



## ***Drosera gunniana* comb. et stat. nov., a species in the *Drosera peltata* (Droseraceae) complex**

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### **Introduction**

The complex of closely-related species that includes *Drosera peltata* Thunb. has a complicated nomenclatural and taxonomic history (Table 1). *Drosera peltata* was originally described (Thunberg 1797) using a type from New South Wales. Thunberg's authorship of *D. peltata* was soon overlooked (Conn 1981), with authors after de Candolle (1824) almost unanimously attributing its authorship to J. E. Smith [published by Willdenow 1798]. The distribution of the complex spans from the Himalayas to south-east Asia (Japan, China, Philippines), down to southern Australia and New Zealand (Gibson et al. 2012).

The *D. peltata* complex was revised by Gibson et al. (2012), who recognised *D. peltata sensu stricto*, occurring in New South Wales, Victoria and Tasmania; *D. auriculata* Backh. ex Planch. in Queensland, New South Wales, Victoria, South Australia and Tasmania, as well as New Zealand; *D. hookeri* in Queensland, New South Wales, Victoria, South Australia, Tasmania and New Zealand; *D. lunata* Buch.-Ham ex DC. in New South Wales and Queensland to south-east Asia, Japan and the Himalayas; and *D. yilgarnensis* R.P. Gibson & B.J. Conn in Western Australia.

Gibson et al (2012) provided a taxonomic review of the group, and suggested that the type of *Drosera peltata* Thunb. was conspecific with the taxon then recognised as *D. gracilis* Hook.f. ex Planch. and had been broadly misapplied by most authors after Thunberg to multiple

### **Abstract**

A recent revision of the *Drosera peltata* Thunb. complex left a morphologically and ecologically distinct species with no valid combination at the species rank, treating it under *D. hookeri* R.P.Gibson, B.J.Conn & Conran (Gibson et al., 2012). The new combination *D. gunniana* (Planch.) de Salas is proposed for a robust, erect, single-stemmed taxon to which the name *D. peltata*, and more recently *D. hookeri*, have been widely misapplied. A new key to *Drosera* species in Tasmania and descriptions and illustrations of *D. hookeri* and *D. gunniana* are included.

**Keywords:** *Drosera peltata* complex, combination, morphology, sympatry, Tasmania

**Table 1.** Names used for taxa in the *Drosera peltata* complex by various authors in a Tasmanian context.

Author / Current treatment	<i>Drosera auriculata</i>	<i>Drosera peltata</i>	<i>Drosera hookeri</i>	<i>Drosera gunniana</i>
Thunberg (1797)	-	<i>D. peltata</i>	-	-
Labillardière (1805)	-	? <i>D. peltata</i>	-	-
de Candolle (1824)	-	? <i>D. peltata</i>	-	-
Planchon (1848)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. foliosa</i>	<i>D. peltata</i> var. <i>gunniana</i>
Hooker (1860)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. foliosa</i>	<i>D. peltata</i> var. <i>gunniana</i>
Bentham (1864)	<i>D. auriculata</i>	<i>D. peltata</i> var. <i>gracilis</i>	<i>D. peltata</i> var. <i>foliosa</i>	<i>D. peltata</i> var. <i>peltata</i>
Rodway (1903)	<i>D. auriculata</i>	<i>D. peltata</i> var. <i>gracilis</i>	<i>D. peltata</i> var. <i>foliosa</i>	<i>D. peltata</i> var. <i>peltata</i>
Curtis & Morris (1975)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. peltata</i>	<i>D. peltata</i>
Conn (1981)	<i>D. peltata</i> subsp. <i>auriculata</i>	<i>D. peltata</i> subsp. <i>peltata</i>	<i>D. peltata</i> subsp. <i>peltata</i>	<i>D. peltata</i> subsp. <i>peltata</i>
Marchant (1982)	<i>D. auriculata</i>	<i>D. peltata</i>	<i>D. peltata</i>	<i>D. peltata</i>
Morris (2009)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. foliosa</i>	<i>D. peltata</i>
Gibson et al. (2010)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. hookeri</i>	<i>D. peltata</i>
Baker & de Salas (2012)	<i>D. auriculata</i>	<i>D. gracilis</i>	<i>D. hookeri</i>	<i>D. peltata</i>
Gibson et al. (2012)	<i>D. auriculata</i>	<i>D. peltata</i>	<i>D. hookeri</i>	<i>D. hookeri</i>

morphotypes that Gibson et al. treated within their broadened circumscription of *D. hookeri*.

