

Flora of South Australia

5th Edition



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Government
of South Australia



Flora of South Australia

5th Edition | Edited by Jürgen Kellermann

LOGANIACEAE¹

B.J. Conn²

Trees, shrubs, woody climbers or herbs, sometimes epiphytic or hemi-epiphytic; colleters often present in axils of leaves, or on stipules and sepals; leaves usually opposite and decussate, simple, usually penninerved, rarely 3–7-plinerved, entire or sometimes toothed or lobed, sessile or petiolate; stipules interpetiolar, often reduced to a stipular line. **Inflorescences** variously cymose; flowers sometimes solitary or in clusters, rarely in umbels, usually actinomorphic, either bisexual or unisexual and then with male and female flowers on separate plants; sepals 2–5, usually united or calyx absent and then corolla enclosed in a 2-lobed involucre; corolla sympetalous, tube short or long, lobes usually 4 or 5, imbricate or valvate; disk sometimes present; stamens usually equal in number to and alternating with corolla lobes, inserted on tube, included or exerted, anthers 2-locular, basifixed or sometimes subdorsifixed, slightly to deeply bifid basally, dehiscence introrse, latrorse or extrorse; ovary usually superior, rarely semi-inferior, usually 2-locular; ovules 1–many, amphitropous or anatropous; placentation axile, often peltate; styles usually 1, or 2 and then separate or \pm coherent, terminal; stigma entire or lobed. **Fruit** usually a capsule, berry-like, or sometimes drupe-like.

About 29 genera containing approximately 500 species mainly confined to tropical and subtropical regions, with a few genera extending to warm temperate regions of the world. 7 genera recorded for Australia.

The commonly cultivated genus *Buddleja*, included in Loganiaceae in the last edition of *Flora of South Australia* (Perry 1986), is now classified in the family Scrophulariaceae (Mabberley 2008).

A number of species of *Strychnos* L. are commercially important. Strychnine is obtained from the seeds of *S. nux-vomica* L. The alkaloids of curare are obtained from *S. toxifera* Schomb. and other closely related species. *S. spinosa* Lam. has edible fruit.

Reference: Conn *et al.* (1996).

1. Shrubs or subshrubs, less frequently herbs (not in S.A.); calyx and corolla 5-lobed; stamens 5..... 1. **Logania**
- 1: Herbs; calyx absent (corolla enclosed in a leafy involucre) or calyx 4-lobed; corolla 4-lobed; stamens 4
 2. Calyx absent, corolla enclosed in a 2-lobed leafy involucre; ovary semi-inferior; capsules with papery thin wall, with style withering in fruit 3. **Phyllangium**
 - 2: Calyx present; involucre absent; ovary superior; capsules with slightly hardened wall, usually with style hardened and persistent in fruit..... 2. **Mitrasacme**

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1. LOGANIA R.Br.

Prodr. 454 (1810).

(After James Logan, botanist, 1674–1751, born in Ireland, emigrated to North America with William Penn in 1699, Governor of Pennsylvania 1736–1738; wrote a book on sexuality of plants.)

Euosma Andrews, *Bot. Repos.* 8: t. 520 (1808).

Herbs, shrubs or subshrubs; leaves opposite, sometimes greatly reduced, sessile or petiolate, bases of opposite leaves joined by a stipular membrane, margin entire, flat or recurved, bases of opposite leaves joined by a membranous stipule. **Inflorescence** terminal, often appearing axillary when developing from short lateral shoots, variously cymose, 1–many-flowered; flowers bisexual or unisexual and then with male and female flowers on separate plants; bisexual flowers with calyx dark green to black and deeply 5-lobed; corolla campanulate to almost rotate, 5-lobed (in S.A. species), lobes imbricate in bud, obtuse; stamens 5, inserted about half-way up corolla tube or on tube at throat, anthers narrowly oblong, ovate to orbicular; disk papillose; ovary superior, ovoid or nearly so, 2-loculate, with many ovules in each locule; style simple, slender, included or exserted; stigma large, obloid, subglobose to obovoid; unisexual flowers similar; male flowers with stamens inserted on tube shortly below middle, usually included; style slender, stigma capitate, obloid or ellipsoid; disk present; ovary undeveloped; female flowers with staminodes inserted on tube shortly below middle; style short and broad, stigma ovoid to broadly ovoid or capitate. **Fruit** a capsule, usually black, subglobular to ovoid or ellipsoid, woody, contracted towards summit, dehiscent septically, almost completely separating from apex to base, summit appears to open by 4 teeth, carpels 2, finally almost separating; placenta adnate to central suture; seeds ± ellipsoid, brown. **Loganias**.

24 species confined to Australia.

Reference: Conn (1994, 1995b).

