

Flora of South Australia

5th Edition



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Government
of South Australia



Flora of South Australia

5th Edition | Edited by Jürgen Kellermann

FABACEAE (LEGUMINOSAE) (partly)¹

A.I. Craigie^{2,3}, J. Kellermann³, P.J. Lang³, I.R. Thompson^{4,5}, J.Z. Weber[†] & P.G. Wilson⁶

Treatments of Fabaceae presented here include tribes Bossiaeeae, Brongniartieae, Mirbelieae and Indigofereae. Other groups are in preparation and will be made available once finalized. — Ed.

TRIBE BOSSIAEEAE (Benth.) Hutch.

Prepared by I.R. Thompson

Small trees, shrubs, subshrubs, or perennial herbs, with branches occasionally armed (not in S.A.), without glandular material in axils; leaves alternate or opposite, petiolate, 1–3-foliolate, imparipinnate, or absent; stipules present, free, persistent or caducous, sometimes fusing to form a scale; lamina of leaflets mostly entire; leaflets short-petiolulate, estipellate. **Inflorescences** terminal or pseudoaxillary, comprising few- to many-flowered racemes or flowers solitary; sometimes with scales below; flowers pedicellate; bract basal or near-basal; bracteoles persistent or caducous; calyx with tube variable in length relative to lower lobes; lobes imbricate in bud, upper lobes ± free or variously fused, sometimes relatively broad and/or long; petals clawed; stamens forming an adaxially open sheath, anthers uniform, versatile; ovary mostly few–several-ovulate. **Pods** dehiscent, predominantly stipitate, body oblong to elliptic in profile, moderately to strongly compressed, valves variably rigid, with thinner valves sometimes rolling on dehiscence, rarely with internal partitions; seeds with hilum short, c. lateral, mostly arillate; aril hood-like.

7 genera and c. 104 species, all endemic in Australia. *Hovea* and *Templetonia*, included in this tribe in Jessop & Toelken (1986), are now in the tribe Brongniartieae.

- 1. Leaves trifoliolate
 - 2. Plants erect, c. 1–3 m high; inflorescences many-flowered..... 3. **Goodia**
 - 2: Plants prostrate; inflorescences 1- or 2-flowered 4. **Muelleranthus**
- 1: Leaves unifoliolate or leaves absent (scales in their place)
 - 3. Inflorescences mostly 3 or more flowered in an elongate raceme, without basal bud scales; flowers with a cylindrical hypanthium 1. **Aenictophyton**
 - 3: Inflorescences mostly 1-flowered (but several may be clustered in axil), with bud scales below; flowers without an hypanthium
 - 4. Bracteoles 0.3–3 mm long; pods without a winged upper margin; leaves without lateral lobes or leaves absent..... 2. **Bossiaea**
 - 4: Bracteoles 5–10 mm long; pods with a winged upper margin; leaves commonly with acute, pungent-pointed lateral lobes 5. **Platylobium**

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1. AENICTOPHYTON A.T.Lee

Contr. New South Wales Natl. Herb. 4(7): 422 (1973).

(from the Greek *ainiktos*, baffling, and *phyton*, a plant, in reference to the difficulty the author had in placing *A. reconditum* in a new genus.)

Rhizomatous herbs; branches terete; leaves alternate, unifoliolate or imparipinnate, with petiole and rachis green; lamina entire, with terminal leaflet slightly longer than lateral ones; stipules persistent, free, herbaceous becoming dry and pale. **Inflorescences** pedunculate, of several flowered racemes, scales absent below, bract and bracteoles herbaceous, variably persistent, bracteoles inserted distally; hypanthium conspicuous; calyx sparsely hairy or glabrous; upper lobes moderately fused, similar in length to lower lobes; standard equal to or longer than wings, wings longer than keel. **Pods** ± narrow-oblong in profile, glabrous, upper suture not winged or ridged; aril small or vestigial.

2 species endemic in Australia.

Reference: Thompson (2011c).

1. **Aenictophyton anomalum** (F.Muell.) I.Thomps., *Muelleria* 29(2): 185 (2011). — *Ptychosema anomalum* F.Muell., *Fragm.* 9: 62 (1875) — **Illustr.**: I.R.Thomps., *Muelleria* 29: 185, fig. 8a–c (2011).

Erect herbs to c. 30 cm high, with rhizomes to c. 4 mm in diam., stems to 1.5 mm in diam.; indumentum of sparse to scattered appressed hairs on most parts; leaves (5–) 7–11-foliolate; petiole 8–25 mm long, rachis 10–40 mm long, petiolules 0.4–0.8 mm long, lamina of leaflets obovate to oblanceolate or elliptic, mostly 2–7 × 1–4 mm (sometimes less than 1 mm when folded), with terminal one longest, often folded, margin flat, often with raised secondary veins, with apex obtuse to truncate, commonly with a short recurved apiculum; stipules lanceolate, 1–3 mm long, erect. **Flowers** 5–9 per raceme, flowering progressively; peduncle 20–30 mm long; pedicels 2–3 mm long; bract and bracteoles caducous, bract 2 mm long; bracteoles 1–2 mm long, inserted 1–2 mm below receptacle; receptacle 1.5–2.5 mm long, ribbed; calyx 3–4 mm long, with reddish longitudinal stripes, lobes c. equalling tube; sinus between upper lobes c. 1 mm deep; standard 6–10 mm long, including claw 2.5–3 mm long, orange, sometimes with purplish bands on outside; wings 5–8 mm long, yellow or purple; keel 5–7 mm long, greenish-yellow; ovary several-ovulate, style c. 2 mm long. **Pods** with stipe 3–5 mm long, body oblong-elliptic, 10–15 × 4–5 mm, mostly 1–4-seeded (not seen mature), base cuneate, beak c. 0.5 mm long, valves variably flecked or blotched purple; seeds c. 3 mm long, greenish-brown; aril a rim only. **Fig. 1.**

S.A.: NW; N.T.; N.S.W. Grows on sand dunes. Flowers: Aug.–Sep.

Imparipinnate leaves, an elongate, ribbed hypanthium, and a striped calyx and hypanthium distinguish this species from other species in the Bossiaceae. The rachis and petiole of leaves are rather broad and green, and therefore resemble stems.

2. BOSSIAEA Vent.

Descr. Pl. Nouv. 1, 7 (1800).

(After Bossieu de la Martinière, botanist to the ill-fated French expedition of La Pérouse which visited Sydney in 1788.)

Shrubs or subshrubs; branches sometimes flattened; leaves opposite or more often alternate, unifoliolate (but sometimes appearing to be simple), or absent, sessile or petiolate, lamina mostly entire; stipules persistent, free, mostly dry, in leafless species united to form a scale. **Inflorescences** sessile, mostly solitary, floral bracts and bracteoles scale-like, persistent or not, floral bracts few to several; bracteoles inserted proximally to distally, generally small; calyx glabrous or mostly somewhat sparsely hairy, pubescent internally, upper lobes predominantly moderately fused, sometimes markedly longer than lower lobes; petals yellow, with red markings, occasionally all red or all yellow, standard longer than wings, wings c. equal to keel, or occasionally keel with the longest petals. **Pods** elliptic, oblong-elliptic or narrow-oblong in profile, hairy all over (not in S.A.), with hairs restricted to sutures, or glabrous upper

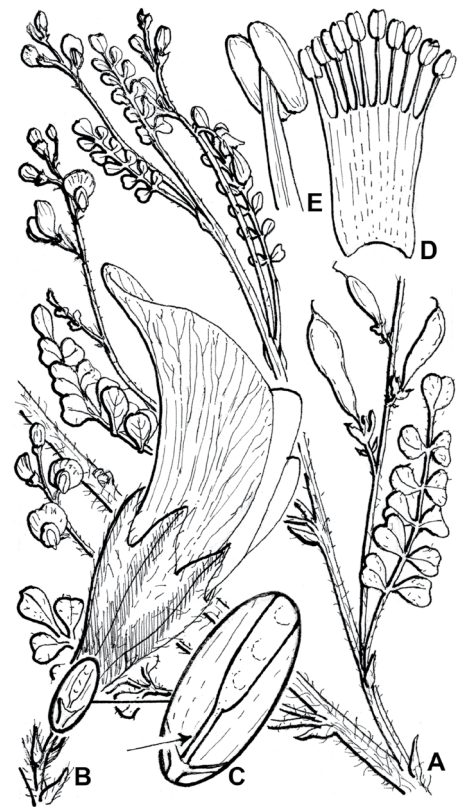


Fig. 1. *Aenictophyton anomalum*: **A**, twig; **B**, flower; **C**, base of ovary (close-up); **D**, stamens; **E**, anther. Illustration by G.R.M. Dashorst.

suture sometimes ridged but hardly winged; aril c. half of length of seed. **Bossiaeas**.

Endemic to Australia, with c. 65 species.

The petiole-petiolule articulation is sometimes geniculate in *Bossiaea*, a feature also evident in species of *Platylobium*. In *Bossiaea* a spur sometimes develops at this articulation.

Reference: Thompson (2012).

1. Plants leafy, a pair of stipules at each node; flowering branches terete to slightly flattened, pubescent, 0.3–1.5 mm wide
 2. Shrubs, > 20 cm high; petiole c. 0.5 mm long; leaf-apex acute; bracteoles mostly inserted distally, persistent..... 1. **B. cinerea**
 2. Dwarf sub-shrubs, mostly < 20 cm high; petiole 0.8–5.0 mm long; leaf-apex subacute to rounded; bracteoles inserted proximally, often caducous 3. **B. prostrata**
- 1: Plants generally leafless, with a single scale at each node; flowering branches markedly flattened, glabrous, 3–10 mm wide
 3. Keel c. 7 mm long; bracteoles present at anthesis and overlapping calyx; flowering, developing cladodes glabrous except for margins; ovary c. 6-ovulate..... 2. **B. ensata**
 - 3: Keel 15–20 mm long; bracteoles lost at anthesis; developing cladodes hairy all over; ovary c. 20-ovulate 4. **B. walkeri**

1. **Bossiaea cinerea** R.Br. in W.T.Aiton, *Hortus Kew.* ed. 2, 4: 268 (1812). — *B. cordifolia* Sweet, *Fl. Australas.* t. 20 (1827); *B. tenuicaulis* Graham, *Edinburgh New Philos. J.* 29: 171 (1840) ; *B. cinerea* var. *tenuicaulis* (Graham) J.M.Black, *Fl. S. Austral.* 2: 304 (1929). — **Illustr.:** M.G.Corrick & B.A.Fuhrer, *Wildfl. Victoria* 84, fig. 303 (2000).

Erect or straggling shrub to 100 cm high; new branches ± terete, c. 1 mm diam., with hairs appressed or spreading; leaves: petiole 0.2–0.5 mm long, commonly with a spur at the slightly geniculate articulation with petiolule, lamina narrowly triangular-ovate to lanceolate, 6–20 × 2–8 mm, base rounded to slightly cordate, margin revolute, apex acute, with apiculum 0.2–2 mm long, sometimes pungent, upper surface mostly glabrous, often minutely asperous, lower surface with scattered hairs; stipules narrow-lanceolate to ± linear, 1–3 mm long, mostly strongly recurved, dry. **Pedicels** 5–20 mm long; bracts c. 0.5 mm long; bracteoles ± opposite, inserted 1–4 mm below receptacle, ovate, 0.3–0.5 mm long; calyx 3–4.5 mm long, reddish-brown, glabrous or sparsely hairy with appressed hairs, upper lobes c. 2 mm wide, with point lateral; standard 10–12 mm long, keel predominantly dark purple; ovary 4–6 ovulate, style c. 4 mm long. **Pods** with stipe 2–4 mm long, body 12–20 × 6–8 mm, glabrous; seeds 3–4 mm long. **Showy bossiaea. Fig. 2A–C, Pl. 1A–C.**

S.A.: SE; N.S.W.; Vic.; Tas. Flowers: Aug.–Sep.

2. **Bossiaea peninsularis** I.Thomps., *Muelleria* 30: 162 (2012). — *B. riparia* auct. non A.Cunn. ex Benth.: Tate, *Handb. Fl. Extratrop. S. Austral.* 65 (1890); J.M.Black, *Fl. S. Austral.* 2: 304 (1948); *B. ensata* auct. non Sieber ex DC.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 689 (1986).

Erect or sprawling leafless shrub to c. 2 m high; branches (cladodes) winged, to 15 mm wide, with flowering branches 3–8 mm wide, sometimes developing flakes of epicuticular wax; new growth glabrous except for margins which have variably persistent hairs; leaves not seen; scales ovate, 2–2.5 mm long, eroding with age. **Pedicels** 2–3 mm long; scales 2–4, bract 2–2.5 mm long, inserted c. 1 mm along pedicel, caducous; bracteoles inserted shortly below receptacle, subopposite, narrow-ovate, 2–2.5 mm long, persistent; calyx in bud with small beak directed obliquely, at anthesis calyx 4–5 mm long, glabrous, upper lobes c. triangular, 1.5 mm wide, a little larger than lower lobes; standard c. 8 mm long, yellow with red mark; wings and keel slightly shorter, purplish distally; ovary 4–6-ovulate, style c. 2 mm long. **Pods** stipitate, glabrous (not seen mature). **Sword bossiaea. Fig. 2D & E, Pl. 1D–F.**

S.A.: EP (southern section). Flowers: Oct.

This taxon is endemic to S.A. and was formerly placed in *B. ensata*. It differs from *B. ensata* of the E coast of N.S.W. and far eastern Vic. in having larger, more distally inserted bracteoles, larger scales, more frequent branching, and shorter, broader cladodes. From *B. scolopendria* (Andrews) Sm. it differs mainly in having smaller flowers.

(Vulnerable status in S.A.)

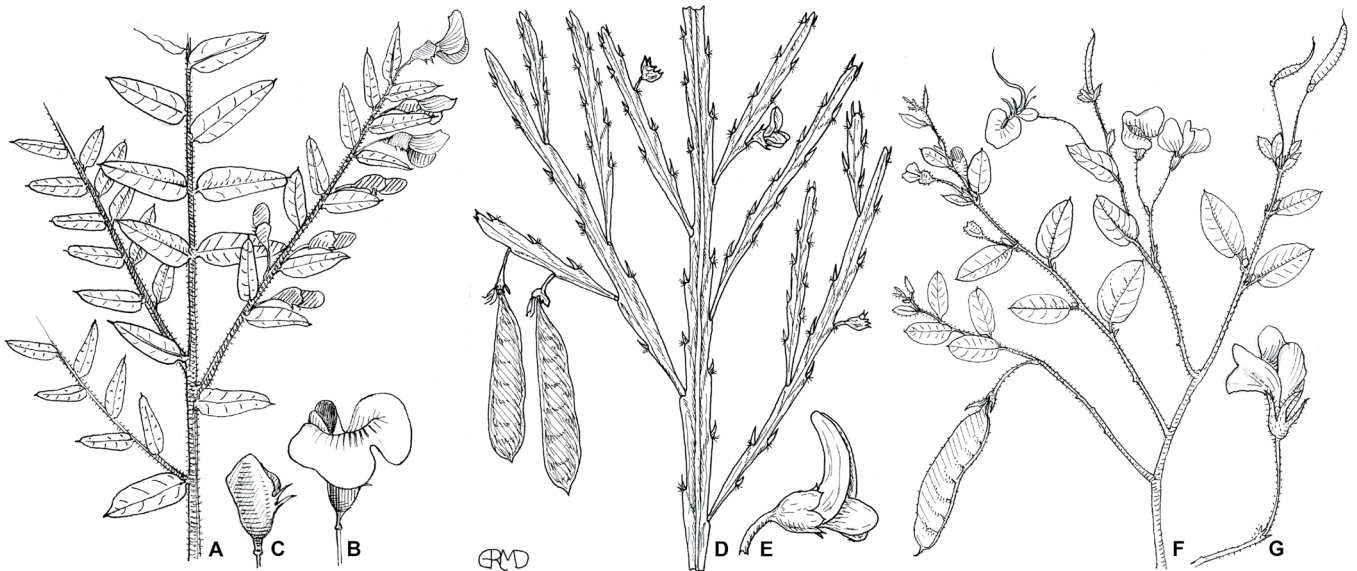


Fig. 2. A–C, *Bossiaea cinerea*: A, branch; B, flower; C, calyx. D & E, *B. peninsularis*: D, branch; E, flower. F & G, *B. prostrata*: F, branch; G, flower. Illustrations by B. Chandler, from *Flora of South Australia* 2: 690, Fig. 372A–C (1986).

3. *Bossiaea prostrata* R.Br., *Curtis's Bot. Mag.* 36: t. 1493 (1812). — **Illustr.:** M.G.Corrick & B.A.Fuhrer, *Wildfl. Victoria* 85, fig. 306 (2000).

Prostrate to weakly ascending subshrub to c. 20 cm high, with stout taproot, new branches 0.3–0.7 mm wide, somewhat flattened, hairy; leaves: petioles 0.8–5 mm long, unspurred at a strongly geniculate junction with petiolule, lamina suborbicular, ovate or oblong-ovate, becoming narrow-ovate upwards, 7–25 × 3–15 mm, base rounded to slightly cordate, margin nearly flat, sometimes slightly undulate, apex subacute to rounded, with apiculum to 0.5 mm long, not pungent, surfaces transiently hairy; stipules lanceolate, erect or slightly divergent, dry. **Pedicels** 5–20 mm long; bracts 2 or 3, largest to 2 mm long, somewhat persistent; bracteoles opposite or subopposite, inserted in proximal half of pedicel, lanceolate, 2–3 mm long; calyx in bud with beak pointing forwards, c. 4 mm long, moderately hairy with spreading hairs, upper lobes 1–1.8 mm wide; standard c. 10 mm long, keel purple in distal half; ovary 8–12-ovulate, style c. 3 mm long. **Pods** with stipe 1–2 mm long, body oblong, 20–30 × 5–7 mm, generally hairy along both sutures, rarely hairy on valves; seeds c. 2 mm long. **Creeping bossiaea.** **Fig. 2F & G, Pl. 1G & H.**

S.A.: NL, MU (E side of Mt Lofty Ra.), SL, SE; Qld; N.S.W.; Vic.; Tas. Flowers: Sep.–Nov.

4. *Bossiaea walkeri* F.Muell., *Fragm.* 2: 120 (1861). — **Illustr.:** L.F.Costermans, *Native Trees Shrubs S.E. Austral.* 195 (1981); *Fl. Victoria* 3: 813, fig. 164i (1994).

Erect leafless shrub to c. 2 m high; branches (cladodes) winged to 7 mm wide, flowering branches 2–6 mm wide; early glabrescent, developing exfoliating epicuticular wax; new growth transiently covered with hair; leaves occasionally seen near base of branches; petiole 1–2 mm long, with petiole-petiolule junction geniculate, lamina elliptic to orbicular, 10–20 mm long; scales ovate, 2–2.5 mm long, eroding with age. **Pedicels** 3–6 mm long; basal bracts 6–12, largest to c. 2.5 mm long, with more distal ones caducous; bracteoles inserted 0.5–2 mm beyond base of pedicel, ovate, c. 3 mm long, early caducous; calyx in bud hardly beaked, at anthesis calyx 6–10 mm long, glabrous, upper lobes quadrangular, 3 mm wide; standard 14–18 mm long, remaining folded, pale red; keel 20–25 mm long, red; ovary c. 20-ovulate, style 6–8 mm long. **Pods** with stipe 3–4 mm long, body narrow-oblong, c. 60 × 10 mm, with hairs along sutures, glabrescent, valves glaucous; seeds c. 3 mm long. **Cactus pea, cactus bossiaea.** **Pl. 2A & B.**

S.A.: NW, NU, GT, EP, MU (Chowilla); W.A.; N.S.W.; Vic. Mainly on sandy flats or dunes. Flowers: Jul.–Nov., occasionally autumn.

Abscission scars of the two bracteoles are sharply defined and become visible once the bract and more distal scales are lost. Juvenile leaf morphology is similar to that of species like *B. prostrata*. When such leaves are formed a pair of broad stipules are present. The scale at each leafless node can be considered to be the result of fusion of this pair of stipules. The same developmental process is likely to account for the single scale seen at nodes in *Templetonia egena*.

3. GOODIA Salisb.

Parad. Lond. 1, t. 41 (1806).

(After Peter Good, horticulturist and botanical collector under Robert Brown in the early 1800s, and who travelled on board Matthew Flinders' H.M.S. Investigator.)

Shrubs; branches terete; leaves alternate, pinnately 3-foliolate, long-petiolate; terminal leaflet slightly larger than lateral ones, lamina entire, stipules caducous, free, herbaceous. **Inflorescences** pedunculate, of terminal many-flowered racemes; floral bracts and bracteoles herbaceous, caducous, floral bract solitary; bracteoles inserted distally; calyx glabrous or hairy, glabrous internally, upper lobes moderately to \pm completely fused, c. as long as lower lobes, standard a little longer than wings, wings c. equal to keel. **Pods** rhomboid-elliptic or oblong to narrow-oblong in profile, glabrous or rarely with a few hairs restricted to sutures, upper suture commonly with a thick, low ridge; aril $1/3$ – $2/3$ of length of seed. **Goodias**.

Endemic in Australia, with 2 species and 1 variety currently recognised.

Reference: Thompson (2011a).

1. **Goodia medicaginea** F.Muell., *Fragm.* 1: 10 (1858). — *Goodia lotifolia* Salisb. var. *lotifolia* auct. non. H.B.Will.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 691 (1986); *Goodia lotifolia* Salisb. var. *pubescens* auct. non (Sims) H.B.Will.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 692 (1986). — **Illustr.:** *Pl. W. N.S.W.* 395 (1982); I.R.Thomp., *Muelleria* 29: 142 & 144, fig. 1d, 2b & d (2011).

Shrubs to c. 2 m high, with appressed to nearly spreading hairs mostly present on axes, calyces and undersurface of leaves; leaves: petiole 10–20 mm long, rachis 3–18 mm long, petiolules 1.5–3 mm long, lamina elliptic, orbicular, oblate, or obovate, 10–30 \times 8–25 mm, apex obtuse to truncate, or slightly emarginate, with apiculum to 0.8 mm long, upper surface glabrous, lower surface with scattered appressed hairs; stipules 4 mm long. **Racemes** up to 30-flowered; pedicels 3–10 mm long; bract 5 mm long, caducous; bracteoles inserted 1–4 mm below summit of pedicel, 2 mm long, caducous; calyx 3–5 mm long, usually with scattered appressed to spreading hairs, upper lobes 1.5–2 mm wide, completely fused to produce a \pm truncate upper lip or with sinus to c. 0.5 mm deep; standard 7–10 mm long, with limb 4–6 mm long, yellow with a purple mark surrounding a yellow throat, variably purple on back, wings 6–8 mm long, generally purple distally, keel 6–8 mm long, purple distally; ovary 2–4-ovulate, with scattered hairs on sutures, style 2–2.5 mm long. **Pods** with stipe 5–10 mm long, body rhomboid-elliptic, (10–) 15–25 \times 7–11 mm with sutures glabrescent; seeds c. 3 mm long, black; aril c. 2 mm long, c. 1 mm high, zone of attachment 0.8–1 mm long, lobe strongly overhanging and downcurved. **Western golden-tip, clover tree. Fig. 3A–E, Pl. 2C–H.**

S.A.: FR, EP, NL, MU, YP, SL, KI, SE; W.A.; N.S.W.; Vic.; Tas. Flowers: Aug.–Nov.

Short-podded plants occur on the Eyre Peninsula. In the Flinders Ranges the leaf rachis is particularly long (often > 10 mm). *Goodia pubescens* Sims occurs in far south-western Vic., but has not been recorded for S.A. It is similar to *G. medicaginea* in having hairs on inflorescence rachides, pedicels, calyces and the lower surface of leaves. However, in *Goodia pubescens* the leaf rachis is generally shorter, the upper lip of the calyx is conspicuously cleft, the standard is largely yellow abaxially, wings are yellow distally, the ovary and developing fruit do not have hairs on sutures, and the aril of seeds has a much longer zone of attachment. Additionally, leaves of *G. pubescens* differ in that they commonly have sparse to scattered hairs on the upper surface.

4. MUELLERANTHUS Hutch.

Gen. Fl. Pl. 1:361 (1964).

(After Ferdinand von Mueller, Australian botanist; Greek *anthos*, flower.)

Prostrate herbs; branches terete; leaves alternate, mostly digitately trifoliolate, long-petiolate; leaflets all similar in size, lamina broad-obovate or cuneiform, entire or distally denticulate; stipules persistent, free, herbaceous. **Inflorescences** pedunculate, of 1–3-flowered racemes, floral bracts and bracteoles herbaceous, variably persistent, floral bract solitary, bracteoles inserted distally; calyx hairy, glabrous internally, upper lobes moderately fused; standard equal to or longer than keel, wings often a little shorter than keel. **Pods** \pm narrow-oblong in profile, glabrous, upper suture not winged and not or hardly ridged; aril not developed or only c. $1/10$ of length of seed. **Sand-peas**.

3 species endemic in Australia.

Reference: Thompson (2011c).

1. **Muelleranthus stipularis** (J.M. Black) A.T.Lee, *Contr. New South Wales Natl. Herb.* 4: 419 (1973). — *Ptychosema stipulare* J.M.Black, *Trans. Roy. Soc. S. Austral.* 62: 103 (1938). — **Illustr.**: *Pl. W. N.S.W.* 407 (1981); I.R.Thomps., *Muelleria* 29: 182, fig. 4l–m (2011).

Prostrate plants with stems to c. 60 cm long, c. 0.5–0.8 mm in diam.; glabrous, or more often with spreading hairs on most parts; leaves: petiole 7–30 mm long; leaflets broad-obovate or cuneiform, mostly 3–7 (–9) × 2–6 mm, flat, apex broadly obtuse to truncate, rarely emarginate; stipules broad-ovate, 2–6 × 2–5 mm. **Flowers** 1 or rarely 2 per raceme, peduncle 10–50 mm long; pedicels 1–2.5 mm long; bract 2–3 mm long, variably persistent; bracteoles 1–2.5 mm long, 0.2–0.4 mm wide; receptacle inconspicuous; calyx 3–3.5 mm long, lobes c. equalling tube; sinus

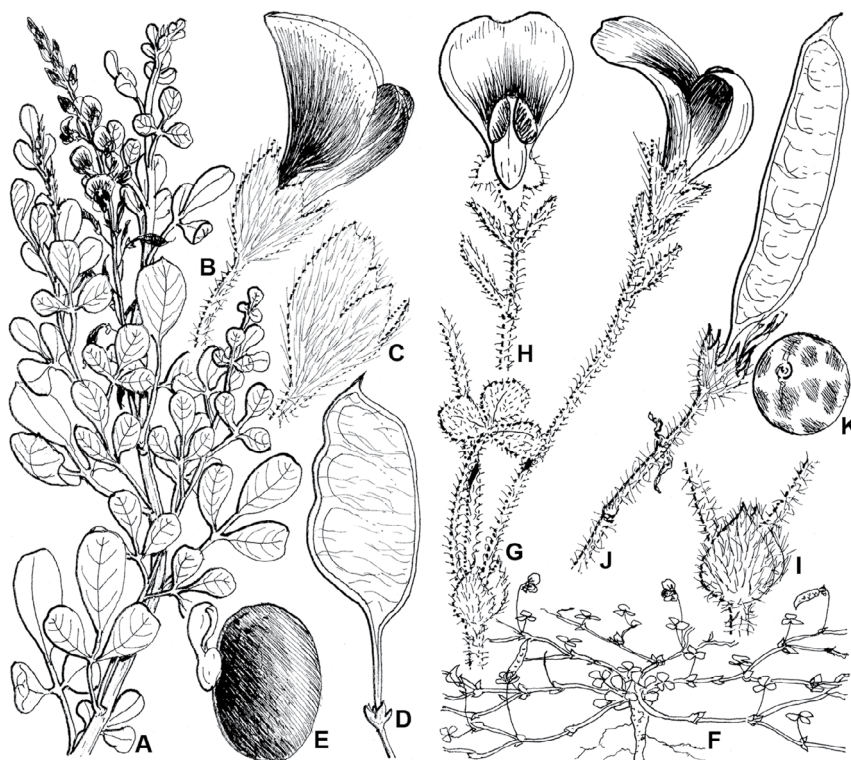


Fig. 3. A–E, *Goodia medicaginea*: A, branch; B, flower; C, calyx; D, fruit; E, seed. F–K, *Muelleranthus stipularis*: F, habit; G, twig with flower; H, flower; I, stipules; J, fruit; K, seed. Illustrations by G.R.M. Dashorst.

between upper lobes 0.8 mm deep, lower lobes slightly longer than upper; standard 4–5 mm long, including claw 2–2.5 mm long, purple except for veins; wings 3–4 mm long, with limb purple throughout; keel 4–5 mm long, greenish-yellow; ovary 6–10-ovulate, style 1–2 mm long. **Pods** with stipe 2.5–4 mm long, body narrow-oblong or lower margin somewhat convex, 20–30 × 4.5–6 mm, mostly 4–8-seeded, base cuneate, beak 0.5–2 mm long, valves not or inconspicuously maculate; seed irregularly globular, 2–3 mm in diam., red and brown, mottled blackish, aril not developed. **Sand pea.** **Fig. 3F–K, Pl. 2J.**

S.A.: NW, LE, GT; W.A.; N.T.; Qld; N.S.W. Flowers: Jul.–Oct.

Glabrous forms occur throughout the range of the species but are less common than the hairy form. *Muelleranthus parvalatus* I.Thomps., which occurs near the northern and eastern borders of, but not in, S.A. (incorrectly recorded as occurring in S.A. in Barker *et al.* 2005, as *M. trifoliolatus*), can be distinguished from *M. stipularis* by the following features: flowers are larger, wings are yellow distally, the keel is much longer than the wings and with bands of purple flecks, stipules are narrower (0.5–1.5 mm wide), pods are slightly broader and mostly fewer-seeded, and seeds are not mottled and have a small but distinct aril. *Muelleranthus parvalatus* is almost glabrous and so is also easily distinguished from the hairy form of *M. stipularis*.

5. PLATYLOBIUM Sm.

Spec. Bot. New Holland 1: 17, t. 6 (1793).

(From the Greek *platys*, flat and *lobos*, lobe, referring to the shape of the fruit.)

Shrubs or subshrubs; branches terete; leaves opposite or alternate, unifoliolate, sessile or petiolate; lamina entire or occasionally lobate; stipules persistent. **Inflorescences** sessile, solitary or in 2–4-flowered clusters, floral bracts and bracteoles scale-like, persistent, with ciliolate margins, floral bracts several to many; bracteoles mostly inserted strongly distally, often large; calyx mostly hairy, glabrous internally, upper lobes shortly fused, markedly longer than lower lobes; petals yellow with red markings, standard a little longer than wings and keel. **Pods** mostly c. narrow-oblong in profile, hairy all over, or with hairs restricted to sutures, upper suture winged; aril c. half to two-thirds of length of seed. **Flat-peas.**

Endemic to southern and eastern Australia with 4 species currently recognised.

Closely related to *Bossiaea*. In S.A. and eastern Australia *Platylobium* can be readily distinguished by the wing-like extension of pods, the larger, conspicuously net-veined leaves, the cluster of floral bracts at the base of pedicels, the

larger bracteoles, and the large rounded upper calyx lobes. Rolling of the valves at dehiscence is a consistent feature of *Platylobium*, whereas in *Bossiaea* this occurs to varying degrees in species with thinner valves.

References: Ross (1983), Thompson (2011b).

1. ***Platylobium obtusangulum*** Hook., *Bot. Mag.* 60, t. 3528 (1833) — *P. obtusangulum* var. *spinulosum* J.H.Willis, *Muelleria* 1: 126 (1967). — **Illustr.:** L.F.Costermans, *Native Trees Shrubs S.E. Austral.*, 194 (1981); J.H.Ross, *Muelleria* 5: 133, fig. 4a–e. (1983); I.R.Thomp., *Muelleria* 29: 156 & 158, figs 1a, 2c (2011).

Sprawling to erect shrub to c. 1 m high; branches with appressed to spreading hairs, glabrescent; leaves opposite, subsessile or petiole to 2 (–3) mm long, a ridge generally marking articulation with petiolule, lamina broad-ovate to narrow-ovate, rhomboidal, triangular, or trilobate, 10–30 × 5–30 mm, base broad-cuneate to cordate or sagittate, margin hyaline, flat to slightly revolute, apex 0.5–3 mm long, with apiculum 0.5–3 mm long, often pungent (lateral angles and lobes also often with pungent points), upper surface glabrous or minutely scabrid, lower surface with scattered appressed hairs or glabrous; stipules triangular, 1.5–5 mm long. **Flowers** 1–3 per axil; pedicels 3–6 mm long, floral bracts 7–14, with longest 5–7 mm long extending beyond pedicel, bracteoles inserted at summit of pedicel, narrow-ovate, 5–7 mm long, convex, glabrous or with some hairs; calyx 8–12 mm long, clothed in long, loosely appressed hairs; upper lobes 4–8 mm wide; standard 12–14 mm long including claw 3–4 mm long, limb oblate, deeply notched, yellow with a red flare around throat and with red flecks in throat, red abaxially at least towards margin; keel 9–10 mm long, mostly pale, reddish distally; ovary 6–8-ovulate, style 4–6 mm long. **Pod** subsessile, body oblong, 12–30 × 9–15 mm, hairy all over or hairs restricted to sutures, wing 2–4 mm wide, up to 8-seeded; seeds 2.5–3 mm long; aril 1–2 mm long. **Common flat-pea, native holly. Pl. 2I.**

S.A.: MU (E side of Mt Lofty Ra.), SL, KI, SE; Vic.; Tas. Grows in forest, woodland and heathland. Flowers: Oct.–Nov.

Exhibits considerable plasticity in leaf morphology. Plants with more strongly trilobate leaves are more common on Kangaroo Island. Generally, lateral spines on leaves arise markedly proximally; however, several specimens from the Mt Lofty Ranges have leaves more orbicular and often with more numerous and more distally placed pungent points. These are referable to *P. obtusangulum* var. *spinulosum* J.H.Willis described from a single Victorian collection. The variety was not recognised by Ross (1983). It appears to be sympatric with plants with typical leaf morphology and is perhaps due to a congenital mutation. The very large upper lobes of the calyx of *P. obtusangulum* often become pinkish, especially on the inner surface. *Platylobium triangulare* R.Br. is vegetatively similar to *P. obtusangulum* and occurs in Vic. close to the S.A. border. It differs most obviously in having flowers on pedicels that conspicuously exceed the bracts, much smaller bracteoles and a longer-stipitate pod.

TRIBE BRONGNIARTIEAE (Benth.) Hutch.

Prepared by I.R. Thompson

Small trees, shrubs or subshrubs, with branches occasionally armed, sometimes with reddish glandular material in axils; leaves alternate, petiolate or rarely sessile, simple, 1–5-foliolate or sometimes rudimentary or absent; stipules present or not, free or rarely forming a scale, variably persistent; lamina of leaves and leaflets mostly entire; leaflets petiolulate, mostly estipellate. **Inflorescences** axillary, sessile, solitary or of few-flowered clusters, or rarely pedunculate, of few-several-flowered racemes; flowers subsessile or pedicellate; floral bract basal, solitary, bracteoles mostly persistent; calyx with tube similar in length to lower lobes, lobes valvate in bud, imbricate in *Templetonia*, upper lobes moderately to strongly fused, sometimes relatively broad and/or long; petals clawed; stamens forming an adaxially open sheath, anthers alternately long and basifixed, short and versatile; ovary 2–8- or rarely many-ovulate. **Pods** dehiscent, stipitate or sessile, body circular to elliptic or narrow-oblong in profile, plump to mildly compressed, valves mostly fairly rigid, sometimes with internal partitions; seeds with hilum short, subapical, longer and extending laterally in *Hovea*; arillate; aril ± annular, usually with a vertical lobe.

10 genera and c. 150–200 species in Central America, South America and Australia. In Australia 6 endemic genera and c. 60 species.

The two genera in S.A., *Hovea* and *Templetonia*, were placed in the Bossiaceae in Jessop & Toelken (1986).

1. Calyx ± densely hairy externally; standard and wing petals various shades of purple; pods nearly circular in profile or elliptic but then pods hairy; plants with leaves..... 6. **Hovea**
- 1: Calyx glabrous or with scattered hairs externally; standard and wing petals entirely red, or yellow with red-brown markings; pods elliptic to narrow-oblong, glabrous; plants with leaves or leafless 7. **Templetonia**

6. HOVEA R.Br.

in W.T.Aiton, *Hortus Kew.* ed. 2, 4: 275 (1812).

(After A.P. Hove, a Polish collector of plants for the Royal Botanic Garden at Kew.)

Small trees, shrubs or subshrubs, branches terete, smooth, rarely spinescent (not in S.A.), sometimes with glandular material evident in axils, generally moderately to densely hairy on several parts, with hairs often brown basally; leaves simple, mostly short-petiolate. **Inflorescences** 1–7-flowered, predominantly in sessile or short pedunculate clusters, or inflorescence sometimes elongated by auxotelic growth, hairy; bracteoles generally inserted ± at summit of pedicel, mostly slender, ± flat; calyx densely hairy, with lobes valvate in bud, upper lobes mostly moderately to strongly fused to form lip that generally expands distally and is at least as long as lowermost lobe; standard and wings a mauve- or blue-purple, sometimes rather pale, rarely white, standard longer than wings, wings longer than a dark-purple tipped keel; ovary glabrous or hairy, 2-ovulate or rarely up to 7-ovulate. **Pods** sessile or stipitate, orbicular to broad-elliptic in profile, mostly only slightly compressed, without internal partitions, mostly 2-seeded; seeds plump, hilum short or long; aril circular, elliptic or oblong to narrow-oblong, entire, with lobe small, inserted near apex. **Hoveas**.

A genus of 38 species endemic in Australia, mostly in eastern states, but also in south-western W.A., N.T., and south-eastern S.A.

1. Standard and wings pale purple; ovary and pods hairy (sometimes glabrescent), pods sessile
 2. Sub-shrubs with an indumentum of straight appressed hairs; bract and bracteoles 0.6–1.8 (–2.2) mm long; standard 6–8 mm long; pod sparsely hairy (SE) 1. **H. heterophylla**
 - 2: Shrubs with an indumentum of curled hairs; bract and bracteoles 2.2–4.0 mm long; standard 11–17 mm long; pod densely hairy (FR)..... 3. **H. purpurea**
- 1: Standard and wings a deep purple-blue; ovary and pods completely glabrous, pods stipitate (garden escapes)
 3. Leaves pungent; stipules setaceous, mostly > 2 mm long 2. **H. pungens**
 - 3: Leaves not pungent; stipules lanceolate, to c. 2 mm long..... 4. **H. trisperma**

1. **Hovea heterophylla** A.Cunn. ex Hook.f., *Fl. Tasman.* 1: 93 (1856). — *Hovea heterophylla* f. *decipiens* Domin, *Biblioth. Bot.* 89: 729 (1926). *Hovea linearis* auct. non (Sm.) R.Br.: T.A.James in Harden, *Fl. New South Wales* 2: 514 (1991); J.H.Ross, *Muelleria* 9: 15 (1996); J.H.Ross, in Walsh & Entwisle, *Fl. Victoria* 3: 805 (1996). — **Illustr.:** Corrick & Fuhrer, *Wildfl. Victoria* 93, fig. 333 (2000), as *H. linearis*; I.R.Thomps., *Austral. Syst. Bot.* 14: 45, fig. 18a–h (2001).

Sprawling to weakly erect subshrubs, mostly less than 0.5 m high, with hairs ± appressed; leaves: petiole 1.5–3 mm long; lamina elliptic, ovate to lanceolate, or narrow-oblong to linear, often varying along a stem, 5–80 × 1.5–10 (–17) mm, with midrib recessed, margins recurved to revolute, apiculum to c. 0.5 mm long, commonly recurved, upper surface glabrous; lower surface sparsely to moderately hairy; stipules lanceolate, 1–2 mm long, sometimes recurved. **Inflorescences** sessile, (1- or) 2- or 3-flowered, or occasionally shortly pedunculate and 4- or 5-flowered; pedicels 1.5–3 mm long, bract and bracteoles 0.6–1.8 (–2.2) mm long, bract persistent; calyx 3.5–5 (–6) mm long, upper lobes 1.5–2 mm wide; standard 6–8 mm long, moderately emarginate, mauve with a greenish-yellow throat; wings 6–7.5 mm long; keel 4.5–5 mm long; ovary 2-ovulate. **Pods** sessile, suborbicular in profile, 7–10 mm long, with scattered appressed hairs, sometimes glabrescent; seeds 3.5–4.5 mm long, dark-brown or red-brown, sometimes mottled; aril oblong or narrow-ovate, 2.5–3.5 mm long, orifice 1.5–2.5 mm long.

Common hovea. Fig. 4A & B, Pl. 3A & B.

S.A.: SE; Qld; N.S.W.; Vic.; Tas. Grows in woodland and forest, often in poorer soils. Flowers: Aug.–Oct.

Treated as a synonym of *H. linearis* by Ross (1996) and in recent state floras, but shown to be distinct by Thompson (2001). *Hovea linearis* is restricted to near-coastal N.S.W. and southern Qld. A feature of *H. heterophylla* is the fine and often minutely recessed reticulate venation of the upper surface of leaves. Pods can superficially appear glabrous and sometimes the valves become glabrous; however, hairs are always evident along the sutures.

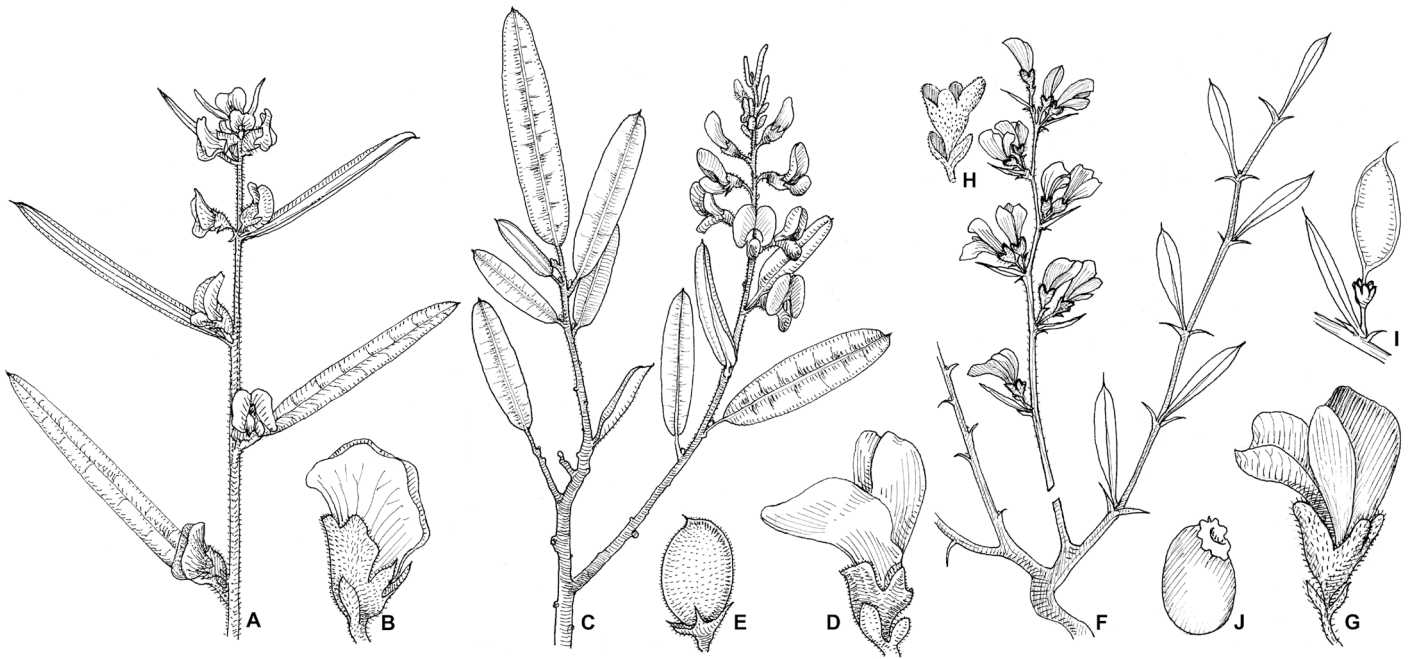


Fig. 4. A & B. *Hovea heterophylla*: A, branch; B, flower. **C-E. *H. purpurea*:** C, branch; D, flower; E, fruit. **F-J. *Templetonia aculeata*:** F, branch; G, flower; H, calyx; I, fruit; J, seed. Illustrations by B. Chandler, from *Flora of South Australia* 2: 692, Fig. 374 & 697, Fig. 377A (1986).

2. ****Hovea pungens*** Benth. in Endl. *et al.*, *Enum. Pl.* 37 (1837). — **Illustr.:** J.H.Ross, *Muelleria* 7(1): 34, fig. 5a–d. (1989).

Erect shrubs to 1.8 m high, with hairs \pm straight, antrorse-appressed to divergent; leaves: sessile or subsessile, lamina narrow oblong-elliptic, lanceolate or linear, 5–30 \times 1–3(–4) mm, with midrib not or hardly recessed, margin strongly revolute, apiculum 1–2 mm long, straight, pungent, upper surface glabrous, lower surface glabrous except for midrib; stipules setaceous, 2–5.5 mm long. **Inflorescences** mostly sessile, 1 (or 2 or 3)-flowered, pedicels 3–9 mm long, bract and bracteoles 1.5–3.5 mm long, bract caducous; calyx 5–7 mm long, upper lobes 2.5–3 mm wide; standard 12–17 mm long, deeply emarginate, purplish-blue, with a white throat; wings 9.8–12.5 mm long; keel 4.2–6.7 mm long; ovary 2-ovulate. **Pods** with stipe 4–6 mm long, body suborbicular in profile, 6–9 mm long, glabrous; seeds 4–5.5 mm long, brown with paler mottling; aril c. elliptic, 2 mm long, orifice 0.8–1 mm long. **Devil’s pins. Pl. 3C & D.**

S.A.: *SL; W.A. Flowers: Jul.–Oct.

A garden escape that is weakly naturalised.

Occasionally cultivated.

3. ***Hovea purpurea*** Sweet, *Fl. Australas.* t. 13 (1827). — *H. beckeri* F.Muell., *Linnaea* 25: 391 (1853). *Hovea longifolia* var. *lanceolata* auct. non (Sims) Benth.: J.M.Black, *Fl. S. Austral.* 2: 305 (1924); *Hovea longifolia* var. *longifolia* auct. non Benth.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 693 (1986). — **Illustr.:** I.R.Thomps., *Austral. Syst. Bot.* 14: 71, fig. 26f–k (2001); *Fl. Victoria* 3: 807, fig. 163e (1996).

Erect shrubs, generally forming a short trunk, to 3 m tall, with hairs mostly curled; leaves: petiole 2–6.5 mm long; lamina narrow-elliptic to narrow-oblong, 12–70 \times 4–10 (–17) mm, with midrib not or only slightly recessed, margins flat or recurved, apiculum 0.1–0.5 mm long, straight; upper surface with hairs along midrib; lower surface covered by a dense felted indumentum; stipules narrow-ovate to lanceolate, 1–2 mm long, sometimes recurved. **Inflorescences** sessile, 2-flowered; pedicels 1.5–2.5 mm long, bract and bracteoles ovate, oblong or obovate, 2.2–4 mm long, bract persistent; calyx 5.2–8.5 mm long, with upper lobes c. 2 mm wide; standard 11.5–17 mm long, moderately emarginate, mauve with a greenish-yellow throat; wings 10.3–15.5 mm long; keel 9.6–15.2 mm long; ovary 2-ovulate. **Pods** sessile, body broad-elliptic in profile, 10–17 mm long, densely hairy; seeds 5.5–7 mm long, dark brown; aril narrow-ovate, 3–4 mm long, without a basal expansion, orifice 2–3 mm long. **Alpine hovea. Fig. 4C–E.**

S.A.: FR, EP, NL; N.S.W.; Vic. Grows in forest and woodland, often amongst rocks. Flowers: Oct.–Dec.

As with many species of *Hovea*, occasional white-petalled mutants have been recorded. A species with a relatively

long keel and stamen-tube, the latter being evident in fruit. Its broad, rounded bracts and bracteoles are also distinctive. S.A. populations are remarkably disjunct from other populations of the species which occur in eastern N.S.W. and far eastern Vic.

(Rare status in S.A.)

4. ***Hovea trisperma** Benth. in Endl. *et al.*, *Enum. Pl.* 37 (1837), var. **trisperma**. — *Hovea lanceolata* var. *linearis* Lindl. in *Edwards's Bot. Reg.* 24: t. 1427 (1831); *H. mangesii* Lindl. in *Edwards's Bot. Reg.* 24: t. 62 (1838).

Sprawling to weakly erect subshrubs to c. 0.8 m high, with hairs appressed to spreading; leaves: petiole 1–3 mm long; lamina narrow-ovate to lanceolate, narrow-elliptic or linear, mostly 8–80 × 3–10 mm, margin recurved, apiculum 0.5–1 mm long, straight or slightly recurved, upper surface ± glabrous, with midrib recessed; lower surface with scattered hairs; stipules linear-lanceolate, to 2 mm long. **Inflorescences** mostly sessile, 1–6-flowered, pedicels 1–4 mm long, bract and bracteoles 1.5–3 mm long, bract generally persistent; calyx 6–8 mm long, upper lobes 3–4 mm wide; standard 10–14 mm long, emarginate, deep purplish-blue, with a white throat; wings 9–11 mm long; keel 6–8 mm long; ovary mostly 3- or 4-ovulate. **Pods** with stipe 3–4 mm long, body suborbicular in profile, 8–12 mm long, glabrous; seeds 4–6 mm long, brown, without mottling; aril c. elliptic, 2.5–3.5 mm long, orifice c. 1.2 mm long.

S.A.: *SL; W.A. A garden escape that is naturalised. Flowers: Jul.–Oct.

A species native to W.A. that superficially resembles *H. heterophylla*. In W.A., there is considerable variation in floral and foliar characters, and Bentham (1864) recognised three varieties. Ross (1989) chose not to recognise these formally. Material collected from S.A. is referable to var. *trisperma* and the above description is based on this variety. *Hovea trisperma* became established following plantings in predominantly native bushland in what is now the Engelbrook National Trust Reserve at Bridgewater. The species regenerated strongly from seed following bushfires in the 1980s. Eradication attempts have been successful in reducing numbers.

Occasionally cultivated.

7. TEMPLETONIA R.Br.

in W.T. Aiton, *Hortus Kew.* ed. 2, 4: 269 (1812).

