



138 PITTOSPORACEAE ¹

Matthew L Baker, Hans Wapstra ²

Trees, shrubs or climbers, sometimes spiny. Leaves alternate or whorled, exstipulate, petiolate or sessile; lamina simple. Inflorescence a cyme, cymose panicle or flowers solitary. Flowers actinomorphic or zygomorphic, usually bisexual; sepals 5, free or fused at the base; petals 5, imbricate, free, fused at the base or joined to form a tube; stamens 5, alternating with the petals; anthers dehiscent by pores or longitudinal slits; pistil 1; ovary superior, 1–5-locular. Fruit a capsule or berry; seed with endosperm, often surrounded by a viscid fluid.

A family of nine genera and approximately 200 species. All genera are native to Australia with only the type genus (*Pittosporum*) extending out of the region in tropical and warm temperate parts of New Zealand, Malesia, the Pacific Islands, eastern Asia north to Japan, India, Sri Lanka and westwards to Africa. Nine genera and 164 species (including four naturalised species of *Pittosporum*) in all states of Australia; four genera and 16 species in Tasmania (including four naturalised species and one hybrid between *P. bicolor* and *P. undulatum*). Recent studies support the placement of Pittosporaceae within the Apiales, in contrast to its traditional placement within the Rosales. For a discussion of the placement of Pittosporaceae within the angiosperm phylogeny see Chandler *et al.* (2007). Many species, especially those from the genus *Pittosporum*, are grown as ornamentals.

Key references: Makinson (1992); Walsh & Albrecht (1996); Cayzer *et al.* (1999a); Cayzer *et al.* (1999b); Cayzer *et al.* (2000); Cayzer *et al.* (2004); Chandler *et al.* 2007.

External resources: accepted names with synonymy & distribution in Australia (APC); author & publication abbreviations (IPNI); mapping (ALA, AVH, NVA); nomenclature (APC, APNI, IPNI).

- | | |
|--|------------------------|
| 1. Fruit a berry, indehiscent; plant with a twining habit | 4 <i>Billardiera</i> |
| 1: Fruit a dehiscent capsule; low procumbent shrub to large tree but never twining | 2 |
| 2. Procumbent shrub, < 50 cm tall, without spines; leaves usually < 10 mm long | 1 <i>Rhytidosporum</i> |
| 2: Erect shrub to large tree, with or without spines; leaves usually much larger than 10 mm long, or if smaller, then plant spinescent | 3 |
| 3. Plant with spines; fruit flattened | 2 <i>Bursaria</i> |
| 3: Plant without spines; fruit globose | 3 <i>Pittosporum</i> |

1 RHYTIDOSPORUM

Rhytidosporum F.Muell., *Pl. Victoria* 1: 75 (1862).

Small shrubs to 0.6 m tall, with scrambling or procumbent to erect branches. Leaves alternate, petiolate or sessile. Inflorescence terminal or axillary, with flowers solitary or paired, or in many-flowered cymes. Flowers actinomorphic; sepals free; petals free or joined at the base. Fruit a bilocular capsule; style persistent; seeds 2–6 per loculus, not immersed in viscous fluid.

¹ This work can be cited as: Baker ML & Wapstra H (2019). Pittosporaceae, **version 2019:1**. In MF de Salas (Ed.) *Flora of Tasmania Online*. 11 pp. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery: Hobart). <https://flora.tmag.tas.gov.au/treatments/pittosporaceae/>

² Tasmanian Herbarium, Tasmanian Museum & Art Gallery, PO Box 5058, UTAS LPO, Sandy Bay, TAS 7005, Australia.

Rhytidosporum is a genus of five species native to eastern and south-eastern Australia (Cayzer *et al.* 1999). Two species are native in Tasmania.

Key references: Cayzer *et al.* (1999)

1. Erect shrubs up to 60 cm tall (but usually much less); leaves evenly spread along the branches; usually of lowland habitats up to 480 m a.s.l. 1 R. procumbens
- 1: Low growing inconspicuous shrubs no taller than 5 cm; leaves arranged along branches in almost a single plane; usually of highland areas but also in lower elevation, winter-wet frosty sites, approx. 400–1250 m a.s.l. 2 R. inconspicuuum

1 *Rhytidosporum procumbens* (Hook.) F.Muell., *Pl. Victoria* 1: 75 (1862) *Starry Appleberry, Mary's Flower*

Pittosporum procumbens Hook., *Companion Bot. Mag.* 1(9): 275 (1836); *Marianthus procumbens* (Hook.) Benth., *Fl. Austral.* 1: 117 (1863); *Billardiera procumbens* (Hook.) E.M.Benn., *Nuytsia* 2(4): 187 (1978).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 536, fig. 110a–b (1996); Cayzer *et al.*, *Austral. Syst. Bot.* 12: 691, fig. 1E (1999a); Gilfedder *et al.*, *The Nature of the Midlands* 123 (2003); Wapstra *et al.*, *Tasmanian Plant Names Unravalled* 215 (2010).

Soft-wooded straggling to erect undershrub up to 60 cm tall but usually much less. Stems villous when young, later glabrescent. Leaves alternate, evenly spaced along the branches; petiole absent or very short; lamina narrowly linear or narrowly elliptic to narrowly oblanceolate, (2.9–)4.2–10.5(–12.7) mm long, (0.6–)0.7–1.8(–2.0) mm wide; adaxial surface sparsely hairy when young, later glabrescent; abaxial surface slightly paler than adaxial surface; base attenuate; margin thickened, recurved; apex mucronate, entire or often three toothed. Flowers solitary or in pairs, subtended by a pair of lanceolate bracts. Sepals narrowly triangular 2.5–3.0 mm long, erect. Petals up to 4 mm long, erect to spreading, white, sometimes with a magenta apex. Ovary glabrous. Stamens c. 3 mm long; anthers 0.5 mm long; filaments widest just below the middle. Fruit a 2(–3)-valved capsule, slightly flattened, globose, up to 6 mm long, up to 6.5 mm wide, light brown at maturity. Seed c. 1.4 mm long, brown, wrinkled, several per fruit. Flowering (Jun.–)Aug.–Nov.; fruiting Sep.–Jan.