Four species within this complex occur in Tasmania, and extend to south-eastern mainland Australia. *D. auriculata* is common throughout the island at all but the highest elevation habitats, it has pink flowers and is the only Tasmanian species in this group with glabrous sepals. *Drosera peltata* Thunb. (= *D. gracilis*) is common in swampy, peaty ground and permanently wet habitats such as seeps and riparian corridors, from sea level to montane elevations. It grows later in the season, when the other species are dormant, and is generally slender, single-stemmed, with basal leaves and stems stained red, and with hirsute calyces and a white corolla. The flower and fruit size is smaller than the other members of the complex in south-eastern Australia. Both species are morphologically distinct and easily distinguished, and detailed descriptions and a key are provided in Gibson et al. (2012). A third taxon, *Drosera foliosa* Hook.f. ex Planch. (1848) was described from Tasmanian material collected by R.C. Gunn. and has been recognised as distinct by most authors since. As originally described, it is a grassland and grassy woodland species, which in Tasmania is found mostly in the north and north-east. A complete description and discussion of its distinctive features are given below. However, Hooker's name was illegitimate, being predated by *Drosera foliosa* Elliott 1821 (see Gibson et al. 2010). Gibson et al.

(2010) provided the replacement name *Drosera hookeri* R.P.Gibson, B.J.Conn & Conran, and chose as a lectotype one of Gunn's collections from the 'Formosa' property, near Cressy, Tasmania.

The fourth taxon is one to which the name *Drosera peltata* has most often been incorrectly applied in Tasmania and south-eastern mainland Australia (Table 1). It is common through the south-east, primarily in dry woodland habitats, extending into grassland. It has a distinctive morphology, and has been recognised by various authors (Planchon 1848, Bentham 1864, Rodway 1903, Morris 2009). A complete description and discussion of its distinctive features are given below. Tasmanian specimens of this taxon were used by Planchon as the basis for *Drosera peltata* var. *gunniana* Planch., a name that has been largely ignored. Although Gibson et al. (2012) recognised that *D. hookeri* is comprised of various morphotypes, and that occasionally these grow sympatrically while remaining distinct, they nevertheless chose to include both *Drosera peltata* var. *genuina* Planch. (presumably what Planchon considered the typical form from Port Jackson, the type locality of *D. peltata*) and *Drosera peltata* var. *gunniana* within their broader concept of *D. hookeri*.

Examination of material from south-east Australian herbaria (AD, HO, MEL, NSW), and in the field at their Tasmanian type localities, makes it clear that the types of *D. hookeri* (as *D. foliosa*) and *D. peltata* var. *gunniana*,

are not conspecific and can be distinguished reliably. The new combination *Drosera gunniana* (Planch.) de Salas is proposed for Planchon's *D. peltata* var. *gunniana* and a lectotype is designated.

## Materials and Methods

Work carried out for this study consisted of field excursions to various localities where taxa in the *D. peltata* complex are known to co-occur. Herbarium material from the Tasmanian Herbarium (HO), the State Herbarium of South Australia (AD), the National Herbarium of Victoria (MEL) and the National Herbarium of NSW (NSW) was examined with a Wild Heerbrugg stereomicroscope. Seed were observed and drawn using the same microscope, with the aid of a Wild TYP 25675 drawing mirror, the originals digitised and converted to vector drawings using Inkscape v0.92. Live plant photographs were obtained with a Pentax K5 digital camera and a Pentax D-FA 100 mm F2.8 Macro WR lens, with post-processing in Adobe Lightroom 5.3.