(After J. Templeton, Irish botanist, 1766–1825.)

Shrubs or subshrubs, branches terete or flattened, longitudinally ridged and/or angular, sometimes spinescent, with glandular material in axils, ± glabrous or only sparsely hairy, with hairs pale; leaves simple or compound (not in S.A.), short-petiolate, or rudimentary or absent, sometimes caducous. **Inflorescences** 1- or 2-flowered, sessile, pedicellate, glabrous except for ciliolate margins of bracts, bracteoles and calyx, or sparsely haired in *T. aculeata*; bracteoles inserted from mid-point to summit of pedicel, generally broad, abaxially convex; calyx with lobes imbricate in bud; upper lobes strongly fused to form lip that is tapering and commonly shorter than lowermost lobe; standard and wings yellow with purple-brown marks, or entirely red in *T. retusa*, standard longer than wings; wings as long as a pale or purple-tipped keel; ovary glabrous, 2–8- or rarely many-ovulate. **Pods** subsessile or more often stipitate, body elliptic, oblong-elliptic or narrow-oblong in profile, mostly slightly to moderately compressed, sometimes internally partitioned; seeds mildly compressed or plump, hilum short; aril elliptic or circular, entire or variously frilled, with a vertical lobe moderately large or absent, inserted near apex or somewhat laterally. **Templetonias**.

A genus of thirteen species endemic in Australia; widely distributed in mainland states and territories, except Qld where only in the far SE.

References: Ross (1982), Thompson (2010).

1. Stipules recurved, spiny, 2–10 mm long; pedicels and calyces with scattered hairs..... 1. **T. aculeata**
- 1: Stipules not recurved or spiny, < 2 mm long, often not evident; pedicels and calyces glabrous
2. Plants leafy, lamina mostly > 10 mm long; bracteoles pale green throughout
3. Shrub; standard 20–45 mm long, red; pods 40–80 mm long, with internal partitions..... 5. **T. retusa**
- 3: Subshrub; standard to 10–15 mm long, yellow with purplish-brown markings; pods 12–26 mm long, without internal partitions..... 7. **T. stenophylla**
- 2: Plants leafless or with leaf rudiments to c. 2 mm long; bracteoles brown-scaly at least distally



Fig. 5. A–D, *Templetonia battii*: A, branch; B, flower; C, margin of bracteole; D, fruit. E–H, *T. egena*: E, branch; F, flower; G, fruits; H, seed; I–L, *T. retusa*: I, branch; J, leaf; K, fruit; L, seed. Illustrations by G.R.M. Dashorst.

- 4. Branches flattened; bracteoles brown-scaly throughout 6. **T. rossii**
- 4: Branches terete; bracteoles brown-scaly in distal third to half
 - 5. Branches markedly divergent, spiny at apex; bracteoles usually with glandular material at apex; seeds 4–5 mm long 2. **T. battii**
 - 5: Branches ± erect, not spiny at apex; bracteoles lacking glandular material at apex; seeds 9–14 mm long
 - 6. Flowering-branch diameter mostly < 1.5 mm, with ridges well-defined; pedicels > 1 mm long at flowering; standard-limb 3–4 times length of claw; pods mostly < 18 mm long 3. **T. egena**
 - 6: Flowering-branch diameter mostly > 1.5 mm, with ridges generally poorly defined; pedicels < 1 mm long at flowering; standard-limb c. 2 times length of claw; pods mostly > 18 mm long 4. **T. incrassata**

1. ***Templetonia aculeata*** (F.Muell.) Benth., *Fl. Austral.* 2: 170 (1864). — *Bossiaea aculeata* F.Muell. *Fragm.* 2: 120 (1861). — **Illustr.:** J.H.Ross, *Muelleria* 5: 17, fig. 9 (1982); *Pl. W. N.S.W.*: 423 (1981).

Subshrubs to c. 0.4 m high, commonly with appressed hairs on most parts; branches moderately divergent, terete, unarmed, commonly with appressed hairs; leaves with petiole to 1 mm long, narrow-elliptic to oblanceolate, narrowing to c. linear upwards, mostly 5–20 × 1–3 mm, pungent; stipules (2–) 3–10 mm long, spiny, recurved, often spreading. **Pedicels** 2–6 mm long, with scattered hairs, bract 1–1.5 mm long, bracteoles 1.5–3.5 long, inserted 1–2 mm below summit of pedicel, sometimes brown-scaly at apex; calyx 3–9 mm long, with scattered hairs, with upper lip ± entire; standard, 12–18 mm long, with limb suborbicular, yellow with purple-brown mark; keel purple distally; ovary 2–6-ovulate, style 6–11 mm long. **Pods** with stipe 5–10 mm long, body elliptic to narrow-oblong in profile, 15–20 mm long, mostly 3–5-seeded, partitioned; seeds 2.5–4 mm long, aril 1–1.5 mm long, margin frilled, lobe 0.5 mm high. **Spiny mallee-pea. Fig. 4F–J. Pl. 4A.**

S.A.: FR, EA, NL, SL; W.A.; N.S.W. Grows in sandy or loamy soils, in grassland, shrubland and woodland. Flowers: Aug.–Oct.

An easily recognised species because of its spiny stipules. Branches are generally flexuose. Leaves tend to be caducous.

2. **Templetonia battii** F.Muell., *Australas. Chem. Druggist*. 2(2): 31 (1887). — *Bossiaea battii* (F.Muell.) Tate, *Handb. Fl. Extratrop. S. Austral.* 65 (1890). — **Illustr.:** J.H.Ross, *Muelleria* 5: 22, fig. 12 (1982).

Erect shrubs to c. 1.4 m high; branches divaricate, \pm terete (slightly flattened at first), forming a terminal spine, glabrous; leaves to c. 1×0.4 mm, sometimes persistent; stipules c. 0.5 mm long. **Pedicels** 0.5–1.3 mm long; bract c. 0.5 mm long, membranous; bracteoles 1.5–2 mm long, inserted \pm at summit of pedicel, brown-scaly distally, usually with glandular material at apex; calyx 2–3.5 mm long, with upper lip notched, with lower median lobe longest; standard suborbicular, 5.5–7 mm long, yellow with a purple-brown mark; keel purple distally; ovary 6-ovulate, style 1.5–2.5 mm long, stout. **Pods** subsessile, body elliptic or oblong-elliptic in profile, 8–15 mm \times 4–7 mm, without partitions, valves not gland-dotted, 1- or 2-seeded; seeds 4.5–5 mm long, aril 1.5–2 mm long, margin frilled, lobe c. 0.5 mm high. **Fig. 5A–D.**

S.A.: NU, EP (north-western section); W.A. Grows in sandy and loamy soils, usually on limestone, in shrubland and woodland. Flowers: Jul.–Nov.

Two distinctive floral features of *T. battii* are the gland-tipped bracteoles and the relatively short, stout style. New growth is likely to be needed to identify rudimentary leaves and stipules, as these structures degenerate with age.

(Rare status in S.A.)

3. **Templetonia egena** (F.Muell.) Benth., *Fl. Austral.* 2: 170 (1864). — *Daviesia egena* F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1854–55: 118 (1855); *Bossiaea egena* (F.Muell.) F.Muell. in W.J.Hooker, *Hooker's J. Bot. Kew Gard. Misc.* 8: 43 (1856). — **Illustr.:** J.H.Ross, *Muelleria* 5: 19, fig. 10 (1982); *Pl. W. N.S.W.* 423(1981).

Shrubs to c. 3 m high; branches erect to suberect, terete, unarmed, glabrous; a single triangular scale at each node 1–1.5 mm long in place of leaves and stipules, becoming eroded. **Pedicels** 1–3 mm long, glabrous, bracts c. 1 mm long, membranous; bracteoles 1–1.5 mm long, inserted \pm at summit of pedicel, brown-scaly in distal half to third; calyx 2.5–4 mm long, with upper lip shallowly notched; standard 5.5–9 mm long, with limb suborbicular, yellow with a purple-brown mark; keel pale greenish or tinged purple distally; ovary 5- to 8-ovulate, style 2.5–4 mm long. **Pods** subsessile, elliptic in profile, 11–18 (–22) \times 5–11 mm, without partitions, valves gland-dotted, 1- or occasionally 2-seeded; seeds 7–9 (–11) mm long; aril 1.5–3.5 mm long, margin frilled, lobe inconspicuous. **Desert broombush, round broombush, desert templetonia. Fig. 5E–H.**

S.A.: NW, LE, GT, FR, EA, EP, NL, MU; W.A.; N.T.; Qld; N.S.W.; Vic. Grows in sandy soils, in grassland and shrubland. Flowers: Aug.–Feb.

Plants from much of south-western S.A. formerly included in *T. egena* are now placed in *T. incrassata*.

4. **Templetonia incrassata** I.Thomps., *Muelleria* 28: 60 (2010). — **Illustr.:** I.R.Thompson, *Muelleria* 28: 55, fig. 1i; 56, fig. 2g–h (2010).

Shrubs to c. 2.5 m high; branches suberect, terete, unarmed, glabrous; a single triangular scale at each node 0.6–1.2 mm long in place of leaves and stipules, becoming eroded. **Pedicels** 0.3–1 mm long, glabrous, bracts c. 1 mm long, membranous; bracteoles 1.5–2.2 mm long, inserted \pm at summit of pedicel, brown-scaly in distal third; calyx 3–4.5 mm long, with upper lip shallowly notched; standard 5.5–8 mm long, with limb suborbicular, yellow with a purple-brown mark; keel generally dark purple distally; ovary 6-ovulate, style 2.5–3.5 mm long. **Pods** subsessile, elliptic in profile, 16–25 \times 7–10 mm, without partitions, valves gland-dotted, 1- or occasionally 2-seeded; seeds 9–14 mm long; aril 1.5–3 mm long, margin crenate to deeply lobate, lobe not evident.

S.A.: NW, NU, GT, EP (Nundroo); W.A. Grows in various soils including sands and calcareous sands, often near lake margins, in woodland, shrubland and grassland. Flowers: Aug.–Oct.

Compared to its closest relative *T. egena*, *T. incrassata* has thicker branches with more widely spaced and often indistinct ridges, shorter pedicels, longer pods and larger seeds. Branches are often glaucous.

5. **Templetonia retusa** (Vent.) R.Br. in W.T.Aiton, *Hortus Kew.* ed. 2, 4: 269 (1812). — *Rafnia retusa* Vent., *Jard. Malmaison* 1: t. 53 (1804). — **Illustr.:** L.F.Costermans, *Native Trees Shrubs S.E. Austral.* 196–197 (1981); J.H.Ross, *Muelleria* 5(1): 5, fig. 1 (1982).

Erect shrubs mostly 0.3–4 m high; branches moderately divergent, angular, unarmed, glabrous, sometimes glaucous; leaves with petiole 1–2 mm long, lamina obovate to oblanceolate, mostly 10–40 (–60) \times 4–23 mm,

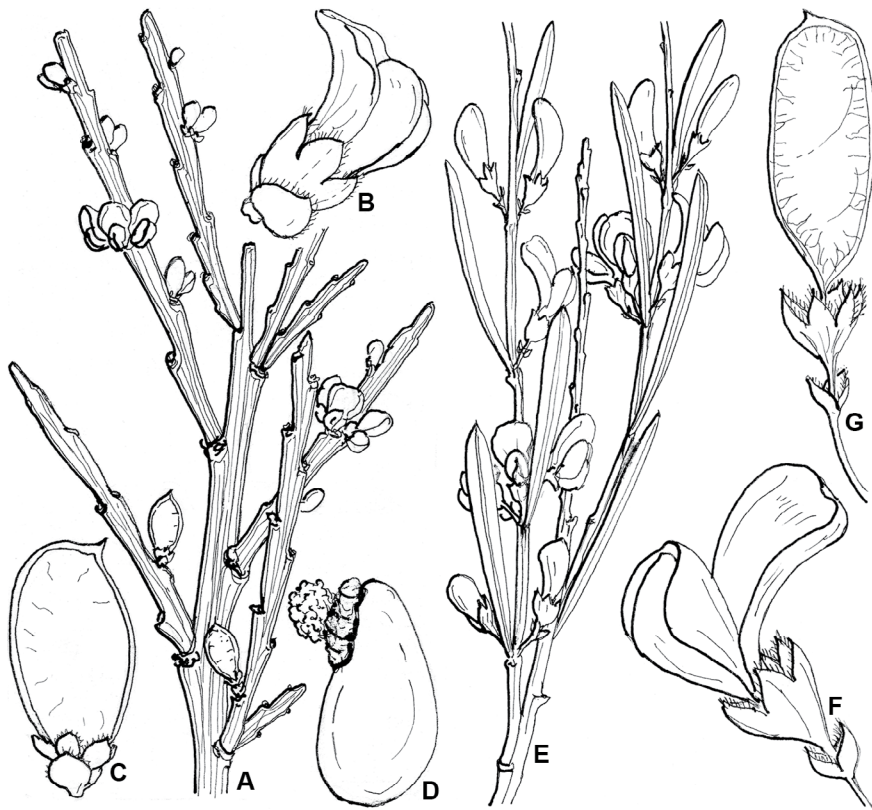


Fig. 6. A–D, *Templetonia rossii*: A, branch; B, flower; C, fruit; D, seed. E–G, *T. stenophylla*: E, branch; F, flower; G, fruit. Illustrations by G.R.M. Dashorst.

flat, rounded, truncate or emarginate; stipules 0.5–1 mm long. **Pedicels** 6–20 mm long, glabrous, bracts 0.5–1.5 mm long, bracteoles 1.5–2.5 mm long, inserted 2–8 mm below summit of pedicel, pale green throughout; calyx 6–11 mm long, with upper lip not or hardly notched; standard 20–45 mm long, with limb elliptic, red, or occasionally white or yellow; keel red, ovary 10–15-ovulate, style 15–35 mm long. **Pods** with stipe 4–10 mm long; body narrow-oblong, mostly 40–80 × 8–15 mm, with internal partitions, valves not gland-dotted, up to 12-seeded; seeds 4–7 mm long; aril 2–3 mm long, margin entire or slightly crenulate, lobe 0.5–1 mm high. **Cockies tongue, common templetonia, red templetonia, flame bush.** Fig. 5I–L, Pl. 4B–E.

S.A.: NU, FR, EP, NL, YP, SL, KI; W.A. Grows in sandy or loamy soils, often on limestone, in scrubland, woodland and forest. Flowers: Jul.–Oct.

Has a marked divergence in floral form compared to other species of *Templetonia*. Moderately distinct forms of *T. retusa* can be recognised in S.A., including a long-flowered form on Kangaroo Island, a broad-leaved form in the Flinders Ranges, and a long-leaved form near Port Germein Gorge.

Widely cultivated.

6. ***Templetonia rossii*** (F.Muell.) I.Thomps., *Muelleria* 28: 63 (2010). — *Bossiaea rossii* F.Muell., *Fragm.* 3: 94 (1862). *T. sulcata* auct. non (Meisn.) Benth.: J.H.Ross, *Muelleria* 5(1): 23 (1982); J.H.Ross, *Muelleria* 5(4): 277 (1984); J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 699 (1986). — **Illustr.:** *Pl. W. N.S.W.* 424 (1982), as *T. sulcata*; Corrick & Fuhrer, *Wildfl. Victoria* 105, fig. 373 (2000), as *T. sulcata*; I.R.Thompson, *Muelleria* 28: 55, fig. 1f; 56, fig. 2e & 2h (2010).

Erect shrubs to c. 1.4 m high; branches moderately divergent, flattened, longitudinally ridged, tapered but not spiny at apex, glabrous, sometimes glaucous; leaf rudiments to c. 2 × 0.4 mm, mostly caducous; stipules c. 1 mm long. **Pedicels** 0.5–1.5 mm long, glabrous, bracts c. 1 mm long, brown-scaly; bracteoles 1.5–3 mm long, inserted ± at summit of pedicel, largely brown-scaly; calyx 2.5–3.5 mm long, with upper lip not or only shallowly notched; standard 6–7 mm long, with limb broad-obovate, yellow with a purplish-brown mark; wings and keel 4–5 mm long, keel purple distally; ovary 2- or 3-ovulate, style c. 3 mm long. **Pods** with stipe c. 1 mm long, body elliptic or oblong-elliptic in profile, 7–12 (–16) mm long, without partitions, with valves not gland-dotted, 1- or 2- or rarely 3-seeded; seeds 3.5–5 mm long; aril 1.5–2 mm in diam., margin entire, lobe 0.3–0.7 mm high. **Flat templetonia, flat mallee-pea.** Fig. 6A–D, Pl. 4H & I.

S.A.: EP, NL, MU, YP; W.A.; N.S.W.; Vic. Grows in sandy and loamy soils, in shrubland and woodland. Flowers: Aug.–Oct.

Recently segregated (Thompson 2010) from *T. sulcata* (Meisn.) Benth., a species now considered endemic to western W.A. In S.A. all material previously referred to *T. sulcata* is *T. rossii*. *Templetonia rossii* differs most notably from *T. sulcata* in having non-spinescent branchlets, the upper lip of the calyx with a less distinct sinus, and larger and more completely brown and scaly bracteoles. Sterile specimens have in the past been confused with *Bossiaea walkeri* which has a superficially similar vegetative structure. The latter, however, has branches with a more prominent central zone, and it lacks the glandular material that is seen at nodes in species of *Templetonia*.

7. **Templetonia stenophylla** (F.Muell.) J.M.Black, *Fl. S. Austral.* 2: 304 (1924). — *Bossiaea stenophylla* F.Muell., *Fragm.* 1: 9 (1858); *T. muelleri* Benth., *Fl. Austral.* 2: 169 (1864). — **Illustr.:** J.H.Ross, *Muelleria* 5(1): 10, fig. 5 (1982); Corrick & Fuhrer, *Wildfl. Victoria* 105, fig. 373 (2000).

Weakly erect or decumbent subshrubs to c. 0.5 m high; branches terete or slightly angular, not spiny at apex, glabrous; leaves with petiole 1–1.5 mm long; lamina narrow-oblong or narrow oblong-elliptic narrowing upwards to linear, 20–50 × 1–8 mm, mostly concave to folded, rounded becoming acute upwards and then sometimes with a small recurved mucro; stipules 1–2 mm long. **Pedicels** 4–8 mm long, glabrous; bract 1–1.5 mm long, green; bracteoles 1.5–2.5 mm long, inserted 1–3 mm below summit of pedicel, pale green throughout; calyx 4–5 mm long, with upper lip shallowly notched; standard 10–15 mm long, with limb orbicular, yellow with a purplish-brown mark; wings and keel to c. 12 mm long, keel pale, sometimes tinged purple; ovary mostly 8-ovulate; style 4–8 mm long. **Pods** with stipe 3–5 mm long, body elliptic to narrow-oblong in profile, 12–26 × 8–11 mm, without partitions, valves not gland-dotted, commonly 6–8-seeded; seeds 3.5–5 mm long; aril c. 1.5 mm long, margin entire, lobe c. 0.4 mm high. **Leafy templetonia.** **Fig. 6E–G, Pl. 4F & G.**

S.A.: MU (near Hartley), SE; Qld; N.S.W.; Vic. Grows in sandy, loamy or clay soils, on slopes and plains, in forest, woodland and grassland. Flowers: Aug.–Oct.

(Vulnerable status in S.A.)

TRIBE INDIGOFERAE Benth.

Prepared by Peter G. Wilson

Herbs, shrubs or small trees with biramous hairs; leaves usually present, simple, unifoliolate or imparipinnate; leaflets, when present, opposite, less commonly alternate on the rachis; stipules sometimes persistent and somewhat spinescent; stipels usually absent. **Inflorescence** usually an axillary raceme; flowers usually lacking bracteoles; calyx with teeth often subequal, shorter to longer than the tube; petals commonly pink to red or purplish; keel with lateral spurs; stamens diadelphous with 9 stamens forming a tube (tips of filaments free) and 1, the adaxial one, free; anthers versatile, usually apiculate. **Pods** with short pedicels, mostly straight and cylindrical but subspherical, 4-angled, curved or coiled pods also occur; seeds shortly cylindrical to cuboid, lacking an aril, and often separated in fruit by partitions.

6 genera, largely pantropical and southern temperate in distribution; 2 genera native to Australia.

1. Standard glabrous; keel rostrate; fruit somewhat bilaterally flattened; partitions between seeds membranous; endocarp never spotted..... 8. **Indigastrum**
 1: Standard with hairs on back; keel not rostrate; fruit ± round (rarely somewhat tetragonal) in section; partitions between seeds (when present) usually pithy; endocarp often spotted 9. **Indigofera**

8. INDIGASTRUM Jaub. & Spach

Ill. Pl. Orient. 5: 101, t. 492 (1856).

(Neo-Latin *indigo*, an allusion to the genus *Indigofera*, and the suffix *-astrum*, meaning ‘incomplete likeness’)

Indigofera subg. *Indigastrum* (Jaub. & Spach) Gillett, *Kew Bull., Add. Ser.* 1: 123 (1958).

Annual herbs or subshrubs; hairs equally two-armed, appressed, multicellular and glandular hairs absent; leaves pinnate, rarely 1–3-foliolate (but never exclusively unifoliolate); stipels absent; stipules present, not persistent or spinescent. **Inflorescence** a pedunculate axillary raceme; flowers pedicellate; bracts caducous; calyx lobes 5, equal to or longer than the tube, with a broad u-shaped sinus between the upper lobes; corolla pink, mauve or white; standard glabrous, base narrow, gradually tapering to the claw; wings glabrous; keel glabrous, lateral pockets pouch-like, apex open, ± spatulate; stamen filaments alternating long and short; anthers apiculate, glabrous or anthers of the shorter stamens rarely with scales at the base; ovary sessile, pubescent; ovules numerous; style shorter than the ovary, incurved; stigma oblique. **Fruit** usually straight and descending, linear, terete to slightly bilaterally flattened; endocarp never spotted; seeds cylindrical to compressed cuboidal, separated by papery outgrowths of the endocarp.

A predominantly African genus with one species extending to India and Australia.

1. **Indigastrum parviflorum** (Wight & Arn.) Schrire, *Bothalia* 22: 168 (1992) — *Indigofera parviflora* Heyne ex Wight & Arn., *Prodr. Fl. Ind. Orient.* 201 (1834). — **Illustr.:** Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 184 (1990); *Fl. Kimberley Reg.* 412, fig. 125B (1992); Milson, *Pl. Ident. Arid Zone* 50 (1996).

Erect, annual herb 0.2–0.75 (–1.5) m high; young stems ridged, green, hairs moderately dense, appressed; leaves with (1–) 5–11 leaflets; petiole (3–) 7–15 (–20) mm long; leaflets linear to narrowly elliptical or ovate, (10–) 20–45 × 1–6 mm wide; upper surface green, glabrous, or rarely sparsely hairy with appressed hairs; lower surface green, hairs sparse to moderately dense, appressed; apex obtuse and shortly mucronate; stipules narrowly triangular or subulate, 1–1.9 mm long. **Inflorescence** (2–) 10–30 (–40) mm long, shorter than the leaf; bracts ovate, 0.3–1.1 mm long; flowers purplish to pinkish to red or orange; pedicel 0.5–0.9 mm long; calyx 1.5–3 mm long; hairs sparse to moderately dense, white, appressed; lobes equal to or longer than the tube; standard obovate, 5.9–6.5 (–7.2) × (3.5–) 4.5–5.2 mm; wing narrowly obovate, 6.5–8 × (2.0–) 2.7–3.5 mm; keel 5.5–7.7 × 1.2–1.5 mm, glabrous; apex spatulate, drawn out from body of the keel (1–) 1.4–2.2 mm; lateral pockets present but inconspicuous, 0.1–0.3 mm long; staminal tube 3–3.8 mm long; ovary moderately hairy. **Fruit** descending, somewhat bilaterally flattened, (12–) 20–40 (–48) × 2–3 mm, yellowish or brown; hairs moderately dense, appressed; apex upturned, shortly beaked; seeds 10–14 per fruit. **Smallflower indigo.**

S.A.: LE; Qld; N.T.; W.A. North-eastern to southern Africa and India. Recorded from heavy black or red clay soils, gravelly loams or sand in grasslands and open savanna woodlands. Flowers: Feb.–June.

A variable species that is often found on roadsides and other disturbed sites and has therefore been regarded as a weed (Lazarides *et al.* 1997).

9. INDIGOFERA L.

Sp. Pl. 2: 751 (1753).

(Neo-Latin *indigo*, the colour; *-fera*, ‘bearing’; referring to the production of this dye by some species.)

Anil Mill., *Gard. Dict. Abr. ed.* 4: 95 (1754); *Anila* Ludw. ex Kuntze, *Revis. Gen. Pl.* 1: 159 (1891). *Sphaeridiophorum* Desv., *J. Bot.* 1: 125 (1813); *Indigofera* subg. *Sphaeridiophora* Benth. in Benth. & Hook.f., *Gen. Pl.* 1: 494 (1865).

Annuals, subshrubs or shrubs; hairs typically two-armed, sometimes with multicellular and/or gland-tipped hairs present as well; leaves simple, unifoliolate, trifoliolate or pinnate, discolorous; stipels present in some species, persistent. Stipules present, sometimes persistent and ± spinescent. **Inflorescence** a pedunculate axillary raceme; flowers pedicellate; bracts usually deciduous, occasionally persistent; calyx lobes 5, subequal or the lowermost longer; sinus between upper lobes v- to u-shaped; corolla red or pink to purple; standard hairy on adaxial surface, base abruptly tapering to the claw; wings variously hairy; keel hairy at apex and upper margin fringed, lateral pockets spur-like; stamens 10, 9 filaments connate and 1 free; filaments alternating long and short; anthers apiculate, glabrous or with tufts of hairs at the apex and/or the base; ovary sessile, usually pubescent; ovules 1, 2 or numerous; style longer, or sometimes shorter, than the ovary, incurved; stigma capitate. **Fruit** straight or curved, spreading to descending, rarely ascending, globose to linear, terete or sometimes angular, usually dehiscent; endocarp very often spotted; seeds globose to cylindrical or cuboidal, separated by papery or pithy outgrowths of the endocarp. **Indigos.**

Indigofera is a large and diverse genus of c. 730 species, of which c. 70 occur in Australia (c. 53 endemic, 7 native and 10 introduced). Phylogenetic studies by Schrire *et al.* (2009) have shown that the species fall into four well-supported groups, which they call the Palaeotropical, Pantropical, Cape and Tethyan subclades. Almost all endemic Australian species are members of the Pantropical subclade, which also contains the type species of the genus, *I. tinctoria* L.

1. Leaves apparently simple..... 9. **I. linifolia**
 1: Leaves pinnate
 2. Leaflets alternate or subopposite; pod (1–) 2 (–3)-seeded 10. **I. linnaei**
 2: Leaflets opposite on rachis; pod with seeds > 3
 3. Gland-tipped hairs always present, at least on the ovary or fruit; pod 1.5–2 mm diameter..... 3. **I. colutea**
 3: Gland-tipped hairs absent; pod 2 mm or more in diameter
 4. Leaves usually with 5 leaflets (range 3–9)
 5. Pod ± tetragonal; flowers pink 5. **I. ewartiana**
 5: Pod terete; flowers red..... 6. **I. georgei**

- 4: Leaves usually with 7 or more leaflets
 - 6. Upper surface of leaflets glabrous or sparsely appressed-hairy; pods \pm glabrous
 - 7. Stems \pm tetragonal; stipules spinescent 7. **I. helmsii**
 - 7: Stems \pm terete or irregularly angular; stipules not spinescent 1. **I. australis**
 - 6: Upper surface of leaflets moderately to densely hairy; pods variously hairy
 - 8. Keel 4–6.5 mm long; staminal tube < 4 mm long
 - 9. Perennial subshrub; flowers pink 12. **I. psammophila**
 - 9: Shrub; flowers deep purplish pink 2. **I. basedowii**
 - 8: Keel 6.5–9 mm long; staminal tube \geq 4 mm long
 - 10. Leaflets grey-green to grey
 - 11. Leaflets 15–21; calyx lobes longer than the tube 11. **I. longibractea**
 - 11: Leaflets 9–15; calyx lobes shorter than or equal to the tube 4. **I. cornuligera**
 - 10: Leaflets densely white-hairy 8. **I. leucotracha**

1. **Indigofera australis** Willd., *Sp. Pl.* ed. 4, 3: 1235 (1802). — *Anila australis* (Willd.) Kuntze, *Revis. Gen. Pl.* 2: 938 (1891); *I. sylvatica* Sieb. ex Spreng., *Syst. Veg.* 3: 278 (1826); *I. angulata* Lindl., *Bot. Reg.* t. 991 (July 1826), *nom. illeg.*; *I. lindleyana* Steud., *Nomencl. Bot.* ed. 2, 1: 807 (1841), *nom. illeg.*

Erect shrub, 0.5–2 m high; young stems ridged to terete, glabrous or with sparse, appressed hairs; leaves with (3–) 7–25 leaflets; stipules triangular (often with a broad base swollen by a dense mass of multicellular hairs and narrowing quickly to a narrow, drawn out tip), 1–4 (–5.5) mm long, not thickened or spinescent, not persistent; petiole 3–15 (–19) mm long; rachis furrowed, multicellular hairs between leaflet pairs absent to dense, red to brown, club-shaped; stipels usually absent; leaflets variable, ovate to obovate or elliptical, (3–) 5–40 (–63) \times (2–) 2.5–10 (–23) mm; upper surface green, glabrous or hairs sparse, appressed; lower surface green (generally paler than above), glabrous or with sparse appressed hairs; apex acute, emarginate or obtuse and mucronate. **Inflorescence** (5–) 20–100 (–220) mm long, shorter to longer than leaves; bracts triangular, 0.5–1.5 (–3) mm long; flowers pink to purple; pedicel 1.5–4 (–5.5) mm long; calyx (1–) 1.5–3 mm long with short subequal lobes, clothed with sparse appressed hairs; standard ovate, obovate or orbicular, 6–8 (–10.6) \times 5.5–9 mm; wings narrowly obovate, 6–11 \times 1.7–3.5 mm; keel (5.5–) 6–10 \times 2–3 mm; apex rounded to acute; lateral pockets 0.8–1.5 mm long; staminal tube 4–6.5 mm long; ovary glabrous to moderately hairy. **Fruit** ascending to descending, terete, (13–) 25–45 (–52) \times 2–4 mm, brown, glabrous or with scattered appressed hairs; endocarp spotted; seeds (4–) 8–10 (–12) per fruit. **Austral indigo, hill indigo, native indigo.**

A widespread and variable species with a range that extends from southern Qld, though the southern States (including Tas.) and across to W.A. In N.S.W. and Qld there is marked variation in leaflet number and size, habit and stem morphology (ribbed vs. \pm terete), but there is rarely any readily discernible pattern to the variation. However, the populations found in W.A., and the western part of S.A., are morphologically relatively uniform and are recognised as a separate subspecies (Wilson & Rowe 2010).

- 1. Leaves usually with 7–15 leaflets; leaflets usually 10–40 mm long; petiole usually 6–15 mm long; stipule-bases not swollen by masses of multicellular hairs; peduncle usually 10–20 mm long 1a. **I. australis** subsp. **australis**
 - 1: Leaves usually with 17–25 leaflets; leaflets usually 5–10 mm long; petiole usually 3–6 mm long; stipules usually with bases swollen by masses of multicellular hairs; peduncle usually 4–7 mm long 1b. **I. australis** subsp. **hesperia**
- 1a. **Indigofera australis** Willd. subsp. **australis**. — *I. australis* var. *gracilis* DC., *Prodr.* 2: 226 (1825); *I. australis* var. *angulata* Benth., *Fl. Austral.* 2: 200 (1864), partly; *I. australis* var. *minor* Benth., *Fl. Austral.* 2: 200 (1864). — **Illustr.:** *Pl. W. N.S.W.* 396 (1982); *Fl. Victoria* 3: 671, fig. 135c (1996).

Shrub, 0.5–2 m high; leaves with (3–) 7–15 (–21) leaflets; stipules 1–2.5 (–5) mm long; petiole (3.5–) 6–15 (–19) mm long; stipels generally absent, rarely 0.3–0.6 mm long; lamina ovate to elliptical or oblong, (5–) 10–40 (–63) \times (2.5–) 5–10 (–23) mm. **Inflorescences** (13–) 30–100 (–220) mm long; peduncle usually 10–20 mm long; bracts 0.5–1 (–2) mm long; pedicels (1.5–) 2–4 (–5.5) mm long; calyx (1–) 1.5–3 mm long, sparsely hairy with white to

brown hairs; standard 6–8 (–10.6) × 6.5–9 mm; wings 6.5–11 × 2.5–3.5 mm; keel 6.5–10 × 2.2–3 mm; lateral pockets 0.8–1.5 mm long; staminal tube 4–6.5 mm long; ovary glabrous. **Fruit** (13–) 30–45 (–52) × 2.5–4 mm, usually glabrous. **Pl. 5A.**

S.A.: LE (N edge of Flinders Ra.), FR, EA, NL, SL, MU, SE; Qld; N.S.W.; Vic.; Tas. Often found on hills in shallow soil amongst rocks in eucalypt savanna woodland communities. Flowers: Jul.–Dec.

- 1b. **Indigofera australis** subsp. **hesperia** Peter G. Wilson & Rowe, *J. Adelaide Bot. Gard.* 24: 68 (2010). — *I. ervoides* Meisn. in Lehm., *Pl. Preiss.* 1: 88 (1844); *I. australis* var. *angulata* Benth., *Fl. Austral.* 2: 200 (1864), partly. — **Illustr.:** Grieve, *How to know W. Austral. Wildfl.* 2: 462 (1998).

Shrub, 0.3–1.5 (–2) m high; young stems ridged; leaves with (7–) 17–25 leaflets; stipules 2.5–4 (–5.5) mm long, swollen bases often persistent; petiole 3–6 (–10) mm long; stipels absent or inconspicuous; lamina obovate, (3–) 5–10 (–20) × (2–) 2.5–4.5 (–6.5) mm. **Inflorescences** (5–) 20–70 (–95) mm long; peduncle usually 4–7 mm long; bracts 0.5–1.5 (–3) mm long; pedicels 1.5–4 mm long; calyx 1.5–3 mm long, clothed with sparse, brown, appressed hairs; standard 6.5–7.5 × 5.5–7.5 mm; wings 6–8 × 1.7–3 mm wide; keel (5.5–) 6–7.5 × 2–2.7 mm; lateral pockets 0.8–1.3 mm long; staminal tube 4–4.8 mm long; ovary glabrous to moderately hairy. **Fruit** (17–) 25–40 × 2–3 mm deep, glabrescent or very sparsely hairy. **Fig. 7A–D, Pl. 6A & B.**

S.A.: GT, FR, EP, NL; W.A. Occurs in shallow soils on rocky substrates in shrubland or low open woodland. Flowers: Aug.–Oct.

2. **Indigofera basedowii** E.Pritz., *Repert. Spec. Nov. Regni Veg.* 15: 356 (1918). — **Illustr.:** Elliott & Jones, *Encyc. Austral. Pl.* 5: 409 (1990); Urban, *Wildfl. & Pl. Centr. Austral.* 95 (1990), as *I. georgei*.

Erect and spreading shrub, 0.3–1 m high; young stems four-angled, grey-green, pubescent with moderately dense to very dense hairs. Leaves with (3–) 7–11 leaflets; stipules narrowly triangular, (2–) 3–7.5 (–9) mm long; petiole 4–12 mm long; stipels conspicuous, 0.3–2.7 (–4.2) mm long; leaflets elliptical to obovate, (5–) 9–23 (–30) × (3–) 5–14 mm, with both surfaces green or grey-green, but somewhat discoloured; apex obtuse and mucronate or apiculate (some appearing emarginate). **Inflorescences** (30–) 55–145 (–180) mm long, longer than leaves; bracts subulate to linear, (2–) 3–5.5 (–7.5) mm long; flowers deep pink to purple; pedicel 0.2–1.5 mm long; calyx 2.3–4.2 mm long, with lobes equal to or longer than the tube, clothed with moderately dense to dense grey to almost black, shortly spreading hairs; standard broadly obovate to orbicular, 5.5–7.2 × 5–7.5 mm; wings spatulate, 5.5–7 × 1.7–2.5 (–3.2) mm; keel 5.2–6.5 × 1.5–2.2 mm; lateral pockets 0.5–1 mm long; staminal tube 3–3.7 mm long; ovary densely hairy. **Fruit** ascending to descending, terete, 15–42 × 2.5–5 mm with dense, spreading hairs; endocarp spotted; seeds 5–10 per fruit. **Showy indigo.**

S.A.: NW; N.T. Found on coarse gravel or sand, in skeletal soils of rocky granite, quartz and sandstone hills, on ridges, in creek beds or on flats at the bases of hills. Flowers: (May–) June–Sep.

3. [?]**Indigofera colutea** (Burm. f.) Merr., *Philipp. J. Sci.* 19: 355 (1921). — *Galega colutea* Burm. f., *Fl. Ind.* 172 (1768); *I. viscosa* Lam., *Encycl.* 3: 247 (1789). — **Illustr.:** Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 180 (1990); Milson, *Pasture Pl. N.W. Queensl.* 83 (2000).

Erect or occasionally prostrate herb, 0.1–0.5 m high; young stems ridged, appressed-hairy; gland-tipped hairs usually present, dense, spreading; leaves with 7–15 (–21) leaflets; stipules subulate, 1–3 (–5) mm long; petiole 3–10 (–16) mm long; rachis furrowed; stipels absent; leaflets elliptical to obovate, 2.5–9 (–13.5) × 1–4 (–7.5) mm, sparsely to moderately appressed-hairy; lower surface paler than the upper; apex obtuse or acute and shortly mucronate. **Inflorescences** (5–) 15–50 (–90) mm long, shorter to longer than leaves; bracts ovate to linear, 0.5–1.5 (–3) mm long; flowers red; pedicel 0.2–1.3 (–2.5) mm long; calyx 1.5–2.8 mm long, with subequal lobes longer than the tube, clothed with moderately dense, white, appressed hairs; standard red, obovate to elliptical, (2.5–) 3.4–4.2 × 2–2.8 mm; wings narrowly obovate or spatulate, 3.2–4.6 × 0.7–1.2 mm; keel 3–5 × 1–1.5 mm, apex rounded or acute, lateral pockets 0.5–0.7 mm long; staminal tube (1.5–) 2–3 mm long; ovary moderately hairy. **Fruit** ascending or spreading, terete, (5–) 10–20 (–25) × 1.5–2 mm, brown, hairs moderately dense to dense, appressed; glandular hairs present; endocarp spotted; seed (3–) 7–13 per fruit. **Sticky indigo; rusty indigo. Fig. 7H–J, Pl. 5B & C.**

S.A.: *NW, [?]LE, *FR; W.A.; N.T.; Qld; N.S.W. Africa, Arabia, India, Sri Lanka, Burma, Thailand, Vietnam,

Indonesia and New Guinea. Recorded from sand dunes, grassy plains, or in open forest or woodland on soils derived from a wide range of substrates. As there is a pre-1924 collection from LE, it is thought to be questionably native in that region, but more recent records from LE and other regions are considered more likely to be alien. It grows readily in disturbed sites and is listed as a weed in Lazarides *et al.* (1997). Flowers: year-round, but mostly Feb.–June.

The distribution and density of glandular hairs in this species is rather variable. In some instances, they seem to be found only on the ovary and fruit but in most cases they also occur on the vegetative parts of the plant.

4. ***Indigofera cornuligera*** Peter G. Wilson & Rowe, *J. Adelaide Bot. Gard.* 24: 71 (2010). — *I. leucotricha* auct. non E.Pritz.: J.Z.Weber, *Fl. S.Austral.* 2: 581 (1986), partly.

Spreading to erect subshrub or shrub to 1.25 m high; young stems terete or slightly ridged, green or grey to brown, with dense to very dense, appressed and shortly spreading hairs; leaves usually with 9–15 leaflets; stipules triangular, generally distinctly thickened, 1.5–4 mm long, persistent, \pm spinescent; petiole 1–4 (–7) mm long; rachis furrowed, multicellular hairs between leaflet pairs sparse to dense, usually conspicuous, red to dark brown; stipels absent or inconspicuous; leaflets obovate, usually 2–8.5 \times 1–5.5 mm; grey to green, with sparse to moderately dense appressed hairs; lower surface generally paler; apex obtuse. **Inflorescences** equal to, or longer than leaves; bracts triangular to ovate (sometimes thickened and persistent), usually 1–2 mm long; calyx with subequal lobes less than or equal to the tube, clothed with moderately dense to dense, dark, appressed or shortly spreading hairs; petals to c. 9 mm long; staminal tube mostly 4.5–6.5 mm long; ovary moderately hairy. **Fruit** spreading to descending, terete; hairs sparse to dense, appressed to spreading; endocarp spotted; seed usually up to 10 per fruit.

In the previous edition of the *Flora of South Australia*, this taxon, with its two geographically separate subspecies, was included under *Indigofera leucotricha*. However, in S.A., the latter species has a limited range and is only found in the Lake Eyre region.

1. Flowers pink to purplish; sepals \pm straight; clusters of multicellular hairs between leaflet pairs distinct, usually also scattered along the rachis 4a. ***I. cornuligera*** subsp. ***cornuligera***
1. Flowers red; sepals mostly with recurved tips; clusters of multicellular hairs between leaflet pairs not strongly developed 4b. ***I. cornuligera*** subsp. ***flindersensis***

4a. ***Indigofera cornuligera*** subsp. ***cornuligera***

Spreading to erect subshrub or shrub, (0.2–) 0.4–1.25 m high; leaves with (7–) 9–15 (–21) leaflets; multicellular hairs in distinct clusters between leaflet pairs and scattered along the rachis; stipules 1.5–4 mm long; petiole 1–4 (–7) mm long; leaflets obovate, 2.5–7 (–11) \times 1.5–4 (–5.5) mm; apex obtuse and emarginate. **Inflorescences** (7–) 15–50 (–85) mm long, equal to, or longer than leaves; bracts 1–2 mm long; pedicel 1–2 mm long; calyx 2–4 mm long, clothed with moderately dense to dense, brown to black (rarely pale) appressed or shortly spreading hairs; sepals \pm straight; flowers pink to purplish; standard ovate to orbicular, 6.5–8.3 \times 6.5–9.5 mm; wings spatulate, 6.5–8 \times 2–4.5 mm; keel 7–8 \times 3–3.5 mm deep; apex rounded to acute; lateral pockets 0.5–1.3 mm long; staminal tube (4–) 4.5–6.5 mm long. **Fruit** (15–) 20–30 (–40) \times 2.5–4 (–4.5) mm deep, brown, tomentose; hairs sparse to moderately dense, appressed to shortly spreading; seed (4–) 7–10 (–12) per fruit.

S.A.: NW, LE; W.A.; N.T. Found on hillsides, rocky ground, and in gorges and creek outwash areas. Flowers: June–Sep.

4b. ***Indigofera cornuligera*** subsp. ***flindersensis*** Peter G. Wilson & Rowe, *J. Adelaide Bot. Gard.* 24: 72 (2009).

Erect and spreading shrub or subshrub, 0.3–1.2 m high, up to 2 m wide; leaves with (5–) 11–15 (–19) leaflets; multicellular hairs not distinctly clustered between leaflet pairs; stipules 1.5–3.5 mm long; petiole 1–4 (–7) mm long; leaflets obovate, 2–8.5 \times 1–6 mm; apex obtuse, mucronate and emarginate. **Inflorescences** 25–110 mm long, longer than leaves; bracts 1.8–2.3 mm long; pedicel 1.5–3.5 mm long; calyx 2.5–4 (–5) mm long, clothed with dense, brown to almost black, appressed hairs; sepals mostly with recurved tips; flowers red; standard broadly ovate or orbicular, (5–) 6–9 \times 7–10 mm; wings narrowly obovate or spatulate, 6.5–8.5 \times (1.7–) 2.5–3.7 mm; keel (5.5–) 6.5–9 \times 2.4–3.3 mm; apex acute or rounded; lateral pockets 1–1.7 mm long; staminal tube (4–) 4.5–6 mm long. **Fruit** 18–32 \times 2.5–3 mm, grey to brown, tomentose, often glabrescent; hairs sparse to dense, spreading; seed c. 9 per fruit. **Fig. 8H–L, Pl. 5D & E.**

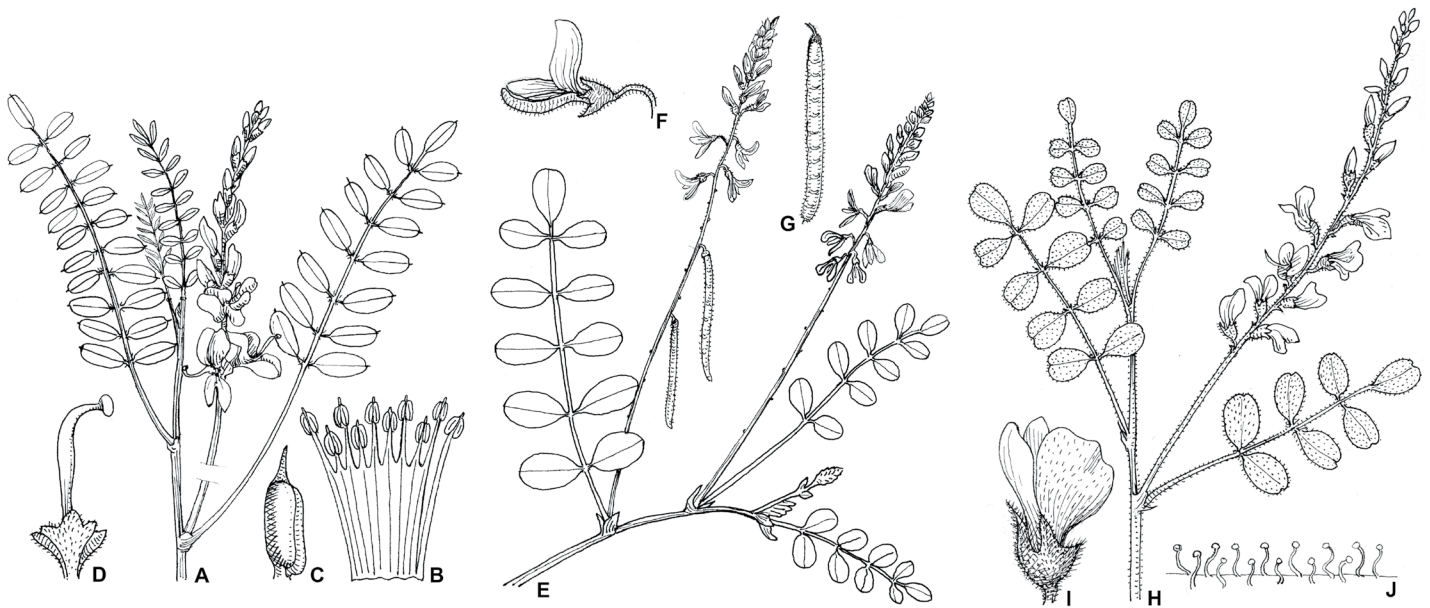


Fig. 7. A–D, *Indigofera australis* subsp. *hesperia*: A, twig; B, connate stamens; C, anther; D, ovary with calyx. **E–G, *I. psammophila*:** E, twig; F, flower; G, fruit. **H–J, *I. colutea*:** H, twig; I, flower; J, glandular tomentum. Illustrations by B. Chandler, from *Flora of South Australia* 2: 578–579, Fig. 306A, 307 (1986).

S.A.: LE (N edge of Flinders Ra.), FR, EA (Reaphook Hill). Endemic to the northern Flinders Ranges, where it is found on rocky hillsides or in rocky creek beds on a range of substrates including shale and limestone. Flowers: Jul.–Sep.

5. ***Indigofera ewartiana*** Domin, *Biblioth. Bot.* 89: 189 (1926). — **Illustr.:** Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 188 (1990), as *I. trita* L.f.

Erect to spreading, short lived perennial herb to subshrub, 0.1–0.5 (–0.9) m high; young stems ridged; hairs moderately dense to dense, appressed; leaves with 3–5 (–7) leaflets; stipules narrowly triangular or subulate, 2–6 mm long, pubescent, generally not persistent; petiole 4–15 mm long; rachis furrowed; stipels absent, or inconspicuous; leaflets ovate to elliptical, (5–) 10–35 (–40) × (4–) 5–15 (–17) mm, grey to green, with sparse to moderately dense, appressed hairs; apex acute or obtuse and mucronate. **Inflorescences** (30–) 60–150 (–240) mm long, longer than leaves; bracts narrowly triangular, 1–2 mm long; flowers pink to purple; pedicel 0.5–1.5 mm long; calyx (1.3–) 2–4 (–5.5) mm long, with subequal to equal lobes longer than the tube and sparse to moderately dense, appressed hairs; standard obovate to elliptical, (5.5–) 6.5–8 (–9) × (3.5–) 4.5–6 (–8) mm; wings narrowly obovate to spatulate, (5–) 6–8 (–9.5) × (1.8–) 2.5–3.5 mm; keel 5–7.5 × 1.5–2.5 mm; apex acute and beaked; lateral pockets 0.5–1.2 mm long; staminal tube 3.5–4 mm long; ovary sparsely to moderately hairy. **Fruit** spreading to descending, the pedicel deflexed but the base of pod standing out at an angle, distinctly longitudinally ridged on each side to give a four-angled appearance, (10–) 30–50 × 2.5–3 mm, brown; hairs sparse to moderately dense, appressed; apex shortly beaked; endocarp not spotted; seed (2–) 8–10 (–14) per fruit.

S.A.: LE; Qld; N.T. This species is found almost exclusively on heavy loam soils, cracking clays and black soil plains, particularly in grasslands. Flowers: mostly Dec.–Feb.

See Wilson & Rowe (1994) for discussion of the *Indigofera trita* group in Australia.

(Rare in S.A., only collected twice.)

6. ***Indigofera georgei*** E.Pritz., *Bot. Jahrb. Syst.* 35: 268 (1904). — **Illustr.:** Ewart & Morrison, *Proc. Roy. Soc. Victoria* n.s. 26: 156, pl. xiv, fig. 1 (1913) as *I. boviparda*.

