened ovoid, shallowly reticulate. **Coastal moort.**

S.A.: \*SL, \*SE; W.A. Naturally distributed on the south coast of W.A., from near Beaufort Inlet eastwards almost as far as Twilight Cove on the Great Australian Bight, and including some of the islands in the Archipelago of the Recherche. Commonly planted as for shelter in coastal localities in southern Australia. Flowers: Mainly summer.

Closely related to *E. platypus* Hook., which differs from *E. utilis* primarily in its elliptical to orbicular adult leaves, loosely erect-held inflorescences, longer peduncles (to 70 mm long), longer buds (20–36 mm long), yellow flowers, and larger fruits (10–13 mm diam.).

Widely used for shelterbelts and as a street tree. Widely cultivated in coastal regions of southern Australia, where it rapidly grows into a dense-crowned tree.

81. **Eucalyptus viminalis** Labill., *Nov. Holl. Pl.* 2: 12 (1806).

Tree, 6–90 m tall, sometimes several-stemmed, lignotuberous; bark smooth throughout or rough on the trunk and sometimes branches, moderately-fissured, grey-brown; smooth above, decorticating in ribbons, pale grey to creamy-white; branchlets not pruinose, pith glands absent; cotyledons bilobed; juvenile leaves opposite, sessile and amplexicaul, glabrous, narrow-lanceolate to lanceolate, not pruinose, glossy, green; adult leaves disjunct, petiolate, lanceolate, sometimes undulate, 100–300 × 10–30 mm, concolorous, not pruinose, glossy, green. **Inflorescences** axillary; umbellasters 3 or 7-flowered, held erect; peduncles 3–10 mm long, pedicels 0–4 mm long, buds smooth, not pruinose, 7–8 mm long, 4–5 mm diam.; hypanthia obconical to cupular, opercula conical, about equal in length to hypanthium; flowers white; stamens irregularly flexed, all fertile; anthers versatile, oblong; ovules in 4 vertical rows. **Fruits** sessile or on short pedicels, globose to obconical, smooth, not pruinose, 6–8 mm long, 5–9 mm diam.; disc ascending; valves 3 or 4, exerted above rim level; seeds brown to black, flattened ovoid, lacunose.

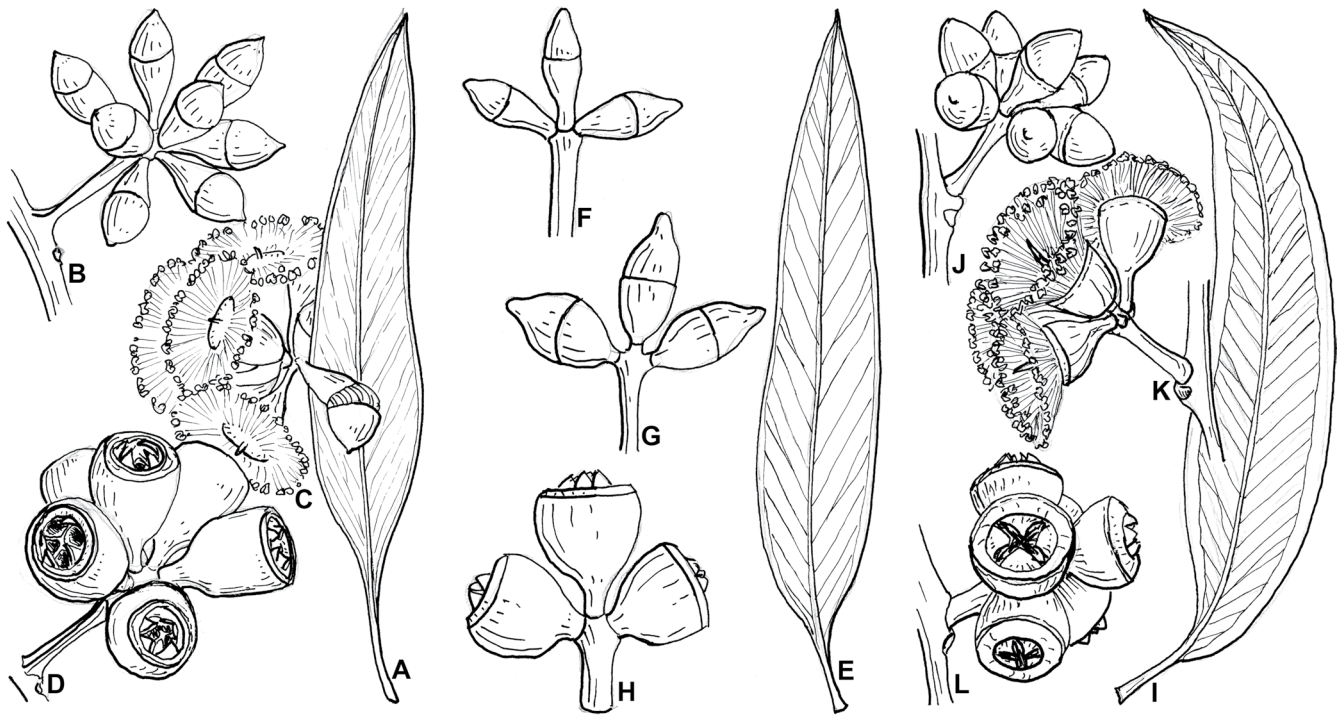


Fig. 26. A–D, *Eucalyptus trivalva*: A, leaf; B, buds; C, flowers; D, fruits. E–H, *E. viminalis* subsp. *viminalis*: E, leaf; F & G, buds; H, fruits. I–L, *E. viminalis* subsp. *cygnetensis*: I, leaf; J, buds; K, flowers; L, fruits. Illustration by G.R.M. Dashorst.

Widespread in south-eastern Australia, including throughout much of Tas., Vic. and the south-eastern part of N.S.W., extending westwards into S.A. as far as Kangaroo Island and lower Eyre Peninsula. Flowers: Summer to autumn.

Four subspecies are recognised, of which two are known in S.A. (subsp. *pryoriana* (L.A.S. Johnson) Brooker & Slee) is endemic to eastern Vic. and subsp. *siliceana* Rule is endemic to western Vic.)

The species is mainly used in forestry. Also grown as a very fast-growing specimen and shade tree. A preferred food tree of koalas. Widely cultivated in southern and eastern Australia and less commonly worldwide.

- 1. Bark predominantly smooth; inflorescences consistently 3-flowered..... 81b. ***E. viminalis* subsp. *viminalis***
- 1: Bark rough on trunk and major branches; inflorescences 3 and/or 7-flowered.....  
..... 81a. ***E. viminalis* subsp. *cygnetensis***

81a. ***Eucalyptus viminalis* subsp. *cygnetensis*** Boomsma, *J. Adelaide Bot. Gard.* 2: 295 (1980). — ?*E. huberiana* Naudin, *Ann. Sci. Nat., Bot. sér.* 6, 16: 42 (1891); ?*E. viminalis* var. *huberiana* (Naudin) N.T.Burb., *Trans. Roy. Soc. South Australia* 71: 147 (1947). *E. viminalis* var. *racemosa* auct. non (F.Muell.) Blakely: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 627 (1952); *E. aromaphloia* auct. non Pryor & Willis: Eichler, *Suppl. J.M.Black's Fl. S. Austral.* 239 (1965); *E. pryoriana* auct. non L.A.S.Johnson: Eichler, *Suppl. J.M.Black's Fl. S. Austral.* 238 (1965), partly. — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 198 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 392 (2001); D.Nicolle, *Eucalypts S. Austral.* 133 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 135 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 158, 159 (2013).

Tree 6–22 m tall, sometimes several-stemmed; bark rough and persistent on the trunk(s) and often the branches; smaller branches smooth. **Umbellasters** 7-flowered or mixed 3- and 7-flowered. **Rough-barked manna gum.** **Fig. 26I–L, Pl. 20E & F.**

S.A.: EP, MU, SL, KI, SE; Vic. Of widespread but scattered occurrence in the wetter parts of S.A., including Kangaroo Island, the Southern Mount Lofty Ranges and the south-east of the State, extending into Vic. Very scattered populations also occur in the upper south-east of S.A. (as far inland as Carcuma Conservation Park) and on lower Eyre Peninsula south-west of Port Lincoln. Usually occurs on well-drained sandy soils. Flowers: Summer to autumn.

Distinguished within the species by its rough bark on the trunk and larger branches, and the 7 or mixed 3- and 7-flowered umbellasters. The subspecies usually forms a small to medium-sized spreading tree. *Eucalyptus*



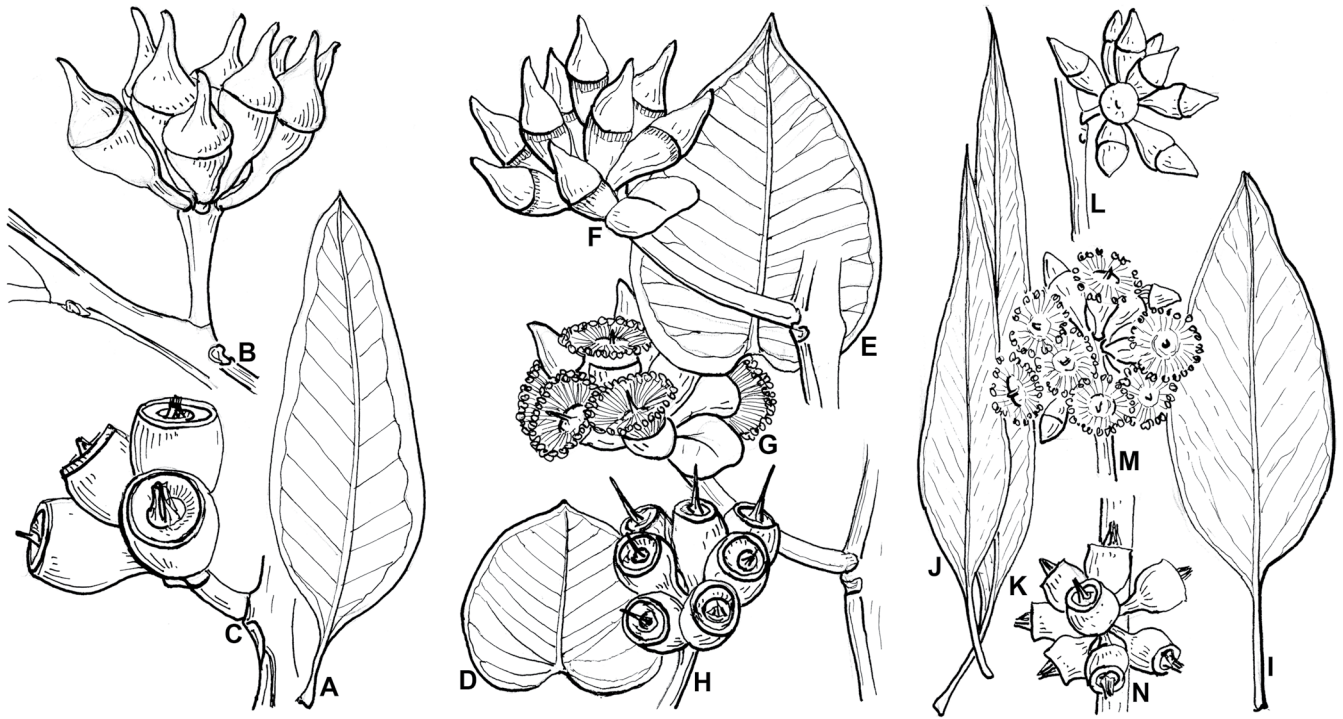


Fig. 27. A–C, *Eucalyptus vokesensis*: A, leaf; B, buds; C, fruits. D–H, *E. wyolensis*: D & E, leaves; F, buds; G, flowers; H, fruits. I–N, *E. yalattensis*: I–K, leaves; L, buds; M, flowers; N, fruits. Illustration by G.R.M. Dashorst.

