

Flora of South Australia

5th Edition



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Flora of South Australia

5th Edition | Edited by Jürgen Kellermann

DROSERACEAE¹

J.G. Conran² & N.G. Marchant³

Annual and perennial herbs, shortly rhizomatous and fibrous-rooted, or with a spherical tuber and vertical stolon, or long-stemmed, rootless aquatic herbs; leaves in a rosette or cauline, alternate or whorled, stipulate or exstipulate; lamina with mucilaginous, sometimes touch sensitive insect-catching glandular hairs or a hinged, touch-sensitive, tooth-edged trap. **Flowers** regular, bisexual; sepals 4 or 5, free or almost free; petals 4 or 5, free; stamens 4 or 5, free, alternate with the petals; ovary superior, 1-celled; ovules numerous, on 2–5 parietal placentas; styles 3–5, simple or branched. **Fruit** a loculicidal capsule with persistent calyx; seeds small, usually black, with endosperm. **Sundew and Venus' flytrap family.**

3 genera, 2 monotypic and *Drosera* with c. 100–170 species (depending on authority) in tropical, subtropical and temperate regions of the world. Two genera (*Drosera* and *Aldrovanda* L.) occur in Australia, with the majority of species occurring in south-western W.A. There are c. 12 *Drosera* species in S.A., with 2 endemic.

The monotypic genus *Drosophyllum* Link from Portugal, although traditionally included in the family is now recognised as representing a separate, distantly related family to Droseraceae (Mabberley 2008).

Some species of *Drosera* are used medicinally and others provide dyeing agents. Many Droseraceae are grown as horticultural curiosities, especially the well-known Venus' fly trap (*Dionaea muscipula* Sol. ex Ellis) from N America. The plants generally require specialised conditions specific to the habitat for each species. The majority require special growing media, low-nutrient conditions and chemical- and salt-free water for successful cultivation (Rice 2006).

Reference: Marchant *et al.* (1982), Lowrie (1987, 1989, 1998).

1. DROSERA L.

Sp. Pl. 1: 281 (1753).

(Greek *droseros*, dewy; alluding to the glistening of the glandular leaf laminae.)

Sondera Lehm., *Flora* 27: 82 (1844).

Annual or perennial, evergreen or geophytic herbs with sticky, glandular, insect-trapping leaves in a hemispherical rosette, flat basal rosette, or cauline on a stem or stem-like scape 1–100 cm long, sometimes with a basal rosette; rosette leaves petiolate or not, spatulate, flabellate, reniform or orbicular; cauline leaves single, clustered or whorled, either spatulate or linear and entire or divided, or peltate and orbicular or crescentic; stipules present or absent. **Inflorescence** a scapose terminal, lateral or axillary raceme, cyme, or flowers solitary. **Flowers** usually 5-merous; sepals lanceolate, ovate or elliptic, 1.5–8 mm long, glabrous or pubescent, entire or lobed; petals obovate or elliptic-spatulate, 2–14 mm long, white, pink or orange; styles 2–5, simple or variously repeatedly divided. **Fruit** capsular; seeds small, ovoid-elliptic to elongate or linear, sometimes winged; generally reticulately sculptured. **Sundews.**

About 120 species recorded for Australia, over half of which occur in south-western W.A.

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All species of *Drosera* are insectivorous and many species have touch-sensitive hairs which can move in response to the presence of prey on the lamina.

The taxonomy of the Australian species suggests that many very variable species, and/or those with infra-specific taxa are in need of revision. Many of these are subject to on-going research.

Several extra-Australian species are used medicinally and some of the tuberous Australian species have been used in the past as sources of dyes (Cribb & Cribb 1982; Latz 1995; Clarke 2007). see notes for family.

References: Conn (1981; 1984), Susandarini *et al.* (2002), Conran & Lowrie (2007), Morris (2009), Gibson *et al.* (2010).

1. Leaf lamina linear, simple or divided; styles 3, bipartite or with a few branches
 2. Leaf lamina entire, narrow-linear; stipules absent; stems often lax 7. **D. indica**
 - 2: Leaf lamina once or twice divided, segments linear; stipules membranous; stem very short 3. **D. binata**
- 1: Leaf lamina spatulate, flabellate, orbicular or crescentic; styles 3 or 4, with 2 to many branches
 3. Leaves forming a hemispherical rosette; stipules present; scapes racemose or flowers solitary and axillary
 4. Lamina spatulate; inflorescences racemose, many-flowered; flowers 5-merous 4. **D. glanduligera**
 - 4: Lamina orbicular, peltate; ; scapes 1-flowered, axillary, 4-merous..... 11. **D. pygmaea**
 - 3: Leaves all or mostly cauline or all in a flat rosette; stipules absent; scape single
 5. Leaves all in a rosette, or if cauline, spatulate and whorled; inflorescences with short, condensed peduncles
 6. Inflorescence leafless, emerging in autumn, leaves borne later on a lateral shoot; peduncle 1–3 cm long, largely subterranean..... 10. **D. praefolia**
 - 6: Inflorescence borne above the leaves, peduncle aerial, often very short and inflorescence appearing to consist of multiple single flowers
 7. Plants forming large clonal colonies, stoloniferous..... 1. **D. aberrans**
 - 7: Plants solitary, stolons absent
 8. Leaves narrowly-spatulate with narrow U-shaped petioles; cauline leaves, if present, whorled 12. **D. schmutzii**
 - 8: Leaves broad, flat, petioles multi-ribbed; cauline leaves always absent 14. **D. whittakeri**
 - 5: Leaves cauline, sometimes also with a basal rosette, cauline leaves single or in 3s, crescentic or orbicular; inflorescences with open, elongate, pedunculate scapes
 9. Lamina orbicular, deeply concave
 10. Stem erect; leaves patent to spreading; flowers pink 13. **D. stricticaulis**
 - 10: Stem trailing or climbing; leaves nodding; flowers white..... **D. macrantha**
 - 9: Lamina crescent- or U-shaped
 11. Calyx glabrous; peduncles usually more than 3 cm long..... 2. **D. auriculata**
 - 11: Calyx pubescent; peduncles usually less than 4 cm long
 12. Aerial stem very slender (c. 0.5 mm diam.), leafless in upper 1/2 to 1/3..... 5. **D. gracilis**
 - 12: Aerial stem c. 1–2 mm diam., always leafy distally
 13. Scape multi-branched basally, plant appearing multi-stemmed and shrubby 6. **D. hookeri**
 - 13: Scape simple or distally few-branched 9. **D. peltata**

