



## 48 PROTEACEAE <sup>1</sup>

Alan M Gray, Marco F Duretto <sup>2</sup>

Small shrubs to tall trees, usually bisexual, sometimes andromonoecious or dioecious; variously hairy with simple hairs, rarely glabrous; lignotubers sometimes present, cluster roots (proteoid roots: short lateral root clusters with mycorrhizal associations) often produced. Leaves alternate, less commonly opposite, or sometimes whorled, exstipulate; lamina simple, sometimes pinnatisect or compound or rarely dichotomously dissected, margins entire or variously toothed, usually coriaceous. Inflorescences axillary or terminal, simple or compound, racemose, paniculate or spike-like, or aggregated into dense heads that are often surrounded by an involucre of bracts, or cone-like, rarely flowers solitary; flowers born laterally, singly, or in pairs, usually subtended by small bracts, rarely ebracteate. Flowers actinomorphic or zygomorphic, usually bisexual, rarely unisexual, 4-merous. Perianth a single whorl of four petaloid tepals; tepals valvate, free or united, usually ultimately separating, each with a variously expanded distal portion (limb). Stamens 4, usually all fertile, filaments partially or wholly adnate to the tepals, rarely free; anthers 2(4)-locular, usually introrse, rarely latrorse, dehiscent by longitudinal slits. Hypogynous glands (nectaries) 0–4, scale-like or fleshy, free or fused into a complete or partial ring, nectar often copious. Gynoecium of 1 carpel; ovary superior, sessile or stipitate; ovules 1-many; style simple, often long, sometimes hooked or curved, often persistent, often expanded below or around the small stigma into a specialised pollen presenter; stigma usually small. Fruit a dehiscent woody or coriaceous follicle, a fleshy or non-fleshy drupe, or a small nut. Seeds 1-many, often winged in folliculate fruit; endosperm present or absent.

A largely Southern Hemisphere family with about 80 genera and 1700 species. The major centres of diversity of the family are Australia and South Africa, with minor centres of diversity in South America, New Caledonia and Madagascar. In Australia there are 46 genera (37 endemic) and about 1100 species (majority endemic). South-west Western Australia is particularly diverse in species and genera. 16 genera are also restricted to the rainforests of north-east Queensland. 12 genera (3 endemic) and 30–33 species (17 endemic; poss. 3 naturalised) are found in Tasmania.

Proteaceae are placed in the Proteales, an order that also contains the superficially dissimilar Platanaceae (Planes, Sycamore; N Temperate) and Nelumbonaceae (Sacred Lotus; E Asia to N Australia, E North America). The family is classified into 5 subfamilies (Weston & Barker 2006; Weston 2007), all of which are found in Australia with 1 endemic to Tasmania. Four of the subfamilies are further classified into numerous tribes and subtribes. The Tasmanian flora contains representatives of a diverse array of lineages with most genera having their closest relatives outside the state. It is of interest to note that Tasmania is the only place in the world where all 5 subfamilies are found: that is, it has the highest phylogenetic diversity of any biogeographical region. The subfamily descriptions below are largely based on that published by Weston (2007).

Proteaceae includes a significant number of ornamental shrubs and trees, as well as many species of economic value. A large number of species are utilised for the floricultural industry, both from wild-picked material as well as from plants cultivated for that purpose. Other Australian genera of considerable ornamental and horticultural merit, include species and cultivars of *Banksia*, *Isopogon*, *Conospermum*, *Hakea*, *Petrophile*, *Persoonia* and *Telopea*; of particular note are the very numerous and highly variable hybrids and

1 This work can be cited as: Gray AM & Duretto MF (2019). Proteaceae, **version 2019:1**. In MF de Salas (Ed.) *Flora of Tasmania Online*. 31 pp. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery: Hobart). <https://flora.tmag.tas.gov.au/treatments/proteaceae/>

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

cultivars of *Grevillea*, which number in their hundreds. Many non-Australian representatives of the family, notably the South African genera *Protea* L., *Leucospermum* R.Br. and *Leucadendron* R.Br., and the South American *Embothrium* Forst., include many species of exceptional horticultural value. *Grevillea robusta* A.Cunn. (Silky Oak; Qld, NSW) is a medium-sized tree of particular ornamental value due to its graceful, fern-like foliage and its large trusses of bright, golden-yellow flowers. This species, along with a number of other rainforest Proteaceae, is the source of a handsome, characteristically grained timber once extensively used in building but now used chiefly in the furniture and joinery trades.

An Australian plant that has gained world-wide fame for the edible kernel (seed) of its fruit is the Queensland Nut or Macadamia Nut; two species, *Macadamia integrifolia* Maiden & Betche and *M. tetraphylla* L.A.S.-Johnson, as well as hybrids and cultivars of these, produce the edible kernel. Although cultivated in Queensland and northern New South Wales as a commercial crop, it is more extensively cultivated in Hawaii, South Africa and Central America. The Macadamia is the only Australian plant that produces a fruit of significant commercial value. Many other genera also include species that provide nectar and pollen for the honey industry.

Key references: *Flora of Australia* (McCarthy 1995; Wilson 1999, 2000); Weston & Barker (2006); Weston (2007).

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

- |  |                      |
|--|----------------------|
| 1. Inflorescence a densely compact cylindrical head (cone), or a closely bracteate, spherical head of flowers  | 2                    |
| 1: Inflorescences spikes, racemes or clusters, not densely arranged as above   | 4                    |
| 2. Leaves entire or variously toothed; inflorescence a dense, cylindrical head (cone)  | <b>8 Banksia</b>     |
| 2: Leaves deeply divided, or leaves simple; inflorescence a bracteate, spherical head or few-flowered axillary spikes or clusters  | 3                    |
| 3. Leaves deeply divided into narrow, linear segments  | <b>6 Isopogon</b>    |
| 3: Leaves simple, flat, terete, or triquetrous   | <b>12 Hakea</b>      |
| 4. Fruit a fleshy drupe  | 5                    |
| 4: Fruit a small nut, leathery follicle or woody capsule   | 6                    |
| 5. Leaves (4-)8-15 cm long, margins coarsely toothed; flowers in numerous terminal spikes  | <b>4 Cenarrhenes</b> |
| 5: Leaves 1.5-5.0 cm long, margins entire; flowers axillary, solitary or in small clusters   | <b>2 Persoonia</b>   |
| 6. Perianth regular  | 7                    |
| 6: Perianth irregular, or slightly irregular and 2-lipped  | 9                    |
| 7. Inflorescence a short terminal raceme on a long, naked peduncle; fruit an indehiscent follicle, usually reddish   | <b>1 Bellendena</b>  |
| 7: Inflorescence of single flowers on long axillary spikes; or, flowers in pairs on short terminal or axillary spikes; peduncle short or absent; fruit a nut or dehiscent, brownish follicle | 8                    |
| 8. Flowers single, in numerous, long axillary spikes clustered at the ends of the branches; fruit a small nut  | <b>3 Agastachys</b>  |
| 8: Flowers paired, in short spikes, axillary or terminal on numerous, short lateral branches; fruit a dehiscent, brownish, boat-shaped follicle  | <b>7 Orites</b>      |
| 9. Perianth slightly irregular, 2-lipped; flowers in dense, terminal corymbose panicles  | <b>5 Conospermum</b> |
| 9: Perianth irregular; flowers in compact heads, or in loose terminal or axillary clusters or racemes  | 10                   |

10. Inflorescence a compact, ± flat terminal head, subtended by ± persistent involucre bracts; perianth bright red or, rarely, yellow 10 *Telopea*
- 10: Inflorescence a terminal or axillary cluster or loose raceme; involucre bracts absent or caducous; perianth cream, white, pale pink or deep burgundy 11
11. Fruit a capsule opening along 2 sutures, usually long persistent; valves usually thick, woody and hard, rarely thin and coriaceous 12 *Hakea*
- 11: Fruit a leathery follicle, opening along 1 suture, not long persistent; valves thin, not woody and hard 12
12. Inflorescence a small axillary or terminal umbel-like cluster; fruit not opening fully flat (boat-shaped) 11 *Grevillea*
- 12: Inflorescence a loose, simple or branched, terminal or axillary raceme; fruit opening fully flat (like an open book) 9 *Lomatia*

## SUBFAMILY 1 BELLENDENOIDEAE

Plants bisexual. Cluster (proteoid) roots present. Cotyledons not known. Flowers pedicellate. Staminal filaments free. Hypogynous glands 0. Carpels shortly stipulate; ovules 2; style tip not functioning as a pollen presenter. Fruit dry, 2-winged, indehiscent.

A monotypic subfamily endemic to Tasmania that is most closely related to subfamily Persoonioideae (Weston & Barker 2006; Weston 2007).

Key references: Weston (1995b, 2007).

### 1 BELLENDENA

*Bellendena* R.Br., *Trans. Linn. Soc. London* 10: 166 (1810).

Small shrubs. Leaves alternate, simple or variously lobed in distal half. Inflorescence terminal or subterminal, long-pedunculate, densely racemose; ebracteate. Flowers not in pairs, bisexual. Perianth actinomorphic; tepals free. Stamens: filaments free, connective extending shortly above loculi; anthers monomorphic, not apiculate. Hypogynous glands 0. Ovary shortly stipitate; style straight, short, tip not functioning as pollen presenter; stigma simple. Fruit an indehiscent, 1-seeded follicle, glabrous, winged.

A monotypic genus endemic to Tasmania.

Key references: Weston (1995b, 1996).

**1 *Bellendena montana*** R.Br., *Trans. Linn. Soc. London* 10: 166 (1810)

*Mountain Rocket*

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 3: t. 106, no. 63 (1971); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 112, pl. 560 (1980); Weston, *Fl. Australia* 16: 126, fig. 45; pl. 24 (1995); Kirkpatrick, *Alpine Tasmania* 45, fig. 18c (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 262 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 81, pl. 118 (2005); Weston, *Fam. & Gen. Vasc. Pl.* (Ed. K.Kubitzki) 9: 382 (2007); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, 4th edn, 21 (2008).

Small shrubs 0.15–0.75(–1.5) m high, erect or ± decumbent; often densely branched. Younger branches minutely papillate, older branches glabrous. Leaves shortly petiolate, variable in shape; lamina 1–4(–6) cm long, 0.3–1(–2) cm wide, broadly oblanceolate to spatulate-cuneate in outline, pale green or ± glaucous, concolorous, glabrous, entire or the apex broadly and shallowly 3-lobed, the lobes entire or often with 2–3 shallow secondary lobes, base usually attenuated, margins slightly thickened, slightly recurved. Inflorescence a short, usually compact raceme; peduncle erect, 3–10(–15) cm long; rachis 10–45 mm long, 10–50-flowered, glabrous to pubescent; pedicels spreading to sub-erect, 5–8 mm long, glabrous to pubescent. Tepals white to pale pink, 2.3–5.0 mm long, fusiform in bud, narrow elliptical, spreading widely, reflexed at anthesis, glabrous. Stamens inserted on the receptacle and falling separately from the lobes; anthers bilocular. Ovary tapering to a short, broad style. Follicle usually bright red-scarlet to crimson, 8–17 mm long, pendulous, ± coriaceous, dry at maturity. Flowering Dec.–Mar.; fruiting Feb.–May.

Tas. (BEL, TCH, TNS, TSE, TSR, TWE); endemic. Widespread and abundant in montane shrubberies and heaths, on dolerite mountain summits, plateaus and rocky slopes. Occurs mostly at high elevations, from c. 500 m to 1500 m alt. Plants from plateaus in the north-east usually have leaves that are entire though plants growing in the shade do sometimes have lobed leaves. In other places the leaves are invariably lobed.

## SUBFAMILY 2 PERSOONIOIDEAE

Plants bisexual or andromonoecious. Cluster (proteoid) roots absent. Cotyledons not auriculate. Flowers usually pedicellate. Staminal filaments largely or completely adnate to tepals. Hypogynous glands 2 or 4. Ovules 1–22. Fruit an indehiscent, 1–2-seeded drupe or dry 15–22-seeded, dehiscent follicle.

A subfamily with 2 tribes (1 monotypic), 5 genera (4 monotypic) and >100 species found in Australia, New Zealand (1 sp.) and New Caledonia (1 sp.). The subfamily is most closely related to subfamily Bellendoideae (Weston & Barker 2006; Weston 2007). Tribe Persooneae (4 genera) is found in Tasmania. In addition to *Persoonia*, the tribe contains 3 monotypic genera: *Toronia* L.A.S.Johnson & B.G.Briggs (New Zealand), *Garnieria* Brogn. & Gris (New Caledonia) and *Acidonia* L.A.S.Johnson & B.G.Briggs (SW WA). Tribe Placospermeae is confined to north-eastern Queensland.

Key references: Weston (1995a, 2007).

## 2 PERSOONIA

*Persoonia* Sm., *Trans. Linn. Soc. London* 4: 215 (1798), *nom. cons.*

Synonymy: *Linkia* Cav., *Icon. [Cavanilles]* 4(2): 61 (1798), *nom. rej.*

Shrubs or small trees. Leaves alternate, rarely opposite or whorled, simple, entire. Flowers solitary, terminal or axillary, subtended by scale leaves or small leaves, sometimes aggregated distally and appearing racemose, bisexual. Perianth actinomorphic or zygomorphic (not in Tas.); tepals free or connate at base. Stamens: filaments adnate to tepals, connective not extending beyond loculi; anthers monomorphic, apiculate or inapiculate. Hypogynous glands 2 or 4. Ovary shortly stipitate; style straight or curved, tip not functioning as pollen presenter; stigma simple, terminal. Fruit an indehiscent, 1-seeded, ± fleshy drupe, usually glabrous.

An Australian genus of > 100 species that may be polyphyletic with respect to the other members of the tribe (Weston 2007).

Key references: Orchard (1984); Weston (1995a).

- |  |                        |
|--|------------------------|
| 1. Leaves narrow-linear to subulate, apex acute or pungent; tepals without marginal wings  | 1 <i>P. juniperina</i> |
| 1: Leaves narrowly to broadly obovate to spatulate, apex rounded or blunt; tepals with undulate marginal wings   | 2                      |
| 2. Prostrate shrubs; leaves 0.5–0.8(–1.5) cm long, often twisted to one side; tepals 7–10 mm long  | 3 <i>P. moscalii</i>   |
| 2: Erect shrubs; leaves 1.5–5.0 cm long, not or scarcely twisting to one side; tepals 8–15(–20) mm long  | 3                      |
| 3. Leaves 2–4 cm long, thin, transverse ridges few or obscure, abaxial surface strigose only in distal portion; tepals (8–)10–15 mm long   | 2 <i>P. gunnii</i>     |
| 3: Leaves 1.5–5.0 cm long, thick, drying with conspicuous transverse ridges, abaxial surface usually strigose throughout at maturity (± glabrescent in subsp. <i>muelleri</i> ); tepals (10–)15–20 mm long | 4 <i>P. muelleri</i>   |

**1 *Persoonia juniperina*** Labill., *Nov. Holl. Pl.* 1: 33, t.45 (1805)

*Prickly Geebung*

*Linkia juniperina* (Labill.) Kuntze, *Revis. Gen. Pl.* 2: 579 (1891). *Persoonia tasmanica* Gand., *Bull. Soc. Bot. France* 66: 227 (1919). *Persoonia juniperina* var. *brevifolia* Meisn., *Prodr. [DC.]* 14(1): 336 (1856). *Persoonia juniperina* var. *ulicina* Meisn., *Prodr. [DC.]* 14(1): 336 (1856). *Persoonia juniperina* var. *mollis* Orchard, *Brunonia* 6: 225 (1984).

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 24, pl. 45 (1980); Orchard, *Brunonia* 6: 219 figs 1–5 (1984); Weston, *Fl. Australia* 16: 66, fig. 38b (1995); Jeanes, *Fl. Victoria* 3: 837, fig. 170e (1996); Weston, *Fl. New South Wales* 2, rev. edn: 10 (2002); Gilfedder et al., *The Nature of the Midlands* 92 (2003); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 273 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 153, pl. 226 (2005).

Small shrubs, 0.5–2.5 m high. Branches erect to diffuse, younger branches sparsely to densely silky-pubescent, older branches glabrescent. Leaves variable in form, not turning black on drying, sessile, bases very shortly stem-clasping; lamina patent to sub-erect, soft or rigid, 0.8–2(–3) cm long, 1.0–1.5(–3.0) mm wide, narrow linear-subulate to narrowly linear-lanceolate, concave, midrib often prominent on the abaxial surface, concolorous, both surfaces sparsely to ± densely antrorse silky-pubescent when young, glabrescent later, apex acute or pungent. Flowers solitary in the upper leaf axils, sometimes crowded distally; pedicels 1–3 mm long, sparsely to densely pubescent. Tepals yellow, 7–10 mm long, abaxial surface shortly silky-pubescent to ± glabrous, adaxial surface glabrous, marginal wings absent, apex inrolled, recurved, terminal point c. 1 mm long. Ovary on a short gynophore, glabrous. Fruit purplish-black, ovoid, 6–10 mm long, 6–8 mm wide; style persistent; edible but insubstantial and insipid. Flowering & fruiting Dec.–Feb.

Tas. (all regions except MIS); also SA, NSW, Vic. Common to local in shrubby, sandy heaths, coastal heaths and open forests, from sea-level to c. 850 m alt.