1. Flowers unisexual with male and female flowers on separate plants; staminal filaments inserted on tube just below middle; shrubs or subshrubs, leaves always obvious
 2. Corolla tube internally thickened at top to form a rim (sometimes incompletely formed in *L. insularis*), glabrous except for hairs on rim
 3. Branches minutely pubescent
 4. Leaves (5–) 10 times as long as wide, linear to very narrowly elliptic; lamina margin not recurved 4. **L. linifolia**
 - 4: Leaves up to 3 times as long as wide, narrowly ovate to obovate; lamina margin recurved
 5. Leaves elliptic to obovate, 3–8 mm long, length to width ratio 2.6–3; base attenuate 3. **L. insularis**
 - 5: Leaves ovate to narrowly ovate, 13–18 mm long, length to width ratio 1.8–2.6; base rounded to slightly cuneate 10. **L. scabrella**
 - 3: Branches glabrous to minutely papillose
 6. Leaves sessile and weakly stem-clasping, linear to narrowly ovate, margin recurved 8. **L. recurva**
 - 6: Leaves shortly petiolate to almost sessile, but not stem-clasping, lamina ovate to broadly ovate or narrowly elliptic, margin not recurved 7. **L. ovata**
 - 2: Corolla tube not internally thickened at top, pubescent inside almost to base
 7. Branches glabrous; leaf lamina concave 9. **L. saxatilis**
 - 7: Branches scabridulous; leaf lamina flat
 8. Leaf lamina narrowly obovate, margin scabridulous 5. **L. minor**
 - 8: Leaf lamina obovate, broadly obovate or broadly elliptic, margin not scabridulous 2. **L. crassifolia**
 - 1: Flowers bisexual; staminal filaments inserted on tube at throat; intricately branched subshrub, appearing leafless with many rush-like branches
 9. Branches moderately hairy; hairs minute, 0.1–0.2 mm long; corolla lobes with outer surface moderately hairy (especially near base) 1. **L. centralis**
 - 9: Branches glabrous, minutely papillose; corolla lobes with outer surface glabrous or with an occasional hair 6. **L. nuda**

1. **Logania centralis** B.J.Conn, *Telopea* 5: 676–679 (1994). — **Illustr.:** B.J. Conn, *Telopea* 5: 678, fig. 4g–n (1994).

Erect, compact, intricately branched subshrub, 0.15–0.3 (–0.45) m high, much-branched; with branches rush-like, terete or subterete, finely striate, often ending in a weak spine, moderately hairy with most hairs retrorse; leaves sessile, with lamina much reduced and scale-like, narrowly triangular, 3–4 mm long, becoming slightly rigid, moderately hairy; stipules reduced to a stipular line. **Inflorescence** cymose, on short lateral branches, hence appearing axillary, 1–7-flowered; flowers bisexual, not known if aromatic; calyx 2–2.5 mm long, outer surface sparsely to moderately hairy basally and medially, hairs often absent near apex, inner surface glabrous, lobes triangular to narrowly triangular with margin narrowly membranous from base to apex, ciliate; corolla white, 2.5–3 mm long, tube 1–1.5 mm long, outer surface moderately hairy basally and medially, often more sparsely hairy or glabrous toward margin, inner surface moderately hairy near base, minutely and moderately hairy distally and papillose near apex of lobes, stamens inserted in or near sinus of corolla lobes, filaments 0.6–0.7 mm long, with a few scattered hairs basally. **Capsule** 2–2.5 (–3) mm long, 2–2.5 mm diam. (near base), brown.

S.A.: NW; W.A.; N.T.; Vic. Rare or infrequent subshrub occurring in open shrublands usually in sandy soils. Flowers: not known, may be in response to rain, possibly Oct.–May.

This species is a member of *Logania* sect. *Stomandra* and is closely related to *L. nuda*. Both species have greatly reduced leaves such that the plants appear leafless. *Logania centralis* has moderately hairy branches (glabrous and minutely papillose in *L. nuda*), moderately hairy leaves with stiff bristle-like hairs (*L. nuda* has glabrous leaves), flowers with a shorter pedicel (0.4–0.7 mm long cf. 1–1.7 mm long in *L. nuda*), a shorter corolla (2.5–3 mm long cf. (3.5–) 4–5.5 mm in *L. nuda*), and a shorter corolla tube (1–1.5 mm long cf. (1.5–) 2.5–3.5 mm long in *L. nuda*).

2. **Logania crassifolia** R.Br., *Prodr.* 455 (1810) — *Euosma crassifolia* (R.Br.) Kuntze, *Revis. Gen. Pl.* 2: 425 (1891). — **Illustr.:** B.J.Conn, *Austral. Syst. Bot.* 8: 656, fig. 15a–f (1995).