1. **Drosera aberrans** (Lowrie & Carlquist) Lowrie & Conran, *Telopea* 12: 151 (2008). — *D. whittakeri* Planch. subsp. *aberrans* Lowrie & Carlquist, *Phytologia* 73: 113 & 115, fig. 8 (1992). — **Illustr.:** G.R.Cochrane *et al.*, *Fl. Pl. Victoria*, fig. 62 (1982), as *D. whittakeri*; A.Lowrie, *Carniv. Pl. Austral.* 3: 257, 259, pl. 69 (1998), as *D. whittakeri* subsp. *aberrans*; A.Lowrie & J.G.Conran, *Telopea* 12: 152, fig. 2a–b (2008).

Perennial, geophytic, colony-forming herb with a red stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 2–8 cm long; lateral stolons several, below leaves; leaves annual in a flat rosette, green or red; lamina broadly spatulate, 15–35 × 5–15 mm, apically circinnate when young, tapering

to a flat, 3-ridged eglandular petiole 8–15 mm long, 1–1.3 mm wide basally, 1.5–1.7 mm wide distally; stipules absent. **Stem** ± sessile in centre of rosette, 1–4, rarely to 7-flowered; peduncle to 5 mm, often more or less absent; pedicels 1–4 cm long, decumbent in fruit; calyx 4–5 × 2–4 mm, enlarging in fruit to 6–8 × 3–5 mm, divided almost to the base into lanceolate lobes, punctate; petals cuneate, truncate to shallowly notched, 8–12 × 5–8 mm, white; stamen filaments white, anthers and pollen yellow; styles 3, 1.6–1.8 mm long each divided into many filiform segments. **Capsule** ovoid to globose, 6–8 mm diam.; seeds charcoal black, ovoid-cylindrical 1–1.3 × 0.8–1.2 mm long, irregularly reticulate-sculptured. **Scented sundew. Pl. 3C–E.**

S.A.: NL MU, SL, SE; Vic., N.S.W. Widespread and common in the mallee regions of eastern S.A. and southern and central Victoria. Flowers: Jul.–Sep.; summer dormant.

Widespread in heathlands and open forests on a range of soils. The flowers are sweetly scented. Closely related to *D. whittakeri*, *D. praefolia* and *D. schmutzii*, but differs in its distribution, stoloniferous, colony forming habit and generally fewer flowers, which open successively.

The tubers of this species were used as a source of red dye and ink.

2. ***Drosera auriculata*** Backh. ex Planch., *Ann. Sci. Nat., Bot., sér. 3*, 9: 295 (1848). — *D. peltata* Thunb. subsp. *auriculata* (Backh. ex Planchon) B.J.Conn, *J. Adelaide Bot. Gard.* 3: 98 (1981); *D. peltata* Thunb. var. *auriculata* (Backh. ex Planch.) N.G.Marchant in J.P.Jessop, *Census S.A. Vasc. Pl.* 31 (1983), *nom. inval.*; *Sondera auriculata* (Backh. ex Planch.) Chrtek & Slavíková, *Novit. Bot. Univ. Carol.* 13: 43 (2000). — **Illustr.:** R.Erickson, *Plants of prey*, t. 11(1–4) (1968); E.R.Rotherham *et al.*, *Fl. Pl. N.S.W. S. Queensl.*, fig. 44 (1975); A.Lowrie, *Carniv. Pl. Austral.* 3: 141, 143 (1998).

Perennial, geophytic, colony-forming herb with a red stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 4–6 cm long; aerial stem erect, annual, usually sparsely branched distally, sometimes simple, 15–70 cm long, glabrous; lowest leaves in a flat rosette, lamina orbicular-reniform, 2–6 mm diam., on a petiole 3–10 mm long, sometimes reduced to short linear prophylls; cauline leaves alternate or in clusters, lamina crescentic-orbicular with acute lobes, 4–6 mm diam., peltate, on a slender petiole 2–9 mm long; stipules absent. **Inflorescence** a terminal raceme, 3–10 cm long, 2–8-flowered, glabrous; peduncle usually c. 5 cm long but up to 19 cm; pedicels 4–12 mm long; sepals obovate-elliptic, obtuse or dentate, 3–6 × 2–4 mm, glabrous; petals obovate, obtuse, 5–8 × 4–7 mm, white or pink; styles 3, 0.5–1 mm long, dichotomously much-branched and fan-shaped. **Capsules** globose, 4–6 mm diam., erect, enclosed in persistent sepals; seeds black, narrowly linear-cylindrical, 0.65–0.9 × 0.1–0.2 mm, rarely up to 1.3 mm long, reticulate. **Tall sundew, errienellam. Fig. 1D, K, Pl. 1A–B, D.**

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

This species was regarded by Conn (1981) as a subspecies of *D. peltata sens. lat.* However, these taxa often co-occur, are easily recognised as distinct in seedling and mature stages and are here regarded as species. *D. auriculata* can be recognised by its more erect, branching upper stem, longer peduncles and glabrous calyx.

3. ***Drosera binata*** Labill., *Nov. Holl. Pl.* 1:98, t. 105 (1805). — **Illustr.:** *Fl. N.S.W.* 1: 495 (1990); *Fl. Victoria* 3: 360, fig. 73g (1996); A.Lowrie, *Carniv. Pl. Austral.* 3: 153, 155, pl. 40 (1998).