Orchard (1984), in his treatment of Tasmanian *Persoonia*, assigned varietal rankings to four forms within the *P. juniperina* complex, most based on variations in leaf form and indumentum. Weston (1995a), in his treatment of the genus for the Flora of Australia, placed all varieties in synonymy under *P. juniperina*. Weston gave two reasons for doing this: most forms are broadly sympatric, with intergrading forms present throughout, and, variation outside Tasmania was not included by Orchard in his treatment of the complex. Further research on the species investigating variation across the full geographic range of the species may lead to a clarification of the status of some forms within this complex.

**2 *Persoonia gunnii* Hook.f.**, *London J. Bot.* 6: 283 (1847)

*Mountain Geebung*

*Linkia gunnii* (Hook.f.) Kuntze, *Revis. Gen. Pl.* 2: 579 (1891); *Persoonia gunnii* var. *dilatata* Meisn., *Prodr.* [DC.] 14: 340 (1856), *nom. inval.* *Persoonia gunnii* var. *oblanceolata* Orchard, *Brunonia* 6: 236 (1984).

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 1: t. 35, no. 21 (1967); Curtis, *The Student's Flora of Tasmania* 3: 603, fig. 128 (1967); Orchard, *Brunonia* 6: 235, fig. 10 (1984); Kirkpatrick, *Alpine Tasmania* 47, fig. 19c (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 272 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 153, pl. 227 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, 4th edn, 51 (2008).

Erect shrubs, 0.5–4.0 m high. Branches stout, spreading; younger branches sparsely to densely silky-pubescent, leaf scars obscure. Leaves often crowded, turning brown or black on drying; lamina 2–4 cm long, 3–10 mm wide, narrowly to broadly obovate to spatulate, base narrowed into a short petiole which may be erect, remainder of lamina spreading, then the apex erect, or the lamina half-spreading to erect, flat or convex or the margins incurved, thin, transverse ridging obscure, young leaves glabrous to sparsely strigose-hairy on the distal abaxial surface, glabrescent, apex blunt. Flowers solitary, often crowded distally, with a rather 'heavy', sickly-sweet fragrance; pedicels 2.5–5.0 mm long, thick, moderately to densely tomentose. Tepals creamy-yellow or yellow, (8–)10–15 mm long, spreading or slightly recurved, both surfaces glabrous, margins narrowly undulate-winged, apex hooded, apiculate. Ovary on a short gynophore, glabrous. Fruit purplish-black, often with a glaucous bloom, ovoid, 6–10 mm long, 6–10 mm wide; style persistent; edible, semi-sweet but mealy and insipid. Flowering & fruiting Dec.–May.

Tas. (BEL, TCH, TSR, TWE); endemic. Scattered to local in sub-montane shrubberies in the west and south-west and central highlands, also in sub-montane areas of the north-east; occurring at altitudes from c. 450–1200 m.

**3 *Persoonia moscalii*** Orchard, *Brunonia* 6: 238 (1984)

Creeping Geebung

*Illustrations:* Orchard, *Brunonia* 6: 239, fig. 12 (1984); Kirkpatrick, *Alpine Tasmania* 47, fig. 19e (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 273 (2004).

Prostrate shrubs. Branches spreading, forming mats c. 1 m diam., lateral branches with the tips ascending 4–5 cm high; younger branches densely appressed-pubescent, older branches glabrous, marked with prominent, raised leaf scars. Leaves crowded at the ends of the branches, sub-erect to spreading, those inserted on the underside of the prostrate branches twisted upwards, tending to dry brownish or yellow-green; lamina 0.5–0.8(–1.5) cm long, 3–5 mm wide, obovate to oblanceolate, thick, rather fleshy, flat or ± concave, concolorous, glabrous, base narrowed into a short petiole, apex rounded or blunt. Flowers solitary in the axils of the upper leaves, ± sessile, fragrance unknown. Tepals yellow, 7–10 mm long, spreading, fleshy, abaxial surface sparsely appressed-pilose, adaxial surface glabrous, with a thin marginal wing, coalescing distally into a small, hooded, apiculate apex. Ovary on a very short gynophore, glabrous. Fruit spherical to ovoid, c. 10 mm long, 8 mm wide, presumed edible. Flowering & fruiting Jan.–Mar.

Tas. (TWE); endemic. Local in sub-montane, heathy micro-shrubberies on exposed and eroded skeletal soils, on or near the summits of quartzite peaks in the Melaleuca, Wilmot and Frankland ranges in the far south-west of the state, from c. 650–900 m alt. Listed as Rare under The Tasmanian Threatened Species Protection Act 1995.

**4 *Persoonia muelleri*** (P.Parm.) Orchard, *Brunonia* 6: 226 (1984)

Highland Geebung

*Drimys muelleri* P.Parm., *Bull. Sci. France Belgique* 27: 227, 300 (1896). *Drimys intermedia* P.Parm., *Bull. Sci. France Belgique* 27: 223, 224 (1896).

*Illustrations:* Orchard, *Brunonia* 6: 228, fig. 6 (1984); Weston, *Fl. Australia* 16: 66, fig. 38c (1995); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 274 (2004).

Erect shrubs, 1–4(–5) m high. Younger branches densely appressed white-pilose, older branches marked with prominent, raised leaf scars. Leaves well dispersed or crowded and clustered at the ends of the branches, spreading to sub-erect, turning brown, rarely quite black, on drying; lamina 1.5–5.0 cm long, 3–10 mm wide, straight, linear to oblanceolate or spatulate, flat or ± concave, coriaceous, thick, drying with ± conspicuous transverse ridges, particularly nearer the base, strigose when young, the indumentum persisting, or strigose-glabrescent with age, base gradually or abruptly attenuated into a short, thick petiole, apex rounded, blunt or acute, sometimes apiculate. Flowers solitary, sometimes ± crowded in the axils of the upper leaves, with a sickly-sweet fragrance; pedicels 4.0–5.5 mm long, thickened at the apex, strigose. Tepals yellow, (10–)15–20 mm long, spreading, abaxial surface densely strigose, adaxial surface glabrous or papillose-hairy at the base, margins narrowly undulate-winged, coalescing distally into a small, hooded, apiculate apex. Ovary on a short gynophore, glabrous. Fruit purplish-black, often with a glaucous bloom, ovoid, 8–12 mm long, 6–10 mm wide; style persistent; edible, semi-sweet but mealy and insipid. Flowering & fruiting Nov.–Jul.

Tas. (BEL, TCH, TNS, TSE, TSR, TWE); endemic. Widespread and locally common from coastal to highland habitats in the central west and south-west of the state and in the north-east highlands, from sea-level to c. 1200 m alt. In his original description, Orchard (op. cit.) described the tepal apices as “not hooded at the tip”. In all material held at the Tasmanian herbarium, the narrow marginal wings of each tepal coalesced at the apex to form a distinctive hood-like structure, terminating in a 1.0–1.5 mm long apiculus.

- |   |                               |
|---|-------------------------------|
| 1. Leaves linear-oblanceolate to narrowly oblanceolate; apex ± acute                      | 4b subsp. <i>angustifolia</i> |
| 1: Leaves oblanceolate to spatulate; apex rounded or apiculate                            | 2                             |
| 2. Leaves not densely crowded, oblanceolate, strigose when young, glabrescent at maturity | 4a subsp. <i>muelleri</i>     |
| 2: Leaves densely crowded, spatulate, densely strigose at maturity                        | 4c subsp. <i>densifolia</i>   |

**4a *Persoonia muelleri* (P.Parm.) Orchard subsp. *muelleri****Highland Geebung**Persoonia gunnii* var. *alpina* Hook.f., *London J. Bot.* 6: 283 (1847).*Illustrations:* Orchard, *Brunonia* 6: 228, fig. 6 (1984); Weston, *Fl. Australia* 16: 66, fig. 38c (1995); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 274 (2004).

Erect shrubs, 1–2(–5) m high; younger branches densely hairy. Leaves not or only moderately crowded, spreading to sub-erect; lamina 1.5–3(–5) cm long, 4–6(–8) mm wide, oblanceolate to spatulate, strigose when young, older leaves glabrescent, margins slightly recurved, apex rounded or blunt-apiculate. Tepals yellow, (15–)17–20 mm long, spreading, abaxial surface sparsely strigose, adaxial surface glabrous or with papillose hairs on margin at base. Flowering & fruiting Dec.–Feb.

Tas. (BEL, TCH, TSE, TSR, TWE); endemic. Widespread but scattered in wet forests and sub-montane heaths and shrubberies. Mostly confined to the higher elevations of the Central Plateau, including the Mt Field and Mt Wellington massifs; also the higher mountains of the north-east, from c. 450–1200 m alt.

**4b *Persoonia muelleri* subsp. *angustifolia* (Benth.) L.A.S.Johnson & P.H.Weston, *Fl. Australia* 16: 472 (1995)***Narrowleaf Geebung**Persoonia gunnii* var. *angustifolia* Benth., *Fl. Austral.* 5: 399 (1870); *P. muelleri* var. *angustifolia* (Benth.) Orchard, *Brunonia* 6: 232 (1984).

Erect shrubs, to c. 4 m high; younger branches moderately to densely hairy. Leaves not crowded, often distant, sub-erect; lamina 3–5 cm long, 3–7 mm wide, linear-oblanceolate to oblanceolate flat to convex, irregularly ± densely strigose-hairy when young, moderately hairy when mature, apex ± acute. Tepals yellow, 15–20 mm long, erect to spreading, abaxial surface moderately hairy, adaxial surface glabrous or slightly papillose at the base. Flowering & fruiting Nov.–Apr.

Tas. (TCH, TSR, TWE); endemic. Locally common in rainforests and wet shrubberies in the west, from near the Pieman River catchment in the north to the Bathurst Range in the south, from near sea-level to 1100 m alt. Listed as Rare under The Tasmanian Threatened Species Protection Act 1995.

**4c *Persoonia muelleri* subsp. *densifolia* (Orchard) L.A.S.Johnson & P.H.Weston, *Fl. Australia* 16: 472 (1995)***Leafy Geebung**Persoonia muelleri* var. *densifolia* Orchard, *Brunonia* 6: 230 (1984).*Illustration:* Orchard, *Brunonia* 6: 231, fig. 8 (1984).

Shrubs or small trees, 1–5 m high; younger branches moderately to densely hairy. Leaves crowded towards the ends of the branches, sub-erect; lamina 2–5 cm long, 6–10 mm wide, spatulate, often broadly so, flat or the margins very narrowly recurved, densely hairy when young, older leaves sparsely to moderately so, apex rounded or apiculate. Tepals bright yellow, 15–20 mm long, abaxial surface moderately hairy, adaxial surface glabrous to slightly papillose. Flowering & fruiting Dec.–Apr.

Tas. (TCH, TSR, TWE); endemic. Local to common in coastal heaths and shrubberies and on higher ground adjacent to the coast, in the south-west of the state, from near Surprise Bay to Elliot Point, from sea-level to c. 1000 m alt.

**SUBFAMILY 3 SYMPHIONEMATOIDEAE**

Plants bisexual. Cluster (proteoid) roots absent. Cotyledons not known. Flowers sessile. Staminal filaments variously adnate to tepals. Hypogynous glands 0. Ovules 1–2. Fruit dry, 1-seeded, indehiscent.

An Australian subfamily with 2 genera: *Agastachys* (Tas.) and *Symphionema* R.Br. (2 spp.; NSW). The subfamily is sister to subfamily Proteoideae (Weston & Barker 2006; Weston 2007).

Key references: Weston (2007).

### 3 AGASTACHYS

*Agastachys* R.Br., *Trans. Linn. Soc. London* 10: 158 (1810).

Synonymy: *Lippomuelleria* Kuntze, *Revis. Gen. Pl.* 2: 579 (1891).

Medium shrubs or small trees. Leaves alternate, simple, entire. Inflorescence axillary, densely flowered spikes; bracts small. Flowers not in pairs, bisexual. Perianth actinomorphic; tepals free. Stamens: adnate to tepals, connective just extending above loculi; anther monomorphic, inapiculate. Hypogynous glands 0. Ovary sessile; style straight, short, tip not functioning as pollen presenter; stigma flattened, lateral. Fruit an indehiscent, 1-seeded, glabrous, 3-winged nut.

A monotypic genus endemic to Tasmania.

Key references: Telford (1995); Weston (2007).

**1 *Agastachys odorata*** R.Br., *Trans. Linn. Soc. London* 10: 158 (1810)      *Fragrant Candlebush, White Waratah*

*Lippomuelleria odorata* (R.Br.) Kuntze, *Revis. Gen. Pl.* 2: 579 (1891).

*Illustrations*: Stones & Curtis, *The Endemic Flora of Tasmania* 3: t. 105, no. 63 (1971); Weston, *Fl. Australia* 16: xix, pl. 23, 132, fig. 47a-d (1995); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 261 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 141, pl. 209 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, 4th edn, 49 (2008).

Shrubs 2–4 m high, or sometimes a small tree to c. 8 m. Branches erect, stout, glabrous, younger branches often reddish, often with fine, longitudinal ridges. Leaves ± crowded, sub-erect to spreading, shortly petiolate; lamina 2.5–10 cm long, 0.5–1.5 cm wide, narrow-oblong or elliptical-oblong, coriaceous, pale green, concolorous, turning brown or black on drying, base rounded, margins entire, narrowly revolute, apex rounded. Inflorescences erect, axillary spikes, few to many, crowded at the ends of the branches, 4–12 cm long; rachis densely 5–25-flowered, glabrous. Flowers sessile, fragrant, subtended by erect, narrow triangular to linear bracts, as long as or a little shorter than the perianth and often persisting after fruit fall. Tepals creamy-white to dazzling-white, 5–8 mm long, spreading then recurved, glabrous. Stamens inserted just below the middle of the tepals; anthers 4-locular. Ovary sessile, 3-angled; style extending to base of anthers; stigma as long as the style. Fruit a small, 1-seeded nut, c. 3–5 mm long, with 2 lateral wings and a narrow abaxial wing, dry at maturity. Flowering & fruiting Dec.-Apr.

Tas. (KIN, TCH, TSR, TWE); endemic. Widespread and locally frequent in wet forests and shrubberies and on better drained sites in sedge-lands and heaths, usually on acid, peaty soils over quartzites and schists in the west and south-west of the state, from sea-level to c. 1000 m alt.

### SUBFAMILY 4 PROTEOIDEAE

Plants bisexual or andromonoecious or dioecious. Cluster (proteoid) roots present. Cotyledons not auriculate. Flowers sessile or pedicellate. Staminal filaments usually adnate to tepals, rarely free. Hypogynous glands 0 or 4. Ovules 1–2. Fruit dry or drupaceous, 1-seeded, indehiscent.

A subfamily of 25 genera found mainly in Australia and South Africa but extending to Madagascar, sub-Saharan Africa and New Caledonia. The subfamily is sister to subfamily Symphionematoideae (Weston & Barker 2006; Weston 2007). 19 of the genera are classified into 4 tribes, 2 of which are each divided into 2 subtribes; the remaining 6 genera are placed incertae sedis, that is, their relationships are uncertain (Weston & Barker 2006; Weston 2007). Three genera represent the subfamily in Tasmania: *Cenarrhenes* (incertae sedis), *Conospermum* (tribe Conospermeae [3 genera; mainly SW WA] subtribe Conosperminae [2 genera; mainly SW WA]) and *Isopogon* (tribe Leucadendreae [12 genera; S'ern Australia, South Africa] subtribe Isopogoninae [monogeneric]).

Key references: Weston (2007).



## 4 CENARRHENES

*Cenarrhenes* Labill., *Nov. Holl. Pl.* 1: 36 (1805).

Synonymy: *Cennarrhenes* Steud, *Nomen. Bot.* [Steudel]. ed. 2, 1: 317 (1840), *orth. var.*

Shrubs or small trees. Leaves alternate, simple, coarsely toothed. Inflorescence axillary, open spikes; bracts small. Flowers not in pairs, bisexual. Perianth  $\pm$  actinomorphic; tepals free. Stamens: filaments free, expanded at apex around anthers and with awn-like terminal extension; anthers monomorphic, apiculate. Hypogynous scales 4. Ovary sessile; style straight, short, tip not functioning as pollen presenter; stigma minute, terminal. Fruit an indehiscent, 1-seeded, fleshy drupe, glabrous.

A monotypic genus endemic to Tasmania.

Key references: Telford (1995); Weston (2007).

### 1 *Cenarrhenes nitida* Labill., *Nov. Holl. Pl.* 1: 36 (1805)

*Native Plum*

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 602, fig. 127 (1967); Stones & Curtis, *The Endemic Flora of Tasmania* 4: t. 153, no. 91 (1973); Weston, *Fl. Australia* 16: xix, pl. 22; 132, fig. 47e-h (1995); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 264 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 49, pl. 72 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, 4th edn, 51 (2008).