*huberiana* Naudin has been used as a synonym of *E. viminalis* subsp. *cygnetensis*; however, the application of the name *E. huberiana* is uncertain, partly because no type was designated.

- 81b. ***Eucalyptus viminalis*** Labill. subsp. ***viminalis*** — **Illustr.:** Boland *et al.*, *Forest Trees Austral.* ed. 5, 427 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 197 (2006); D.Nicolle, *Eucalypts S. Austral.* 135 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 131 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 156, 157 (2013).

Tree 10–90 m tall, usually single-stemmed; bark smooth throughout or rough and persistent on the lower trunk only. **Umbellasters** 3-flowered. **Manna gum, ribbon gum.** Fig. 26E–H.

S.A.: SL, ?SE; N.S.W.; Vic.; Tas. Widespread in south-eastern Australia, with a disjunct occurrence in the higher parts of the Mount Lofty Ranges of S.A. Flowers: Summer to autumn.

Distinguished within the species by its completely smooth bark, rough bark restricted to the lower part of the trunk only, and the consistently 3-flowered umbellasters. The subspecies is usually a medium-sized to very tall forest tree, although on coastal site the subspecies may be depauperate and bushier.

Widespread in cultivation in areas of more reliable rainfall in southern Australia, where the taxon has a rapid growth rate. (Rare status in S.A.)

82. ***Eucalyptus vokesensis*** D.Nicolle & L.A.S.Johnson, *Telopea* 8: 194 (1999). — **Illustr.:** D.Nicolle, *Native Eucalypts S. Austral.* 76, 77 (2013).

Mallee, 4–7 m high, lignotuberous; bark rough on lower stems, fibrous, grey to grey-brown; smooth above, decorticating in ribbons, tan to grey to cream; branchlets strongly pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite, sessile, glabrous, ovate, pruinose; adult leaves disjunct, petiolate, ovate to broad-lanceolate, 85–110 × 20–54 mm, concolorous, usually pruinose, dull, blue-grey. **Inflorescences** axillary; umbellasters (7) 9 (–13)-flowered, generally held erect; peduncles 7–22 mm long, pedicels 3.5–7.5 mm long, buds smooth, strongly pruinose, 12–15 mm long, 5–7 mm diam.; hypanthia cupular, opercula horn-shaped, longer than hypanthium; flowers pale yellow; stamens variously flexed, all fertile; anthers weakly versatile, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, barrel-shaped to urceolate to almost globose, smooth, pruinose when young, 7–10.5 mm long, 6.5–9 mm diam.; disc descending; valves 4, enclosed or exerted due to split style remnants; seeds grey to dark grey-brown, compressed ovoid, smooth. **Vokes Hill mallee.** Fig. 27A–C, Pl. 20G–I.

S.A.: NW; W.A. Restricted to the Great Victoria Desert in the Ooldea Range and north to the Voakes Hill area, extending west, just across into W.A. It occurs on deep red sand on sand dunes and in the broad swales between dunes. Flowers: Sporadic, possibly related to rainfall events.

Distinctive in the field due to its crown of large, very pruinose adult leaves and the strongly pruinose branchlets, buds and fruits. The species intergrades with *E. socialis* subsp. *victoriensis* in the Vokes Hill area. Although the epithet is spelt 'vokes' in recognition of the distribution of the species, it has been discovered that geographical features in the area concerned were named after W. Voakes and so both spellings are encountered.

Not commonly cultivated.

83. **Eucalyptus wimmerensis** Rule, *Muelleria* 7: 193 (1990). — *E. viridis* subsp. *wimmerensis* (Rule) Brooker & Slee, *Muelleria* 9: 81 (1996). *E. aff. viridis* R.T.Baker: Jessop, *List Vasc. Pl. S. Austral.* ed. 4, 61 (1993), partly. — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 163 (1997); D.Nicolle, *Eucalypts Victoria & Tasman.* 185 (2006); D.Nicolle, *Native Eucalypts S. Austral.* 188, 189 (2013).

Erect-stemmed mallee, 4–12 m tall, lignotuberous; bark smooth throughout or rough on the lower stems only and smooth above, decorticating in strips and ribbons, grey to tan to coppery; branchlets not pruinose, pith glands absent; cotyledons reniform; juvenile leaves disjunct, petiolate, glabrous, narrowly-elliptical, 5–12 mm wide, not pruinose, dull, blue-green; adult leaves disjunct, petiolate, linear-lanceolate to narrow-lanceolate, 50–80 × 8–15 mm, concolorous, not pruinose, dull and blue-green when young, becoming glossy and green with age. **Inflorescences** axillary; umbellasters 7–11-flowered, held erect; peduncles 5–13 mm long, pedicels 4–6 mm long, buds smooth, not pruinose, 5–6 mm long, 3–4 mm diam.; hypanthia cupular to obconical, opercula hemispherical to bluntly conical, shorter than hypanthium; flowers white; stamens variously flexed, all fertile; anthers adnate, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, cupular to barrel-shaped, smooth, not pruinose, 4–6 mm long, 4–6 mm diam.; disc descending; valves (3) 4 (5), below rim level; seeds brown, ovoid, reticulum fine. **Wimmera mallee box.**

S.A.: SE; Vic. Restricted to the Wimmera of Vic. and adjacent areas of S.A. in the Bordertown area where it grows in sands or gravelly loams in mallee shrubland or mixed mallee-woodland. Flowers: Summer to autumn.

Very similar to, and perhaps conspecific with, *E. cajuputea*. *Eucalyptus cajuputea* can be quite variable with respect to its extent of rough bark and the size and shape of the juvenile and adult leaves, but generally the juvenile and adult leaves are longer than in *E. wimmerensis*. Further research is required to ascertain the pattern of variation within and between the two species, and if the two species are indeed specifically distinct. Also closely related to *E. odorata*, which differs in its usually larger habit (*E. wimmerensis* is always a mallee), usually more extensive rough bark, generally broader adult leaves and generally larger buds and fruits. *Eucalyptus viridis* (widely distributed in northern Vic., N.S.W. and southern Qld, but not in S.A.), is distinguished from *E. wimmerensis* by its narrower and longer, linear juvenile leaves, narrow adult leaves and generally smaller buds and fruits.

(Rare status in S.A.)

84. **Eucalyptus wyolensis** Boomsma, *J. Adelaide Bot. Gard.* 10: 59 (1987). — **Illustr.:** D.Nicolle, *Eucalypts S. Austral.* 45 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 78, 79 (2013).

Mallee, 4–7 m high, lignotuberous; bark rough on lower stems, fibrous, grey to grey-brown; smooth above, decorticating in ribbons, tan to grey to cream; branchlets pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite, sessile, glabrous, ovate, pruinose; mature crown composed of juvenile leaves that are opposite to subopposite, sessile or on petioles to 2 mm long, orbicular to ovate, 55–85 × 36–64 mm, concolorous, pruinose, dull, greyish. **Inflorescences** axillary; umbellasters 9–11-flowered, generally held erect; peduncles 13–22 mm long, pedicels 3–7 mm long, buds smooth, pruinose, 14–18 mm long, 6–8 mm diam.; hypanthia cupular, opercula horn-shaped, longer than hypanthium; flowers pale yellow; stamens variously flexed, all fertile; anthers weakly versatile, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, barrel-shaped to globose, smooth, pruinose when young, 9–11 mm long, 9–10.5 mm diam.; disc descending; valves 3 or 4, enclosed or exerted due to split style remnants; seeds grey to dark grey-brown, compressed ovoid, smooth. **Wyola mallee. Fig. 27D–H, Pl. 20J, 21A–C.**

S.A.: NW. Known from only a few populations on the Ooldea Range south of Wyola Lake and westwards towards the W.A. border in the southern Great Victoria Desert (endemic to S.A.). The species occurs on deep red sand plains in open mallee vegetation. Flowers: Sporadic, possibly related to rainfall events.

Similar to *E. gillii*, differing primarily in its larger leaves, buds and fruits. Possibly represents genetically neotenus populations of *E. vokesensis*, which occurs in similar habitats in the Great Victoria Desert of S.A., although the seedling leaf morphology of the two species is distinct, with *E. nyolensis* having ovate to cordate seedling leaves and *E. vokesensis* having lanceolate to ovate seedling leaves.

Virtually unknown in cultivation. (Rare status in S.A.)

85. **Eucalyptus yalatensis** Boomsma, *S. Austral. Naturalist* 50: 29 (1975). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 3, 1: 114 (2006); Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 257 (2001); D.Nicolle, *Eucalypts S. Austral.* 51 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 64, 65 (2013).