Subshrub prostrate, spreading to rigid, diffuse to 0.5 (–1.5) m high, dioecious; branches sparsely to densely hairy, hairs coarse and minute or indumentums reduced to ± triangular or wart-like trichomes, hence ± scabridulous, rarely glabrous; leaves petiolate, lamina broad to very broad, obovate to ovate, or elliptic to circular, 15–35 × 15–26 mm, flat, base usually shortly cuneate, often almost rounded, margin slightly thickened, recurved to slightly revolute, not scabridulous, apex obtuse and mucronate; petiole 2–7 mm long; stipules c. 0.5 mm long, soon reduced to an interfoliar membranous scar. **Inflorescence** multi-branched or variously reduced, cymose, peduncle usually greatly reduced such that inflorescence ± held amongst the leaves, rarely with peduncle to 30 mm long, many-flowered. Flowers unisexual, strongly aromatic; calyx 1.5–2.2 mm long, margin ciliate; corolla white, 3.5–4 mm long, glabrous outside, tube 1.5–2 mm long, inner surface with a band of crinkled hairs from c. 1 mm above base of tube or from mouth to 1/2 (sometimes 3/4) way up lobes; stamens inserted c. 1/3 way up tube, filaments very short, c. 0.5 mm long, glabrous. **Capsule** (5.5–) 6–9 mm long, 5–6.5 mm diam. (near base).

Coast logania.

S.A.: EP, YP, SL, KI, SE. Commonly occurs in coastal low open to closed heath, sometimes amongst Mallee communities, often amongst rocks near beach, usually in sandy soils of consolidated dunes overlying limestone. Flowers: Aug.–Oct.

The male flowers have a ± filiform style which is basally expanded into a greatly reduced ovary and the stigma is ± cylindrical, where female flowers have a thick style, almost as broad as long, with an abrupt change into the fully developed ovary, stigma ± ovoid. The inflorescence of female plants is usually smaller than that of the male plants.

3. **Logania insularis** J.M.Black, *Fl. S. Austral.* 3: 457 (1926). — **Illustr.:** Toelken & Dashorst, *J. Adelaide Bot. Gard.* 7: 143 (1984); B.J.Conn, *Austral. Syst. Bot.* 8: 654, fig. 13a–e, p. (1995).

Small shrub to 30 cm high, dioecious; branches minutely and moderately hairy, leaves shortly petiolate or sessile, lamina elliptic to obovate, 3–8 × 1–3 mm, lower surface of midrib and petiole sometimes with scattered hairs, upper surface minutely papillose and with scattered hairs along margin, base attenuate, margin recurved; petiole 0.5–1 mm long, minutely pubescent; stipule membranous and sparsely to moderately hairy. **Inflorescence** cymose, short, few-flowered; flowers unisexual, not known if aromatic; calyx 0.8–1 mm long, margin ciliate, corolla cream-coloured to pale yellow, c. 1.5 mm long, tube internally thickened distally to form a rim at mouth (sometimes incompletely formed), glabrous except for a few hairs on top of rim (difficult to see in dried specimens), lobes

glabrous; stamens inserted in lower 1/2 of tube, included, filaments short, 0.2–0.4 mm long, glabrous. **Capsule** 2.5–4 mm long, 2–3.5 mm diam. (near base). **Island logania.**

S.A.: KI (Cape Borda). Flowers: Oct.

This species is morphologically similar to *L. linifolia*. Both species have relatively narrow leaves, glabrous corolla lobes and the mouth of the corolla is internally thickened. Although this species is locally common, it has a very restricted distribution of about 3 km². Therefore, the long-term conservation status of this species must be monitored very carefully. This and three other species of *Logania* described by J.M. Black are often cited as published in *Trans. & Proc Roy. Society of South Australia* (23 Dec. 1929), however, although that paper was read to the Royal Society on 14 Oct. 1926, Conn (1995a) established that the third volume of Black's *Fl. S. Austral.* was published slightly earlier than the *Transactions* (before 15 Dec. 1929).

(Vulnerable status in S.A.)

4. **Logania linifolia** Schldtl., *Linnaea* 20: 605 (1847) — *Euosma linifolia* (Schldtl.) F.Muell., *Key Vict. Pl.* 1: 360 (1887–1888), *nom. inval. pro syn.*; *E. linifolia* (Schldtl.) Kuntze, *Revis. Gen. Pl.* 2: 425 (1891); *L. orthophylla* Gand., *Bull. Soc. Bot. France* 70: 921 (1924). — **Illustr.:** B.J.Conn, *Austral. Syst. Bot.* 8: 654, fig. 13f–m (1995).