Shrubs 1–2 m high (exposed sites) or small trees to 8 m high. Branches erect to divaricate, younger branches reddish, older branches smooth to  $\pm$  scaly, glabrous. Leaves usually in seasonal clusters towards the ends of the branches, having a strong, unpleasant, foetid smell when bruised or crushed; petioles 5–15(–25) mm long; lamina 4–8(–15) cm long, 1–2(–3.5) cm wide, narrow obovate to elliptical-oblongate, dark green, glossy adaxially, paler abaxially, discolorous, turning dark brown or black on drying, base attenuated, margins coarsely and bluntly serrate, the tips not glandular, apex blunt to rounded. Inflorescences  $\pm$  erect, axillary spikes, shorter than the leaves, clustered at or near the ends of the branches; rachis loosely 6–20-flowered, glabrous. Flowers sessile, subtended by a small, narrowly-ovate, spreading bract. Tepals dull white,  $\pm$  fleshy, lanceolate, acuminate, apex recurved. Filaments short, broad, adnate to the base of the tepals; connective of adaxial stamen elongated and filiform, remainder short and recurved; anthers bilobed. Ovary sessile; style filiform. Fruit a blue-black, 1-seeded, fleshy drupe, glaucous, spherical, c. 1.0–1.5 cm diam.; endocarp hard, bony, wrinkled; inedible. Flowering Oct.–Apr.; fruiting Jan.–May

Tas. (BEL, KIN, TCH, TNS, TSE, TSR, TWE); endemic. Widespread but local in rainforests, montane shrub-beries and on better drained sites in sedgelands and heaths in the west, south-west and parts of the Central Plateau, from sea-level to c. 1100 m alt.

This plant is often commonly associated, and confused, with the Tasmanian Laurel *Anopterus glandulosus* (Escalloniaceae), the two being superficially quite similar in appearance. When not in flower or fruit, *Anopterus* may be readily distinguished from *Cenarrhenes* by the generally leafy branches throughout, the leaf margin serrations that are gland-tipped, and not having the characteristic, foetid smell when bruised or crushed. Many Tasmanian bushmen and bushwalkers have a rather crude term for *C. nitida*, relating its odour to something akin to the product of a natural bodily function.

## 5 CONOSPERMUM

*Conospermum* Sm., *Nov. Holl. Pl.* 1: 36 (1805).

Shrubs or small trees. Leaves alternate, simple, entire. Inflorescence terminal or axillary, paniculate to corymbose, of 1-many short, dense spikes. Flowers not paired, sessile, each subtended by a bracteole; bisexual. Perianth zygomorphic, tubular, with 4 almost equal lobes, or perianth 2-lipped, adaxial lip 1, broad, abaxial lip 3-lobed, narrow. Stamens: filaments inserted in expanded limb of perianth tube, or in base of abaxial lip; anthers inapiculate, heteromorphic, adaxial stamen 2-locular, connate with lateral 1-locular stamens, abaxial stamen sterile. Hypogynous glands 0. Ovary sessile; style bent at tip, variously modified

but tip not functioning as a pollen presenter; stigma lateral, subterminal. Fruit an indehiscent, 1-seeded, achene, variously hairy or glabrous, without wings.

An Australian genus of 53 species with a complex infrageneric classification (see Bennett 1995).

Key references: Bennett (1995); Weston (2007).

**1 *Conospermum hookeri*** (Meisn.) E.M.Benn., *Fl. Australia* 16: 485 (1995) *Tasmanian Smokebush*

*Conospermum taxifolium* C.F.Gaertn. var. *hookeri* Meisn., *Prodr.* [DC.] 14: 320 (1856). *Conospermum taxifolium* var. *leianthum* Benth., *Fl. Austral.* 5: 372 (1870).

*Illustrations:* Weston, *Fl. Australia* 16: 253, fig. 112a-b (1995); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 263 (2004); Kirkpatrick & Harris, *The Disappearing Heath Revisited* 98, fig. 15(2) (1999).

Small shrubs, 0.5–1.5 m high. Branches slender, erect, grey-white tomentose-pubescent, older branches glabrescent, somewhat scaly. Leaves crowded along main stems and numerous short lateral branchlets, sessile, erect or  $\frac{1}{2}$  spreading, the base appressed to the stem, the remainder of the lamina  $\pm$  spreading to erect; lamina 1–3 cm long, 1–2 mm wide, linear to narrowly oblanceolate, concolorous, both surfaces grey-white with short, pilose-silky hairs, flat or concave with the margins narrowly inrolled, midrib  $\pm$  prominent on the adaxial surface, base long-attenuated, apex blunt. Inflorescence a terminal,  $\pm$  corymbose panicle. Flowers sessile, in clusters of 3–8 on simple or branched peduncles, subtended by, and exceeding, the upper leaves, each flower subtended by a brown, silky, acuminate bract c.  $\frac{1}{2}$  as long as the flower. Tepals white-cream or pale lilac, 3–5(–7) mm long, tube longer than the lobes, 2-lipped, upper lobe broad, concave, abaxial surface pubescent, apex acuminate, recurved, lower lip slightly exceeding the upper lip and divided into 3 narrow lobes. Fruit a small, obconical achene, c. 2 mm diam., villous, the summit with a rim of fine, erect to spreading hairs. Flowering & fruiting Aug.–Jan.

Tas. (BEL, FUR, TSE); endemic. Local, scattered in heathy areas in open scrub and woodlands along the east coast, usually on sandy or gravelly soils, from sea-level to c. 450 m alt. Listed as Vulnerable under The Tasmanian Threatened Species Protection Act 1995.

## 6 ISOPOGON

*Isopogon* Sm., *Nov. Holl. Pl.* 1: 36 (1805).

Shrubs or small trees. Leaves alternate, simple or compound, margins entire. Inflorescence terminal or axillary, a dense spherical or ovoid cone-like spike, sessile or pedunculate; involucre bracts usually present. Flowers not paired; bisexual. Perianth actinomorphic; tepals basally fused, spreading at anthesis. Stamens: filaments adnate to tepals; anthers monomorphic, apiculate. Hypogynous glands 0. Ovary sessile; style straight, tip modified into a swollen, clavate pollen-presenter; stigma terminal, simple. Fruit an indehiscent, 1-seeded nut, hairy, not winged.

A southern Australian genus of 35 species.

Key references: Foreman (1995); Weston (2007).

**1 *Isopogon ceratophyllus*** R.Br., *Trans. Linn. Soc. Bot.* 10: 72 (1810) *Horny Conebush*

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 17, pl. 2 (1980); Weston, *Fl. Australia* 16: 200, fig. 99g-h (1995); Jeanes, *Fl. Victoria* 3: 840, fig. 171a (1996); Kirkpatrick & Harris, *The Disappearing Heath Revisited* 98, fig. 15(1) (1999); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 268 (2004).

Small, densely tufted shrubs, 5–65 cm high, arising from a thick, woody rootstock, branches diffuse, scaly, glabrous. Leaves crowded towards the ends of the short branches; petioles flattened,  $\pm$  as long as the lamina, adaxial surface shallowly channelled; lamina 2–6 cm long, and as wide, ternate to pinnately divided into linear lobes which are again divided into divaricate, pungent segments, concolorous, pale green, margins slightly thickened. Inflorescence a terminal spherical 'cone', c. 1.5–2.0 cm diam., closely surrounded

by an involucre of imbricate bracts; bracts c. 6–10 mm long, broadly ovate to ovate, glabrous; cone scales narrow ovate to ovate, lower abaxial surface villous. Tepals yellow, c. 1.5 mm long, glabrous or with a minute tuft of hairs at the apex. Fruit a small, fusiform nut, c. 4 mm long, densely silky-hairy, style persistent. Flowering & fruiting Sep.-Jun.

Tas. (FUR, KIN); also SA, Vic. Local on the Bass Strait islands, in sandy soils in heaths, open forests and shrub-beries. Listed as Vulnerable under The Tasmanian Threatened Species Protection Act 1995.

## SUBFAMILY 5 GREVILLEOIDEAE

Plants bisexual or andromonoecious or dioecious. Cluster (proteoid) roots present. Cotyledons auriculate. Flowers sessile or pedicellate. Staminal filaments variously adnate to tepals. Hypogynous glands 0 or 4. Ovules 2–8. Fruit 2-seeded, drupaceous or a dry, dehiscent follicle.

A subfamily of 47 genera found in Australasia, Melanesia (extending to China and Japan), south-west Pacific, Central and South America, Southern Africa and Madagascar. The subfamily is sister to a clade containing the subfamilies Symphionematoideae and Proteoideae (Weston & Barker 2006; Weston 2007). Forty-five of the genera are classified into 4 tribes and 13 subtribes; the remaining 2 genera are placed incertae sedis (Weston & Barker 2006; Weston 2007). Six genera represent the subfamily in Tasmania: *Orites* (tribe Roupaleae [13 genera; mainly Australian, SW Pacific, America]), *Banksia* (tribe Banksieae [3 genera; mainly Australian]) subtribe Banksiinae [monogeneric]), and in tribe Embothrieae (12 genera; mainly Australian, S America), *Lomatia* (subtribe Lomatiinae [monogeneric]), *Telopea* (subtribe Embothriinae [4 genera; E Australia, New Guinea, S America]), *Grevillea* and *Hakea* (both subtribe Hakeinae [5 genera; mainly Australian]).

Key references: Weston & Baker (2006); Weston (2007).

## 7 ORITES

*Orites* R.Br., *Trans. Linn. Soc. Bot.* 10: 189 (1810).

Synonymy: *Oritina* R.Br., *Trans. Linn. Soc. Bot.* 10: 224 (1810).

Shrubs, or trees (not in Tas.). Leaves alternate, simple, entire or coarsely toothed or lobed. Inflorescence axillary or terminal, a raceme or a panicle of racemes; ebracteate. Flowers paired, subtended by a small caducous bract; bisexual. Perianth actinomorphic; tepals coherent at first but splitting to the base at anthesis. Stamens: filaments adnate to base of tepals; anthers monomorphic, inapiculate or apiculate. Hypogynous glands 4, free or connate. Ovary sessile; style filiform, scarcely widened at the apex into a definite pollen presenter; stigma minute. Fruit a 1–2-seeded follicle, boat-shaped, dehiscing completely along the adaxial suture, or tardily, and usually  $\pm$  incompletely, from the apex, glabrous, often long-persisting, seed dust not present. Seeds with an oblique terminal or  $\pm$  encircling wing.

A genus of 8 or 9 species: 7 or 8 endemic to eastern Australia and 2 in Chile and Argentina. The genus is classified into 2 sections: Excelsae (4 or 5 spp: Qld, NSW, S America) and *Orites* (5 spp.: Tas., alpine & subalpine NSW, Vic. & ACT).

Key references: George & Hyland (1995); Weston (2007).

- |   |                           |
|---|---------------------------|
| 1. Leaves terete or margins closely revolute  | 2                         |
| 1: Leaves flat or margins only slightly recurved  | 3                         |
| 2. Leaves yellow-green, terete, apex pungent  | 1 <i>O. acicularis</i>    |
| 2: Leaves dark green, closely revolute, apex blunt  | 2 <i>O. revolutus</i>     |
| 3. Leaves much longer than wide, margins entire, or irregularly toothed, particularly toward the apex | 3 <i>O. diversifolius</i> |
| 3: Leaves almost as wide as long, margins regularly and coarsely toothed                              | 4 <i>O. milliganii</i>    |

**1 *Orites acicularis* (R.Br.) Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 3: 427 (1818)***Yellow Orites*

*Oritina acicularis* R.Br., *Trans. Linn. Soc. Bot.* 10: 224 (1810); *Orites acicularis* (R.Br.) R.Br., *Suppl. Prodr. Fl. Nov. Holl.* 32 (1830), *nom. illeg.*

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 3: t. 117, no. 70 (1971); Weston, *Fl. Australia* 16: 350, fig. 161c-d (1995); Kirkpatrick, *Alpine Tasmania* 47, fig. 19d (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 270 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 151, pl. 225 (2005).

Small to medium shrubs, 0.5–2.0 m high. Branches erect to sub-erect, crowded, often compact and sprawling due to exposure; younger branches pubescent, glabrescent, older branches sometimes flaky-scaly. Leaves crowded, erect, usually incurved; petioles 3–5 mm long; lamina 10–35 mm long, 1–2 mm wide, terete, with groove along adaxial surface, yellow-green, ± glossy, base narrowed, apex acute-acuminate, pungent. Inflorescence a terminal or axillary spike, 4–12-flowered; rachis c. 2 cm long, pubescent, hairs rusty-brown; bracts c. 2 mm long, ovate, scarious; flowers sessile. Tepals creamy-white, rarely tinged pink, 3–5 mm long, separating almost to the base, recurved, glabrous, limb slightly enlarged. Stamens erect, slightly exerted beyond level of limb. Nectar scales 0.2–0.3 mm long, linear, erect. Ovary silky-pubescent. Follicle 1.0–1.5 cm long, oblong, obliquely beaked with persistent style, glabrous, valves opening incompletely. Seed oblong, surrounded by a small, symmetrical wing. Flowering & fruiting Nov.–Apr.

Tas. (BEL, TCH, TNS, TSE, TSR, TWE); endemic. Widespread and frequent in montane shrubberies, heaths, boulder-fields and herb-fields, on most dolerite mountains and plateaus of the west, Central Plateau and the north-east highlands at higher altitudes, from c. 800–1500 m alt.

**2 *Orites revolutus* R.Br., Trans. Linn. Soc. Bot. 10: 190 (1810) [as “*O. revoluta*”]***Revolute Orites*

*Illustrations* (often as *O. revoluta*): Stones & Curtis, *The Endemic Flora of Tasmania* 4: t. 149, no. 89 (1973); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 110, pl. 546 (1980); Weston, *Fl. Australia* 16: 350, fig. 161e-f (1995); Kirkpatrick, *Alpine Tasmania* 47, fig. 19f (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 272 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 153, pl. 228 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 31 (2008).

Erect or divaricate shrubs, often prostrate due to exposure, or up to 2 m high. Younger branches sparsely pubescent-glabrescent, the hairs brownish, sometimes ± scaly. Leaves crowded, erect or somewhat incurved, sessile to very shortly petiolate; lamina 1–2(–3) cm long, 1.5–3.5 mm wide, linear to very narrowly elliptic, thick, coriaceous, adaxial surface dark green, glabrous, ± glossy, abaxial surface, where visible, densely brown-tomentose, base rounded, margins entire, closely revolute, sometimes to the midrib, apex blunt or minutely apiculate. Inflorescence a terminal or axillary spike, 10–20(–30)-flowered; rachis 1–2(–3.5) cm long, densely rusty-brown pubescent; bracts c. 2 mm long, ovate, pubescent; flowers sessile. Tepals cream to white, 3–5 mm long, separating to the base, spreading to recurved, glabrous, limb slightly enlarged. Stamens erect, exerted well above level of recurved limb. Nectar scales oblong, thick. Ovary densely rusty-brown, silky-pubescent. Follicle 1–2(–2.5) cm long, obliquely elliptic, obliquely beaked with persistent style, densely velvety-tomentose, glabrescent with age, valves opening incompletely. Seed ovoid, with large terminal wing. Flowering & fruiting Nov.–Apr.

Tas. (BEL, TCH, TNM, TNS, TSE, TSR, TWE); endemic. Widespread and abundant in montane shrubberies, heaths, and boulder fields, chiefly on dolerite mountains and plateaus of the west, Central Plateau and the north-east highlands, from near sea-level in the west, to 1100 m alt.

**3 *Orites diversifolius* R.Br., Trans. Linn. Soc. Bot. 10: 190 (1810) [as “*O. diversifolia*”]***Variable Orites*

*Illustrations* (often as *O. diversifolia*): Stones & Curtis, *The Endemic Flora of Tasmania* 4: t. 150, no. 89 (1973); Kirkpatrick, *Alpine Tasmania* 45, fig. 18a (1997); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 271 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 141, pl. 210 (2005).

Erect, sparsely branched shrubs, 1.0–2.5 m high. Young branches rusty velvety-tomentose, glabrescent, older branches greyish, scarcely flaky-scaly. Leaves scarcely crowded, shortly petiolate, sub-erect to spreading; petioles 2–3 mm long; lamina very variable in size and shape, (2–)5–10 cm long, 0.5–0.8(–1.5) cm wide, the size varying with exposure, narrowly elliptic to oblong-lanceolate, discolorous, adaxial surface dark green, shining, abaxial surface paler, base rounded, margins recurved or flat, entire or coarsely toothed, or  $\pm$  unevenly toothed towards the apex, teeth usually gland-tipped, apex glandular-apiculate. Inflorescence numerous axillary spikes towards the ends of the branches, 6–20(–30)-flowered; rachis 2–5 cm long, rusty-tomentose; bracts c. 3–4 mm long, ovate, glabrous except for the apex; flowers sessile. Tepals creamy white, 4–6 mm long, separating to the base, recurved, glabrous, limb enlarged. Stamens erect, exerted above the level of recurved limb tips. Nectar scales ovoid, c. 3 mm long. Ovary villous. Follicle 1.0–1.5 mm long, apex with persistent style, glabrous, valves opening completely. Seed ovoid, with curved terminal wing. Flowering & fruiting Aug.–May.

Tas. (BEL, TCH, TSE, TSR, TWE); endemic. Widespread and frequent in wet sub-montane forests and shrubberies in the west, Central Plateau and north-east highlands; occasional in montane shrubby forests and heaths. Usually occurring on dolerite mountains, from near sea-level in the west, to c. 1100 m alt.