Mallee, 2–7 m high, lignotuberous; bark rarely smooth throughout, more commonly rough on lower stems, fibrous, pale to dark grey; smooth above, decorticating in ribbons, yellow-brown to grey to cream; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 10–20 pairs, sessile, glabrous, ovate to broad-lanceolate, not pruinose; adult leaves disjunct, petiolate, lanceolate, 65–113 × 11–25 mm, concolorous, not pruinose, dull, blue-green to greyish. **Inflorescences** axillary; umbellasters 7–11 (–13)-flowered, held erect; peduncles 4–9 mm long, pedicels 1.5–5 mm long, buds smooth, not pruinose, 6.5–8 mm long, 3.5–4 mm diam.; hypanthia cupular to obconical, opercula conical to horn-shaped, 1.2–1.7 times as long as hypanthium; flowers creamy-white; stamens variously flexed, all fertile; anthers weakly versatile, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, obconical to squat-pyriform, smooth, not pruinose, 4–6 mm long, 5–6.5 mm diam.; disc level to descending; valves 3 or 4 (rarely 5), enclosed or exerted due to split style remnants; seeds grey, compressed ovoid, smooth. **Yalata mallee. Fig. 27I–N.**

S.A.: NU, EP, MU, ?YP; W.A. Distributed from Balladonia Homestead and near Israelite Bay in W.A. eastwards along the south coast to central and southern Eyre Peninsula, and disjunctly in the Cooke Plains to Sherlock area east of Tailem Bend in the southern Murray Mallee (all S.A.). Possibly also found on Yorke Peninsula, although records from Yorke Peninsula require field verification as they may represent variants of *E. socialis* subsp. *socialis*. It occurs in tall closed mallee to low open mallee vegetation on level to slightly undulating topography or sometimes on limestone scarps, always on calcareous shallow sandy to sandy loams overlying limestone. Also recorded from Fennelon Island off the west coast of S.A. Flowers: Summer.

Not commonly cultivated.

86. **Eucalyptus youngiana** F.Muell., *Fragm.* 10: 5 (1876). — *E. pyriformis* subsp. *youngiana* (F.Muell.) Boomsma, *Trans. Roy. Soc. South Austral.* 93: 161 (1969). *E. pyriformis* auct. non Turcz.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 625 (1952), partly; *E. erythrocalyx* auct. non Oldfield & F.Muell. ex F.Muell.: Eichler, *Suppl. Black's Fl. S. Austral.* 2: 237 (1965). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 272 (2001); D.Nicolle, *Eucalypts S. Austral.* 59 (1997); D.Nicolle, *Native Eucalypts S. Austral.* 88, 89 (2013).

Mallee, 3–10 m high, lignotuberous; bark rough on lower stems, fibrous, dark grey-brown; smooth above, decorticating in ribbons, pinkish-grey to cream; branchlets rarely pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for 4–7 pairs the disjunct, petiolate, glabrous, ovate to broad-lanceolate, dull, blue-green; adult leaves disjunct, petiolate, lanceolate to broad-lanceolate, 50–150 × 20–40 mm, concolorous, not pruinose, dull, blue-green. **Inflorescences** axillary; umbellasters 3-flowered, generally held erect; peduncles 10–25 mm long, pedicels 5–15 mm long, buds coarsely ribbed, rarely pruinose, 45–65 mm long, 25–40 mm diam.; hypanthia cupular; opercula hemispherical to shortly beaked, about as long as hypanthium; flowers pale yellow or red; stamens erect or oblique, all fertile; anthers versatile, ovoid; ovules in 10–12 vertical rows. **Fruits** tapering to pedicel, broadly obconical to hemispherical, coarsely ribbed, rarely pruinose, 25–45 mm long, 35–70 mm diam.; disc broad, concave, ascending; valves 4–6, around rim level or slightly exerted; seeds grey-brown, pyramidal, smooth or shallowly reticulate. **Ooldea mallee, large-fruited mallee. Fig. 28A–C, Pl. 21D–H.**

S.A.: NW, NU, GT, EP; W.A. Endemic to the Great Victoria Desert of W.A. and S.A., as far south-east as Bulgunnia and Kondoolka Stations. It typically grows in open mallee in deep red sand on dunes and swales, but in the south-eastern part of its distribution the species is also known from outcropping granite monoliths (e.g. Nalara Rock and Lois Rocks) and rocky hillslopes (e.g. Mt. Finke). Flowers: Autumn to spring, probably related to rainfall events.

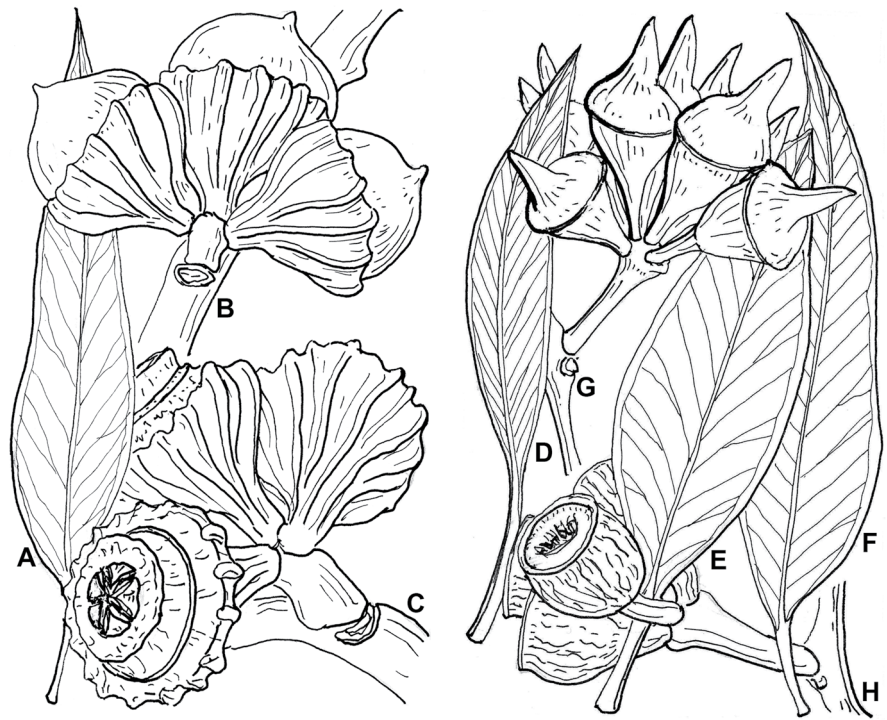
A distinctive species, related to the W.A. endemic *E. pyriformis*, which differs in its down-turned inflorescences, much longer peduncles and pedicels, and narrowly obconical bud hypanthium and fruits.



Occasionally grown for its very large and ornamental flower buds, flowers and fruits.

87. **Eucalyptus yumbarrana** Boomsma, *J. Adelaide Bot. Gard.* 1: 366 (1979). — **Illustr.:** Brooker & Kleinig, *Field Guide Eucalypts* ed. 2, 2: 256 (2001); D.Nicolle, *Native Eucalypts S. Austral.* 74, 75 (2013).

Mallee, 3–6 m high, lignotuberous; bark smooth throughout or rough on lower stems, fibrous to coarsely stringy, grey; smooth above, decorticating in ribbons, grey to pale grey; branchlets not pruinose, pith glands absent; cotyledons bisected; juvenile leaves opposite for numerous pairs, sessile, glabrous, ovate, not pruinose, dull to slightly glossy, green to slightly blue-green; adult leaves disjunct, petiolate, lanceolate to



**Fig. 28. A–C. *Eucalyptus youngiana***: A, leaf; B, buds; C, fruits. **D–H. *E. yumbarrana***: D–F, leaves; G, buds; H, fruits. Illustration by G.R.M. Dashorst.

broad-lanceolate, 85–133 × 23–46 mm, concolorous, not pruinose, slightly glossy to glossy and green to slightly blue-green at first, maturing glossy, green. **Inflorescences** axillary; umbellasters 7–9 (–11)-flowered, generally held erect; peduncles 9–15 mm long, pedicels 4–7.5 mm long, buds sometimes weakly pruinose, 13–19.5 mm long, 6.5–8.5 mm diam.; hypanthia cupular to urceolate, usually smooth; opercula smooth or sometimes ribbed, horn-shaped, slightly wider than hypanthium at join, 1.3–2.4 times as long as hypanthium; flowers cream to pale creamy-yellow; stamens variously flexed, all fertile; anthers weakly versatile, globoid; ovules in 4 vertical rows. **Fruits** tapering to pedicel, barrel-shaped to urceolate to almost globose, smooth or slightly ribbed, not pruinose, 8–13 (–18) mm long, 8.5–11 mm diam.; disc descending; valves 4 (rarely 5), enclosed or exerted due to split style remnants; seeds grey, compressed ovoid, smooth. **Yumbarra mallee. Fig. 28D–H.**

S.A.: NU, GT, EP. Occurs in the far south-eastern Great Victoria Desert from the Moornaba Rock area south-east nearly to sand dune systems to the west of the Gawler Ranges, endemic to S.A. It occurs as a component of open mallee to mallee vegetation on sand ridges. It occurs on white, orange or red sands overlying limestone, often on the crests only but also in the intervening swales in deep sands. Flowers: Mainly winter to spring.

The holotype of *E. yumbarrana* has weakly, but noticeably, pruinose flower buds. *Eucalyptus yumbarrana* is often completely non-pruinose, but does sometimes have weakly pruinose buds that are more noticeable on drying, as in the holotype. The type of *E. yumbarrana* subsp. *striata* from Lake Wyola, S.A., represents the hybrid *E. canescens* subsp. *canescens* × *E. vokesensis*, based on seed morphology of the holotype.

Not commonly cultivated.

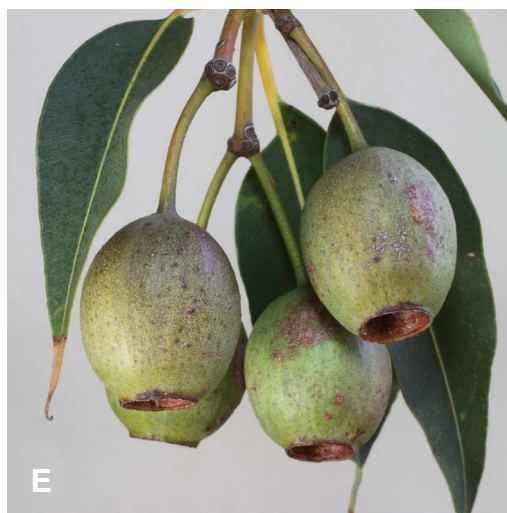
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**Corymbia calophylla** (A, B & C)



**C. eremaea** subsp. *eremaea*

**C. ficifolia**



**C. opaca** (F & G)

**Pl. 1.** A–C, Belair N.P., SL. D, Krewinkel Hill, APY Lands, NW, BS23-25487. E, cultivated. F, ENE of Pipalyatjara, APY Lands, NW. G, Makiri, APY Lands, NW, BS23-24638. Photos: A–C & G, P.J. Lang, DEWNR; D & F, A.C. Robinson, DEWNR; E, P.J. Lang.