Perennial, evergreen herb with thick fleshy roots, sometimes dying down to rootstock; stem very short (<1 cm), stolons often present; scapes 1 or 2, to 50 cm long, glabrous; leaves radical, erect; lamina once or twice forked, lobes linear, 20–100 × 2–5 mm long, circinnate when young; petiole slender, 4–30 cm long, glabrous; stipules membranous, 3–5 mm long. **Inflorescence** cymose, branched, 15–30-flowered; bracts linear, 1–2 mm long; pedicels 5–15 mm long; sepals ovate, acute or laciniate, 3.5–7 × 2–4 mm; petals obovate, 6–14 × 5–12 mm, white; stamen filaments white, anthers yellow, pollen yellow, turning orange; styles 3, 2.5–2.8 mm long, with a few dichotomous branches. **Capsules** ovoid, 4–5 mm long; seeds linear to narrowly oblong, 1.2–1.9 × 0.4–0.6 mm, winged at both ends, seed dark brown, body elliptic, 0.3–0.4 × 0.15–0.25 mm, wings flattened, hollow, often twisted, translucent, pale brown. **Forked sundew. Fig. 1F.**

S.A.: SL, KI, SE; Qld; N.S.W.; Vic.; Tas. New Zealand. Flowers: mainly Dec.–Apr.

(Rare status in S.A.)

4. **Drosera glanduligera** Lehm., *Nov. Stirp. Pugill.* 8: 37 (1844). — **Illustr.:** *Pl. W. N.S.W.* 339 (1982); R.Erickson, *Plants of prey*, t. 2(8) (1968); A.Lowrie, *Carniv. Pl. Austral.* 2: 179, 181, pl. 44 (1989).

Annual herb yellow-green with fibrous roots with dense root hairs; stem to 10 mm long, erect; leaves in a convex rosette, 15–20, lamina suborbicular to almost flabellate, deeply concave, 6–10 × 9–12 mm, abruptly narrowed to a flat petiole 3–8 × 2–4 mm; stipules fused to the base of the petiole, 1–2 mm long. **Scapes** 1–4, 3–6 cm long, glandular-hirsute, many-flowered; pedicels 4–10 mm long, deflexed after flowering; sepals 4–5 × 2–3 mm, pilose, deeply divided into ovate laciniate lobes; petals obovate-cuneate, 4–5 × 4–5 mm, bright orange to red; anther filaments orange distally, anthers and pollen yellow; styles 3, 3.5–4.5 mm long, bi- or trifurcate distally, further dividing into 4–7 stigmatic segments. **Capsules** globose, 3–4.5 mm diam., finely reticulate, enclosed in densely hairy sepals; seeds black, spheroidal, c. 0.4 mm diam. reticulate. **Scarlet sundew. Fig. 1A, H, Pl. 2C.**

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

Extremely widespread in many habitats and environments where there is at least temporary soil moisture during the cooler months of the year.

Although the plant is abundantly self-fertile and germinates readily, seedlings can be difficult to grow on to maturity.

5. **Drosera gracilis** Planch., *Ann. Sci. Nat., Bot., sér 3*, 9: 297 (1848). — *D. peltata* var. *gracilis* (Planch.) Benth., *Fl. Austral.* 2: 465 (1864). *D. peltata* auct non Thunb.: N.G.Marchant, *Fl. S. Austral.* 1: 363 (1986), partly. — **Illustr.:** C.Clayton, *Carniv. Pl. Victoria*, rev. ed., 19–20 (2005).

Perennial, geophytic, colony-forming red herb with a red stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 2–6 cm long, lateral stolons common; aerial stem erect, annual, simple, 5–20 cm long, very slender, glabrous, leafless in distal half; lowest leaves 5–10 in a flat rosette, lamina orbicular-lunate, 3–5 mm diam., not peltate, on a petiole 4.5–8 mm long; cauline leaves alternate, sometimes in clusters of 3–4, lamina broadly crescentic, 3–6 mm diam., auriculate, peltate, on petiole 7–8 mm long; stipules absent. **Inflorescence** a terminal raceme, 2–5-flowered; peduncle up to 4 (–6) cm; pedicels 8–10 mm long; sepals narrowly elliptic, 2.5–3.5 × 1.5–2.5 mm, black, hairy; petals obovate, 3.5–4.5 × 3–4 mm, pink to white; stamen filaments white, anthers and pollen pale yellow; styles 3, 0.4–0.6 mm long, white, each divided into many slender segments. **Capsules** globose, 4–5 mm diam., erect, enclosed in persistent sepals; seeds black, narrowly turbinate, slightly arcuate with a short wing, 0.4–0.5 × 0.1–0.2 mm long, reticulate. **Pl. 1C.**

S.A.: EP, KI, SE; N.S.W., Tas., Vic. Flowers: Aug.–Nov.

Drosera gracilis tends to grow in seasonally wetter, swampy areas than the other members of the *D. peltata* complex. Although included as part of a broadly circumscribed and very variable *Drosera peltata* (Conn 1981), studies have shown that there are several discrete entities within that taxon (Gibson 1992a, 1992b). In particular, although *D. gracilis* and *D. hookeri* are generally included within *D. peltata*, they have been returned to species status in recent publications (Clayton 2003; Morris 2009) and that approach is followed here. *Drosera gracilis* can be distinguished by the very fine, erect, simple, wiry stem which is generally leafless in the distal half and by its distinctive seeds.

6. **Drosera hookeri** R.P.Gibson, B.J.Conn & Conran, *J. Adelaide Bot. Gard.* 24: 41 (2010). — *D. foliosa* Hook.f. ex Planch., *Ann. Sci. Nat., Bot., sér 3*, 9: 297 (1848) *nom. illeg., non Elliott* (1821): C.Clayton, *Carniv. Pl. in S. Austral.* 14–16 (2005); Morris, *Fl. Tas. Online Droseraceae*: 5 (2009); *Drosera peltata* auct. non Thunb. subsp. *peltata*: Marchant *et al.*, *Fl. Austral.* 8: 22 (1982), partly; *Drosera peltata* auct. non Thunb.: Marchant, *Fl. S. Austral.* 1: 363 (1986), partly. — **Illustr.:** C.Clayton, *Carniv. Pl. Victoria*, rev. ed. 14–16 (2005), as *D. foliosa*.