**4 *Orites milliganii*** Meisn., *Prodr.* [DC.] 14(1): 424 (1856) [as ‘\**O. milligani*\*’]

*Toothed Orites*

*Orites milliganii* Meisn., *Hook. J. Bot. Kew Gard. Misc.* 4: 209 (1852), *nom. inval.*

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 3: t. 118, no. 70 (1971); Kirkpatrick, *Alpine Tasmania* 45, fig. 18b (1997); Whiting et al., *Tasmania’s Natural Flora*, ed. 1, 271 (2004).

A much branched shrub, sometimes prostrate, or to 0.5–1.5 m. high, rarely a larger shrub to c. 4 m. in sheltered locations. Branches glabrous throughout, younger branches sometimes  $\pm$  scaly. Leaves rather crowded, on short branches of the current season’s growth, erect; petioles 3–7 mm long; lamina 1.0–2.5(–3) cm long, 5–15(–20) mm wide, ovate to obovate, thick, hard, discolorous, adaxial surface pale green to yellowish green, shining, abaxial surface dull, base narrowed, margins coarsely, shallowly and evenly toothed, the tips sharply pointed, apex apiculate but scarcely pungent. Inflorescence a terminal spike, 3–7 cm long, 6–60-flowered; rachis glabrous or very sparsely pubescent; bracts 3.5–4.5 mm long, ovate, ciliate; flowers sessile. Tepals white, 4–6 mm long, separating to the base, recurved, glabrous, limb enlarged. Stamens erect to spreading, level with, or exerted above level of recurved limb. Nectar scales orbicular to  $\pm$  cuboid, c. 0.2 mm long. Ovary rusty-villous. Follicle 1–2 cm long, oblong-elliptic, broader abaxially, apex shortly beaked with persistent style, glabrous, scaly with age, valves opening completely. Seed circular, surrounded by narrow wing, wider on one side. Flowering & fruiting Dec.–Apr.

Tas. (TCH, TSR, TWE); endemic. Local in montane shrubberies, heaths and low vegetation among rocky outcrops, usually on quartzite mountains in the west and southwest. Occurs at higher altitudes, from 600–1200 m alt. Listed as Rare under The Tasmanian Threatened Species Protection Act 1995.

## 8 BANKSIA

*Banksia* L.f., *Supp. Pl.* 15, 126 (1872).

Synonymy: *Dryandra* R.Br., *Trans. Linn. Soc. London* 10: 211, t. 3 (1810). *Isostylis* (R.Br.) Spach, *Hist. Nat. Vég.* (Spach) 10: 402 (1841). *Sirmuelleria* Kuntze, *Rev. Gen. Pl.* 2: 581 (1891).

Shrubs or small to medium trees. Leaves alternate, simple, entire or toothed or lobed, sometimes whorled, often crowded. Inflorescences terminal, erect or pendulous (not in Tas.), broadly cylindrical or spherical (not in Tas.) spikes (cones), or capitulum (not in Tas.), with a woody, elongated rachis; basal involucre of narrow bracts, caducous at anthesis. Flowers very numerous, in pairs, each pair subtended by a small common bract; individual flowers subtended by a bract, bisexual. Perianth usually zygomorphic; tepals in bud coherent in a slender tube, slit on the abaxial side by style (in Tas.), usually free at anthesis, small apical limb scarcely expanded, recurved. Stamens: filaments adnate to tepals; anthers monomorphic, apiculate. Hypogynous glands 4, free. Ovary sessile; style long, straight, curved or hooked, tip modified into a usually erect

pollen presenter; stigma barely expanded. Fruit a 2-seeded, transverse woody follicle, opening by 2 valves, variously hairy or glabrous, usually relatively few and randomly dispersed on rachis, seed dust not present. Seeds winged or not (not in Tas.), separated by 2, flat, woody plates.

An Australian genus of 169 species with 1 species extending into southern New Guinea. The major centre of diversity of the genus is south-western Western Australia where > 150 species are endemic. The genus *Dryandra* R.Br. (SW WA, 93 spp.) was recently transferred to *Banksia* by Mast and Theile (2007) who demonstrated that the former was nested within the latter. The genus has a rich infrageneric classification (George 1999; Mast & Theile 2007). All three Tasmanian species are placed in *Banksia* subgenus *Banksia* section *Banksia*: *B. integrifolia* and *B. marginata* in series *Salicinae* (11 spp.; N & E Australia, New Guinea), and *B. serrata* in series *Banksia* (8 spp.; SW WA, E Australia).

Key references: George (1999); Weston (2007).

- |   |                          |
|---|--------------------------|
| 1. Adult leaves with margins regularly toothed, lateral veins parallel, at right angles to midrib, conspicuous on abaxial surface             | 3 <i>B. serrata</i>      |
| 1: Adult leaves entire or irregularly and unevenly toothed, mainly toward the apex, lateral veins reticulate ± conspicuous on abaxial surface | 2                        |
| 2. Trees; leaves 5–12 cm long, 1.0–2.5 cm wide (extinct in Tas.; Bass Strait)   | 1 <i>B. integrifolia</i> |
| 2: Small trees or shrubs; leaves 2–8 cm long, 0.3–1.0 cm wide (widespread)  | 2 <i>B. marginata</i>    |
| <b>1 † <i>Banksia integrifolia</i> L.f., <i>Suppl. Pl.</i> 127 (1782), subsp. <i>integrifolia</i></b>   | <i>Coast Banksia</i>     |

*Sirmuelleria integrifolia* (L.f.) Kuntze, *Rev. Gen. Pl.* 2: 582 (1891); *Isostylis integrifolia* (L.f.) Britten, *Ill. Austral. Pl. Cook's Voy.* 3: 83, t. 269 (1905).

*Illustrations*: Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 63, pl. 275 (1980); Jeanes, *Fl. Victoria* 3: 885, fig.180c (1996); Weston, *Fl. Australia* 17B: 187, fig. 25i (1999); Harden, *Fl. New South Wales* 2, rev. edn: 83 1a (2002); Minchin, *Wildflowers of Tasmania – A Field Guide* 197, pl. 293 (2005).

Trees to c. 25 m high. Branches erect to spreading, sometimes dichotomous; bark dark grey-brown, usually roughly tessellated, younger branches densely rusty-brown, tomentose-pubescent, glabrescent, older branches marked by persistent leaf scars. Adult leaves often in whorls of 3–5; petiole 4–10 mm long; lamina narrowly elliptic to oblanceolate or obovate, 5–12 cm long, 1.0–1.5(–2.5) cm wide, discolorous, adaxial surface dull green, glabrescent, abaxial surface closely white floccose-tomentose or sometimes less densely so and the venation ± conspicuous, base attenuated, margins entire, not or slightly recurved, apex blunt or apiculate; juvenile leaves sometimes coarsely and unevenly toothed. Inflorescence oblong-cylindrical, 6–10(–14) cm long, 5–8 cm wide at anthesis; involucre bracts 2–10 mm long, tomentose. Tepals pale, dull yellow, 20–25 mm long, silky-pubescent abaxially, glabrous adaxially, caducous. Style straight or slightly curved, caducous. Follicles up to 60, unevenly distributed over grey-brown axis, exserted, 7–15 mm long, 3–10 mm high, 3–6 mm wide, opening spontaneously when ripe; valves semi-elliptic, tomentose-hirsute, glabrescent in distal half. Seed body ± crescentic, 5–10 mm long, wing 10–20 mm long. Flowering & fruiting all year.

Tas. (FUR<sup>†</sup>, KIN<sup>†</sup>); also Qld, NSW Vic. In Tasmania, recorded from King Island (1876) and Long Islet in the Hogan Group (last collected in 1984). Presumed extinct for Tasmania and listed as Extinct under The Tasmanian Threatened Species Protection Act 1995.

There are two other subspecies: *Banksia integrifolia* subsp. *monticola* K.R.Thiele from New England National Park to the Blue Mountains (NSW), differs from subsp. *integrifolia* in the adult leaves that are narrowly elliptic and usually 10–13 cm long and 17–19 mm wide, the leaf apex being acute and the adaxial leaf surfaces shining green. *Banksia integrifolia* subsp. *compar* (R.Br.) K.R.Thiele, occurs from Proserpine to Brisbane (Qld), and differs from subsp. *integrifolia* by its larger, undulate leaves that are usually 10–20 cm long and 20–26 mm wide, and the adaxial leaf surfaces shining green.

**2 *Banksia marginata* Cav., *Anales Hist. Nat.* 1(3): 227, t.13 (1800)***Silver Banksia*

*Banksia australis* R.Br., *Trans. Linn. Soc. London* 10(1): 205 (1810). *Banksia depressa* R.Br., *op. cit.*; *B. australis* var. *depressa* (R.Br.) Hook.f., *Bot. Antarct. Voy. III. (Fl. Tasman.)* 1: 329 (1859). *Banksia patula* R.Br., *op. cit.* *Banksia insularis* R.Br., *op. cit.*, 206 (1810). *Banksia gunnii* Meisn., *Hook. J. Bot. Kew Gard. Misc.* 4: 210 (1852), *nom. nud.* *Banksia gunnii* Meisn., *Prodr.* [DC.] 14(1): 456 (1856). *Banksia depressa* var. *subintegra* Meisn., *op. cit.*

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 55, pl. 229 (1980); Jeanes, *Fl. Victoria* 3: 885, fig.180e (1996); Weston, *Fl. Australia* 17B: 187, fig. 25f (1999); Kirkpatrick & Harris, *The Disappearing Heath Revisited* 99, fig.16(4) (1999); Harden, *Fl. New South Wales* 2, rev. edn: 84 (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 261 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 197, pl. 294 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 75 (2008).

Shrubs or small trees, 1–4(–12) m high, often dichotomously branching. Younger branches rusty-brown villous-tomentose, glabrescent, older branches and trunk smooth, grey-brown and often wrinkled or tessellated, leaf scars obscure. Adult leaves alternate, occasionally clustered; shortly petiolate; lamina variable, 2–5(–8) cm long, 3–7(–10) mm wide, narrow oblong-cuneate, narrow oblanceolate, rarely linear, discolorous, adaxial surface dark green ± shining or hirsute, glabrescent, abaxial surface white-tomentose, reticulate venation obscured or conspicuous, midrib sometimes rusty-pubescent, base attenuated, margins flat or shortly recurved, entire, or regularly serrated throughout or nearer the apex, apex obtuse, truncate, or emarginate, or mucronate; juvenile and sub-adult leaves broader and ± regularly serrated particularly towards the apex. Inflorescence cylindrical, 5–10 cm long, 4–6 cm wide at anthesis; involucre bracts to 10 mm long, often persistent. Tepals pale yellow, 14–15 mm long, pubescent, persistent. Style straight or slightly curved, persistent. Follicles up to 150, unevenly distributed over rusty-brown 'felty' axis, exserted, narrowly elliptic, 7–16 mm long, 2–5 mm high, 2–4 mm wide, opening spontaneously when ripe; valves semi-elliptic, thin, smooth, hirsute, glabrescent. Seed body obovate-cuneate, 5–8 mm long, wing c. 15 mm long. Flowering & fruiting all year.

Tas. (BEL, FUR, KIN, TCH, TNM, TNS, TSE, TSR, TWE); also in SA, NSW, Vic. Widespread and abundant almost throughout the state from coastal dunes, heaths, woodlands, wet and dry forests to montane shrubberies, sometimes forming small stands, from sea-level to c. 1000 m alt.

**3 *Banksia serrata* L.f., *Suppl. Pl.* 126 (1782)***Saw Banksia*

*Sirmuelleria serrata* (L.f.) Kuntze, *Rev. Gen. Pl.* 2: 582 (1891); *Isostylis serrata* (L.f.) Britten, *Ill. Austral. Pl. Cook's Voy.* 3: 83, t. 270 (1905). *Banksia media sensu* J.D.Hooker, *Bot. Antarct. Voy. III. (Fl. Tasman.)* 1: 329 (1859), *non.* R.Br. (1830).

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 20, pl. 21 (1980); Jeanes, *Fl. Victoria* 3: 885, fig.180g, pl.15c (1996); Weston, *Fl. Australia* 17B: 198, fig. 26f-g (1999); Harden, *Fl. New South Wales* 2, rev. edn: 85 (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 262 (2004); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 141 (2008).

Shrubs 1–3 m or a small tree to c. 15 m high, often branching dichotomously. Younger branches densely rusty to chestnut-brown tomentose, glabrescent, older branches greyish, bark thick, verrucose, wrinkled, leaf scars scarcely prominent. Leaves crowded; petioles 5–15 mm long; lamina 10–15(–20) cm long, 10–25(–35) mm wide, broadly oblong-oblanceolate to narrow obovate, slightly discolorous, adaxial surface bright green, glabrous, abaxial surface at first tomentose, glabrescent, dull green, lateral veins ± conspicuous, parallel, diverging at right angles to the midrib, bases attenuated, margins evenly and coarsely serrate, except at the attenuated base, apex obtuse to truncate, mucronate; juvenile leaves smaller but scarcely differentiated from older leaves. Inflorescence oblong-cylindrical, 8–18 cm long, 8–12 cm wide at anthesis; involucre bracts c. 10 mm long, tomentose, ± persistent. Tepals pale yellow with greyish tinge, 35–45 mm long, pubescent abaxially, glabrous adaxially, persistent. Style shallowly curved downwards then ascending, persistent. Follicles c. 5–25, unevenly distributed over thick, woody axis, prominently exserted, broadly elliptic, 25–35 mm long, 20–25 mm high, 15–20 mm wide, opening usually only after fire; valves semi-

elliptic, thick, woody, tomentose, glabrescent. Seed body  $\pm$  obovate, 8–12 mm long, wing 30–35 mm long. Flowering & fruiting all year.

Tas. (KIN, TNM, TNS,); also NSW, Vic. Occurs over a limited area at Sisters Hills in the central north of the state where found in coastal open, heathy woodland on sandy soils, from sea level to c. 100 m alt. Listed as Rare under The Tasmanian Threatened Species Protection Act 1995.

## 9 LOMATIA

*Lomatia* R.Br., *Trans. Linn. Soc. Bot.* 10: 199 (1810), *nom. cons.*

Synonymy: *Tricondylus* Knight, *Cult. Prot.* 121 (1809), *nom. rej.*

Shrubs or small trees. Leaves alternate, simple or compound, margins entire or toothed to deeply pinnatisect, sometimes heteromorphic. Inflorescence terminal or axillary, a raceme, usually simple but sometimes slightly branched; bracts usually small and caducous or absent. Flowers paired, subtended by a small, caducous bract; bisexual. Perianth zygomorphic; tepals coherent in bud but slit by style along the abaxial side, then completely separating at anthesis; limb globular, recurved in bud. Stamens: filaments adnate to tepals; anthers monomorphic, minutely apiculate or inapiculate. Hypogynous glands 3, free. Ovary stipitate; style long, curved at 90°, distally expanded into an oblique pollen presenter; stigma terminal. Fruit a many-seeded follicle, opening out flat. Seeds with a terminal wing, covered in a yellow powdery substance.

A genus of 12 species: 9 endemic to eastern Australia and 3 to South America.

Key references: Wilson et al. (1995); Weston (2007).

- |   |                        |
|---|------------------------|
| 1. Leaves variously divided; leaflet margins entire or toothed                      | 2                      |
| 1: Leaves simple, or very rarely some irregularly lobed or divided; margins various | 3                      |
| 2. Leaves regularly pinnately divided; leaflets broad, margins toothed              | 1 <i>L. tasmanica</i>  |
| 2: Leaves irregularly pinnate or bi-pinnate; lobes linear margins entire            | 3 <i>L. tinctoria</i>  |
| 3. Leaves 2–6(–8) cm long; margins entire or occasionally irregularly lobed         | 2 <i>L. polymorpha</i> |
| 3: Leaves 6–12 cm long; margins usually variously toothed                           | 4 <i>L. fraseri</i>    |

**1 *Lomatia tasmanica*** W.M.Curtis, *The Student's Flora of Tasmania* 3: 651 (1967) *King's Lomatia, King's Holly*

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 6: t. 254, no. 155 (1978); Weston, *Fl. Australia* 16: 380, fig. 169i (1999); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004).

Small, spindly trees to c. 5 m tall, or sparsely branched shrubs to c. 2.5 m tall, often etiolated. Stems often inclined, with several erect branches arising therefrom; younger branches rusty-brown tomentose-pubescent, older branches greyish, sometimes scaly. Leaves crowded at the ends of the branches; petiole 1.0–2.5(–4) cm long; lamina 5–10(–18) cm long, 2–5(–8) cm wide, ovate to elliptic in outline, pinnate, sometimes pinnatisect, particularly towards the apex; pinnae 7–10(–25), sessile, decurrent, oblong to ovate in outline, deeply and irregularly acutely toothed, or lobed, or, rarely, the lower ones pinnatisect, coriaceous,  $\pm$  discoloured, adaxial surface dark green, glossy, glabrous, reticulate veined, abaxial surface paler. Inflorescence a terminal raceme, usually exceeding leaves, flowers numerous, loose, rarely  $\pm$  compact; rachis glabrous; pedicels 0.5–1.0 cm long, glabrous. Tepals dull crimson-burgundy, glabrous. Gynophore c. 4 mm long, slender. Fertile fruit or seed have never been encountered. Flowering Nov.–Jan.