## Results and Discussion

Many authors, including Hooker (1860), Bentham (1864), Rodway (1903) and Morris (2009), had recognised *D. hookeri* (as *D. foliosa* or *D. peltata* var. *foliosa*) as distinct from what they considered to be the standard form (in Tasmania) of *D. peltata*, while Curtis and Morris (1975), Conn (1981), and Marchant et al. (1982) used a broader circumscription and treated *D. hookeri* in synonymy under *Drosera peltata* Thunb. The revision of the *Drosera peltata* group by Gibson et al. (2012) clarified that the name *D. peltata* Thunb. had been broadly misapplied in Australia, and chose to treat the main taxon to which the name had been misapplied in the south-east under a broadened circumscription of *D. hookeri*, a small and distinctive species with a Tasmanian type. The name *Drosera peltata* var. *gunniana* Planch., based on collections by R.C. Gunn from three Tasmanian localities (the 'Formosa' property near Cressy, the 'Penquite' property inside modern-day Launceston, and New Norfolk) is available, and a good match for the taxon to which the name *D. peltata* had been misapplied in SE Australia by most authors until Gibson et al. (2012). This name has been ignored by subsequent authors or treated in synonymy under a misapplied *D. peltata*.

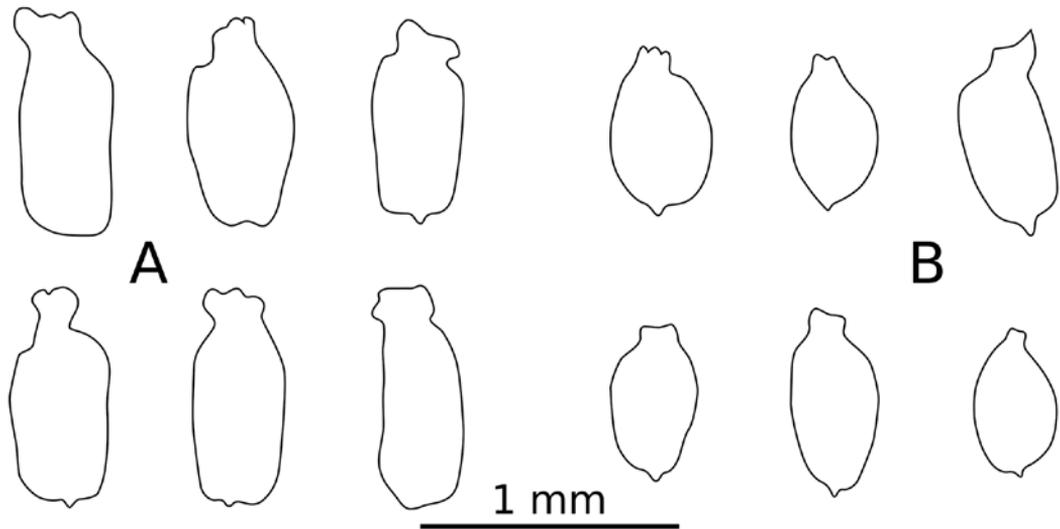
However, even in the protologue of *D. peltata* var. *gunniana*, Planchon (1848) speculated that this variety may be a different species from *D. peltata* altogether ("... *an spec. propria?*"; p. 297).

In Tasmania, this taxon is abundant, particularly in the northern part of the State, and it can still be collected at two of the three localities mentioned by Planchon (Formosa and New Norfolk). The Penquite property no longer exists, having been absorbed by the suburbs of the City of Launceston, but this taxon is common in the surrounding area.

*Drosera peltata* var. *gunniana* is morphologically distinct from *D. hookeri*. It is a much taller plant with a single main axis that can reach 30 cm tall or more with a terminal inflorescence (Fig. 1A), compared to the short, multi-stemmed habit of *D. hookeri*. The latter often matures its earliest fruits within 1 or 2 cm of the basal rosette (Fig. 3B), whereas *D. peltata* var. *gunniana* flowers and ripens fruit well above the ground. The general plant colour is also different: *D. hookeri* is yellow-green to distinctly yellow, whereas *D. peltata* var. *gunniana* is pale olive green, often suffused with orange, and can range to almost entirely red. *Drosera peltata* var. *gunniana* has flower buds that range from dark olive green to dark maroon and are approximately spherical. Its calyx lobes are somewhat spreading after anthesis, and are covered with a dense indumentum of long hairs best described as hirsute (Fig. 3C). The flower buds of *D. hookeri* are yellowish-green and longer than broad. Its calyx lobes clasp the capsule after anthesis and are covered in a short indumentum which in dried specimens is often paler than the sepal lamina (Fig. 3D). The seed of *D. hookeri* (Fig. 2A), although described by Gibson et al. (2012) as being 0.3–0.4 mm long, were found to be considerably longer than this (0.6–0.7 mm long) in both Tasmanian specimens from the type locality and mainland Australian specimens, and longer than those of *D. peltata* var. *gunniana* (Fig. 4B). They are cylindrical in *D. hookeri*, and ellipsoidal to ampulliform in *D. peltata* var. *gunniana* (Fig. 4). As well as being morphologically distinct, the two taxa occupy somewhat separate environmental niches: *Drosera hookeri* is normally found in damp, open grassland habitats, whereas *D. peltata* var. *gunniana* prefers heathy and grassy woodland. In northern Tasmania, populations of both taxa are commonly found adjacent to each other or overlapping