Openly branched, erect shrub, to 0.6 (–1) m high, rarely compact, often supported by other vegetation, dioecious; branches moderately to densely hairy with minute hairs; leaves sessile or petiole indistinct and to 1 mm long, lamina linear to very narrowly elliptic, narrowing towards base, (8–) 10–21 (–24) × 1–2 (–4) mm, flat or slightly concavo-convex in section, sparsely and minutely hairy basally, often with hairs restricted to basal part of midrib of lower surface and margin, otherwise glabrous, sometimes sparsely hairy throughout, rarely glabrous throughout, base attenuate, somewhat decurrent, apex subacute; stipule membranous, minutely hairy. **Inflorescence** multi-branched, cymose, often terminating short, axillary, leafy branches, often consisting of several 7-flowered cymes, frequently variously reduced; flowers unisexual, not known if aromatic; calyx 0.7–1.2 mm long, lobes with margin minutely irregular, ciliolate; corolla white, 1.5–2 mm long, tube 0.8–1 mm long, internally thickened distally to form a rim at mouth, tube and lobes glabrous or sometimes with a few hairs on inner surface of rim (often difficult to see in dried specimens); stamens inserted c. 1/2 way up tube, included, filaments short, 0.3 mm long, glabrous. **Capsule** (3–) 4–6 mm long, 2–3.5 mm diam. (near base). **Flax-leaved logania.**

S.A.: EP, MU, YP, SL, KI, SE; Vic. An occasional to locally common shrub in mallee heath communities, in white sandy soil, on low to steep dunes, in sandy loam flats, or sometimes with outcropping limestone. Flowers: Aug.–Nov.

5. **Logania minor** (J.M.Black) B.J.Conn, *Austral. Syst. Bot.* 8: 616–617 (1995). — *Logania crassifolia* R.Br. var. *minor* J.M.Black, *Fl. S. Austral.* 456 (1926). *Logania* sp. A *sensu* G.Perry in Jessop & Toelken, *Fl. S. Austral.* 3: 1041 (1986). — **Illustr.:** *Fl. S. Austral.* 3: fig. 511F (1986); B.J. Conn *Austral. Syst. Bot.* 8: fig. 18a–e, p. 659.

Prostrate or spreading shrub, to 0.15 m high, to 1 m diam., dioecious; branches densely scabridulous, rough to touch, with stiff, minute, hair-like trichomes, older branches becoming almost glabrous; leaves petiolate with petiole 2.5–5 (–9) mm long, lamina narrowly obovate to narrowly elliptic, rarely to broadly obovate, 8–28 × 2–10 mm, flat, base attenuate, margin scabridulous, apex acute or shortly acuminate, lower surface glabrous or minutely papillose, sometimes scabridulous basally, midrib slightly thickened, often scabridulous basally, upper surface glabrous; stipule soon torn medially, glabrous. **Inflorescence** multi-branched, cymose, with various elaboration, basal nodes often leafy, many-flowered; flowers unisexual, apparently not aromatic or at least not strongly so; calyx 1–1.2 mm long, lobes with margin minutely papillose to slightly ciliolate; corolla white, 2.2–3 mm long, tube 1–1.5 mm long, outer surface glabrous, inner surface moderately to densely hairy from just above base to lower 1/3 of lobe; stamens inserted c. 1/3 way up tube, included, filaments short, 0.4–0.5 mm long, glabrous. **Capsule** 4.5–7 mm long, 3–5 mm diam. (near base). **Fig. 1A.**

S.A.: EP, YP, SL, .SE. Usually occurring in open mallee communities in brownish sandy soil overlying limestone, or on flats adjacent to bare knolls. Flowers: (Aug.–) Sep.–Oct. (–Nov.).

6. **Logania nuda** F.Muell., *Fragm.* 1: 129 (1859). — **Illustr.:** *Pl. W. N.S.W.* 549 (1982); B.J.Conn, *Telopea* 5: 678, fig. 4a–f (1994).

Erect, ± compact, intricately branched subshrub, 0.15–0.5 (–0.75) m high, much-branched; with branches rush-

like, terete or subterete, finely striate, often ending in a weak spine, minutely papillose; leaves sessile, lamina triangular to narrowly triangular, much reduced and scale-like, becoming rigid, 1.5–3.5 (–5) mm long (older leaves less than 1.5 mm long); stipules reduced to a stipular line. **Inflorescence** cymose, on short lateral branches, hence appearing axillary, 1–4 (or 5)-flowered; flowers bisexual, pleasantly aromatic; calyx 1.5–2 mm long, outer surface sparsely to moderately hairy basally and medially, hairs often absent near apex, occasionally glabrous throughout, inner surface glabrous, lobes ovate with margin membranous from base almost to apex, sparsely ciliate; corolla white, (3.5–) 4–5.5 mm long, tube (1.5) 2.5–3.5 mm long, outer surface with an occasional hair to sparsely hairy, rarely glabrous, inner surface densely hairy from just above base to mouth, lobes with outer surface glabrous or with an occasional hair, inner surface densely hairy at base, distally glabrous and papillose; stamens inserted in or near sinus of corolla lobes, exserted; filaments 0.8–1 mm long, glabrous or with a few scattered hairs basally. **Capsule** (4–) 5–5.5 mm long, 3–4 mm diam. (near base), brown. **Bare (or leafless) logania.**