Tas. (TWE); endemic. Very rare, currently known from a single extant population covering an area of less than c. 1 square kilometre on the Bathurst Range in the far south of the state. Two earlier reported populations, within 5 km of the known population, are now presumed extinct. Found in closed rainforest. The populations are from c. 200–400 m alt. Listed as Endangered under The Tasmanian Threatened Species Protection Act 1995.



Genetic studies have shown that the extant population is triploid and sterile. As no fertile fruit/seed is produced, the small population has apparently been cloning itself, for what is believed to have been millennia, possibly since the end of the last ice-age (c. 12–14,000 years BP), or, possibly, even much longer.

The plants appear to sucker readily if broken or damaged. The plant's very slender stems and etiolated habit of growth may result in a plant eventually declining and eventually making contact with the ground, following which a natural layering process probably occurs. Wild-fires and fungal root pathogens pose a significant risk to the species existence. *Lomatia tasmanica* has been proved difficult to propagate and even more so to cultivate and maintain alive for any length of time.

## 2 *Lomatia polymorpha* R.Br., *Trans. Linn. Soc. Bot.* 10: 200 (1810)

*Mountain Guitarplant*

*Lomatia polymorpha* var. *rufa* R.Br., *op. cit.* *Lomatia polymorpha* var. *cinerea* R.Br., *op. cit.* *Tricondylus polymorphus* (R.Br.) Kuntze, *Rev. Gen. Pl.* 2: 582 (1891) [as '\*T. polymorpha\*'] .

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 4: t. 152, no. 91 (1973); Kirkpatrick, *Alpine Tasmania* 45, fig. 18d (1997); Weston, *Fl. Australia* 16: 380, fig. 169a-h (1999); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 143, pl. 212 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 29 (2008).

Erect shrubs, 1–4 m high, rarely a small tree to c. 5 m, not or scarcely rhizomatous. Younger branches rusty-silky tomentose, older branches glabrous, sometimes ± flaky-scaly. Leaves variable; petiole 3–5 mm long; lamina 2–6(–8) cm long, 3–7(–10) mm wide, narrow oblanceolate to narrow elliptic, rarely linear, sometimes irregularly 3–5 toothed or lobed towards the apex, rarely further divided, discolorous, adaxial surface green to grey-green, younger leaves very sparsely pilose, older leaves glabrous, abaxial surface densely rusty-brown tomentose, base attenuated, margins slightly recurved, apex acute or mucronate. Inflorescences terminal or axillary racemes at the ends of the branches, usually rather short and compact and about as long as the leaves, occasionally the rachis ± elongating at anthesis and in the fruiting stages; rachis densely to sparsely tomentose with rusty brown and whitish hairs; pedicels 0.5–1–2 cm long, tomentose. Tepals cream-white, abaxial surface sparsely pubescent. Gynophore 0.5–1.0 cm long, slender. Follicle pendulous, gynophore plus pedicel 2.5–3.0 cm long, body of follicle 1.5–2.5 cm long, when fully open c. 1.5 cm wide, coriaceous; persistent style 0.5–1.0 cm long. Seeds triangular, wing 0.5–1.0 cm long. Flowering Dec.-Apr.; fruiting Mar.-May.

Tas. (BEL, TCH, TNM, TNS, TSE, TSR, TWE); endemic. Widespread and frequent in sub-montane forests and shrubberies in the west, Central Plateau and north-east highlands; usually occurring on dolerite mountains, from near sea level in the west, to c. 1100 m alt.

## 3 *Lomatia tinctoria* (Labill.) R.Br., *Trans. Linn. Soc. Bot.* 10: 199 (1810)

*Guitarplant*

*Embothrium tinctorium* Labill., *Nov. Holl. Pl.* 1: 31, t.42 & 43 (1805); *Tricondylus tinctorius* (Labill.) Knight, *Cult. Prot.* 122 (1809).

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 3: t. 107, no. 64 (1971); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 117, pl. 587 (1980); Gilfedder et al., *The Nature of the Midlands* 122 (2003); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 270 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 143, pl. 211 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 115 (2008).

Small to medium shrubs, 0.5–1(–2) m high, often multi-stemmed and forming large communities due to rhizome development. Younger branches reddish, sparsely tomentose-pubescent, glabrescent, the hairs rusty to greyish. Leaves very variable; petiole 1–2 cm long; lamina 3–10 cm long, 3–8 cm wide, ovate to broadly ovate in outline, rarely simple, usually evenly or unevenly pinnate to pinnatisect, occasionally bipinnate or bipinnatisect, lobes 1–4 cm long, linear to oblong, pale to mid green, bases decurrent, margins usually entire, glabrous, apex blunt or acute. Inflorescence an axillary or terminal, erect, open raceme, usually much longer than the leaves; rachis glabrous or sometimes very sparsely hairy; pedicels 1.0–1.5 cm long, glabrous. Tepals cream-white, rarely tinged pink, glabrous. Gynophore 0.5–1.0 cm long, slender. Follicle ± pendulous, gynophore plus pedicel 1.5–2.0 cm long, body of follicle 1.5–2.0 cm long, when fully

open c. 1.5 cm wide, coriaceous, persistent style 0.5–0.8 mm long. Seeds triangular, 3–4 mm long, wing 5–10 mm long. Flowering Nov.-May; fruiting Apr.-Sept.

Tas. (BEL, FUR, KIN, TCH, TNM, TNS, TSE, TSR, TWE); endemic. Widespread and locally frequent in dry forests, open woodlands and grassy heaths, usually on dolerite derived soils, but not confined to these, from sea-level to c. 1000 m alt. The dissection of the leaves may vary greatly on any plant and also the amongst the plants within any population. Some populations of plants on the Tasman Peninsula have leaves so highly dissected as to resemble curled parsley. An ornamental plant in cultivation and relatively easily maintained. The leaves of this species have been used for dyeing procedures. Different mordant treatments apparently producing a number of distinctive shades of green.

**4 \* *Lomatia fraseri*** R.Br., *Suppl. Prodr. Fl. Nov. Holl.* 34 (1830)

*Tree Lomatia, Forest Lomatia*

*Tricondylus fraseri* (R.Br.) Kuntze, *Rev. Gen. Pl.* 2: 582 (1891).

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 86, pl. 408 (1980); Jeanes, *Fl. Victoria* 3: 840, fig. 171u (1996); Harden, *Fl. New South Wales* 2, rev. edn: 30 (2002);

Shrubs or small trees, 8(–11) m tall, not or scarcely rhizomatous. Younger branches densely brown-tomentose, older branches glabrescent. Leaves variable; petioles 1.0–2.5 cm long; lamina 6–12 cm long, 2.5–4.5 cm wide, lanceolate to elliptical, adaxial surface pale green, glabrous, abaxial surface pale yellow-green, rusty or silvery hairy, base rounded, margins entire or shallowly to deeply toothed, apex rounded or acute. Inflorescence a terminal or axillary raceme or panicle, 8–15 cm long; rachis densely rusty-silvery tomentose; pedicels 6–10 mm long, tomentose. Tepals white or cream, densely tomentose. Gynophore 0.5–1.0 cm long, slender. Follicle pendulous, gynophore plus pedicel c. 1.8 cm long; body of follicle 1.5–3.0 cm long, when fully open 1.8–2.0 cm wide; persistent style 0.8–1.0 cm long. Seed ovate, c. 3 mm diam., wing c. 0.8–1.0 cm long. Flowering Dec.-Mar.; fruiting Apr.-Jul.

Tas. (TSE); native in NSW, Vic. Introduced as a garden specimen, occasionally escaping from cultivation into nearby natural vegetation, eg. around Hobart; though probably not establishing.

## 10 TELOPEA

*Telopea* R.Br., *Trans. Linn. Soc. London* 10: 197 (1810), *nom. cons.*

Synonymy: *Hylogyne* Salisb. ex Knight, *Cult. Prot.* 126 (1809). *nom. rej.*

Shrubs or rarely small trees. Leaves alternate, simple, entire or toothed. Inflorescence terminal, a dense, ovoid to globular or flat-compressed head, surrounded by an involucre of caducous bracts. Flowers paired, subtended by a small caducous bract; bisexual. Perianth zygomorphic; tepals coherent in bud, slit by the style along the abaxial side, remaining a split tube after anthesis (not in Tas.) or separating at anthesis; limb globular, strongly incurved in bud, separating and revolute at anthesis. Stamens: filaments adnate to tepals; anthers monomorphic, minutely apiculate or inapiculate. Hypogynous gland solitary. Ovary stipitate; style long and strongly incurved, apex dilated into pollen presenter; stigmatic tip eventually freed from limb, stigma lateral. Fruit a many-seeded follicle. Seeds in 2 overlapping rows, winged, covered in a brown powdery substance.

A genus of 5 species confined to south-eastern Australia.

Key references: Crisp & Weston (1995); Weston (2007).

**1 *Telopea truncata*** (Labill.) R.Br., *Trans. Linn. Soc. London* 10: 198 (1810)

*Tasmanian Waratah*

*Embothrium truncata* Labill., *Nov. Holl. Pl.* 1: 32, t.44 (1805); *Hylogyne australis* Salisb. ex Knight, *Cult. Prot.* 127 (1809); *Hylogyne truncata* (Labill.) Kuntze, *Rev. Gen. Pl.* 2: 578 (1891), *nom. illeg.* *Telopea tasmaniana* Ross, *Hobart Town Almanack* 110 (1835). *Telopea truncata* f. *lutea* A.M.Gray, *Muelleria* 3: 63 (1974).

*Illustrations:* Stones & Curtis, *The Endemic Flora of Tasmania* 4: t. 141, no. 84 (1973); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 110, pl. 549 (1980); Kirkpatrick, *Alpine Tasmania* 44, fig. 17 (1997); Weston, *Fl. Australia* 16: 380, fig. 169i; 388, fig. 171a-c; pl.137 (1999); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 274 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 159, pl. 237 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 67 (2008).

Shrubs, 1–4 m high or small, multi-stemmed trees to c. 6 m tall. Branches erect or spreading, stout, younger branches densely rusty-brown, puberulose to tomentose-pubescent, older branches smooth, greyish. Leaves spreading, sometimes ± crowded towards the ends of the current season's growth; petioles 5–10 mm long; lamina 3–15 cm long, 0.4–2.5 cm wide, oblanceolate-spathulate, discolorous, adaxial surface dark green, glabrous, abaxial surface pale green, or younger leaves often rusty-puberulose, entire or rarely a few leaves obscurely and irregularly lobed, nearer the apex, base often long-narrowed into the petiole, margins narrowly recurved, apex acute or obtuse. Inflorescence a ± flat, compact, terminal, racemose head, c. 5–8 cm diam, subtended by involucre bracts; bracts ± persistent, triangular-orbicular, reddish, 10–25 mm long, the innermost of which are the largest; rachis 1.0–1.5 cm long, tomentose, with 10–30 flowers in pairs; pedicels stout, 0.5–2.0 cm long, subtended by linear bracts, 1.0–1.5 cm long. Tepals scarlet to deep crimson red, rarely yellow, 1.5–2.5 cm long, linear, fleshy, at first cohering to form a tube, tapered into a narrowed, recurved neck below the limb, completely separating from the base, limb globular, c. 4 mm diam., becoming revolute. Anthers sessile at the base of the concave limbs. Nectar scales continuous, in a crescentic gland, nectar copious. Ovary glabrous; gynophore 1.0–1.5 cm long; style thick, longer than the perianth, stigmatic tip freed from limb at anthesis. Follicle pendulous, gynophore plus pedicel 1.5–3.5 cm long, body of follicle 3.5–6.5 cm long, woody, crescentic, persistent style 1.0–3.0 cm long, dehiscing along the adaxial suture. Seeds numerous, light brown, ovoid, wing terminal, seed and wing 25–35 mm long. Flowering & fruiting Nov.–Jun.

Tas. (BEL, KIN, TCH, TNM, TNS, TSE, TSR, TWE); endemic. Widespread and locally abundant on most dolerite mountains throughout the state, in montane and sub-montane forests, woodlands and shrubberies, occasionally forming ± pure stands, from sea-level to c. 1400 m alt.

A highly ornamental plant, relatively easily grown and maintained given appropriate attention. The yellow-flowered form, *T. truncata* f. *lutea*, occurs sporadically amongst populations of the typical form. The flowers are a clear, deep yellow and the leaves usually a little broader-spathulate than the red form.

## 11 GREVILLEA

*Grevillea* R.Br. ex Knight, *Cult. Prot.* xvii, 120 (1809) [as *Grevillia*].

Synonymy: see APC, APNI for complete list.

Prostrate to erect shrubs or, rarely, small trees (not in Tas.). Leaves alternate, simple or variously divided (not in Tas.), margins entire to serrate (not in Tas.). Inflorescence terminal or axillary, simple or compound racemes, cylindrical or secund in form, sometimes sub-globose (Tas.). Flowers in pairs, subtended by a common bract; bisexual. Perianth actinomorphic or zygomorphic; tepals in bud cohering in a straight tube, later slit on the abaxial side by the style, separating at least partially at anthesis; limb reflexed, globular. Stamens: filaments adnate to tepals; anthers monomorphic, minutely apiculate or inapiculate. Hypogynous glands usually integral or annular, rarely 0, or 4. Ovary shortly stipitate or sessile; style long, curved, protruding from the tube until the stigmatic tip is freed from the limb at anthesis, apex dilated into a pollen presenter; stigma small, terminal. Fruit a 1–2-seeded, follicle, opening along a single suture, rarely an achene (not in Tas.), glabrous or hairy; seed dust not present. Seeds with a small wing (Tasmanian species) or not.

A genus of 362 species largely confined to Australia (357 spp.; 355 endemic) but with 3 species (1 endemic) in New Guinea, 3 endemic species in New Caledonia and 1 species endemic in Sulawesi (Indonesia). *Grevillea* may prove to be polyphyletic with respect to *Hakea* and *Finschia* Warb. (see Weston 2007).

Key references: McGillivray & Makinson (1993); Makinson (2000a, b); Weston (2007).

1. Tepals white, with a sparse, rusty-brown to dull-white indumentum abaxially, 3–4 mm long 1 *G. australis*  
 1: Tepals pink to red, rarely greenish-white, 8–10 mm long 2 *G. rosmarinifolia*

**1 *Grevillea australis*** R.Br., *Trans. Linn. Soc. London* 10: 171 (1810) Southern *Grevillea*

*Grevillea tenuifolia* R.Br., *op. cit.*; *G. australis* var. *tenuifolia* (R.Br.) Meisn., *Prodr.* [DC.] 14(1): 360 (1856). *Grevillea australis* var. *brevifolia* Hook.f., *Hook. J. Bot. Kew Gard. Misc.* 6: 282 (1847). *Grevillea australis* var. *erecta* Hook.f., *op. cit.* *Grevillea australis* var. *linearifolia* Hook.f., *op. cit.* *Grevillea australis* var. *montana* Hook.f., *op. cit.* *Grevillea australis* var. *planifolia* Hook.f., *op. cit.* *Grevillea australis* var. *subulata* Hook.f., *op. cit.* *Grevillea stuartii* Meisn., *Linnaea* 26: 357 (1854), *nom. inval.* *Grevillea amplifica* F.Muell. ex Meisn., *Linnaea* 26: 358 (1854). *Grevillea amplicifolia* Meisn., *Prodr.* [DC.] 14(1): 355 (1856), *nom. inval.*

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 123, pl. 624 (1980); Jeanes, *Fl. Victoria* 3: 853, fig. 172j-k (1996); Kirkpatrick, *Alpine Tasmania* 47, fig. 19a (1997); McGillivray & Makinson, *Grevillea, Proteaceae: a taxonomic revision* 349 (1993); Weston, *Fl. Australia* 17A: 261, fig. 25a-d (2000); Harden, *Fl. New South Wales* 2, rev. edn: 61 (2002); Gilfedder et al., *The Nature of the Midlands* 122 (2003); Minchin, *Wildflowers of Tasmania – A Field Guide* 159, pl. 237 (2005); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 264 (2004); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 77 (2008).

A very variable shrub, 0.25–2.5 m high. Branches erect, spreading or procumbent, often prostrate, younger branches densely grey to rusty-brown tomentose, glabrescent, older branches greyish, often scaly. Leaves very variable, erect or spreading, evenly dispersed or sometimes crowded on short lateral branchlets; sessile or very shortly petiolate; lamina 0.5–2(–4) cm long, 1.5–2.5(–4) mm wide, narrow linear to narrow lanceolate, oblanceolate, linear-oblong, or narrow elliptical, flat or convex, discolorous, adaxial surface glabrous or sparsely silky-hairy, glabrescent, pale to dark green, abaxial surface grey-white silky-hairy, margins entire, narrowly revolute, or revolute to the midrib, apex acute-acuminate, mucronate, often pungent. Inflorescences small axillary, or terminal, sub-globose, umbel-like heads, ebracteate; rachis much abbreviated, 1.0–2.5 mm long, tomentose, with 4–20 flowers on slender pedicels 2–4 mm long; flowers fragrant. Tepals white, 3–4 mm long, sparsely rusty-brown to dull-white tomentose abaxially, particularly the limb, ± glabrescent, adaxial surface glabrous, caducous. Hypogynous gland forming a semi-circle, open on one side of the ovary. Ovary glabrous; gynophore c. 1 mm long. Follicle coriaceous, erect, gynophore plus pedicel 5–7 mm long, body of follicle inflated, 6–12 mm long, not opening flat on ripening. Seed ovoid, c. 3–5 mm long, surrounded by a very narrow wing which is elongated at one end. Flowering & fruiting almost throughout year.