Tas. (BEL, FUR, KIN, TNM, TNS, TSE, TSR); also SA, NSW, Vic. Widespread in Tasmania and found in a range of habitats including woodland, heathland, littoral flats and river banks from near sea level to 480 m a.s.l.

2 *Rhytidosporum inconspicuuum* L.Cayzer, Crisp & I.Telford, *Austral. Syst. Bot.* 12(5): 700 (1999)

Alpine Appleberry

Rhytidosporum sp. 1, *sensu* N.G.Walsh & D.E.Albrecht, *Fl. Victoria* 3: 533 (1996); *Billardiera alpina* (McGill.) E.Benn. *sensu* A.M.Buchanan *et al.*, *A Census of the Vascular Plants of Tasmania*, ed. 1: 31 (1989); *Rhytidosporum alpinum* McGill. *sensu* A.M.Buchanan, *A Census of the Vascular Plants of Tasmania*, ed. 3: 37 (1995).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 536, fig. 110c–d (1996), as *Rhytidosporum* sp. 1; Kirkpatrick, *Alpine Tasmania* 54, fig. 23f (1997) as *R. alpinum*; Cayzer *et al.*, *Austral. Syst. Bot.* 12: 691, fig. 1A–D (1999a); Wapstra *et al.*, *Tasmanian Plant Names Unravalled* 215 (2010).

Soft-wooded, prostrate, scrambling shrub to 5 cm tall. Stems sparsely hairy, later glabrescent, with obvious leaf scars. Leaves alternate, evenly spaced along branches in almost a single plane due to ground hugging habit; petiole absent or very short; lamina oblanceolate, obovate or elliptic, (2.3–)3.3–9.0(–10.0) mm long, (1.1–)1.3–2.9(–3.8) mm wide; adaxial surface with an occasional hair, glabrescent; abaxial surface slightly paler than adaxial surface; base attenuate; margin recurved, thickened; apex entire with a straight to variously hooked mucro, occasionally with a three toothed apex (very occasionally young leaves have toothed apices or are lacerate). Flowers usually solitary (occasionally in pairs), subtended by a pair of lanceolate bracts. Sepals narrowly triangular, up to 1.5 mm long, erect to spreading. Petals up to 3.5 mm long, spreading, white, sometimes flushed with pink at the distal end. Ovary glabrous. Stamens c. 3 long; anthers 0.4 mm long; filaments widest at the middle. Fruit a 2-valved capsule, slightly flattened, globose, up to 4

mm long, up to 5.4 mm wide, light brown at maturity. Seed c. 1.7 mm long, brown, minutely papillose, several per fruit. Flowering Oct.–Dec.; fruiting Nov.–Feb.

Tas. (TNS, TSE, TSR); also NSW, Vic. Found in highland areas where it grows in buttongrass moorland and subalpine heathland. Also found at lower elevations, in winter-wet frosty sites, low heathy grassland and river gravel, from 430–1240 m a.s.l. No Tasmanian material possesses a rhizomatous habit as reported by Cayzer *et al.* (1999a). Instead, Tasmanian plants are tap-rooted shrubs with closely ground hugging branches.

2 BURSARIA

Bursaria Cav., *Icon.* [Cavanilles] 4: 30 (1797).

Small trees or shrubs, rhizomatous. Shoots spinescent. Leaves alternate, usually sessile. Inflorescence a terminal bracteate panicle. Flowers actinomorphic; sepals free; petals free. Fruit a flattened 2-valved capsule; seeds 1–6 per loculus, not immersed in viscous fluid.

Bursaria is a widespread Australian genus of seven species. One species is native to Tasmania.

Key references: Cayzer *et al.* (1999b)

1 *Bursaria spinosa* Cav., *Icon.* [Cavanilles] 4: 30, t. 350 (1797) subsp. **spinosa**

Prickly Box, Native Box, Australian Blackthorn

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 538, fig. 111a–d (1996); Cayzer *et al.* *Austral. Syst. Bot.* 12: 118, fig. 1 p. (1999b); Gilfedder *et al.*, *The Nature of the Midlands* 119 (2003); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, ed. 4: 113 (2008); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 214 (2010).

Large shrubs to small trees up to 8 m tall. Stems sparsely hairy, later glabrescent, in juvenile growth stages with numerous side shoots in the form of 1 cm long, stout, pungent spines (spines uncommon in adult growth stages but long-persistent on mature plants). Leaves glabrous, alternate, crowded on short shoots and at the base of spine-like side-shoots in juvenile growth stages; petiole absent or very short; lamina spatulate, obovate or oblanceolate, (3–)5.5–40(–49) mm long, (2–)2.5–13(–17) mm wide; abaxial surface slightly paler and less glossy than adaxial surface; base attenuate; margin slightly recurved, thickened, often toothed in juvenile growth stages; apex mucronate to emarginate, occasionally truncate. Inflorescence a many flowered, terminal panicle. Sepals and bracts caducous, narrowly triangular up to 1 mm long, appressed. Petals up to 5 mm long, spreading, white. Ovary compressed, bilocular. Stamens equal to or slightly longer than petals, erect; anthers up to 1 mm long. Fruit a flattened, 2-valved capsule, obcordate to oblong in cross section, up to 7 mm long, up to 12 mm wide, brown at maturity, opening apically. Seed flattened, up to 4 mm wide, up to 3 mm long, brown, reniform with a 0.5 mm wide wing around the margin, 1–3 per loculus. Flowering Nov.–Dec.; fruiting Jan.–Mar. (empty capsules are persistent throughout the year).