Erect or spreading shrub or subshrub, 0.3–1.2 m high; young stems terete (rarely slightly ridged), white or grey to brown; hairs appressed to spreading, moderately to very dense; leaves with 3–7 (–9) leaflets; stipules 1.5–4 (–6) mm long; petiole (3–) 5–10 (–15) mm long; stipels very small, (rarely to 1.1 mm long); leaflets (3–) 9–25 (–33) × (2.5) 5–12 (–17) mm, white, grey or green, hairs usually slightly denser below. **Inflorescences** (30–) 50–150 (–250) mm long, longer than leaves; bracts ovate, 1–2.5 mm long; flowers red; pedicel 1–3.5 mm long; calyx (1.2–)

2–4 mm long, with moderately dense to dense, white or grey to black, appressed to spreading hairs; standard broadly ovate to orbicular, 5.5–8 × 5.5–7 mm; wings narrowly obovate to spatulate, 5–6.5 × 1.8–2.5 mm; keel 6–8.5 mm long, 2.5–3 mm deep; apex rounded; lateral pockets 0.6–1.2 mm long; staminal tube 5.5–7 mm long; ovary glabrous to densely hairy. **Fruit** spreading to descending, terete, (15–) 25–35 (–40) × 3–3.5 mm, clothed with moderately dense to dense, shortly spreading or spreading hairs; endocarp spotted; seed (5–) 8–11 per fruit. **Fig. 8A–D, Pl. 5F.**

S.A.: NW, LE, EP (Koweridda, Gawler Ra.); Qld; N.T.; W.A. This species is found primarily on sand dunes and sandy plains. Flowers: June–Sep. (–Oct.).

7. **Indigofera helmsii** Peter G. Wilson, *J. Adelaide Bot. Gard.* 10: 119 (1987). — *I. uncinata* Ewart & L.R.Kerr, *Proc. Roy. Soc. Victoria* n.s. 39: 3 (1926), *nom. illeg., non* G.Don; *I. brevidens* var. *uncinata* Benth., *Fl. Austral.* 2: 201 (1864); *I. uncinata* var. *minor* Ewart & L.R.Kerr, *Proc. Roy. Soc. Vic.* n.s. 39: 3 (1926). — **Illustr.:** Ewart & L.R.Kerr, *Proc. Roy. Soc. Vic.* n.s. 39: 4, fig. 2 (1926); *Flora S. Austral.* 2: 580 (1986), as *I. uncinata*.

Erect subshrub, 0.2–0.7 (–1) m high; young stems four-angled, with moderately dense to dense, appressed hairs; leaves with (5–) 7–9 (–15) leaflets; stipules triangular, 2–7 mm long, spinescent, persistent; petiole 3–9 mm long; rachis furrowed, multicellular hairs between leaflet pairs dense, conspicuous, red to dark brown; stipels inconspicuous; leaflets obovate or elliptical, (3–) 6–20 (–25) × 3–8 (–9.5) mm; upper surface green, glabrous; lower surface green, paler than above, with sparse appressed hairs; apex obtuse and mucronate, rarely acute. **Inflorescences** 15–40 (–65) mm long, shorter than or equal to leaves; bracts subulate, 1.3–2.5 mm long; flowers pink to purple; pedicel 0.7–2 mm long; calyx 1.9–3.4 mm long, with lobes less than or equal to the tube; hairs appressed, brown to black; standard broadly ovate to orbicular, 5–6.2 × (4.3–) 5–6.5 mm; wings narrowly obovate or spatulate, 5.5–7 × 2–2.6 mm; keel 5–6 × 1.5–2.2 mm; apex acute or rounded; lateral pockets 0.5–0.7 mm long; staminal tube 3–3.5 mm long; ovary moderately hairy. **Fruit** descending, terete, (10–) 18–25 (–30) × 2.5–3.5 mm deep, brown; hairs sparse, appressed; endocarp spotted; seed 7–8 per fruit. **Fig. 8E–G, Pl. 6C.**

S.A.: NW, GT, FR, EA, EP, NL; W.A.; N.T.; N.S.W. The species is relatively common in South Australia and the Northern Territory, but is only recorded from a single area in Western Australia and from a limited area in N.S.W. It occurs in shrubland, open woodland or *Triodia* grassland on red clay loam on quartzite or granite ranges, as well as in sandy or rocky creek beds flowing from ranges or gorges. Flowers: June–Oct.

8. **Indigofera leucotricha** E.Pritz., *Repert. Spec. Nov. Regni Veg.* 15: 357 (1918). — *I. lasiantha* F.Muell., *New S. Wales – Parl. Pap. – Votes & Proc. Legis. Assembly* 2 (159-A): 6 (1859), *nom. illeg. non* Desv. (1826). — **Illustr.:** *Pl. W. N.S.W.* 398 (1982); Elliott & Jones, *Encyc. Austral. Pl.* 5: 419, 420 (1990); Urban, *Wildfl. & Pl. Centr. Austral.* 95 (1990); Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 182 (1990).

Erect or spreading shrub or subshrub, 0.25–1 m high, up to 1.5 m wide; young stems ridged to terete, white or grey, tomentose with very dense, spreading hairs; leaves with 7–11 (–17) leaflets; stipules triangular (rarely slightly thickened), 2–5 mm long; petiole (2.5–) 5–8 (–15) mm long; rachis furrowed, multicellular hairs between leaflet pairs sparse, conspicuous to inconspicuous; stipels absent; leaflets obovate to cuneate, (1.5–) 5–11 (–19) × (1–) 2.5–6 (–11) mm; upper surface white or grey, rarely greenish, with very dense, appressed to shortly spreading hairs; lower surface white or grey, with dense, shortly spreading to spreading hairs; apex obtuse and mucronate. **Inflorescences** (10–) 25–110 mm long, longer than leaves (rarely shorter); bracts triangular, 1.5–3 mm long; flowers pink to purple; pedicel 1.5–3 mm long; calyx (2–) 3–4 mm long; lobes equal to, or longer than the tube; hairs dense, white or grey to almost black, appressed to spreading; standard orbicular to obovate, 6.5–10 × (5–) 7–9 mm; wings spatulate or narrowly obovate, 6–8.8 × 2.5–3.5 mm; keel 7–9 × (2–) 2.5–3.5 mm; lateral pockets 0.8–1.5 mm long; staminal tube 4.5–6 mm long; ovary moderately hairy. **Fruit** spreading to descending, terete, (10–) 20–35 (–40) × 3–4.5 mm, grey to brown, densely tomentose; endocarp spotted; seed 4–8 per fruit. **Silver indigo. Pl. 6D.**

S.A.: LE, EA; N.S.W.; N.T.; Qld. This species shows a preference for rocky hill slopes and gullies, but has also been found on stony plains. It has been recorded on various substrates including granite, ironstone, quartzite, sandstone, limestone, and calcrete. Flowers: May–Oct.

In S.A. this species occurs on ranges west of Lake Eyre, and in the far north-east of the State on Innaminka and Cordillo Downs Stations. References in the *Flora of South Australia* (1986) to this species as occurring in the North-Western region apply to *I. cornuligera* subsp. *cornuligera* and, in the Flinders Ranges, to *I. cornuligera* subsp. *flindersensis*.

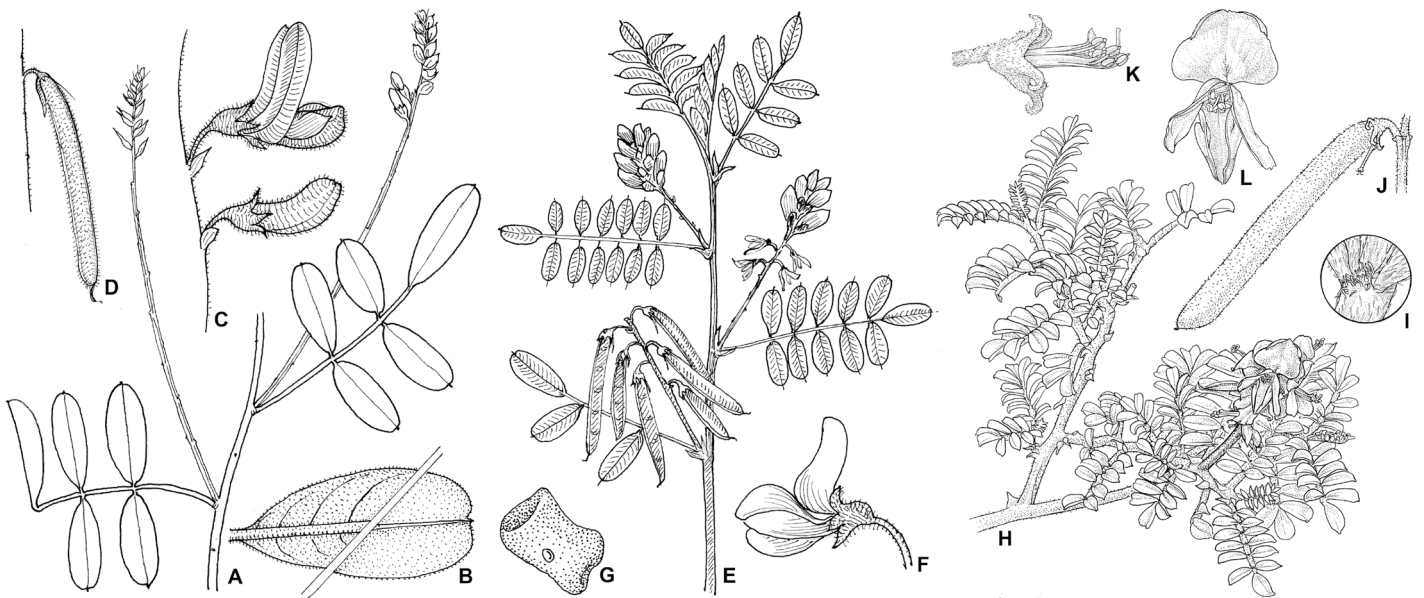


Fig. 8. A–D, *Indigofera georgei*: A, twig; B, leaf upper (right) and lower surface (left); C, flowers; D, fruit. **E–G, *I. helmsii*:** E, twig; F, flower; G, seed. **H–L, *I. cornuligera* subsp. *flindersensis*.** H, habit; I, details of multicellular hairs on leaf rachis; J, fruit; K, stamens with calyx; L, flower. **Illustrations:** A–G, by B. Chandler, from *Flora of South Australia* 2: 580, Fig. 308A & 583, Fig. 310A (1986); H–J, by C. Wardrop, from *P.G. Wilson & R. Rowe, J. Adelaide Bot. Gard.* 24: 70, Fig. 1 (2011).

9. ²****Indigofera linifolia*** (L.f.) Retz., *Obs. Bot.* 4: 29 (1786). — *Hedysarum linifolium* L.f., *Suppl. Pl.* 331 (1781). — **Illustr.:** Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 183 (1990); Milson, *Pasture Pl. N.W. Queensl.* 85 (2000); Urban, *Wildfl. & Pl. Centr. Austral.* 96 (1990).

Prostrate or spreading, perennial herb, 0.1–0.3 (–0.5) m high; young stems ridged, with dense, appressed hairs; leaves simple, with no apparent articulation; stipules triangular, 1–3 mm long; petiole 0.5–1 mm long; lamina linear or narrowly lanceolate to narrowly oblanceolate, (6–) 10–35 (–50) × 1–3 (–4.0) mm, green to grey-green, with moderately dense or dense hairs; apex acute and shortly mucronate. **Inflorescences** (2–) 5–15 (–25) mm long, shorter than leaves; bracts ovate with scarios margin, 0.7–1.5 mm long; flowers red; pedicel 0.5 mm long; calyx 1.5–4 mm long, with subequal lobes longer or much longer than the tube, and dense, grey, appressed hairs; standard obovate to orbicular, 2.5–3.5 × 1.7–3 mm; wings narrowly obovate, 2.5–3 × 0.7–1.2 mm; keel 2.5–3.8 × 0.8–1.1 mm; lateral pockets 0.3–0.7 mm long; staminal tube 2.5–3 mm long; ovary densely hairy. **Fruit** ascending, globular, 2–3 × 1.5–1.8 mm, white or grey with dense, appressed hairs; apex shortly beaked; endocarp not spotted or rarely some pale blotches; seed 1 per fruit. **Round-pod indigo, narrow-leaved indigo. Pl. 5G & H.**

S.A.: ²ⁿLE; W.A.; N.T.; Qld; N.S.W. North-eastern Africa, through southern Asia to southern China, Ryukyu and Taiwan, and south through Thailand to Malesia. Recorded from a wide range of habitats, especially on disturbed sites like roadsides but also occurs on sand or rocky ridges in open woodland or grassland; it is considered to be a weed in some areas (Lazarides *et al.* 1997). Not collected in S.A. until the 1960s. Flowers: year-round, but mostly Feb.–June.

10. ²****Indigofera linnaei*** Ali, *Bot. Not.* 3: 549 (1958). — *I. enneaphylla* L., *Mant.* 2: 272 (1771), *nom. illeg.*; *I. dominii* H.Eichler, *Suppl. J.M.Black's Fl. S. Austral.* 190 (1965), *nom. illeg. & superfl.* — **Illustr.:** *Pl. W. N.S.W.* 398 (1982); Hacker, *Guide Herbaceous Shrub Legumes Queensl.* 183 (1990); Milson, *Pasture Pl. N.W. Queensl.* 86 (2000); Urban, *Wildfl. & Pl. Centr. Austral.* 96 (1990).

Prostrate to spreading, perennial herb, 0.05–0.3 × 0.7 m; stems slightly ridged, green to white, with dense, appressed to spreading hairs; leaves with (5–) 7–9 (–13) alternate leaflets; stipules triangular with linear, drawn-out tip and thin scarios margin, (2–) 3–7 mm long; petiole 1–4 mm long; rachis furrowed or flattened; stipules absent; leaflets obovate, (4.5–) 5–15 (–23) × (1.0–) 1.5–7 (–10) mm wide, green to grey, with sparse to dense, appressed to spreading hairs; apex obtuse and mucronate, emarginate or rarely acute. **Inflorescences** (3–) 5–20 (–35) mm long, generally shorter than the leaf; bracts ovate to triangular, 1.5–3.5 mm long, with scarios margins; flowers red; pedicel 0.5 mm long; calyx 2.5–5 mm long; lobes unequal or subequal, longer than the tube, covered with moderately dense to dense, grey, white or pale brown, appressed to shortly spreading, very unequal biramous hairs; standard obovate, 3–5 × 2.3–3.3 mm; wings oblong to spatulate, 3.5–5 × 0.7–1.2 mm wide; keel 3.5–4.5 × 0.7–1.2 mm; lateral pockets 0.3–0.6 mm long; staminal tube (2.0–) 2.5–3.2 mm long; ovary densely hairy. **Fruit**

ascending, shortly cylindrical, (2.5–) 4–8 (–10.5) × 2–2.5 mm, white to grey or yellowish and brown, with hairs moderately dense to dense, appressed to spreading; endocarp not spotted; seeds (1–) 2 (–3) per fruit. **Birdsville indigo. Pl. 5I–K.**

S.A.: *NW, ²ⁿ*LE, *FR (Arkaroola Ck); W.A.; N.T.; Qld; N.S.W. Pakistan, India, Sri Lanka, Burma, Thailand, Vietnam, Indonesia and New Guinea. Recorded as growing on most substrates, particularly on sand in open areas, grassland or woodland, and particularly on disturbed sites like roadsides. Flowers: year-round, but mostly Nov.–Mar.

This species is implicated in ‘Birdsville Disease’ in horses, the symptoms of which include weight loss, general weakness and progressive loss of coordination. *I. linnaei* is considered possibly native in the Lake Eyre region, due to some early collections from 1924 and 1931. It colonises readily disturbed areas like roadsides and appears to be spreading in LE and the other regions, and has been regarded as a weed by some authors (Lazarides *et al.* 1997).

11. **Indigofera longibractea** J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 47: 369 (1923). — *I. basedowii* subsp. *longibractea* (J.M.Black) Peter G. Wilson, *J. Adelaide Bot. Gard.* 10: 121 (1987). — **Illustr.:** *Pl. W. N.S.W.* 397 (1982), as *I. basedowii*; Elliott & Jones, *Encyc. Austral. Pl.* 5: 417 (1990), as *I. basedowii* subsp. *longibractea*.

Erect or spreading subshrub, 0.2–1 m high, to 2 m wide though generally smaller, young stems terete or slightly ridged; hairs dense to very dense, spreading. Leaves with (9–) 15–21 (–23) leaflets; stipules triangular, (2–) 3–5 (–6) mm long, usually not persistent; petiole (1.5–) 3–6 (–9) mm long; rachis terete or slightly furrowed, multicellular hairs between leaflet pairs sparse, conspicuous, red to dark brown; stipels absent; leaflets obovate to oblong, 3–10 (–12) × (1.5–) 2.5–5 mm, green to grey, with moderately dense to dense, appressed hairs; apex obtuse and mucronate or emarginate. **Inflorescences** (15–) 60–120 (–160) mm long, longer than leaves; bracts ovate (often narrowly), (3–) 3.5–4.5 (–5.2) mm long; flowers pink to purple; pedicel 1.5–2.5 mm long; calyx (3–) 3.5–4.5 (–6) mm long, with subequal lobes longer than the tube, clothed with dense, grey or almost black, spreading hairs; standard broadly elliptical or ovate, (7–) 8.5–10 (–11) × (5.5–) 6–8 (–9) mm; wings spathulate, 7–9 × 2.5–4.5 mm; keel 7–8.5 × 2.5–2.8 mm; apex acute; lateral pockets 1–1.5 mm long; staminal tube 4–5 mm long; ovary densely hairy. **Fruit** descending, terete, 22–35 × 2.5–4.5 mm, grey to brown; hairs moderately dense to dense, shortly spreading to spreading; endocarp spotted; seed 4–10 per fruit. **Fig. 6E & F.**

S.A.: NW, FR, EA; N.S.W.; N.T. This species grows on rocky hills, ridges or scree slopes amongst boulders, in creeks or in alluvium of creek banks. Flowers: June–Sep.

Earlier considered to be a subspecies of *I. basedowii*, but field observation has confirmed it as a distinct species. As well as the difference in leaflet number, *I. longibractea* has much larger flowers. The two taxa are closely related and a few intergrades have been noted. Specimens with calyx lobes much longer than the tube were collected in the vicinity of Ernabella, towards the northern limit of the species.

12. **Indigofera psammophila** Peter G. Wilson, *Telopea* 3: 597 (1990). — *I. brevidens* auct. non Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 462 (1948), partly; Jacobs & Pickard, *Pl. N.S. Wales* (1981); J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 579 (1986). — **Illustr.:** *Pl. W. N.S.W.* 397 (1982), as *I. brevidens* var. *brevidens*.

Erect, spreading, decumbent or prostrate subshrub or perennial herb, 0.15–0.5 m high; young stems ridged or terete, grey, green, yellowish or dark brown, with dense to very dense, appressed to spreading, equally or unequally biramous hairs; leaves with (5–) 7–9 (–13) leaflets; stipules triangular or subulate, 1.5–3.5 mm long, pubescent, not spinescent, not persistent; petiole 3–15 (–22) mm long; rachis furrowed; stipels absent or inconspicuous; leaflets obovate, (2.5–) 4–14 (–22) × 1.5–8 (–9) mm, grey or green, with moderately dense or dense, appressed hairs; apex obtuse and mucronate or apiculate. **Inflorescences** (20–) 50–185 (–280) mm long, longer than leaves; bracts ovate to subulate, 1.3–2.5 mm long; flowers pink to pale purple; pedicel 0.7–1.2 mm long; calyx 1.5–2.7 mm long, with unequal lobes less than or equal to the tube, clothed with moderately dense, white or brown, appressed to shortly spreading hairs; standard ovate, 4.8–6.5 × 3.5–5.2 mm; wings spathulate or narrowly obovate, 4.8–8 × 1.2–2.5 mm; keel 4.3–6.3 × 1.7–2.4 mm deep; apex acute or beaked; lateral pockets 0.7–1 mm long; staminal tube 2.7–3.4 mm long; ovary densely hairy. **Fruit** descending, terete, (9–) 15–33 × 2–3 mm deep, grey to brown, hairs moderately dense to dense, appressed; endocarp spotted; seed 5–10 per fruit. **Desert indigo. Fig. 7E–G, Pl. 6G & H.**

S.A.: NW, LE, GT; W.A.; N.T.; N.S.W.; Qld. Occurs in deep sand on dunes and sandplains. *I. psammophila* is widely distributed through the deserts of central Australia. Flowers: mostly Apr.–Nov.

TRIBE MIRBELIEAE (Benth.) Polhill & Crisp

Prepared by A.I. Craigie (unless otherwise indicated), P.J. Lang, J.Z. Weber† & J. Kellermann

Shrubs or subshrubs, often scleromorphic, rarely herbaceous; leaves usually simple or lacking from flowering shoots, sometimes reduced to phyllodes, spines or scales, less often digitate to pinnate, estipellate; stipules small or absent. **Flowers** usually in terminal or axillary racemes, clusters or solitary; bracteoles present or absent, sometimes cupular; calyx lobes imbricate to valvate, the upper pair often connate higher up unless exceptionally long or short; corolla papilionoid with a broad standard and small keel enveloped by the wings, often with contrasting colours (commonly yellow to red), or red bird-pollinated flowers with narrow petals and the standard sometimes reduced relative to the wings and keel; stamens free or shortly connate, sometimes adnate to petals; anthers uniform to slightly dimorphic; pollen often operculate, the endoaperture variably formed, endexine thin, foot layer distinct, and columellae well developed; ovary 2- to many-ovulate; style tapered to a small terminal occasionally penicillate stigma. **Pods** normally 2-valvate, dehiscent, occasionally 1-seeded and indehiscent; seeds variable in shape, apparently always with incurved radicle, usually arillate.

A tribe of c. 25 genera (but see below) almost entirely endemic to Australia, with only *Gompholobium* extending into southern New Guinea. It is most abundant in south-western W.A.

Molecular phylogenetic studies support the monophyly of a clade comprising several Mirbelieae genera (including *Aotus*, *Callistachys*, *Dillwynia*, *Eutaxia*, *Gastrolobium*, *Leptosema*, *Phyllota*, and *Pultenaea*) within which generic boundaries remain unresolved (Orthia *et al.* 2005a, 2005b). This clade, referred to as the ‘*Mirbelia* group’ or *Pultenaea sensu lato*, contains all Mirbelieae genera with ‘no antipodals’ type embryology, with the exception of *Isotropis* (Crisp & Cook 2003). Orthia *et al.* (2005b) suggest that members of this clade should be treated under an expanded concept of *Pultenaea*, but at this stage the current generic concepts have been maintained. Additionally, there is evidence for the monophyly of a group within Faboideae with ‘giant antipodals’ type embryology, which comprises the tribe Bossiaceae and the ‘*Daviesia* group’ genera currently placed in Mirbelieae (i.e. *Daviesia*, *Ericksenia*, *Gompholobium*, *Sphaerolobium*, and *Viminaria*) (Cameron & Prakash 1994; Crisp & Cook 2003). If the monophyly of this group is confirmed then the ‘*Daviesia* group’ could be transferred to Bossiaceae.

Reference: Cameron & Prakash (1994), Polhill (1981), Crisp & Cook (2003), Orthia *et al.* (2005a & b).

1. Flowering stems with well-developed adult leaves or leaf-like phyllodes
 2. Leaves opposite
 3. Stipules minute or absent
 4. Leaves with recurved or revolute margins; bracteoles absent 10. **Aotus**
 - 4: Leaves flat, concave or with \pm involute margins; bracteoles present..... 14. **Eutaxia**
 - 3: Stipules present and well developed
 5. Leaves 20–60 mm long; bracteoles absent 15. **Gastrolobium**
 - 5: Leaves < 10 mm long; bracteoles present 20. **Pultenaea**
 - 2: Leaves or phyllodes alternate, scattered or whorled
 6. Ovules 2
 7. Stipules present, usually connate on the adaxial side of the petiole for part of their length 20. **Pultenaea**
 - 7: Stipules absent, or if present then minute and inconspicuous
 8. Leaves with recurved or revolute margins
 9. Bracteoles present..... 19. **Phyllota**
 - 9: Bracteoles absent 10. **Aotus**
 - 8: Leaves grooved on the adaxial surface or replaced by flattened or terete phyllodes
 10. Leaves terete or \pm trigonous with a groove on the adaxial surface (rarely almost flat with involute margins)..... 13. **Dillwynia**
 - 10: Leaves replaced by phyllodes; phyllodes terete or flattened vertically or horizontally..... 12. **Daviesia**

- 6: Ovules 4 or more
11. Leaves digitately trifoliolate..... 16. **Gompholobium**
- 11: Leaves simple or unifoliolate
12. Subshrubs or herbs; pod completely dehiscent 17. **Isotropis**
- 12: Tall erect shrubs, sometimes arborescent; pod dehiscing in the upper third only 11. **Callistachys**
- 1: Flowering stems with the adult leaves reduced to scales, spines or to long filiform petioles (some scattered leaves may be present in *Sphaerolobium*)
13. Flowers in basal racemes; standard petal reduced, narrow-triangular..... 18. **Leptosema**
- 13: Flowers in terminal or axillary racemes or panicles, sometimes solitary; standard petal broad, \pm orbicular
14. Calyx lobes very short, subequal
15. Leaves reduced to long filiform petioles to c. 30 mm long; pod sessile, obovoid 22. **Viminaria**
- 15: Leaves replaced by phyllodes; phyllodes terete or flattened vertically or horizontally; pod subsessile or stipitate, obliquely obtriangular in outline..... 12. **Daviesia**
- 14: Upper 2 calyx lobes broader, connate higher up to form an upper lip
16. Inflorescence a long raceme of usually paired axillary flowers; pod stipitate, globose 21. **Sphaerolobium**
- 16: Inflorescence usually a short axillary raceme, sometimes modified to a false umbel, or flowers solitary; pod subsessile or stipitate, obliquely obtriangular in outline..... 12. **Daviesia**

10. **AOTUS** Sm.

Ann. Bot. (König & Sims) 1: 504 (1805).

(Greek *a*, not; *otos*, ear; the bracteoles are absent.)

Erect perennial woody shrubs; stems terete; leaves simple, opposite, alternate or in whorls of 3 or more, margins entire (or dentate), recurved or revolute, sessile or shortly petiolate; stipules absent. **Flowers** shortly pedicellate, axillary, solitary or in clusters, or rarely in short terminal racemes; bracts small, ovate, caducous; bracteoles absent; calyx 5-lobed, the 2 upper lobes broader and \pm united into a lip; corolla papilionoid, petals rather long-clawed, yellow or yellow and purple; standard \pm orbicular, the apex slightly emarginate, longer than the other petals; wings narrow-oblong; keel incurved, c. equal to the wings; stamens 10, free; anthers uniform, dorsifixed; ovary turgid, villous, shortly stipitate; style filiform, with a minute terminal stigma; ovules 2, on straight funicles. **Pod** ovate to obovate, compressed or turgid, usually pubescent, usually 2-seeded; seeds reniform, usually exarillate.

An endemic Australian genus with c. 18 species; 1 in S.A. It occurs in all states with the exception of N.T., in open woodland, open forests, mallee woodland, heath, and swamps.

Reference: Weber (1986), Wiecek (1991a), Jeanes (1996), Wheeler *et al.* (2001a).

1. **Aotus subspinescens** (Benth.) Crisp in Jessop & Toelken, *Fl. S. Austral.* 2: 658 (1986). — *Aotus villosa* var. *subspinescens* Benth., *Fl. Austral.* 2: 91 (1864). *Aotus villosa auct. non* (Andrews) Sm.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 443 (1948); *Aotus ericoides auct. non* (Vent.) G.Don: H.Eichler, *Suppl. Black's Fl. S. Austral.* 185 (1965). — **Illustr.:** *Fl. S. Austral.* 2: 658, fig. 356 (1986); *Fl. Victoria* 3: 764, fig. 154a–b (1996).

Variable shrub to 60 cm high; branches sometimes spinescent, with appressed to spreading, short, curved hairs, often rusty; leaves opposite, alternate or in irregular whorls of 3 or more, linear to linear-oblong or -elliptic, 3–10 \times c. 1 mm, margins recurved or revolute, adaxial surface becoming glabrous and shining, usually with a few scattered long hairs abaxially, petioles c. 1 mm long; stipules absent. **Flowers** solitary or paired in upper leaf axils, forming a leafy raceme; pedicels 2–3 mm long, sparsely to densely pubescent; bracts broadly ovate to obovate, c. 1–2 mm long, scarious, \pm puberulous; calyx 3–4 mm long, villous; calyx lobes acute, shorter than the tube, margins ciliate, the upper 2 slightly broader and united higher up; standard red and yellow; keel crimson to purple. **Pod** stipitate, ovoid, exceeding the calyx, 4–6 mm long, turgid, villous, 2-seeded; seeds c. 2.5 mm long, black, reticulate. **Mallee aotus. Fig. 9A–C, Pl. 7A–G.**

S.A.: GT, EP, MU, YP, SL, SE; N.S.W.; Vic. Mainly on Eyre Peninsula through to southern Yorke Peninsula and the southern Murray region. It is found in mallee communities on deep sandy soils. Flowers: Aug.–Nov.

Aotus ericoides (Vent.) G.Don, which is restricted to near-coastal districts in the eastern States, can be distinguished by its non-spinescent branches, pedicels less than 2 mm long with dense and often appressed hairs that obscure the surface, and usually yellow keel petals.

11. CALLISTACHYS Vent.

Jard. Malmaison 2: 115 (1804).

(Greek *calli-*, beautiful; *-stachys*, relating to a spike; alluding to the conspicuous inflorescence.)

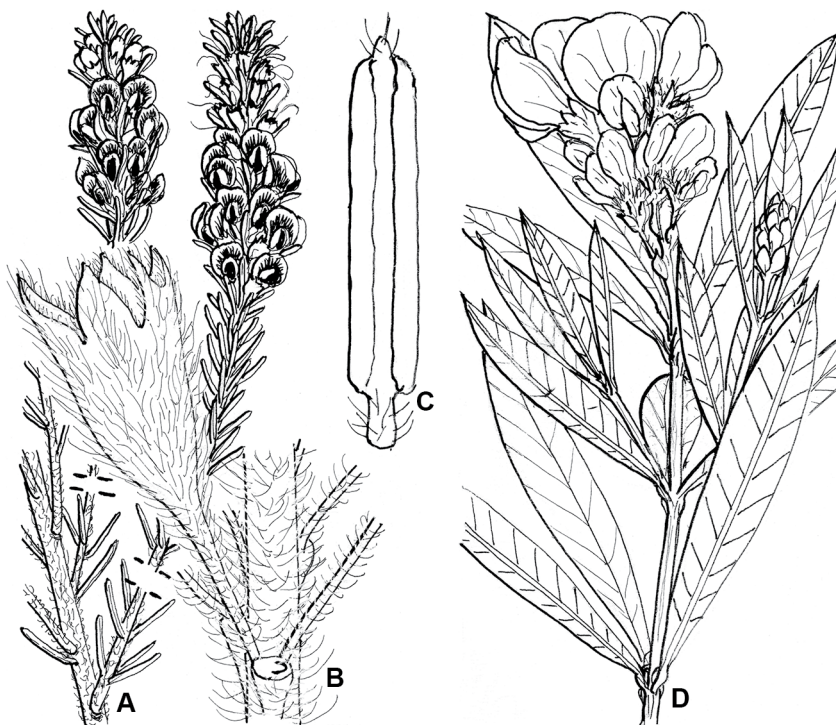


Fig. 9. A–C, *Aotus subspinescens*: A, flowering branch; B, calyx; C, leaf, abaxial surface. D, *Callistachys lanceolata*: flowering branch. Illustrations by G.R.M. Dashorst.

Perennial shrubs or small trees; stems glabrescent to appressed pubescent, hairs simple; leaves large, usually whorled, simple, entire, coriaceous, shortly petiolate, conspicuously stipulate; stipules free. **Inflorescence** racemose, terminal, often branched, pedunculate; flowers shortly pedicellate, bracteate; bracts and bracteoles caducous; calyx 5-lobed, lobes valvate, \pm equal; corolla papilionoid, petals clawed, yellow to orange; standard ovate to suborbicular, emarginate, slightly longer than the wings and keel; wings oblong; keel slightly curved, obtuse; stamens 10, free, \pm uniform, anthers dorsifixed, versatile; ovary shortly stipitate, 6–12 ovulate, densely villous; style filiform, gently curved, glabrous; stigma small, terminal. **Pod** stipitate, ovoid-ellipsoid, compressed, lacking septa, dehiscent in the upper third, 6–12-seeded; seeds arillate.

A monotypic genus, possibly including a second undescribed species, native to south-western W.A.

It is similar to *Oxylobium* Andrews but can be distinguished by its arborescent habit, sometimes trifold bracts, conspicuous stipules, and often branched inflorescence.

Reference: Jeanes (1996).

1. ****Callistachys lanceolata*** Vent., *Jard. Malmaison* 2: 115 (1804) — *Oxylobium lanceolatum* (Vent.) Daveau in Bois, *Dict. Hort.* 2(29): 908 (1898); Druce, *Rep. Bot. Soc. Exch. Club Brit. Isles* 4 (*Suppl.* 2): 638 (1917), *nom. inval.* — **Illustr.:** *Fl. Victoria* 3: 745, fig. 149f (1996).

Tall erect shrubs, sometimes arborescent, 4–8 m high; branchlets with appressed silky hairs; leaves mostly in whorls of 3, sometimes with some leaves alternate or opposite, coriaceous, cross-venulate, lanceolate to oblanceolate or oblong to elliptic or narrow-ovate to -obovate, 40–170 \times 4–30 mm, margins flat to slightly recurved, apex acute to obtuse, mucronate, adaxial surface glabrescent, abaxial surface sparsely to densely appressed-pubescent; petiole to c. 5 mm long; stipules filiform or subulate, to c. 4 mm long, sometimes dentate. **Inflorescence** racemose, terminal, dense, slender, many-flowered, often branched; flowers shortly pedicellate, pedicels 3–6 mm long, silky pubescent; bracts narrow-triangular to triangular, sometimes trifold, 2–6 mm long, villous, caducous; bracteoles similar to bracts, caducous; calyx 6–10 mm long, densely golden- or dark-sericeous; calyx lobes c. equal to or longer than the tube, the upper 2 lobes broader and connate higher up, slightly curved; corolla yellow to orange; standard 10–15 mm long; wings shorter, c. equal to the keel; ovules 6–12. **Pod** shortly stipitate, ovoid-ellipsoid, 10–15 \times 5–7 mm, acuminate, slightly compressed, sericeous, the surface reticulately patterned, usually 2–6-seeded; seeds reniform, c. 2 mm long, brown, mottled, minutely arillate. **Native willow, wonnich, greenbush. Fig. 9D.**

S.A.: *NL, *SL; W.A.; *Vic. Native to W.A. and apparently a garden escape recorded from the northern and southern Mt. Lofty Ranges (mostly near Mt. Lofty) in S.A.; also naturalised in Vic. Flowers: Sep.–Jan.

12. DAVIESIA Sm.

Trans. Linn. Soc. London 4: 220 (1798).

(After the Rev. Hugh Davies, Welsh Botanist, 1739–1821.)

Shrubs or rarely small trees, mostly scleromorphic, glabrous or sometimes hispid; leaves modified to phyllodes or reduced to scales, simple and entire or sometimes 1–2-lobed, often pungent, terete or flattened vertically or horizontally, smaller towards tips of branchlets, sometimes decurrent along the stem; stipules minute or absent. **Inflorescence** racemose, usually axillary, sometimes modified to a false umbel, cluster or single flower; bracts on the peduncle or at the base of the pedicels scale-like, sometimes enlarged into an involucre; bracteoles absent; flowers articulate on the pedicel; calyx usually campanulate; calyx lobes 5, shorter than the tube, the upper 2 usually broader and \pm connate; corolla papilionoid, yellow to orange, usually with dark reddish markings; standard usually reflexed and \pm orbicular, emarginate; wings often apically incurved and embracing keel; keel \pm incurved, often beaked, sometimes abaxially rugose; stamens 10, free or slightly cohering, incurved; outer filaments compressed or flattened and shorter than inner \pm terete filaments; anthers dimorphic, alternately large and basifixed (outer whorl) and small and usually versatile (inner whorl); ovary shortly stipitate, glabrous, tapering into a subulate incurved style; stigma terminal, minute; ovules 2. **Pod** subsessile or stipitate, obliquely obtriangular in outline, compressed or turgid, often beaked, upper suture nearly straight, the lower much curved, forming almost a right angle, 1–2-seeded; aril lobed distally to the radicle. **Bitter-peas.**

An endemic Australian genus with 122 species; 11 in S.A. It is most diverse in the south-west.

Daviesia is distinctive within Mirbelieae by its unit-inflorescence and obtriangular pod. The inflorescence is a raceme terminated by a non-developing vegetative bud, with the uppermost floral bud aborting, and with a series of sterile bracts on the peduncle (Crisp 1995).

Reference: Crisp (1980, 1982, 1991a & b, 1995), Weber (1986), Jeanes (1996), Chandler & Crisp (1997).

1. Phyllode lamina compressed or flattened horizontally, articulate, pungent or not
 2. Phyllodes never pungent
 3. Inflorescence a raceme; upper 2 calyx lobes forming a truncate, emarginate lip; branchlets angular; phyllodes greenish 7. **D. leptophylla**
 - 3: Inflorescence an umbel with a rosette of bracts beneath the pedicels; calyx with 5 equal acuminate teeth; branchlets triquetrous, narrowly winged; phyllodes glaucescent..... 10. **D. stricta**
 - 2: Phyllodes with a pungent point
 4. Phyllodes cordate (occasionally narrow- to broad-elliptic), folded upwards to give a V-shaped transaction, midvein and marginal nerves thickened below; keel narrow-elliptic 1. **D. arenaria**
 - 4: Phyllodes narrow-ovate to -elliptic to slightly obovate, adaxially flattened to concave or convex, the midvein more prominent above than below; keel half transverse-broad-ovate to -elliptic to -obovate
 5. Calyx lobes strongly keeled, incurved at the margins and in profile, c. 0.5–1 mm long; phyllodes narrow-ovate to -elliptic, if > 15 mm long then generally < 2–3 mm wide; secondary venation usually not visible..... 11. **D. ulicifolia**
 - 5: Calyx lobes flat or somewhat keeled, slightly recurved from the base; phyllodes obovate or narrow-obovate, sometimes narrow-elliptic, often large (> 15 mm long and > 3 mm wide); secondary venation usually visible
 6. Calyx lobes deep (c. 1 mm long); phyllodes dull dark green, thick, wrinkled when dry; standard > 6 mm wide; southern Yorke Peninsula 9. **D. sejugata**
 - 6: Calyx lobes shallow (c. 0.5–1 mm long); phyllodes often glaucous, not so thick or wrinkled when dry; standard usually < 5 mm wide; north-western South Australia 2. **D. arthropoda**
 - 1: Phyllode lamina compressed or flattened vertically or terete, articulate or continuous with the stem, pungent, or absent
 7. Phyllodes absent or if present terete, subulate, few and only at the branchlet apices, divaricate to slightly ascending, continuous with branchlets, 5–30 mm or more long 4. **D. benthamii**

- 7: Phyllodes present along the entire length of the branches (rarely naked to half-way from base), flattened or terete, continuous or articulate
8. Phyllodes continuous with the branchlets
9. Phyllodes flat, strongly decurrent by a 3–10 mm broad and long base, usually perpendicular to the branchlets, grey-green..... 8. **D. pectinata**
- 9: Phyllodes terete, continuous with the branchlets, if decurrent, scarcely so
10. Phyllodes \leq 5 mm long, slightly recurved at the tips, oblique to the stem; pod c. 15 mm long, inflated..... 5. **D. brevifolia**
- 10: Phyllodes 5–30 mm or more long, subulate, divaricate to slightly ascending; pod up to 8 mm long, compressed..... 4. **D. benthamii**
- 8: Phyllodes articulate at the base
11. Phyllodes compressed or flattened, subulate or obliquely falcate to narrow-ovate; phyllodes and branches striate, striation scabridulous; pod 10–14 mm long..... 3. **D. asperula**
- 11: Phyllodes terete or compressed, quite straight and slender; branches faintly striated to smooth, glabrous; pod less than 12 mm long..... 6. **D. genistifolia**

1. **Daviesia arenaria** Crisp, *J. Adelaide Bot. Gard.* 2: 163 (1980). — *Daviesia ulicina* var. *ruscifolia* auct. non (A.Cunn. ex Benth.) J.M.Black: J.M.Black, *Fl. S. Austral.* 2: 296 (1924). — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 2: 163, fig. 1 (1980); *Fl. S. Austral.* 2: 660, fig. 357a (1986); *Fl. Victoria* 3: 762, fig. 153d (1996).

Generally low, spreading and hummocky shrub to 1.5 m high; branchlets numerous, divaricate, terete, longitudinally ribbed, rigid and spiny, grey-hispid or rarely glabrous; phyllodes alternate, flattened horizontally, sessile, commonly cordate, occasionally narrow- to broad-elliptic, rarely obovate, $2.5\text{--}10 \times 1.5\text{--}8$ mm, pungent, cuspidate, base cordate to cuneate, articulate at the base, folded upwards to give a slightly V-shaped transection, hispid, abaxial surface with thickened marginal nerves and midrib. **Inflorescence** racemose but reduced to 1 flower, 1–2 per axil; pedicels 2–3 mm long, hispid or glabrous; bracts broad-ovate, imbricate, to c. 1 mm long; calyx oblique-campanulate, 2.5–3.5 mm long including c. 0.5 mm receptacle; calyx lobes subequal, triangular, acute, slightly fimbriate at the margins, c. 1 mm long, the upper 2 lobes slightly broader, the lowermost lobe slightly longer than the others; standard depressed-ovate, $6\text{--}7 \times 5\text{--}6$ mm, orange-pink with maroon and yellow markings; wings narrow-obovate, rounded at the apex, equaling the standard and keel; keel connate along the lower margin except the claws, narrow-elliptic, incurved, beaked. **Pod** obliquely triangular, narrowing to the base, $6\text{--}7 \times c. 4$ mm, compressed, acuminate beaked, 1-seeded; seed ellipsoid, c. 3 mm long, brown with black markings, conspicuously arillate. **Sandhill bitter-pea. Fig. 10A–C, Pl. 7H–J.**

S.A.: FR, EP, NL, MU, SL, KI, SE; N.S.W.; Vic. Widespread in mallee districts of south-eastern Australia. In S.A. it occurs from near Minnipa on Eyre Peninsula to the south-east. Usually on deep sand or skeletal soils, often in mallee or open forests. Flowers: Sep.–Oct.

2. **Daviesia arthropoda** F.Muell., *Fragm.* 8: 225 (1874).

Rigid, divaricate shrub to 1.5 m high; branchlets spinescent, angular-terete, longitudinally ridged; phyllodes often glaucous, alternate, flattened horizontally, narrow-obovate, to $35 \times c. 5$ mm, pungent, sessile, articulate at the base, decurrent, secondary venation often visible. **Flowers** c. 6 mm long, few in an umbel on a distinct peduncle 2–8 mm long, on pedicels 2–5 mm long; bracts oblong-navicular, 0.5–1 mm long, light brown, glabrous except for the fimbriate margins; calyx glabrous, 2–3 mm long; calyx lobes shallow, c. 0.5–1 mm long, narrow-triangular to apiculate, \pm recurved, flat or sometimes slightly keeled, margins entire or rarely minutely ciliate; standard broad-obcordate, c. $6 \times c. 5$ mm, on a short claw; keel triangular, narrowing to the base, obtuse. **Pod** obliquely triangular, c. $7 \times c. 3.5$ mm, strongly compressed, upper suture nearly straight, lower suture curved in a semi-circle.

S.A.: NW; W.A.; N.T.; Qld. A single record from a population near Mintabie. Occurs on dunes.

This species most closely resembles *D. sejugata*, which has phyllodes that tend to be elliptic rather than narrow-obovate, and that often appear thick and wrinkled when dry. The calyx lobes of *D. arthropoda* also tend to be shallower. It also resembles *D. ulicifolia* but can be distinguished by its usually larger, narrowly obovate phyllodes.

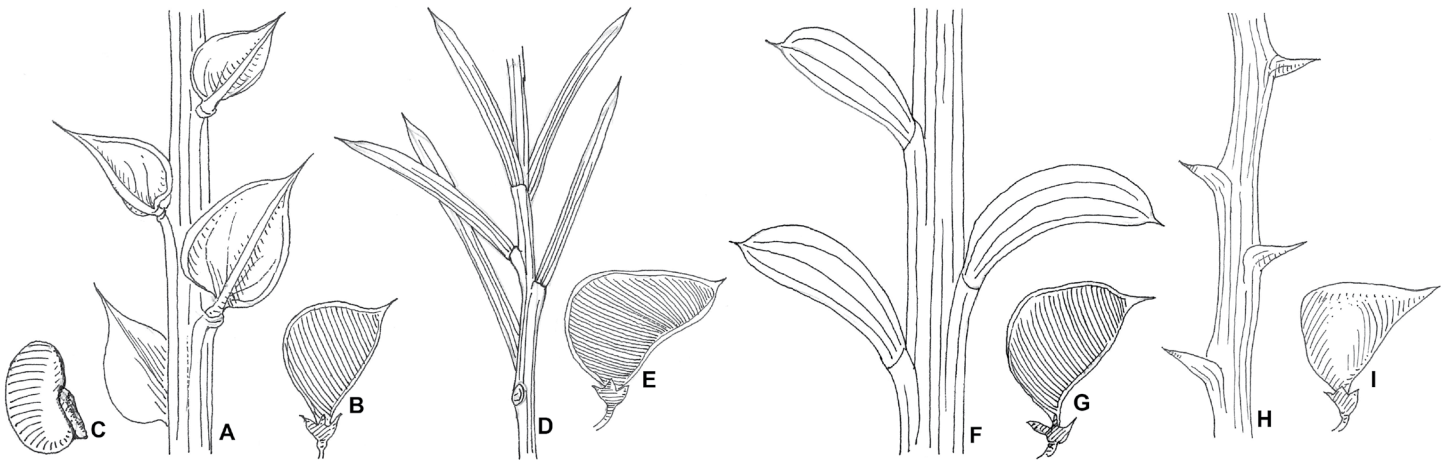


Fig. 10. A–C, *Daviesia arenaria*: A, branch; B, pod; C, seed. D & E, *D. asperula* subsp. *asperula*: D, branch; E, pod; F & G, *D. asperula* subsp. *obliqua*: F, branch; G, pod. H & I, *D. brevifolia*: H, branch; I, pod. Illustrations by G.R.M. Dashorst from *Flora of South Australia* 2: 661, Fig. 357 (1986).

3. ***Daviesia asperula*** Crisp, *J. Adelaide Bot. Gard.* 6: 55 (1982). — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 57, fig. 1 (1982).

Compact or spreading shrub to 2 m high; branchlets greenish, with several longitudinal scabridulous ribs; phyllodes arranged regularly spirally, often crowded, divaricate, recurved at least at the base, compressed or flattened vertically, either subulate or falcate to obliquely narrow-obovate, 7–30 × 1–4.5 mm, pungent, articulate at the base, striate with parallel nerves, scabridulous. **Inflorescence** racemose, 2–3-flowered, 1 per axil; rachis almost nil; pedicel 1–2 mm long; bracts ovate to spatulate, to 1 mm long, brown to dark-brown, glabrous; calyx campanulate, 2–3 mm long, glabrous; calyx lobes very short and subequal, triangular to apiculate, slightly fimbriate, the upper 2 partly united higher up; standard very broad-ovate, emarginate, c. 7 × c. 7 mm, orange or yellow with a deep-red centre; wings obovate, c. 5 × c. 2 mm, auriculate, pale-red adaxially; keel obliquely obovate, acute, auriculate, saccate, c. 5 × c. 2 mm, deep-red distally. **Pod** broad-obtriangular, constricted to a slightly elongated stipe-like base, 10–14 × 7–10 mm, with a semicircular curve along the lower suture, brown, glabrous, 1-seeded; seed broadly ovoid-ellipsoid, 3.3–4 × 2.4–3.3 mm; aril thickly 2-lobed, projecting beyond the outline of the seed in profile.

Widespread on Kangaroo Island and southern Eyre Peninsula on poor soils, either sand or laterite, in mallee or open forests.

Variation in the shape of the phyllodes is extensive in *D. asperula*, and the boundary between subsp. *asperula* and subsp. *obliqua* is somewhat arbitrary due to the existence of intermediate forms on both Eyre Peninsula and Kangaroo Island. These descriptions are based on the extreme forms, specimens of which are numerous compared to the relatively few intermediates. *D. genistifolia* is similar to the subulate leaf form of *D. asperula*, which is readily distinguished by its striate and scabridulous branchlets. The pods of *D. asperula* have a semicircular curve along the lower suture, and the aril is thickly bilobed, while in *D. genistifolia* the pods are more sharply curved along the lower suture, and the aril is 1-lobed.

- 1. Phyllodes subulate, broadest at or near the base 3a. ***D. asperula*** subsp. ***asperula***
- 1: Phyllodes falcate or obliquely narrow-obovate, broadest at or above the middle... 3b. ***D. asperula*** subsp. ***obliqua***

3a. ***Daviesia asperula*** Crisp subsp. ***asperula*** — *Daviesia genistifolia* auct. non A.Cunn. ex Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948), partly; *Daviesia incrassata* auct. non Sm.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948); *Daviesia polyphylla* auct. non Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948), partly. — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 57, fig.1a–c (1982).

Phyllodes subulate, compressed vertically or subterete, recurved only near the base, 10–30 × 1–1.5 mm, tapering from the base into the pungent point. **Fig. 10D & E, Pl. 7K & L, 8A & B.**

S.A.: EP, SL, KI. Mainly Kangaroo Island, but with several outliers on southern Eyre Peninsula and a single record from Waitpinga (SL). Flowers: Sep.–Oct.

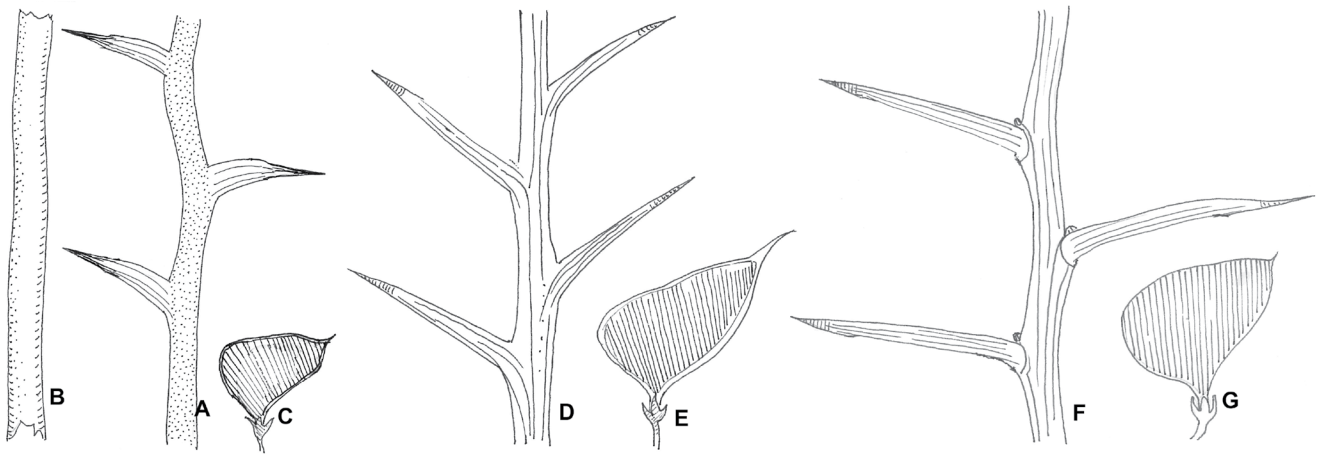


Fig. 11. A–C, *Daviesia benthamii* subsp. *acanthoclada*: A, branch; B, stem; C, pod. D & E, *D. benthamii* subsp. *humilis*: D, branch; E, pod; F & G, *D. genistifolia*: F, branch; G, pod. Illustrations by G.R.M. Dashorst from *Flora of South Australia* 2: 661, Fig. 357 (1986).