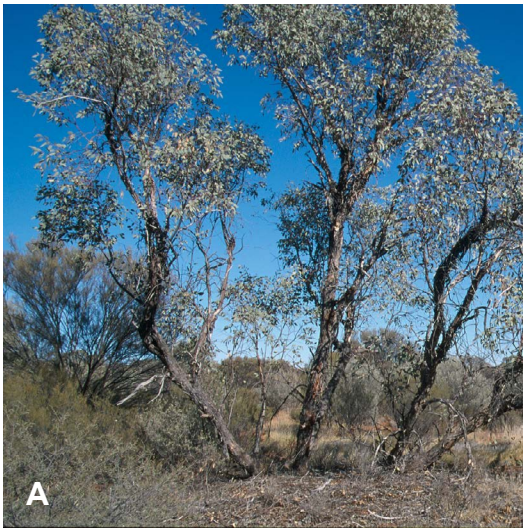


**A**  
*Corymbia terminalis* (A, B, C, D & E)



**C**  
**D**  
**E**  
Pl. 2. A–E, Dullingari, LE, C.J. Brodie 3313. Photos: A–E, P.J. Lang, DEWNR.





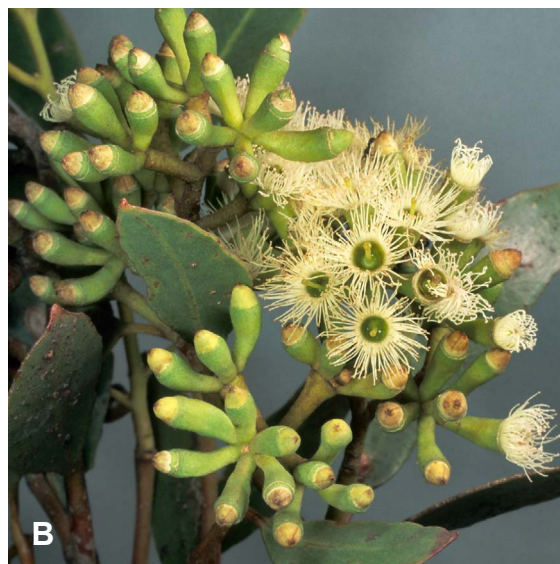
**Eucalyptus alatisissima** (A, B, C, D, E & F)



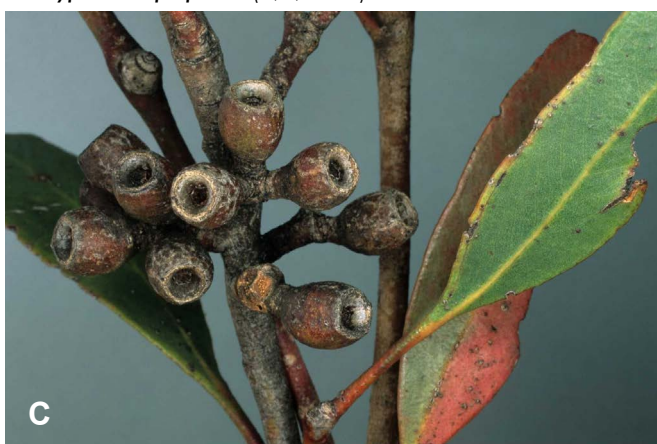
**E. albopurpurea** (G & H)

**Pl. 3.** A–C, Mamungari C.P., NW, B594-3585. D & E, cultivated. F, Mamungari C.P., NW, B594-3585. G, 20km NW of Port Lincoln, EP. H, cultivated. Photos: A–C, E & F, P.J. Lang, DEWNR; G, A.C. Robinson; H, Nadiatalent.





*Eucalyptus albopurpurea* (A, B, C & D)



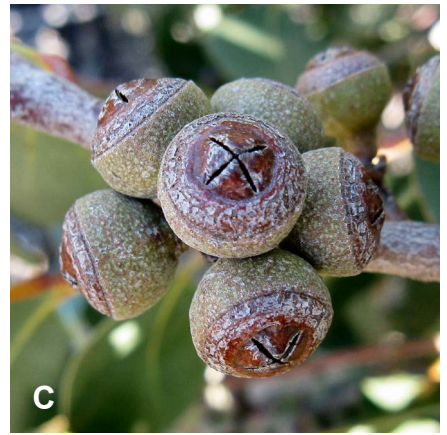
*E. angulosa*



*E. arenacea*

**Pl. 4.** **A.** W of Sleaford, EP, BS128-3378. **A-D.** D'Estrees Bay, KI, BSOP-749. **E.** Mt Greenly, EP, BS128-3040. **F.** Ngarkat C.P., SE. Photos: A-E, P.J. Lang; F, A.L. Carle.





**Eucalyptus arenacea** (A, B & C)



**E. baxteri** (D, E, F & G)

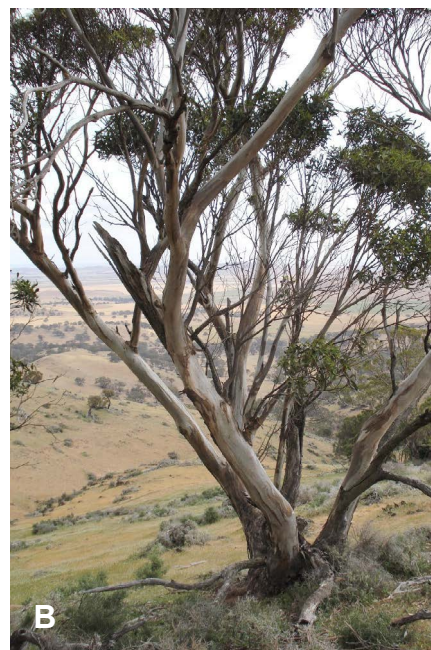


**E. behriana** (H & I)

**Pl. 5.** **A, B & C**, Ngarkat C.P., SE. **D**, Cleland C.P., SL, BSOP-510. **E**, Cox Scrub C.P., SL. **F**, Mt Magnificent C.P., SL. **G**, Cleland C.P., SL, BSOP-510. **H**, Broken Bucket, Vic. **I**, Port Lincoln - Cummins, EP. Photos: A-C, A.L. Carle; D & G, P.J. Lang; E, C.C. Chesson; F, A.C. Robinson; H, G.N. Carle; I, M.I.H. Brooker & D.A. Kleinig © Australian National Botanic Gardens.



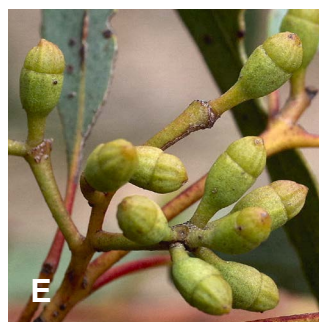




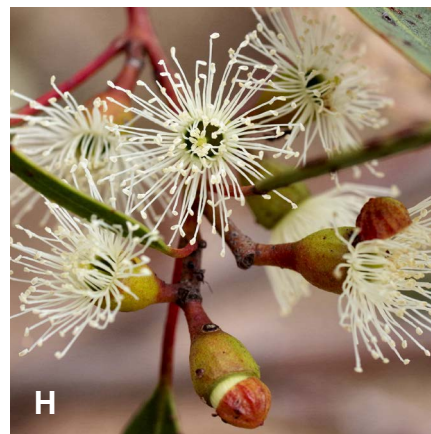
**A**  
*Eucalyptus bicostata* (A & B)



**C & D**  
*E. brachycalyx* (C & D)



**E, F, G & H**  
*E. calcareana* (E, F, G & H)

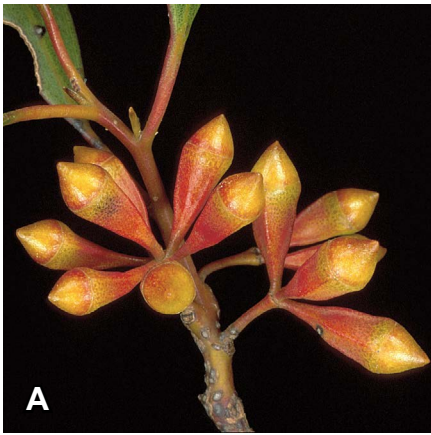


**Pl. 6.** **A**, Mt Bryan, NL. **B**, *ibid.*, P.J. Ainsley 181. **C & D**, Monarto South, MU. **E–H**, cultivated, Currency Creek Arboretum. **I**, Yeldulknie C.P., EP, BS128-1086. Photos: **A & I**, P.J. Lang; **B**, P.J. Ainsley, DEWNR; **C & D**, C.M. Chesson; **E–H**, R. Cumming.