Tas. (BEL, FUR, KIN, TNM, TNS, TSE, TSR); also SA, Qld, NSW, Vic. Widespread in Tasmania but absent from the highlands, South West and West Coast. It is most commonly associated with open woodland, grassland, heathland and riparian habitats, from near sea level to 800 m a.s.l. *Bursaria spinosa* subsp. *lasiophylla* (E.M.Benn.) L.Cayzer, Crisp & I.Telford (SA, NSW, ACT, Vic.) differs from the type subspecies by only ever being shrubby and reaching no more than 5 m tall and by having shoots and abaxial leaf surface with a covering of persistent appressed hairs (leaf surface is glabrescent in subsp. *spinosa*).

3 PITTOSPORUM

Pittosporum Banks & Sol. ex Gaertn., *Fruct. Sem. Pl.* 1: 286, t. 59, fig. 7 (1788).

Trees or shrubs. Leaves simple, alternate, entire, petiolate. Inflorescence terminal or axillary, of solitary flowers or in many flowered cymes. Flowers actinomorphic; sepals free or joined at the base; petals free, imbricate and forming a tube. Fruit a loculicidal capsule; seeds few to many, immersed within a viscous fluid.

A genus of about 100–200 species native to Australia, New Zealand, the Malesian region, the Pacific Islands, eastern Asia north to Japan, India, Sri Lanka and westwards to Africa. In Australia, 20 species are native and a further five species and one hybrid (*P. bicolor* × *P. undulatum*) are naturalised. Several New Zealand species are commonly grown as garden plants in Australia (e.g. *P. tenuifolium* and *P. eugenioides*). In Tasmania, one species is native (*P. bicolor*) and four species (*P. crassifolium*, *P. eugenioides*, *P. tenuifolium* and *P. undulatum*) and one hybrid (*P. bicolor* × *P. undulatum*) are naturalised. Cultivated species are the source of Tasmania's naturalised taxa.

Key references: Cayzer *et al.* (2000); Baker (2011).

- | | |
|--|---|
| 1. Leaves with prominent yellow midrib; fruit less than 6.5 mm long | 1 <i>P. eugenioides</i> |
| 1: Leaves without a prominent yellow midrib; fruit more than 6.5 mm long | 2 |
| 2. Fruit opening by three valves; petals maroon | 3 |
| 2: Fruit opening by two valves; petals yellow with maroon markings or cream | 4 |
| 3. Abaxial leaf surface persistently tomentose; flowers several in terminal umbels | 3 <i>P. crassifolium</i> |
| 3: Abaxial leaf surface glabrous; flowers solitary in leaf axils | 2 <i>P. tenuifolium</i> |
| 4. Leaves 1–7 cm long, 0.3–1.5 cm wide; leaf margins not undulate; abaxial surface of leaf densely hairy | 5 <i>P. bicolor</i> |
| 4: Leaves 6–13.5 cm long, 1.8–5.0 cm wide; leaf margins usually undulate; abaxial surface of leaf glabrous or nearly so | 5 |
| 5. Leaf margins not undulate or slightly undulate; inflorescence with c. 6 flowers; petals creamy-yellow, flushed maroon (especially in bud); fruit dark yellowish-green when mature | <i>P. bicolor</i> X <i>P. undulatum</i> + |
| 5: Leaf margins undulate; inflorescence with up to 35 flowers; petals cream; fruit bright orange when mature | 4 <i>P. undulatum</i> |

+ See discussion under *Pittosporum undulatum*.

1 * ***Pittosporum eugenioides*** A.Cunn., *Ann. Nat. Hist. ser. 1, 4: 106* (1840) *Tarata (Maori), Lemonwood*

Illustrations: Spencer, *Horticultural Flora of South-Eastern Australia* 3: 18 (2002); Salmon, *The Native Trees of New Zealand* 132–133, fig. 1–10 (1992); Baker, *Pap. & Proc. Roy. Soc. Tasmania* 145: Plate 3A (2011).

Trees to 5 m tall (to 12 m in New Zealand). Stems glabrous. Leaves alternate; petiole up to 20 mm long; lamina elliptic, 55–130 mm long, 22–45 mm wide, sub-coriaceous; adaxial surface glabrous, glossy; abaxial surface glabrous, paler than adaxial surface; base cuneate; margin not revolute, irregularly undulate (sometimes only slightly); apex acute to minutely apiculate. Flowers in many-flowered terminal compound umbels. Sepals free, 1.5–2.0 mm long, glabrous apart from a few hairs on the margin, erect. Petals up to 7 mm long, spreading, cream. Ovary pubescent. Fruit a 2-valved capsule, up to 6.5 mm long, glabrescent, black at maturity. Seeds c. 2.3 mm diam., deep burgundy, c. 5 per fruit. Flowering Oct.–Dec.; fruiting Oct.–Jan.

Tas. (KIN, TNS, TSE); also naturalised in NSW, Vic.; native to New Zealand. Introduced to Tasmania as an ornamental plant. It has naturalised along forest margins, roadsides and the banks of watercourses in a few sites throughout the State. It was first recorded as a weed in 1986 from roadside vegetation at Detention Falls in the northwest. *Pittosporum eugenioides* resembles the more commonly cultivated and naturalised *P. undulatum*, from which it differs by having a much greater number of flowers per inflorescence and much smaller fruits that are green at first and later mature to black (compared to the mature orange fruits in *P. undulatum*). The seeds of *P. eugenioides*, unlike those of other species of *Pittosporum* in Tasmania, are surrounded by a thin, membranous endocarp and the leaves, when crushed, have a characteristic lemon scent. Phenology information has been taken from Allan (1961).