Perennial, geophytic, dense colony-forming, yellowish green herb with a white stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 2–6 cm long; aerial stem erect, annual, much branched basally, appearing multi-stemmed and shrubby, 1–12 cm long, glabrous; lowest leaves 5–10 in a flat rosette, lamina spatulate-flabellate, 7–11 × 5–10 mm, peltate, on a petiole 5–14 mm long; cauline leaves alternate, close spaced, sometimes in clusters of 2–4, lamina broadly crescentic-lunate, 3–6 × 3–5 mm, with caudate angles, peltate, on petiole 5–11 mm long, lower cauline leaves often reduced to bract-like petioles; stipules absent. **Inflorescence** a 1-sided raceme, terminal and in upper leaf axils of scapes, 5–10-flowered; peduncle usually 1–2 cm long; pedicels 5–8 mm long; sepals ovate-lanceolate, 2.5–3 × 1–2 mm, pubescent, fimbriate; petals obovate, 4–4.5 × 2.5–4 mm, white; stamen filaments white, anthers and pollen pale yellow; styles 3, 0.4–0.6 mm long, white, each divided into many slender segments. **Capsules** globose, 4–6 mm diam., erect, enclosed in persistent sepals; seeds black, ovate

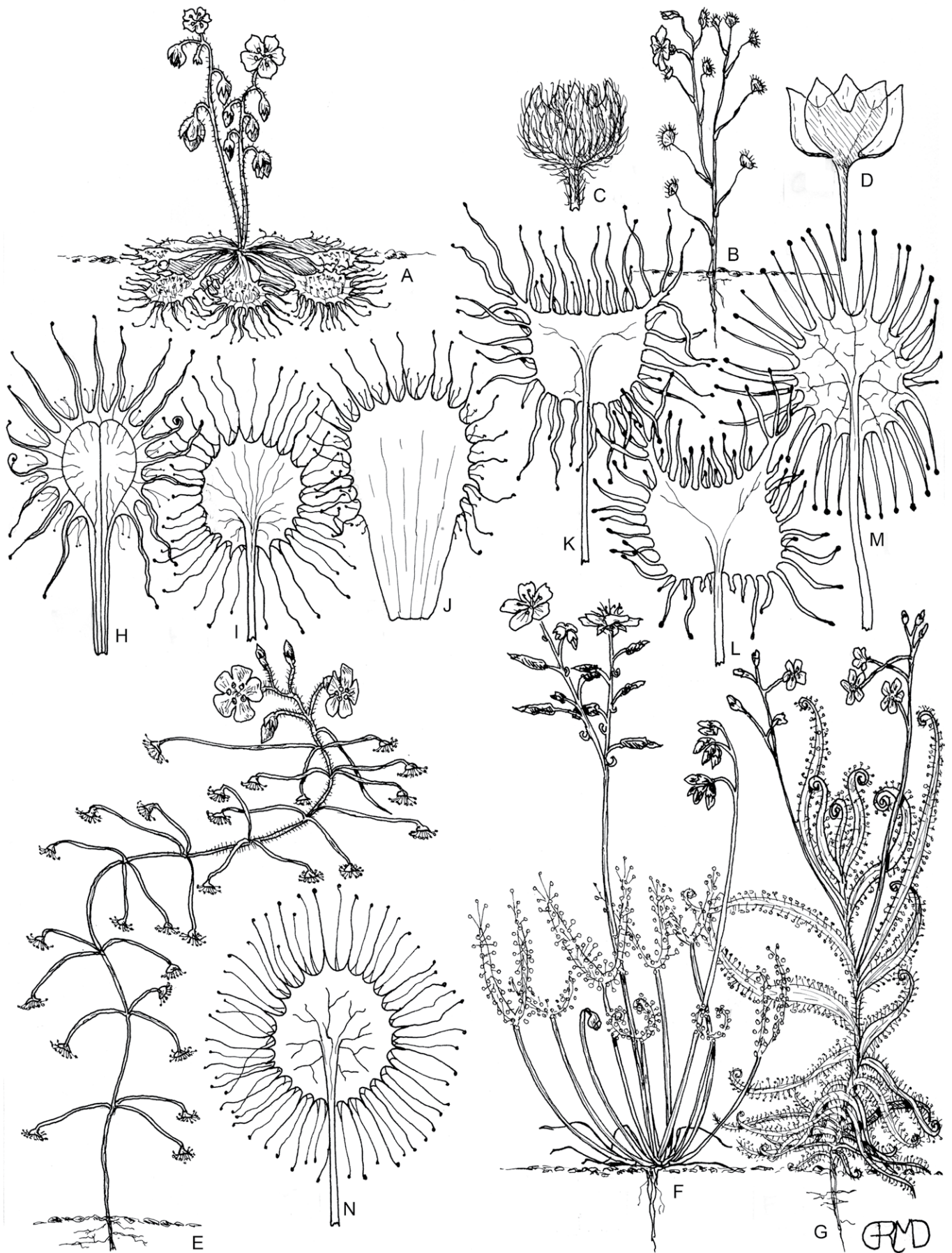


Fig. 1. Plants and flowers of *Drosera*. A, *D. glanduligera*; B–C, *D. hookeri*: B, habit; C, calyx; D, *D. auriculata*, calyx; E, *D. macrantha* subsp. *planchonii*; F, *D. binata*; G, *D. indica*. Leaves of *Drosera*. H, *D. glanduligera*; I, *D. pygmaea*; J, *D. whittakeri*; K, *D. auriculata*; L, *D. hookeri*; M, N, *D. macrantha* subsp. *planchonii*. Illustration by G.R.M. Dashorst, from *Flora of South Australia* 1: 362, Fig. 202 (1986).

cylindrical, 0.3–0.5 × 0.1–0.2 mm, reticulate. **Fig. 1 B, C, L, Pl. 1F–H.**

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

See note under *D. gracilis*. Because the combination *D. foliosa* Elliot, *Sketch* 1:376 (1821), already exists as a synonym of the North American *D. intermedia* Hayne, a new name was required for the Australian species (Gibson *et al.* 2010), previously treated as *D. peltata*. *Drosera bookeri* can be distinguished readily by the basally much-branched, shrubby habit and distinctive yellowish green colour.

7. ***Drosera indica* L.**, *Sp. Pl.* 1: 282 (1753). — **Illustr.:** *Pl. W. N.S.W.* 340 (1982); R.Erickson, *Plants of prey*, t. 12(2) (1968); A. Lowrie, *Carniv. Pl. Austral.*, 3: 180, 182, pl. 47 (1998).