**Figure 1.** Habit and inflorescence detail of *Drosera hookeri* and *D. gunniana*. **A.** Simple-stemmed, erect habit of *D. gunniana*. Note multiple vegetative nodes below the inflorescence. **B.** Short, multi-stemmed habit of *D. hookeri*. Note inflorescence arising from first vegetative node. **C.** Inflorescence detail of *D. gunniana*. Note the long indumentum and almost spherical buds. **D.** Inflorescence detail of *D. hookeri*. Note the short indumentum and elongated buds.



**Figure 2.** Seed morphology of *Drosera hookeri* and *D. gunniana*. Scale bar = 1 mm. **A.** Seed of *D. hookeri*. Note cylindrical shape, almost like a bottle. **B.** Seed of *D. gunniana*. Note ellipsoidal, almost ampulliform shape.

(for example *de Salas* 270, 271; *de Salas* 275, 276; *de Salas* 314, 315; *de Salas* 394, 395, *de Salas* 1043, 1045). Wherever this happens, individuals in a population can be easily assigned to one taxon or the other, and intermediate forms are extremely rare. Despite this, mixed herbarium sheets containing both *D. peltata* var. *gunniana* and *D. hookeri* are not rare. In addition to mixed sheets, Gunn used taxon numbers rather than collection numbers, and many of Gunn's collections have more than one gathering of the same taxon number mounted on the same sheet, making it impossible to determine which gathering a specimen belongs to. This has necessitated the designation of a lectotype for *D. peltata* var. *gunniana* (see below). A lectotype for *D. hookeri* was already designated by Gibson et al. (2012).

In conclusion, the concept of *D. hookeri* as treated by Gibson et al (2012) contains in synonymy an additional species that can be reliably distinguished morphologically in the field and from herbarium specimens, for which the new combination *Drosera gunniana* is created in this study.

## Taxonomy

The following descriptions and key serve to differentiate *D. hookeri* and *D. gunniana*. Intermediate forms are rare in Tasmania, although very robust specimens of *D. hookeri* growing in sheltered sites can begin to branch

higher up the main stem and resemble *D. gunniana*. Conversely, specimens of *D. gunniana* that are damaged by grazing animals early in the season can develop multiple stems. The most reliable characters to separate the two taxa are shape and indumentum of the flower buds and fruits, tuber colour, branching pattern and petal colour. A key to all Tasmanian *Drosera* is included, and supersedes the one in Morris (2009).

### *Drosera hookeri* R.P.Gibson, B.J.Conn & Conran, *J. Adelaide Bot. Gard.* 24: 41 (2010)

*Drosera foliosa* Hook.f. ex Planch., *Ann. Sci. Nat.*, sér 3, 9: 298 (1848), *nom. illeg.* non *Drosera foliosa* Elliott, *Sketch Bot. S. Carolina* 1: 376 (1817). *Drosera peltata* var. *foliosa* (Hook.f. ex Planch.) Benth., *Fl. Austral.* 2: 465 (1864).

**Type:** TASMANIA. Formosa [near Cressy], 7 Dec. 1842, R.C.Gunn 1027 (lectotype: K215054 K215054 *vide* Gibson, Conn & Conran (2010), top row, middle specimen, photo!, Fig. 3; residual syntype: HO3402!).