2 * *Pittosporum tenuifolium* Banks & Sol. ex Gaertn., *Fruct. Sem. Pl.* 1: 286 (1788) *Kohuhu, Black Matipo*

Illustrations: Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 336 (2006); Spencer, *Horticultural Flora of South-Eastern Australia* 3: 19 (2002); Salmon, *The Native Trees of New Zealand* 146–147, fig. 1–10 (1992); Baker, *Pap. & Proc. Roy. Soc. Tasmania* 145: Plate 3B (2011).

Shrubs or trees to 6 m tall (to 8 m in New Zealand). Stems sparsely pubescent when young, later glabrescent. Leaves alternate; petiole 7–12 mm long; lamina elliptic to obovate, 23–55 mm long, 10–25 mm wide, thinly coriaceous, with both surfaces at first sparsely pubescent, then glabrescent; abaxial surface paler than adaxial surface; base cuneate; margin not or only slightly revolute, variously undulate; apex acute to minutely apiculate, sometimes obliquely twisted. Flowers usually solitary in leaf axils (also in few-flowered cymes in New Zealand). Sepals free, c. 3 mm long, hairy when young, erect. Petals up to 10 mm long, recurved in the apical quarter, deep maroon. Ovary pubescent. Fruit a 3-valved capsule, 8–10 mm long, dark brown to black at maturity. Seeds c. 3 mm diam., dark reddish brown to almost black, up to 6 per fruit (up to 16 in New Zealand material). Flowering Oct.–Nov.; fruiting Jan.–Mar.

Tas. (TNM, TSE, TSR, TWE); also naturalised in NSW, Vic.; native to New Zealand. Introduced to Tasmania as an ornamental plant. It has been recorded throughout the State as a weed, mostly in shaded, moist habitats including the banks of watercourses and in wet sclerophyll forest. It was first recorded as a weed in 2002 from bushland at the Waterworks Reserve near Hobart. *Pittosporum tenuifolium* can be readily identified from other members of the genus by having solitary flowers and relatively small leaves (up to 55 mm long). Phenology information has been taken from Allan (1961).

3 * *Pittosporum crassifolium* Banks & Sol. ex A.Cunn., *Ann. Nat. Hist. ser. 1*, 4: 106 (1840) *Karo*

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 536, fig. 110e (1996); Spencer, *Horticultural Flora of South-Eastern Australia* 3: 19 (2002); Salmon, *The Native Trees of New Zealand* 144–145, figs 1–9; Baker, *Pap. & Proc. Roy. Soc. Tasmania* 145: Plate 3C (2011).

Shrubs or trees to 5 m tall (to 9 m in New Zealand). Stems grey tomentose when young, glabrescent with age. Leaves alternate; petiole 5–15 mm long; lamina spatulate to narrowly obovate, 30–85 mm long, 12–37 mm wide, coriaceous; adaxial surface pubescent, soon glabrescent; abaxial surface persistently grey tomentose; base cuneate to attenuate; margin revolute, not undulate; apex sub-acute to rounded. Inflorescence a terminal umbel with up to 5 flowers (up to 10 in New Zealand). Sepals free, 3–6 mm long, pilose on abaxial surface, spreading to deflexed. Petals up to 14 mm long, recurved in the apical third, deep maroon. Ovary pubescent. Fruit a (2 or)3-valved capsule, 15–25 mm long, tomentose, pale grey-green. Seeds c. 4 mm diam., black, numerous. Flowering & fruiting Sep.–Dec.

Tas. (FUR, KIN); also naturalised in Vic., Norfolk Island; native to New Zealand. Introduced to Tasmania as an ornamental plant. It is naturalised on King Island, where it was first recorded in 2005. It is common on sandy soils in remnant bushland surrounding the township of Currie. A small population of four plants has also been recorded growing at Binalong Bay on the State's east coast. *Pittosporum crassifolium* can be readily identified by its large leathery leaves that have a persistent and dense covering of grey-coloured hairs on the abaxial surface. The fruits are the largest of all the taxa in Tasmania. Phenology information has been taken from Allan (1961).

4 * *Pittosporum undulatum* Vent., *Descr. Pl. Nouv.* 8:76, t.76 (1802) *Sweet Pittosporum*

Illustrations: Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 336 (2006); Walsh & Albrecht, *Fl. Victoria* 3: 536, fig. 110g (1996); Spencer, *Horticultural Flora of South-Eastern Australia* 3: 22 (2002); Wapstra *et al.*, *Tasmanian Plant Names Unravelled* 215 (2010); Baker, *Pap. & Proc. Roy. Soc. Tasmania* 145: Plate 3D (2011).

Trees to 13 m tall. Stems glabrous. Leaves alternate, crowded in pseudo-whorls at the ends of stems; petiole up to 30 mm long; lamina elliptic to ovate, 60–135 mm long, 18–50 mm wide, sub-coriaceous, both surfaces glabrous; abaxial surface paler than adaxial surface; base attenuate; margin not or very slightly revolute, slightly to strongly undulate; apex acute, occasionally obliquely twisted. Flowers in terminal umbel-like

cymes with up to 35 flowers per cluster. Sepals at first joined at the base, splitting at maturity, up to 10 mm long, sparsely hairy, erect. Petals up to 16 mm long, recurved in the apical quarter, cream. Ovary pubescent. Fruit a 2-valved capsule, up to 14 mm long, pubescent and green at first, becoming orange, and almost glabrous. Seeds 3–4 mm diam., orange to burgundy, numerous. Flowering Jul.–Oct.; fruiting Jan.–Jun. (–Sep.).

Tas. (FUR, TSE, TSR); also in WA (naturalised), SA (naturalised), Qld (native), NSW (native and naturalised), Vic. (native and naturalised), Lord Howe Island (naturalised), Norfolk Island (naturalised). Introduced to Tasmania as an ornamental. It is the most common naturalised species of *Pittosporum*. It grows in a range of habitats but is most commonly found in coastal heathland and dry forests that border residential areas. It was first recorded in Tasmania from the Forth River in 1974. *Pittosporum undulatum* can be readily identified by its fruits that ripen to a bright orange colour. For notes on differentiating *P. undulatum* from the similar looking species, *P. eugenioides*, see under that species.