Annual herb with fibrous roots; stem simple, to 50 cm long, often lax, green to red, pubescent to glandular-hairy; leaves cauline, scattered; lamina narrowly linear, acute, to 30–100 × 2–6 mm, gradually narrowed to a glabrous petiole 5–10 mm long, stipules absent. **Inflorescences** terminal, becoming cauline and leaf opposed by axillary shoot growth, racemose, to 50 cm long, glandular, 3–25-flowered, peduncle up to 15 cm long; bracts linear, 1–3 mm long; pedicels 6–18 mm long; sepals lanceolate to narrowly oblong, 3–5 × 1–2 mm, entire to serrulate, glandular; petals cuneate-obovate, 5–12 × 3–8 mm, pink, orange to white; stamen filaments, anthers and pollen white, yellow, pink or red; styles 3, 3–3.5 mm long, bipartite, white, orange or red; stigmas papillose. **Capsules**, ovoid, 2–3.5 mm long, erect to spreading; seeds dark grey, obovoid, 0.25–0.8 × 0.2–0.6 mm, reticulate, often ridged. **Flycatcher. Fig. 1G, Pl. 2F–H.**

S.A.: NW, LE; All mainland States; rare in Vic. Widespread in Asia, extending to Africa. Flowers: mainly Apr.–Aug.

The species grows in a wide range of habitats and soil types, including arid central Australia, but generally occurs in seasonally damp or inundated areas or along watercourses. In S. A. the plant is found along ephemeral rivers in the north of the State. The species is extremely variable across its range, especially in northern Australia. There are wide variations in flower, anther and seed characteristics (Susandarini *et al.* 2002), as well as gland characteristics. Numerous varieties have been erected, with some of the more unusual and conspicuous variants such as *Drosera angustifolia* F.Muell. from Qld and *Drosera hartmeyerorum* Schlauer from W.A. recognised at species level.

8. ***Drosera macrantha* Endl.** in Endl. *et al.*, *Enum. Pl.* 6 (1837), subsp. **planchonii** (Hook.f. ex Planchon) N.G.Marchant, *Fl. Austral.* 8: 383 (1982). — *D. planchonii* Hook.f. ex Planchon, *Ann. Sci. nat., Bot., sér. 3*, 9:294 (1848); *D. menziesii* R.Br. var. *albiflora* Benth., *Fl. Austral.* 2:468 (1864); *Sondera planchonii* (Hook.f. ex Planch.) Chrtek & Slavíková, *Novit. Bot. Univ. Carol.* 13: 44 (2000).

Perennial, geophytic, reddish-green to reddish-brown herb with a white naked, warty stem tuber 1–1.5 cm diam.; subterranean stem vertical, annual, 3–7 cm long; aerial stem simple, climbing, annual, 20–60 cm long, pilose distally; leaves cauline, alternate, in clusters of 3, glabrous or rarely minutely glandular-hairy, lamina circular, cup-shaped, peltate, nodding, 4–6 mm diam., petiole of median leaf 12–25 mm long, petioles of lateral leaves in the cluster 3–8 mm; stipules absent. **Inflorescence** a terminal cymose panicle, many-flowered, glandular hairy; peduncle 3–15 mm long; pedicels 8–16 mm long; sepals broadly ovate, 5–8 × 1.5–3 mm, densely pubescent, apex deeply glandular-fringed; petals broadly obovate, 7–12 × 6–8 mm, white; stamen filaments white, anthers yellow, pollen pale yellow; styles 3, white, 2.5–3.5 mm long, dichotomously much-branched from the base. **Capsules** globose, 5–8 mm diam., nodding, enclosed in persistent sepals; seeds black, linear-cylindrical, with a narrow wing on one side, apically expanded, nail-shaped, 2.5–3 × 0.7–1.2 mm, reticulate. **Climbing sundew. Fig. 1E, M–N, Pl. 1I, 2A–B.**

S.A.: FR, EP, NL, MU, YP, SL, KI, SE; Vic.; Tas. Flowers: Jul.–Oct.

D. macrantha subsp. *macrantha* is widespread in south-west W.A. It is distinguished from subsp. *planchonii* by its usually longer stems and narrower shallowly fringed sepals. Although the *D. macrantha* complex has been considered to be all one large, variable species (Conn 1984), ongoing research suggests that there are a number of taxa, mainly within W.A.

9. ***Drosera peltata* Thunb.**, *Drosera* 7 (1797). — *Drosera peltata* var. *genuina* Planch., *Ann. Sci. Nat., Bot., sér. 3*, 9: 297 (1848), *nom. inval.*; *Sondera peltata* (Thunb.) Chrtek & Slavíková, *Novit. Bot. Univ. Carol.*, 13: 44 (2000). — **Illustr.:** *Fl. Austral.* 8: 23 fig. 6 (1982); C.Clayton, *Carniv. Pl. Victoria*, rev. ed., 27–29 (2005).

Perennial, geophytic, colony-forming herb with a red stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 3–6 cm long; aerial stem erect, thin, wiry, annual, usually simple, sometimes sparsely branched distally, 6–50 cm long, 1–2 mm diam. glabrous; lowest leaves 5–10 in a flat rosette, lamina spatulate-flabellate, 4–7 mm diam., peltate, on a petiole 10–15 mm long; cauline leaves alternate, sometimes in clusters of 2–4, lamina broadly crescentic, 4–7 mm diam., with caudate angles, peltate, on petiole 10–17 mm long, lower cauline leaves often reduced to bract-like petioles; stipules absent. **Inflorescence** a 1-sided raceme, 5–10-flowered; peduncle usually c. 2 cm long but up to 50 cm; pedicels 8–10 mm long; sepals ovate-lanceolate, 2–4 × 1–2 mm long, densely to sparsely pubescent, ciliate, laciniate or dentate; petals obovate, 4–7 × 3–5 mm long, white or pink; stamen filaments white, anthers and pollen pale yellow; styles 3, white, 0.4–0.6 mm long, each divided into many slender segments. **Capsules** globose, 4–6 mm diam., erect, enclosed in persistent sepals; seeds black, ovate cylindrical, 0.2–0.4 × 0.1–0.2 mm, reticulate. **Pale sundew. Pl. 1E.**

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

Closely related to *D. auriculata*, *D. gracilis* and *D. hookeri* (see note under *D. gracilis*) but these species are now recognised as distinct. *Drosera peltata* can be recognised from related species by the combination of a thin, wiry (1–2 mm diam.) leafy, simple to apically few-branched scape and abaxially pubescent sepals.