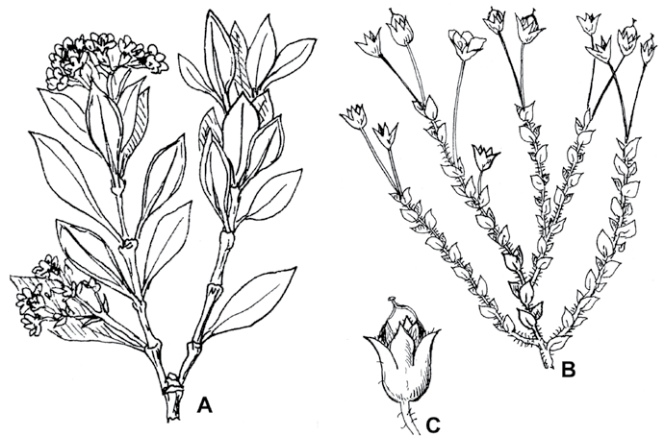


Fig. 1. A, *Logania minor*, twig. B–C, *Mitrasacme pilosa* var. *pilosa*: B, twig; C, flower. Illustration by G.R.M. Dashorst, from *Flora of South Australia* 2: 1040 & 1042, Fig. 511F & 512C (1986).

S.A.: NU, GT, EP, MU; W.A.; N.S.W.; Vic. An occasional to frequent subshrub, frequently in open scrub, usually in sand dunes of white sandy soils. Flowers: Oct.–Feb.

Logania nuda is a member of *Logania* sect. *Stomandra* and is closely related to *L. centralis*, a species that occurs in the far north-west of the State (NW). The morphological differences between these two species are discussed under *L. centralis*.

7. **Logania ovata** R.Br., *Prodr.* 455 (1810); B.J.Conn, *Austral. Syst. Bot.* 8: 618–620 (1995). — *Euosma ovata* (R.Br.) F.Muell. *Key Vict. Pl.* 1: 360 (1887–8), *nom. inval. pro syn.*; *E. ovata* (R.Br.) Kuntze, *Revis. Gen. Pl.* 2: 425 (1891). *L. elliptica* R.Br., *Prodr.* 455 (1810). — **Illustr.:** B.J.Conn (1995), *Austral. Syst. Bot.* 8: fig. 15g–l, p. 656.

Erect shrub, (0.5–) 1–2 m high, dioecious; branches often with two lateral ridges, glabrous to minutely papillose; leaves very shortly petiolate to almost sessile with petiole < 0.8 mm long, lamina ovate to broadly ovate, rarely narrowly ovate or narrowly elliptic, 16–27 (–36) × (6–) 7–20 (–26) mm (on Kangaroo Island lamina 20–38 × 10–26 mm), flat, base rounded to slightly cuneate; margin slightly thickened, slightly recurved; apex obtuse and sometimes mucronulate; surface glabrous or lower surface minutely papillose; stipules membranous, glabrous. **Inflorescence** multi-branched, cymose, often somewhat compact, usually leafy and hence basal inflorescence-units often appearing axillary, many-flowered, basal internode of inflorescence usually 20–50 (–60) mm long; flowers unisexual; calyx 1–1.5 (–2) mm long, margin of lobes ciliolate; corolla white, 2.5–3 mm long, tube 1.7–2.3 mm long, internally thickened distally to form a rim at mouth, outer surface glabrous, inner surface glabrous except for a dense band of crinkled hairs which restricted to rim; stamens inserted c. 1/2 way up tube, included; filaments short, 0.3–0.4 mm long, glabrous. **Capsule** (3.8–) 5.5–6 mm long, (2.8–) 3–3.4 mm diam. (near base). **Oval-leaved logania.**

S.A.: EP, YP, KI, SE; Vic. An occasional near-coastal species, occurring as an understorey shrub in mallee communities, less frequently in low closed heath, growing in alkaline sandy loams to heavier clay-rich soils, less frequently in sands overlying limestone. Flowers: Aug.–Nov.

On KI, a large-leaved variant is present, which is more similar to *L. crassifolia*.

8. **Logania recurva** J.M.Black, *Fl. S. Austral.* 3: 456 (1926). — *L. longifolia* var. *subsessilis* Benth., *Fl. Austral.* 4: 361 (1868). — **Illustr.:** B.J.Conn, *Austral. Syst. Bot.* 8: 649, fig. 8a–f (1995).