3b. ***Daviesia asperula* subsp. *obliqua*** Crisp, *J. Adelaide Bot. Gard.* 6: 58 (1982). — *Daviesia polyphylla* auct. non Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948), partly. — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 57, fig.1d–g (1982).

Phyllodes falcate or obliquely narrow-obovate, flattened vertically, recurved along the entire length of the upper or both margins, 7–20 × 1.5–4.5 mm, broadest at or above the middle, contracted towards the base, distinctly nerved lengthwise. **Fig. 10F & G, Pl. 8C & D.**

S.A.: EP. Found on Eyre Peninsula, mainly south of Yeelanna. Flowers: Aug.–Sep.

4. ***Daviesia benthamii*** Meisn. in Lehm., *Pl. Preiss.* 1: 48 (1844). — **Illustr.:** *Fl. S. Austral.* 2: 660, fig. 357d–e (1986).

Slender glabrous shrub 0.3–2 m high; branchlets slightly sulcate, c. 2–3 mm thick; phyllodes if present spreading to slightly ascending, terete, subulate, 5–30 or more mm long, 1–2 mm diam., rigid, pungent, their wide bases continuous with the branchlets. **Inflorescence** racemose, 3–12-flowered, solitary or clustered; rachis 2–20 mm long; bracts obovate, to 0.5 mm long, scarious, glabrous except for the ciliate margins; calyx campanulate, 2.4–4 mm long including the c. 1–1.5 mm long receptacle, glabrous; calyx lobes very short, apiculate, fimbriate, the upper 2 shorter, broader, partly united to form a truncate lip; standard transverse-elliptic, retuse, yellow-brown; wings and obtuse keel rather shorter. **Pod** shortly stipitate, broad-obovate to triangular, narrowing to the base, 5.5–8 × 4–5.5 mm, compressed, upper suture gently sigmoid, lower curved nearly at right angles, 1–2-seeded; seeds ovate, c. 2.5 mm long, slightly compressed; aril lateral, compressed-ovoid. **Spiny bitter-pea.**

D. benthamii subsp. *acanthoclona* differs from subsp. *humilis* in its taller habit, its few phyllodes that are reduced to short spines at the branchlet apices, and its long, slender inflorescence rachises; subsp. *acanthoclona* also tends to occur in slightly dryer localities in S.A. There is no evidence of a cline in phyllode size or number linking these two taxa, nor are there any intermediate specimens (Crisp 1982).

1. Stems 0.5–2 m high (usually above 1 m); phyllodes reduced to a few short stout spines at the branchlet apices, mostly less than 10 mm long; inflorescence rachis 5–20 mm long 4a. ***D. benthamii* subsp. *acanthoclona***

1. Stems 30–90 cm high; branchlets usually clothed with spiny phyllodes to near their bases, 5–30 mm long; inflorescence rachis 2–7 mm long 4b. ***D. benthamii* subsp. *humilis***

4a. ***Daviesia benthamii* subsp. *acanthoclona*** (F.Muell.) Crisp, *Austral. Syst. Bot.* 8: 1175 (1995). — *Daviesia acanthoclona* F.Muell., *Fragm.* 10: 32 (1876). *Daviesia aphylla* F.Muell. ex Benth., *Fl. Austral.* 2: 88 (1864); *Daviesia nudula* J.M.Black, *Trans. Roy. Soc. South Australia* 71: 20 (1947). *Daviesia genistifolia* auct. non A.Cunn. ex Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948), partly; *Daviesia benthamii* subsp. *benthamii* auct. non Crisp: J.Z.Weber & Crisp in Jessop & Toelken, *Fl. S. Austral.* 2: 663 (1986), partly. — **Illustr.:** *Fl. S. Austral.* 2: 660, fig. 357d (1986), as subsp. *benthamii*; M.D.Crisp, *Austral. Syst. Bot.* 8: 1177, fig. 6 (1995).

Erect shrubs 1–2 m high; branchlets almost smooth, rigid; phyllodes few (rarely none), divaricate, 5–10 mm long, more frequent near the apex of the branchlets. **Inflorescence** 3–12-flowered; rachis 5–20 mm long; pedicels 3–12 mm long. **Pod** 7–8 mm long. **Fig. 11A–C, Pl. 8E.**

S.A.: NU, EP, MU; W.A. Widespread on Eyre Peninsula and in the north-eastern Murray region, extending to near Hughes in the west. Commonly on sandy, sandy-loam, or clay-loam soils, in *Eucalyptus* woodland and mallee communities. Flowers: Aug.–Sep.

The name *D. benthamii* subsp. *benthamii* was misapplied to *D. benthamii* subsp. *acanthoclona* in Weber (1986). Subsp. *benthamii* is not known to occur in S.A.

- 4b. **Daviesia benthamii** subsp. **humilis** Crisp, *J. Adelaide Bot. Gard.* 6: 55 (1982). — *Daviesia genistifolia* auct. non A.Cunn. ex Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948), partly. — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 61, fig. 3 (1982); *Fl. S. Austral.* 2: 660, fig. 357e (1986); *Fl. Victoria* 3: 762, fig. 153g (1996).

Dense shrub 0.3–0.9 m high; branchlets usually clothed with phyllodes to near base, rarely naked to half-way from base; phyllodes spreading or slightly ascending, 5–30 or more mm long, 1–1.75 mm in diameter at base. **Inflorescence** 4–6-flowered; rachis 2–7 mm long including 0–1 mm peduncle. **Pod** 5.5–7 mm long. **Fig. 11D & E, Pl. 8F & G.**

S.A.: FR, EP, NL, MU, YP, SL, KI, SE; N.S.W.; Vic. Scattered through mallee districts of S.A., N.S.W., and Vic., on a variety of soils, including skeletal soils, sandy loam, and gravelly clay. It usually occurs within mallee habitats, but occasionally in heath or woodland. Flowers: Sep.–Oct.

(Rare status in S.A.)

5. **Daviesia brevifolia** Lindl. in T.Mitch., *Three Exped. Australia* 2: 200 (1838). — **Illustr.:** *Fl. S. Austral.* 2: 660, fig. 357f (1986); *Fl. Victoria* 3: 762, fig. 153b (1996).

Broom-like shrub to 1 m high; branchlets rigid, terete, striate, 1.5–2 mm thick, glabrous, sometimes slightly flexuose; juvenile leaves occasionally present, obovate, 15–30 × 7–10 mm, 2-lobed to hatchet-shaped, attenuate, fleshy; phyllodes regularly spaced, terete, tapering gradually into the slightly recurved tip, 2–5 mm long, pungent, oblique to and with a wide base continuous with the branches. **Inflorescence** racemose, mostly 1–4-flowered, 1–few per axil; rachis 1–3 mm long; peduncle 0–1 mm long; pedicels c. 1–2 mm long; bracts scaly, glabrous, ± ovate, to c. 1 mm long; calyx campanulate, 3–4 mm long, including the c. 1 mm long obpyramidal receptacle, glabrous; calyx lobes short-triangular to apiculate, fimbriate, the upper two almost united in an obtuse lip; corolla apricot to brown-red; standard transverse-elliptic, retuse, c. 5 × c. 7 mm, striate, grading from orange to deep-brown-red in the centre; wings oblong-obovate, shorter, deep-red in the centre; keel red with a dark acute pointed much incurved tip. **Pod** shortly stipitate, obliquely triangular, c. 15 × c. 10 mm, inflated, upper suture quite straight, lower bent suddenly to more than a right angle, dark-brown, 1- rarely 2-seeded; seed reniform, 3–4 × 2.5 mm, reddish-brown; aril circular, yellow, medially placed. **Leafless bitter-pea. Fig. 10H & I, Pl. 8H & I.**

S.A.: FR, EP, NL, MU, SL, KI, SE; Vic. Widespread in southern districts of S.A. and extending into the Flinders Ranges and western Victoria. Commonly on sandy soils, in *Eucalyptus* woodland, mallee, and heath. Flowers: Aug.–Oct.

6. **Daviesia genistifolia** A.Cunn. ex Benth., *Commentat. Legum. Gen.* 11: (1837). — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 61, fig. 2 (1982); *Fl. S. Austral.* 2: 660, fig. 357g (1986); *Fl. Victoria* 3: 762, fig. 153c (1996).

Low shrub to 0.6 m high, or rarely slender, open and up to 2 m high; branchlets glabrous, slightly sulcate, faintly striated to smooth, terete; phyllodes divaricate to slightly ascending, terete or compressed vertically, subulate, 5–30 × 0.5–1.7 (–2) mm, rigid, pungent, articulate at the base, usually striate. **Inflorescence** racemose, mostly 2–6-flowered, 1-few per axil; rachis 1.5–8 mm long including the 0.5–1.5 mm long peduncle; pedicels c. 2.5 mm long; bracts ovate to spatulate, concave, recurved, c. 1 mm long, glabrous; calyx campanulate, 2.2–4 mm long including the 0.5–1 mm long obconical receptacle, glabrous; calyx lobes shallow, 0.5–0.6 mm long, apiculate, slightly fimbriate, the upper 2 united higher up; standard suborbicular, emarginate, 6–8 × 6–8 mm, yellow to orange with a crimson centre; wings obovate, shorter, orange; keel obtuse, deep-crimson apically. **Pod** shortly stipitate, broad-triangular, narrowing to the base, 8–12 × 4–8 mm, compressed, lower suture sharply curved, usually 1-seeded; seed oblong-reniform, c. 4 × c. 3 mm, olive-green and black; aril large, 1-lobed. **Broom bitter-pea. Fig. 11F & G.**

S.A.: FR (W edge of S Flinders Ra.), EA, EP, NL, MU (Caroona Ck); Qld.; N.S.W.; Vic. Widespread in sclerophyll communities, often on sandy, clayey and loamy soils. Flowers: Aug.–Oct. See note under *D. asperula*.



Fig. 12. A–D, *Daviesia pectinata*: A, branch; B, pod; C, empty pod; D, seed. E–I, *D. sejugata*: E, branch; F, leaf; G, inflorescence; H, calyx; I, cross section through leaf; J–O, *D. ulicifolia* subsp. *ulicifolia*: J, branch; K–L, leaves; M, inflorescence; N, calyx; O, cross section through leaf. Illustrations by G.R.M. Dashorst; A–D from *Flora of South Australia* 2: 661, Fig. 3571 (1986).

7. ***Daviesia leptophylla*** A.Cunn. ex G. Don, *Gen. Hist.* 2: 125 (1832). — *Daviesia virgata* A.Cunn. ex Hook., *Bot. Mag.* 59: 3196 (1832); *Daviesia corymbosa* auct. non Sm.: J.M. Black, *Fl. S. Austral.* ed. 2, 2: 435 (1948); *Daviesia mimosoides* auct. non R.Br.: Crisp in Jessop, *List. Vasc. Pl. S. Austral.* 53 (1983). — **Illustr.:** Crisp, *Austral. Syst. Bot.* 4: 261, fig. 17 (1991).

Glabrous shrub to 1.5 (–2) m high; branchlets rigid, erect, angular, ribbed, sometimes apparently leafless towards the tips; phyllodes spirally arranged, erect or rarely spreading, flattened horizontally, linear-obovate to linear-elliptic, to 90 (–110) mm long, to 6 (–11) mm wide, sometimes very reduced, apex tapered to obtuse, mucronate, tapered towards the articulate base, adaxially convex, margins slightly recurved, venation conspicuous with a longitudinal nerve near each margin, dull yellow-green. **Inflorescence** racemose, 5–10-flowered, 1–4 per axil, subcorymbose; rachis 2.5–15 (–30) mm long including the 1.3–10 (–15) mm long peduncle; pedicels 1–4 mm long; bracts appressed, subulate, margins incurved; calyx 3.4–4.7 mm long including the 1.3–2.4 mm receptacle; calyx lobes fimbriate, the upper 2 united in a truncate, scarcely emarginate lip, the lower 3 shallowly triangular; standard transversely broad-elliptic, emarginate, 5.8–6.7 × 5.9–7 mm, mostly orange-yellow; wings obovate, rounded and incurved at the apex, auriculate, dark red with orange-yellow apex; keel half broad-ovate to depressed-obovate, acute, saccate, auriculate, dark red. **Pod** shortly stipitate, obliquely triangular to broad-triangular, 5–10 × 3.5–6 mm, compressed, upper suture gently sigmoid, lower suture sharply curved, light-brown, usually 2-seeded; seed elliptic-reniform, 2.5–3.5 × 1.4–2.2 mm, brown, mottled black; aril conspicuous, thickly lobed. **Narrow-leaf bitter-pea. Fig. 13A & B, Pl. 8J & K.**

S.A.: FR, EP, NL, MU (Barossa Ra.), SL, KI, SE; N.S.W.; Vic. Widespread in the southern Mt. Lofty Ranges, extending to Eyre Peninsula in the west and to the Flinders Ranges in the north. Mainly on dry open sites, usually skeletal soils, in shrubland or eucalypt forests. Flowers: Aug.–Dec.

Daviesia mimosoides and *D. corymbosa*, both of which have been confused with *D. leptophylla*, occur only in the eastern States.

8. ***Daviesia pectinata*** Lindl. in T. Mitch., *Three Exped. Australia (Mitchell)* 2: 150 (1838). — *Daviesia latipes* F. Muell., *Linnaea* 25: 390 (1853). — **Illustr.:** *Fl. S. Austral.* 2: 660, fig. 3571 (1986); *Fl. Victoria* 3: 762, fig. 153a (1996).

Rigid shrub to 1.5 m high; branches and branchlets glabrous, very prominently angled by the decurrent bases of the phyllodes; phyllodes divaricate and straight or falcate, flattened vertically, lanceolate or linear-lanceolate,

10–60 mm long, very rigid, tapering into a pungent point, adnate to the stem by the 3–10 mm long decurrent base, the lower ones longer than the upper ones, grey-green. **Inflorescence** racemose, mostly 2–10-flowered, 1–few per axil; rachis 1–7 mm long; peduncle 0–1 mm long; pedicels 1–1.5 mm long, glabrous; bracts oblong, hooded, 1–1.5 mm long, with ciliate or fimbriate margins; calyx 3–4 mm long including the c. 1 mm receptacle, glabrous, base obtuse; calyx lobes short, triangular, acute, margins ciliate, the upper 2 broader and slightly united, truncate; corolla mostly orange; standard orbicular, 5–6 × 5–6 mm; wings obovate, shorter; keel obtuse, shorter than the wings. **Pod** shortly stipitate, obliquely triangular, 9–14 × 6–10 mm, compressed, upper suture sigmoid, lower obtuse, curved through a right angle, dark-brown; seed ovate-reniform, c. 4 × 2–2.5 mm, brown, with black markings, conspicuously arillate near the centre. **Barbed wire bush, thorny (or prickly) bitter-pea. Fig. 12A–D, Pl. 9A–D.**

S.A.: EP, SL, SE; Vic. Mainly southern Eyre Peninsula, but with isolated occurrences near Waitpinga, in the Goolwa-Finiss area, and the upper SE region of S.A., extending to western Vic. Usually in mallee scrubland and woodland on dry stony or sandy soils. Flowers: Sep.–Nov.

(Rare status in S.A.)

9. **Daviesia sejugata** G.Chandler & Crisp, *Austral. Syst. Bot.* 10: 33 (1997).

Spreading shrub to 2 m high, sometimes wider than high; branches divaricate; branchlets spinescent, prominently longitudinally ridged, angular; phyllodes alternate, flattened horizontally, narrow-elliptic to slightly obovate, (8–) 15–33 × (1.5–) 2.5–5.5 mm at the widest point, pungent, articulate at the base, adaxially convex to concave or ± flattened with the midrib more prominent than below, thick and wrinkled when dry. **Inflorescence** umbellate, 2–5-flowered, 1–2 per axil; peduncle 1–8 mm long; pedicels 2–4.5 mm long; bracts c. 1–1.5 mm long; calyx campanulate, 3–4.5 mm long including the c. 1 mm receptacle; calyx lobes uniform, broad-triangular, scarcely keeled, slightly recurved from the base, c. 0.7–1.5 mm long; standard very broad-ovate, emarginate, c. 6–7 × 6.5–7.5 mm, yellow to orange at the margins with a darker base; wings obovate, auriculate, c. 6 × 2–2.5 mm; keel half transverse broad-ovate, base auriculate, c. 5 × 2 mm. **Pod** shallowly obtriangular, 8–11 × 4–6 mm, acuminate beaked, upper suture sigmoid, lower suture curved through a right angle; seed ellipsoid, 2.5–3 × 1.2–1.5 mm, orange-brown to tan, usually mottled black; aril c. 1.5 mm long. **Fig. 12E–I, Pl. 9E–G.**

S.A.: YP; Tas. Restricted to southern Yorke Peninsula and northern and eastern Tas., including King Island. On Yorke Peninsula it occurs on grey, calcareous soils, sandy soils, and limestone soils. Flowers: Sep.–Oct.

This species grows in apparently clonal colonies on lower Yorke Peninsula. It can flower profusely, but is not known to produce seed (in S.A.). Similar to *D. arthropoda* and *D. ulicifolia*. It differs from *D. arthropoda* by its thick, wrinkled phyllodes, deeper calyx lobes, and larger standard petals, and from *D. ulicifolia* by its broad, slightly recurved, flat or scarcely keeled calyx lobes, usually longer and wider phyllodes that can be slightly obovate, and constantly umbellate inflorescence.

(Endangered status in S.A.)

10. **Daviesia stricta** Crisp, *J. Adelaide Bot. Gard.* 6: 63 (1982). — **Illustr.:** Crisp, *J. Adelaide Bot. Gard.* 6: 63, fig. 4 (1982); *Fl. S. Austral.* 2: 661, fig. 357j (1986).

Open shrub to 1.5 m high; branchlets usually rigidly erect, compressed-triquetrous, narrowly winged, smooth; phyllodes arranged spirally, flattened horizontally, erect or ascending, narrow- to linear-elliptic, 10–100 × 1.5–15 mm, obtuse or acute, mucronate, articulate at the base, midrib prominent, venation obscure, coriaceous, glaucescent. **Inflorescence** umbelliform, 3–5-flowered, solitary or clustered in the axils; rachis 3–7 mm long; pedicels slender, 2–5 mm long; bracts triangular to spatulate, flat to navicular, 0.2–2 mm long, spirally placed along the peduncle and forming a rosette at the base of the pedicels; calyx narrow-campanulate, c. 5 mm long, glabrous; calyx lobes uniform, c. equal to the tube, triangular, acuminate, recurved at the tips, midribs raised, margins fimbriate, viscid, maroon; standard very broad-ovate, shallowly emarginate, 3.5–7.5 × 4–6.5 mm including the c. 2 mm long claw, orange with a purplish centre, fading to yellow-brown; wings obovate, auriculate, purplish; keel half-elliptic, slightly auriculate, slightly pouched, purplish distally. **Pod** narrow-triangular, enclosed at the base by the enlarged calyx, 9–13 × 5–7 mm, compressed before opening, acuminate beaked, upper suture slightly sigmoid, lower curved in a semicircle; seed reniform, c. 4.5 × c. 2.5 mm, compressed. **Fig. 13C–E.**

S.A.: FR, EA. Mostly restricted to the Flinders Ranges, where it is found on ridge tops and mountain slopes. It occurs on skeletal, quartz-derived soils, usually in mallee shrubland with heath-like shrubs or *Triodia*. Flowers: Oct.

This species appears to be closely related to *D. nyattiana*, which occurs on the eastern coast of Australia (Crisp 1982).

(Rare status in S.A.)

11. ***Daviesia ulicifolia*** Andrews, *Bot. Repos.* 5: t. 304 (1803). — *Daviesia ulicina* Sm., *Ann. Bot. (König & Sims)* 1: 506 (1805), *nom. superfl. & inval.* — **Illustr.:** G.T.Chandler & Crisp, *Austral. Syst. Bot.* 10: 37, fig. 2 (1997).

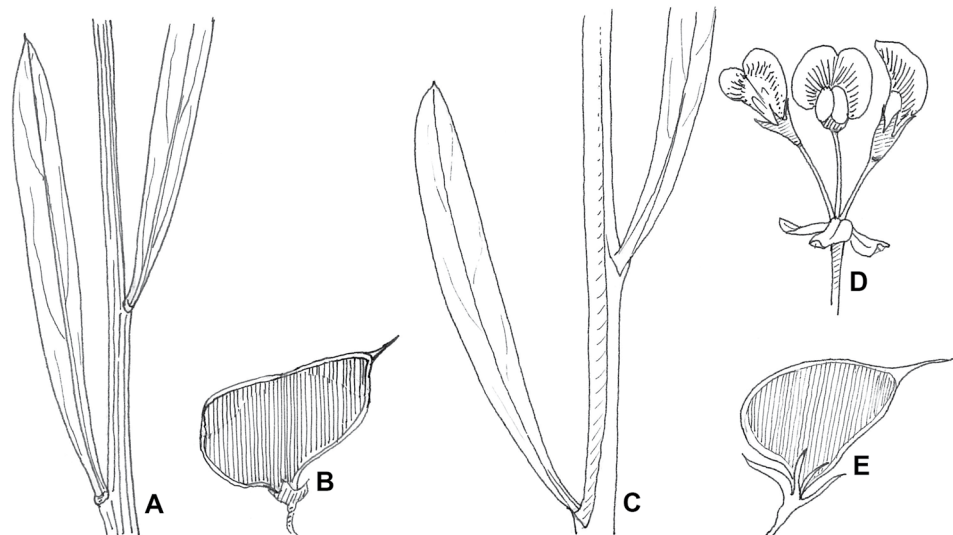


Fig. 13. A & B. *Daviesia leptophylla*: A, branch; B, pod. **C–E. *D. stricta*:** C, branch; D, inflorescence; E, pod. Illustrations by G.R.M.Dashorst from *Flora of South Australia* 2: 661, Fig. 357 (1986).

Divaricate shrub to 2.5 m high; branchlets spinescent, longitudinally ridged, angular-terete, glabrous to occasionally hispid; phyllodes alternate, flattened horizontally, narrow-ovate to -elliptic, 3–22 × 0.5–6 mm, pungent, articulate at the base, adaxially convex with the midrib more prominent than below, glabrous to occasionally hispid, secondary venation usually not visible. **Inflorescence** 1 or 2 per axil, 1-flowered, or racemose or umbellate with 2–7-flowers; peduncle 0–3.5 mm long; pedicels 0.5–5 mm long; bracts c. 1 mm long; calyx 2–4 mm long including the c. 0.5–1 mm long receptacle, glabrous; calyx lobes uniform, triangular to narrow-triangular, strongly keeled, incurved at the margins and in profile, the tips sometimes recurved, c. 0.5–1 mm long, the margins minutely ciliate; standard broad-obovate, emarginate or with a broad shallow sinus at apex, c. 3–9 × 3–10 mm including c. 1–2 mm claw; wings obovate to broadly so, apex rounded, auriculate, 4–7 × 1.4–3 mm; keel half transverse-broad-elliptic to -obovate, apex obtuse to very acute, 4–6 × 1–3 mm, deep red distally. **Pod** triangular, c. 8 × c. 5.5 mm, compressed horizontally, acuminate beaked, upper suture sigmoid, lower strongly curved, light brown; seed round-oblong, 3.5–4 × 1.8–2 mm, light-medium brown; aril round. **Gorse bitter-pea.**

1. Plant dull green; inflorescence 1-flowered or umbellate (rarely slightly racemose); standard petal sometimes or always > 4.5 mm wide
 2. Standard petal rosy red to deep red-orange, 7–8 × 7.5–9.5 mm; primarily southern Mt. Lofty region..... 11b. ***D. ulicifolia*** subsp. ***incarnata***
 - 2: Standard petal yellow, c. 3–6 × 3.5–9 mm..... 11c. ***D. ulicifolia*** subsp. ***ulicifolia***
- 1: Plant glaucous; inflorescence very shortly racemose (appearing umbellate); standard petal < 4.5 mm wide; southern arid areas of S.A..... 11a. ***D. ulicifolia*** subsp. ***aridicola***

- 11a. ***Daviesia ulicifolia*** subsp. ***aridicola*** G.Chandler & Crisp, *Austral. Syst. Bot.* 10: 39 (1997) — *Daviesia arthropoda* auct. non F.Muell.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 660 (1986).

Glaucous shrub; branchlets heavily ribbed and very rigid; phyllodes narrow-ovate to -elliptic, 8–17.5 × 1.3–3 mm. **Inflorescence** 1 (–2) per axil, very shortly racemose appearing umbellate, 2–7-flowered; standard petal c. 2.8–3.2 × 3.5–4 mm.

S.A.: FR, NW, NU, GT, EA, EP, MU; W.A., N.S.W. Occurs from the Great Victoria Desert in W.A. through to the Eyre Peninsula and Gairdner-Torrens regions of S.A., and far-western N.S.W. Found in southern arid areas on sandy soil with mallee vegetation. Flowers: May–Nov.

- 11b. ***Daviesia ulicifolia*** subsp. ***incarnata*** G.Chandler & Crisp, *Austral. Syst. Bot.* 10: 40 (1997).

Dull green shrub; phyllodes narrow-elliptic to -ovate or linear, 9.5–22 × 1–3 mm. **Inflorescence** 1–2 per axil, umbellate, rarely racemose, 2–5-flowered; standard petal broad-obovate to -elliptical, 7–8 × 7.5–9.5 mm, rosy-red to deep red-orange. **Pl. 9H & I.**

S.A.: SL, MU (E side of Mt Lofty Ra.), NL. Mostly confined to the southern Mt. Lofty region where it is found in hilly and mountainous areas, on sandy to rich loams, usually in *Eucalyptus* dominated woodland. Flowers: late Sep. to early Nov.

11c. **Daviesia ulicifolia** subsp. **ulicifolia**. — **Illustr.:** G.T.Chandler & Crisp, *Austral. Syst. Bot.* 10: 37, fig. 2 (1997).

Dull green shrub; phyllodes narrow-ovate or -elliptic, 4–20 × 1–3 mm. **Inflorescence** 1 to 2 per axil, 1-flowered or umbellate (rarely slightly racemose) with 2–4 (–5) flowers; standard petal c. 3–6 × 3.5–9 mm, yellow. **Fig. 12J–O, Pl. 9J.**

S.A.: KI, SL, MU, SE; N.S.W.; Vic. Occurs from the north coast of N.S.W., south into the northern plains of Vic., and west to south-eastern S.A. Its habitat is variable, but it is usually found in *Eucalyptus* dominated dry sclerophyll forests. Flowers: late Aug.–Nov.

This subspecies is morphologically variable across its range. In S.A. it most closely resembles *D. ulicifolia* subsp. *incarnata*, but can be distinguished by its yellow standard petals.

13. DILLWYNIA Sm.

Ann. Bot. (Koenig & Sims) 1: 510 (1805).

(After L.W. Dillwyn, English Botanist, 1778–1855.)

J.Z. Weber†, updated by J. Kellermann & P.J. Lang

Heath-like shrubs; leaves simple, linear, terete, with a groove along the upper surface, or somewhat trigonous in cross section, rarely almost flat with involute margins; stipules usually absent, if present minute. **Flowers** yellow or yellow and red, single, paired and axillary or a few in terminal and/or axillary racemes or corymbs; bracts small, usually caducous; bracteoles small, on the pedicels often well removed from the base of the calyx, usually soon caducous; calyx lobes 5, short or as long as the tube, often the upper 2 lobes broad, divergent and partly united into an upper lip, the base long- or short-turbinate; petals clawed; the standard broader than long; the wings narrow; the keel usually shorter, straight or scarcely incurved; stamens 10, free; ovary shortly stipitate, pubescent, the style erect, rather thick, hooked below the apex, with a truncate thick stigma, the 2 ovules on short funicles. **Pod** nearly sessile, ovate or rounded, turgid; seed arillate. **Parrot-peas.**

Endemic to Australia, with about 30 published species and several unpublished taxa.

This is an unaltered reprint of the descriptions published in the last edition of the *Flora of South Australia*, only species distributions and information on habitat and flower colour have been updated. *Dillwynia* is currently being revised and a new treatment will be published, once available.

1. Flowers (1–) 2–8, mostly in terminal pedunculate corymbs or short racemes; keel acuminate, longer than the wings or obtuse and shorter
 2. Keel acuminate, orange, equalling the wings; plant usually pubescent, hairs present at least on leaves and/or calyx or pedicel..... 3. **D. hispida**
 - 2: Keel obtuse, yellow to reddish, shorter than the wings; plant wholly glabrous or nearly so... 2. **D. glaberrima**
- 1: Flowers 2–8 (–10) in sessile or subsessile terminal and/or lateral short racemes, or single or paired and axillary, or often in corymbs; keel obtuse, shorter than the wings
 3. Flowers single or paired, axillary, subsessile in long leafy racemes; leaves straight, 5–20 mm long, subacute-mucronate, scabrous..... 4. **D. sericea**
 - 3: Flowers 2–10 or more, in terminal and/or lateral leafless short racemes or corymbs
 4. Leaves 3–7 mm long, thick, obtuse, spreading, usually much recurved; flowers 2–5; standard yellow with red centre..... 5. **D. uncinata**
 - 4: Leaves 5–20 mm long, more or less filiform, acute, more or less ascending, not or slightly recurved distally; flowers 3–10; standard orange with red centre..... 1. **D. cinerascens**

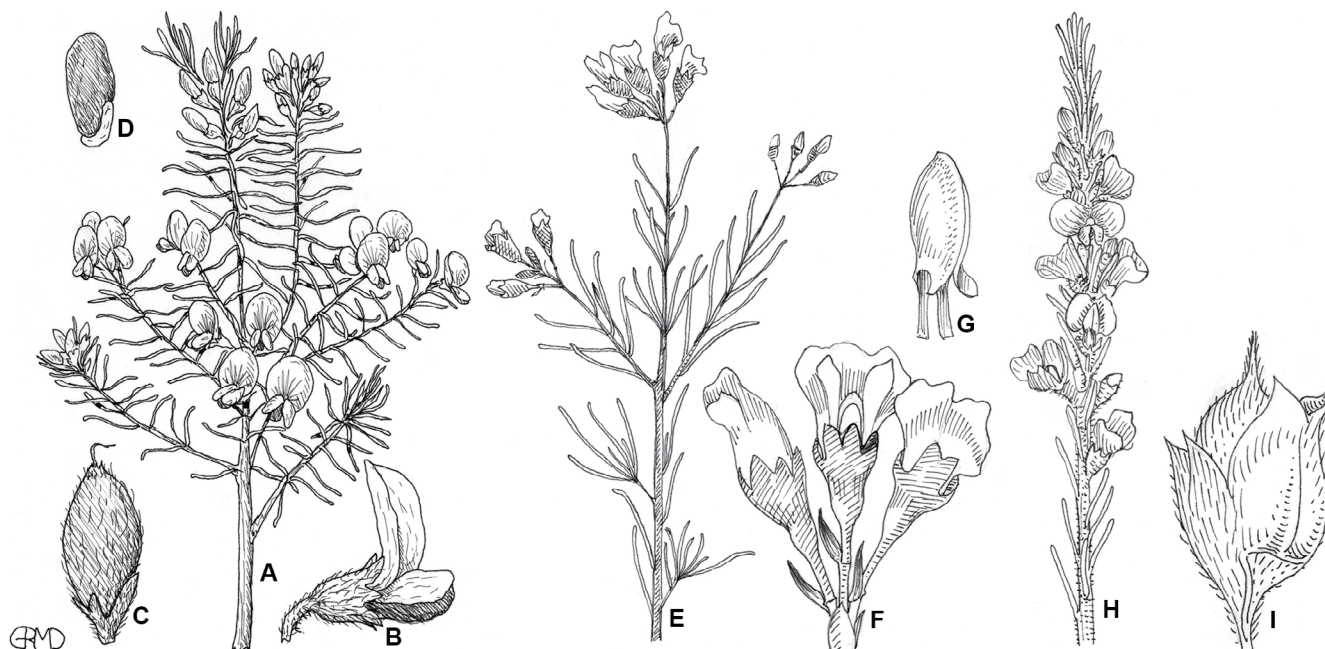


Fig. 14. A–D, *Dillwynia cinerascens*: A, branch; B, flower; C, fruit; D, seed. E–G, *D. glaberrima*: E, branch; F, inflorescence; G, keel. H–I, *D. sericea*: H, branch; I, fruit. Illustration by G.R.M. Dashorst from Flora of South Australia 2: 665, Fig. 358 (1986).

1. ***Dillwynia cinerascens*** R.Br. in Sims, *Bot. Mag.* 48: t. 2247 (1821).

Heath-like shrub, branches usually more slender, slightly hairy or nearly glabrous (in some western specimens the branchlets often ending in slender thorns); leaves moderately crowded, more or less filiform, 5–20 × 0.3–0.5 mm (dried), acute, mucronulate, more or less ascending, not or slightly recurved distally, glabrous or sprinkled with white hairs. **Flowers** 5–8 mm long, on pedicels 1–2 mm long, in terminal or less often axillary, 3–10-flowered sessile short racemes or corymbs; bracts at the base of the raceme or pedicel ovate, c. 1 mm long, acute, brown, leathery, white-sericeous, caducous; bracteoles distal on the pedicels, remote from the calyx, ovate-lanceolate, slightly longer than the bracts, white-sericeous, more persistent but finally caducous; calyx c. 4 mm long, short-turbinate at the base, usually hoary, lobes short, ciliate; the 2 upper broader, united almost to the top into an almost truncate lip; petals predominantly orange (or yellow); standard less than twice as long as broad, centre red; wings slightly shorter, narrow-obovate; keel obtuse, shortest. **Pod** sessile, ovate, c. 5 × c. 3 mm, subacute, turgid, white-pubescent; seed usually 1, elliptic, c. 3 × c. 1.5 mm, black, turgid; aril circular, off-centre. **Grey parrot-pea.** Fig. 14A–D, Pl. 9K, 10A & B.

S.A.: SE; N.S.W.; Vic.; Tas. The species grows mainly in red gum woodland, adjacent to seasonally inundated areas and wetlands, on sandy soils. Flowers: Oct.–Dec.

(Endangered status in S.A.)

2. ***Dillwynia glaberrima*** Sm., *Ann. Bot. (Koenig & Sims)* 1: 510 (1805). — *D. ericifolia* Sm. forma *glaberrima* (Sm.) Benth., *Fl. Austral.* 2: 149 (1864). *D. ericifolia* var. *peduncularis* auct. non (Benth.) Benth.: J.M.Black, *Fl. S. Austral.* 3: 203 (1922); *D. peduncularis* auct. non. Benth.: J.M.Black, *Fl. S. Austral.* ed. 2, 3: 444 (1948). — **Illustr.:** L.F.Costermans, *Native Trees Shrubs S.E. Austral.* 193 (1981).

Shrubs less than 1 m to more than 2 m high; the branches slender, wiry, almost glabrous; leaves on distinct up to 1 mm long wrinkled honey-yellow petioles, linear, 5–20 mm, but commonly 10–15 mm long and c. 0.5 mm across (dried), the apex obtuse with a small mucro usually recurved glabrous or rarely pubescent, often grooved above by involute margins or smooth, occasionally slightly twisted; stipules minute, filiform, acuminate, to 0.5 mm long, glabrous, persistent. **Flowers** 8–10 mm long, on 2–3 mm long mostly glabrous pedicels; racemes short or elongated, terminal and in upper axils, rarely 1- but up to 6-flowered; peduncles 5–20 mm long, glabrous, as long as or longer than the nearest leaf; bract ovate, acute, c. 1.5 mm long, brown, leathery, glabrous except for the ciliate margins, caducous; bracteoles lanceolate, distal on the pedicels, remote from the calyx, lanceolate, 1–2 mm long, with a few hairs apically, caducous; calyx 4–6 mm long, gradually contracted into an obturbinate base, glabrous except for fine hairs near the edge of the lobes, or occasionally with appressed hairs; lobes shorter than the tube, triangular, ciliate, the upper 2 united for half of their length, notched, falcate; standard with a claw as long as the

calyx, transverse-elliptic, notched, wider than long, yellow with a reddish blotch centrally; wings shorter, spathulate, yellow; keel obtuse, about half as long as the standard, yellow to reddish, usually ciliate. **Pod** sessile, ovoid 4–6 × c. 4 mm, turgid, brown, sparsely hairy; seeds 2, reniform, c. 2 × c. 1.5 mm, brown, smooth; aril large, attached centrally. **Smooth parrot-pea. Fig. 14E–G, Pl. 10C & D.**

S.A.: SE; Qld; N.S.W.; Vic.; Tas. It grows in high rainfall parts of the South-Eastern region in heath and woodlands with heathy understorey, on sandy soils. Flowers: Sep.–Nov.

3. **Dillwynia hispida** Lindl. in T.Mitch., *Three Exped. Austral.* 2: 249 (1838). — **Illustr.:** G.R.Cochrane *et al.*, *Fl. Pl. Victoria* 86, fig. 242 (1968).

Slender erect shrub to 50 cm high; branches clustered on a thick rootstock, pubescent to almost glabrous; leaves rather crowded, filiform, 3–10 (–13) × 0.5–0.7 mm, smooth or minutely tuberculate, covered with rather stiff spreading hairs or rarely almost glabrous, obtuse, with a short incurved point, apex straight or recurved, often grooved above by the involute margins, on wrinkled yellow petioles less than 1 mm long; stipules filiform, c. 0.5 mm long. **Flowers** 7–12 mm long, on pedicels 1–3 mm long and more or less beset with stiff hairs, 3–8 in terminal rarely axillary leafless corymbs or short racemes or clusters, on 5–20 mm long peduncles more or less beset with white stiff hairs and as long or longer than the nearest leaf; bracts lanceolate, 2–3 mm long, pubescent with stiff hairs, caducous; bracteoles attached less than half way up the pedicel, lanceolate, 1–2.5 mm long, with stiff white hairs, caducous; calyx 5–8 mm long, the lower part of the tube gradually contracted into an obturbinate base, usually covered with spreading hairs, but occasionally glabrous except for a few hairs on the tip of the lanceolate lobes, shorter than the tube, the upper 2 united for half their length; petals orange; standard less than twice as long as the calyx, transverse-elliptic, notched, 12–20 mm broad, centre with yellow blotch; wings spathulate, shortest; keel acuminate usually protruding from the wings, recurved at the summit. **Pod** sessile, ovoid or globular, c. 4 × 3.5 mm, villous, slightly exceeding the calyx; seed reniform c. 1.5 × c. 0.8 mm, brown, smooth; aril attached centrally. **Red parrot-pea, downy parrot-pea. Pl. 10E–K.**

S.A.: EP, NL, MU, YP, SL, KI, SE; N.S.W.; Vic. The species grows on rocky skeletal sandy loamy soils, near the edges of stringybark forests and often in disturbed, open sites. Flowers: Sep.–Nov.

Yellow-flowered forms occur in some regions.

4. **Dillwynia sericea** A.Cunn. in B.Field, *Geogr. Mem. N.S.W.* 347 (1825). — *D. floribunda* auct. non Sm.: J.M.Black, *Fl. S. Austral.* 2: 303 (1924) & 2: 444 (1948). — **Illustr.:** Cunningham *et al.*, *Pl. W. N.S.W.* 392 (1982).

Tall erect heath-like shrub with pubescent slender but stiff branches; buds enclosed in brown bracts; leaves filiform, 5–20 mm long, < 1 mm wide, straight, rather rigid, minutely tuberculate or scabrid-hairy, margins involute to grooved above, subacute and mucronate, on short thick wrinkled pedicels less than 0.5 mm long. **Flowers** 6–10 mm long, single, paired or few to many, axillary, subsessile or on pedicels to 1 mm long (if few the pedicel short, stout, < 1 mm long), in long leafy racemes along the apical parts of the branches resembling a dense leafy spike; bracts broad-ovate, c. 2.5 mm long, brown, leathery, white-pubescent especially on the margins, caducous; bracteoles absent; calyx 4–6 mm long, gradually contracted into a distinct turbinate base, white-pubescent, lobes triangular, short, heavily ciliate or short-pubescent on the margins; the upper 2 longer, united higher up and falcate; standard nearly twice as long as the calyx, transverse-elliptic, retuse, often wider than long, apricot-coloured or yellow distally, red centrally, wings shorter, oblanceolate, reddish; keel shortest, c. 5 mm long, obtuse, red. **Pod** sessile, scarcely exceeding the calyx, obovate, c. 5 × c. 3.5 mm, globose, brown, white-pubescent; seeds 2, reniform, c. 1.5 mm long, dark-brown, reticulate. **Showy parrot-pea. Fig. 14H & I, Pl. 11A–F.**

S.A.: MU, YP, SL, KI, SE; Qld; N.S.W.; Vic.; Tas. The plant grows in heathland and mallee communities, mainly on sandy soils. Flowers: Aug.–Dec.

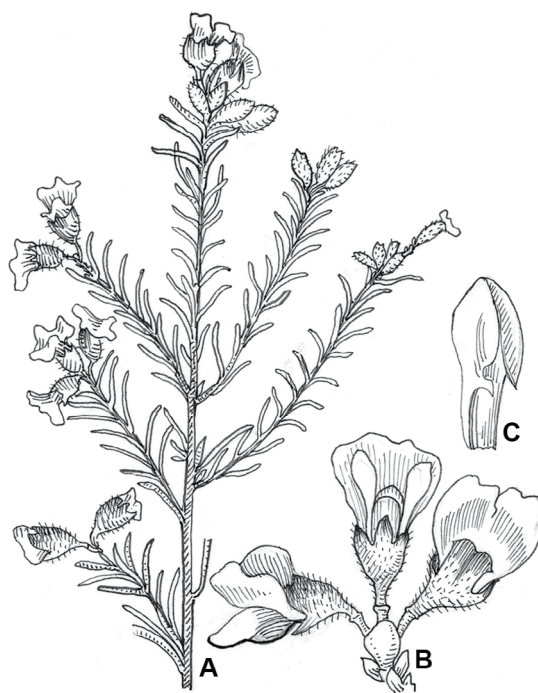


Fig. 15. A–C, *Dillwynia uncinata*: A, branch; B, flowers; C, keel. Illustration by G.R.M. Dashorst from *Flora of South Australia* 2: 665, Fig. 358 (1986).

5. **Dillwynia uncinata** (Turcz.) J.M.Black, *Fl. S. Austral.* 2: 303 (1924). — *Eutaxia uncinata* Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 26: 269 (1853); *E. sparsifolia* F.Muell., *Defin. Austral. Pl.* 39 (1855) & *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 118 (1855); *E. patula* F.Muell. in D.Dietr., *Fl. Univ. Neue Ser.* t. 17 (1861); *D. patula* (F.Muell.) F.Muell., *Fragm.* 4: 16 (1863).

Erect shrub, branches divaricate, silky-pubescent on the young parts; leaves scattered, terete, 3–7 × 0.5–0.6 mm, rather thick, obtuse, spreading and recurved, rarely erect, grooved above, somewhat trigonous, with a few appressed white hairs beneath, green, slightly and gradually attenuate towards the distinct short (less than 0.5 mm long) white-pubescent petiole. **Flowers** 6–10 mm long, on the stout 1–2 mm long white-pubescent pedicel, in short 2–5- rarely 1-flowered terminal rarely axillary loose-corymbose clusters; bracts at the base of the peduncle and each pedicel, ovate, c. 1 mm long, subacute, brown, leathery, white-pubescent, caducous; bracteoles mainly subulate, c. 1.5 mm long, basal or distal on the pedicels, white-pubescent, caducous; calyx 4–5 mm long, sharply contracted and obtuse at the base, hoary-pubescent, brown, leathery; teeth short, ciliate, the upper 2 longer and united so far up that they form a slightly notched upper lip; standard nearly twice as long as the calyx, rather broader than long, on a short claw, yellow-orange distally, reddish centrally, often red on back; wings oblong, slightly shorter, yellow distally, reddish basally; keel obtuse, scarcely more than half as long as the standard, reddish. **Pod** sessile, ovate, c. 5 × 3.5–4 mm, slightly or not compressed, globular, brown, with white hairs; seeds 2, triangular in outline, cordate, c. 2 × c. 2 mm, thick, brown, shiny, with the aril centro-basal. **Silky parrot-pea. Fig. 15, Pl. 11G–L.**

S.A.: EP, MU, YP, SE; W.A.; Vic. This species is associated with deep sandy soils, mainly growing in sand-dunes in open mallee vegetation. Flowers: Aug.–Oct.

14. EUTAXIA R.Br.

in W.T. Aiton, *Hortus Kew.* ed. 2, 3: 16 (1811).

(Greek *eu*, well; *taxis*, arrangement; referring to the regular arrangement of the leaves of most species.)

Prostrate to erect perennial shrubs; stems and branches usually glabrous; leaves opposite-decussate (alternate or whorled), simple, entire, flat, concave or with ± involute margins; stipules minute or absent. **Flowers** pedicellate, axillary, solitary or several together, sometimes crowded in the upper axils; bracts small, caducous or absent; bracteoles distal on the pedicels, persistent; calyx 5-lobed, lobes unequal, the upper 2 ± united into a lip; corolla papilionoid, petals long-clawed, yellow and orange, red-brown or purple; standard orbicular, longer than the other petals; wings oblong; keel obtuse, almost straight; stamens 10, free, anthers uniform; ovary narrowed at the base, sessile or stipitate, pubescent or rarely glabrous, 2-ovulate; style filiform and incurved or thicker and hooked near the apex; stigma small, terminal. **Pod** ovoid to obovoid, turgid or compressed, pubescent, sessile or stipitate, usually 2-seeded; seeds reniform to ellipsoid, with a 2-lobed aril.

An endemic Australian genus with c. 9 species; 2 in S.A. It occurs in all mainland states, primarily in the south-west of W.A., in forests, woodland and heath.

Wilkins *et al.* (2010) resurrect the name *E. empetrifolia* for a W.A. species, with only one known collection from S.A., the type specimen, collected in the 1840s from near Bethany in the Barossa Valley. This is not followed here and *E. empetrifolia* is synonymised with *E. microphylla*. The taxonomy of *E. diffusa*, *E. empetrifolia* and *E. microphylla* still needs clarification and adoption of *E. empetrifolia* for a W.A. taxon seems premature.

References: Weber (1986), Porteners 1991a), Jeanes (1996), Wilkins *et al.* (2010).

1. Leaves linear to linear-oblong, mostly less than 3 mm long, to 1 mm wide, more or less concave, apex obtuse 2. **E. microphylla**
- 1: Leaves lanceolate to ovate or obovate to rhomboid, mostly more than 3 mm long, more than 1 mm wide, concave and keeled, apex subacute 1. **E. diffusa**

1. **Eutaxia diffusa** F.Muell., *Fragm.* 1: 7 (1858). — *Eutaxia microphylla* var. *diffusa* (F.Muell.) Court, *Victorian Naturalist* 73: 173 (1957). — **Illustr.:** *Fl. Victoria* 3: 796, fig. 160d–f (1996).

Variable heath-like shrub to 1.5 m high; stems and branches often erect, usually glabrous, non-spinescent; leaves paired, opposite, decussate, somewhat distant, lanceolate to ovate or obovate to rhomboid, mostly 3–7 × 1–3 mm, apex subacute, concave, ± keeled, usually glabrous, green above and often brownish below, subsessile. **Flowers** c.

6 mm long, solitary or rarely paired; pedicels 1–2 (–3) mm long, glabrous; bracts if present caducous; bracteoles persistent on the upper pedicels, attached below the calyx, elliptic to linear-lanceolate, 1–4 mm long; calyx 2.5–4 mm long, glabrous or with sparse spreading hairs; calyx lobes c. equal to or longer than the tube, margins ciliate, the upper 2 partly united; standard longest, broader than long, yellow, occasionally with distinct reddish streaks; wings yellow; keel purple. **Pod** 4–5 mm long, turgid, long-stipitate, usually 2-seeded; seeds reniform, c. 2.5 mm long, brown-black. **Spreading eutaxia. Fig. 16A–F, Pl. 12D.**

S.A.: FR, EA, EP, NL, MU, YP, SL, KI, SE; N.S.W.; Vic. Widespread in south-eastern S.A. from southern Eyre Peninsula through to the north-east of the South-Eastern region. It usually occurs in *Eucalyptus* dominated woodland or mallee communities on a variety of soil types. Flowers: Aug.–Nov.

2. **Eutaxia microphylla** (R.Br.) C.H.Wright & Dewar, *Johnson's Gard. Dict.*: 1052 (1894). — *Sclerothamnus microphyllus* R.Br. in W.T.Aiton, *Hortus Kew.* ed. 2, 3: 16 (1811). *Eutaxia empetrifolia* Schldl., *Linnaea* 20: 667 (1847). — **Illustr.:** *Fl. Victoria* 3: 796, fig. 160a–c (1996).

Variable heath-like shrub to 1 m high, sometimes prostrate; stems and branches often dense and intricate, usually glabrous, the branchlets often spinescent; leaves paired, opposite, decussate, crowded, linear to linear-oblong, 1.5–2.5 (–5) mm long, to 1 mm wide, apex obtuse, \pm concave, usually glabrous or slightly ciliate on the margins, green on both surfaces, petiole c. 0.3 mm long. **Flowers** c. 6 mm long, axillary, solitary or rarely paired; pedicels 1–2 (–3) mm long, glabrous; bracts if present caducous; bracteoles persistent on the upper pedicels, attached below the calyx, elliptic to linear-lanceolate, 1–4 mm long; calyx 2.5–4 mm long, glabrous or with sparse spreading hairs; calyx lobes c. equal to or longer than the tube, margins ciliate, the upper 2 partly united; standard longest, broader than long, yellow, often with distinct purple or red streaks; wings yellow; keel purple. **Pod** 4–5 mm long, turgid, long-stipitate, usually 2-seeded; seeds reniform, c. 2.5 mm long, brown-black. **Common eutaxia, mallee bush-pea. Fig. 16G–K, Pl. 12A–C.**

S.A.: NU, GT, FR, EA, EP, NL, MU, YP, SL, KI, SE; W.A.; Qld; N.S.W.; Vic.; Tas. Widespread in southerly regions of S.A. from the Nullarbor Plain to the south-east. It usually occurs in *Eucalyptus* dominated woodland or mallee communities on a variety of soil types. Flowers: Aug.–Nov.