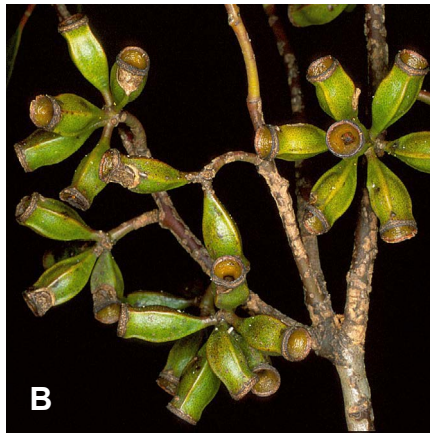


**I**  
*E. calycogona* subsp. *calycogona*





A

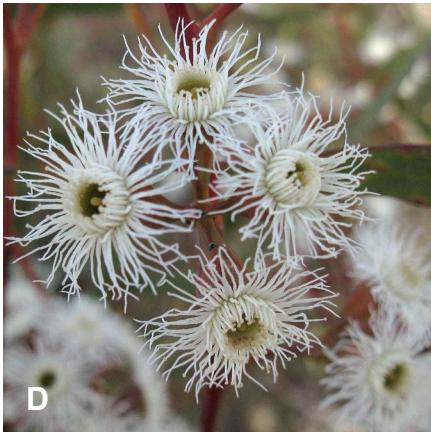


B



C

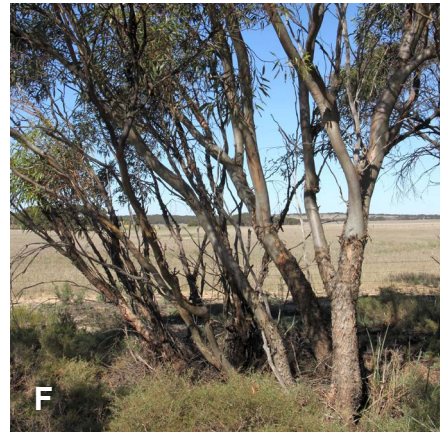
*Eucalyptus calycogona* subsp. *calycogona* (A, B & C)



D

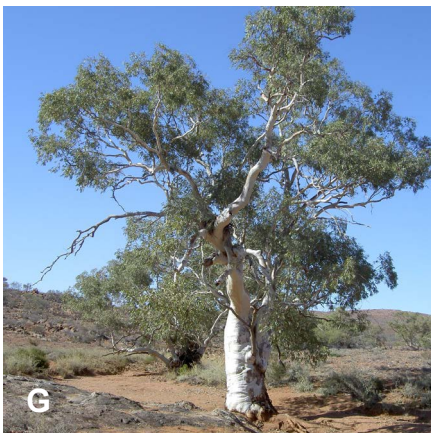


E



F

*E. calycogona* subsp. *trachybasis* (D, E & F)



G



H



I

*E. camaldulensis* subsp. *arida* (G & H)

*E. camaldulensis* subsp. *camaldulensis* (I–L)



J



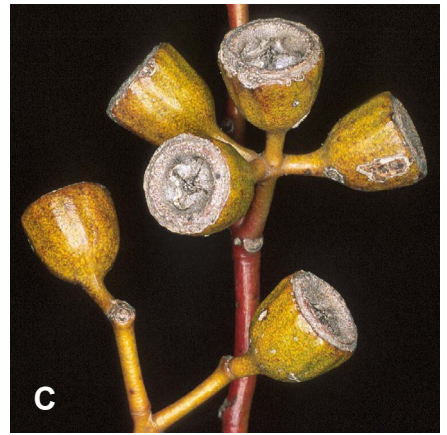
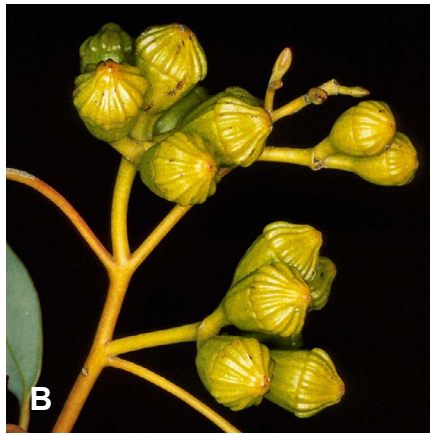
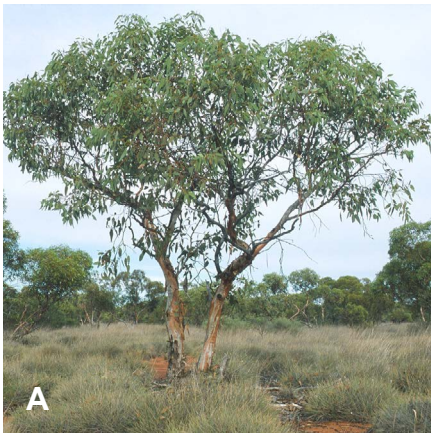
K



L

PL. 7. A–C, Yeldulknie C.P., EP, BS128-1086. D, Ngarkat C.P., SE. E, near Lameroo, MU. F, Monarto South, MU. G, Bimbowrie C.P., EA. H, Musgrave Ranges, APY Lands, NW. I, Baan Hill Res., SE. J, Waite Conservation Res., SL. K & L, Nhill, Vic. Photos: A–C, F & J, P.J. Lang; D, G.N. Carle; E & I, A.L. Carle; G, K.Bevan, DEWNR; H, P.J. Lang, DEWNR; K & L, J.G. Conran.

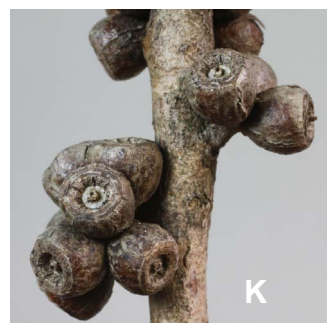
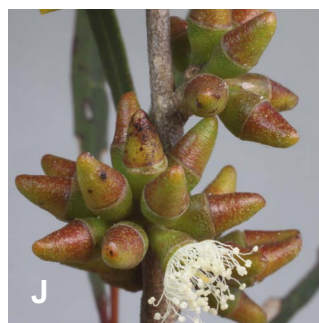
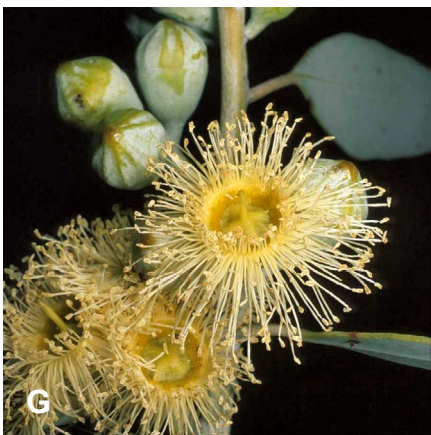




*Eucalyptus canescens* subsp. *beadellii* (A, B, C & D)



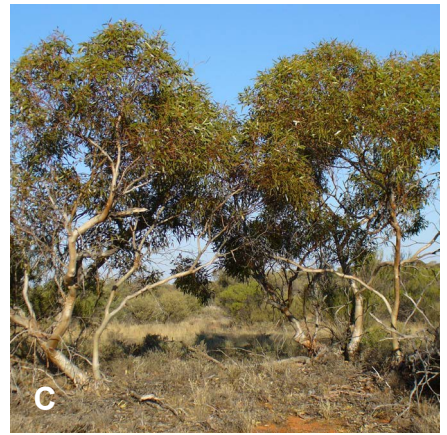
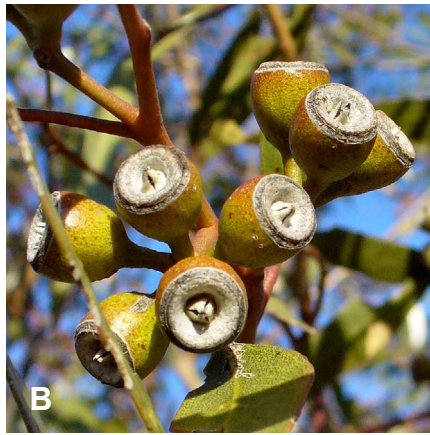
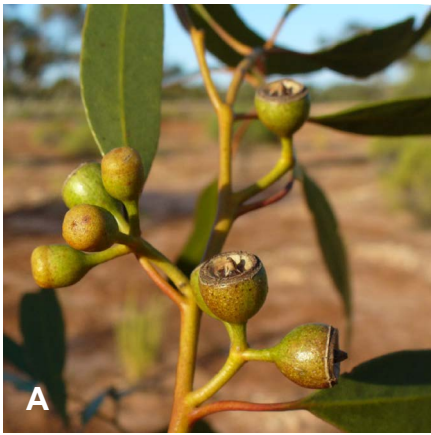
*E. canescens* subsp. *canescens* (E, F, G & H)



*E. cneorifolia* (I, J & K)

**Pl. 8.** A, S of Wyola Lake, MT Lands, NW, BS14-8040. B & C, *ibid.*, BS94-2824. D, *ibid.*, BS14-8040. E-G, near Oak Valley, MT Lands, NW, BS94-2725. H, *loc. ibid.* I-K, W of Murray Lagoon, Ki, P.J. Lang 2712. Photos: A, D & H, P.J. Lang, DEWNR; B, C, E-G & I-K, P.J. Lang.





*Eucalyptus concinna* (A, B & C)



*E. conglobata* subsp. *conglobata* (D, E & F)

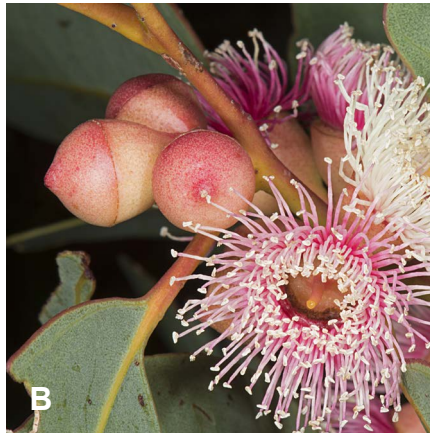


*E. coolabah* (G, H, I & J)



**Pl. 9.** A–C, MT Lands, NW. D–F, cultivated, Currency Creek Arboretum. G, Marqualpie area, Innamincka R.R., LE. H, Cooper Basin, LE. I, near Patchawarra Bore, LE. J, Kunderanna Waterhole, Mulka Station, LE, BS94-2611. Photos: A–C & G, K.L. Graham, DEWNR; D–F, R. Cumming; H, S.A. Seed Conservation Centre, DEWNR; I, P.J. Lang, DEWNR; J, P.J. Lang.

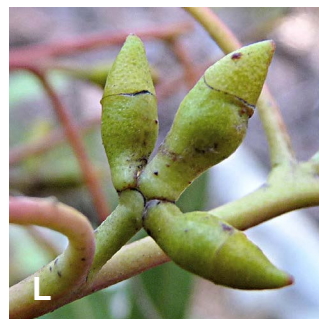




*Eucalyptus cosmophylla* (A, B, C & D)



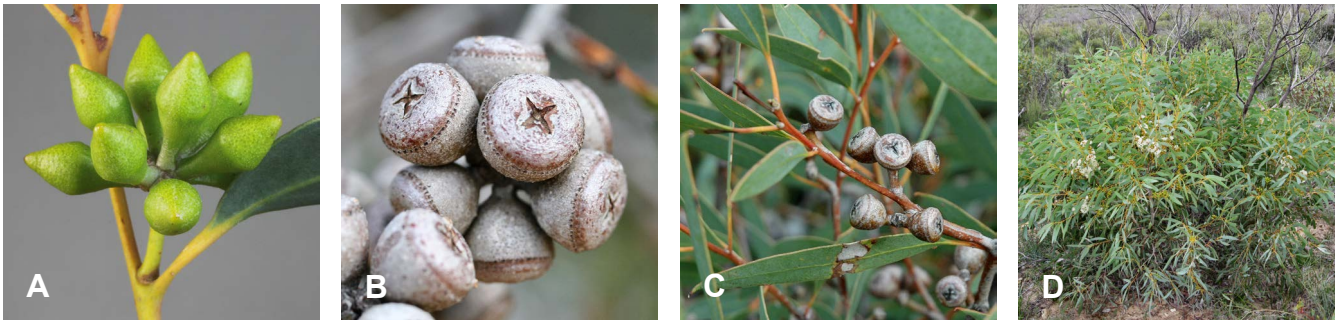
*E. cretata* (E, F, G, H & I)



*E. dalrympleana* subsp. *dalrympleana* (J, K, L & M)

**Pl. 10.** A & B, Cox Scrub C.P., SL. C, Newland Head C.P., SL. D, Cox Scrub C.P., SL. E–G, cultivated, ex Carapsee Hill C.P., EP. H & I, Carapsee Hill C.P., EP. J & K, Sinclair Gully, SL. L & M, Mount George C.P., SL. Photos: A & D, J. Burgher; B & C, C.M. Chesson; E–G, P.J. Lang; H & I, P.J. Lang, DEWNR; J & K, C.S. Cichon; L & M, C. Chesson.