10. ***Drosera praefolia*** Tepper, *Bot. Centralbl.* 50: 357 (1892) — *D. bulbosa* var. *praefolia* (Tepper) R.Hamet, *Bull. Soc. Bot. France* 54: 70 (1907); *D. whittakeri* var. *praefolia* (Tepper) J.M.Black, *Fl. S. Austral.* 2: 258 (1924); *D. whittakeri* subsp. *praefolia* (Tepper) Lowrie, *Bull. Austral. Carniv. Pl. Soc.* 8: 47 (1989); *D. aphylla* Tepper ex Lowrie & Conran, *Telopea* 12: 155, *nom. inval.* — **Illustr.:** A.Lowrie, *Carniv. Pl. Austral.* 3: 217, 219 Pl. 56 (1998); C.Clayton, *Carniv. Pl. Kangaroo Isl.* 18–21 (2003); A.Lowrie & J.G.Conran, *Telopea* 12: 155–156, Fig. 1b, 2c, 3c, d (2008).

Perennial, geophytic herb with a white stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 3–5 cm long; leaves annual in a flat rosette, green or red; lamina obovate, 10–16 × 8–12 mm, margins involute when young, tapering to a short flat eglandular petiole 4–8 mm long, c. 2 mm diam; stipules absent. **Scape** lateral and subterranean 3–5 cm long, emerging before rosette, 1–10-flowered; pedicels 2.5–5 cm long, decumbent underneath the rosette foliage in fruit; sepals 4–5 × 1–1.5 mm, enlarging in fruit to 6–8 × 2–4 mm, divided almost to the base into lanceolate lobes, punctate; petals cuneate, truncate to shallowly notched, 6–8 × 3–4 mm, white; stamen filaments white, anthers yellow, pollen translucent, pale yellow; styles 3, 1.2–1.4 mm long each divided into many filiform segments. **Capsules** ovoid to globose, 6–8 mm diam.; seeds charcoal black, ovoid, 1–1.3 × 0.7–1 mm long, irregularly reticulate-sculptured. **Pl. 3J–K, 4.**

S.A.: SL, KI. Flowers: Mar.–Jul.

The flowers appear on a terminal inflorescence before the leaves which develop on a subterminal lateral shoot. The flowers have a musky, sweet scent. Although sometimes regarded as a precocious variant of *D. whittakeri*, this species is quite distinct from the other members of the complex in its tuber, flowering habit, leaf shape and much smaller flowers produced in autumn.

(Rare status in S.A.)

11. ***Drosera pygmaea*** DC., *Prodr.* 1: 317 (1824). — **Illustr.:** Diels, *Pflanzenr.* IV.112 (Heft 26): 17, 66, fig. 6B, 22 (1906); A.Lowrie, *Carniv. Pl. Austral.* 2: 151, 153, pl. 37 (1989); C.Clayton, *Carniv. Pl. S. Austral.* 32 (2005).

Perennial colony-forming herb with fibrous roots, generally evergreen, sometimes dying back to a dormant stipule-covered bud 3–3.5 mm diam. over summer; stem short, enclosed by persistent leaf bases, <5 mm long or absent; leaves many in a convex rosette; lamina orbicular, peltate, attached near the margin, 1–2 mm diam., petiole slender, flat, glabrous, 2–7 mm long; stipules 3–5 mm long, deeply 3-fid, segments laciniate; central leaves in winter modified to form deciduous propagules (gemmae), gemmae broadly ovate, flat, c. 0.6 mm diam., 0.15 mm thick. **Scapes** 1–4, 5–45 mm long, very slender, glabrous, 1-flowered; Flowers 4-merous; sepals oblong to elliptic, glabrous, 1.5–2.5 mm × 1–1.3 mm; petals elliptic-spathulate, 2–3.3 × 1.5–2.5 mm, white; stamen filaments, anthers and pollen white; styles 4, 0.8–1.1 mm long, filiform, white, stigmas clavellate. **Capsules** ovoid, 1.5–2 mm diam., erect; seeds black, ovoid-elliptical, 0.3–0.4 × 0.2–0.25 mm, reticulate. **Tiny sundew. Fig. 1I, Pl. 2E–F.**

S.A.: .EP MU, SL, KI, SE; W.A.; Qld; N.S.W.; Vic.; Tas. New Zealand. Flowers: Sep.–Jan., Apr.

Generally a plant of seasonally damp, swampy environments on a wide range of soils and vegetation types. Although self-fertile and producing seed abundantly, the water-dispersed gemmae also allow the plant to form large clonal populations. Plants on Kangaroo Is. and in south-western W.A. tend to have short stems and persistent leaf bases. The most widespread of the so-called pygmy *Drosera* species (subgen. *Bryastrum* (Planch.) Schlauer), readily distinguished by the tiny rosette of peltate leaves, gemmae and 4-merous flowers.

12. ***Drosera schmutzii*** Lowrie & Conran, *Telopea* 12: 157 (2008) — *Drosera whittakeri* auct. non Planch.: N.G. Marchant in Jessop & Toelken, *Fl. S. Austral.* 1: 363 (1986), partly. — **Illustr.:** C. Clayton, *Carniv. Pl. Kangaroo Isl.* 24–26 (2003) as *D. whittakeri* [Kangaroo Island form]; A. Lowrie & J. G. Conran, *Telopea* 12: 158–159, figs 4–5 (2008).