E. microphylla and *E. diffusa* display similar distributional patterns in S.A., and have been observed to co-occur, but they do not appear to intergrade with regard to the leaf traits that distinguish them.

15. GASTROLOBIUM R.Br.

in W.T. Aiton, *Hortus Kew.* ed. 2, 3: 16 (1811).

(Greek *gaster*, belly; *lobos*, pod; alluding to the ovoid pod.)

Erect to prostrate shrubs; leaves simple, opposite, alternate or whorled; stipules usually present. **Flowers** in terminal or axillary racemes or umbels; bracts often caducous, usually scale-like; bracteoles absent; calyx campanulate, the upper 2 lobes usually connate higher up than the lower 3; corolla papilionoid, sometimes with the standard reduced, mostly yellow or orange, often with a red central ring surrounding a yellow centre; standard lamina usually broader than long, usually emarginate; stamens 10, free; ovary stipitate to sessile, densely pubescent, with 2–20 ovules, rarely more. **Pod** usually \pm ovoid, stipitate to \pm sessile, pubescent, dehiscent; seed reniform to ellipsoid, arillate. **Poison-peas.**

Restricted mainly to south-western Western Australia, with 109 species; two species occur in northern and central Australia.

Gastrolobium species are all native to south-western W.A., except for *G. brevipes* Crisp, which occurs in central Australian (W.A. and N.T.), and *G. grandiflorum* F.Muell., which extends from Western Australia through to Queensland. Both *G. brevipes* and *G. grandiflorum* can occur close to the northern South Australian border, but have not been recorded from this state. Several species, including *G. villosum*, *G. spinosum* Benth., *G. parviflorum* (Benth.) Crisp, *G. latifolium* (R.Br.) G.Chandler & Crisp (= *Brachysema latifolium* R.Br.), *G. celsianum* (Lem.) G.Chandler & Crisp (= *B. celsianum* Lem.), and *G. sericeum* (Sm.) G.Chandler & Crisp (= *B. sericeum* (Sm.) Domin), are recorded as cultivated or are questionably established in S.A., and are not included in this treatment.

Reference: Chandler *et al.* (2002).

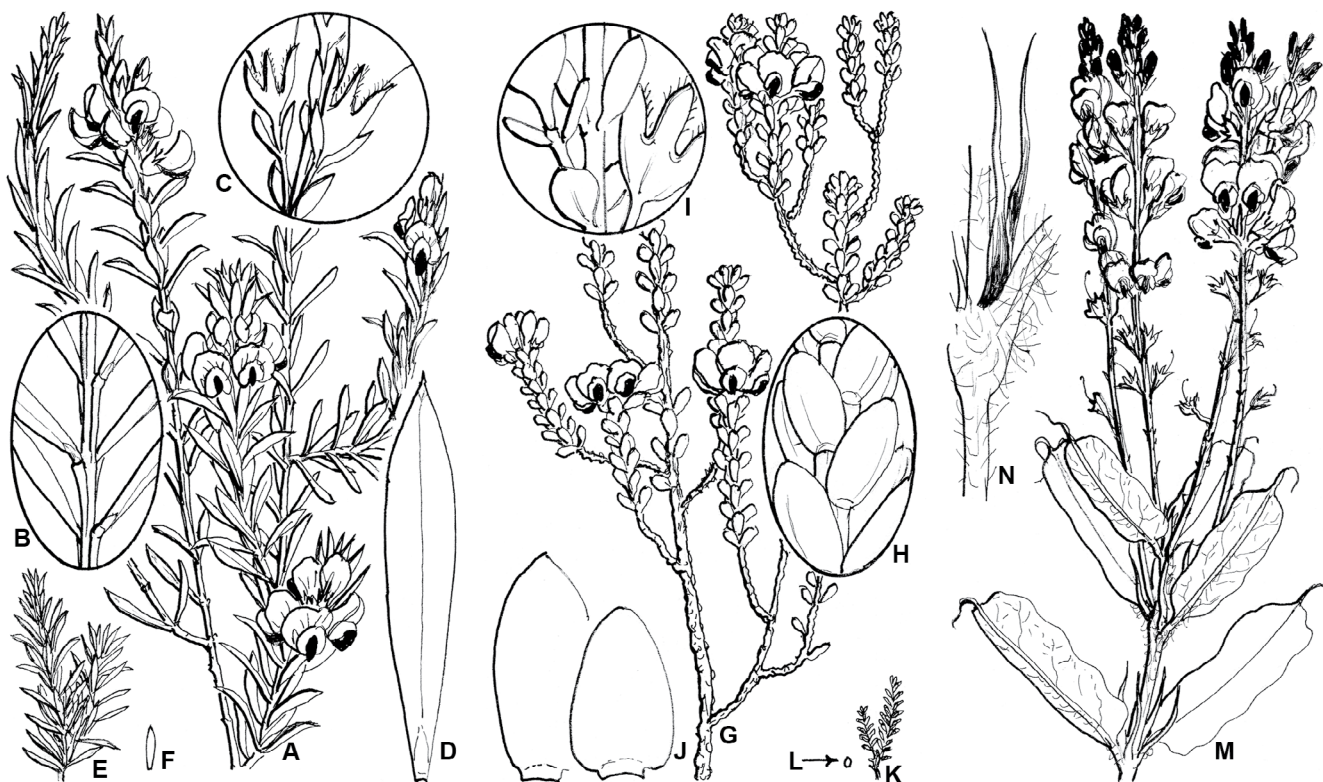


Fig. 16. A–F, *Eutaxia diffusa*: A, branch; B, detail of leaf bases; C, detail of calyx; D, leaf; E–F, life sized images: E, plant; F, leaf. G–K, *E. microphylla*: G, branch; H, detail of leaf bases; I, detail of calyx; J, leaves; K–L, life sized images: K, plant; L, leaf. M & N, *Gastrolobium villosum*: M, branch; N, leaf base and stipules. Illustration by G.R.M. Dashorst.

1. **Gastrolobium villosum* Benth. in Lindl., *Sketch Veg. Swan R.* xiii (1839).

Low, spreading shrub 0.3–0.6 (–1) m high; branchlets ascending, terete, densely pubescent; leaves spreading, opposite, broadly ovate, ovate or ± oblong, 20–45 (–60) × 7–25 (–35) mm, mature leaves glabrous adaxially, moderately to densely pubescent abaxially, margins strongly undulate, apex rounded, often with a small, blunt mucro; petioles terete, densely pubescent, continuous but not decurrent with the branchlets; stipules narrow-triangular, 8–15 mm long, erect, entire, glabrous or sparsely pubescent. **Inflorescence** racemose, terminal, more than 30-flowered; rachis 80–150 mm long; peduncle usually with a sheath of persistent barren bracts at the base; calyx 6–7 mm long, moderately pubescent, lobes reflexed, the upper 2 lobes connate higher up; standard lamina broader than long, emarginate, deep orange to pale red with a red to pink ring around the yellow centre; wings deep orange to pale red; keel pink, shorter than and often ± enclosed by the wings. **Pod** shortly stipitate, obliquely ellipsoid, 8–9 mm long, sparsely to moderately pubescent; seed reniform, 4–5 mm long, arillate. **Crinkle leaved poison. Fig. 16M & N.**

S.A.: ^{2c}SL; W.A. This species is questionably established near Uraidla in the southern Mt. Lofty Ranges. Flowers: Aug.–Oct.

16. GOMPHOLOBIUM Sm.

Trans. Linn. Soc. London 4: 20 (1798).

(Greek *gomphos*, a club; *lobos*, pod; alluding to the club-shaped pod.)

Small to large perennial shrubs; branches glabrous or with simple white hairs; leaves persistent, alternate, simple or compound, pulvinate, sessile or petiolate; leaflets usually narrow, margins entire, stipels absent; stipules small, free, interpetiolar, or absent. **Flowers** axillary or at apex of branchlets, solitary or in 2- to many-flowered racemes; bracts small, not enclosing inflorescence; bracteoles present; calyx lobes valvate, without prominent veins, all lobes symmetrical and split to near hypanthium, or the two adaxial lobes asymmetrical and fused higher than the three symmetrical abaxial lobes; corolla papilionoid, petals shortly clawed, yellow, orange, red, pink or mauve, glabrous or with marginal hairs on keel; standard orbicular or reniform, longer than the wings and keel; wings straight; keel obtuse; stamens 10, free; anthers dorsifixed to sub-basifixed, uniform; ovary stipitate, unilocular, glabrous inside, 2–many-ovulate, funicles long; style curved, without wings or hairs; stigma terminal, simple, papillate. **Pod** turgid, globose or ellipsoid, dehiscent along both sutures; seed exarillate, or rim aril present.

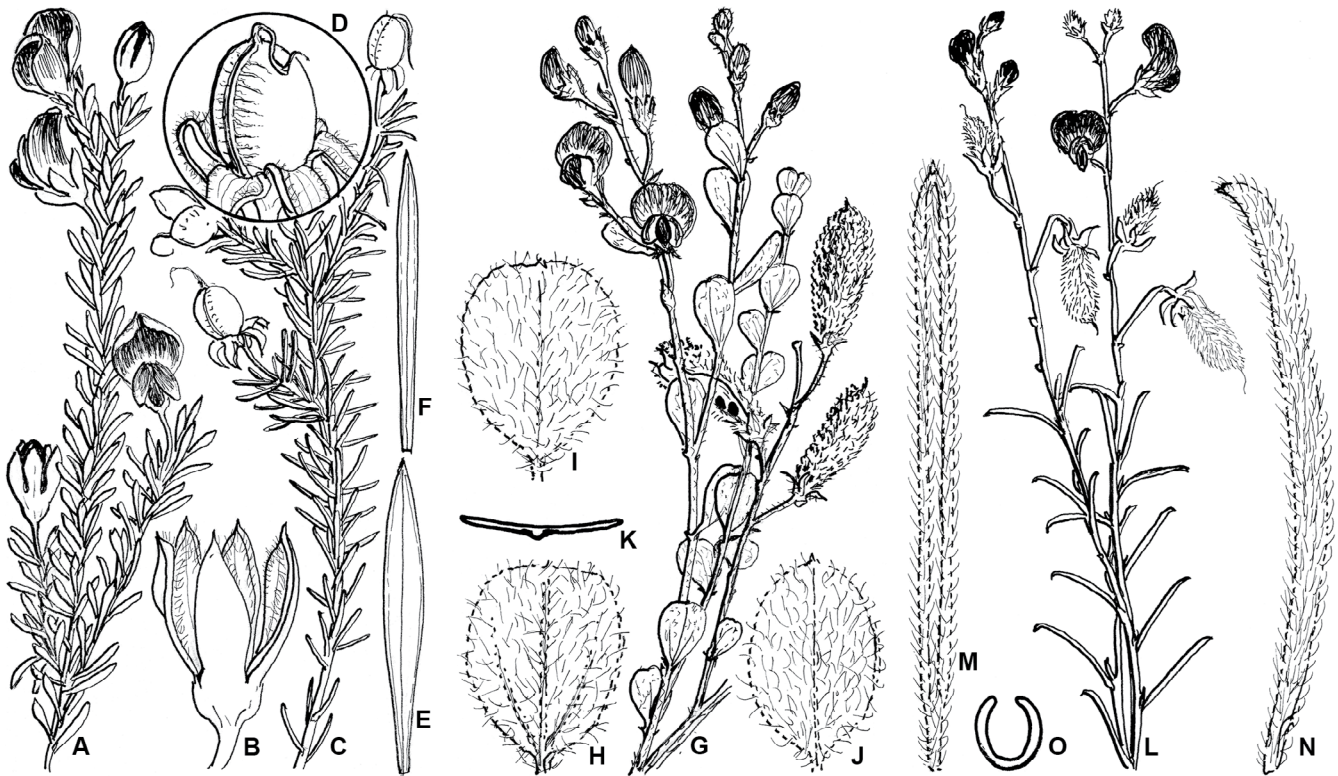


Fig. 17. A–F. *Gompholobium ecostatum*: A, flowering branch; B, calyx; C, fruiting branch; D, detail of fruit; E–F, leaves. **G–K. *Isotropis centralis*:** G, branch; H–J, leaves: H, lower surface; I & J, upper surface; K, cross section of leaf. **L–O. *I. wheeleri*:** L, branch; M & N, leaves: M, lower surface; N, upper surface; O, cross section of leaf. *Illustration by G.R.M. Dashorst.*

An endemic Australasian genus with 44 species; 1 in S.A. It occurs in all Australian states and mainland territories, and has been recorded from Wetar Island in the Lesser Sunda Islands, and from New Guinea. It is particularly diverse in the south-west of W.A.

Reference: Weber (1986), Jeanes (1996), Wheeler *et al.* (2001b), Chappill *et al.* (2008).

1. ***Gompholobium ecostatum*** Kuchel in H.Eichler, Suppl. 182 (1965). — *Gompholobium minus* var. *grandiflorum* Benth., *Fl. Austral.* 2: 45 (1864). *Gompholobium minus* auct. non Sm.: J.M.Black, *Fl. S. Austral.* ed. 2, 2: 433 (1948). — **Illustr.:** *Fl. S. Austral.* 2: 667, fig. 359b (1986); Chappill *et al.*, *Austral. Syst. Bot.* 21: 141, fig. 48 (2008).

Low scrambling or erect shrub to 1 m high; branchlets wiry, ± angular, sparsely to densely puberulous, hairs c. 0.25 mm long; leaves digitately trifoliate, sessile; leaflets narrowly elliptic to obovate or linear with tapering base, 2–10.5 × 0.5–1.2 mm, apex acute, mucronate, margins entire and variably revolute, glabrous or with scattered hairs c. 0.1 mm long, shortly petiolulate; stipules filiform, 0.3–1 mm long. **Flowers** solitary or paired at the apex of branchlets or near apex; pedicels 5.5–13 mm long, glabrous; bracts filiform, 1–1.5 mm long, with scattered hairs at apex; bracteoles persistent near the middle of the pedicel, filiform, 0.7–1 mm long, with scattered hairs on the margins; buds ecostate; calyx c. 8–10 mm long, black, glabrous outside; calyx lobes valvate, triangular-lanceolate, symmetrical, fused at the base, the inside margins tomentose; standard emarginate, 8.1–16.9 × 10–23.1 mm not including claw, orange to red with a yellow eye rimmed with red; wings straight, lobed at the base on both margins, orange to red; keel orange with grey apex, usually minutely ciliate along the margins, apex straight, obtuse; ovules 14. **Pod** 8.9–11 × 5.5–7.2 mm, glabrous, turgid; seeds ellipsoid, with cuticular wrinkles, glossy brown, c. 2.4 mm long; rim aril absent. **Dwarf wedge-pea. Fig. 16A–F, Pl. 12E–I.**

S.A.: EP, MU, SL, KI, SE; Vic.; Tas. (Flinders Island). Common in the southern Mt. Lofty Ranges, Kangaroo Island, and south-eastern S.A. It also occurs on the southern tip of Eyre Peninsula, but has not been recorded from Yorke Peninsula. It is found in shrubland or woodland on yellow-brown sandy-clay loam over limestone, ironstone, sandstone or granite. Flowers: Sep.–Jan.

17. ISOTROPIS Benth.

in Endl. *et al.*, *Enum. Pl.* 28 (1837).

(Greek *isos*, equal; *tropis*, keel; the keel is about as long as the wings.)

Subshrubs or herbs; branches erect or spreading, pubescent to woolly tomentose; leaves alternate, simple or unifoliolate, herbaceous, pubescent, rarely glabrous, sessile to petiolate; stipules lanceolate, linear or minute. **Flowers** solitary, axillary or in loose terminal racemes, pedicellate; bracts and bracteoles linear to lanceolate; calyx very deeply lobed, the upper 2 lobes united almost to the apex; corolla papilionoid, petals clawed, striate, yellow through to red or purplish; standard orbicular, emarginate, longer than the wings; wings \pm falcate; keel incurved, c. equal to the wings; stamens 10, free, all similar; ovary sessile, pubescent, many-ovulate; style filiform, incurved, with a minute terminal stigma. **Pod** oblong, linear or narrow-ovate, acute, usually turgid, pubescent; seed reniform, with a reticulate surface, exarillate.

An endemic Australian genus with c. 10 species; 2 in S.A. Found in drier communities, usually on sandy soils.

Reference: Maconochie (1981), Weber (1986), Porteners (1991b).

1. Leaves ovate to obovate or suborbicular 1. **I. centralis**
1. Leaves narrow-linear to filiform, channelled to grooved above 2. **I. wheeleri**

1. **Isotropis centralis** Maconochie, *J. Adelaide Bot. Gard.* 2: 323 (1980). — **Illustr.:** J.R.Maconochie, *J. Adelaide Bot. Gard.* 2: 323 (1980).

Erect multi-stemmed subshrub to 50 cm high, but usually to 20 cm; branches terete, weakly striate, densely sericeous-tomentose; leaves ovate to obovate or suborbicular, 5–13 \times 4–9 mm, apex obtuse to retuse, mainly attenuate towards the base, margin slightly undulate, with a densely appressed sericeous indumentum on both surfaces; petioles c. 1–2 mm long; stipules filiform, acute, 1.5–2 mm long, pubescent. **Inflorescence** racemose, terminal, 2- or 3-flowered rarely more, flowers widely spaced; peduncle 15–30 mm long; pedicels 4–7 mm long, slender, pubescent; bracts ovate-lanceolate, c. 2 mm long, acute, mostly glabrous above, pubescent below; bracteoles similar, close to the calyx, c. 1.5 mm long; calyx 5–6 mm long, densely appressed-pubescent outside, glabrous inside; calyx lobes triangular-lanceolate, longer than the tube, 3-striate inside; petals dark-red, striate; standard orbicular, emarginate, c. 9 \times 10 mm; wings obovate, c. 8 \times 3 mm; keel obovate, incurved, equalling the wings; ovary sessile, densely pubescent, fusiform, 10–12-ovulate; style filiform, glabrous. **Pod** shortly stipitate, oblong, 10–16 \times c. 6 mm, densely to subwoolly-pubescent; seed reniform, c. 3 \times c. 2 mm, strongly reticulate, brown. **Fig. 17G–K.**

S.A.: NW; W.A.; N.T. Restricted to the northern north-western region in S.A. It can be found in sand flats, sand hills and granite formations. Flowers: Jul.–Sep.

2. **Isotropis wheeleri** F.Muell. ex Benth., *Fl. Austral.* 2: 40 (1864). — **Illustr.:** *Fl. N.S.W.* 2: 467 (1991).

Erect multi-stemmed subshrub to c. 60 cm high; stems wiry, covered with a short dense rusty indumentum; leaves unifoliolate, narrow-linear to filiform, mostly 10–30 mm long, c. 1 mm wide, apex recurved, channelled to grooved above by the involute margins, densely tomentose; petioles 1–3 mm long; stipules narrow-ovate, c. 2 mm long, \pm falcate. **Flowers** in few-flowered terminal racemes or solitary; pedicels 3–8 mm long, slender, pubescent; bracts lanceolate, c. 2 mm long, densely tomentose with long white hairs; bracteoles similar, close to the calyx, smaller; calyx 5–7 mm long, densely silky-pubescent outside, glabrous inside; calyx lobes triangular-lanceolate, longer than the tube; petals 5–10 mm long, yellow to red-brown or purplish, striate; standard longest, reniform-orbicular, deeply emarginate, streaked purple; wings oblong; keel obovate, equalling the wings; ovary sessile, densely pubescent, fusiform, many-ovulate; style short, incurved. **Pod** shortly stipitate, \pm oblong, 10–20 \times c. 5 mm, turgid, pubescent, often with a blunt or truncate apex; seed reniform, 2.5–3 \times c. 2 mm, strongly reticulate, light-brown to a dark reddish-brown. **Wheeler's lamb-poison. Fig. 17L–O, Pl. 12J & K.**

S.A.: LE, GT, EA; N.T.; Qld; N.S.W. Confined primarily to the Lake Eyre region and adjacent areas in the Eastern and Gairdner-Torrens regions. It usually occurs on sandy soils on or near dunes. Flowers: Aug.–Sep.

18. LEPTOSEMA Benth.

Commentat. Legum. Gen. 20 (1837).

(Greek *leptos*, slender, narrow; *sema*, referring to the standard.)

Low shrubs, sometimes divaricately branched; branchlets flattened to terete, sometimes spinescent; indumentum of usually simple hairs; juvenile leaves unifoliolate, stipulate; adult leaves reduced to scales, alternate, exstipulate.

Flowers in elongated basal racemes or panicles, or in short axillary racemes, or solitary; flowers resupinate in most species; bracts scale-like and similar to the adult leaves or slightly enlarged; bracteoles persistent or caducous; calyx lobes 5, the two vexillary (adjacent to the standard) lobes divided to the base or variously connate, the three carinal (adjacent to the keel) lobes divided to the base, equal; petals red or green; standard equal to or shorter than the other petals, not or scarcely exerted; keel usually larger and more

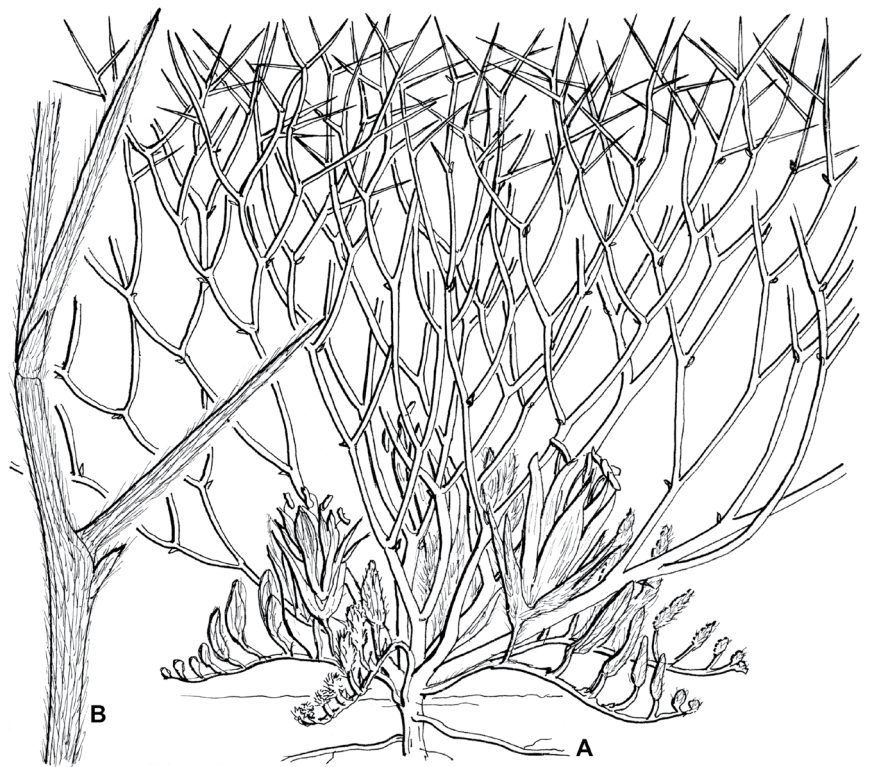


Fig. 18. A–F. *Leptosema chambersii*: A, flowering shrub; B, detail of branch and spines. Illustration by G.R.M. Dashorst.

conspicuous than the other petals; stamens usually 10, free; anthers usually equal, versatile or sub-basifixed; ovary sessile or stipitate, with 2–60 or more ovules; style short and thick or long and filiform; stigma terminal, minute. **Pod** exerted or enclosed by the persistent calyx and petals, dehiscent, obliquely ovoid or ellipsoid to linear-cylindric; seed reniform, exarillate.

An endemic Australian genus with 13 species; 1 in S.A. It is found in drier parts of central Queensland, Arnhem Land, and central and Western Australia.

Leptosema is distinctive within Mirbelieae by its reduced scale-leaves, and by its usually resupinate flowers with standard petals narrow and reduced relative to the wings and keel.

Reference: Crisp (1981, 1999), Weber (1986).

1. ***Leptosema chambersii*** F.Muell., *Essay Burdek. Exped.* 8 (1860). — *Brachysema chambersii* (F.Muell.) F.Muell. ex Benth., *Fl. Austral.* 2: 13 (1864). — **Illustr.:** *Fl. S. Austral.* 2: 670, fig. 360d (1986); Crisp, *Austral. Syst. Bot.* 12: 48, fig. 25 (1999).

Low slender divaricately branched shrub to 40 cm high; indumentum sericeous with golden-brown, laterally attached hairs; stems and branches angular or subterete; branchlets spinescent, rarely glabrescent; adult leaves reduced to scales, appressed, c. 1.5 mm long, brown, scarios. **Inflorescences** basal, prostrate, racemose or rarely 1-branched; rachis to c. 20 cm long, golden-brown sericeous, with 2–20 or more secund flowers; bracts ovate, acuminate, entire, c. 3 mm long; flowers resupinate, 35–45 mm long; pedicels 5–20 mm long, golden-brown sericeous; bracteoles attached on the upper half of the pedicel, narrow-ovate, acuminate, 1.5–3.5 mm long, often caducous; calyx 28–34 mm long, golden-brown sericeous outside, reddish and glabrous inside; vexillary lip recurved, connate to near the apex with two broadly falcate lobes c. 4 mm long; carinal three lobes divided nearly to the base, linear-triangular; corolla red, petals clawed; standard enclosed in the vexillary lip of the calyx, narrow-triangular, 17–22 × 5–6 mm; wings linear, ± acute, 32–34 × 2–3 mm; keel much exerted, linear, incurved, apiculate, 38–40 × c. 5 mm; ovary subsessile, densely sericeous, c. 60-ovulate; style thickened and pubescent at base, glabrous and filiform above. **Pod** obliquely ellipsoid, beaked, golden-brown sericeous, 10–20 × 7–11 mm. **Fig. 18, Pl. 13A–F.**

S.A.: NW; W.A.; N.T. Restricted to the far north-west of S.A., where it occurs on red sandy plains and dunes, in *Triodia* dominated hummock grasslands. Flowers: mainly Jul.–Oct., also Apr. and Dec.

19. PHYLLOTA (DC.) Benth.

in Endl. *et al.*, *Enum. Pl.* 33 (1837).

(Greek *phyllon*, leaf; *otos*, ear; the bracteoles of some species are foliose.)

Pultenaea sect. *Phyllota* DC., *Prodr.* 2: 113 (1825).

Prostrate to erects subshrubs; stems and branches terete, hairs present at least in the upper parts; leaves alternate or scattered, simple, entire, linear, margins revolute, the bases decurrent; stipules minute or absent (in S.A.). **Flowers** solitary or paired, axillary or crowded towards the ends of the branches; pedicels 1–5 mm long; bracts identical to or scarcely differing from the foliage leaves; bracteoles inserted at the base or on the base of the calyx, 1–15 mm long, scarious or herbaceous; calyx 5-lobed, the upper 2 lobes broader than the lower 3 and connate higher up, sometimes united into a lip; corolla papilionoid, petals clawed, yellow, orange or yellow and red; standard ovate to orbicular or rhomboid, longest or equal to the others; wings oblong; keel shortest, much incurved; stamens all or at least the outer ones adnate to the petals at the base; ovary sessile, pubescent; ovules 2, on short funicles; style dilated or thickened at the base, incurved or subulate above, with a small terminal stigma. **Pod** ovoid, turgid, usually enclosed in persistent calyx, subsessile, 1–2-seeded; seeds ovate or reniform, exarillate. **Phyllotas**.

An endemic Australian genus with c. 10 species; 2 in S.A. It occurs in open woodland and open forests, mallee woodland, and heath.

Reference: Weber (1986), Wiecek (1991b), Jeanes (1996).

1. Bracteoles to 2 mm long, obtuse, not keeled; leaves mostly crowded towards the ends of the branches, distinctly mucronate, tips recurved..... 1. ***P. pleurandroides***

1: Bracteoles more than 2 mm long, acute, keeled, almost enveloping the calyx; leaves distant on the stems, usually minutely mucronate, tips not recurved..... 2. ***P. remota***

1. ***Phyllota pleurandroides*** F.Muell., *Trans. Philos. Soc. Victoria* 1: 38 (1855). — **Illustr.**: *Fl. Victoria* 3: 764, fig. 154e–f (1996).

Low heath-like shrubs to 70 cm high; stems terete, suckering; branches pubescent to tomentose, mostly on the upper parts; leaves mostly crowded towards the ends of the branches forming dense fascicles, linear, 6–15 × 0.7–1.2 mm, distinctly mucronate, tips recurved, scabrous-tuberculate, basally narrowed into 1–2 mm long, dorsoventrally compressed, ± pubescent petioles; stipules inconspicuous, if present then very small. **Flowers** 5–8 mm long, solitary or paired, terminating the branchlets, almost hidden amongst the subtending bracts; pedicels 0.5–1 mm long, pubescent; bracts similar in appearance to the foliage leaves, usually narrowed and more villous towards the base; bracteoles attached to the base of the calyx, ovate, obtuse, 1–2 × c. 1 mm, coriaceous, appressed-pubescent; calyx 3–4 mm long, white-villous outside, glabrous inside; upper 2 calyx lobes broader and united almost

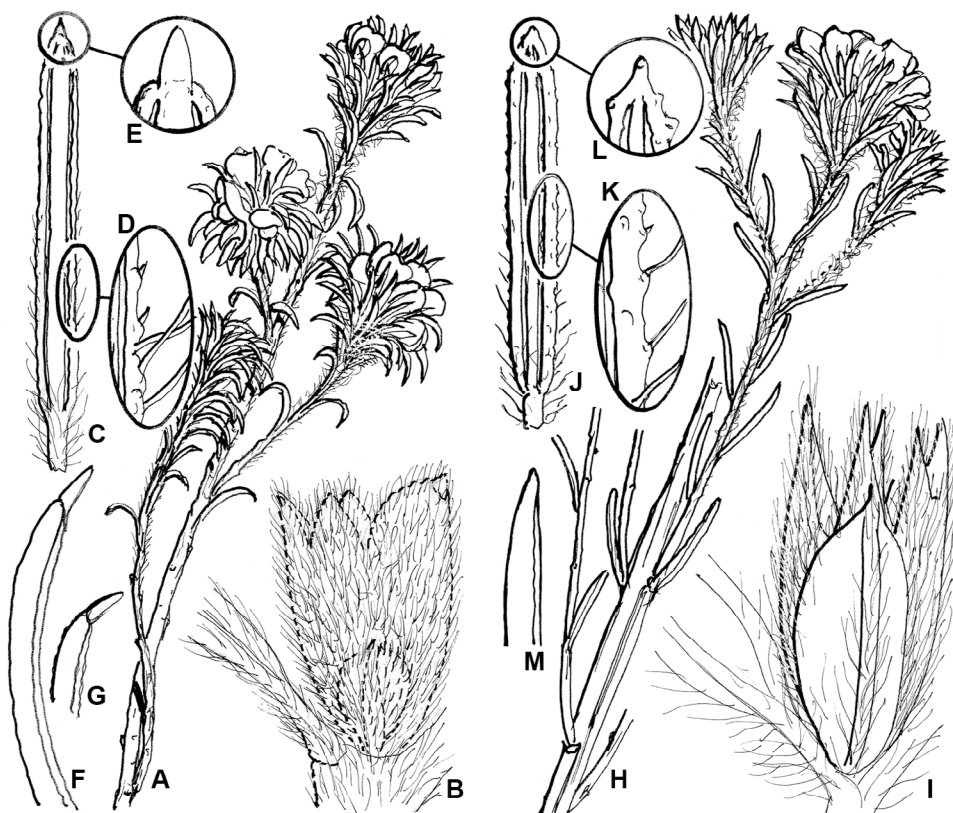


Fig. 19. A–G, *Phyllota pleurandroides*: A, branch; B, calyx; C, leaf; D, detail of leaf margin; E, leaf apex; F–G, side views of leaves and apex. H–M, *P. remota*: H, branch; I, calyx; J, leaf; K, detail of leaf margin; L, leaf apex; M, side view of leaf and apex. *Illustration by G.R.M. Dashorst.*

to the apex as a truncate upper lip; lower 3 lobes acute, c. equal to the tube; petals yellow, orange or reddish; standard broad-ovate; wings oblong; keel obtuse, shortest; stamens free, basally adnate to the petals at the base of the claw, both deciduous after flowering; style slightly thickened and pubescent basally, slender, glabrous distally. **Pod** ovoid, 3–6 mm long, with \pm appressed white hairs, 1–2-seeded; seeds obliquely reniform, c. 3 mm long, brown, shiny. **Heathy phyllota. Fig. 19A–G, Pl. 13G–J.**

S.A.: MU, SL, KI, SE; Vic. Widespread on Kangaroo Island, in the southern Mt. Lofty Ranges, and in the south-east. It usually occurs on deep sand in sand-heath and heathy woodlands. Flowers: mostly summer–autumn.

2. **Phyllota remota** J.H.Willis, *Victorian Naturalist* 73: 191 (1957). — **Illustr.:** *Fl. Victoria* 3: 764, fig. 154g-h (1996).

Low heath-like shrubs to 50 cm high; stems terete, non-suckering; branches pubescent to tomentose, mostly on the upper parts; leaves distant on the stems and branches, linear, 5–10 \times 0.8–1.2 mm, minutely mucronate to occasionally distinctly so, tips not recurved, scabrous-tuberculate, on 1–2 mm long \pm pubescent petioles; stipules inconspicuous, if present then very small. **Flowers** 6–9 mm long, solitary or paired, axillary, conspicuous or few in slightly concealed proliferous terminal leafy clusters, sessile or subsessile on short pubescent pedicels < 0.5 mm long; bracteoles attached to the pedicel under the calyx, ovate, acute, c. 4 mm long, keeled, mucronate, almost enveloping the calyx, coriaceous, \pm pubescent; calyx 3–4 mm long, glabrous to white-villous outside, glabrous inside; upper 2 calyx lobes longer and wider, united higher up, truncate, falcate; lower 3 lobes lanceolate, c. equal to the tube; petals yellow or reddish; standard rhomboid, slightly hooded, about twice as long as the calyx; wings oblong; keel obtuse, shortest; stamens free, sometimes basally adnate to the claws of the petals, both deciduous after flowering; style slender, pubescent except at the tip. **Pod** ovoid, 3–5 mm long, with \pm appressed white hairs, usually 1-seeded; seed ovate, 2–2.5 mm long, brown, sometimes mottled. **Slender phyllota. Fig. 19H–M, Pl. 13K & L, 14A & B.**

S.A.: EP, MU, SL (Currency Ck area), SE; Vic. Found on Eyre Peninsula and in south-eastern districts of South Australia. It usually occurs on deep sand in sand-heath and heathy woodlands. Flowers: mostly summer–autumn.

20. PULTENAEA Sm.

Spec. Bot. New Holland 3: 35 (1794).

(After R. Pulteney (1730–1801), physician and botanist; a biographer of Linnaeus.)

A.I. Craigie & P.J. Lang

Prostrate to erect shrubs; branchlets often terete or rounded, sometimes angular; leaves simple or unifoliate, usually alternate, rarely opposite or in whorls of 3, petiolate to subsessile or sessile, margins entire, lamina flat or concave below by the recurved or revolute margins, or more frequently concave above by the incurved or involute margins, sometimes channeled or grooved; stipules commonly lanceolate-acuminate, margins scarios, usually connate on the adaxial side of the petiole for part of their length, occasionally minute and free, often reddish to brown, those of the floral bracts often considerably modified. **Flowers** axillary, solitary, paired, or several in terminal racemes or head-like clusters, pedicellate to sessile; bracts when present leaf-like to scale-like, sometimes forming an involucre, caducous or persistent; when leaf-like often with enlarged stipules, sometimes with the lamina reduced and the stipules often partially fused with the central lobe; when scale-like with the stipules fused with the central lobe forming a \pm entire scale, often scarios; bracteoles persistent, inserted on the calyx tube or less frequently distal on the pedicel, leaf-like with free stipules at the base, or with the lamina reduced and the stipules partially fused with the central lobe appearing distinctly tri-dentate, or with the stipules fused with the central lobe forming a \pm entire scale; calyx 5-lobed, the upper 2 lobes often connate higher up, broader, sometimes falcate, the lower 3 usually narrower, longer than the calyx tube; corolla papilionoid, petals long-clawed; standard suborbicular, ovate, cordate, equal to or slightly longer than the wings and keel, apex round to emarginate, usually c. twice as long as the calyx, commonly yellow to orange, often with reddish markings; wings obovate, auriculate on the upper side, commonly yellow to orange; keel incurved, often purple or red distally; stamens 10, free, \pm equal; ovary glabrous to velutinous, or glabrous with a tuft of hairs at the apex, usually sessile, 2-ovulate (rarely 4-ovulate); style subulate, often velutinous on the lower part; stigma terminal, minute. **Pod** \pm ovate in outline, beaked by the persistent base of the style, compressed or turgid, hairy or glabrous, 1- or 2-seeded; seeds smooth, ellipsoid or reniform in outline, aril deeply branched. **Bush-peas.**

Endemic to southern and eastern Australia with c. 108 species; 27 in S.A. of which 9 are endemic.

Pultenaea is morphologically distinctive within Mirbelieae by stipules with scarios margins that are usually fused behind the petiole. Based on recent molecular evidence this genus is not monophyletic as currently circumscribed (Orthia *et al.* 2005b).

Reference: Weber (1986, 1995), Cooke (1987), Corrick (1987, 1996), Lang (1998), de Kok & West (2003, 2004), Orthia *et al.* (2005b).

1. Leaf margins recurved to revolute (leaves occasionally flat to concave above or conduplicate), or if margins flat then leaf darker on the upper surface
 2. Leaves opposite-decussate, elliptic to orbicular, margins revolute, shortly mucronate, pubescent beneath with curled hairs 6. **P. elachista**
 - 2: Leaves alternate
 3. Flowers axillary, solitary or rarely paired; pedicels filiform, 5–30 mm long
 4. Leaves narrow-lanceolate to narrow-elliptic, to 12 mm long, apex usually straight, acicular, lower surface often glabrescent; stem hairs usually appressed antrorse, mainland South Australia 14. **P. pedunculata**
 - 4: Leaves elliptic or ovate to obovate, to 6 (–7.5) mm long, apex recurved, shortly mucronate, lower surface rarely glabrescent; stem hairs usually patent to spreading; Kangaroo Island endemic 9. **P. insularis**
 - 3: Flowers in lax or dense head-like clusters, sessile, subsessile or on pedicels less than 4 mm long
 5. Inflorescence-subtending bracts absent or leaf-like
 6. Flower-subtending bracts leaf-like; branches largely concealed by the persistent stipules; leaves broad-ovate to -obovate or elliptic to orbicular, apex acute to obtuse..... 4. **P. densifolia**
 - 6: Flower-subtending bracts scale-like; leaves narrow- to broad-cuneate or obcordate, apex bilobed to truncate..... 18. **P. scabra**
 - 5: Inflorescence-subtending bracts scale-like, forming an involucre
 7. Leaves 3.8–40 mm long, obovate to cuneate, apex straight, rounded, truncate or bilobed, conspicuously mucronate and pungent 3. **P. daphnoides**
 - 7: Leaves 2–16 mm long, not mucronate, or with a short recurved mucro
 8. Petioles decurrent
 9. Leaf apex obtuse, straight to slightly recurved, not mucronate, not pungent; stipules \leq 1 mm long, stipule lobes divergent..... 11. **P. kraehenbuehlii**
 - 9: Leaf apex acute to obtuse, with a short recurved mucro, pungent; stipules usually \geq 1 mm long, stipule lobes parallel to slightly convergent..... 19. **P. stricta**
 - 8: Petioles not decurrent
 10. Leaves flat or concave above to conduplicate, apex acute or obtuse to emarginate, margins flat or only slightly recurved, lower surface appressed-pubescent..... 12. **P. largiflorens**
 - 10: Leaves flat or convex above, margins recurved, apex often distinctly bi-lobed, lower surface villous..... 18. **P. scabra**
 - 1: Leaf margins incurved or involute, or if margins flat then leaf darker on the lower surface or concolourous
 11. Bracteoles with ‘free’ stipules (distinctly tri-dentate or leaf-like with lateral stipular lobes, the outer lobes sometimes obscure)
 12. Leaves pungent-pointed
 13. Leaves glabrous, base attenuate to cuneate, apex straight..... 25. **P. vestita**
 - 13: Leaves sparsely to densely hairy, base rounded, apex recurved 23. **P. trifida**
 - 12: Leaves not pungent-pointed
 14. Petioles decurrent; bracts scale-like; flowers sessile..... 5. **P. dentata**
 - 14: Petioles not decurrent; bracts all leaf-like, or leaf-like to scale-like; flowers subsessile or on pedicels to 6 mm long

15. Branchlet hairs appressed to ascending; leaves light green above, lower surface glabrous to appressed-pubescent, apex straight to recurved; inflorescence dense becoming lax; pedicels to 6 mm long; calyx sparsely to densely pubescent..... 13. **P. laxiflora**
- 15: Branchlet hairs ascending to spreading; lower leaf surface hispid (occasionally villous or glabrous), apex straight; inflorescence dense; pedicels to 3 mm long; calyx glabrous to sparsely pubescent..... 8. **P. hispidula**
- 11: Bracteoles without free stipules (bracteoles scale-like, more or less entire)
16. Leaves not pungent-pointed
17. Flower-subtending bracts scale-like (the basal bracts sometimes leaf-like)
18. Inflorescence-subtending bracts absent, or leaf-like, or flowers solitary
19. Flower-subtending bracts and bracteoles closely imbricating the calyx (calyx mostly or fully concealed)
20. Leaves linear-terete, channeled above by involute margins, margins not long-ciliate 16. **P. prostrata**
- 20: Leaves lanceolate to narrow-lanceolate or narrow-elliptic, flat to concave above, margins incurved, long-ciliate..... 10. **P. involucreta**
- 19: Flower-subtending bracts and bracteoles not imbricating the calyx (calyx mostly exposed)
21. Stipules and bracteoles viscid, the young stipules exuding a yellow wax 27. **P. viscidula**
- 21: Stipules and bracteoles not viscid (or stipules rarely viscid), the stipules not exuding a yellow wax
22. Bracteoles broad-ovate to narrow-lanceolate, scarious, mostly glabrous; lower leaf surface hispid (occasionally villous or glabrous); calyx to 4.8 mm long, sparsely pubescent to occasionally glabrous..... 8. **P. hispidula**
- 22: Bracteoles linear-lanceolate to subulate, densely villous; lower leaf surface almost glabrous to silky-pubescent or appressed-pubescent; calyx c. 6–7 mm long, moderately to densely villous
23. Leaves linear-terete, c. 0.5 mm wide, 1-furrowed above; calyx lobes sub-equal, the upper lobes ovate-acute, the lower lobes lanceolate-acuminate 21. **P. teretifolia**
- 23: Leaves elliptic to oblong or obovate to oblanceolate, 1–3 mm wide, concave above to conduplicate; calyx lobes usually \pm equal, triangular-acuminate..... 2. **P. canaliculata**
- 18: Inflorescence-subtending bracts scale-like (the basal bracts sometimes leaf-like)
24. Bracteoles and flower-subtending bracts tightly concealing the calyx; bracteoles ovate- to obovate-truncate; inflorescence initially dense becoming lax; calyx glabrous; leaves ovate-lanceolate to narrow-lanceolate or narrow-elliptic, flat to concave above, apex straight and acute, margins long-ciliate; endemic to the southern Mt Lofty Ranges..... 10. **P. involucreta**
- 24: Bracteoles and flower-subtending bracts not concealing the calyx; inflorescence dense
25. Lower leaf surface hispid (occasionally villous or glabrous), darker than above, apex straight; stipules 0.9–2.5 mm long, lanceolate; calyx to 4.8 mm long, sparsely pubescent to occasionally glabrous..... 8. **P. hispidula**
- 25: Lower leaf surface appressed-pubescent, concolourous or lighter than above, apex recurved, sometimes emarginate; stipules 0.5–1 mm long, triangular; calyx 5–7 mm long, moderately to densely appressed-pubescent..... 12. **P. largiflorens**
- 17: Flower-subtending bracts leaf-like

26. Bracteoles viscid; young stipules viscid, exuding a yellow wax
27. Young stipules with scented yellow wax; leaves linear to elliptic or ovate, 0.5–3 mm wide; inflorescence usually lax; bracteoles 1–2 mm long 7. **P. graveolens**
- 27: Young stipules with unscented yellow wax; leaves narrow-linear to linear-terete, 0.3–0.8 mm wide; inflorescence head-like, pseudo-umbellate 27. **P. viscidula**
- 26: Bracteoles not viscid; young stipules not exuding a yellow wax
28. Stipules of the flower-subtending bracts closely imbricating and fully or mostly concealing the calyx
29. Leaves ovate-lanceolate to lanceolate or elliptic, 1.8–5.6 mm wide, margins slightly incurved, glabrous above, 3-nerved below; calyx tube concealed by the stipules of the flower-subtending bracts (calyx lobes exposed)..... 24. **P. trinervis**
- 29: Leaves narrow-lanceolate to slender-terete, 0.3–0.5 mm wide, margins involute, pubescent above, only midrib prominent below; calyx largely concealed by the stipules of the flower-subtending bracts 20. **P. tenuifolia**
- 28: Flower-subtending bracts not concealing the calyx
30. Bracteoles broad-ovate to narrow-lanceolate, scarious, mostly glabrous, c. 1–4 mm long; lower leaf surface hispid (occasionally villous or glabrous); calyx to 4.8 mm long, sparsely pubescent to occasionally glabrous..... 8. **P. hispidula**
- 30: Bracteoles linear-lanceolate to subulate, densely villous; lower leaf surface almost glabrous to silky-pubescent or appressed-pubescent; calyx c. 6–7 mm long, moderately to densely villous
31. Leaves linear-terete, c. 0.5 mm wide, 1-furrowed above; calyx lobes sub-equal, the upper lobes ovate-acute, the lower lobes lanceolate-acuminate..... 21. **P. teretifolia**
- 31: Leaves elliptic to oblong or obovate to oblanceolate, 1–3 mm wide, concave above to conduplicate; calyx lobes usually \pm equal, triangular-acuminate 2. **P. canaliculata**
- 16: Leaves pungent-pointed
32. Flower-subtending bracts scale-like, or both scale-like and leaf-like bracts present
33. Leaf margins long-ciliate; leaf apex acute
34. Stipules \geq 2 mm long; each flower surrounded by numerous imbricate bracts; bracteoles tightly concealing the calyx; endemic to the southern Mt Lofty Ranges..... 10. **P. involucreta**
- 34: Stipules \leq 2 mm long; floral bracts usually leaf-like; bracteoles not concealing the calyx; endemic to Eyre Peninsula..... 22. **P. trichophylla**
- 33: Leaf margins not long-ciliate; leaf apex acute to obtuse or emarginate; leaves flat to conduplicate, obovate to cuneate or elliptic..... 12. **P. largiflorens**
- 32: Flower-subtending bracts leaf-like
35. Stipules \leq 2 mm long; calyx \leq 3 mm long; leaves villous to appressed-pubescent and 3-nerved below, margins long-ciliate; flowers often in dense leafy clusters; endemic to Eyre Peninsula..... 22. **P. trichophylla**
- 35: Stipules \geq 2 mm long; calyx \geq 3 mm long
36. Leaf margins long-ciliate to glabrescent
37. Inflorescence dense; leaves linear, 0.5–0.8 mm wide; stipules $>$ 5 mm long; bracteoles linear, 7.2–11 mm long..... 15. **P. penna**
- 37: Flowers solitary; leaves ovate to lanceolate or elliptic, 5–9 mm wide; stipules 2–5 mm long; bracteoles lanceolate, 2–5 mm long..... 26. **P. villifera**

- 36: Leaf margins usually glabrous, sometimes pubescent towards the base
 38: Flowers subsessile, pedicels < 1.5 mm long; leaves linear-terete,
 0.5–1 mm wide, usually petiolate..... 1. **P. acerosa**
 38: Flowers pedicellate, pedicels 3–7 mm long; leaves lanceolate or
 ovate-acute, 1–7 mm wide, sessile or occasionally subsessile on
 indistinct petioles..... 17. **P. rigida**

1. **Pultenaea acerosa** R.Br. ex Benth., *Fl. Austral.* 2: 131 (1864). — *P. acerosa* var. *acicularis* H.B. Will., *Proc. Roy. Soc. Victoria* 33: 140 (1921). — **Illustr.:** Corrick, *Victorian Naturalist* 95: 189, fig. 141 (1978).

Erect to prostrate rigid shrub to 60 cm high; branchlets terete, wooly-pubescent, later pubescent or tomentose; leaves alternate, petiolate, occasionally subsessile, straight to recurved, \pm linear-terete, the widest point near or above the middle, 5–17 \times c. 0.5–1 mm, channeled or 1-furrowed above, margins involute, apex usually straight, mucronate, strongly pungent, base attenuate, both surfaces sometimes pubescent at first, later glabrous; midrib and sometimes lateral veins prominent; petioles not decurrent, distinct or indistinct and contiguous with the lamina; stipules lanceolate-acuminate, 2–5 mm long, densely wooly-pubescent on the margins and midrib or glabrous. **Flowers** axillary or in lax to dense terminal leafy clusters of 2–10 flowers, subsessile; pedicels < 1.5 mm long, glabrous to moderately pubescent; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts leaf-like, sometimes with slightly enlarged stipules; bracteoles inserted immediately below the calyx tube, oblong to ovate-lanceolate, c. 3–4 mm long, shorter than the calyx, scarious, ciliate, midrib tapering into a slender point, occasionally hairy centrally; calyx 5–7 mm long, glabrous or rarely villous; calyx lobes longer than the tube, ciliate, acuminate, each tapering into a rigid point; standard yellow to orange, sometimes with dark-red markings; wings yellow to orange; keel dark-red distally; ovary and lower style velutinous. **Pod** 3–4 mm long, villous, brown, exceeding the calyx; seed c. 1.5 mm long. **Bristly bush-pea. Fig. 20A–E, Pl. 14C–I.**

S.A.: EP, YP, SL, KI, SE; Vic. Widespread in the southern Mt Lofty Ranges, southern Eyre and Yorke Peninsulas, Kangaroo Island, and the South-East in dry sclerophyll forests, mallee and heath, on coastal and inland dunes or cliffs and headland. Substrates include skeletal sand over quartzite, sand or loam soils over limestone or soils with ironstone gravel. Flowers: Aug.–Dec.