The name *P. undulatum* has been misapplied to the spontaneously arising hybrid *Pittosporum bicolor* × *P. undulatum*, for example in Rodway (1903) and Curtis (1956). Such plants were not known to be hybrids at the time they were first described (as *P. undulatum* subsp. *emmettii* W.M.Curtis (Morris & Curtis 1974)). This hybrid also occurs in Victoria and New South Wales (Walsh & Albrecht 1996). The hybrid has the following characters that differ from the parents: young leaves with scattered hairs on both surfaces; leaf margins flat to slightly undulate; flowers in terminal clusters of c. 6; petals creamy-yellow, flushed with crimson (especially in bud); capsule dark yellowish-green when mature. As it is the product of hybridisation between a native and an introduced species it should be considered introduced to Tasmania.

5 *Pittosporum bicolor* Hook., *J. Bot.* (Hooker) 1:249 (1834)

Cheesewood

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 536, fig. 110h (1996); Gilfedder *et al.*, *The Nature of the Midlands* 103 (2003); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, ed. 4: 57 (2008); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 214 (2010).

Shrubs or trees to 14 m tall (smaller in exposed situations at higher elevations). Stems densely tomentose when young, later glabrescent. Leaves alternate; petiole 2–3 mm long; lamina variable, mostly narrowly elliptic, 10–70 mm long, 3–15 mm wide, coriaceous; adaxial surface glabrous or with a very sparse indumentum of appressed hairs; abaxial surface with an indumentum of usually persistent whitish or ferruginous hairs, occasionally glabrous; base cuneate; margin strongly revolute, not undulate; apex acute to subacute. Inflorescence axillary and terminal, with flowers solitary or with several grouped at the ends of stems. Sepals free, 2–6 mm long, densely to sparsely hairy, erect to deflexed. Petals up to 13 mm long, recurved to curled in the apical third, yellow with or without maroon markings. Ovary pubescent. Fruit a 2-valved capsule, 10–12 mm long, tomentose, green when young, turning black with age. Seeds 3–4 mm diam., orange-red, numerous. Flowering Jul.–Jan.; fruiting Oct.–Mar. (empty fruits often remain on the plants throughout the year).

Tas. (all regions except MIS); also NSW, Vic. Common and widespread in Tasmania. Found growing in a wide range of habitats from coastal forest and vegetated dunes through to sub-alpine shrubbery. Leaves of *P. bicolor* are very similar to the leaves of *Lomatia polymorpha* R.Br. and *Persoonia muelleri* (P.Parm.) Orchard (both Proteaceae).

4 BILLARDIERA

Billardiera Sm., *Spec. Bot. New Holland* 1: 1 (t. 1) (1793).

Woody vines or scrambling shrubs. Leaves simple, alternate, entire, shortly petiolate. Inflorescence terminal or axillary, of solitary flowers or in many-flowered cymes; sepals free or joined at the base; petals free or partly joined. Fruit a berry; seeds numerous, surrounded by pulp.

A genus of 20 species native to Australia. In Tasmania, four species are native and one species, *B. heterophylla*, is naturalised.

Key references: Cayzer *et al.* (2004).

- | | |
|---|--------------------------|
| 1. Flowers in cymes; corolla blue, rarely white or pink; petals free; fruits narrowly oblong | 5 B. heterophylla |
| 1: Flowers solitary; corolla greenish yellow; petals cohering along part of their length; fruits globose to oblong | 2 |
| 2. Petal lobes not or hardly spreading | 3 |
| 2: Petal lobes widely spreading or recurved | 4 |
| 3. Petals 10–15(20) mm long; fruits globose, soft, purple (rarely white); leaves thin-textured | 1 B. longiflora |
| 3: Petals 20–35 mm long; fruits oblong, firm, red, pink or pale blue; leaves coriaceous | 3 B. ovalis |
| 4. Flowers tubular with narrowed throat; petals 13–18 mm long; petal lobes strongly recurved; fruits narrowly oblong, firm, green | 4 B. mutabilis |
| 4: Flowers campanulate; petals (10–)15–35(–45) mm long; petal lobes widely spreading; fruits globose, firm, purple | 2 B. macrantha |

1 *Billardiera longiflora* Labill., *Nov. Holl. Pl.* 1: 64, t 89 (1805) *Purple Appleberry*

Labillardiera longiflora (Labill.) Schult., *Syst. Veg.*, ed. 15 bis [Roemer & Schultes] 5: 330 (1819). *Billardiera longiflora* var. *alpina* Rodway, *Tasm. Fl.* 10 (1903).

Illustrations: Gilfedder *et al.*, *The Nature of the Midlands* 77 (2003); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, ed. 4: 69 (2008).

Woody twining vines. Stems shining brown, glabrescent, up to 2(3) m long. Leaves alternate; petiole 1–2 mm long; lamina lanceolate to oblanceolate, sometimes almost linear, 15–25(–30) mm long, 3–5(–8) mm wide, dark green, shiny, thin-textured; abaxial leaf surface slightly paler than adaxial surface; margins slightly recurved (especially in herbarium specimens), often sparsely ciliate; apex somewhat rounded, with short mucro. Flowers solitary in upper leaf axils, pendulous; pedicels 10–15(–20) mm long. Sepals lanceolate, glossy, purplish brown, 2–4(–5) mm long. Petals greenish yellow, with bright green tips in bud, narrow spatulate 10–15(–20) mm long, loosely cohering for most of their length to form a narrow tube that bulges slightly at the middle; lobes not or hardly spreading (in ageing flowers the petals readily separate and discolour to purplish blue, often blotchy or along margins at first). Stamens and carpels almost hidden in the tube and not readily visible. Fruit a soft and plump berry, glossy, blue, rarely white, globular to oblong, 17–25 mm long, the largest ones often approaching a square shape. Seeds numerous, oval, 2 mm long, surrounded by soft pulp. Flowering Oct.–Jan.(–May); fruiting (Oct.–)Nov.–May(–Jun.).