Tas. (BEL, TCH, TNM, TNS, TSE, TWE); also NSW, Vic. Widespread but occasional in montane shrubberies, shrubby sub-montane heaths, open forests and riparian scrub; mostly on soils derived from sandstones or dolerite, from sea-level to c. 1000 m alt. Many of the numerous variations of this species have been accorded varietal or sub-specific status. Although these are quite distinctive and occupy widely differing habitats and environmental conditions, most are connected by intermediate forms.

**2 \* *Grevillea rosmarinifolia*** A.Cunn., *Geogr. Mem. New South Wales* 328 (1825) Rosemary *Grevillea*

*Illustrations:* Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 69, pl. 310 (1980); Jeanes, *Fl. Victoria* 3: 859, fig. 174a (1996); Harden, *Fl. New South Wales* 2, rev. edn: 51, 34a-b (2002); Richardson et al., *Weeds of the South-East, an Identification Guide for Australia* 350 (2006).

Shrubs, variable, 0.5–3.0 m high; usually densely branched, younger branches sparsely pubescent, glabrescent. Leaves often crowded or whorled, spreading to sub-erect, sessile; lamina 1.5–2.5(–4) cm long, 1–3 mm wide, linear to narrowly oblong-elliptic, margins entire, closely revolute, almost to the midrib, adaxial surface green, shining, lower surface loosely tomentose-pubescent but often obscured by the revolute margin, apex acute-acuminate, ± pungent. Inflorescence terminal, a decurved, loose, sub-umbelloid head; rachis 2–8 mm long, glabrous, with 4–12 flowers on reflexed pedicels, 3–5 mm long; flowers not fragrant. Tepals pink to red, rarely greenish-white, 8–10 mm long, strongly curved, abaxial surface glabrous, adaxial surface hairy, often strongly pouched at base on adaxial side; ± persistent. Hypogynous gland U-shaped. Ovary glabrous to villous on lower abaxial surface, gynophore thick, 0.7–1.4 mm long. Style glabrous or sparsely tomentose,

straight, persistent. Follicle glabrous, 8–10 mm long, ovoid-ellipsoid, not opening fully on ripening. Seed not seen. Flowering & fruiting Jul.-Feb.

Tas. (TSE, FUR); native in NSW, Vic. This species and many of its variable cultivars were introduced into Tasmania and extensively planted in parks and gardens as a hardy, easily maintained specimen and low hedge plant. Although slow to escape from cultivation it is currently appearing sporadically, and establishing, with other similar cultivars and forms, in some urban bush areas, road-sides and waste places.

Richardson et al. (2006) describe this plant and its various forms “as a serious threat to indigenous plants”. This is particularly so in mainland Australia, due to its ability to hybridise with other *Grevillea* species; in Tasmania, it is not known to occur within a significant distance of populations of the indigenous species, with which it may possibly hybridise.

## 12 HAKEA

*Hakea* Schrad. & J.C.Wendl., *Sertum Hannoveranum* 3: 27, t. 17 (1797).

Synonymy: *Conchium* Sm., *Trans. Linn. Soc. London* 4: 215 (1798).

Shrubs or trees. Leaves alternate, simple or compound (not in Tas.), margins entire or serrate (not in Tas.), terete or slightly flattened or flat. Inflorescences axillary clusters or racemes; involucre bracts present though usually quickly deciduous. Flowers in pairs, subtended by common bract or not; bisexual or functionally unisexual. Perianth zygomorphic; tepals in bud cohering in a straight, cylindrical tube, splitting entirely or later only slit on the adaxial side by the style, with a curved apical limb splitting to base and spreading at anthesis. Stamens: filaments adnate to tepals; anthers monomorphic, minutely apiculate or inapiculate. Hypogynous gland semicircular or curved, rarely 0. Ovary shortly stipitate; style long, curved, protruding from the tube on the abaxial side until the stigmatic tip is freed from the limb at anthesis, end of style dilated forming a discoid or conical pollen presenter; stigma small, protruding from centre of pollen presenter. Fruit a dehiscent, 2-seeded follicle, the valves dehiscent partly or completely along two sides, sometimes tardily, woody or coriaceous, glabrous (Tas.), seed dust absent. Seeds winged.

An Australian genus of 149 species with major centres of diversity in south-west Western Australia and eastern Australia.

Key references: WR Barker et al. (1999); RM Barker et al. (1999); Weston (2007).

Some Tasmanian species of *Hakea* are very difficult to separate, particularly with dried material. In particular, the *H. epiglottis* and *H. megadenia* groups require much further extensive field collections of flowering material with critical evaluation to clarify their status. It is often very difficult to separate and identify the entities within this complex.

- |   |                         |
|---|-------------------------|
| 1. Leaf lamina always flat  | 2                       |
| 1: Leaves ± triquetrous, or terete, with some ± flat leaves occasionally present  | 3                       |
| 2. Flowers cream-white, in small, loose racemes; leaf venation pinnate  | 9 <i>H. salicifolia</i> |
| 2: Flowers red-pink, in conspicuous, dense spherical pincushion-like heads; leaf venation longitudinal  | 10 <i>H. laurina</i>    |
| 3. Leaves triquetrous, with 3 conspicuous longitudinal veins  | 8 <i>H. ulicina</i>     |
| 3: Leaves nearly always terete, some flat leaves also occasionally present; longitudinal veins obscure  | 4                       |
| 4. Fruit recurved at the base, then incurved at the apex, as in 'S'-shape (sigmoidal); beak inflexed  | 5                       |
| 4: Fruit not or scarcely curved as in 'S'-shape; beak not inflexed  | 6                       |
| 5. Diffuse shrubs to c. 3 m; hypogynous gland in all flowers 0.1–0.5 mm high; fruit 1.4–1.8(–2.8) cm long, 0.6–1.3 cm wide                                | 6 <i>H. epiglottis</i>  |
| 5: Erect shrubs or small trees to 3–5(–7) m high; hypogynous gland in both ♂ and ♀ flowers 0.6–0.9 mm high; fruit (1.8–)2.2–2.5) cm long, 0.9–1.2 cm wide | 7 <i>H. megadenia</i>   |

6. Fruit at least 3x as long as broad; apex a slender, much elongated beak; basal spurs conspicuous **5 *H. teretifolia***  
 6: Fruit scarcely 2x as long as broad; apical beak absent or very short; basal spurs absent 7
7. Fruit (0.8–)1–1.2 cm long, 0.3–0.6 cm wide; valves of fruit relatively thin, ± coriaceous **4 *H. microcarpa***  
 7: Fruit 1.5–3.5 cm long, 2.0–3.5 cm wide; valves thick, woody 8
8. Leaves 5–12(–15) cm long **1 *H. lissosperma***  
 8: Leaves 1.5–4(–6) cm long 9
9. Leaves rigid, terete, relatively dark green, apex acute, pungent when green; perianth white, often pink, tube 4.5–8.0 mm long; beak of fruit bluntly pointed ± upturned, often with 2 short, brittle spurs at apex **2 *H. decurrens***
- 9: Leaves relatively soft, often somewhat flattened, pale green, apex acute but scarcely pungent when green; perianth yellow, tube 2–3 mm long; beak of fruit small, inconspicuous, spurs absent **3 *H. nodosa***

**1 *Hakea lissosperma*** R.Br., *Trans. Linn. Soc. London* 10: 180 (1810) **Mountain Needlebush**

*Hakea acicularis* var. *lissocarpa* (R.Br.) Benth., *Fl. Austral.* 5: 515 (1870). *Hakea tenuifolia* var. *lissocarpa* (R.Br.) Domin, *Biblioth. Bot.* 22(89): 592 (1930). *Hakea sericea* var. *lissocarpa* (R.Br.) Ewart, *Fl. Victoria* 407 (1931).

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3, 608 fig. 129e (1967); Jeanes, *Fl. Victoria* 3: 875, fig. 177e (1996); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 265 (2004); Weston, *Fl. Australia* 17B: 58, fig. 5k-m, pl. 4 (1999); Harden, *Fl. New South Wales* 2, rev. edn: 75 (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 265 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 161, pl. 239 (2005); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 61 (2008).

Monoecious shrubs or small trees, 2–8 m high. Branches erect, younger branches sparsely and minutely pubescent. Leaves very shortly petiolate, spreading, sub-erect or curved and ascending; lamina 5–12(–15) cm long, 1.5–2.5 mm diam., terete, rigid, not grooved, dark green, dull, glabrous or young leaves sparsely pubescent, apex acute, pungent. Inflorescences 3–8(–12)-flowered; bracts sparsely pubescent; rachis a small rounded projection, densely white-tomentose; pedicels 3–6 mm long, tomentose-pubescent. Tepals white, 4–6 mm long, tube thick, narrow-lanceolate, recurved, abaxial surface glabrous to very sparsely pubescent, glabrous adaxially. Hypogynous gland thick, truncate to crenulate. Ovary on a very short gynophore; style terminating in a flat, oblique disc. Follicle obliquely ellipsoid, dark purplish to grey-brown, 2.0–3.5 cm long, 2–3 cm wide, unopened; valves thick, woody, spreading 30–60°, surfaces wrinkled, rugose or tuberculate, apical beak scarcely prominent, transverse, horns absent or small. Seed and wing blackish-brown, 12–15 mm long, wing extending c. ½ way along one side of seed. Flowering Oct.–Jan.; fruiting Oct.–May.

Tas. (BEL, FUR, TCH, TNM, TNS, TSE, TSR, TWE); also SA, Vic. Widespread and locally abundant in wet forests and sub-montane shrubberies on most mountains of the west, south-west and eastern and north-eastern highlands, sometimes forming almost pure, small stands, from c. 100 to 1200 m alt.

**2 *Hakea decurrens*** R.Br., *Suppl. Prodr. Fl. Nov. Holl.* 27 (1830) **Needlebush**

*Illustrations:* Jeanes, *Fl. Victoria* 3: 875, fig. 177e-g (1996); Weston, *Fl. Australia* 17B: 62, fig. 6a-e,h (1999); Harden, *Fl. New South Wales* 2, rev. edn: 73 (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 264 (2004); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 149 (2008).

Monoecious shrubs or small trees, 0.5–5.0 m high. Younger branches appressed-sericeous to tomentose, and mostly glabrescent but sometime ± persisting-tomentose. Leaves sometimes crowded, widely spreading or sub-erect; lamina 1.5–4(–6) cm long, 1.0–1.5 mm diam., terete, rigid, grooved abaxially, dark green, glabrous, apex acuminate, pungent. Inflorescences 4–8-flowered; bracts minute, light brown, apex minutely ciliolate; rachis 0.5–2.8 mm long, densely tomentose; pedicels 2–4 mm long, sericeous-tomentose to appressed-pubescent. Tepals white or clear pink, 4.5–8.0 mm long, tube linear, slender, recurved, both surfaces glabrous. Hypogynous gland curved, crenulate. Ovary on very short gynophore; style terminating in an oblique disc. Follicle obliquely ovate to broadly ovate, 2.5–3.5 cm long, 2.0–3.5 cm wide, unopened;

valves thick, woody, spreading to c. 45°, grey-brown, smooth, or deeply wrinkled or sometimes coarsely tuberculate, often eroded, beak of fruit bluntly pointed, ± upturned, smooth or ± pustulate, horns brittle, to c. 5 mm long. Seed and wing blackish-brown, 15–20 mm long, wing extending only down one side of seed. Flowering & fruiting Aug.-Jun.

Tas. (FUR, KIN, TNS, TSE); also NSW, Vic. In Tasmania, confined to the Islands of the Furneaux Group, including Flinders and Cape Barren Islands. Scattered to locally common in coastal sandy heaths, open shrubberies and woodlands, from sea-level to c. 300 m alt. The species has often been planted as an ornamental plant; however, its main 'virtue' is as an almost impenetrable hedge plant and a refuge for nesting birdlife.

There are 3 subspecies, 2 of which occur in Tasmania; they are separated predominantly on fruit characteristics and the indumentum of the younger branches, leaves and the pedicels.

- |  |                              |
|--|------------------------------|
| 1. Branchlets with appressed hairs, soon glabrescent, or persisting at least until flowering; red-brown wood zone of follicle valves inner face 1.0–2.5 mm wide near seed base | 2a subsp. <i>physocarpa</i>  |
| 1. Branchlets with long-persistent tomentose hairs; red-brown wood-zone of follicle valves inner face 3–5 mm wide near seed base   | 2b subsp. <i>platytaenia</i> |

**2a *Hakea decurrens* subsp. *physocarpa*** W.R.Barker, *J. Adelaide Bot. Gard.* 17: 193 (1996) *Bushy Needlebush*

*Hakea acicularis* sensu G.Bentham, *Fl. Austral.* 5: 514 (1870); J.D.Hooker, *Bot. Antarct. Voy. III. (Fl. Tasman.)* 1: 324 (1859), non. (Sm. ex Vent.) Knight. (1809). *Hakea sericea* sensu W.M.Curtis, *The Student's Flora of Tasmania* 3: 610 (1967), non Schrad. & J.C.Wendl. (1796).

*Illustrations:* Jeanes, *Fl. Victoria* 3: 875, fig. 177g (1996); Weston, *Fl. Australia* 17B: 62, fig. 6a-e (1999); Harden, *Fl. New South Wales* 2, rev. edn: 73, fig. 16b (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 149 (2008).

Shrubs or small trees 0.5–5.0 m high. Younger branches sparsely to densely tomentose or appressed-sericeous. Leaves quickly glabrescent. Pedicels sparsely to densely tomentose to appressed-sericeous. Follicle valves with red-brown zone of inner face 1.0–2.5 mm wide at the base of the seed.

Tas. (FUR, KIN, TNS, TSE); also NSW, Vic. Scattered to locally common in coastal sandy heaths, open shrubberies and woodlands, from sea-level to c. 200 m alt. Collections from the Tasmanian mainland are presumably from either planted specimens or escapees.

**2b *Hakea decurrens* subsp. *platytaenia*** W.R.Barker, *J. Adelaide Bot. Gard.* 17: 196 (1996) *Coast Needlebush*

*Illustrations:* Jeanes, *Fl. Victoria* 3: 875, fig. 177e (1996); Weston, *Fl. Australia* 17B: 62, fig. 6h (1999); Harden, *Fl. New South Wales* 2, rev. edn: 73 fig.16c (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004).

Small shrubs 0.3–2.0 m high. Younger branches moderately to densely tomentose, rarely appressed-sericeous. Leaves sparsely tomentose, some hairs appressed, soon glabrescent. Pedicels sparsely appressed-pubescent. Follicle valves with red-brown zone of inner face 3–5 mm wide at the base of the seed.

Tas. (FUR); also NSW, Vic. Occurs on Flinders and Cape Barren Islands; local in sandy heaths, open shrubberies and forests, from sea-level to c. 300 m alt.

**3 *Hakea nodosa*** R.Br., *Trans. Linn. Soc. London* 10: 179 (1810) *Yellow Needlebush*

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 608, fig. 129d (1967); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 18, pl. 11 (1980); Jeanes, *Fl. Victoria* 3: 875, fig. 177d (1996); Weston, *Fl. Australia* 17B: 51, fig. 4l (1999); Kirkpatrick & Harris, *The Disappearing Heath Revisited* 99, fig. 16(1) (1999); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 267 (2004); Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 95 (2008).

Monoecious shrubs from 1–4 m high. Branches erect, slender, glabrous or the younger branches minutely silky-pubescent. Leaves crowded, sessile, sub-erect; lamina 1.5–4(–6) cm long, 1.0–1.5 mm wide, terete, but sometimes ± flattened and grooved at the base, sub-rigid, pale green, dull, glabrous, apex mucronate-acute

but scarcely pungent. Inflorescences 3–6-flowered; bracts minute, pubescent; rachis a minute projection, tomentose; pedicels 3–4 mm long, pubescent. Tepals yellow, 2–3 mm long, tube slender, narrow-lanceolate, recurved, both surfaces glabrous. Hypogynous gland semi-circular, truncate. Ovary sessile; style terminating in a large, flat disc. Follicle obliquely ellipsoid to almost spherical, 1.5–3.5 cm long, 2–3 cm wide, unopened; valves thick, woody, spreading to c. 30°, grey to purplish-brown, wrinkled to rugose or almost smooth, apical beak obscure, horns absent. Seed and wing dark grey to brown, 10–23 mm long, wing broadly decurrent along most of one side of seed, ± narrowly along the opposite side. Flowering Oct.-May; fruiting Apr.-Jul.

Tas. (BEL, FUR, TNM); also SA, NSW, Vic. Confined to the north-east of the state, including Flinders Island and the Furneaux group; occasional in damp heaths and sedgy areas, and in heathy areas in light forest and along creeks and drainage channels, from sea-level to c. 250 m alt.

#### 4 *Hakea microcarpa* R.Br., *Trans. Linn. Soc. London* 10: 182 (1810)

*Smallfruit Needlebush*

*Hakea microcarpa* var. *bathurstiana* Meisn., *Prodr.* [DC.] 14(1): 400 (1856). *Hakea microcarpa* var. *tasmanica* Meisn., op. cit.