Small, tuberous perennial *herb* to 10 cm tall, often forming closely-packed colonies. *Tubers* externally white. *Stems* often repeatedly branching from near the base, yellowish green to distinctly yellow, with no red staining. *Basal rosette leaves* well-developed, always present at flowering; petiole flattened, 5–14 mm long, lamina 7–11 mm in diameter, semi-orbicular,

lunate, not peltate. *All cauline leaves* yellow-green; petiole 5–11 mm long; lamina 3–6 mm in diameter, crescentic, auriculate or occasionally the auriculate lobes absent. *Inflorescence* often subtended by only one or two vegetative internodes, 1–several branched, branching from the base, each branch terminating in a short raceme, resulting in a growth habit with flowers and leaves mixed along much of the plant's height; *bracts* linear-lanceolate, fimbriate, c. 2.5 mm long. *Flower buds* longer than wide. *Sepals* green, 2.5–3 mm long, 1.5–2.5 mm wide, appressed to the capsule after anthesis, margin ciliate, apex obtuse, often fimbriate; indumentum sparse, hairs 0.3–0.6 mm long, semi-appressed to appressed, longer on the margins and paler than sepal lamina. *Petals* white, 4–5 mm long, obovate, drying cream or white. *Seeds* black, cylindrical with a short neck, 0.6–0.7 mm long and c. 0.25 mm in diameter, surface reticulated.

**Selected specimens examined: SOUTH AUSTRALIA.**

Glen Shera Swamp by top pump shed, *R.J. Bates 60238* (MEL2375311); 11.4 km direct NNE of Warrow, *P.J. Lang BS128-3096* (AD175805); Mt. Lofty, ca. 15 km south-east of Adelaide, *s.c., s.n.* (AD97618569); Kangaroo Island, 5 km NE of Cape Younghusband, *P. Copley NPKI 20270* (AD99026185); Bordertown edge of recreation lake reserve, *D.E. Murfet 7517* (AD259213); Berkins Scrub Native Forest Reserve, *D.E. Murfet 4581* (AD156394). **TASMANIA.** Kelso & George Town, N. Tas., 23.x.1844, *R.C. Gunn 1027* (HO3412); 'Formosa', Cressy, 4.xi.1844, *R.C. Gunn s.n.* (HO3407); Little Musselroe Bay, *A. Moscal 2971* (HO70161); Fingal Valley Road, *F. Duncan s.n.* (HO326475); Campbell Town Golf Course, *H.&A. Wapstra s.n.* (HO515933); Conara Park ('paddock'), *H.&A. Wapstra s.n.* (HO528561); 'Forest Hall', Cleveland, *H.&A. Wapstra s.n.* (HO528559); Valleyfield Road just W of Macquarie Road intersection, N side of road, *M.F. de Salas 276* (HO568007); Exeter, junction of West Tamar Highway and Beaton Street, north Side of Beaton Street, west side of highway, in mowed area in front of houses, *M.F. de Salas 394* (HO571066); Fingal. Mangana Road, approximately 500 m SW of Mathinna Road and Bridge over South Esk River, *M.F. de Salas 1043* (HO575876). **VICTORIA.** Volcanic Plain. E side of Forest Lane, 10.1 km SW of Dunkeld, *P.C. Jobson 3954* (MEL2028326); Dookie Agricultural College Reserve (hill 4 km S of Mt Major), *I. Crawford 1928* (MEL274583); Western Port, French Island, Albions Point, *C. Gordes 103A* (MEL2011809, specimens marked 'A' only).

**Distribution and ecology:** Grassland, grassy woodland and open, grassy habitats such as mowed lawns, in Victoria, South Australia and Tasmania, at low

to mid elevations. Flowering Sep.–Nov. and dormant during the summer months.

***Drosera gunniana* (Planch.) de Salas, comb. et stat. nov.**

**Basionym:** *Drosera peltata* var. *gunniana* Planch. *Ann. Sci. Nat.* sér 3, 9: 297 (1848).

*Drosera peltata* Thunb. *sensu* J.D. Hooker, *Bot. Antarct. Voy. Ill. (Fl. Tasman.)*. 1(1): 30 (1855); W.M. Curtis & D.I. Morris, *The Student's Flora of Tasmania* ed. 2, 1: 188 (1975) *p.p.*; Marchant et al., *Fl. South Australia* Ed. 4, 1: 363 (1986) *p.p.*; N.G. Marchant, *Fl. Australia* 8: 22 (1982) *p.p.*; D.I. Morris, *Flora of Tasmania Online* (2009, accessed 12 Jan 2018); *Electronic Flora of South Australia* (accessed 12 Jan 2018) *p. p.* *Drosera peltata* subsp. *peltata sensu* B.J. Conn, *J. Adelaide Bot. Gard.* 3(1): 97 (1981) *p.p.* *D. peltata* var. *peltata sensu* G. Bentham, *Fl. Austral.* 2: 465 (1864) *p.p.*; L. Rodway, *Tasman. Fl.* 48 (1903) *p.p.*