Tas. (TSR, TCH, TNS, TSE); endemic. Largely restricted to Tasmania's south-east where it grows in forest margins and canopy gaps in wet sclerophyll and rainforest, but more common and often locally frequent in shrubby dry sclerophyll forest where it scrambles through the low to mid understorey. Mostly found in lowland to mid-range elevations with only a small number of collections from higher elevations (0–1100 m a.s.l.).

This treatment agrees with the reduction to synonymy of *B. longiflora* var. *alpina* by Cayzer *et al.* (2004). This taxon was described from Ironstone Mountain (at about 1000 m a.s.l.) but is now considered to be just one extreme of an altitudinal cline. Flower and leaf sizes in both *B. longiflora* and *B. macrantha* reduce with increasing elevation, and as a result a small number of herbarium specimens from higher elevations cannot confidently be allocated to either taxon.

2 *Billardiera macrantha* Hook.f., *Bot. Antarct. Voy. III.* (Fl. Tasman.) 1:37 (1855) *Forest Appleberry*

Billardiera longiflora *sensu* G.Bentham, *Fl. Austral.* 1: 123 (1863), *p.p.*; W.M.Curtis, *Student's Flora of Tasmania* 1: 56 (1956), *p.p.*, *non*. Labill. (1805). *Billardiera nesophila* L. Cayzer & D.L.Jones, *Aust. Syst. Bot.* 17(1): 105 (2004). *Billardiera viridiflora* L. Cayzer & D.L.Jones, *Aust. Syst. Bot.* 17(1): 105 (2004).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 529, fig. 109 j–k (1996) (as *B. longiflora* var. *longiflora*); Corrick & Fuhrer, *Wildflowers of Victoria* 174, fig. 612 (2000) (as *B. longiflora*); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 211, 212* (2010) (*as *B. nesophila*).

Strongly climbing and branching vines often forming leafy blankets over supporting understorey shrubs, to 5–6(–8) m tall; stems shining brown, glabrescent. Leaves alternate; petiole 2–3(–5) mm long; lamina lanceolate, 25–45 mm long, 3–9 mm wide (some populations have narrow linear leaves to 70 mm long), dark green, shiny, thin-textured; abaxial leaf surface slightly paler than adaxial surface; margins and sometimes the midvein ciliate; apex acute with short mucro. Flowers solitary in upper leaf axils, pendulous; pedicels 10–15–35(–45) mm long. Sepals narrow lanceolate, glossy, green to purplish, 5–7(–9) mm long. Petals greenish yellow with bright green tips in bud, strongly spatulate (10–)15–35(–45) mm long, strongly cohering for most of their length, forming a narrow-campanulate tube with a widening throat; lobes spreading widely (in ageing flowers the petals often separate and variously discolour to purplish blue, often blotchy from the base or along margins at first). Stamens and style fully exposed to view, as long as or slightly exceeding the petals, the style lengthening in older flowers. Fruit a firm berry, glossy, blue, oblong or somewhat globular, 10–18(–20) mm long. Seeds numerous, oval, 2 mm long, surrounded by soft pulp. Flowering Oct.–Feb.; fruiting Oct.–May(–Jun.).

Tas. (BEL, KIN, TCH, TNM, TNS, TSR, TWE, TSE); also NSW, ACT, Vic. Widespread in forest margins and in sheltered gullies among non-forest habitats.

Although Joseph Hooker described this large-flowered taxon in 1855, it had since been ignored and treated as *B. longiflora* Labill., until Cayzer *et al.* (2004) resurrected it. Two endemic taxa with large flowers from Tasmania, *B. nesophila* and *B. viridiflora*, were also described as novel species by Cayzer *et al.* (2004). In the present treatment, these are reduced to synonymy, following examination of fresh material from the type and other cited localities in 2007–2009 that showed the three taxa are highly variable and cannot be separated on vegetative characters. Furthermore, diagnostic differences, stated by Cayzer *et al.* (2004), in the colour of the anthers and pollen (mauve versus bright blue) and discolouration of ageing flowers was found to be highly variable, even within the same plants.

Billardiera macrantha forms an altitudinal cline of reducing characters (see note under *B. longiflora*).

3 *Billardiera ovalis* Lindl., *Edwards's Bot. Reg.* 20: t.1719 (1834)

Seaspray Appleberry

Billardiera longiflora var. *ovalis* (Lindl.) E.M.Benn., *Nuytsia* 2:190 (1978). *Billardiera longiflora sensu* G.Bentham, *Fl. Austral.* 1: 123 (1863), *p.p., non*. Labill. (1805).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 529, fig. 109j–k (1996) (as *Billardiera longiflora* var. *longiflora*); Corrick & Fuhrer, *Wildflowers of Victoria* 174, fig. 612 (2000) (as *Billardiera longiflora*); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 212 (2010).