Erect slender shrub, 0.4–1 m high, dioecious; branches with 2 pairs of lateral ridges, glabrous, minutely papillose; leaves sessile and weakly stem-clasping, narrowly ovate to narrowly elliptic, often appearing almost linear when margin strongly revolute, 24–51 (–60) × (4–) 5–11 mm, glabrous, minutely papillose, base rounded to shortly attenuate, decurrent, margin recurved to strongly revolute (particularly when dry), apex subacute; stipule collar-like to slightly triangular, glabrous. **Inflorescence** multi-branched, compact cymes consisting of 15-flowered

inflorescence-units that are arranged for form the larger inflorescence, basal inflorescence-units usually only (1–) 5–13-flowered. Flowers unisexual, not recorded as aromatic; calyx 1.4–1.8 mm long, with margin minutely irregular, papillose and often with a few scattered hairs; corolla white, 2.3–3.6 mm long, tube 1.5–2.5 mm long, internally slightly thickened distally to form a rim at mouth, outer surface glabrous, inner surface glabrous except densely hairy on rim (at mouth); stamens inserted on lower 1/3–1/2 of tube, included; filaments short, 0.2–0.4 mm long, glabrous. **Capsule** 5–6.5 mm long, 3–4.5 mm diam. (near base). **Curved logania**.

S.A.: SL. Locally frequent understorey shrub in *Eucalyptus obliqua* sclerophyll forest, growing in clay-rich soils, often with quartz fragments. Flowers: Aug.–Oct.

9. **Logania saxatilis** G.Perry ex B.J.Conn, *Austral. Syst. Bot.* 8: 632–634 (1995). — *L. longifolia* auct. non R.Br.: Benth., *Fl. Austral.* 4: 361 (1868), partly; *L. vaginalis* auct. non (Labill.) F.Muell.: J.M.Black, *Fl. S. Austral.* 3: 456, fig. 187A–F (1926); Robertson in J.M.Black, *Fl. S. Austral.* ed. 2, 4: 688 (1965); *Logania* sp. B *sensu* G.Perry in Jessop & Toelken, *Fl. S. Austral.* 3: 1041, fig. 5111 (1986). — **Illustr.:** B.J.Conn, *Austral. Syst. Bot.* 8: 659, fig. 18f–1 (1995).

Erect (often weakly so) multibranched open shrub, (1–) 1.5–2.2 m high, dioecious; branches terete, glabrous and glaucous; leaves with petiole (4–) 6–12 (–15) mm long, ovate or elliptic to narrowly ovate or narrowly elliptic, (30–) 45–80 (–97) × (10–) 20–35 (–38) mm, glabrous and glaucous, base cuneate-attenuate, narrowly decurrent, margin noticeably less glaucous than lamina, apex ± mucronate to slightly acuminate; stipule an interpetiolar band, soon torn medially. **Inflorescence** cymose, multi-branched, with various elaborations and reductions, basal nodes often leafy, many-flowered (typically at least 100-flowered). Flowers unisexual, not aromatic or strongly and pleasantly aromatic; calyx 1.2–1.6 mm long, with margin entire or slightly irregular distally; corolla white, 2.9–4 (–5) mm long, tube 1.5–3.7 mm long, outer surface glabrous, inner surface sparsely to moderately hairy from 1/2 up tube to 1/3 (–1/2) way up lobes, hairs crinkled; stamens inserted c. 1/3–2/5 way up tube, included; filaments 0.8–1 mm long, glabrous. **Capsule** 7–10 mm long, 3–5 mm diam. (near base).

S.A.: FR, NL, SL. Locally frequent in open woodland communities on steep-sided sandstone gorges in crevices of rocky outcrops, in shallow sandy or clay-rich soils. Flowers: Sep.–Jan.

This species tends to occur in disturbed localities with only a few individuals in each population.

(Rare status in S.A.)

10. **Logania scabrella** B.J.Conn, *Austral. Syst. Bot.* 8: 620–622 (1995). — **Illustr.:** B.J.Conn, *Austral. Syst. Bot.* 8: 658, fig. 17 (1995).

Erect subshrub or shrub, 0.2–1 m high, dioecious; branches subterete, often with 2 pairs of lateral ridges, densely and minutely hairy; leaves subsessile with petiole < 0.8 mm long, ovate to narrowly ovate, 13–18 × 7–8 mm, lower surface glabrous except for midrib which is sparsely to moderately hairy (especially near base), often with a few hairs near base of margin, base rounded to slightly cuneate, margin slightly recurved, apex obtuse and sometimes mucronulate; stipule ± triangular, minutely hairy. **Inflorescence** multi-branched, usually leafy and hence basal inflorescence units often appearing axillary, cymes 7–49-flowered, consisting of 7-flowered inflorescence-units that are arranged to form the larger inflorescence; flowers unisexual, not recorded as aromatic, almost sessile; calyx 1.2–1.5 mm long, with margin ciliate; corolla white, c. 2.5 mm long, tube c. 1.5 mm long, internally thickened distally to form a rim at mouth, outer surface glabrous, inner surface glabrous except densely hairy on rim (at mouth), hairs crinkled; stamens inserted on lower c. 1/2 up tube, included; filaments short, 0.3–0.4 mm long, glabrous. **Capsule** 3.5–5 mm long, 2.8–3.5 mm diam. (near base).

S.A.: KI. An occasional shrub of *Eucalyptus remota* tall-shrubland over a heathy understorey, growing in sandy loams to clayey soils overlying limestone. Flowers: Oct.–Dec.