Perennial, geophytic herb with a red stem tuber enclosed by multi-layered black sheath; subterranean stem vertical, annual, 4–5 cm long; stem sometimes present, 1–1.5 cm long; leaves annual in a semi-erect rosette, green or red; cauline leaves if present 3–5, whorled; lamina narrowly spatulate, 15–35 × 5–15 mm, apically circinnate when young, tapering to a canaliculate to flat eglandular petiole 8–12 mm long, 1–1.3 mm wide basally, 2–2.5 mm wide distally, u-shaped in cross section; stipules absent. **Scapes** 1–3, short (< 1 cm) to ± sessile in centre of rosette, 2–7-flowered; pedicels 2.5–4 cm long, arching in fruit; calyx 4–7.5 × 1.3–3 mm, enlarging in fruit to 6–9 × 2–4 mm, divided almost to the base into lanceolate lobes, punctate; petals cuneate, truncate to shallowly notched, 10–14 mm × 7–9 mm, white; stamen filaments white, anthers white, pollen yellow; styles 3, 1–1.5 mm long, each divided into many filiform segments. **Capsules** ovoid to globose, 6–8 mm diam.; seeds charcoal black, irregularly cuboid 1.3–1.5 × 0.8–1.5 mm, irregularly reticulate-sculptured. **Pl. 3F–I.**

S.A.: KI. Endemic to Kangaroo Island, mainly in the central and western ends of the island. Flowers: June–Sep.

The flowers have a sweet scent. Closely related to *Drosera whittakeri* and *D. aberrans*, differing in the possession of semi-erect, canaliculate, narrowly long-petiolate spoon-shaped leaves and the occasional presence of whorled cauline leaves.

13. ***Drosera stricticaulis*** (Diels) O.H. Sarg., *J. Bot.* 51: 40 (1913). — *Drosera macrantha* Endl. var. *stricticaulis* Diels in Engler, *Nat. Pflanzenfam.* 26: 119 (1906). *Drosera macrantha* subsp. *planchonii* auct. non. (Hook.f. ex Planch.) N.G. Marchant, N.G. Marchant in Jessop & Toelken, *Fl. S. Austral.* 1: 363 (1986), partly; *Drosera* aff. *stricticaulis* (Diels) O.H. Sarg.: J. P. Jessop *Census S. Austral. Vasc. Pl.*, ed. 4, 28 (1993); *Drosera* sp. *Rigid* (R. J. Bates 2268) Toelken, *J. Adelaide Bot. Gard. Suppl.* 1: 51 (2005). — **Illustr.:** A. Lowrie, *Carniv. Pl. Austral.* 1: 101, 103, pl. 23 (1987); C. Clayton, *Carniv. Pl. S. Austral.* 34–36 (2005); J. G. Conran & A. Lowrie, *Trans. Roy. Soc. South Australia* 132: 145, fig. 2 (2007).

Perennial, geophytic, yellow-green herb with a white, generally naked, minutely tuberculate stem tuber, rarely enclosed by multi-layered black sheath; subterranean stem vertical, annual, 4–8 cm long; aerial stem erect, annual, usually sparsely branched distally, 15–70 cm long, robust (c. 2 mm diam.), minutely glandular-hairy; leaves cauline, alternate, in clusters of 3, lamina circular, cup-shaped, peltate, 4–6 mm diam., petiole of median leaf 11–40 mm long, petioles of lateral leaves in the cluster 3–8 mm, petioles minutely glandular-hairy, lower cauline leaves reduced to subulate prophyllar bracts; stipules absent. **Inflorescence** a terminal cymose panicle, 3–14-flowered; peduncle 2.5–8 cm long; pedicels 10–20 mm long, glandular hairy; sepals narrowly ovate-lanceolate, 5–8 × 2–4 mm, stalked glandular-hairy, punctate; petals broadly obovate, 9–12 × 7–10 mm, pink; stamen filaments white, anthers and pollen yellow; styles 3, 2–2.5 mm long, white, dichotomously much-branched and fan-shaped. **Capsules** globose, erect, enclosed in persistent sepals, 4–7 mm diam.; seeds black, linear-cylindrical, apically expanded, nail-shaped, 0.65–1.3 × 0.15–0.3 mm, reticulate. **Erect sundew.**

S.A.: .EP; WA. Flowers: Aug.–Nov.

Drosera stricticaulis is unusual in having a widely disjunct distribution between W.A., east of Perth and two small, isolated areas in S.A.: the lower Eyre Peninsula and on Dutchmans Stern in the Flinders Ranges. Its distribution suggests that it may reflect refugial survival on ancient, nutrient-poor soils that have not experienced recent marine incursion (Conran & Lowrie 2007). Part of the wider *Drosera macrantha* complex in southern Australia. Although *Drosera stricticaulis* subsp. *eremaea* (Marchant & Lowrie) Schlauer has been described from arid Western Australia, current usage in Australia remains as *Drosera macrantha* subsp. *eremaea* N.G. Marchant & Lowrie.

(Vulnerable status in S.A.)

14. ***Drosera whittakeri*** Planch., *Ann. Sci. Nat., Bot., sér. 3*, 9:302 (1848). — *Sondera whittakeri* (Planch.) Chrtek & Slavíková, *Novit. Bot. Univ. Carol.* 13: 45 (2000). — **Illustr.:** C. Clayton, *Carniv. Pl. Kangaroo Isl.* 24–26 (2003), as *D. whittakeri* [Kangaroo Island form]; Lowrie & Conran, *Telopea* 12: 158–159, figs 4–5 (2008).

Perennial, geophytic herb with an orange stem tuber enclosed by multi-layered black sheath; vertical stolon annual, 2–8 cm long; leaves annual in a flat rosette, green, orange or red; lamina broadly spatulate, 10–15 mm long, 9–13 mm wide, apically circinnate when young, tapering to a 5-ridged, eglandular petiole 15–35 mm long, 4.5–5.5 mm wide basally, 6–7.5 mm wide distally; stipules absent. **Scape** 1, short (<1 cm) to ± sessile in centre of rosette, up to 20-flowered; pedicels 3–6 cm long, decumbent to arching in fruit; calyx 6–8 × 3–4 mm, enlarging in fruit to 7–10 × 3–6 mm, divided almost to the base into lanceolate lobes, punctate; petals cuneate, truncate to shallowly notched, 8–15 mm long, 6–10 mm wide, white; stamen filaments white, anthers white, pollen pale yellow; styles 3, 1.5–1.7 mm long, each divided into many filiform segments. **Capsules** ovoid to globose, 6–8 mm diam.; seeds charcoal black, angular, ovoid-cylindrical 1–1.3 × 0.7–1, irregularly reticulate-sculptured. **Whittaker's sundew, scented sundew. Fig. 1 J, Pl. 3A–B.**