*Eucalyptus diversifolia* subsp. *diversifolia* (A, B, C & D)



*E. eremicola* subsp. *peeneri* (E & F)



*E. falciformis*



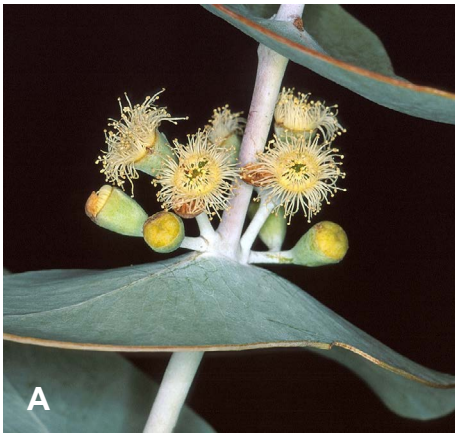
*E. fasciculosa* (H, I, J & K)



*E. flindersii*

PL 11. A, Bucks Camp, Ngarkat C.P., SE. B, Newland Head C.P., SL. C, Marion Bay, YP. D, post-fire regrowth, Jimmy Well Tk, Ngarkat C.P., SE. E, WNW of Emu, MT Lands, NW, BS94-3560. F, NE of Maralinga, MT Lands, NW, BS94-7597. G, Nangwarry N.F.R., SE. H, Aldinga Scrub C.P., SL. I, Nangawooka Flora Res., Victor Harbor, SL. J, cultivated. K, near Hartley, MU. L, cultivated, ex Mt Aleck, FR. Photos: A, P.J. Lang, DEWNR; B & C, R.K. Sandercock, DEWNR; D, G.N. Carle; E, G, J & L, P.J. Lang; F, K.L. Graham, DEWNR; H, J. Burgher; I, R. Cumming; K, D.N. Kraehenbuehl.

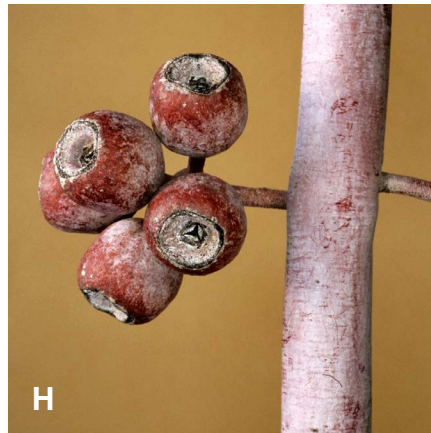




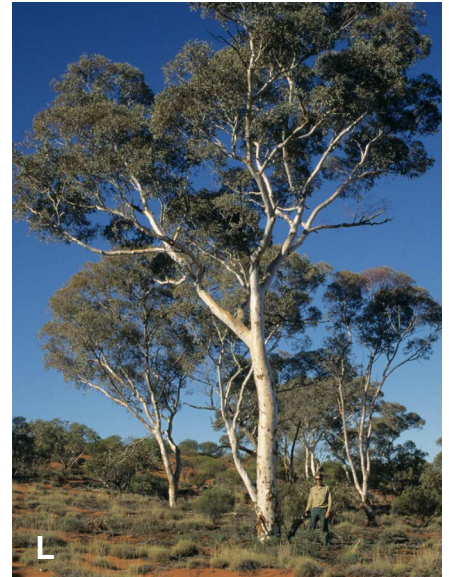
*Eucalyptus gamophylla* (A, B & C)



*E. glomerosa* (D, E & F)



*E. gongylocarpa* (G, H, I, J, K & L)



**PL. 12.** **A & B.** N of Kalka, APY Lands, NW, BS23-25230. **D.** W of Mt Illillie, APY Lands, NW. **E.** Mamungari C.P., NW, BS94-3584. **F.** SW of Makiri, APY Lands, NW. **G.** MT Lands, NW. **H.** Mamungari C.P., NW, BS94-3582. **I-K.** MT Lands, NW. **L.** SSW of Mt Poondinna, APY Lands, NW. Photos: A, B, E & H, P.J. Lang; C & D, A.C. Robinson, DEWNR; F & L, P.J. Lang, DEWNR; G, S.A. Seed Conservation Centre; I-K, K.L. Graham, DEWNR.

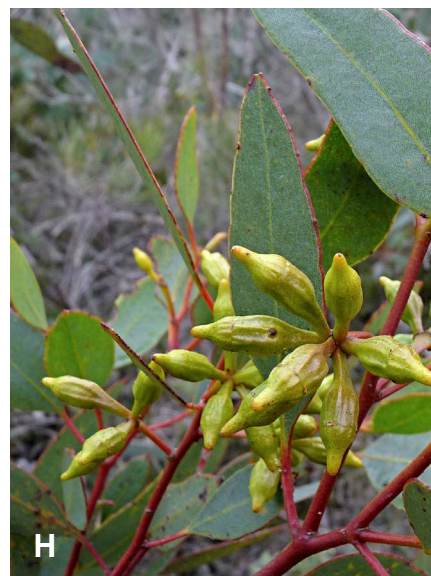




*Eucalyptus gracilis* (A, B, C, D & E)



*E. gypsophila* (F & G)



*E. incrassata* (H, I, J & K)

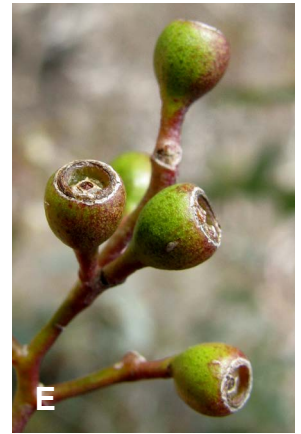


**Pl. 13.** A, near Bakara, MU. B, Monarto South, MU. C, Ardrossan, YP. D, Monarto South, MU. E, Gawler Ranges, EP. F, Serpentine Lakes, Mamungari C.P., NW. G, *ibid.*, BS94-3568. H, Cox Scrub C.P., MU. I, near Bakara, MU. J, Port Julia, YP. K, Monarto C.P., MU. Photos: A & I, L.J. Paton; B & D, C.M. Chesson; C & J, R.K. Sandercock, DEWNR; E, F, Kutsche, DEWNR; F, G & K, P.J. Lang; H, C.C. Chesson.

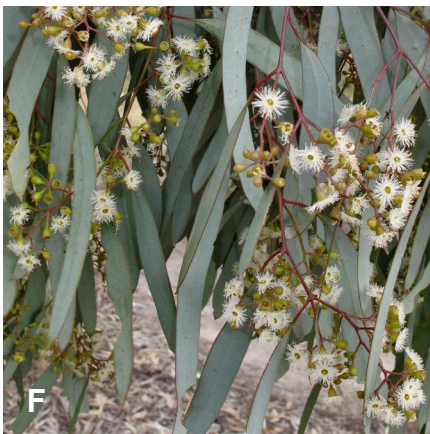




*Eucalyptus lansdowneana* (A, B, C & D)

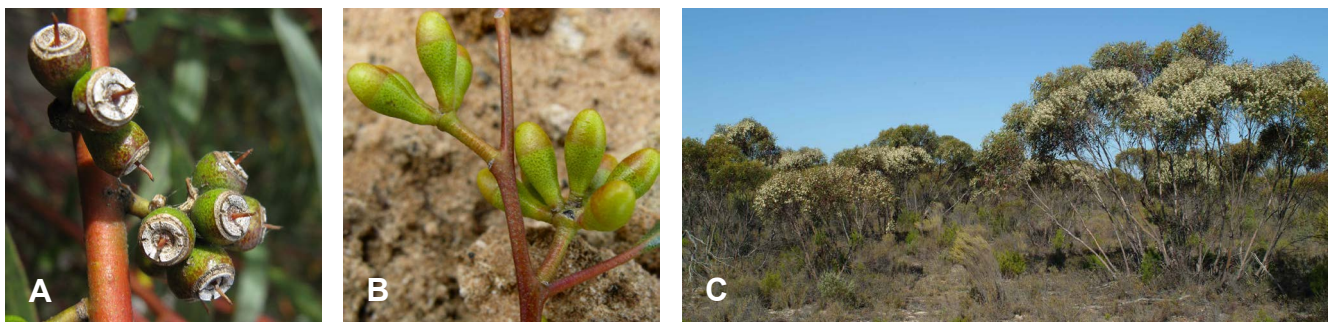


*E. largiflorens* (E, F, G, H & I)