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 608, fig. 129c (1967); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 128, pl. 649 (1980); Jeanes, *Fl. Victoria* 3: 877, fig. 178c (1996); Kirkpatrick, *Alpine Tasmania* 47, fig. 19b (1997); Weston, *Fl. Australia* 17B: 86, fig. 10q-s; pl. 8 (1999); Harden, *Fl. New South Wales* 2, rev. edn: 72 (2002); Gilfedder et al., *The Nature of the Midlands* 122 (2003); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004); Minchin, *Wildflowers of Tasmania – A Field Guide* 161, pl. 240 (2005).

Monoecious, usually much-branched shrubs, 0.5–2.0 m high. Younger branches glabrous or sparsely appressed-pubescent, glabrescent. Leaves sessile, erect to ascending; lamina terete or some flat, usually as juvenile or in response to fire or other injury. Terete leaves 2–6(–8) cm long, 1.5–2.0 mm diam., dark green, ± shining, apex long-acuminate, pungent; flat leaves usually randomly dispersed, either a few amongst the terete leaves or whole branches affected, shortly petiolate, erect; lamina 2–5(–10) cm long, 3–6 mm wide, narrowly elliptic, concolorous, adaxial surface smooth, abaxial surface with midrib prominent, margins recurved, sometimes infolded and almost terete at the apex, apex acuminate, pungent. Inflorescences crowded, 5–20-flowered; bracts dark brown, apex minutely ciliolate; rachis c. 2 mm long, shortly tomentose; pedicels 3–5 mm long, glabrous. Perianth white, both surfaces glabrous; tube 2.5–3.5 mm long, tepals linear, slender, strongly recurved. Hypogynous gland short, thick, truncate. Ovary on a very short gynophore; style terminating in a broad, oblique, flat disc. Follicle obliquely ovoid-ellipsoid, presented at right angle to stem, (0.8–)1–1.2 cm long, 0.3–0.6 cm wide, unopened; valves 1.5–3.0 mm thick, coriaceous at first, later semi-woody when dry, opening widely, >180°, pale to dark brown, smooth to ± rugose, apical beak short, often with ± persistent style, horns short, ± caducous. Seed and wing brown, 6–10 mm long, wing extending partly along one side of seed. Flowering Sep.-Jan.; fruiting Oct.-May.

Tas. (BEL, FUR, TCH, TNM, TNS, TSE, TSR, TWE); also Qld, NSW, Vic. Widespread and locally frequent in montane shrubberies, open forests and riparian scrub, usually on heavier soils, from sea-level to c. 1000m alt.

#### 5 *Hakea teretifolia* (Salisb.) Britten, *J. Bot.* 54: 60 (1916), subsp. *hirsuta* (Endl.) R.M.Barker, *J. Adelaide Bot.*

*Gard.* 13: 105 (1990)

*Dagger Needlebush*

*Banksia teretifolia* Salisb., *Prodr. Stirp. Chap. Allerton* 51 (1796) [basionym for *Hakea teretifolia*]. *Hakea pugioniformis* β R.Br., *Trans. Linn. Soc. London* 10: 179 (1810); *Hakea pugioniformis* β *hirsuta* Endl., *Gen. Pl. Suppl.* 4(2): 85 (1848). *Hakea pugioniformis* var. *sericea* sensu J.D.Hooker, *Bot. Antarct. Voy. III. (Fl. Tasman.)* 1: 324 (1859), non. Endl. (1848). *Hakea pugioniformis* sensu G.Bentham, *Fl. Austral.* 5: 506 (1870); L.Rodway, *Fl. Tasman.* 169 (1903), non. Cav. (1800).

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 608, fig. 129a (1967); Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 19, pl. 13 (1980); Jeanes, *Fl. Victoria* 3: 877, fig.178e (1996); Kirkpatrick &



Harris, *The Disappearing Heath Revisited* 98, fig. 15(3) (1999); Harden, *Fl. New South Wales* 2, rev. edn: 71 fig.9b (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004) Simmons et al., *A Guide to Flowers and Plants of Tasmania*, ed. 4, 149 (2008).

Erect or spreading monoecious shrubs 1–4 m high. Branches often much interwoven and intricate, younger branches tomentose-pubescent, glabrescent by flowering. Leaves sessile, rarely some juvenile leaves ± flat, shallowly grooved along the adaxial surface, straight and spreading to curved and ascending; lamina terete, 1–5(–8) cm long, 1–2 mm diam., dull green, apex acuminate, pungent. Inflorescences densely crowded, 10–30-flowered; bracts large, dark brown, apex minutely ciliolate; rachis c. 2 mm long, densely tomentose; pedicels 2–3 mm long, densely tomentose, with some hairs appressed. Tepals dull white to 'dirty' cream-brown, or sometimes pale pink, 3.5–5.5 mm long, slender, recurved, abaxial surface densely tomentose, with some hairs appressed, adaxial surface glabrous. Hypogynous gland cupular. Ovary sessile; style long, almost straight, terminating in a slightly convex disc. Follicle narrowly ovate to lanceolate, enlarged at the base, tapering to a long, often ± pungent, curved beak, 1.5–3.0 cm long, 0.8–1.3 cm wide, unopened; valves thick, woody, spreading to c. 45°, brown with black markings, longitudinally wrinkled and with 2–4 prominent horns just above the base. Seed and wing black, 10–15 mm long, wing extending ½ way along one side of seed. Flowering & fruiting Oct.–May.

Tas. (BEL, FUR, TCH, TNS, TSE); also WA, NT, SA, Qld, NSW, Vic. Widespread and occasional to frequent in damp heaths and wetter, scrubby-heathy areas in open forests, chiefly in coastal districts, from sea-level to c. 500 m alt. The other subspecies, *Hakea teretifolia* subsp. *teretifolia* (from near coastal NSW), differs from *H. teretifolia* subsp. *hirsuta* by having the pedicels and perianth vested with densely appressed-sericeous hairs.

#### 6 *Hakea epiglottis* Labill., *Nov. Holl. Pl.* 1: 30, t.40 (1805)

*Beaked Needlebush*

*Conchium epiglottis* (Labill.) Willd., *Enum. Pl.* [Willdenow] 1:141 (1809). *Conchium teretifolium* C.F.Gaertn., *Supplementum Carpologicae* 3: 217, t. 219 (1807). *Hakea rugosa* sensu W.M.Curtis, *The Student's Flora of Tasmania* 3: 609 (1967), non R.Br. (1810), p.p. *Hakea rostrata* sensu W.M.Curtis, *The Student's Flora of Tasmania* 3: 609 (1967), non F.Muell. ex Meisn. (1854), p.p.

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3, 608 fig. 129b (1967); Stones & Curtis, *The Endemic Flora of Tasmania* 6: t. 253, no. 155 (1978); Gilfedder et al., *The Nature of the Midlands* 122 (2003); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 265 (2004).

Small bisexual or functionally unisexual, diffusely branched shrubs to c. 3 m high. Younger branches sparsely tomentose, glabrescent. Leaves sessile, erect to ascending; lamina 1.5–7(–10) cm long, 1.5–2.0 mm diam., terete, rigid, slightly narrowed at the base, dull dark-green, apex mucronate, pungent. Inflorescences: ♂ plant 3–6 flowered; ♀ plant 1–3 flowered; bracts minute; rachis a small projection, c. 1 mm long; pedicels 2.5–4.0 mm long, silky-pubescent. Perianth creamy-yellow, appressed silky-pubescent throughout or pale brown appressed-pubescent on claw, rusty brown hairs on limb; tube 3–5 mm long; tepals narrow-linear, recurved. Hypogynous gland semi-annular, truncate, 0.1–0.5 mm high. Ovary on a short gynophore; style long, terminating in an oblique, almost flat disc, concave in ♂ flowers, with a short, rounded protuberance in ♀ flowers. Follicle sigmoidal, 1.4–1.8(–2.8) cm long, 0.6–1.3 cm wide, unopened; valves thick, woody, spreading to c. 45°, grey-brown with darker markings, smooth to wrinkled-rugose, beak shortly inflexed to erect, with or without 2 small horns just below beak. Seed and wing black, 8–12 mm long, wing extending partly down one side of seed. Flowering Jun.–Dec.; fruiting Aug.–Apr.

Tas. (BEL, FUR, KIN, TCH, TSE, TSR, TWE); endemic. Widespread and frequent in wet heaths, damp shrub-beries and open forests, from sea-level to c. 1100 m alt.

There are two subspecies recognised. The status of these subspecies is unclear. The sole character separating them appears to be the colour of the indumentum of the perianth. Furthermore, the status of *H. megalodonia*, within this complex is also open to some question, the dimensions of the hypogynous gland being the sole character currently separating this taxon from *H. epiglottis*. Extensive field collections from popula-

tions throughout the state, followed by critical research and evaluation will be required to clarify the status of these taxa.

1. Perianth claw and limb with whitish or cream-yellow appressed, pubescent hairs; some sparse, pale brown or rusty-brown hairs sometimes present 6a subsp. *epiglottis*  
 1: Perianth claw with yellow-white, appressed, pubescent hairs; limb hairs rusty brown 6b subsp. *milliganii*

**6a *Hakea epiglottis*** Labill. subsp. *epiglottis*

*Beaked Needlebush*

*Illustrations* (as *H. epiglottis*): Curtis, *The Student's Flora of Tasmania* 3: 608, fig. 129b (1967); Stones & Curtis, *The Endemic Flora of Tasmania* 6: t. 253, no. 155 (1978); Gilfedder et al., *The Nature of the Midlands* 122 (2003); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 265 (2004).

Perianth claw and limbs with whitish or cream-yellow appressed pubescent hairs; some sparse, pale brown or rusty-brown hairs sometimes present.

Tas. (BEL, FUR, KIN, TCH, TNM, TSE, TSR, TWE); endemic. Widespread and frequent in wet heaths, damp shrubberies and open forests, from sea-level to c. 1100 m alt.

**6b *Hakea epiglottis*** subsp. *milliganii* (Meisn.) R.M.Barker, *Fl. Australia* 17B: 394 (1999)

*Western Beaked Needlebush*

*Hakea milliganii* Meisn., *Prodr.* [DC.] 14(1): 395 (1856).

Perianth claw with yellow-white, appressed, pubescent hairs; limb hairs rusty-brown.

Tas. (KIN, TCH, TWE); endemic. Scattered in the west of the state and represented by a very limited number of collections, i.e. from Mt Darwin, Trial Harbour and Kelly Basin.

**7 *Hakea megadenia*** R.M.Barker, *Aspects of Tasmanian Botany: A tribute to Winifred Curtis* 83 (1991)

*Autumn Needlebush*

*Hakea rostrata sensu* L.Rodway, *Fl. Tasman.* 169 (1903); W.M.Curtis, *The Student's Flora of Tasmania* 3: 609 (1967), *non* F.Muell. ex Meisn. (1854), *p.p.* *Hakea rugosa sensu* W.M.Curtis, *The Student's Flora of Tasmania* 3: 609 (1967), *non* R.Br. (1810), *p.p.*

Diffuse dioecious shrubs or small trees, 3–5(–7) m high. Younger branches densely appressed-pubescent, glabrescent. Leaves spreading to strongly curved-ascending; lamina 1.5–5(–12) cm long, 1–2(–3) mm diam., terete or, rarely, some flat, usually as juvenile or in response to fire or other injury, flat leaves usually randomly dispersed and very variable in size and shape, dark green, apex mucronate, pungent. Inflorescences: ♂ and ♀ 2–6(–12)-flowered; bracts dark brown, appressed-tomentose, apex ciliolate; rachis 1–3 mm long, densely villous; pedicels 2–5 mm long, densely appressed silky-pubescent. Tepals white, 2.5–4.5 mm long, linear, slender, recurved, abaxial surface densely appressed silky-pubescent. Hypogynous gland trilobed, 0.6–0.9 mm long in both ♂ and ♀ flowers. Style long, recurved, terminating in an oblique to lateral disc. Follicle sigmoid, (1.8–)2.2–2.5 cm long, 0.9–1.2 cm wide, unopened; valves thick, woody, spreading to c. 25–30°, pale brown with darker markings, longitudinally wrinkled-rugose, beak short, inflexed, horns obscure. Seed and wing black, 10–12 mm long, wing extending narrowly and only partly down one side of seed. Flowering & fruiting Apr.–Sep.

Tas. (KIN, TCH, TWE); endemic. Locally common in coastal shrubberies, open forests and riverine scrub in the north-east, east and south-east of the state and the Furneaux Islands, from sea-level to c. 550 m alt.

**8 *Hakea ulicina*** R.Br., *Suppl. Prod. Fl. Nov. Holland* 29 (1830)

*Furze Needlebush*

*Illustrations*: Cochrane et al., *Flowers and Plants of Victoria and Tasmania* 18, pl. 12 (1980); Jeanes, *Fl. Victoria* 3: 881, fig. 179c (1996); Kirkpatrick & Harris, *The Disappearing Heath Revisited* 99, fig. 16(3) (1999); Harden, *Fl. New South Wales* 2, rev. edn: 76 (2002); Whiting et al., *Tasmania's Natural Flora*, ed. 1, 269 (2004).

Small monoecious shrubs, 1.0–1.5 m high. Branches spreading, younger branches appressed-pubescent. Leaves sessile, patent; lamina 1.5–7(–10) cm long, 2–3 mm wide, narrowly linear to linear-lanceolate, twisted 90° at base, flat or ± trigonous, rigid, prominently 3-veined, concolorous, dark green, margins thickened, prominent, apex acute-pungent. Inflorescences 3–10-flowered; bracts with minutely ciliolate apices; rachis c. 1.5 mm long, tomentose; pedicels 1–2 mm long, glabrous. Tepals cream-white, 2–3 mm long, slender, recurved, both surfaces glabrous. Hypogynous gland ovoid. Ovary on a very short gynophore; style long, terminating in a straight, elongated cone, disc oblique. Follicle ovate to obliquely ovate, 1.5–2.5 cm long, 8–15 mm wide, unopened; valves thick, woody, spreading to c. 30°, pale to dark brown, often with black markings, beak short, apiculate, horns absent. Seed and wing black, 10–15 mm long, wing extending ½ way along one side of seed. Flowering Sep.–Dec.; fruiting Sep.–May.

Tas. (FUR); also NSW, Vic. In Tasmania occurs only on the islands of the Furneaux group, including Flinders and Cape Barren Islands; locally common on damp soils in sandy heaths, shrubby heathlands and coastal, open woodland, from sea-level to c. 150 m alt. Listed as Vulnerable under The Tasmanian Threatened Species Protection Act 1995.

**9 \* *Hakea salicifolia*** (Vent.) B.L.Burtt subsp. **salicifolia** *Bull. Misc. Inform. Kew* 1941: 33 (1941) *Willowleaf Hakea*  
*Embothrium salicifolium* Vent., *Descr. Pl. Nouv.* 1: 8, t. 8 (1800). *Conchium salicifolium* C.F.Gaertn., *Suppl. Carp.* 2: 217, t. 219 (1807).

*Illustration*: Harden, *Fl. New South Wales* 2, rev. edn: 76 (2002).

Tall monoecious shrubs or small trees to c. 4 m. Young branches sparsely silky-hairy to glabrous. Leaves alternate, spreading to sub-erect; petioles 3–5 mm long; lamina 5–12 cm long, 5–20 mm wide, narrow-elliptic to lanceolate, concolorous, pale green, occasionally ± glaucous, lateral veins pinnate, acute, obscure, margins entire, apex acute. Inflorescences 10–20-flowered; rachis 1.0–1.5 mm long; pedicels 5–7 mm long, glabrous. Tepals white, 3–5 mm long, linear, recurved, glabrous. Ovary sessile; style long, recurved-coiled; terminating with an oblique disc. Follicle ovoid-spherical, 2.0–2.3 cm long, 1.3–3.0 cm wide, unopened; valves thick, woody, spreading to c. 30°, grey-brown, covered with rounded, black-tipped hemispherical warts, beak slightly upturned, horns small. Seed and wing black, 15–20 mm long, wing extending ½ way along one side of seed. Flowering & fruiting Sep.–Nov.

Tas. (TSE, TNS); native to NSW. Doubtfully naturalised in Tasmania and known from isolated escapes from cultivation, e.g. at Sandy Bay, near Gowrie Park and Ulverstone. Further observations and collections are necessary to monitor the potential naturalisation of this taxon. The other subspecies, *H. salicifolia* subsp. *angustifolia* (A.A.Ham) W.R.Barker is characterised by its narrower (4–7 mm wide), leaves.

**10 \* *Hakea laurina*** R.Br., *Suppl. Prod. Fl. Nov. Holland* 29 (1830)

*Pincushion Hakea*

*Hakea eucalyptoides* Meisn., in J.G.C. Lehmann, *Pl. Preiss.* 1: 573 (1845).

*Illustrations*: Weston, *Fl. Australia* 17B: 163, fig. 22g; pl. 19 (1999); Richardson et al., *Weeds of The South-East* 351 (2006).