Woody shrub with twining branches, sometimes these climbing through available supporting vegetation up to 3 m tall or virtually prostrate against rocks; stems shiny light brown, villous at first, becoming rough with raised leaf scars when mature. Leaves alternate but mostly clustering on side shoots; petiole up to 3 mm long; lamina obovate-spathulate, elliptic or oblanceolate, 7–34 mm long, 4–11 mm wide, dark green, shiny, thick and leathery; abaxial leaf surface slightly paler than adaxial surface; margins thick, recurved, ciliate; apex obtuse to acute (rarely emarginate), sometimes with a very small mucro. Flowers solitary in upper leaf axils, pendulous; pedicels lengthening to 17 mm in fruit. Sepals ovate to narrow triangular, reddish, to 4.5 mm long with ciliate margin. Petals greenish yellow with green tips in bud, spatulate (in ageing flowers the petals variously discoloured to purplish blue, often blotchy from the base or along margins at first, rarely reddish), 20–35 mm long, joined at first but soon free for most of their length; tube slightly bulging at the middle; lobes straight or hardly spreading. Stamens and style hidden within the tube or at the same level as the petal tips, the style extending beyond the petals in older flowers. Fruit a firm berry, red, pink or occasionally pale blue, villous at first but becoming glabrous and shining, oval-oblong, 9–18 mm long, up to 12 mm wide, with a persistent and long style. Seeds numerous, oval, up to 2 mm long, surrounded by soft pulp. Flowering Nov.–Dec.(–May); fruit often persisting throughout the year.

Tas. (KIN, TSE, TSR, TWE), endemic. A widespread coastal species of cliff faces and similarly exposed coastal sites, restricted to within the reach of salt spray. 0–280 m (on cliffs).

4 *Billardiera mutabilis* Salisb., *Parad. Lond.* 1: t.48 (1806)

Green Appleberry

Labillardiera mutabilis (Salisb.) Schult., *Syst. Veg.*, ed. 15 bis [Roemer & Schultes] 5: 330 (1819). *Billardiera scandens* sensu G.Bentham, *Fl. Austral.* 1: 123–124 (1863), *p.p.*; *Billardiera scandens* auct. non Sm. (1793), sensu W.M.Curtis, *Student's Flora of Tasmania* 1: 56 (1956); *Billardiera scandens* var. *scandens* auct. non Sm. (1793), sensu N.G.Walsh & D.E.Albrecht, *Fl. Victoria* 3: 531 (1996).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 529, fig. 109l–m (1996) (as *Billardiera scandens* var. *scandens*); Corrick & Fuhrer, *Wildflowers of Victoria* 174, fig. 613 (2000) (as *Billardiera scandens* var. *scandens*); Gilfedder *et al.*, *The Nature of the Midlands* 77 (2003) (as *Billardiera scandens*); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, ed. 4: 128 (2008); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 212 (2010).

Woody twining vines with branches climbing through available supporting vegetation up to 2.4 m tall or creeping along the ground; stems villous at first, becoming glabrous with flaking reddish bark. Leaves, alternate; petiole mostly very short to almost absent, up to 3 mm long; lamina narrowly-elliptic to narrowly-lanceolate, occasionally ovate, 9–60 mm long, 3–15 mm wide, dark green, villous at first, becoming glabrous and shiny, thick and somewhat leathery; abaxial leaf surface slightly paler than adaxial surface; margins irregularly undulate, hairy, recurved; apex acute, occasionally apiculate. Flowers solitary in upper leaf axils, pendulous; pedicels lengthening to 27 mm in fruit. Sepals narrow-lanceolate to narrow-triangular, pale yellow, up to 6 mm long, hairy. Petals pale greenish-yellow (in ageing flowers the petals discolour to pink or bluish), oblanceolate, 13–18 mm long, loosely cohering to form a tube with narrow throat; lobes widely spreading and strongly recurved. Stamens and style hidden within the corolla, the style shorter than the stamens. Fruit a firm berry, green, glabrous and shining, oblong, up to 21 mm long, up to 6 mm wide, with a small persistent style. Seeds numerous, rounded, flat up to 2.5 mm diam., surrounded by soft pulp. Flowering Sep.–Feb.; fruiting Nov.–Mar.

Tas. (BEL, FUR, TNM, TNS); also NSW, ACT and Vic. Occasional in coastal shrubberies, dry sclerophyll forest and woodland and the edges of wet forest. It generally grows at low elevations and has been recorded from 0–280 m a.s.l.

5 * *Billardiera heterophylla* (Lindl.) L.W.Cayzer & Crisp, *Austral. Syst. Bot.* 17: 119 (2004)

Bluebell Creeper

Sollya heterophylla Lindl., *Edwards's Bot. Reg.* 17: t.1466 (1832). *Billardiera fusiformis* Labill., sensu A.M.Buchanan, *A Census of Vascular Plants of Tasmania*, ed. 2008: (2008); *Sollya fusiformis* (Labill.) Briq., sensu A.M.Buchanan, *A Census of Vascular Plants of Tasmania*, ed. 1: (1989).

Illustrations: Walsh & Albrecht, *Fl. Victoria* 3: 529, fig. 109 e–g (1996) (as *Sollya heterophylla*); Wapstra *et al.*, *Tasmanian Plant Names Unravelling* 211 (2010) (as *Billardiera fusiformis*).

Woody twining vine with branches climbing through available supporting vegetation up to 2 m tall; stems densely pubescent, soon becoming glabrous. Leaves alternate; petiole mostly very short to almost absent, up to 2 mm long; lamina elliptic to ovate, occasionally lanceolate, 20–55(–70) mm long, 5–23 mm wide, dark green, shiny, sub-coriaceous; abaxial leaf surface slightly paler than adaxial surface; margins thickened, tightly inrolled; apex acute to apiculate, or obtuse. Flowers in 2–7-flowered cymes, pendulous; pedicels lengthening to 15 mm in fruit, hairy. Sepals ovate to lanceolate, purple, up to 2 mm long with spreading hairs on margin and abaxial surface. Petals blue or occasionally pink or white, elliptic to obovate, 6.5–10.5 mm long, free, spreading; lobes straight. Stamens and style shorter than the corolla. Fruit a firm berry, green but blackish-blue on the exposed surfaces, densely pubescent at first but glabrescent at maturity, oblong, up to 30 mm long, up to 9 mm wide, with a small persistent style. Seeds numerous, rounded, flat up to 2.5 mm diam., surrounded by soft pulp. Flowering and fruiting throughout the year.