This species is morphologically similar to *L. ovata*. The inner surface of the corolla of both species is glabrous except for a band of crinkled hairs that are restricted to an internally thickened rim in the mouth. However, *L. scabrella* has hairy branchlets (*L. ovata* are glabrous or minutely papillose); smaller and ovate to narrowly ovate leaves (13–18 × 7–8 mm), whereas those of *L. ovata* are usually broadly ovate to ovate, 16–27 (–36) × (6–) 7–20 (–26) mm; the inflorescence units are 7-flowered, whereas those of *L. ovata* are many-flowered (usually at least 10-flowered); and there are only 3–5 seeds in each locule of the capsule of *L. scabrella*, whereas there are 10–12 seeds per locule in *L. ovata*.

(Rare status in S.A.)

2. MITRASACME Labill.

Nov. Holl. Pl. 1: 35 (1805).

(Greek *mitra*, ecclesiastical mitre; *acme*, summit.)

Annual or perennial herbs; branches erect or prostrate, leaves opposite, often forming a basal rosette, sessile, bases of opposite leaves connected by a stipular membrane. **Inflorescences** terminal; flowers bisexual, solitary in upper leaf axils or in umbels; calyx 2- (not in S.A.) or 4-lobed; corolla campanulate or salver-shaped, 4-lobed, lobes valvate in bud; stamens 4, usually included, anthers dehiscence extrorse or latrorse; ovary superior or slightly inferior, 2-loculate, with many ovules in each locule; styles 2, usually free in basal part and cohering distally, rarely either entirely cohering or completely free; stigma usually 2-lobed. **Fruit** a small capsule, usually globular or ovoid, opening by apical loculicidal slits.

About 54 species, with 48 species in Australia, also New Caledonia, Malesia, SE Asia, Japan, China and India; one species in S.A.

1. **Mitrasacme pilosa** Labill. var **pilosa**, *Nov. Holl. Pl.* 1: 36, t. 49 (1805). — **Illustr.:** *Fl. N.S.W.* 3: 480 (1992); W.R.Elliot & D.L.Jones, *Encycl. Austral. Pl.* 6: 437 (1994); *Fl. Austral.* 28: xvi, fig. 9 & 38, fig. 37B (1996).

Perennial herb; branches prostrate or ascending, 5–11 cm long, leafy throughout, hairy, rarely glabrous; leaves ovate, narrowly ovate or narrowly elliptic, narrowing towards the base, 3–9 × 1.5–5.5 mm, sometimes with a few scattered hairs on upper and lower surfaces, margin ciliate. **Inflorescences** terminal in distal axils; flowers solitary, pedicel up to 10 mm long, rarely longer, hairy; calyx 2.5–5.5 mm long (slightly larger in fruit), sparsely hairy throughout or hairs restricted to margin of lobe or adaxial surface, tube 1.5–2.5 mm long, lobes 4, margin ciliate; corolla white, 3.5–6.5 mm long, tube 2–4 mm long, glabrous, lobes with outer and inner surface glabrous; stamens 2.2–2.5 mm long, inserted on tube c. 1 mm above base, included, anthers strongly apiculate, dehiscence extrorse; ovary superior; styles free basally, cohering distally. **Capsule** ellipsoidal, 4–6 mm long, with persistent style 1–1.8 mm long, hardened, capsule wall hardened. **Hairy mitrewort. Fig. 1B–C.**

S.A.: SE; N.S.W.; Vic.; Tas. A widespread species occurring in moist communities in heath-lands or eucalypt forests, growing in sandy soils, often associated with sandstone. Flowers: Oct. –Nov.

Type species of the genus. Two varieties are recognised, but only *M. pilosa* var. *pilosa* is present in S.A.

(Vulnerable status in S.A.)

3. PHYLLANGIUM Dunlop

Fl. Austral. 28: 59, 315 (1996).

(from the Greek *phyllon* (a leaf) and *angion* (a vessel), in reference to the leafy involucre surrounding the flowers.)

Mitrasacme sect. *Dichelocalyx* G.Don, *Gen. Hist.* 4: 172(1838).

Annual terrestrial or aquatic herb; leaves cauline, appearing rosulate in diminutive plants, opposite, sessile, margin entire, apex obtuse to subacute; stipules reduced to a fused sheath. **Inflorescence** terminal, often appearing axillary, of solitary peduncles or peduncles many in umbellate clusters; flowers bisexual, solitary, rarely 2, very shortly pedicellate, enclosed in a 2-lobed leafy involucre; involucre with 3 veins extending to each lobe or lateral veins divided again, to 10-veined; calyx absent; corolla 4-lobed, white; lobes valvate; stamens inserted near middle of corolla tube, included; ovary semi-inferior; ovules many; styles 2, usually separate, sometimes ± cohering. **Capsule** enclosed in ± enlarged involucre, loculicidal, walls membranous; style withering in fruit, bases short, persistent; seeds angular.