Pultenaea acerosa exhibits a diversity of forms associated with different habitats. Although similar to *P. rigida* it can be recognised by its subsessile flowers and its narrower, linear-terete, usually petiolate leaves. Petiole length is variable within *P. acerosa* and this trait cannot consistently distinguish it from *P. rigida*. *P. acerosa* also shows similarities with *P. vestita* which has tri-dentate (with free stipules) and almost pungent-pointed bracteoles.

2. **Pultenaea canaliculata** F. Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 119 (1855) — *P. canaliculata* var. *latifolia* H.B. Will., *Proc. Roy. Soc. Victoria* 35: 97 (1922). *P. tenuifolia* auct. non. R.Br. & Sims: de Kok, *Austral. Syst. Bot.* 16: 260 (2003), partly.

Rigid, spreading shrub, 1–2 m high; branchlets terete, densely silky-pubescent; leaves alternate, petiolate, straight to slightly recurved, elliptic to oblong or obovate to oblanceolate, 8–12 \times 1–3 mm, concave above to conduplicate, margins involute, apex straight, usually obtuse, not pungent, base attenuate to cuneate; both surfaces almost glabrous to densely silky-pubescent; only midrib prominent; petioles not decurrent; stipules linear-lanceolate, 2–4 mm long, acuminate, brown, sometimes silky-pubescent. **Inflorescence** usually dense and head-like, terminal, 2–6-flowered, often concealed by the leaves and floral bracts; flowers subsessile to shortly pedicellate; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts persistent, usually leaf-like with slightly enlarged stipules, or sometimes the inner ones with a much reduced lamina, or scale-like and 2- or 3-toothed, the enlarged stipules or scale-like bracts not concealing the calyx; bracteoles inserted at the base or immediately below the calyx tube, linear-lanceolate to subulate, 2–6 mm long, brown, densely villous, usually exceeding the calyx tube; calyx c. 6 mm long, moderately to densely villous; calyx lobes triangular, acuminate, ciliate, \pm equal, the upper 2 lobes connate higher up and sometimes slightly broader; standard usually yellow with red markings on the back; wings shorter, yellow; keel equaling the wings, red to purple; ovary and lower style velutinous. **Pod** c. 5 mm long, brown, pubescent, partly enclosed by the calyx. **Coast bush-pea. Fig. 27A–E, Pl. 14J–L.**

S.A.: EP, SL, KI, SE; Vic. Flowers: June–Jan.

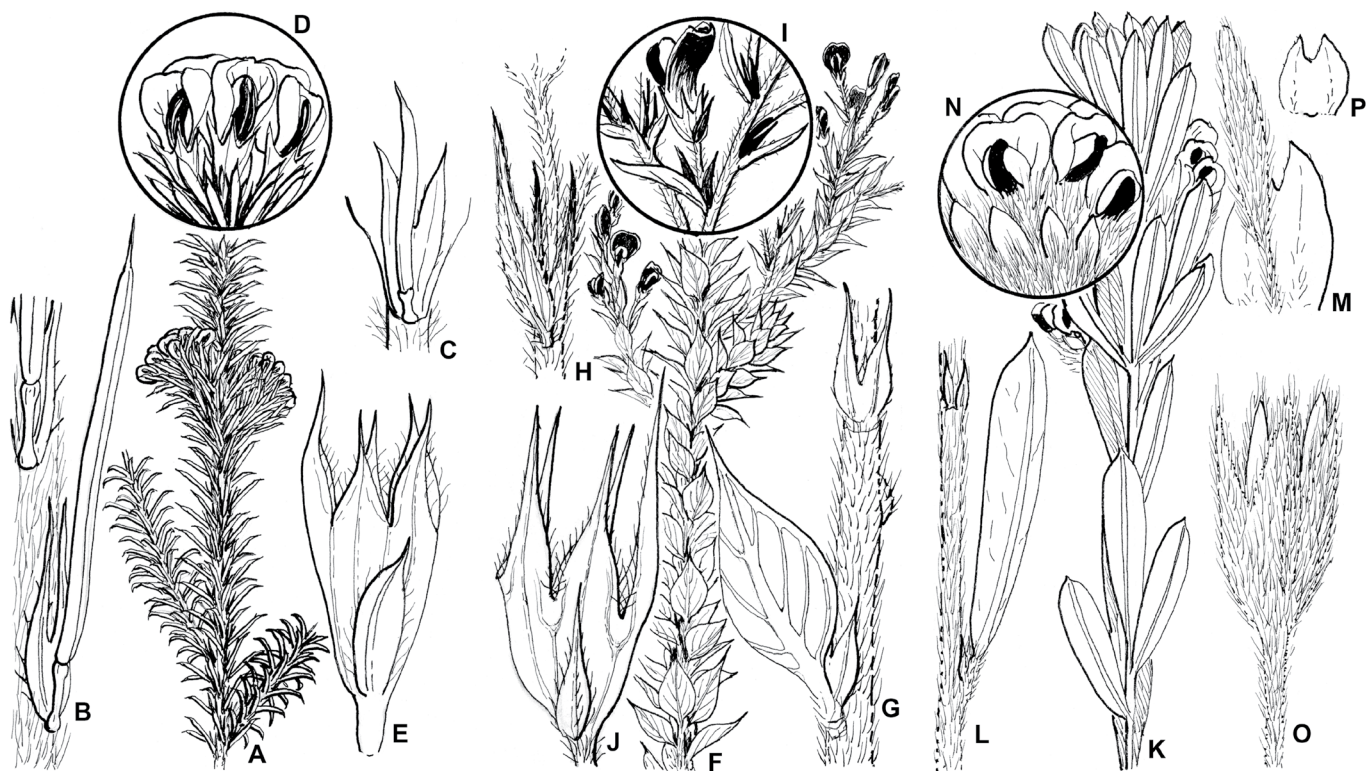


Fig. 20. A–E, *Pultenaea acerosa*: A, branch; B, leaf & stipules; C, bract; D, inflorescence; E, calyx. F–J, *P. rigida*: F, branch; G, leaf & stipules; H, bract; I, flower; J, calyx. K–P, *P. daphnoides*: K, branch; L, leaf & stipules; M, bract; N, inflorescence; O, calyx; P, stipules of bract (M). Illustrations by G.R.M. Dashorst.

3. ***Pultenaea daphnoides*** J.C.Wendl., *Bot. Beob.*: 49 (1798). — *P. obcordata* Andrews, *Bot. Repos.* 9: t. 574 (1809); *P. daphnoides* var. *obcordata* (Andrews) Hook.f., *Fl. Tasman.* 1: 86 (1856). — **Illustr.:** Corrick, *Victorian Naturalist* 93: 179, fig. 2a–g (1976).

Erect shrub, 0.3–3 (–4) m high; branchlets usually ridged or angular, moderately to densely appressed-pubescent; leaves alternate, straight, smooth, linear to elliptic, obovate, or cuneate, 3.8–30 (–40) × 2–20 mm, ± flat with margins flat or slightly recurved, apex usually straight, acute to obtuse, truncate or bilobed, conspicuously mucronate, usually pungent, base attenuate to cuneate; adaxial lamina surface glabrous, darker than below; abaxial lamina surface glabrous to densely appressed-pubescent; midrib and sometimes lateral veins prominent; petioles decurrent; stipules triangular to lanceolate, 1–2 mm long, appressed to ascending, usually dark-brown. **Inflorescence** dense, head-like, terminal, c. 5–15-flowered; inflorescence-subtending bracts scale-like, forming an involucre, persistent, usually shorter than the flower-subtending bracts, the basal ones sometimes leaf-like with slightly enlarged stipules; flower-subtending bracts scale-like, ovate, entire or with the apex torn into 2 or more lobes, pubescent towards the base and along the midrib, reddish to dark-brown, caducous; bracteoles inserted towards the distal end of the calyx tube, linear, 2–5 mm long, scarious, pubescent; calyx 4–6 mm long, moderately to densely silky-villous; calyx lobes shorter than the tube, upper 2 lobes broader, recurved, acute to acuminate, lower lobes straight, acuminate; standard 7–15 mm long, yellow to orange; wings 7–9 mm long, yellow to orange; keel 7–8.2 mm long, red to purple; ovary and lower style velutinous. **Pod** 5–9 mm long, usually compressed, pubescent, exceeding the calyx; seed 3–4.3 mm long. **Large-leaf bush-pea, native daphne.** Fig. 20K–P, Pl. 15A–F.

S.A.: SL, KI; Qld; N.S.W.; Vic.; Tas. Widespread on Kangaroo Island and in the southern Mt Lofty Ranges. Found on clay, sand, or sandy-clay loam soils, in dry to wet sclerophyll forests and woodland. Two 1920's collections are labeled with localities from the Murray Region (Keyneton, and Woods Point school), but these are regarded as too imprecise to indicate an occurrence in that region. Flowers: (May–) Sep.–Dec. (–Feb.).

Leaf shape can be highly variable within and among individuals of this species. A weak cline appears to occur with respect to this trait from Victoria through to the Mt Lofty Ranges, in which the emarginate leaf apex tends to become less common (de Kok & West 2004).

4. ***Pultenaea densifolia*** F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 119 (1855) — **Illustr.:** Corrick, *Victorian Naturalist* 100: fig. 22a–h (1983).

Erect to occasionally prostrate shrub, (–0.1) 0.3–0.6 (–0.8) m high; branchlets often largely concealed by the closely

appressed imbricate stipules, sparsely to moderately wooly-pubescent to tomentose; leaves alternate, crowded, recurved, broadly ovate to obovate or elliptic to orbicular, 2–5 (–6) × 1.2–3 mm, flat to V-shaped in transection, margins flat, apex recurved, obtuse to acute, shortly mucronate, pungent, base rounded to cuneate, both surfaces glabrous except for the sometimes long-ciliate margins, paler below; midrib and lateral veins prominent; petioles not decurrent; stipules lanceolate to ovate-acuminate, 2–4 mm long, connate for most of their length, appressed, light brown, densely wooly-ciliate. **Flowers** sessile, terminal or axillary, loosely or densely clustered towards the apex of branchlets; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts leaf-like, persistent, stipules slightly enlarged and closely imbricating the calyx tube; bracteoles inserted at the base of the calyx tube, ovate-lanceolate, 3–6 mm long, somewhat keeled, light brown, scarious, long-ciliate, with a central line of hairs, finely mucronate; calyx 4–8 mm long, glabrous to sparsely pubescent; calyx lobes triangular-lanceolate, acuminate, glabrous except for the ciliate margins; standard 7.5–10.4 mm long, purple, rarely yellow with red markings; wings 7.5–9 mm long, yellow to orange with red to purple apex; keel 8–9 mm long, red to purple; ovary and lower style velutinous. **Pod** 4–5 mm long, turgid, silky-pubescent, scarcely exceeding the calyx, 2-seeded; seed 1.4–2.2 mm long, brown, shiny. **Dense-leaved bush-pea. Fig. 21A–F, Pl. 15G–I.**

S.A.: EP, NL, MU, YP, SL, KI, SE; Vic. Extends from central Eyre Peninsula and southern Yorke Peninsula, southern Kangaroo Island, through to the Mt Lofty Ranges, and the Murray and South-East regions. Mainly found on white to grey sands to red sandy loams or red clay, in heath, mallee, open woodland, dunes or swales. Flowers: (Aug.–) Sep.–Nov. (–Jan.).

This species is distinctive by the presence of long hairs on the stipule and bracteole margins, and by the wooly-pubescent to tomentose indumentum on the stems and branches. Plants from the Kangaroo Island populations tend to have somewhat narrower leaves than those from the mainland populations.

5. **Pultenaea dentata** Labill., *Nov. Holl. Pl.* 1: 103, pl. 131 (1805) — **Illustr.:** Corrick, *Victorian Naturalist* 94: fig. 8a–g (1977).

Erect to prostrate or procumbent shrub, 0.3–1 m high; branchlets terete or angular, finely ribbed, sparsely to moderately appressed-pubescent; leaves alternate or rarely opposite, straight to slightly recurved, usually smooth, elliptic to oblanceolate, 8.5–11.5 × 1.2–1.5 (–2) mm, flat to broadly U-shaped in transection, margins incurved, apex straight, acute, base attenuate to cuneate; adaxial lamina surface glabrous, paler than below; abaxial lamina surface glabrous to sparsely appressed-pubescent, occasionally slightly wrinkled or minutely tuberculate; only midrib prominent; petioles decurrent; stipules triangular to lanceolate, 1–1.8 mm long, appressed to erect, red-brown. **Inflorescence** dense, head-like at the branchlet tips, 6- or more flowered; flowers sessile; inflorescence- and flower-subtending bracts scale-like, forming an involucre, persistent, ovate, 2–3 mm long, often tri-dentate, brown, appressed-pubescent basally, apex ciliate; bracteoles inserted at or near the base of the calyx tube, oblong to obovate, 1.3–3.2 mm long, tri-dentate, central lobe pubescent, outer stipular lobes broader, glabrous; calyx 3.5–4 mm long, sparsely to densely silky-pubescent; upper calyx lobes recurved, acute to acuminate, the lower lobes narrower, straight, acuminate; standard 3.7–8.2 mm long, yellow to orange with red markings; wings 3.2–5.5 mm long, yellow to orange; keel 3.5–5 mm long, red; ovary and the lower style velutinous; style hooked. **Pod** 4–5 mm long, sparsely pubescent, exceeding the calyx, 2-seeded; seed c. 1.5 mm long, brown, smooth. **Clustered bush-pea, button pea. Fig. 21G–K, Pl. 15J & K.**

S.A.: SL, KI, SE; Qld; N.S.W.; Vic.; Tas. Occurs in the far South-East, the southern Mt Lofty Ranges, and Kangaroo Island. Found on sandy to black humus rich soil in swamps (*Sphagnum* bog), wet heath or open forests, often near waterways. Flowers: Sep.–Dec (–Feb.).

(Rare status in S.A.)

6. **Pultenaea elachista** (F.Muell.) Crisp, *J. Adelaide Bot. Gard.* 6: 66 (1982). — *Gastrolobium elachistum* F.Muell., *Fragm.* 9: 67 (1875). *P. cymbifolia* J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 39: 96 (1915).

Erect to ascending shrub, 0.2–0.6 (–1) m high; branchlets with dense appressed to spreading curled hairs; leaves mostly opposite-decussate, crowded, straight to recurved, smooth to papillate, elliptic to orbicular, 2–4.5 (–6.2) × 1.9–3.5 mm, margins revolute, apex recurved, acute to obtuse, shortly mucronate, sometimes pungent, base rounded to cuneate; adaxial lamina surface sparsely to moderately hairy, hairs short and curled; abaxial lamina surface densely hairy, hairs curled, appressed to spreading; only midrib prominent; petioles not decurrent; stipules lanceolate, 2–4.5 mm long, subulate, appressed to recoiled, brown, with curled hairs at the base. **Flowers** subsessile, axillary, few at the end of the short branchlets in dense leafy clusters; inflorescence-subtending bracts

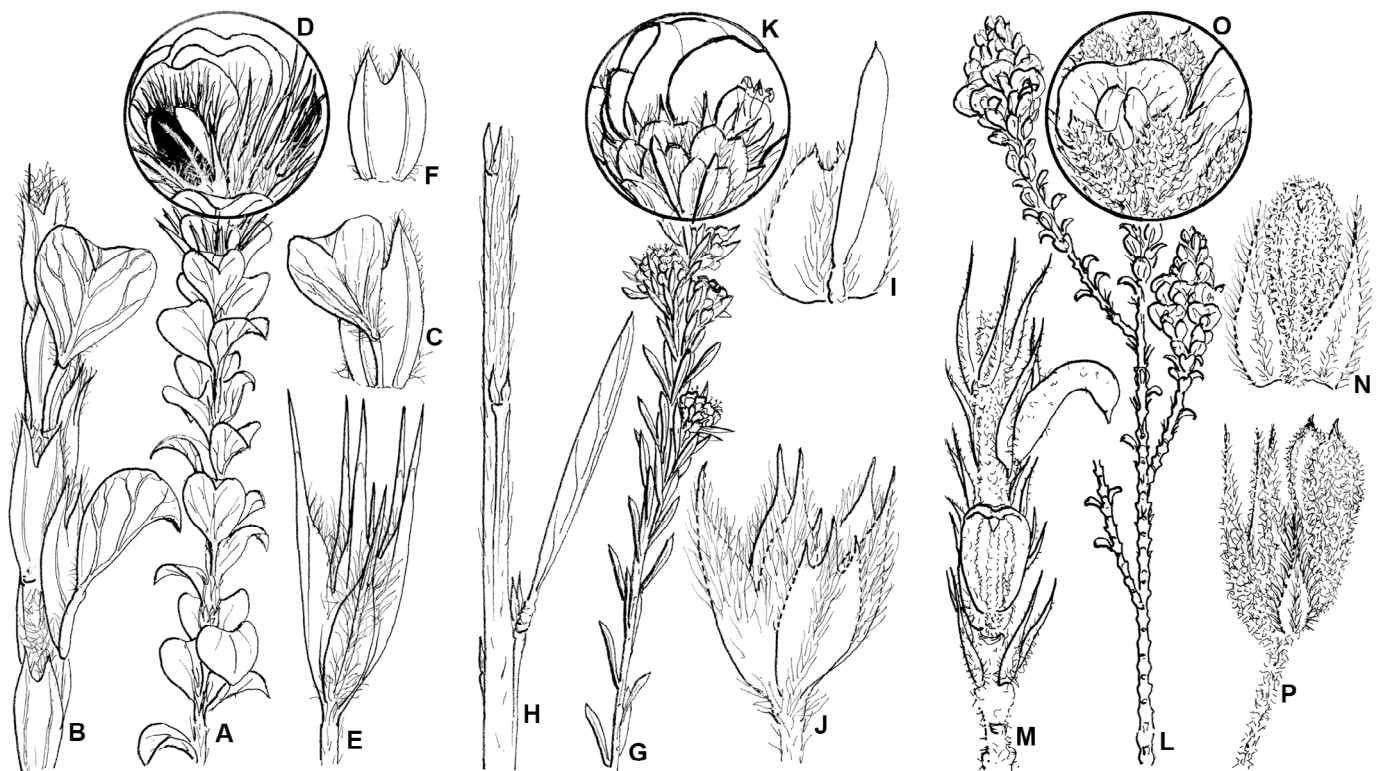


Fig. 21. A–F, *Pultenaea densifolia*: A, branch; B, leaves & stipules; C, bract; D, inflorescence; E, calyx; F, stipules of bract (C). **G–K, *P. dentata*:** G, branch; H, leaf & stipules; I, bract; J, calyx; K, flowers. **L–P, *P. elachista*:** L, branch; M, leaves & stipules; N, bract; O, flower; P, calyx. Illustrations by G.R.M. Dashorst.

absent, or if present then leaf-like; flower-subtending bracts leaf-like, persistent, the stipules ovate-acuminate, c. $3 \times c. 1.5$ mm, brown, pubescent on the back basally, ciliate; bracteoles inserted near the base of the calyx tube, ovate-acuminate, 3–5 mm long, brown, white-pubescent on the back; calyx 7.9–9 mm long, moderately to densely pubescent to velutinous; calyx lobes straight, upper 2 lobes larger, elliptic-obovate, obtuse or acute to acuminate with brown mucronate tips, longer than the tube, the lower 3 narrower, acuminate; standard 7.6–9 mm long, yellow to orange; wings 7–7.2 mm long, yellow to orange; keel 7–7.5 mm long, yellow to red; ovary shortly stalked, velutinous; style filiform, velutinous basally. **Pod** c. 5 mm long, densely pubescent, slightly exceeding the calyx. **Fig. 21L–P, Pl. 15L.**

S.A.: NU, EP, KI; W.A. Occurs mainly in coastal or near coastal areas along the Nullarbor Plain and on Eyre Peninsula, with one early collection from Kangaroo Island; also in southern W.A. (Coolgardie, Eucla and Roe districts). Found on sand, sandy clay, loam or gypsum over limestone or granite in mallee woodland, dune valleys, and heath. Flowers: Sep.–May.

7. ***Pultenaea graveolens*** Tate, *Trans. & Proc. Roy. Soc. South Australia* 7: 68 (1885). — *P. graveolens* var. *glabrescens* J.M.Black, *Fl. S. Austral.* 2: 299 (1924). *P. hispidula* auct. non R.Br. ex Benth.: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 677 (1986), partly. — **Illustr.:** Corrick, *Victorian Naturalist* 98: fig. 20a–h (1981).

Erect shrub, 1–2 m high; branchlets terete, often pendulous, moderately pubescent, hairs often spreading; leaves alternate, petiolate, straight to recurved, linear to elliptic or ovate, $3.2\text{--}25 \times 0.5\text{--}3$ mm, broadly U-shaped in transection or 1-furrowed above, margins incurved to involute, apex straight to recurved, acute, not pungent, base rounded; adaxial lamina surface with pale often spreading hairs, paler than below; abaxial lamina surface scabrous to smooth, sparsely to moderately hispid, occasionally glabrous; only midrib prominent; petioles decurrent; stipules usually ovate, 0.4–1.2 mm long, keeled, appressed to erect, exuding scented yellow wax, viscid. **Inflorescence** lax; flowers forming towards branchlet tips or along the main axis, pedicels to c. 3 mm long; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts leaf-like, not viscid; bracteoles inserted at the base of the calyx tube, ovate, 1–2 mm long, entire, scarious, exuding scented yellow wax, viscid; calyx 4–4.5 mm long, sparsely to moderately hispid; calyx lobes straight, acute to acuminate; standard 7.2–8 mm long, yellow to orange; wings 6.5–7 mm long, yellow to orange; keel 6–7 mm long, red-purple; ovary and most of style velutinous; style gently curved. **Pod** 4.5–5 mm long, pubescent, partly enclosed by the calyx; seed c. 2 mm long. **Fig. 22A–F, Pl. 16A & B.**

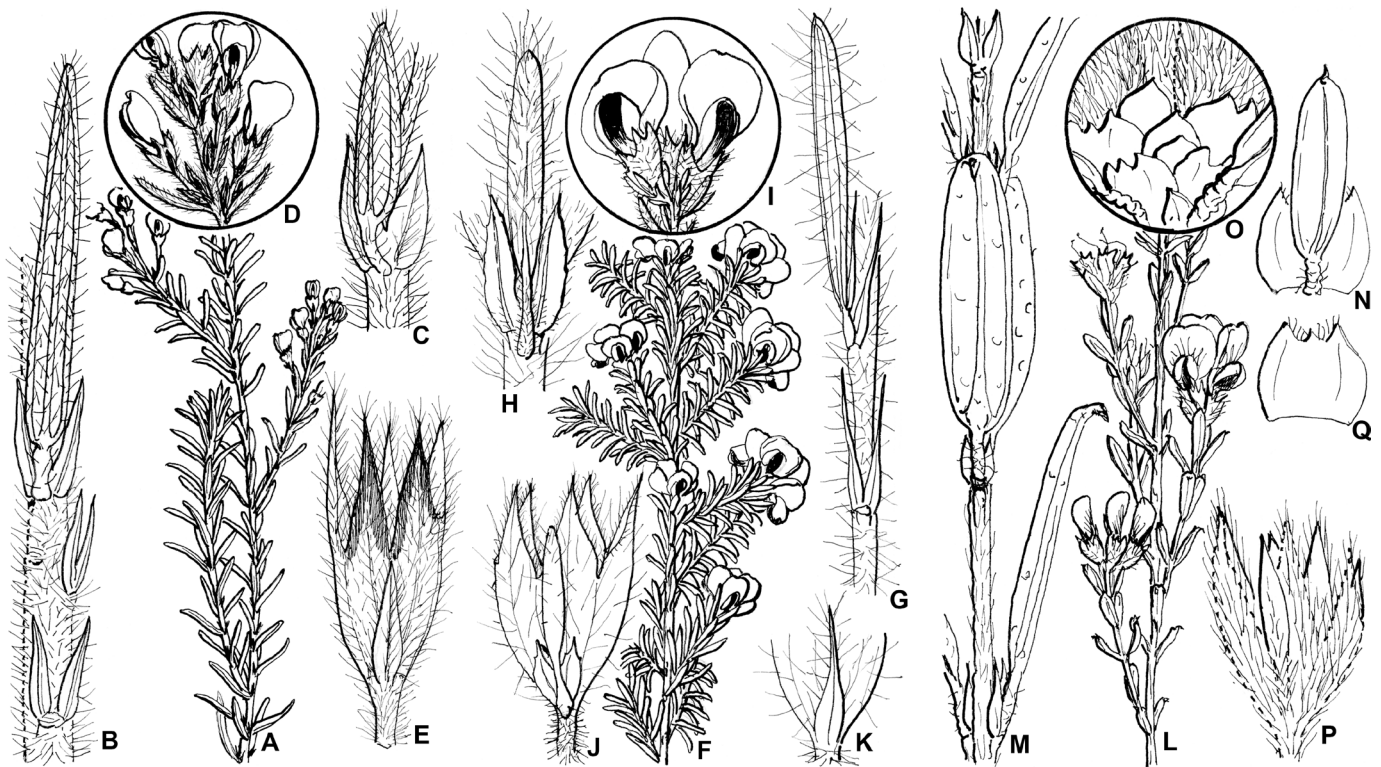


Fig. 22. A–F, *Pultenaea graveolens*: A, branch; B, leaf & stipules; C, bract; D, flowers; E, calyx. F–K, *P. hispidula*: F, branch; G, leaf & stipules; H, bract; I, flowers; J, calyx; K, bractole. L–P, *P. stricta*: L, branch; M, leaves & stipules; N, bract; O, base of flowers; P, calyx; Q, stipules of bract (N). Illustrations by G.R.M. Dashorst.

S.A.: FR, SL, KI; Vic. This species has a disjunct distribution in S.A., occurring primarily in the southern Mt Lofty Ranges and southern Flinders Ranges, with a single outlying Kangaroo Island record collected from Middle River in 1905. A 1932 Ising collection labelled as Pt Augusta (in the Eyre Peninsula Region) is a school collection and is presumed to be from the nearby Flinders Ranges. Found on clay-loam soils over sandstone and granite, in dry sclerophyll scrub or woodland. Flowers: (Aug.–) Oct.–Dec.

Pultenaea graveolens was treated as a synonym of *P. hispidula* by Weber (1986). Several traits previously used to distinguish these taxa, including stipule length and shape, bracteole length, inflorescence density, and pedicel length, can in many cases distinguish them, but intermediate specimens do occur. The scented yellow wax exuded from the stipules in *P. graveolens* is the only morphological trait that will consistently distinguish them, but their separation is further supported by a number of overlapping characters, as mentioned above. The leaves of the Flinders Ranges specimens tend to be less hairy and with the margins more tightly incurved than the more southerly ones.

8. ***Pultenaea hispidula*** R.Br. ex Benth., *Fl. Austral.* 2: 133 (1864). — *P. pubescens* J.M.Black, *Fl. S. Austral.* 2: 301 (1924). *P. daltonii* auct.non H.B.Will.: *S.A. Census Online* [www.flora.sa.gov.au] (Oct. 2010), partly. — **Illustr.:** M.G.Corrick, *Victorian Naturalist* 104: 142, fig. 38 (1987).

Erect shrub, (0.2–) 0.3–2 m high; branchlets terete, usually pendulous, sparsely to moderately hairy, hairs variable in length, ascending to spreading; leaves alternate, petiolate, straight to recurved, linear to elliptic or oblanceolate to obovate, rarely orbicular, 3.2–8 × 0.6–3 mm, flat to broadly U-shaped in transection or 1-furrowed above, margins incurved to involute, apex straight, acute to obtuse, not pungent, base attenuate to rounded; adaxial lamina surface glabrous to sparsely hispid, paler than below; abaxial lamina surface scabrous to smooth, hispid, occasionally villous or glabrous; only midrib prominent; petioles not decurrent; stipules lanceolate, 0.9–2.5 mm long, apex slender, appressed to erect, rarely viscid. **Inflorescence** dense, 2–5-flowered; flowers usually forming towards the branchlets tips, subsessile or on pedicels 1–3 mm long; inflorescence- and flower-subtending bracts variable, leaf-like with enlarged stipules, or the inner ones scale-like, suborbicular, to c. 3 mm long, 2- or 3-lobed, sometimes forming an involucre; bracteoles inserted at the base of calyx tube variable, scale-like to leaf-like, when scale-like broad-ovate to narrow-lanceolate, 1–4.2 mm long, scarios, or when leaf-like with ± free stipules at the base, sometimes with the lamina reduced; calyx 3.2–4.8 mm long, sparsely pubescent to occasionally glabrous; calyx lobes straight, acute to acuminate, ciliate; standard 6.9–7.2 mm long, yellow to orange, sometimes with red markings; wings 6–7.8 mm long, yellow to red; keel 6.6–7.2 mm long, yellow-green to reddish distally; ovary and

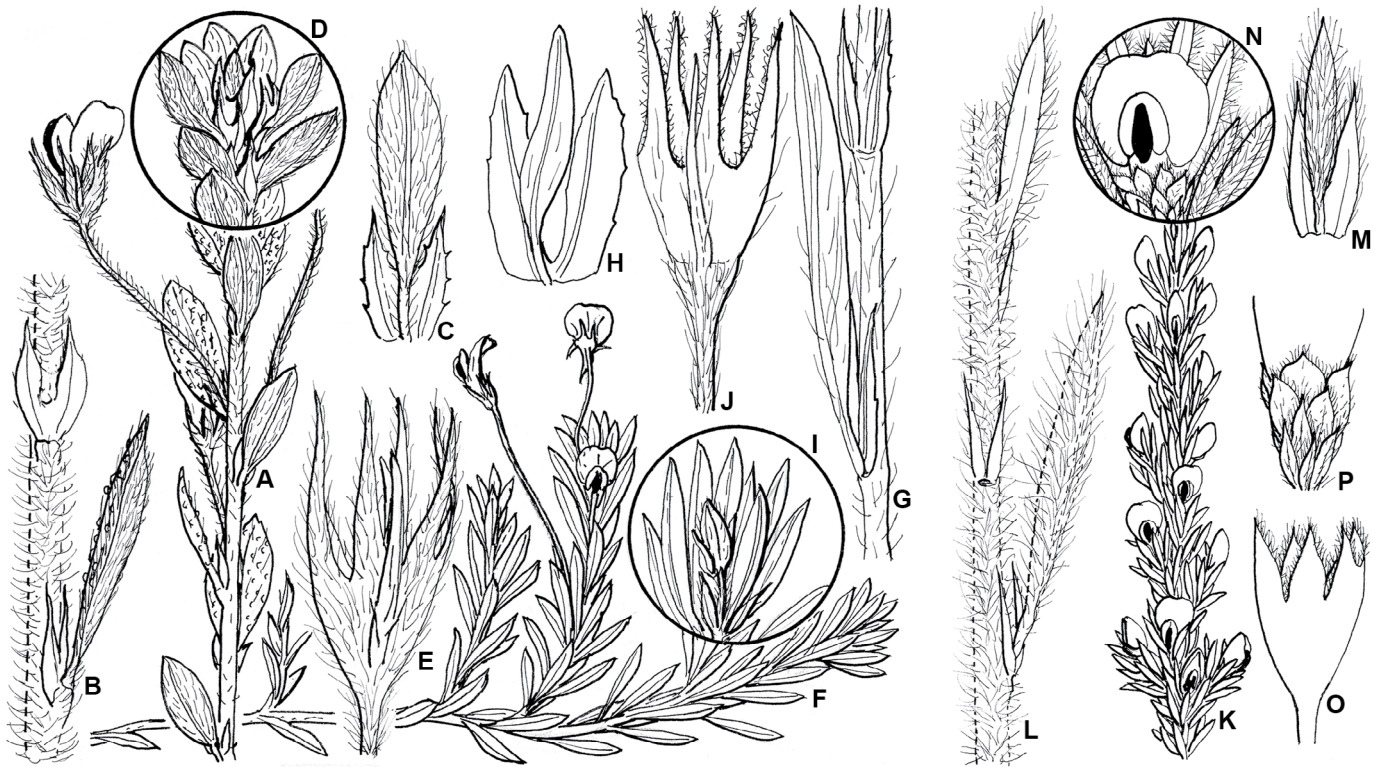


Fig. 23. A–F, *Pultenaea insularis*: A, branch; B, leaf & stipules; C, bract; D, flower; E, calyx. F–J, *P. pedunculata*: F, branch; G, leaf & stipules; H, bract; I, branch apex with bud; J, calyx. K–P, *P. involucrata*: K, branch; L, leaves & stipules; M, bract; N, flower; O, calyx; P, base of flower with flower-subtending bracts. Illustrations by G.R.M. Dashorst.

lower style velutinous; style gently curved. **Pod** 3.6–7.2 mm long, turgid, brown, villous, partly enclosed by the calyx; seed c. 2 mm long, brown-black, shiny. **Rusty bush-pea, spreading bush-pea. Fig. 22F–K, Pl. 16C–G.**

S.A.: SL, KI, SE; N.S.W.; Vic. Occurs mainly in northern part of the Southern Lofty region, and throughout the South-East; there is a single collection from Kangaroo Is. made in 1934. Found on white sand to sandy or red clay loam soils, in open woodland and coastal mallee heath, rarely in wet heathland or swamps. Flowers: (Aug.–) Sep.–Dec.

De Kok & West (2003) distinguish *P. daltonii* from *P. hispidula* by, amongst other overlapping traits, its tri-dentate (with free stipules) bracteoles and hispid hairs lacking. However, S.A. specimens corresponding to *P. hispidula*, especially those collected from the South-East, have bracteoles which transition from scale-like and entire (no free stipules), to almost leaf-like with a reduced lamina and partially fused (tri-dentate) stipules, to leaf-like with free stipules at the base. Furthermore, all of these states can occur on the same specimen. Hispid hairs have also been seen on numerous specimens with tri-dentate bracteoles. With regard to these two taxa in S.A., specimens with scale-like bracteoles and specimens with leaf-like or tri-dentate bracteoles appear to intergrade. These have all been treated as belonging to *P. hispidula* here, and *P. daltonii* is not thought to occur in S.A.

9. ***Pultenaea insularis*** J.Z.Weber, *J. Adelaide Bot. Gard.* 16: 23 (1995). — *P. pedunculata* auct. non. Hook.: de Kok, *Austral. Syst. Bot.* 17: 305 (2004), partly; *P. insularis* I.Holliday, *Kangaroo Island's Native Pl.*: 19 (1995), *nom. nud.* — **Illustr.:** J.Z.Weber, *J. Adelaide Bot. Gard.* 16: 24, fig. 1 (1995).

Spreading to prostrate shrub to 0.6 m high, often with stems rooting at the nodes; branchlets moderately pubescent, hairs usually spreading to antrorse, rarely appressed; leaves alternate, straight, rigid, elliptic or ovate to obovate, 2.5–6 (–7.5) × 1–3 mm, flat with margins flat to recurved, rarely revolute, apex acute to obtuse, recurved, shortly mucronate, somewhat pungent, base attenuate to cuneate; adaxial lamina surface sparsely appressed-pubescent when young, hairs antrorse, later glabrous, slightly tuberculate, darker than below; abaxial lamina surface sparsely to moderately appressed-pubescent, hairs antrorse, rarely glabrescent; only midrib prominent; petioles not decurrent; stipules triangular, 1.5–2 mm long, light to dark-brown, ciliate, midrib ending in a fine point. **Flowers** axillary towards the ends of the lateral branches, solitary, 4–5 mm long, on 8–16 mm long filiform pedicels with appressed antrorse hairs; flower-subtending bracts leaf-like, persistent; bracteoles inserted at the base of the calyx tube, narrow-lanceolate to almost acicular, 1.5–2 mm long, with few appressed antrorse hairs; calyx c. 3 mm long, sparsely to moderately silky-pubescent; calyx lobes straight, slender, acuminate, the upper 2 lobes broader and connate higher up, the lower lobes narrow-triangular and tapering into filiform points, longer than the tube;

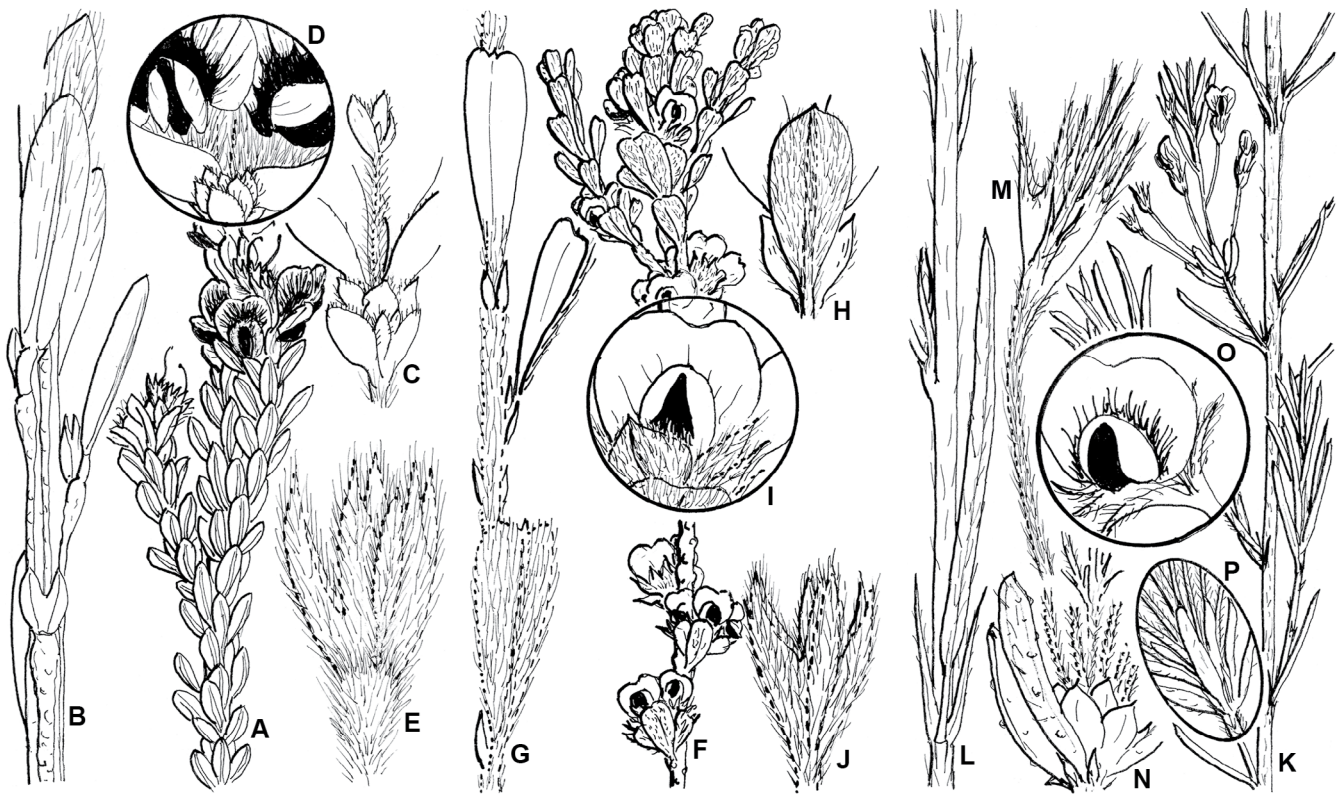


Fig. 24. A–F, *Pultenaea kraehenbuehlii*: A, branch; B, leaves & stipules; C, base of flower with bracteoles; D, flowers; E, calyx. **F–J, *P. largiflorens*:** F, branch; G, leaves & stipules; H, bract; I, flower; J, calyx. **K–P, *P. laxiflora*:** K, branch; L, leaf & stipules; M, calyx; N, base of inflorescence; O, flower; P, base of leaves. Illustrations by G.R.M. Dashorst.

standard c. 5 mm long, yellow with red markings; wings c. 5 mm long, yellow; keel c. 4.5 mm long, red to purple; ovary and lower style velutinous. **Pod** c. 4 mm long, turgid, brown, pubescent. **Fig. 23A–F, Pl. 16H.**

S.A.: KI. Endemic to Kangaroo Island (Beyeria Conservation Park and surrounding area), where it usually found on sandy clay soil in open *Eucalyptus* and *Melaleuca* forest.

De Kok and West (2004) cited considerable overlap in leaf and flower dimensions as the primary reason for sinking *P. insularis* into *P. pedunculata*. In the present treatment, differences in stem and leaf indumentum, and to a lesser extent leaf and flower dimensions, along with its geographical isolation, are thought to be sufficient to recognise *P. insularis* as a distinct species. This species is closely related to *P. pedunculata* which is restricted to the mainland in S.A. It is distinctive by its usually patent to spreading stem hairs (compared to usually appressed antrorse in *P. pedunculata*), usually proportionally broader elliptic or ovate to obovate leaves, which are often more densely hairy below, recurved mucronate leaf tips, and sometimes shorter flowers.

10. ***Pultenaea involocrata*** Benth., *Fl. Austral.* 2: 138 (1864). — *P. fuscata* F.Muell, *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 119 (1855). — **Illustr.:** Dashorst & Jessop, *Pl. Adelaide Plains & Hills* ed. 3, 89, pl. 5 (2006).

Erect to procumbent or prostrate shrub, 0.2–0.4 (–1) m high; branchlets often pendulous with sparse to moderate, appressed to spreading hairs; leaves alternate, rather crowded, petiolate, straight, smooth, ovate-lanceolate to narrow-lanceolate or narrow-elliptic, 6.8–11.5 × 1.1–2.6 mm, flat to concave above, margins incurved, long-ciliate, apex straight, acute, shortly mucronate, sometimes pungent, base attenuate to cuneate; adaxial lamina surface glabrous, paler than below; abaxial lamina surface villous to appressed-pubescent; midrib and sometimes lateral veins prominent on both surfaces; petioles not decurrent; stipules ovate to lanceolate, 2–2.9 mm long, bilobed or deeply divided, appressed to ascending, often ciliate and pubescent abaxially. **Inflorescence** initially dense at the branchlet tips but becoming lax as the branchlet elongates, or flowers solitary; inflorescence-subtending bracts when present leaf-like to scale-like; flower-subtending bracts forming an involucre, tightly imbricating the calyx, the outer bracts leaf-like with persistent lanceolate stipules, the inner bracts scale-like, ovate, c. 2.5 mm long, brown, ciliate; bracteoles inserted on the pedicel, ovate-truncate to obovate-truncate, 2.6–3.5 mm long, navicular, tightly concealing the calyx, glabrous except for the ciliate margins; calyx 2.4–3.8 mm long, glabrous except for the ciliate margins of the triangular lobes; standard 6.2–7.6 mm long, yellow to orange, sometimes with red markings; wings 6–7 mm long, yellow to orange; keel 5.4–6 mm long, yellow-green, red distally; ovary and

lower style velutinous. **Pod** c. 4 mm long, turgid, brown, villous, exceeding the calyx, 2-seeded; seed 2.1–2.4 mm long, dark-brown, dull. **Mount Lofty bush-pea. Fig. 23K–P, Pl. 16I & J.**

S.A.: SL. Endemic to the southern Mt Lofty Ranges where it occurs on sandy loam soils or dark sand, in dry sclerophyll forests, open woodland, and heath. Flowers: (Aug. –) Sep. – Nov. (–May).

This species is similar to *P. trinervis*, which is distinguished by calyces only partially enclosed by the stipules of the leaf-like flower-subtending bracts, by the absence of inflorescence-subtending bracts, and by its 3-nerved leaves. The branchlets of *P. trinervis* are straight, while those of *P. involucrata* tend to droop.

11. **Pultenaea kraehenbuehlii** P.J.Lang, *J. Adelaide Bot. Gard.* 18: 25–32 (1998) — *P. stricta* auct. non Sims: J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 682 (1986), partly. — **Illustr.:** P.J.Lang, *J. Adelaide Bot. Gard.* 18: 27, fig. 1a–n (1998).

Dense, intricate, erect to prostrate shrub, 0.2–1.5 (–2) m high; branchlets glabrescent with sericeous-pubescent indumentum, hairs appressed; leaves alternate, rather crowded, straight, smooth, narrowly oblong-ovate to oblanceolate or broadly elliptic-ovate immediately below inflorescence or near apex of terminal shoots, (2–) 4–9 (–13.5) × (1.2–) 2–4 mm, flat to slightly concave above, margins lightly recurved, apex straight to slightly recurved, obtuse, base obtuse to cordate; lamina surface strigose when young, soon glabrate, slightly darker above, only midrib barely prominent below; petioles decurrent; stipules 0.5–1 mm long, appressed, free part of stipules divergent, narrow-triangular, orange-brown aging to dark red. **Inflorescence** dense, head-like, usually terminal, (1–) 2–5 (–6)-flowered, terminated by a vestigial pubescent rachis bearing several reduced barren bracts at the apex; pedicels 1.8–3 mm long; inflorescence- and flower-subtending bracts scale-like, forming an involucre, obtuse to obscurely emarginate, glabrate except for the tomentose apical tooth and ciliate margins, caducous except for a few persistent basal stipuliform bracts; inner bracts 5–6 mm long, ovate to elliptic; outer bracts shorter, broadly ovate; bracteoles inserted on the lower half of calyx tube, narrow-lanceolate to -oblanceolate, 2.5–3 (–4) mm long, sparsely strigose to glabrescent; calyx (3.5–) 4–5 (–5.5) mm long, pubescent to sericeous; calyx lobes sericeous, all straight or the upper lobes recurved, acute, the upper lobes broadly triangular, lower lobes triangular; standard 9.5–14 mm long, yellow to orange with red markings; wings 8.5–9.5 mm long, yellow to orange; keel 6.5–9.8 mm long, red; ovary velutinous; style slender, curved. **Pod** 6.5–8.8 mm long, compressed, glabrescent, 1–2-seeded; seed 2.7–3.5 mm long. **Fig. 24A–F, Pl. 16K–M.**

S.A.: NL. Endemic to the Tothill Range and nearby Spring Hill in the northern Mt Lofty Ranges, where it occurs in low open woodland on the upper rocky slopes of hills and ranges, in sandy loam. Flowers: Aug.–Sep.

This species most closely resembles *P. stricta*, but can be recognised by, amongst other traits, its non-mucronate leaf apex, divergent stipule lobes, and fewer flowered inflorescences. *P. largiflorens* is also similar to, and sometimes occurs sympatrically with *P. kraehenbuehlii*, and can be recognised by its conduplicate leaves (often clustering in groups of three), caducous floral bracts, axillary inflorescences, and a more persistent indumentum on the stems and abaxial leaf surface.

(Rare status in S.A.)

12. **Pultenaea largiflorens** F.Muell. ex Benth., *Fl. Austral.* 2: 134 (1864). — *P. largiflorens* var. *latifolia* H.B.Will., *Proc. Roy. Soc. Victoria* 32: 223 (1920). — **Illustr.:** Corrick, *Victorian Naturalist* 94: 149, fig. 7 (1977).

Erect to ascending shrub, 0.3–1.3 m high; branchlets terete, rigid, sparsely to densely appressed-pubescent; leaves alternate, often clustered in groups of 3, straight, smooth to rarely tuberculate, obovate to narrow-cuneate or elliptic, 3–10 × 0.5–4 mm, terete or flat to conduplicate, margins flat or incurved to slightly recurved, apex recurved, acute to obtuse, sometimes emarginate, sometimes pungent, base attenuate to cuneate; adaxial lamina surface usually glabrous, concolourous or darker than below; abaxial lamina surface sparsely to moderately appressed-pubescent; only midrib prominent; petioles not decurrent; stipules triangular, 0.5–1 mm long, acute, appressed, dark-brown. **Inflorescence** dense, head-like, 2- to 8-flowered; flowers sessile or on usually < 1.5 mm long pubescent pedicels; inflorescence- and flower-subtending bracts scale-like, forming an involucre, 2–4 mm long, oblong, ovate or almost orbicular, usually emarginate, the inner flower-subtending bracts often acuminate or shallowly tri-dentate, brown, glabrous or with few hairs, caducous; bracteoles inserted near the summit of the calyx tube or lower, lanceolate to ovate, 3–4.5 mm long, keeled, brown, pubescent with hairs mostly towards the margins and on the central portion; calyx moderately to densely appressed-pubescent, 5–7 mm long; upper 2 calyx lobes broader, connate higher up, recurved, the lower lobes narrowly acuminate, longer than the tube,

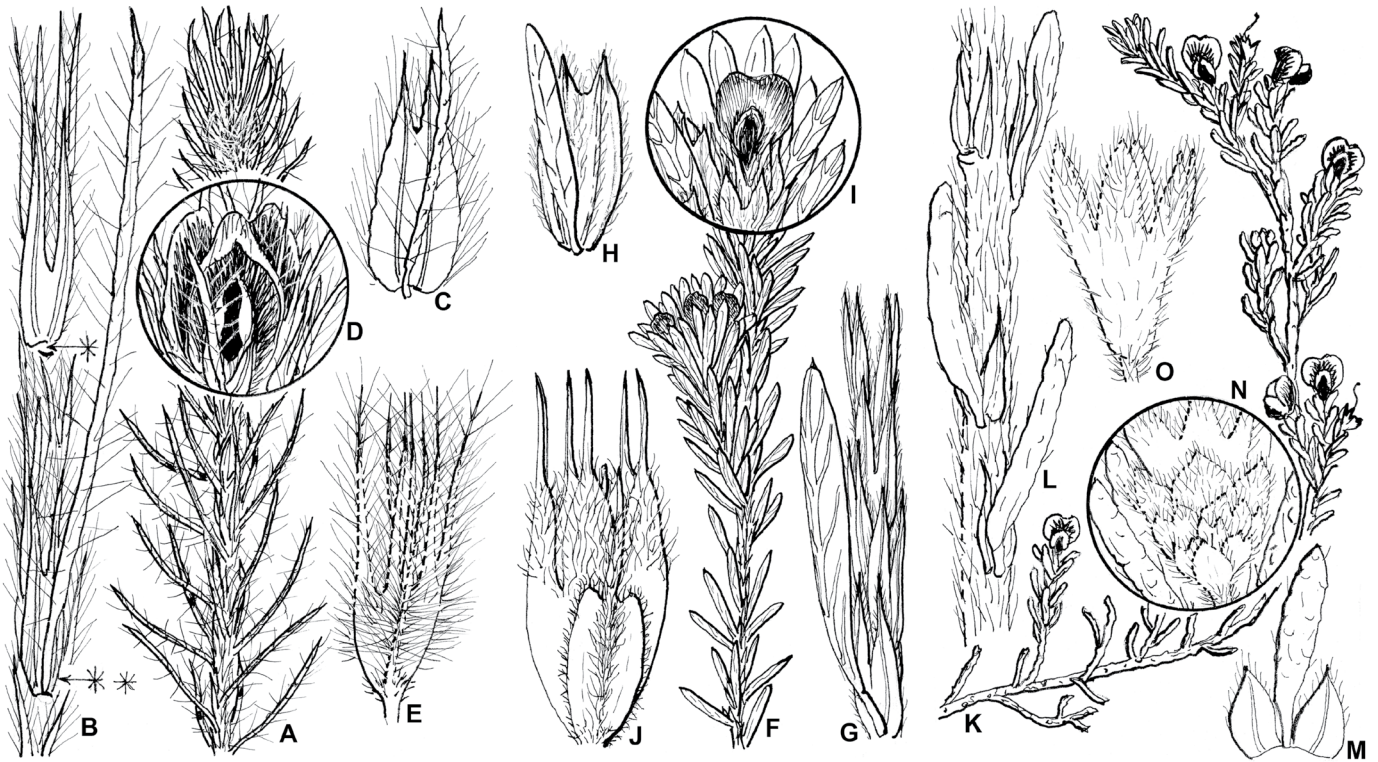


Fig. 25. A–F. *Pultenaea penna*: A, branch; B, leaf & stipules, attachment of leaf indicated with asterisks; C, bract; D, flower; E, calyx. **F–J. *P. vestita*:** F, branch; G, leaf & stipules; H, bract; I, flower; J, calyx. **K–P. *P. prostrata*:** K, branch; L, leaves & stipules; M, bract; N, base of flower; O, calyx. Illustrations by G.R.M. Dashorst.

straight; standard 6–10 mm long, yellow to orange; wings 6.5–9 mm long, yellow to orange; keel 6.5–9 mm long, crimson to purple; ovary and lower style velutinous. **Pod** 4–7 mm long, brown with white antrorse hairs, scarcely exceeding the calyx; seed c. 2 mm long, dark-brown. **Twiggy bush-pea. Fig. 24F–J, Pl. 17A–C.**

S.A.: FR, EP (western margin of Flinders Ranges) NL, MU (eastern margin of Mt Lofty Ranges), SL, KI, ?SE; N.S.W.; Vic. In S.A. this species occurs primarily in the Mt Lofty and Flinders Ranges, and is uncommon on Kangaroo Island. A single 1882 collection labelled ‘Devils Gully’ has previously been taken to indicate an extinct Yorke Peninsula occurrence, but the locality is ambiguous and seems more likely for the Mt Lofty Ranges. There is also a single anomalous collection from Nonning on northern Eyre Peninsula, and a school collection from Burrungule near Mt Gambier which may derive from the south-western Vic. population or represent its extension into this State. Found in sandy loam to loam soils in open woodland or mallee. Flowers: (Jul.–) Aug.–Dec.