Tas. (FUR, TSE, TNS); also naturalised in SA, NSW, Vic.; native of southwest WA, naturalised in New Zealand and USA (California). In Tasmania, it has been recorded as a weed growing in and adjacent to dry woodland communities, sandy heath, tip sites, and waste areas from 0–160 m a.s.l. Originally introduced to Tasmania as an ornamental species. It was first recorded as naturalised in 1965 from a roadside at South Arm, where the species has become invasive. *Billardiera fusiformis* Labill., from WA, is a very similar species and the name has been misapplied to Tasmanian material of *B. heterophylla*.

REFERENCES

- ALA (Atlas of Living Australia) <http://www.ala.org.au/>
- Allan HH (1961) Pittosporaceae. *Flora of New Zealand* **1** 305–318.
- APC (Australian Plant Census) <https://biodiversity.org.au/nsl/services/apc>
- APNI (Australian Plant Name Index) <https://biodiversity.org.au/nsl/services/apni>
- AVH (Australia's Virtual Herbarium) (Council of Heads of Australasian Herbaria) <http://avh.chah.org.au/>
- Baker ML (2011) Contributions to a catalogue of alien plants in Tasmania III. *Papers and Proceedings of the Royal Society of Tasmania* **145** 27–34.
- Cayzer LW, Crisp MD, Telford IRH (1999a) Revision of *Rhytidosporum* (Pittosporaceae). *Australian Systematic Botany* **12** 689–708.
- Cayzer LW, Crisp MD, Telford IRH (1999b) *Bursaria* (Pittosporaceae): a morphometric analysis and revision. *Australian Systematic Botany* **12** 117–143.
- Cayzer LW, Crisp MD, Telford IRH (2000) Revision of *Pittosporum* (Pittosporaceae) in Australia. *Australian Systematic Botany* **13** 845–902.
- Cayzer LW, Crisp MD, Telford IRH (2004) Cladistic analysis and revision of *Billardiera* (Pittosporaceae). *Australian Systematic Botany* **17** 89–92.
- Chandler GT, Plunkett GM, Pinney SM, Cayzer LW, Gemmill CEC (2007) Molecular and morphological agreement in Pittosporaceae: Phylogenetic analysis with nuclear ITS and plastid trnL-trnF sequence data. *Australian Systematic Botany* **20** 390–401.
- IPNI (International Plant Name Index) <http://www.ipni.org> or <http://www.us.ipni.org>
- Makinson RO (1992) Pittosporaceae. *Flora of New South Wales* **3** 65–74.
- NVA (Natural Values Atlas) (Department of Primary Industries and Water: Hobart) <https://www.naturalvaluesatlas.tas.gov.au/>
- Walsh NG, Albrecht DE (1996) Pittosporaceae. *Flora of Victoria* **3** 526–539.
- NOTE:** Web addresses can and do change: a list of current web addresses is maintained in the web version of this treatment on the *Flora of Tasmania Online* website at <https://flora.tmag.tas.gov.au>

INDEX

A	
Alpine Appleberry.....	2
Australian Blackthorn.....	3
B	
<i>Billardiera</i>	6
<i>Billardiera alpina</i>	2
<i>Billardiera fusiformis</i>	9
<i>Billardiera heterophylla</i>	6, 9
<i>Billardiera longiflora</i>	7, 8
<i>Billardiera longiflora</i> var. <i>alpina</i>	7
<i>Billardiera longiflora</i> var. <i>longiflora</i>	7
<i>Billardiera longiflora</i> var. <i>ovalis</i>	8
<i>Billardiera macrantha</i>	7, 8
<i>Billardiera mutabilis</i>	9
<i>Billardiera nesophila</i>	7, 8
<i>Billardiera ovalis</i>	8
<i>Billardiera procumbens</i>	2
<i>Billardiera scandens</i>	9
<i>Billardiera scandens</i> var. <i>scandens</i>	9
<i>Billardiera viridiflora</i>	7, 8
Black Matipo.....	5
Bluebell Creeper.....	9
<i>Bursaria</i>	3
<i>Bursaria spinosa</i>	3
<i>Bursaria spinosa</i> subsp. <i>lasiophylla</i>	3
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	3
C	
Cheesewood.....	6
F	
Forest Appleberry.....	7
G	
Green Appleberry.....	9
K	
Karo.....	5
Kohuhu.....	5
L	
<i>Labillardiera longiflora</i>	7
<i>Labillardiera mutabilis</i>	9
Lemonwood.....	4
<i>Lomatia polymorpha</i>	6
M	
<i>Marianthus procumbens</i>	2
Mary's Flower.....	2
N	
Native Box.....	3

P

<i>Personia muelleri</i>	6
Pittosporaceae.....	1
<i>Pittosporum</i>	1, 3, 4, 6
<i>Pittosporum bicolor</i>	1, 4, 6
<i>Pittosporum bicolor</i> × <i>P. undulatum</i>	4, 6
<i>Pittosporum crassifolium</i>	4, 5
<i>Pittosporum eugenioides</i>	4, 6
<i>Pittosporum procumbens</i>	2
<i>Pittosporum tenuifolium</i>	4, 5
<i>Pittosporum undulatum</i>	1, 4, 5, 6
<i>Pittosporum undulatum</i> subsp. <i>emmettii</i>	6
Prickly Box.....	3

R

<i>Rhytidosporum</i>	1, 2
<i>Rhytidosporum alpinum</i>	2
<i>Rhytidosporum inconspicuum</i>	2
<i>Rhytidosporum procumbens</i>	2
<i>Rhytidosporum</i> sp. 1.....	2

S

Seaspray Appleberry.....	8
<i>Sollya fusiformis</i>	9
<i>Sollya heterophylla</i>	9
Starry Appleberry.....	2
Sweet Pittosporum.....	5

T

Tarata.....	4
-------------	---