5 species endemic to Australia

1. Involucre with 8 or 9 distinct veins (inflorescences few- to many-flowered; corolla tube 1.5–2.5 mm long; anthers minute apiculate; styles cohering distally; seed coat finely reticulate) 2. **P. divergens**
- 1: Involucre with 6 distinct veins
2. Inflorescences of solitary flowers; involucre with tube 1.5–3 mm long, lobes 0.4–1.1 mm long; corolla tube 0.9–1.1 mm long; anthers apiculate; styles separate; seed coat reticulate..... 1. **P. distylis**
- 2: Inflorescences of few flowers, never solitary; involucre with tube 3–5 mm long,

lobes 1–2.9 mm long; corolla tube 2–2.2 mm long; anthers obtuse; styles cohering;

seed coat sulcate 3. **P. sulcatum**

1. **Phyllangium distylis** (F.Muell.) Dunlop, *Fl. Austral.* 28: 315 (1996). — *Mitrasacme distylis* F.Muell., *Trans. Philos. Soc. Victoria* 1: 20 (1855). — **Illustr.:** *Fl. S. Austral.* 2: 1042, fig. 512A (1986); *Fl. Austral.* 28: 60, fig 42D, H–J (1996).

Erect terrestrial herb, up to 2 (–c. 5) cm high, often aquatic and then up to c. 15 cm high, glabrous except involucre with scattered hairs on inner (adaxial) surface; leaves linear or very narrowly ovate, usually 2.5–12 × 0.2–1.2 mm, up to 20 mm long in aquatic forms. **Inflorescence** of solitary flowers, peduncles up to 32 mm long; involucre obscurely 6-veined, tube 1.5–3 mm long, lobes 0.4–1.1 mm long; corolla 1.4–1.7 mm long, tube 0.9–1.1 mm long; stamens c. 0.5 mm long; anthers minutely apiculate; styles separate, somewhat cohering in bud. **Capsule** 2–2.5 mm long; seed coat reticulate. **Tiny mitrewort.**

S.A.: EP, MU, SL, KI, SE; Vic.; Tas. Occurs in sedgeland and wet sandy flats in open heaths, often in waterlogged soils or in shallow water. Flowers: Oct.–Nov.

(Rare status in S.A.)

2. **Phyllangium divergens** (Hook.f.) Dunlop, *Fl. Austral.* 28: 315 (1996) — *Mitrasacme divergens* Hook.f., *London J. Bot.* 6: 276(1847). *M. paradoxa* auct. non R.Br.: G.Perry, *Fl. S. Austral.* 2: 1041 (1986), partly. — **Illustr.:** *Pl. W. N.S.W.*, 549 (1982); Dunlop, *Fl. Austral.* 28: 60, fig. 42B (1996).

Erect herb, 5–15 (–19) cm high, glabrous, except often hairy at base; leaves widely spaced on branches, elliptic, narrowly elliptic or narrowly obovate, 4–10 × 0.8–3 mm. **Inflorescence** of few- to many-flowered umbellate clusters, peduncles up to 50 mm long; involucre with 8 or 9 distinct veins, tube 2–3.5 mm long, lobes 0.6–2 mm long; corolla 2.1–5.3 mm long, tube 1.5–2.5 mm long; stamens 1–1.5 mm long; anthers minutely apiculate; styles cohering distally, lower 2/3 separate. **Capsule** 2.1–4 mm long; seed coat finely reticulate. **Wiry mitrewort.**

S.A.: FR, EP, NL, MU, YP, SL, KI, SE; W.A.; Vic.; Tas. Occurs in open communities in granite- and limestone-derived sandy and clayey soils Flowers: Sep.–Nov.

3. **Phyllangium sulcatum** Dunlop, *Fl. Austral.* 28: 315 (1996) — *Mitrasacme paradoxa* auct. non R.Br.: G.Perry, *Fl. S. Austral.* 2: 1041 (1986), partly. — **Illustr.:** *Fl. Austral.* 28: 60, fig. 42C (1996).

Erect herb, up to 17 cm high, glabrous; leaves widely spaced on branches, narrowly ovate or elliptic, 3–13 × 1–4 mm. **Inflorescence** of few-flowered umbellate clusters, peduncles up to 65 mm long; involucre with 6 distinct veins, rarely with 4 additional secondary veins, tube 3–5 mm long, lobes 1–2.9 mm long; corolla 2.7–3.4 mm long, tube 2–2.2 mm long; stamens c. 1 mm long; anthers obtuse; styles joined. **Capsule** 2–2.5 mm long; seed coat sulcate.

S.A.: FR, EP; W.A.; N.S.W.; Vic. Occurs in rocky habitats and in open low woodland communities in a variety of soils, including red clayey, loamy and sandy soils. Flowers: Aug.–Oct.

(Vulnerable status in S.A.)

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