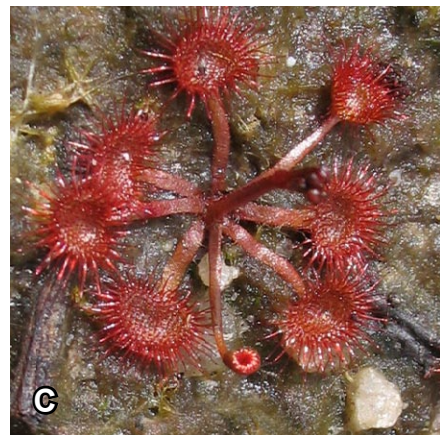
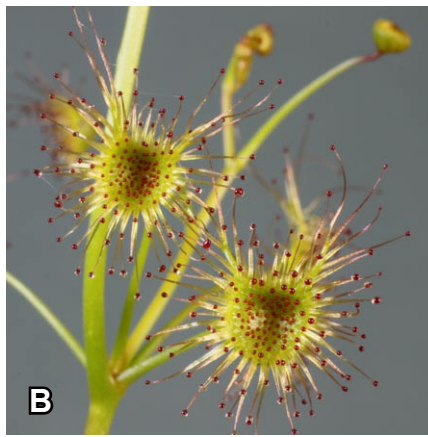
S.A.: ;NL MU, YP, SL, KI, SE; Vic. Flowers: all months especially May–Nov.

The flowers have a spicy, sweet scent. Closely related to *D. aberrans* and *D. schmutzii*, but distinguished by the broad, prominently ribbed petioles, simultaneously multi-flowered habit and generally more robust size. Plants in the Adelaide Hills on more fertile soils tend to be very large and floriferous.

The tubers of this species were used as a source of red dye and ink.

References

- Clarke, P.A. (2007). *Aboriginal people and their plants*. (Rosenberg: Dural)
- Conn, B.J. (1981). The *Drosera peltata* – *D. auriculata* complex. *J. Adelaide Bot. Gard.* 3: 91–100
- Conn, B.J. (1984). Review of the infraspecific classification of *Drosera macrantha* Endl. *Muelleria* 5: 347–349
- Conran, J.G. & Lowrie, A. (2007). The biogeography of *Drosera stricticaulis* (Droseraceae) in Australia: a disjunct 'island' refuge? *Trans. Roy. Soc. South Australia* 132: 142–151
- Cribb, A.B. & Cribb, J.W. (1981). *Useful wild plants*. (Collins: Sydney)
- Gibson, R.P., Conn, B.J. & Conran, J.G. (2010). *Drosera hookeri* R.P. Gibson, B.J. Conn & Conran, a replacement name for *Drosera foliosa* Hook.f. ex Planch. *nom. illeg.* (Droseraceae). *J. Adelaide Bot. Gard.* 24: 39–42
- Latz, P.K. (1995). *Bushfires and bush Tucker: aboriginal plant use in central Australia*. (IAD Press: Alice Springs)
- Lowrie, A. (1987). *Carnivorous plants of Australia*, Vol. 1. (University of Western Australia Press: Perth)
- Lowrie, A. (1989). *Carnivorous plants of Australia*, Vol. 2. (University of Western Australia Press: Perth)
- Lowrie, A. (1998). *Carnivorous plants of Australia*, Vol. 3. (University of Western Australia Press: Perth)
- Mabberley, D.J. (2008). *Mabberley's plant-book*. (Cambridge University Press: Cambridge)
- Marchant, N.G., Aston, H.I. & George, A.S. (1982). Droseraceae. In: George, A.S. (Ed.), *Flora of Australia* 8: 9–64. (Government Printer: Canberra)
- Morris, D.I. (2009). Droseraceae. *Fl. Tas. Online* 96: 1–6
- Rice, B.A. (2006). *Growing carnivorous plants*. (Timber Press: Portland, Oregon)
- Susandarini, R., Collins, G.G., Lowrie, A. & Conran, J.G. (2002). Morphological variation within the *Drosera indica* (Droseraceae) complex in northern Australia. *Austral. J. Bot.* 50: 207–214



Pl. 1. A, B, D, *Drosera auriculata*: A, buds in terminal raceme; B, leaves; D, flowers. C, *D. gracilis*, rosette. E, *D. peltata*; F–H, *D. hookeri*: F, flower; G, stems viewed from above; H, entire plant showing branching habit. I, *D. macrantha* subsp. *planchonii* flower, showing much branched styles. Photos: A & B, P.J. Lang, DENR; E, P.J. Lang; C, F–H, J.G. Conran; I, K. Matthews.



PL. 2. A–B, *Drosera macrantha* subsp. *planchonii*: A, flowering plant; B, climbing stem showing leaves in clusters of three. C, *D. glanduligera*. E–F, *D. pygmaea*: E, young rosettes; F, summer phase rosettes: dessicated plants with dormant bud protected below cover of white stipules. F–H, *D. indica*: F, flower and foliage; G, habit; H, habitat, Ingomar Station, showing a dense patch of plants beside an ephemeral lagoon. Photos: A, A.C. Robinson; B & C, K. Matthews; D & E, J.G. Conran; F–H, D. Duval, DENR.



PL. 3. **A–B, *Drosera whittakeri*:** A, rosettes with flowers and fruit; B, flowers. **C–E, *D. aberrans*:** C, rosettes; D, fruiting plants with an emergent stolon; colony of plants. **F–I, *D. schmutzii*:** F, flowering rosettes; G, leaf; H, fruiting plants; I, plant with a whorl of cauline leaves. **J–K, *D. praefolia*:** J, developing rosette produced post-flowering; K, older rosette, with decumbent fruiting pedicels emerging from below leaves (lower right). Photos: A, L.M. Heard, DENR; B, P.J. Lang; C–K, J.G. Conran.



Pl. 4. A–C. *Drosera praefolia*: A, emergent peduncle with buds; B, flowers; C, habit. Photos: A & C, J.G. Conran; B, P.J. Lang.