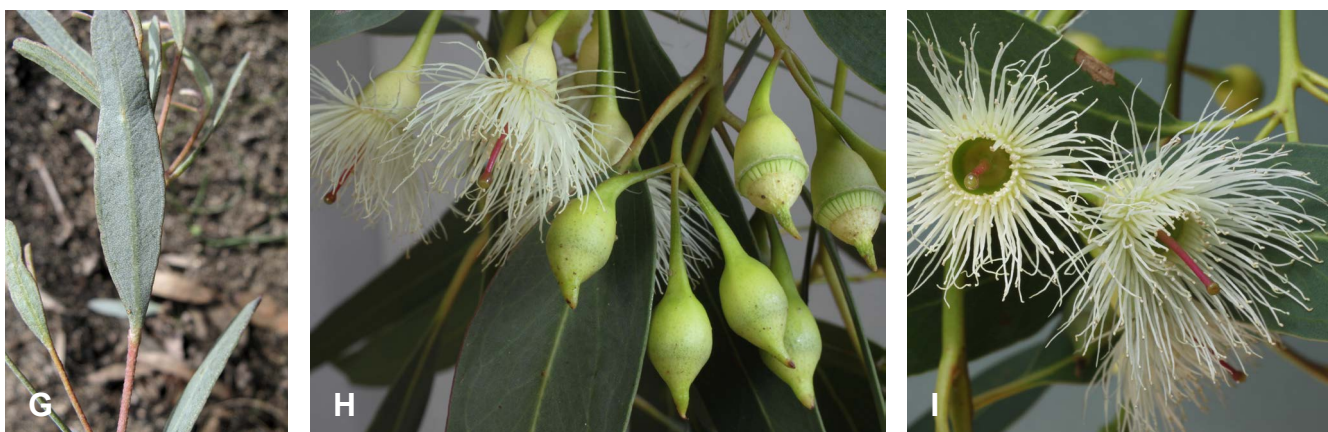
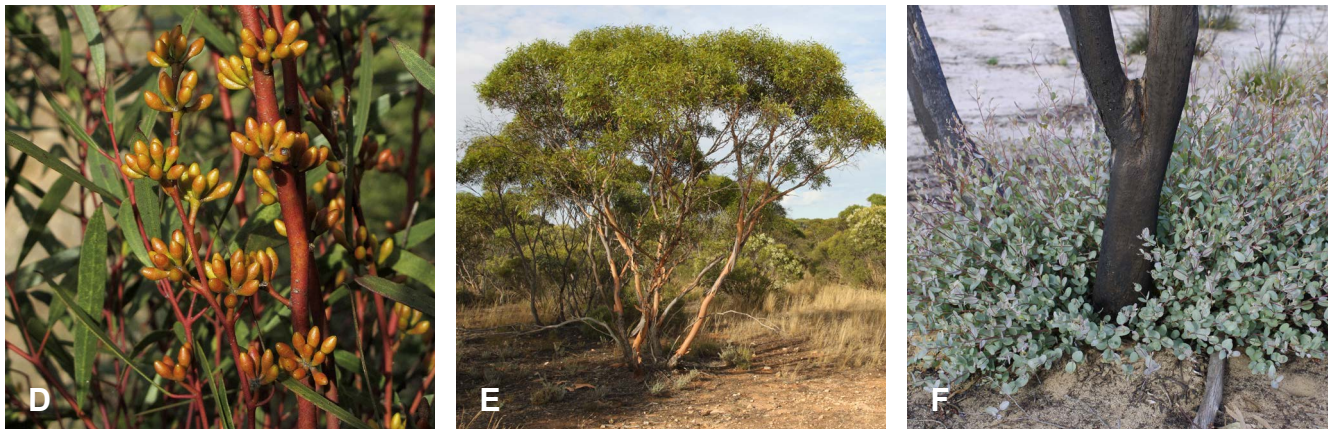


**Pl. 14.** **A**, cultivated. **B**, Gawler Ranges, EP. **C & D**, cultivated. **E**, Baan Hill Res., SE. **F & G**, Baan Hill Tk, Ngarkat C.P., SE. **H**, N of Renmark, MU. **I**, Moorundie Wetlands, S of Blanchetown, MU. Photos: A, M. Fagg © Australian National Botanic Gardens; B, D.N. Kraehenbuehl; C, D, H & I, P.J. Lang; E, A.L. Carle; F & G, G.N. Carle.

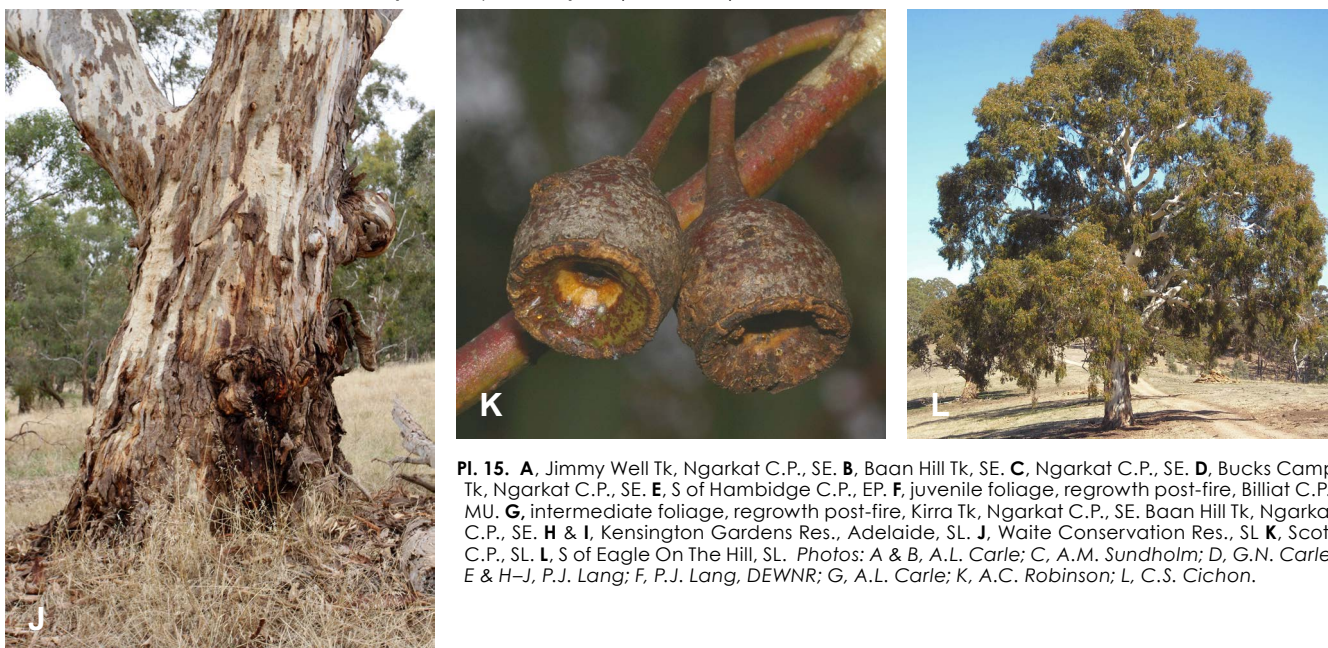




*Eucalyptus leptophylla* (A, B, C, D, E, F & G)

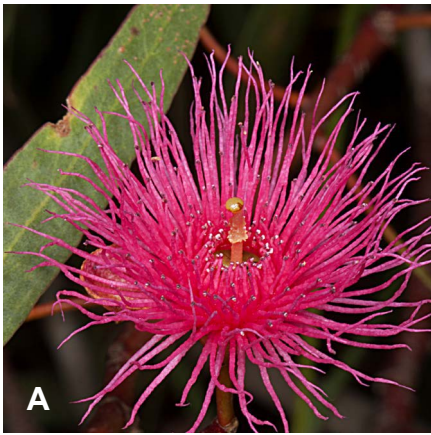


*E. leucoxylon* subsp. *leucoxylon* (H, I, J, K & L)



**Pl. 15.** **A**, Jimmy Well Tk, Ngarkat C.P., SE. **B**, Baan Hill Tk, SE. **C**, Ngarkat C.P., SE. **D**, Bucks Camp Tk, Ngarkat C.P., SE. **E**, S of Hambidge C.P., EP. **F**, juvenile foliage, regrowth post-fire, Billiat C.P., MU. **G**, intermediate foliage, regrowth post-fire, Kirra Tk, Ngarkat C.P., SE. Baan Hill Tk, Ngarkat C.P., SE. **H** & **I**, Kensington Gardens Res., Adelaide, SL. **J**, Waitte Conservation Res., SL. **K**, Scott C.P., SL. **L**, S of Eagle On The Hill, SL. Photos: A & B, A.L. Carle; C, A.M. Sundholm; D, G.N. Carle; E & H-J, P.J. Lang; F, P.J. Lang, DEWNR; G, A.L. Carle; K, A.C. Robinson; L, C.S. Cichon.





*Eucalyptus leucoxyloides* subsp. *leucoxyloides* (A & B)

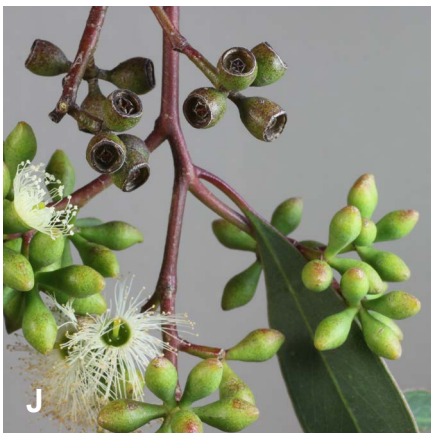
*E. leucoxyloides* subsp. *stephaniae* (C, D & E)



*E. mannensis* subsp. *mannensis* (F & G)

*E. macrorhyncha* subsp. *macrorhyncha*

*E. microcarpa* (I, J, K & L)



**Pl. 16.** A, Monarto C.P., MU. B, Scott C.P., SL. C, Box Flat, Ngarkat C.P., SE. D & E, Baan Hill Tk, SE. F, W of Pundalarinna Lagoon, APY Lands, NW, BS23-26172. G, SSW of Walytjatjata, APY Lands, NW. H, Spring Gully C.P. NL. I-L, Waite Conservation Res., SL. Photos: A, C.M. Chesson; B, A.C. Robinson; C, G.N. Carle; D & E, A.L. Carle; F & G, A.C. Robinson, DEWNR; H, L.M. Heard, DEWNR; I-L, P.J. Lang.

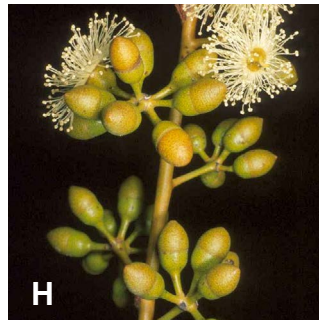




**E. minniritchi** (A, B, C & D)



**E. odorata** (E, F & G)



**E. oleosa** (H, I, J, K & L)



**Pl. 17.** **A–C,** Musgrave Ranges, NW. **D,** Mt Woodroffe, Musgrave Ranges, NW, BS23-24260. **E,** near Tarnma, south Tothill Ranges, NL. **F & G,** Cox Scrub C.P., SL. **H & I,** Oak Valley, MT Lands, NW, BS94-2729. **J & K,** Monarto South, MU. **L,** Danggali C.P., MU. Photos: A–C, S.A. Seed Conservation Centre; D, A.C. Robinson, DEWNR; E & L, D.N. Kraehenbueh; F, G, J & K, C.M. Chesson; H & I, P.J. Lang.