Plants from the Flinders Ranges tend to have narrower leaves that are more commonly conduplicate than those from the more southerly populations.

13. ***Pultenaea laxiflora*** Benth., *Fl. Austral.* 2: 133 (1864). — *P. filifolia* F.Muell., *Fragm.* 1: 9 (1858); *P. laxiflora* var. *pilosa* H.B. Will., *Proc. Roy. Soc. Victoria* 33: 141 (1921); *P. laxiflora* var. *procumbens* F.Muell. ex H.B. Will., *Proc. Roy. Soc. Victoria* 33: 141 (1921); *P. quadricolor* J.M. Black, *Trans. & Proc. Roy. Soc. South Australia* 55: 139 (1931). — **Illustr.:** D.A. Cooke, *J. Adelaide Bot. Gard.* 10: 128 (1987).

Slender, erect to prostrate shrub, (0.1–) 0.3–1.1 m high; branchlets rounded, moderately to densely pubescent, hairs appressed to ascending; leaves alternate, straight to recurved, linear-lanceolate to linear-oblongate or linear-terete, 2.8–10 × 0.4–1.4 mm, channeled to grooved above, margins incurved, apex straight to recurved, acute to emarginate, base attenuate to cuneate; adaxial lamina surface light-green, glabrous, paler than below; abaxial lamina surface glabrous to appressed-pubescent, sometimes slightly tuberculate; only midrib prominent; petioles not decurrent, wrinkled; stipules triangular to lanceolate, 1.2–2 mm long, appressed to erect, ciliate. **Inflorescence** dense to lax, c. 3–6-flowered; pedicels 1–6 mm long, pubescent; inflorescence-subtending bracts forming an involucre, inflorescence- and flower-subtending bracts leaf-like (usually with enlarged stipules) to scale-like; bracteoles inserted at the base of the calyx tube or immediately below it, longer than the tube, linear, 2.8–5.5 mm long, green, leaf-like, tri-dentate with 2 scarious stipular outgrowths at the base; calyx 3.2–5 mm long, sparsely to densely pubescent, hairs stiff or almost villous; calyx lobes acuminate, the upper 2 recurved, the lower 3 straight; standard 7.5–8.4 mm long, yellow to red with red markings; wings 6–6.8 mm long, yellow to

red; keel 6–7 mm long, red to brown or purple; ovary and lower style velutinous. **Pod** 4–5 mm long, compressed, brown, appressed-pubescent, partly exceeding the calyx; seed 1.5–2 mm long, dark-brown. **Loose-flower bush-pea, stalked bush-pea. Fig. 24K–P, Pl. 17D.**

S.A.: NL (Tothill Range), MU (eastern margin of southern Mt Lofty Ra.), SL, KI, SE; N.S.W.; Vic. Primarily Kangaroo Island and southern Mt Lofty Ranges, also occurring in the South-East, extending into its Victorian range. In S.A. it is found on sandy or sandy to clay loam soils in wet heathland or the edges of swamps or creeks, and less commonly in open woodland. Flowers: (Jul.–) Oct.–Jan. (–Feb.).

Pultenaea quadricolor, which was recognised by Weber (1986), was synonymised with *P. laxiflora* by Cooke (1987). Bract morphology in this species can vary considerably within a single inflorescence, at the base of which is a set of scale-like bracts. When the inflorescence is elongated the bracts at the base of the rachis tend to have a reduced lamina and fused stipules (more or less scale-like), becoming leaf-like with free stipules towards the apex.

Plants from swampy and riparian habitats often have a sprawling or prostrate habit and more open inflorescences. An erect form with linear terete leaves and compact inflorescences occurs on sandy soils from north-east of Adelaide to the Barossa, and has a small isolated occurrence on skeletal soils in the Tothill Range. This form has previously been referred to *Pultenaea laxiflora* Benth. var. *pilosa* H.B. Will., but is not clearly resolvable. It intergrades with broader-leaved erect plants in the Adelaide Hills and has similarities with forms in the South-East region and Vic.

14. ***Pultenaea pedunculata*** Hook., *Bot. Mag.* 55: 2859, pl. 2859 (1828). — *P. pedunculata* var. *latifolia* H.B. Will., *Proc. Roy. Soc. Victoria* 35: 99 (1922). — **Illustr.:** M.G. Corrick, *Vict. Naturalist* 94: 199, fig. 8h–m (1977).

Prostrate, densely matted shrub, rarely ascending, often with stems rooting at the nodes; branchlets sparsely to moderately pubescent, hairs appressed to spreading; leaves alternate, straight, rigid, narrow-lanceolate to narrow-elliptic, 5–12 × 1–3 mm, flat with margins recurved, rarely revolute, apex straight to rarely slightly recurved, acute, acicular, almost pungent, base attenuate to cuneate; adaxial lamina surface sparsely appressed-pubescent when young, hairs antrorse, later glabrous, slightly tuberculate, darker than below; abaxial lamina surface sparsely appressed-pubescent, hairs antrorse, often glabrescent; only midrib prominent or rarely with prominent lateral veins; petioles not decurrent; stipules lanceolate, 2–3 mm long, light to dark-brown, ciliate, midrib ending in a fine point. **Flowers** axillary towards the ends of the lateral branches, usually solitary, rarely paired, 4–8 mm long, on 5–30 mm long filiform pedicels with appressed antrorse hairs; flower-subtending bracts leaf-like, persistent; bracteoles inserted at the base of the calyx tube, narrow-lanceolate to almost acicular, 2–4 mm long, glabrous or with appressed antrorse hairs; calyx 3–5 mm long, sparsely to moderately silky-pubescent; calyx lobes straight, slender, acuminate, the upper 2 lobes broader and connate higher up, the lower lobes lanceolate and tapering into filiform points, longer than the tube; standard 4–8 mm long, yellow to orange, sometimes with red markings; wings 5.5–8 mm long, yellow to orange; keel 5–6 mm long, red to purple; ovary and lower style velutinous. **Pod** 4–5 mm long, turgid, brown, puberulent, exserted from the calyx, 2-seeded; seed c. 2 mm long, brown, dull. **Matted bush-pea. Fig. 23F–J, Pl. 17E.**

S.A.: EP, NL, MU, SL, SE; N.S.W.; Vic.; Tas. Occurs from Eyre Peninsula to the Murray and South-East regions, but excluding Yorke Peninsula and Kangaroo Island. Found on sand, loam, or clay soils in heath sedge-land, grassland, mallee and open forests or woodland. Flowers: (Aug.–) Sep.–Dec. (–May).

15. ***Pultenaea penna*** de Kok, *Austral. Syst. Bot.* 16: 252 (2003). — *P. vestita* auct. non R.Br.: J.Z. Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 685 (1986), partly. — **Illustr.:** de Kok & J.G. West, *Austral. Syst. Bot.* 16: 253, fig. 7a–g (2003).

Erect to prostrate shrub, 0.2–1 (–2) m high; branchlets terete, sparsely to moderately pubescent; leaves alternate, often crowded, straight, smooth to tuberculate, linear, (4.5–) 6.8–10 × (0.5–) 0.7–0.8 mm, broadly U-shaped in transection, margins incurved, long-ciliate to sometimes glabrescent, apex straight, acute, pungent, base attenuate to cuneate; abaxial lamina surface darker than above to concolourous, glabrous to sparsely villous; only midrib prominent; petioles not decurrent; stipules lanceolate, 5.2–7.5 mm long, connate for much of their length, appressed to erect, dull to rusty brown, ciliate. **Inflorescence** dense, head-like; flowers sessile or subsessile; inflorescence- and flower-subtending bracts leaf-like with enlarged stipules; bracteoles inserted at the base of the calyx tube, linear, 7.2–11 mm long, villous; calyx 8.5–11 mm long, the tube sparsely pubescent; calyx lobes straight, acuminate, with sparse to dense slender hairs; standard 8–12 mm long, yellow to orange with red markings on front and back; wings 8–10 mm long, yellow to orange; keel 8–10 mm long, yellow to red; ovary velutinous; style curved. **Pods** not seen. **Feather bush-pea. Fig. 25A–E, Pl. 17F.**

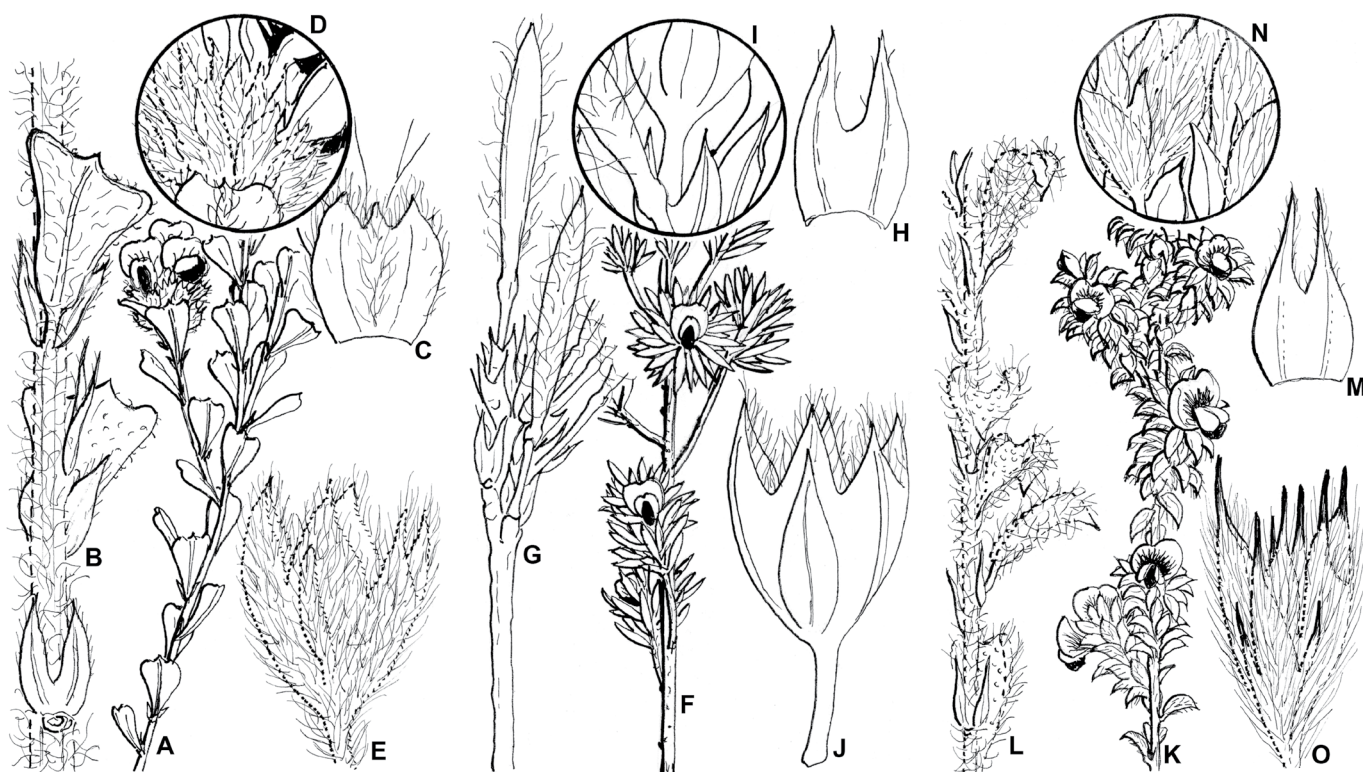


Fig. 26. A–F, *Pultenaea scabra*: A, branch; B, leaves & stipules; C, stipules of bract; D, base of inflorescence; E, calyx. **F–J, *P. trichophylla*:** F, branch; G, leaves & stipules; H, stipules of bract; I, base of inflorescence; J, calyx. **K–O, *P. trifida*:** K, branch; L, leaves & stipules; M, stipules of bract; N, base of flowers; O, calyx. Illustrations by G.R.M. Dashorst.

S.A.: KI, SE; Vic. Common in a restricted area surrounding Kingscote on Kangaroo Island, and less common in the South-East. Found on sand to sandy clay or loam soils in heath or mallee heath, and less commonly in swamps or woodland. Flowers: Nov.–Dec. (–Feb.).

This species was included under *P. vestita* in Weber (1986), from which it can be distinguished by its longer stipules (> 5 mm long), usually long hairs on the young leaf and bract margins, and by its linear (not tri-dentate) bracteoles. It is also similar to *P. trichophylla*, which can be recognised by its shorter stipules (≤ 2 mm long). The older leaves of *P. penna* are often glabrate, while the younger leaves towards the branchlet apices and the bracts tend to have long-ciliate margins and are glabrous or sparsely villous abaxially. The upper leaves and bracts can be glabrous on some parts of the plant.

16. ***Pultenaea prostrata*** Benth. ex Hook.f., *Fl. Tasman.* 1: 89 (1856). — **Illustr.:** Corrick, *Victorian Naturalist* 94: 69, fig. 5g–k (1977).

Erect to prostrate shrub, 0.2–0.6 (–1) m high; branchlets sparsely to moderately silky-pubescent, hairs appressed to spreading; leaves alternate, rarely whorled, almost sessile, straight to recurved, smooth to slightly tuberculate, linear-terete, 2–5 (–8) \times 0.5–0.7 (–1.5) mm, channeled above by the involute margins, apex acute, straight to slightly recurved, base attenuate to cuneate; abaxial lamina surface silky-pubescent or glabrescent, darker than above; petioles not decurrent; stipules triangular to lanceolate, 1–2 mm long, appressed to erect, ciliate. **Flowers** sessile, solitary or rarely paired at the tips of branchlets, each subtended by several scale-like bracts; bracts closely imbricating the calyx, broad-ovate, 2–3.5 mm long, 2- or 3-lobed, brown, scarious, appressed-pubescent, ciliate, persistent; bracteoles inserted at the base of the calyx tube, similar to the bracts, broad-ovate, acute, 4–5 mm long, appressed-pubescent, ciliate, scarious, longer than the calyx tube; calyx 5–7 mm long, silky-pubescent all over or only on the lobes; calyx lobes triangular to lanceolate, acute to acuminate, shorter than the tube, the upper 2 lobes recurved, the lower lobes straight; standard 8–10.5 mm long, yellow to red, with striations on front and back; wings 8.5–9 mm long, yellow to red; keel 8–8.5 mm long, yellow to red; ovary and lower style velutinous. **Pod** c. 5 mm long, dark-brown-villous, scarcely or not exceeding the calyx and bracts; seed c. 2 mm long, dark-brown. **Fig. 25K–P, Pl. 17G & H.**

S.A.: MU, SE; Vic.; Tas. In S.A. this species is restricted to the South-East where it is found on grey sands, brown clay loams, or red-brown clay with quartz, in dry sclerophyll forests, mallee, heath, or open woodland, rarely in swamps. Flowers: Sep.–Nov. (–Dec.).

17. **Pultenaea rigida** R.Br. ex Benth., *Fl. Austral.* 2: 130 (1864). — *P. rigida* var. *ovata* J.Z.Weber in Jessop & Toelken, *Fl. S. Austral.* 2: 681 (1986). *P. acerosa* auct. non. R.Br. ex Benth.: de Kok & West, *Austral. Syst. Bot.* 16: 232 (2003), partly.

Erect to prostrate shrub; branchlets terete, densely hairy, hairs often appressed; leaves alternate, usually sessile, occasionally subsessile, straight, very rigid, lanceolate or ovate-acute, 6–15 × 1–7 mm, flattish or concave above to conduplicate, margins slightly involute, apex straight to recurved, subulate, mucronate, pungent, base rounded to cuneate; adaxial lamina surface glabrous to appressed-pubescent; abaxial lamina surface usually glabrous, sometimes pubescent towards the base on both surfaces and on the margins; midrib and sometimes lateral veins prominent; petioles when present not decurrent, indistinct, ≤ 1 mm long; stipules lanceolate-acuminate, 2–4 mm long, mostly free, sometimes pungent, midrib and margins pubescent or only the margins ciliate. **Flowers** solitary, axillary, or few in small terminal leafy clusters, pedicellate; pedicels moderately to densely pubescent, 3–7 mm long; inflorescence-subtending bracts absent, or if present then usually leaf-like; flower-subtending bracts leaf-like, sometimes with slightly enlarged stipules; bracteoles inserted at the base of the calyx tube, scarious, lanceolate, midrib ending in a subulate or pungent point, 3–4 mm long, glabrous or pubescent, usually ciliate, rarely leaf-like with 2 pointed stipular lobes at the base; calyx 5–7 mm long, glabrous except for the ciliate lobe margins; calyx lobes subulate to pungent-pointed, about as long as the tube, the upper 2 lobes connate higher up, not falcate; standard yellow to orange with red markings; wings yellow to orange; keel distally reddish or purple; ovary and lower style velutinous. **Pod** 4–6 mm long, brown, turning black, pubescent, 2-seeded; seed 2–3 mm long, brown, dull. **Island bush-pea. Fig. 20F–J, Pl. 17I & J.**

S.A.: EP, YP, KI. Endemic to S.A. and confined to lower Eyre Peninsula, lower Yorke Peninsula, and Kangaroo Island. Often found on sand or loam soils over limestone, in sclerophyll woodland, mallee and heath, and on coastal cliffs and dunes. Flowers: Sep.–Jan.

P. rigida was treated as a synonym of *P. acerosa* by de Kok & West (2003), but is maintained as a distinct species here. It is distinguished from *P. acerosa* by its flowers which have longer pedicels (3–7 mm long), and by its usually wider lanceolate or ovate-acute leaves that are sessile or subsessile (linear-terete and usually petiolate in *P. acerosa*). Leaf width variation across the range of *P. rigida* appears to be continuous, hence *P. rigida* var. *ovata* is not considered to be distinct from the type variety.

18. **Pultenaea scabra** R.Br. in Aiton, *Hort. Kew.* ed. 2, 3: 18 (1811). — **Illustr.:** Corrick, *Victorian Naturalist* 101: figs 32a–m, 33 (1984).

Erect or spreading shrub, (0.2–) 0.3–2 (–3) m high; branchlets moderately to densely pubescent, hairs short and long, erect to rarely appressed; leaves alternate, straight, narrow- to broad-cuneate or obcordate, (2.8–) 3.6–16 × 2–13 mm, margins recurved, apex bilobed to truncate, with a short recurved mucro, pungent, base attenuate to cuneate; adaxial lamina surface scabrous and hispid to smooth and glabrous, sometimes tuberculate, darker than below; abaxial lamina surface villous; only midrib prominent; petioles not decurrent; stipules triangular to lanceolate, 1–4 mm long, appressed to recurved, dark-brown. **Inflorescence** dense, head-like, (2–) 3- or more flowered, terminating the branchlets, the short pedicels finally exceeding the bracts; inflorescence-subtending bracts when present forming an involucre, scale-like or the basal ones sometimes leaf-like; flower-subtending bracts scale-like, almost orbicular, 1–3 mm long, apex split or apparently 3-lobed, pubescent, brown, scarious, caducous; bracteoles inserted at or below the centre of the calyx tube, linear to lanceolate, 2.2–5 mm long, brown, densely pubescent; calyx 4–6 mm long, sparsely to densely silky-pubescent; calyx lobes acuminate, the upper lobes broader and connate higher up, recurved, the lower lobes straight; standard 7–12 mm long, yellow to orange and red; wings 7–10 mm long, yellow to orange; keel 5.2–9 mm long, red to purple; ovary and lower style velutinous. **Pod** 5–7.2 mm long, brown, pubescent, partly enclosed by calyx; seed 2.2–2.5 mm long, dark-brown to blackish. **Rough bush-pea. Fig. 26A–F, Pl. 17K & L.**

S.A.: SL, KI, SE; N.S.W.; Vic. In S.A. restricted to Kangaroo Island, southern Fleurieu Peninsula, and the far South-East. Found on sand to clay or loam soils in dry to wet sclerophyll forests or woodland, or heath. Flowers: (Jul.–) Aug.–Jan.

Leaf shape and size within this species is highly variable across its range but variation in these traits appears to be continuous.

(Rare status in S.A.)

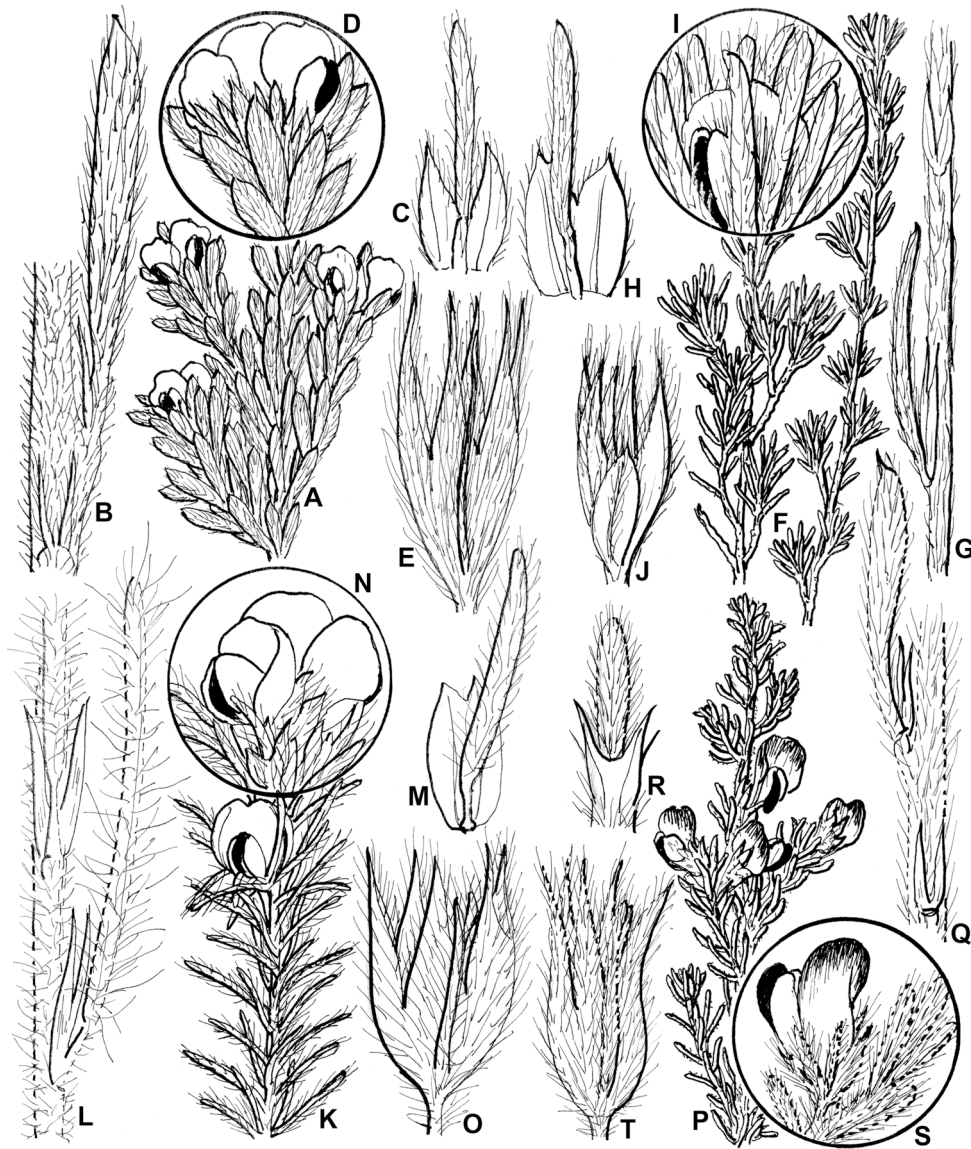


Fig. 27. A–E, *Pultenaea caniculata*: A, branch; B, leaf & stipules; C, bract; D, flowers; E, calyx. **F–J, *P. tenuifolia***: F, branches; G, leaf & stipules; H, bract; I, flower; J, calyx. **K–O, *P. teretifolia* var. *teretifolia***: K, branch; L, leaf & stipules; M, bract; N, flowers; O, calyx. **P–T, *P. teretifolia* var. *brachyfolia***: P, branch; Q, leaf & stipules; R, bract; S, flower; T, calyx. Illustrations by G.R.M. Dashorst.

19. ***Pultenaea stricta*** Sims, *Bot. Mag.* 38: 1588, pl. 1588 (1813). — **Illustr.**: Corrick, *Vict. Naturalist* 94: 27, fig. 4g–l (1977).

Erect to rarely prostrate shrub, (0.3–) 0.5–2.3 m high; branchlets ribbed, sparsely to densely pubescent, hairs appressed to ascending; leaves alternate, occasionally opposite, straight, smooth to rarely tuberculate, linear to elliptic or obtriangular to obovate, (2.8–) 4.1–15 × (1.9–) 2–8.6 mm, flat to V-shaped in transection, margins recurved and slightly thickened, apex acute to obtuse or rarely emarginate, with a short recurved mucro, pungent, base rounded to cuneate; adaxial lamina surface glabrous; abaxial lamina surface glabrous to moderately appressed-pubescent; only midrib prominent; petioles decurrent; stipules broad-lanceolate, 0.8–1.2 mm long, appressed, brown, lobes parallel to slightly convergent. **Inflorescence** terminal, head-like, 3- or more flowered; flowers subsessile; inflorescence-subtending bracts forming an involucre, persistent, scale-like or the basal ones leaf-like; flower-subtending bracts scale-like, ovate, 2–4 mm long, slightly hairy basally, apex often torn, light-brown, scarios, caducous; bracteoles inserted on the upper half of the calyx tube, linear to lanceolate, 2–4 mm long, hairy basally, brown, scarios, persistent; calyx 2–5 mm long, moderately to densely silky-pubescent; calyx lobes triangular, straight, upper lobes acute to acuminate, lower lobes acuminate; standard 8–9 mm long, yellow to orange streaked red; wings 7.8–9 mm long, yellow to orange; keel 7.2–9 mm long, orange to purple; ovary velutinous. **Pod** 5–6 mm long, compressed, brown, strigose, 2-seeded; seed 2–2.2 mm long, dark brown, dull. **Rigid bush-pea. Fig. 22L–P, Pl. 17M.**

S.A.: SE; Vic.; Tas. Restricted to the southern South-East region in S.A. (south of Robe). Found on sand, clay, or black soil in forests or coastal, open or wet heath, often in damp sites or swamps. One herbarium record is known from Adelaide, collected in 1929, but this is here treated as cultivated material. Flowers: Sep.–Nov. (–Jan.).

20. **Pultenaea tenuifolia** R.Br. & Sims, *Bot. Mag.* 46: 2086, pl. 2086 (1819). — *P. tenuifolia* var. *glabra* Benth., *Fl. Austral.* 2: 140 (1864). — **Illustr.:** M.G.Corrick, *Victorian Naturalist* 94: fig. 5a–f (1977).

Spreading or procumbent to prostrate shrub to 1 m high, sometimes mat-forming; branchlets terete, pubescent to villous, rarely glabrous; leaves alternate, crowded or in widely spaced clusters, petiolate, straight, smooth to rarely tuberculate, narrow-lanceolate to slender-terete, 4–8 (–10) × 0.3–0.5 (–0.7) mm, channeled above by the involute margins, apex straight, acute, not pungent, base attenuate; adaxial lamina surface if visible pubescent; abaxial lamina surface sparsely to moderately silky-pubescent to glabrescent, rarely glabrous at first, darker than above; only midrib prominent; petioles not decurrent; stipules narrow-triangular to lanceolate, acute to acuminate, 1–2 (–3) mm long, appressed to reflexed, brown or light-brown, midrib conspicuous. **Flowers** sessile, solitary or paired at the branchlet tips, rarely several in head-like clusters; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts persistent, usually leaf-like with enlarged stipules imbricating and largely concealing the calyx; bracteoles inserted at the base of the calyx tube, c. 2–3 mm long, ovate to lanceolate, scarious, appressed-pubescent distally and sometimes along the midrib, ciliate, apex often torn; calyx 4–6 mm long, tube usually glabrous; calyx lobes ± equal, triangular to lanceolate, acuminate, sparsely to moderately villous, longer than the tube; standard usually yellow with red markings on the back; wings yellow to orange; keel red distally; ovary and lower style velutinous; style gently curved. **Pod** turgid, villous, exceeding the calyx; seed c. 2 mm long, brown, dull. **Fig. 27F–J, Pl. 18A–F.**

S.A.: EP, MU, YP, SL, KI, SE; W.A.; Vic.; Tas. Widespread in southern S.A., from Eyre Peninsula to the South-East region, where it is mostly found in dry sclerophyll forests, open woodland, heath and mallee, and coastal cliffs and dunes. Flowers: Aug.–Dec.

P. canaliculata and *P. teretifolia* were treated as synonyms of *P. tenuifolia* by de Kok & West (2003), but both are maintained as distinct species here. They occur together at a number of sites without intergradation. In *P. tenuifolia* the bracteoles are broader and not densely villous, the calyx is largely concealed by the bracteoles and the enlarged stipules of the floral bracts, and the calyx tube is usually glabrous.

21. **Pultenaea teretifolia** H.B.Will., *Proc. Roy. Soc. Victoria* 35: 101 (1922). — *P. tenuifolia* auct. non. R.Br. & Sims: de Kok & J.G.West, *Austral. Syst. Bot.* 16: 260 (2003), partly.

Slender shrub, 0.3–0.6 (–1) m high; branchlets with soft long or short appressed to spreading rough hairs; leaves alternate, petiolate, straight to curved, linear-terete, 5–10 (–13) × c. 0.5 (–0.9) mm, 1-furrowed above by the involute margins, apex straight, obtuse, not pungent, base attenuate to cuneate; adaxial lamina surface glabrous to sparsely pubescent; abaxial lamina surface smooth to tuberculate, villous to scabrous with appressed to ascending antrorse hairs; only midrib prominent; petioles not decurrent; stipules narrow-lanceolate, 1–2 mm long, acuminate, brown, margins usually ciliate. **Flowers** sessile, subsessile or shortly pedicellate, solitary, paired or several, terminal on short branchlets; inflorescence-subtending bracts absent, or if present then leaf-like; flower-subtending bracts persistent, usually leaf-like with slightly enlarged stipules, or the inner ones sometimes with a much reduced lamina, or scale-like and 2- or 3-toothed, the enlarged stipules or scale-like bracts not concealing the calyx; bracteoles inserted at the base of the calyx tube, linear-lanceolate to subulate, c. 4 mm long, exceeding the tube, brown, densely villous; calyx c. 7 mm long, densely villous; upper 2 calyx lobes ovate-acute, the lower lobes lanceolate-acuminate to subulate, longer, about as long as the tube; standard usually yellow with red markings; wings yellow to orange, shorter; keel red or crimson, shortest; ovary velutinous. **Pod** brown, villous, slightly exceeding the calyx; seed c. 1.5 mm long, dark-brown to black.

S.A.: EP, KI. Endemic to S.A. Mainly found in sclerophyll woodland, mallee and heath.

P. teretifolia is similar in floral morphology to *P. canaliculata*, but the latter species has wider, elliptic to oblong or obovate to oblanceolate, concave to conduplicate leaves, and usually more or less equal calyx lobes.

1. Leaves 7–13 mm long; flowers 3–5 (rarely 6) 21b. **P. teretifolia** var. **teretifolia**
 1: Leaves 3–5 mm long; flowers 1 or 2 21a. **P. teretifolia** var. **brachyphylla**

- 21a. **Pultenaea teretifolia** var. **brachyphylla** H.B.Will., *Proc. Roy. Soc. Victoria* 35: 101 (1922).

Leaves 3–5 mm long. **Flowers** solitary or paired, rarely few in heads. **Fig. 27P–T.**

S.A.: KI. Endemic to Kangaroo Island. Flowers: Oct.–Nov.

21b. **Pultenaea teretifolia** H.B.Will. var. **teretifolia**.

Leaves mostly 7–10 (–13) mm long. **Inflorescence** 3–5 (–6)-flowered, terminal on the short branchlets. **Fig. 27K–O, Pl. 18G–I.**

S.A.: EP. Endemic to lower Eyre Peninsula. Flowers: Aug.–Oct.

22. **Pultenaea trichophylla** H.B.Will. ex J.M.Black, *Fl. S. Austral.* 2: 301 (1924).

Erect to prostrate slender shrub, 0.2–0.3 (–0.5) m high; branchlets sparsely to moderately pubescent with ascending to spreading usually curled hairs; leaves alternate or rarely opposite, straight, smooth to rarely tuberculate, linear to elliptic or lanceolate, 6–9 × 0.8–1.8 mm, flat to U-shaped in transection, margins flat to incurved, long-ciliate to glabrescent, apex straight, acute with a fine mucro to c. 5 mm long, pungent, base attenuate to cuneate; adaxial lamina surface glabrous; abaxial lamina surface sparsely villous or appressed-pubescent to glabrescent, 3-nerved; petioles not decurrent; stipules lanceolate, 1–2 mm long, acute, keeled, appressed to erect, brown, glabrous. **Inflorescence** dense to lax; flowers subsessile or on pedicels to c. 1 mm long, at the tips of the short branchlets which are mostly naked except for the often dense terminal cluster of leaves surrounding and much surpassing the flowers, or along the main axis on younger parts of the plant; inflorescence-subtending bracts leaf-like to scale-like; flower-subtending bracts usually leaf-like, rarely with enlarged stipules, the inner ones sometimes with the lamina reduced to a spike-like structure, or scale-like; bracteoles inserted immediately below the calyx tube, ovate-lanceolate, acute, 1–1.5 mm long, slightly keeled, brown; calyx 2.2–3 mm long, brown, the tube usually glabrous; calyx lobes pubescent or glabrous except for the ciliate margins, upper lobes acute, lower lobes acuminate; standard 5–7.5 mm long, yellow to orange, with red markings; wings 5.5–6.2 mm long, yellow to orange; keel 5–6.8 mm long, red to purple; ovary and lower style velutinous; style gently curved. **Pod** c. 4 mm long, brown, hispid; seed not seen. **Tufted bush-pea. Fig. 26F–J.**

S.A.: EP. Endemic to southern Eyre Peninsula on the hills around Koppio and Uranno, on sandy to clay loam to loamy gravel in open woodland or mallee. Flowers: Sep.–Dec.

(Rare status in S.A.; listed as Endangered in Australia)

23. **Pultenaea trifida** J.M.Black, *Trans. Proc. & Rep. Roy. Soc. South Australia* 33: 224 (1909). — **Illustr.:** J.Z.Weber & Beth Chandler, *J. Adelaide Bot. Gard.* 10: 151 (1987); A.Prescott, *It's Blue with Five Petals Kangaroo Isl.* 132, fig. 2 (1995).

Erect to prostrate shrub, 0.4–1 (–1.5) m high; branchlets sparsely to moderately white- and rusty-pubescent to tomentose; leaves alternate, crowded, straight to recurved, ovate or obovate to broadly elliptic, 1.8–8.2 × 2–3 mm, flat to broadly U-shaped in transection, margins involute, apex recurved, acute to obtuse, with a bristle-like mucro to c. 0.5 mm long, pungent, base rounded; adaxial lamina surface sparsely pubescent, hairs ascending to spreading; abaxial lamina surface densely pubescent or villous, hairs ascending to spreading; midrib and rarely the lateral veins prominent; petioles not decurrent; stipules lanceolate, acute to acuminate, 1.2–2.2 mm long, appressed to erect, brown. **Flowers** subsessile, solitary, paired, or few, crowded terminally on proliferous short branches or axillary; inflorescence-subtending bracts leaf-like with enlarged stipules; flower-subtending bracts appearing scale-like, 2- or 3-lobed, 2-keeled, margins scarious, ciliate, stipules enlarged; bracteoles inserted immediately below the calyx tube, trifid, 2.5–4.5 mm long, central lobe usually leaf-like, lanceolate-subulate, longer and often broader than the 2 lateral pubescent subulate lobes; calyx 4.3–4.5 mm long, sparsely to moderately pubescent; calyx lobes straight, acuminate, the upper 2 lobes broader and connate higher up; standard 6–7 mm long, yellow to orange with red markings on front and back; wings 5.2–6 mm long, yellow to orange; keel 5.5–6 mm long, yellow with a red apex; ovary and lower style velutinous; style gently curved. **Pod** c. 4.5 mm long, turgid, brown, rusty-pubescent, hardly exceeding the calyx; seed c. 1.8 mm long. **Kangaroo Island bush-pea. Fig. 26K–O.**

S.A.: KI. Endemic to and common on Kangaroo Island, where it is found on sand or yellow-brown sandy loams in wet heath or mallee. Flowers: Sep.–Nov. (–Jan.).

24. **Pultenaea trinervis** J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 47: 370 (1923). — *P. villifera* var. *australis* Benth., *Fl. Austral.* 2: 137 (1864), *nom. dub. fide* de Kok & J.G.West, *Austral. Syst. Bot.* 16: 271 (2003). — **Illustr.:** Dashorst & Jessop, *Pl. Adelaide Plains & Hills* ed. 3, 89, pl. 11 (2006).

Erect to prostrate shrub, 0.15–0.5 (–1) m high; branchlets villous, hairs appressed to spreading; leaves alternate, straight, smooth, ovate-lanceolate to lanceolate or elliptic, (5–) 6.8–13.5 × (1.8–) 2–4 (–5.6) mm, flat to U-shaped

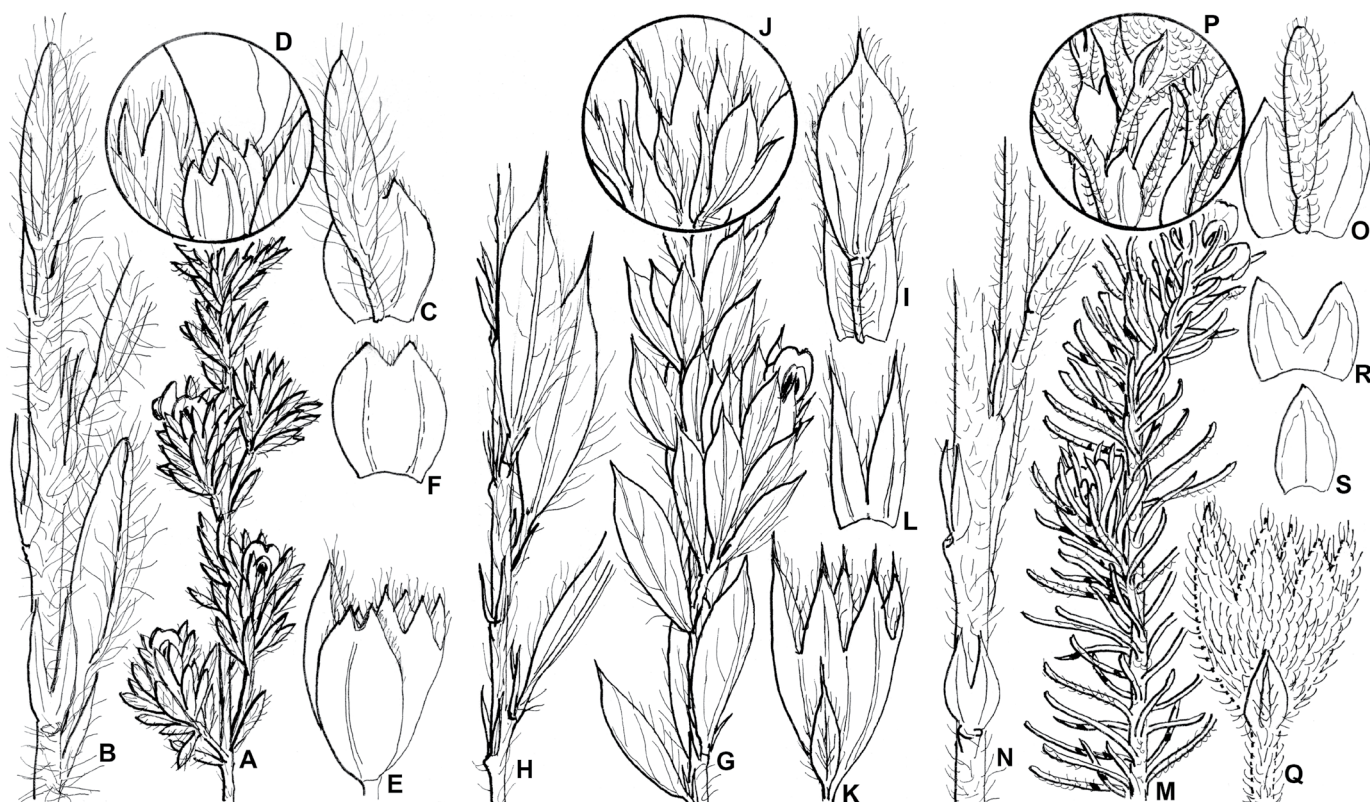


Fig. 28. A–F, *Pultenaea trinervis*: A, branch; B, leaves & stipules; C, bract; D, base of flowers; E, calyx; F, stipules of bract (C). G–L, *P. villifera* var. *glabrescens*: G, branch; H, leaves & stipules; I, bract; J, base of flower; K, calyx; L, stipules of bract (I). M–Q, *P. viscidula*: M, branch; N, leaves & stipules; O, bract; P, base of flowers; Q, calyx; R–S, flower subtending bracts. Illustrations by G.R.M. Dashorst.

in transection, margins incurved, long-ciliate, apex straight, acute, sometimes shortly mucronate but not pungent, base cordate to attenuate; glabrous and paler above, villous or appressed-pubescent and 3-nerved below; petioles not decurrent, distinctly villous; stipules ovate-acute to lanceolate, 1.8–3.5 mm long, appressed to erect, usually connate for much of their length, often ciliate and pubescent on the back, persistent. **Flowers** subsessile, solitary or paired, terminal on short proliferous branchlets or axillary; enlarged stipules of the leaf-like flower-subtending bracts enclosing the calyx tube but leaving the calyx lobes exposed; bracteoles inserted immediately below the calyx tube, ovate-oblong to obovate-oblong, 2–3.2 mm long, usually exceeding the tube, slightly 2-lobed, keeled, glabrous except for the ciliate margins; calyx 3–4 mm long, straw-coloured to reddish, pubescent with short white appressed hairs to glabrescent; calyx lobes triangular, straight, acute to acuminate, shorter than the tube, ciliate; standard 7–8.5 mm long, yellow to orange with red markings on front; wings 7.2–8 mm long, yellow to orange; keel 7–7.5 mm long, semicircular in outline, yellow-green to red; ovary and lower style velutinous. **Pod** c. 4 mm long, turgid, brown, pubescent, exceeding the calyx, usually 1-seeded; seed c. 1.5 mm long, brown, dull. **Three-nerved bush-pea. Fig. 28A–F, Pl. 18J & K.**

S.A.: EP, SL, KI. Endemic to S.A. where it is widespread on Kangaroo Island and in the southern Mt Lofty Ranges, also southern Eyre Peninsula. Found on sand to gravelly clay soils in heath and mallee. Flowers: Sep.–Jan.

This species is very similar to *P. trichophylla*, but has non-pungent and usually wider leaves, usually longer stipules, and longer and broader bracteoles.

25. ***Pultenaea vestita*** R.Br. in Aiton, *Hort. Kew.* ed. 2, 3: 19 (1811).

Erect to prostrate shrub, 0.2–2 m high, sometimes mat-forming; branchlets usually spreading, diffuse, slender, sparsely to densely pubescent, hairs ascending to erect; leaves alternate, straight, linear to elliptic or lanceolate to ovate, (3–) 5.2–9.2 × (0.7–) 0.8–1.8 (–2) mm, flat to broadly U-shaped in transection, margins involute, apex straight, acute, shortly mucronate, slightly pungent, base attenuate to cuneate; both surfaces glabrous, concolourous or paler above, sometimes slightly tuberculate below; petioles not decurrent; stipules ovate-acute to lanceolate-acuminate, 2.8–5.5 mm long, brown, connate for much of their length, persistent, closely imbricating the branches or erect, ciliate, midrib sometimes pubescent. **Flowers** sessile, few in dense terminal heads often on branchlets or axillary at first; inflorescence-subtending bracts usually leaf-like; stipules of the leaf-like flower-subtending bracts ovate, to 6 mm long, midribs ending in points, margins scarios, ciliate, closely imbricating the flowers; bracteoles

inserted close under the calyx tube, lanceolate, acuminate, 5.2–7 mm long, tri-dentate, the central lobe leaf-like with a row of stiff spreading hairs on the midrib, the outer stipular lobes scarious; calyx 7–8.5 mm long, glabrous to sparsely hairy; calyx lobes straight, lanceolate, long-subulate to nearly pungent-pointed, longer than the tube; corolla scarcely exceeding the calyx; standard 8.5–9.2 mm long, yellow to red, sometimes with red markings on front and back; wings 7–8.5 mm long, yellow to red; keel 7.5–8.3 mm long, yellow to red; ovary velutinous; style gently curved to hooked. **Pod** enclosed by the calyx, slightly compressed. **Fig. 25F–J.**

S.A.: EP, YP, KI; W.A. In S.A. restricted primarily to southern tips of Eyre Peninsula and Yorke Peninsula, and eastern Kangaroo Island. Found in dry sclerophyll forests, mallee and heaths on cliffs or dunes. Flowers: Nov.–Jan.

The leaves of the Kangaroo Island plants tend to be shorter and wider than those from the mainland, but this variation appears to be continuous.

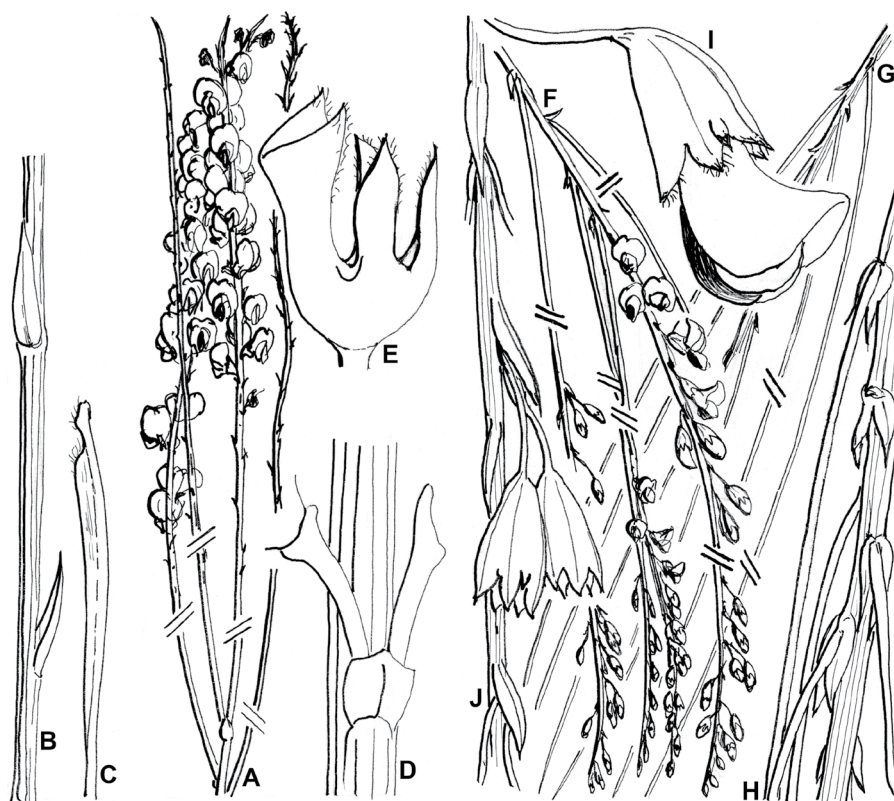


Fig. 29. A–E, *Sphaerolobium minus*: A, branch; B, twig with stipules; C, leaf; D, base of flowers; E, calyx. F–J, *Viminaria juncea*: F, flowering branch; G, leaves; H, leaf bases & stipules; I, flower; J, branch with calyxes. Illustrations by G.R.M. Dashorst.