Erect monoecious shrubs or small trees, 3–6 m high. Younger branches ± pendulous, sparsely tomentose, glabrescent. Leaves alternate, spreading to sub-erect; petiole 1–2 cm long; lamina 7–20 cm long, narrowly obovate-elliptic, both surfaces rusty-tomentose at first, soon glabrescent, concolorous, olive-green, base long-attenuated into petiole, margins entire, apex blunt-apiculate. Inflorescences dense spherical clusters of 100–200 flowers; bracts large, concave-imbricate, glabrous or the upper margins ciliolate; rachis spherical, densely white-pubescent. Tepals deep pink-red, 10–12 mm long, slender, linear, recurved, glabrous. Hypogynous gland v-shaped. Ovary ± sessile; style long, straight. Follicle obliquely ovate-elliptic, 2.0–3.8 cm long, 15–20 mm wide, unopened; valves thick, woody, spreading to c. 30°, tan-brown with darker markings, apical beak apiculate, scarcely prominent, horns absent. Seed and wing black, 15–25 mm long, wing extending down both sides of the seed and narrowly around the base. Flowering & fruiting May–Dec.

Tas. (TSE); also naturalised in SA, native to SW WA. Barely naturalised in Tasmania, eg. at Conningham, but occasionally found as a garden escape, usually in disturbed urban bushland in the vicinity of planted garden specimens. Further observations and collections are necessary to monitor the potential naturalisation of this taxon. A popular ornamental species that is widely planted and admired for the pincushion-like inflorescences; the pink-red perianth contrasting with the emergent creamy-white styles.

## REFERENCES

- ALA (Atlas of Living Australia) <http://www.ala.org.au/>
- 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/>
- Barker RM (1991) Towards a Revision of the *Hakea epiglottis* Labill. (Proteaceae) Complex in Tasmania. *Aspects of Tasmanian Botany A Tribute to Winifred Curtis*. pp. 79–84. (Royal Society of Tasmania, Hobart, Tasmania)
- Barker RM, Haegi L, Barker WR (1999) *Hakea* (Proteaceae). *Flora of Australia* **17B** 31–168.
- Barker WR, Barker RM, Haegi L (1999) Introduction to *Hakea* (Proteaceae). *Flora of Australia* **17B** 1–30.
- Bennett EM (1995) *Conospermum* (Proteaceae). *Flora of Australia* **16** 224–271.
- Crisp MD, Weston PH (1995) *Telopea* (Proteaceae). *Flora of Australia* **16** 386–390.
- Curtis WM (1967) Proteaceae. *The Student's Flora of Tasmania* **3** 597–616.
- Foreman DB (1995) *Isopogon* (Proteaceae). *Flora of Australia* **16** 194–223.
- George AS (1999) *Banksia, Dryandra* (Proteaceae). *Flora of Australia* **17B** 175–363.
- George AS, Hyland BPM (1995) *Orites* (Proteaceae). *Flora of Australia* **16** 346–352.
- IPNI (International Plant Name Index) <http://www.ipni.org> or <http://www.us.ipni.org>
- Jeanes JA, Makinson RO, Forman DB, Barker RM, Barker WR & Haegi L. (1996) Proteaceae. *Fl. Victoria* **3** 830–887.
- Makinson RO (2000a) Introduction to *Grevillea* (Proteaceae). *Flora of Australia* **17A** 1–20.
- Makinson RO (2000b) *Grevillea* (Proteaceae). *Flora of Australia* **17A** 20–506.
- Mast AR, Theile K (2007) The transfer of *Dryandra* R.Br. to *Banksia* L.f. (Proteaceae). *Australian Systematic Botany* **20** 63–71.
- McCarthy P (Ed.) (1995) Elaeagnaceae, Proteaceae 1. *Flora of Australia* **16**.
- McGillivray DJ, Makinson RO (1993) *Grevillea: Proteaceae*. 465 pp. (Melbourne University Press: Melbourne)
- NVA (Natural Values Atlas) (Department of Primary Industries and Water: Hobart) <https://www.naturalvaluesatlas.tas.gov.au/>
- Orchard AE (1984) The Tasmanian Species of *Persoonia* Smith (Proteaceae). *Brunonia* **6(2)** 217–250.
- Richardson FJ, Richardson RG, Shepherd RCH (2006) *Weeds of the South-East, an Identification Guide for Australia*. (RG & FJ Richardson: Meredith, Victoria)
- Telford IRH (1995) *Agastachys, Cenarrhenes* (Proteaceae). *Flora of Australia* **16** 131–133.
- Weston PH (1995a) Proteaceae subfamily 1 Persoonioideae. *Flora of Australia* **16** 47–125.
- Weston PH (1995b) Proteaceae subfamily 2 Bellendenoideae. *Flora of Australia* **16** 125–127.
- Weston PH, Harden GJ, Mackey D, Crisp MD, Makinson RO, Barker RM, Barker WR, Haegi L (2002) Proteaceae. *Flora of New South Wales* **2**, rev. edn: 2–86.
- Weston PH (2007) Proteaceae. In K Kubitzki (Ed) *The Families and Genera of Vascular Plants: IX Flowering Plants – Eudicots – ... Proteales ....* pp. 364–404. (Springer-Verlag: Berlin)
- Weston PH, Barker NP (2006) A new suprageneric classification of Proteaceae, with an annotated checklist of genera. *Telopea* **11** 314–344.
- Wilson AJG (Ed.) (1999) Proteaceae 2. *Flora of Australia* **17A**.

Wilson AJG (Ed.) (2000) Proteaceae 3. *Flora of Australia* **17B**.

Wilson AJG, Hewson HJ, Mowatt J (1995) *Lomatia* (Proteaceae). *Flora of Australia* **16** 374–382.

**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

<i>Acidonia</i> .....	4
<i>Agastachys</i> .....	7, <b>8</b>
<i>Agastachys odorata</i> .....	<b>8</b>
<i>Anopterus</i> .....	9
<i>Anopterus glandulosus</i> .....	9
Autumn Needlebush.....	26

### B

<i>Banksia</i> .....	1, 11, <b>13</b> , 14
<i>Banksia australis</i> .....	15
<i>Banksia australis</i> var. <i>depressa</i> .....	15
<i>Banksia depressa</i> .....	15
<i>Banksia depressa</i> var. <i>subintegra</i> .....	15
<i>Banksia gunnii</i> .....	15
<i>Banksia insularis</i> .....	15
<i>Banksia integrifolia</i> .....	14
<i>Banksia integrifolia</i> subsp. <i>compar</i> .....	14
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i> .....	<b>14</b>
<i>Banksia integrifolia</i> subsp. <i>monticola</i> .....	14
<i>Banksia marginata</i> .....	14, <b>15</b>
<i>Banksia media</i> .....	15
<i>Banksia patula</i> .....	15
<i>Banksia serrata</i> .....	14, <b>15</b>
<i>Banksia teretifolia</i> .....	24
Banksieae.....	11
Banksiinae.....	11
Beaked Needlebush.....	25, 26
<i>Bellenden</i> .....	<b>3</b>
<i>Bellenden montana</i> .....	<b>3</b>
Bellendenoideae.....	<b>3</b> , 4
Bushy Needlebush.....	23

### C

<i>Cenarrhenes</i> .....	8, <b>9</b>
<i>Cenarrhenes nitida</i> .....	<b>9</b>
<i>Cenarrhenes</i> .....	9
Coast Banksia.....	14
Coast Needlebush.....	23
<i>Conchium</i> .....	21
<i>Conchium epiglottis</i> .....	25
<i>Conchium salicifolium</i> .....	27
<i>Conchium teretifolium</i> .....	25
Conospermeae.....	8
Conosperminae.....	8
<i>Conospermum</i> .....	1, 8, <b>9</b>
<i>Conospermum hookeri</i> .....	<b>10</b>
<i>Conospermum taxifolium</i> var. <i>hookeri</i> .....	10
<i>Conospermum taxifolium</i> var. <i>leianthum</i> .....	10
Creeping Geebung.....	6

### D

Dagger Needlebush.....	24
<i>Drimys intermedia</i> .....	6
<i>Drimys muelleri</i> .....	6
<i>Dryandra</i> .....	13, 14

### E

Embothriaceae.....	11
Embothriinae.....	11
<i>Embothrium</i> .....	2
<i>Embothrium salicifolium</i> .....	27
<i>Embothrium tinctorium</i> .....	17
<i>Embothrium truncata</i> .....	18
Escalloniaceae.....	9

### F

<i>Finschia</i> .....	19
Forest Lomatia.....	18
Fragrant Candlebush.....	8
Furze Needlebush.....	26

### G

<i>Garnieria</i> .....	4
<i>Grevillea</i> .....	2, 11, <b>19</b> , 21
<i>Grevillea amplicifolia</i> .....	20
<i>Grevillea amplifica</i> .....	20
<i>Grevillea australis</i> .....	<b>20</b>
<i>Grevillea australis</i> var. <i>brevifolia</i> .....	20
<i>Grevillea australis</i> var. <i>erecta</i> .....	20
<i>Grevillea australis</i> var. <i>linearifolia</i> .....	20
<i>Grevillea australis</i> var. <i>montana</i> .....	20
<i>Grevillea australis</i> var. <i>planifolia</i> .....	20
<i>Grevillea australis</i> var. <i>subulata</i> .....	20
<i>Grevillea australis</i> var. <i>tenuifolia</i> .....	20
<i>Grevillea robusta</i> .....	2
<i>Grevillea rosmarinifolia</i> .....	<b>20</b>
<i>Grevillea stuartii</i> .....	20
<i>Grevillea tenuifolia</i> .....	20
Grevilleoideae.....	<b>11</b>
Guitarplant.....	17

### H

<i>Hakea</i> .....	1, 11, 19, <b>21</b>
<i>Hakea acicularis</i> .....	23
<i>Hakea acicularis</i> var. <i>lissocarpa</i> .....	22
<i>Hakea decurrens</i> .....	<b>22</b>
<i>Hakea decurrens</i> subsp. <i>physocarpa</i> .....	<b>23</b>
<i>Hakea decurrens</i> subsp. <i>platytaenia</i> .....	<b>23</b>
<i>Hakea epiglottis</i> .....	21, <b>25</b>
<i>Hakea epiglottis</i> subsp. <i>epiglottis</i> .....	<b>26</b>
<i>Hakea epiglottis</i> subsp. <i>milliganii</i> .....	<b>26</b>
<i>Hakea eucalyptoides</i> .....	27
<i>Hakea laurina</i> .....	<b>27</b>

<i>Hakea lissosperma</i> .....	<b>22</b>	<i>Macadamia tetraphylla</i> .....	2
<i>Hakea megadenia</i> .....	21, <b>26</b>	Mountain Geebung.....	5
<i>Hakea microcarpa</i> .....	<b>24</b>	Mountain Guitarplant.....	17
<i>Hakea microcarpa</i> var. <i>bathurstiana</i> .....	24	Mountain Needlebush.....	22
<i>Hakea microcarpa</i> var. <i>tasmanica</i> .....	24	Mountain Rocket.....	3
<i>Hakea milliganii</i> .....	26	<b>N</b>	
<i>Hakea nodosa</i> .....	<b>23</b>	Narrowleaf Geebung.....	7
<i>Hakea pugioniformis</i> .....	24	Native Plum.....	9
<i>Hakea pugioniformis</i> var. <i>sericea</i> .....	24	Needlebush.....	22
<i>Hakea pugioniformis</i> $\beta$ <i>hirsuta</i> .....	24	Nelumbonaceae.....	1
<i>Hakea rostrata</i> .....	25, 26	<b>O</b>	
<i>Hakea rugosa</i> .....	25, 26	Orites.....	<b>11</b>
<i>Hakea salicifolia</i> subsp. <i>angustifolia</i> .....	27	<i>Orites acicularis</i> .....	<b>12</b>
<i>Hakea salicifolia</i> subsp. <i>salicifolia</i> .....	<b>27</b>	<i>Orites diversifolius</i> .....	<b>12</b>
<i>Hakea sericea</i> .....	23	<i>Orites milliganii</i> .....	<b>13</b>
<i>Hakea sericea</i> var. <i>lissocarpa</i> .....	22	<i>Orites revolutus</i> .....	<b>12</b>
<i>Hakea tenuifolia</i> var. <i>lissocarpa</i> .....	22	Oritina.....	11
<i>Hakea teretifolia</i> .....	24	<i>Oritina acicularis</i> .....	12
<i>Hakea teretifolia</i> subsp. <i>hirsuta</i> .....	<b>24</b> , 25	<b>P</b>	
<i>Hakea teretifolia</i> subsp. <i>teretifolia</i> .....	25	<i>Persoonia</i> .....	1, <b>4</b> , 5
<i>Hakea ulicina</i> .....	<b>26</b>	<i>Persoonia gunnii</i> .....	<b>5</b>
Hakeinae.....	11	<i>Persoonia gunnii</i> var. <i>alpina</i> .....	7
Highland Geebung.....	6, 7	<i>Persoonia gunnii</i> var. <i>angustifolia</i> .....	7
Horny Conebush.....	10	<i>Persoonia gunnii</i> var. <i>dilatata</i> .....	5
<i>Hylogyne</i> .....	18	<i>Persoonia gunnii</i> var. <i>oblanceolata</i> .....	5
<i>Hylogyne australis</i> .....	18	<i>Persoonia juniperina</i> .....	<b>4</b> , 5
<i>Hylogyne truncata</i> .....	18	<i>Persoonia juniperina</i> var. <i>brevifolia</i> .....	4
<b>I</b>		<i>Persoonia juniperina</i> var. <i>mollis</i> .....	4
<i>Isopogon</i> .....	1, <b>10</b>	<i>Persoonia juniperina</i> var. <i>ulicina</i> .....	4
<i>Isopogon ceratophyllus</i> .....	<b>10</b>	<i>Persoonia moscalii</i> .....	<b>6</b>
Isopogoninae.....	8	<i>Persoonia muelleri</i> .....	<b>6</b>
<i>Isostylis</i> .....	13	<i>Persoonia muelleri</i> subsp. <i>angustifolia</i> .....	7
<i>Isostylis integrifolia</i> .....	14	<i>Persoonia muelleri</i> subsp. <i>densifolia</i> .....	7
<i>Isostylis serrata</i> .....	15	<i>Persoonia muelleri</i> subsp. <i>muelleri</i> .....	7
<b>K</b>		<i>Persoonia muelleri</i> var. <i>angustifolia</i> .....	7
King's Holly.....	16	<i>Persoonia muelleri</i> var. <i>densifolia</i> .....	7
King's Lomatia.....	16	<i>Persoonia tasmanica</i> .....	4
<b>L</b>		Persoonieae.....	4
Leafy Geebung.....	7	Persoonioideae.....	3, <b>4</b>
Leucadendreae.....	8	<i>Petrophile</i> .....	1
<i>Leucadendron</i> .....	2	Pincushion Hakea.....	27
<i>Leucospermum</i> .....	2	Platanaceae.....	1
<i>Linkia</i> .....	4	Prickly Geebung.....	4
<i>Linkia gunnii</i> .....	5	<i>Protea</i> .....	2
<i>Linkia juniperina</i> .....	4	Proteaceae.....	<b>1</b>
<i>Lippomuellera</i> .....	8	Proteales.....	1
<i>Lippomuellera odorata</i> .....	8	Proteoideae.....	7, <b>8</b> , 11
<i>Lomatia</i> .....	11, <b>16</b>	<b>R</b>	
<i>Lomatia fraseri</i> .....	<b>18</b>	Revolute Orites.....	12
<i>Lomatia polymorpha</i> .....	<b>17</b>	Rosemary Grevillea.....	20
<i>Lomatia polymorpha</i> var. <i>cinerea</i> .....	17	Roupaleae.....	11
<i>Lomatia polymorpha</i> var. <i>rufa</i> .....	17	<b>S</b>	
<i>Lomatia tasmanica</i> .....	<b>16</b> , 17	Sacred Lotus.....	1
<i>Lomatia tinctoria</i> .....	<b>17</b>	Salicinae.....	14
Lomatiinae.....	11	Saw Banksia.....	15
<b>M</b>		Silver Banksia.....	15
<i>Macadamia integrifolia</i> .....	2	<i>Sirmuelleria</i> .....	13

<i>Sirmuelleria integrifolia</i> .....	14	Tree Lomatia.....	18
<i>Sirmuelleria serrata</i> .....	15	<i>Tricondylus</i> .....	16
Smallfruit Needlebush.....	24	<i>Tricondylus fraseri</i> .....	18
Southern Grevillea.....	20	<i>Tricondylus polymorphus</i> .....	17
Sycamore.....	1	<i>Tricondylus tinctorius</i> .....	17
<i>Symphionema</i> .....	7	<b>V</b>	
Symphionematoideae.....	7, 8, 11	Variable Orites.....	12
<b>T</b>		<b>W</b>	
Tasmanian Smokebush.....	10	Waratah.....	18
Tasmanian Waratah.....	18	Western Beaked Needlebush.....	26
<i>Telopea</i> .....	1, 11, <b>18</b>	White Waratah.....	8
<i>Telopea tasmaniana</i> .....	18	Willowleaf Hakea.....	27
<i>Telopea truncata</i> .....	<b>18</b>	<b>Y</b>	
<i>Telopea truncata</i> f. <i>lutea</i> .....	18, 19	Yellow Needlebush.....	23
Toothed Orites.....	13	Yellow Orites.....	12
<i>Toronia</i> .....	4		