A



B



C

*Eucalyptus ovata* subsp. *ovata* (A, B & C)



D



E

*E. percostata* (D, E, F & G)



F



G



H

*E. pimpiniana* (H, I, J & K)



I



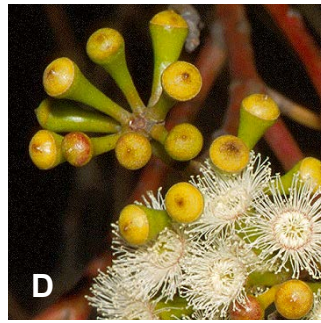
J



K

Pl. 18. A & B, Stipiturus C.P., SL. C, Telford Scrub C.P., SE. D, near Devil's Peak, FR, BSOP-634. E & F, *ibid.*, BSOP-637. G, *ibid.*, BSOP-636. H-J, W of Oak Valley, MT Lands, NW, BS94-2708. K, *ibid.* Photos: A & B, C.M. Chesson; C, J & K, P.J. Lang, DEWNR; D-G, H & I, P.J. Lang.



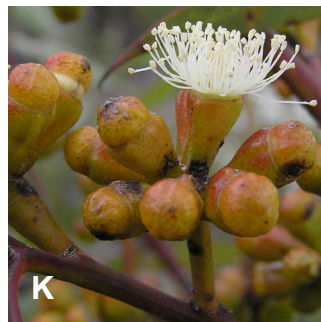


*Eucalyptus porosa* (A, B, & C)

*E. remota* (D, E & F)



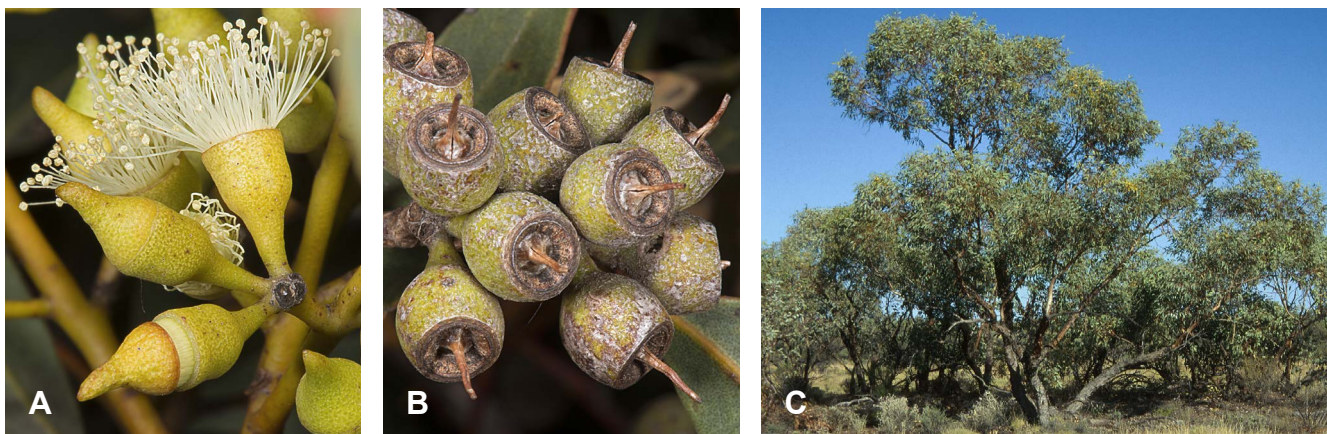
*E. repullulans* (G, H & I)



*E. rugosa* (J, K & L)

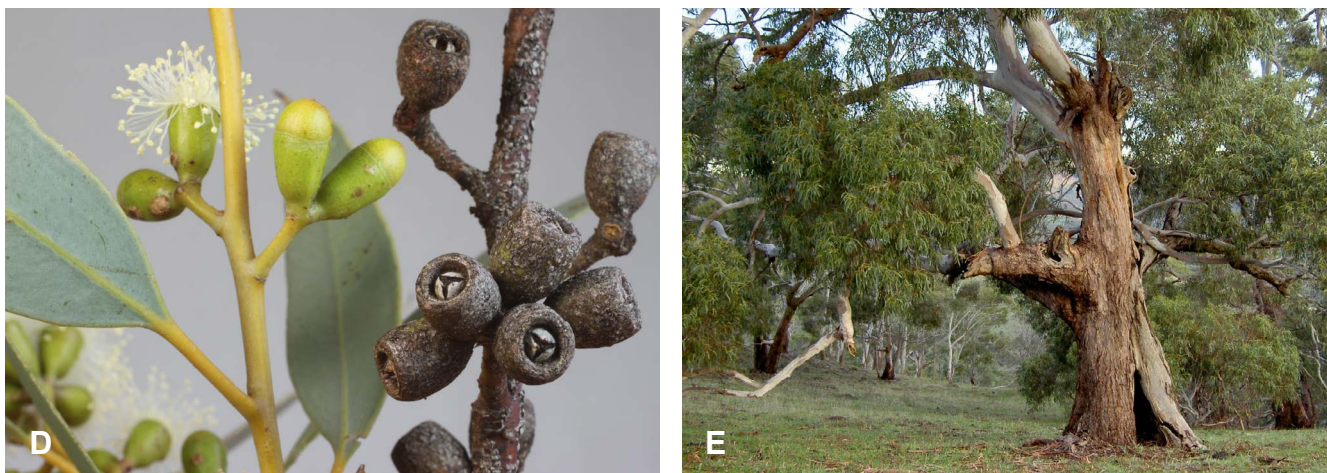
**Pl. 19.** A–C, Monarto C.P., MU. D, E of Grainger Lagoon, KI, BSOP-2184. E, Church Rd, KI. F, airstrip, Flinders Chase, N.P., KI. G–I, near Pipalyatjara, APY Lands, NW. J, Seal Bay C.P., KI. K & L, near Innesston, Innes N.P., YP, INP-305. Photos: A–C, C.M. Chesson; D & E, A.C. Robinson; F, P.J. Lang; G–I, S.A. Seed Conservation Centre; J, D.N. Kraehenbuehl; K & L, T.M. Jaques.





*Eucalyptus socialis* subsp. *socialis* (A & B)

*E. socialis* subsp. *eucentrica*



*E. trivalva*

*E. viminalis* subsp. *cygnetensis* (E & F)



*E. vokesensis* (G, H & I)



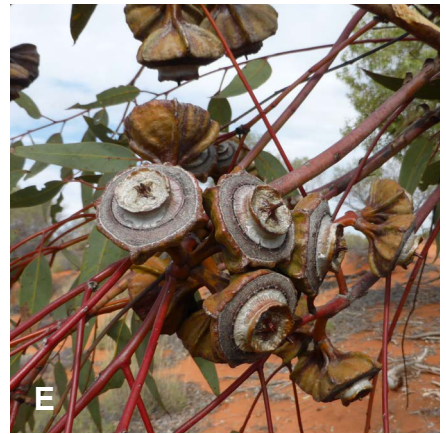
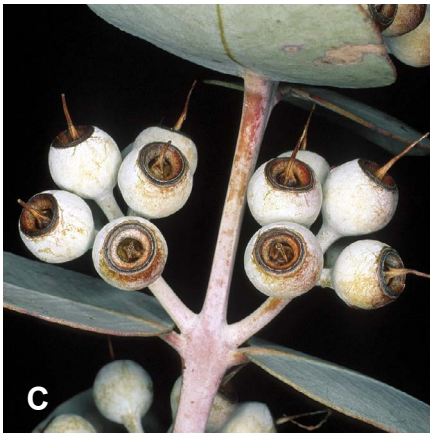
*E. wyolensis*

**Pl. 20.** A & B, Monarto C.P., MU. C, near Krewinkel Hill, APY Lands, NW, BS23-25300. D, cultivated. E, NE of Brown Hill, SL. F, Western Boundary Tk., Ngarkat C.P., SE. G & H, W of Oak Valley, MT Lands, NW, BS14-8038. I, MT Lands, NW. J, cultivated. Photos: A & B, C.M. Chesson; C, A.C. Robinson, DEWNR; D, E, G & H, P.J. Lang; F, A.L. Carle; I, S.A. Seed Conservation Centre; J, R. Cumming.

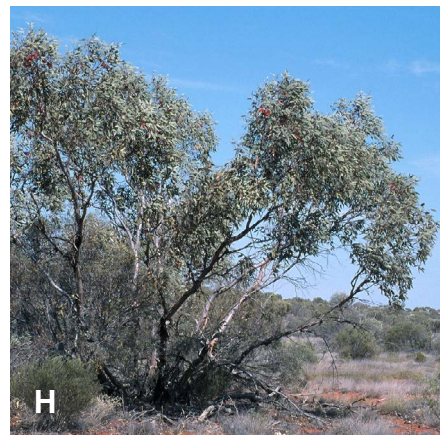
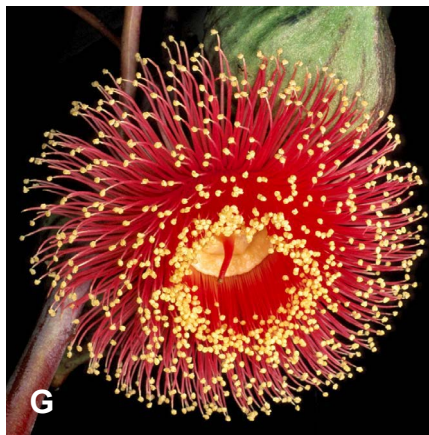




*Eucalyptus wyolensis* (A, B & C)



*E. youngiana* (D, E, F, G & H)



**Pl. 21.** **A**, cultivated. **B & C**, S of Wyola Lake, MT Lands, NW, BS94-2825. **D & E**, MT Lands, NW. **F**, cultivated. **G & H**, Mamungari C.P., NW, BS94-2815. Photos: **A**, R. Cumming; **B & H**, P.J. Lang, DEWNR; **C**, **F & G**, P.J. Lang; **D & E**, S.A. Seed Conservation Centre.