26. ***Pultenaea villifera* DC., *Prodr.* 2: 111 (1825), var. *glabrescens* J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 47: 370 (1923). — **Illustr.:** A.Prescott, *It's Blue with Five Petals Kangaroo Isl.* 132 (1995).**

Erect to prostrate shrub, 1–2 (–3) m high; branchlets glabrous or sparsely to moderately villous or shortly pubescent; leaves alternate, straight, often tuberculate, ovate to lanceolate or elliptic, 14–26 × 5–9 mm, flat to concave above, margins flat to incurved or involute, often long-ciliate, apex straight, acute to acuminate, pungent, base rounded to attenuate; adaxial lamina surface often villous; abaxial lamina surface glabrous to rarely pubescent; midrib and often 2 or more lateral veins prominent, often villous; petioles not decurrent; stipules narrow-lanceolate, acuminate, 2–5 mm long, appressed to reflexed, connate or free. **Flowers** subsessile or on pedicels to c. 2 mm long, axillary, solitary; flower-subtending bracts leaf-like; bracteoles inserted at the base of the calyx tube, lanceolate, 2–5 mm long, longer than the tube, brown, the midrib and base villous, margins scarious, ciliate; calyx 3–6 mm long, sparsely to moderately pubescent basally and on the ciliate lobes; upper 2 calyx lobes broader, ovate-acute, connate higher up, not falcate, the lower lobes narrower, acuminate; standard 6.5–10 mm long, yellow to orange with red markings on the front; wings 7–9 mm long, yellow to orange; keel 7–9 mm long, red; ovary and lower style velutinous; style hooked. **Pod** 6–7.5 mm long, turgid, brown, pubescent, 2-seeded; seed 2–3 mm long, dark-brown, smooth. **Yellow bush-pea, Splendid bush-pea. Fig. 28G–L, Pl. 18L, 19A & B.**

S.A.: KI. This variety is endemic to Kangaroo Island where it is restricted to the northern coast between Cape Cassini and Cape Borda. Found on sandy to gravelly clay soils in dry sclerophyll forests to open mallee woodland, heath, grassland, and coastal cliffs. Flowers: Oct.–Dec.

P. villifera var. *villifera* is restricted to N.S.W. and is distinguished by narrower and less pungent leaves, and more pubescent stems and leaves.

(Vulnerable status in S.A.)

27. **Pultenaea viscidula** Tate, *Trans. & Proc. Roy. Soc. South Australia* 7: 69 (1885). — **Illustr.:** Dashorst & Jessop, *Pl. Adelaide Plains & Hills* ed. 3, 89, pl. 12 (2006).

Erect shrub, 0.2–3 m high; branchlets pendulous, sparsely to moderately pubescent, hairs ascending to spreading; leaves alternate, straight to slightly curved, narrow-linear to linear-terete, (4–) 5–14 × 0.3–0.8 mm, concave to channeled or 1-furrowed above, margins involute, apex straight, acute to obtuse, base attenuate to cuneate; adaxial lamina surface glabrous, paler than below; abaxial lamina surface with minute spreading to antrorse hairs, often slightly tuberculate; petioles not decurrent; stipules ovate-lanceolate, 0.5–1 mm long, appressed to erect, viscid, exuding a yellow wax, becoming black-brown. **Inflorescence** terminal, head-like, pseudo-umbellate, 2–6 (–13)-flowered; flowers on stout erect pubescent pedicels 1.5–3 mm long; inflorescence-subtending bracts leaf-like with enlarged stipules; flower-subtending bracts leaf-like to scale-like, when scale-like ovate, the apex entire or shallowly 2- to 3-lobed, the central portion often pubescent; bracteoles inserted at the base of the calyx tube, ovate, 1–1.4 mm long, slightly keeled, viscid, brown; calyx 3–4.5 mm long, sparsely to moderately pubescent; calyx lobes straight, acute to acuminate, ciliate, the upper 2 lobes ovate-lanceolate to triangular, connate higher up, the lower lobes narrower, longer than the tube; standard 7–7.6 mm long, yellow to orange with red markings on front and back; wings 6–7 mm long, yellow to orange; keel 6–7 mm long, yellow-red to green; ovary velutinous; style gently curved. **Pod** 2.5–5 mm long, brown, pubescent, exceeding the calyx; seed 2.2–2.5 mm long, black. **Dark bush-pea. Fig. 28M–Q, Pl. 19C–E.**

S.A.: SL, KI. Endemic to S.A. and common in western and northern Kangaroo Island, also Fleurieu Peninsula. Found on yellow soils in sclerophyll woodland and heath. Flowers: Sep.–Nov.

This species produces a yellow waxy exudate from the young stipules similar to that of *P. graveolens*, but the wax is not scented.

21. SPHAEROLOBIUM Sm.

Ann. Bot. (König & Sims) 1: 509 (1805).

(Greek *sphaira*, ball, sphere; *lobos*, pod; alluding to the globular fruit.)

Shrubs or subshrubs; stems erect, rush-like, terete, glabrous, often leafless, often with longitudinal ridges; leaves when present simple, alternate or irregularly opposite or whorled, linear or subulate, entire, sessile or subsessile; stipules usually absent. **Inflorescence** a terminal or axillary raceme or cluster; bracts and bracteoles often caducous; calyx campanulate, 5-lobed; calyx lobes imbricate, the upper 2 larger, falcate, united higher up; corolla papilionoid, petals shortly clawed, usually yellow to red; standard ± orbicular, emarginate; wings oblong to obovate, ± falcate, shorter than the standard; keel obtuse, straight or curved, usually shortest; stamens 10, free; anthers uniform; ovary stipitate, glabrous; style much incurved, subulate or dilated at the base, with a membranous wing or a ring of hairs below the stigma; ovules 2, on short thick funicles. **Pod** stipitate, oblique-globose or compressed, 1–2-seeded; seeds ovoid, black or brownish, arillate or exarillate.

An endemic Australian genus with c. 22 species; 1 in S.A. It occurs in all states.

There is a single record of *Sphaerolobium vimineum* Sm. in S.A. from the southern tip of Eyre Peninsula. This species is not included here since this specimen could not be sighted and its identification could not be verified. The occurrence of *S. vimineum* in South Australia is dubious. The species is similar to *S. minus*, but can be distinguished by its darkly punctate (appearing spotted) calyx, wing petals that are longer than the keel, and style wings nearly as broad as long and less than one-quarter the length of the style. *Sphaerolobium vimineum* occurs in W.A., Qld, N.S.W., Vic., and Tas., and appears to occur less frequently than *S. minus* in the eastern States, but is found in similar swampy habitats.

Reference: Weber (1986), Jeanes (1996), Rozefelds *et al.* (2002).

1. **Sphaerolobium minus** Labill., *Nov. Holl. Pl.* 1: 108, t. 138 (1805). — *Sphaerolobium vimineum* auct. non. Sm.: J.Z.Weber, *Fl. S. Austral.* 2: 687 (1986). — **Illustr.:** A.C.Rozefelds *et al.*, *Pap. & Proc. Roy. Soc. Tasmania* 136: 158, fig. 3 (2002).

Erect rush-like shrub to 60 cm high; stems terete, faintly ribbed, glabrous, leafless or with few leaves; branchlets few, long, ascending; leaves when present scattered, alternate, linear-lanceolate, to c. 5 mm long, apex acute, almost sessile, decurrent, caducous; stipules absent. **Inflorescence** a long terminal raceme of usually paired axillary flowers; peduncle to c. 0.5 mm long, produced into a subulate tip between flowers; pedicels 1–3 mm long, glabrous; bracts scale-like, ovate, c. 1 mm long; bracteoles ovate, 1.5–3 mm long, green-black, inserted below

the calyx, caducous but leaving a conspicuous ridge on the pedicel; calyx 3–4 mm long, uniformly green-black, ± glabrous; calyx lobes imbricate, unequal, longer than the tube, the upper 2 lobes longer and broader, fused along most of their length to form a cuneate lip, the lower lobes subulate; petals yellow or yellow with reddish markings; standard broad-obovate, emarginate, 5–6 mm long; wings ± obovate, c. equal to the keel; keel obtuse, somewhat incurved; stilar wing much longer than broad, more than one-quarter the length of the style. **Pod** globose, 3–5 mm in diameter, turgid, long-stipitate, 1–2-seeded; seeds c. 2 mm long, smooth, sometimes mottled, exarillate. **Globe-pea, common eastern globe-pea. Fig. 29A–E, Pl. 19F & G.**

S.A.: EP, MU (E side of Mt Lofty Ra.), SL, KI, SE; Qld; N.S.W.; Vic.; Tas. Restricted mainly to the southern tip of Eyre Peninsula, the southern Mt. Lofty Ranges, and south of Kingston in the south-east. It is found in woodland and scrub, often close to waterways and swamps. Flowers: Sep.–Dec.

(Rare status in S.A.)

22. VIMINARIA Sm.

Ann. Bot. (König & Sims) 1: 507 (1805).

(Latin *vimen*, a twig; alluding to the twig-like seemingly leafless branches.)

Perennial shrubs; branches rush-like, glabrous; leaves alternate, usually reduced to long filiform petioles; stipules small, scarious. **Inflorescence** a terminal or upper axillary raceme or panicle; bracts scarious; bracteoles absent; calyx 5-lobed, campanulate; calyx lobes short, subequal; corolla papilionoid, petals long clawed, yellow or orange with red markings; standard orbicular, emarginate; wings oblong, shorter than the standard; keel slightly curved, obtuse, shortest; stamens 10, free, anthers uniform; ovary subsessile, glabrous, fusiform, 2-ovulate; style filiform, with short appressed hairs; stigma small, terminal. **Pod** sessile, obovoid, obliquely beaked, indehiscent, usually 1-seeded; seed arillate.

A monotypic genus endemic to Australia.

Reference: Weber (1986), Wiecek (1991c), Jeanes (1996).

1. **Viminaria juncea** (Schrad. & J.C.Wendl.) Hoffmanns., *Verz. Pfl.-Kult.* 200 (1824). — *Sophora juncea* Schrad. & J.C.Wendl., *Sert. Hannov.* 9 (1795). *Daviesia denudata* Vent., *Choix. Pl.* 1: 6 (1803), *nom. illeg.*; *Viminaria denudata* (Vent.) Sm., *Ann. Bot. (König & Sims)* 1: 507 (1805), *nom. illeg.* — **Illustr.:** *Fl. S. Austral.* 2: 687, fig. 371a (1986); *Fl. N.S.W.* 2: 472 (1991); *Fl. Victoria* 3: 754, fig. 151g-h (1996).

Shrub usually 1–5 m high; branches erect or pendulous, terete, glabrous, bright green, striate; juvenile leaves 1–3-foliolate, leaflets ovate to linear-lanceolate, mostly 10–60 × 3–15 mm; mature leaves reduced to long, slender petioles, c. 3–30 cm long; stipules lanceolate, c. 1 mm long, glabrous. **Flowers** 7–10 mm long, solitary, axillary, often opposite, in racemes 20 cm or more long; pedicels slender, glabrous, to c. 5 mm long; bracts lanceolate, 2–4 mm long, decurrent, glabrous or with white appressed hairs; calyx campanulate, c. 4 mm long, base turbinate and tapering into the pedicel, glabrous or with a few appressed hairs; calyx lobes triangular, subequal, shorter than the tube; corolla 8–10 mm long, yellow to orange, often with reddish markings; standard orbicular, emarginate, yellow with reddish streaks; wings obovate-oblong, yellow; keel obtuse, reddish. **Pod** obovoid, 4–6 × 3–4 mm, almost black, the surface rather soft, somewhat wrinkled to reticulate, obliquely beaked with the remains of the style, usually indehiscent, 1-seeded; seed ovate-reniform, c. 2–3.5 × c. 1.7 mm, dull, light-brown, with dark-brown mottling; aril small, annular. **Golden spray, native broom. Fig. 29F–J, Pl. 19H–L.**

S.A.: NL, SL, KI, SE; W.A.; Qld; N.S.W.; Vic.; Tas. Occurs mainly in the southern Mt. Lofty Ranges and in far south-eastern S.A., in swampy habitats. Flowers: Oct.–Feb.

(Rare status in S.A.)

References

- Bentham, G. (1864). *Hovea*. In: *Flora Australiensis* 2: 171–176. (L. Reeve & Co.: London)
- Cameron, B.G. & Prakash, N. (1994). Variations of the megagametophyte in the Papilionoideae. In: Ferguson, I.K. & Tucker, S. (eds.), *Advances in legume systematics 6: structural botany*, pp. 97–115. (Royal Botanic Gardens, Kew)
- Chandler, G.T. & Crisp, M.D. (1997). Contributions towards a revision of *Daviesia* (Fabaceae: Mirbelieae). IV. *D. ulicifolia* sens. lat. *Austral. Syst. Bot.* 10: 31–48
- Chandler, G.T., Crisp, M.D., Cayzer, L.W. & Bayer, R.J. (2002). Monograph of *Gastrolobium* (Fabaceae: Mirbelieae). *Austral. Syst. Bot.* 15: 619–739
- Chappill, J.A., Wilkins, C.F. & Crisp, M.D. (2008). Taxonomic revision of *Gompholobium* (Leguminosae: Mirbelieae). *Austral. Syst. Bot.* 21: 67–151
- Cooke, D.A. (1987). *Pultenaea quadricolor* J.Black is a synonym of *P. laxiflora* Benth. *J. Adelaide Bot. Gard.* 10: 127–129
- Corrick, M.G. (1987). Bush-peas of Victoria – genus *Pultenaea* Sm. (Fabaceae) – 22. *Vict. Naturalist* 104: 141–144
- Corrick, M.G. (1996). *Pultenaea*. In: Walsh, N.G. & Entwisle, T.J. (eds), *Flora of Victoria* 3: 765–793. (Inkata Press: Port Melbourne)
- Crisp, M.D. & Cook, L.G. (2003). Phylogeny and embryo sac evolution in the endemic Australasian papilionoid tribes Mirbelieae and Bossiaeeae. In: Klitgaard, B.B. & Bruneau, A. (eds.), *Advances in legume systematics 10: higher level systematics*, pp. 253–268. (Royal Botanic Gardens, Kew)
- Crisp, M.D. (1980). *Daviesia arenaria* (Fabaceae), a new species from the mallee lands of south-eastern Australia. *J. Adelaide Bot. Gard.* 2: 163–166
- Crisp, M.D. (1981). *Leptosema*. In: Jessop, J.P. (ed.), *Flora of Central Australia*: 147–148. (Reed: Sydney)
- Crisp, M.D. (1982). Notes on *Daviesia* and *Pultenaea* (Fabaceae) in South Australia. *J. Adelaide Bot. Gard.* 6: 55–66
- Crisp, M.D. (1991a). *Daviesia*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 472–478. (New South Wales University Press: Sydney)
- Crisp, M.D. (1991b). Contributions towards a revision of *Daviesia* (Fabaceae: Mirbelieae). II. The *D. latifolia* group. *Austral. Syst. Bot.* 4: 229–298
- Crisp, M.D. (1995). Contributions towards a revision of *Daviesia* (Fabaceae: Mirbelieae). III. A synopsis of the genus. *Austral. Syst. Bot.* 8: 1155–1249
- Crisp, M.D. (1999). Revision of *Leptosema* (Fabaceae: Mirbelieae). *Austral. Syst. Bot.* 12: 1–54
- de Kok, R.P.J. & West, J.G. (2003). A revision of the genus *Pultenaea* (Fabaceae) 2. Eastern Australian species with velutinous ovaries and incurved leaves. *Austral. Syst. Bot.* 16: 229–273
- de Kok, R.P.J. & West, J.G. (2004). A revision of the genus *Pultenaea* (Fabaceae) 3. The eastern species with recurved leaves. *Austral. Syst. Bot.* 17: 273–326
- Jeanes, J.A. (1996). Mirbelieae. In: Walsh, N.G. & Entwisle, T.J. (eds.), *Flora of Victoria* 3: 742–802. (Inkata Press: Port Melbourne) [all genera except *Pultenaea*, Corrick (1996)]
- Jessop, J.P. & Toelken, H.R. (1986). *Flora of South Australia*, vol. 2. (Government Printer: Adelaide)
- Lang, P.J. (1998). *Pultenaea kraehenbuehlii*, a new species endemic to the northern Mt Lofty Ranges, South Australia. *J. Adelaide Bot. Gard.* 18: 25–32
- Lazarides, M., Cowley, K. & Hohnen, P. (1997). *CSIRO Handbook of Australian Weeds*. (CSIRO Publishing: Collingwood)
- Maconochie, J.R. (1981). *Isotropis*. In: Jessop, J.P. (ed.), *Flora of Central Australia*: 146–147. (Reed: Sydney)
- Orthia, L.D., Cooke, L.G. & Crisp, M.D. (2005a). Generic delimitation and phylogenetic uncertainty: an example from a group that has undergone explosive radiation. *Austral. Syst. Bot.* 18: 41–47
- Orthia, L.D., Crisp, M.D., Cook, L.G. and de Kok, R.P.J. (2005b). Bush peas: a rapid radiation with no support for the monophyly of *Pultenaea* (Fabaceae: Mirbelieae). *Austral. Syst. Bot.* 18: 133–147
- Polhill, R.M. (1981). Mirbelieae. In: Polhill, R.M. & Raven, P.H. (eds.), *Advances in legume systematics* 1, 391–392. (Royal Botanic Gardens, Kew)

- Porteners, M.F. (1991a). *Eutaxia*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 449. (New South Wales University Press: Sydney)
- Porteners, M.F. (1991b). *Isotropis*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 467. (New South Wales University Press: Sydney)
- Ross, J.H. (1982). A revision of the genus *Templetonia* R.Br. (Papilionaceae), *Muelleria* 5: 1–29
- Ross, J.H. (1983). A revision of the genus *Platylobium* Sm. (Papilionaceae). *Muelleria* 5: 127–141.
- Ross, J.H. (1989). Notes on *Hovea* R.Br. (Fabaceae): 2. *Muelleria* 7: 21–38
- Ross, J.H. (1996). Notes on *Hovea* R.Br. (Fabaceae): 6. *Muelleria* 9: 15–28
- Rozefelds, A.C., Butcher, R. & Murray, W. (2002). The species of *Sphaerolobium* (Fabaceae) in Tasmania. *Pap. & Proc. Roy. Soc. Tasmania* 136: 153–158
- Schrire, B.D., Lavin, M., Barker, N.P. & Forest, F. (2009). Phylogeny of the tribe Indigofereae (Leguminosae–Papilionoideae): Geographically structured more in succulent-rich and temperate settings than in grass-rich environments. *Amer. J. Bot.* 96: 816–852
- Thompson, I.R. (2001). A Morphometric Analysis and Revision of Eastern Australian *Hovea* (Brongniartieae–Fabaceae). *Austral. Syst. Bot.* 14: 1–99
- Thompson, I.R. (2010). A revision of the leafless species of *Templetonia* (Brongniartieae: Fabaceae). *Muelleria* 28: 53–65
- Thompson, I.R. (2011a). A revision of *Goodia* (Fabaceae: Bossiaceae). *Muelleria* 29: 141–153
- Thompson, I.R. (2011b). A revision of *Platylobium* (Fabaceae: Bossiaceae). *Muelleria* 29: 154–172
- Thompson, I.R. (2011c). A revision of the arid-zone genera of the Bossiaceae (Fabaceae): *Muelleranthus*, *Ptychosema* and *Aenictophyton*. *Muelleria* 29: 173–189
- Thompson, I.R. (2012). A revision of eastern Australian *Bossiaea* (Fabaceae: Bossiaceae). *Muelleria* 30(2): 106–174.
- Weber, J.Z. (1986). Mirbelieae. In: Jessop, J.P. & Toelken, H.R. (eds.), *Flora of South Australia* 2: 658–688. (Government Printer: Adelaide)
- Weber, J.Z. (1995). A new South Australian species of *Pultenaea* (Fabaceae, Mirbelieae). *J. Adelaide Bot. Gard.* 16: 23–26
- Wheeler, J., Marchant, N. & Lewington, M. (2001a). *Aotus*. In: *Flora of the South West: Bunbury–Augusta–Denmark* 2: 731–733. (Australian Biological Resources Study, University of Western Australia Press: Press)
- Wheeler, J., Marchant, N. & Lewington, M. (2001b). *Gompholobium*. In: *Flora of the South West: Bunbury–Augusta–Denmark* 2: 753–756. (Australian Biological Resources Study & University of Western Australia Press: Perth)
- Wiecek, B. (1991a). *Aotus*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 478–479. (New South Wales University Press: Sydney)
- Wiecek, B. (1991b). *Phyllota*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 479–480. (New South Wales University Press: Sydney)
- Wiecek, B. (1991c). *Viminaria*. In: Harden, G.J. (ed.), *Flora of New South Wales* 2: 472. (New South Wales University Press: Sydney)
- Wilkins, C.F., Chappill, J.A. & Henderson, G.R. (2010). An account of *Eutaxia* (Leguminosae: Mirbelieae) with a focus on Western Australian species. *Nuytsia* 20: 109–167
- Wilson, P.G. & Rowe, R. (1994). The *Indigofera trita* complex (Fabaceae: Indigofereae) in Australia. *Teloepa* 5: 637–645
- Wilson, P.G. & Rowe, R. (2010). New taxa and typifications in *Indigofera* (Fabaceae) for South Australia. *J. Adelaide Bot. Gard.* 24: 67–73



A



D



E

Bossiaea cinerea (A, B & C)

B. peninsularis (D, E & F)



B



F



C



G

B. prostrata (G & H)



H

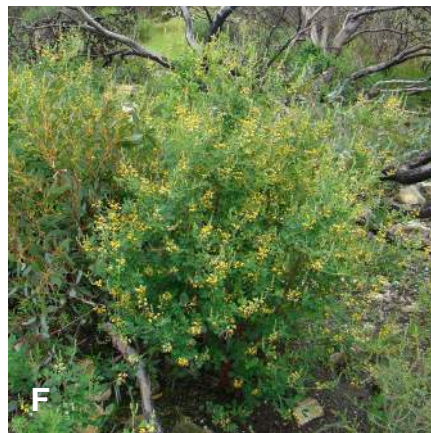
PL. 1. A, immature fruit, & B; Nangwarry N.F.R., SE, P.J. Lang 2791. C, Mt Burr, SE. D & E, EP, F, Lake Brimpton Rd., EP, D.J. Duval 1450. G, Waite Cons. Res., SL, BS156-48. H, Upper Sturt, SL. Photos: A, B & G, P.J. Lang; C, D.N. Kraehenbuehl; D-F, S.A. Seed Conservation Centre, DEWNR; H, A.C. Robinson.



Bossiaea walkeri (A & B)



Goodia medicaginea (C, D, E, F, G & H)

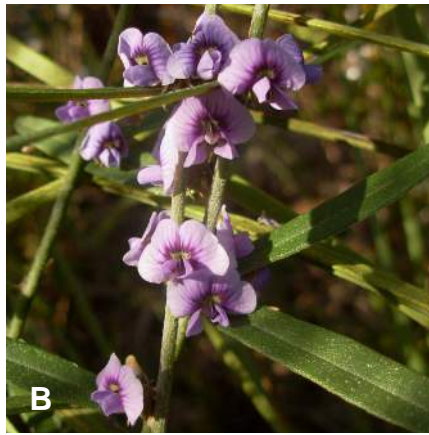


Platylobium obtusangulum



Muelleranthus stipularis

Pl. 2. A, SW of Peterby Yards, EP. B, Mulgathing Stn, GT. C–H (F, habit post-fire; G, upper side of leaf; H, underside of leaf), Innes N.P., YP, INP-849. I, Mylor, SL. J, ESE of Walalkara Homeland, NW, BS23-30056. Photos: A, P.J. Lang; B, F. Kutsche, DEWNR; C–H, T.M. Jaques; I, J.G. Conran; J, A.C. Robinson, DEWNR.

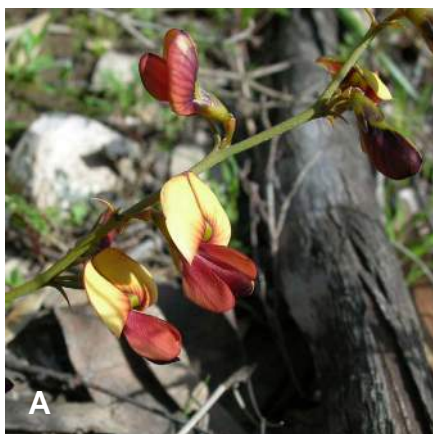


Hovea heterophylla (A & B)



H. pungens (C & D)

Pl. 3. A & B, Deadman's Swamp N.F.R., SE. C & D, Cox Scrub C.P., SL. Photos: A & B, B.T. Haywood; C & D, J. Burgher.



A
Templetonia aculeata



B
T. retusa (B, C, D & E)



C



D



E



F
T. stenophylla (F & G)



G



H
T. rossii (H & I)



I

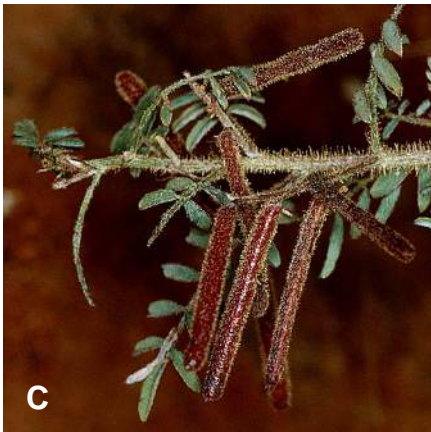
Pl. 4. **A**, Mt. Remarkable N.P., FR. **B**, cultivated. **C**, Innes N.P., YP, INP-18. **D**, immature and mature (black) pods, Innes N.P., YP, INP-431. **E**, NNW of Coorabie, EP, BS94-3601. **F**, E of Wolseley, SE, T.S. Te 501. **G**, SE. **H**, all-yellow variant, Lock, EP, D.N. Kraehenbuehl 5301. **I**, Hambidge C.P., EP. Photos: A, F & G, S.A. Seed Conservation Centre, DEWNR; B, P.J. Lang; C & D, T.M. Jaques; E, P.D. Cauty DEWNR; H, D.N. Kraehenbuehl; I, J.M. Jones.



A
Indigofera australis subsp. *australis*



B
I. colutea (B & C)



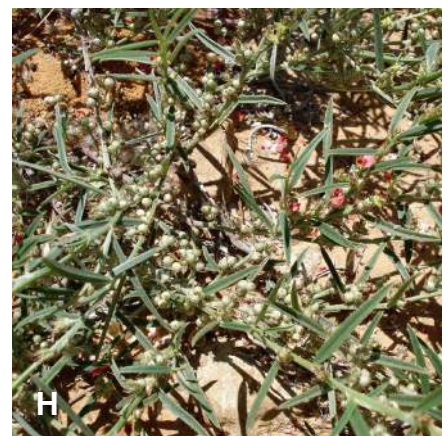
D **E**
I. cornuligera subsp. *flindersensis* (D & E)



F
I. georgei



G **H**
I. linifolia (G & H)



I **J** **K**
I. linnaei (I, J & K)



Pl. 5. **A**, Belair N.P., SL. **B**, N.T. **C**, near Umawa, NW, BS23-30230. **D**, FR. **E**, Italowie Gorge, FR. **F**, SSW of Walytjatjata, NW. **G** & **H**, Cordillo Downs Stn, LE, D.J. Duval 1994. **I-K**, *ibid.*, D.J. Duval 1989. Photos: A & B, A.C. Robinson; C, P.J. Lang, DEWNR; D, E & G-K, S.A. Seed Conservation Centre, DEWNR; F, A.C. Robinson, DEWNR.



Indigofera australis subsp. *hesperia* (A & B)

I. helmsii



I. leucotricha

I. longibractea (E & F)



I. psammophila (G & H)

Pl. 6. **A.** Gawler Ranges N.P., EP, BSI-10672. **B.** Middlecamp Hills C.P., EP, M.J. Thorpe 77. **C.** *ibid.*, M.J. Thorpe 76. **D.** Innamincka Stn, LE. **E & F.** cult., ex W of Italowie Gorge, FR, K.H. Brewer 358. **G & H.** Innamincka R.R., LE, D.J. Duval 1144. **F & G.** Cox Scrub C.P., SL. Photos: A, A.C. Robinson, DEWNR; B–H, S.A. Seed Conservation Centre, DEWNR.



Aotus subspinescens (A, B, C, D, E, F & G)



Daviesia arenaria (H, I & J)



D. asperula ssp. *asperula* (K & L)

Pl. 7. **A**, Ashby Track, Ngarkat C.P., SE. **B & C**, Baan Hill Track, Ngarkat C.P., SE. **D**, Sheoak Hill C.P., EP. **E**, Box Flat Track, Ngarkat C.P., SE. **F**, Ngarkat C.P., SE. **G**, Box Flat Track, Ngarkat C.P., SE. **H**, near Cromer, SL. **I**, glabrous form, Baan Hill Track, SE. **J**, Mason Lookout, MU, L. Jansen 1243. **K**, South Coast Rd, KI. **L**, KI. Photos: A & I, G.N. Carle; B, C, E & G, A.L. Carle; D, D.E. Muffet; F, L.J. Paton; H, C.M. Chesson; J, L. Jansen; K, R.K. Sandercock, DEWNR; L, S.A. Seed Conservation Centre, DEWNR.



A
Daviesia asperula ssp. *asperula* (A & B)



B



C
D. a. ssp. *obliqua* (C & D)



D
D. a. ssp. *obliqua*



E
D. benthamii ssp. *acanthoclona*



F
D. benthamii ssp. *humilis* (F & G)



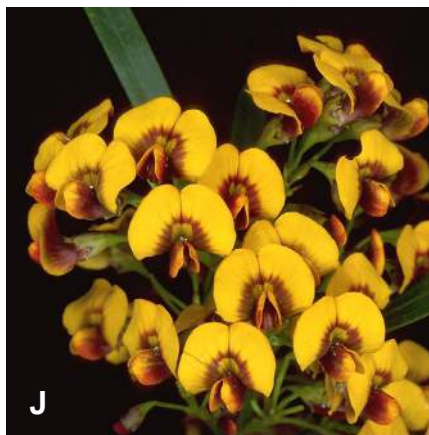
G



H
D. brevifolia (H & I)



I
D. brevifolia



J
D. leptophylla (J & K)



K

Pl. 8. **A & B**, South Coast Rd, E of Seal Bay, Kl. **C & D**, Murrnatta C.P., EP, BS128-3289. **D**, Sheoak Hill C.P., EP. **E**, Pinjarra Lake, near Pureba C.P., EP, NPYE-231. **F**, Currency Creek, SL, D.E. Murfet 3621. **G**, Monarto, MU. **H**, Piggery Track, Ngarkat C.P., SE. **I**, Wanilla C.P., EP, BS128-3011. **J**, Belair N.P., SL, BSOP-535. **K**, Meadows, SL. Photos: A & B, A.C. Robinson; C, D, & I, P.J. Lang; E, A.C. Robinson, DEWNR; F, D.E. Murfet; G, H & K, L. Jansen; J, P.J. Lang, DEWNR.



Daviesia pectinata (A, B, C & D)



D. sejugata (E, F, & G)



D. ulicifolia ssp. *incarnata* (H & I)



D. ulicifolia ssp. *ulicifolia*

Dillwynia cinerascens

Pl. 9. A, B & C, near Kiata, Vic. D, Newland Head C.P., SL. E, N of Marion Bay, YP, BSOP-779. F & G, Innes N.P., YP. H, Mt Gawler N.F.R., SL, BSOP-255. I, Kuitpo, SL. J, Ravine de Casoars W.A., Kl. K, Topperwein N.F.R., SE, P.J. Lang 2775. Photos: A & C, G.N. Carle; B, A.L. Carle; D, D.E. Murfet; E & K, P.J. Lang; F & G, T.M. Jaques; H, P.J. Lang, DEWNR; I, L. Jansen; J, A.C. Robinson, DEWNR.



Dillwynia cinerascens (A & B)



D. glaberrima (C & D)



D. hispida (E, F, G, H, I, J & K)



PL. 10. A, & B, Topperwein N.F.R., SE, P.J. Lang 2775. C & D, Honan N.F.R., SE. E, Aldinga Scrub C.P., SL. F, Myponga C.P., SL. G, Aldgate Valley, SL. H & I, Monarto C.P., MU, P.J. Lang 2827. J, Piggery Track, Ngarkat C.P., SE. K, Monarto, MU. Photos: A, B, C, D, F, H & I, P.J. Lang; E, J, Burgher; G, J.M. Jones; J & K, L. Jansen.



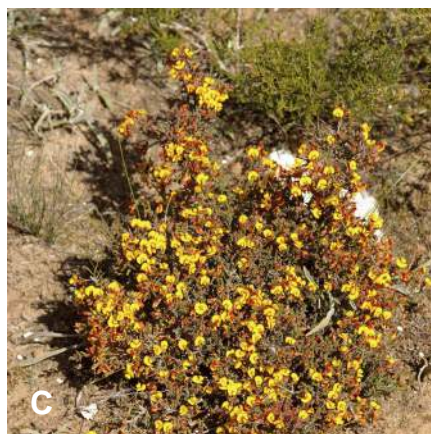
Dillwynia sericea (A, B, C, D, E, & F)



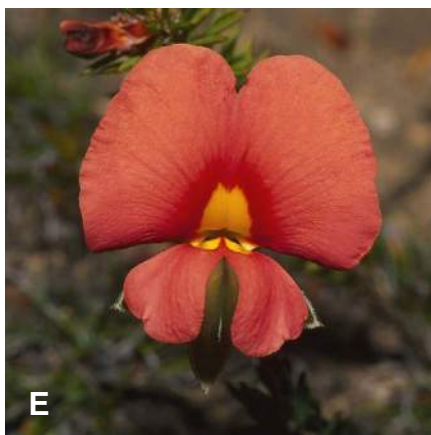
D. uncinata (G, H, I, J, K & L)



PL. 11. **A & B**, Bangham, SE, P.J. Lang 2788. **C**, Flinders Chase N.P., KI. **D & E**, McLaren Flat, SL. **F**, Kuitpo, SL. **G**, Monarto C.P., MU, P.J. Lang 2625. **H, I & J**, Ironstone Hill C.P., EP, P.J. Lang 2805. **K**, Bordertown-Pinnaroo Rd, SE/MU. **L**, Baan Hill Track, Ngarkat C.P., SE. Photos: A, B, D, E, G–J, P.J. Lang; C, A.C. Robinson, DEWNR; F, K & L, A.L. Carle.



Eutaxia microphylla (A, B, & C)



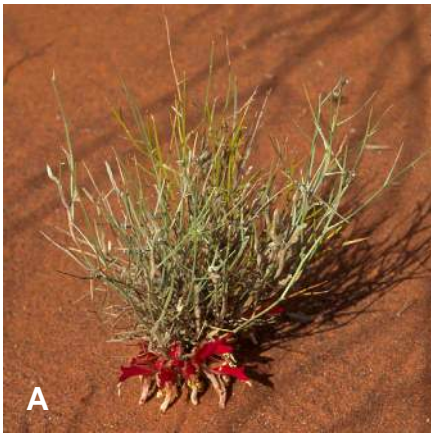
E. diffusa

Gompholobium ecostatatum (E, F, G, H & I)

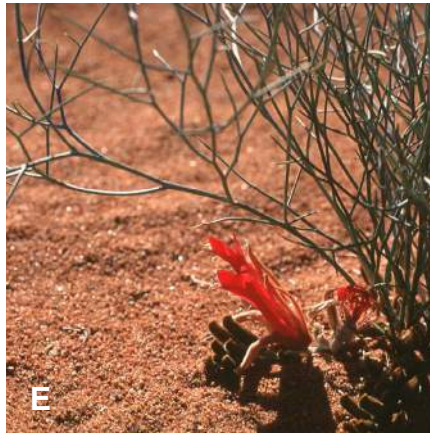
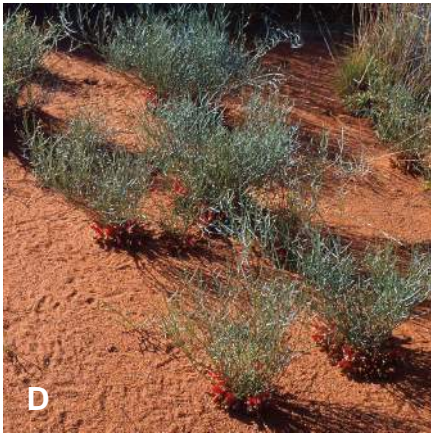


Isotropis wheeleri (J & K)

Pl. 12. A, Butler's Beach, Y.P. B & C, Monarto C.P., MU. D, cultivated, ex Eden Hills, SL. E, Flinders Chase N.P., KI, NPKI-10833. F, Mt Gawler, N.F.R., SL. G-I, Messent C.P., SE, LJ1522. J & K, Marqualpie area, Innamincka R.R., LE, T.S. Te 453. Photos: A, R.K. Sandercock, DEWNR; B & C, A.C. Robinson; D, P.J. Lang; E, A.C. Robinson, DEWNR; F, B.J. McCallum; G, A.L. Carle; J & K, S.A. Seed Conservation Centre, DEWNR.



Leptosema chambersii (A, B, C, D, E & F)

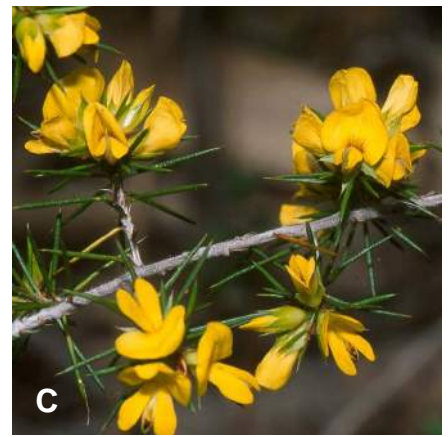


Phyllota pleurandroides (G, H, I & J)



P. remota (K & L)

Pl. 13. **A & B**, SSW of Walytjatjata, APY Lands, NW, BS23-25229. **C–F**, Umpukulu, APY Lands, NW, BS23-30145. **G–I**, Baan Hill Track, Ngarkat C.P., SE. **J**, Piggery Track, Ngarkat C.P., SE. **K**, Pertendi Track, Ngarkat C.P., SE. **L**, Baan Hill Track, Ngarkat C.P., SE. Photos: A & B, A.C. Robinson, DEWNR; C–F, P.J. Lang, DEWNR; G–J & L, G.N. Carle; K, A.L. Carle.



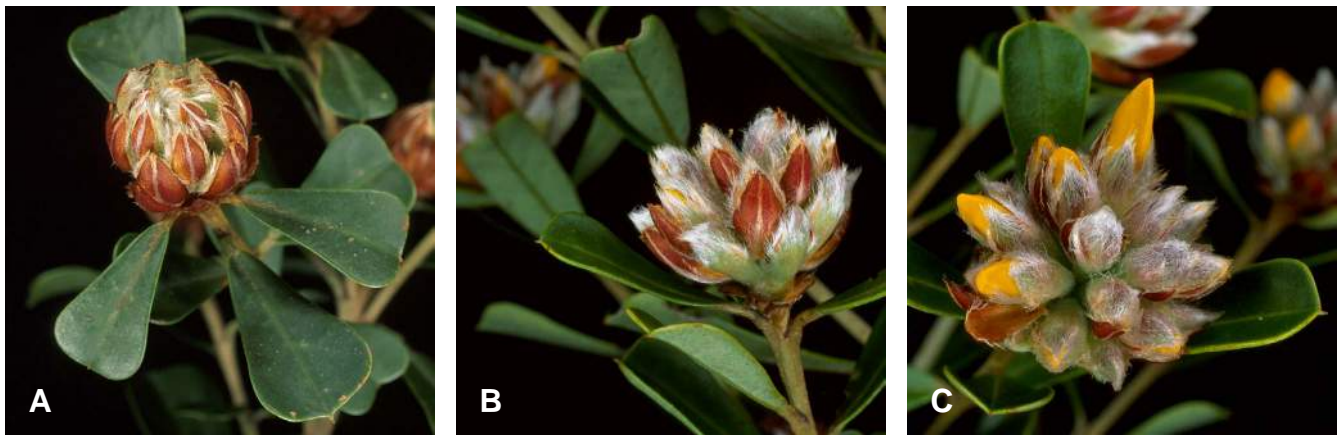
Phyllota remota (A & B)

Pultenaea acerosa (C, D, E, F, G, H & I)



P. canaliculata (J, K & L)

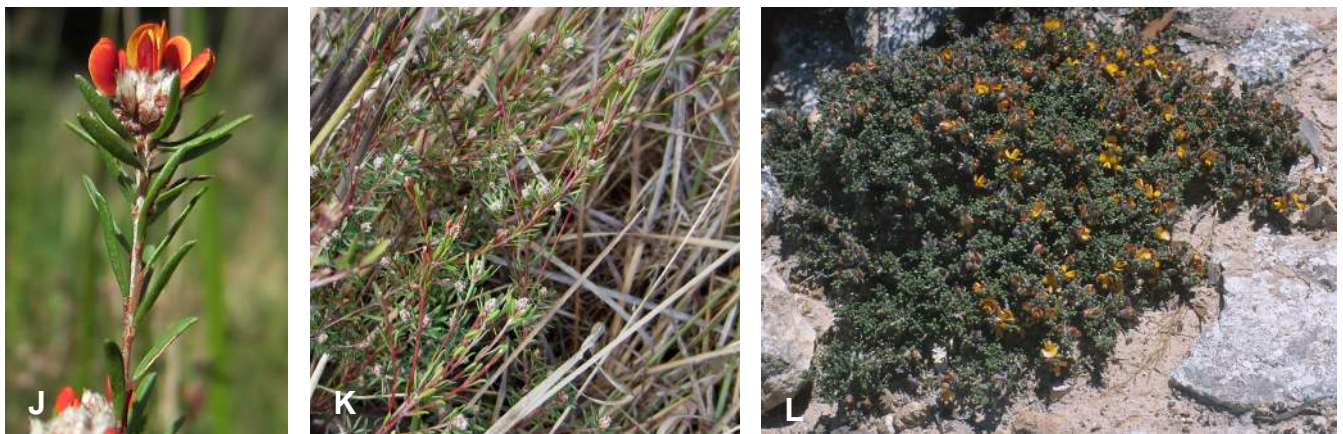
Pl. 14. A, Shaugh Track, Ngarkat C.P., SE. B, Piggery Track, Ngarkat C.P., SE. C, Upper Sturt, SL, BSOP-2177. D, Myponga C.P., SL, D.E. Murfet 236. E–G, Gosse Hill Track, Ngarkat C.P., SE. H, Stenhouse Bay, Innes N.P., YP. I, *ibid*, INP-39. J, near , Currency Creek, SL. K, Myponga C.P., SL. L, Mt Boothby C.P., SE, L. Jansen 1537. Photos: A & F, A.L. Carle; B, E, G & L, G.N. Carle; H & I, T.M. Jaques; J, D.E. Murfet; K, P.J. Lang.



Pultenaea daphnoides (A, B, C, D, E & F)



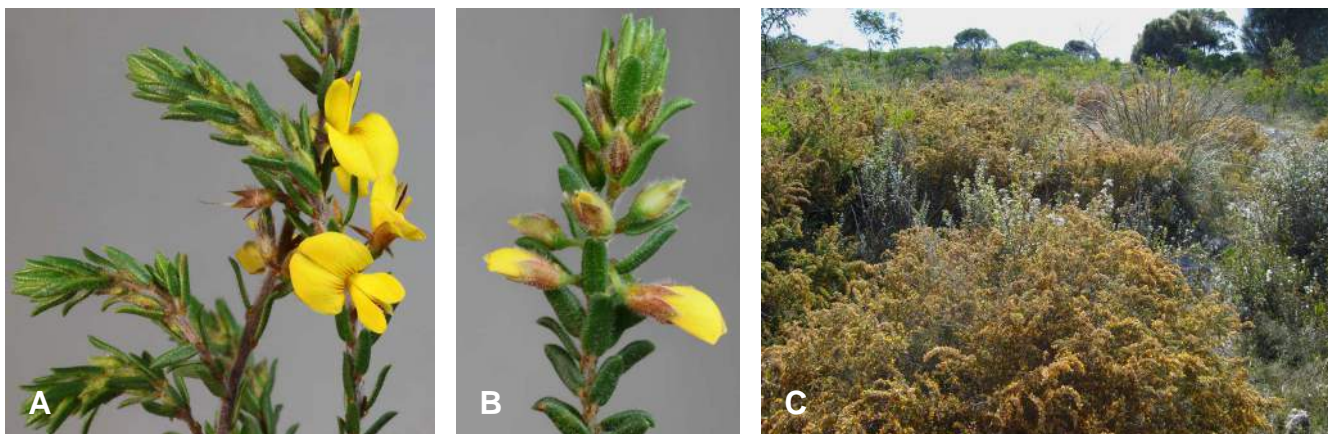
P. densifolia (G, H & I)



P. dentata (J & K)

P. elachista

Pl. 15. A, NNE of Mt Lofty, SL, BSOP-245. B–D, Cleland C.P., SL, BSOP-537. E, Myponga C.P., SL. F, Mt Lofty Botanic Garden, SL. G, Colebatch, SE. H & I, Monarto, MU. J & K, Penola Rd, SE. L, cliffs above Merdeyerrah Sand Patch, NU, BS14-7591. Photos: A & L, P.J. Lang, DEWNR; B–E, P.J. Lang; F, R. Cumming; G, A.L. Carle; H & I, L. Jansen; J & K, T.J. Horn.



Pultenaea graveolens (A & B)

P. hispidula (C, D, E, F & G)



P. insularis

P. involucreta (I & J)



P. kraehenbuehlii (K, L & M)

Pl. 16. **A & B,** Piccadilly, SL, P.J. Lang 2863. **C,** Piccaninnie Ponds C.P., SE, D.J. Duval 1338. **D,** *ibid.*, T.S. Te 499. **E,** Honan N.F.R., SE. **F,** Glenelg River, N of Donovans Landing, SE, D.J. Duval 1346. **G,** Roachdale National Trust Res., SL. **H,** Beyeria C.P., KI, D.E. Murfet 1398. **I & J,** Congeratinga N.F.R., SL, BSOP-547. **K,** Niblet Gap, Tothill Range, NL, P.J.Lang 2532. **L & M,** *loc. ibid.* Photos: A, B, I & J, P.J. Lang; C, D, & F, S.A. Seed Conservation Centre, DEWNR; E, T.J. Horn; G, L & M, D.N. Kraehenbuehl; H, D.E. Murfet; & K, P.J. Lang, DEWNR.



Pultenaea largiflorens (A, B, & C)



P. laxiflora

P. pedunculata

P. penna



P. prostrata (G & H)



P. rigida (I & J)

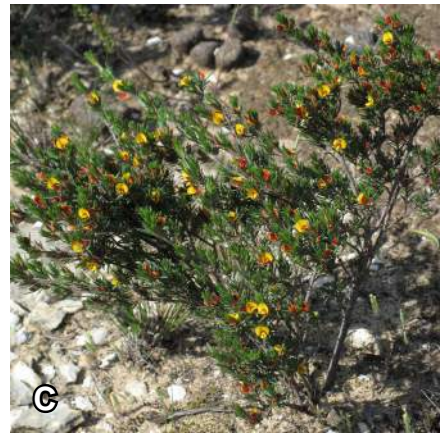
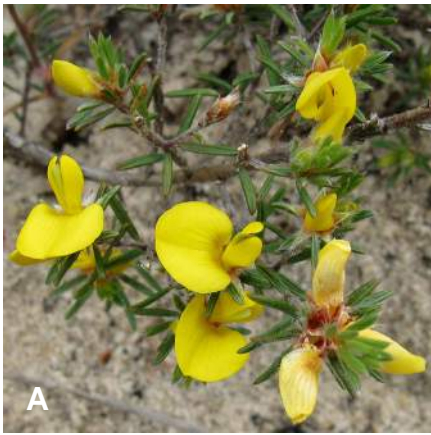


P. scabra (K & L)

Pl. 17. A, Gandy Gully, SL. B & C, Waite Conservation Res., SL, BS156-132. D, Stipiturus C.P., SL. E, Watts Gully N.F.R., SL, BS117-3013. F, Bagdad N.F.R., SE. G, Ngarkat C.P., SE, L. Jansen 488. H, *ibid.*, L. Jansen 860. I, Cape Borda, Flinders Chase N.P., KI. J, Stenhouse Bay, Innes N.P., YP, INP-248. K, Deep Creek, SL, BSOP-552. L, Deep Creek C.P., SL. M, Little's Forest, SE. Photos: A-C, K & L, P.J. Lang; D, D.E. Murfet; E, P.J. Lang, DEWNR; F & M, T.J. Horn; G & H, A.L. Carle; I, R.K. Sandercock, DEWNR; J, T.M. Jaques.



P. stricta



Pultenaea tenuifolia (A, B, C, D, E, & F)



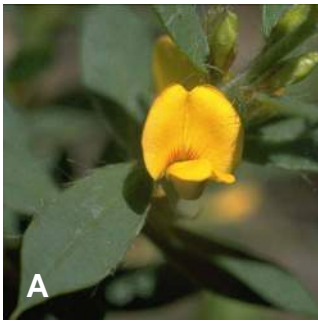
P. teretifolia var. *teretifolia* (G, H & I)



P. trinervis (J & K)

P. villifera var. *glabrescens*

Pl. 18. **A**, Jimmy Well Track, Ngarkat C.P., SE. **B**, Bucks Camp Track, SL, Ngarkat C.P., SE. **C**, Jimmy Well Track, Ngarkat C.P., SE. **D**, Butlers Beach, YP. **E**, Venus Bay C.P., EP. **F**, Baby Lizards Beach, YP. **G**, Caralue Bluff C.P., EP, BS128-1061. **H-I**, Yeldulknie C.P., EP, BS128-1088. **J**, Newland Head C.P., SL. **K**, Cox Scrub C.P., SL. **L**, Kl. Photos: A & C, A.L. Carle; B, G.N. Carle; D & F, R.K. Sandercock, DEWNR; E, A.C. Robinson, DEWNR; G & H, P.J. Lang; I, P.J. Lang, DEWNR; J, D.E. Murfet; K, L. Jansen; L, S.A. Seed Conservation Centre, DEWNR.



Pultenaea villifera var. *glabrescens* (A & B)

P. viscidula (C, D & E)



Sphaerolobium minus (F & G)



Viminaria juncea (H, I, J, K & L)



Pl. 19. A & B, Near Middle River, KI, R. Barrat 187. C–E, E of Grainger Lagoon, KI, BSOP-2225. F & G, Honan N.F.R., SE, BSOP-936. H & I, Knott Hill, Kuitpo, SL. J & K, SL. L, Knott Hill, Kuitpo, SL. Photos: A & B, D.N. Kraehenbuehl; C–E, A.C. Robinson; F & G, P.J. Lang; H, I & L, L. Jansen; J & K, S.A. Seed Conservation Centre.