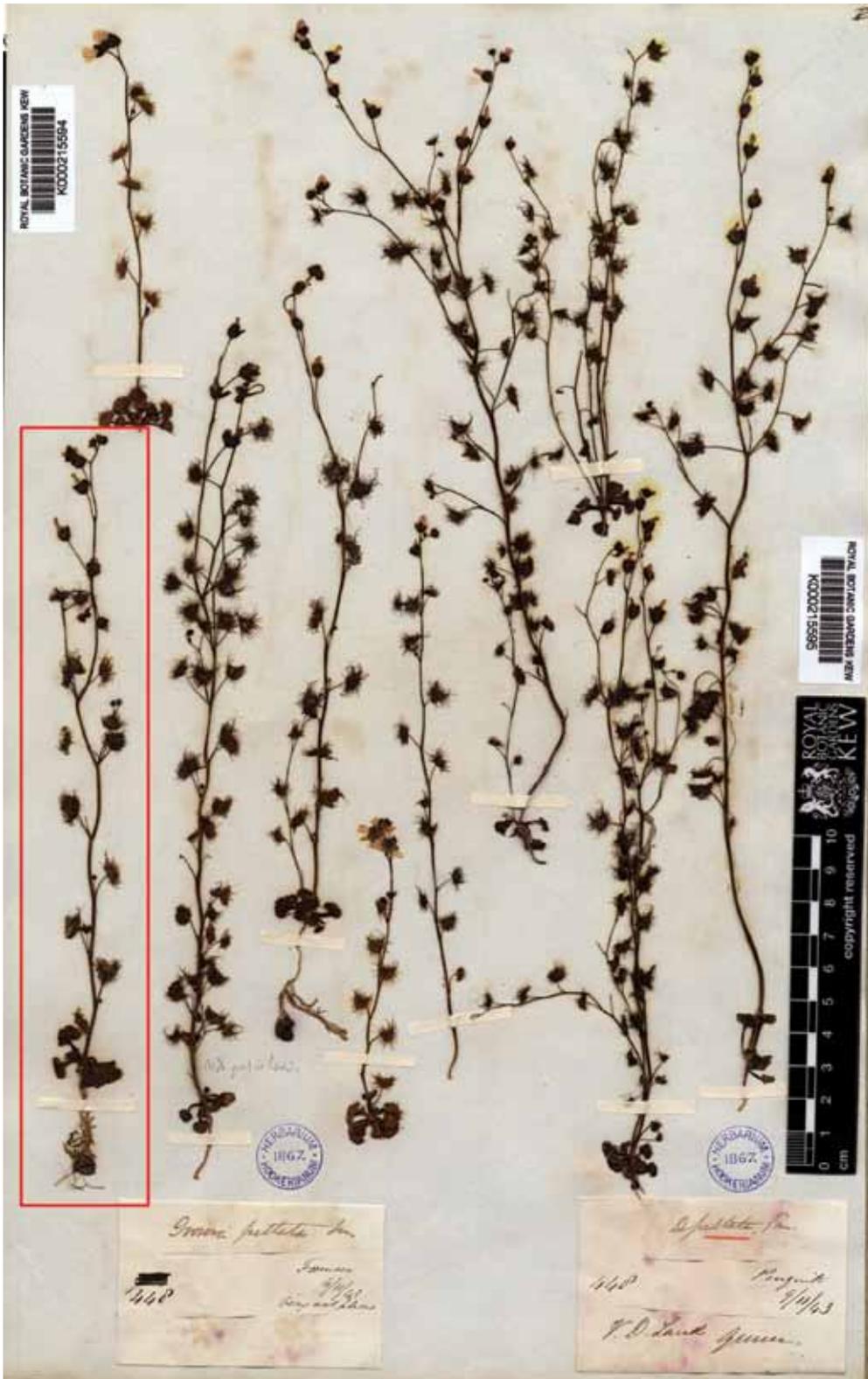
**Type: TASMANIA.** "...in insula Van Diemen, locis dictis: Formosa, Penquite, New Norfolk; Gunn. n° 448 in herb. Hook." (lectotype here chosen: Formosa [Cressy], 4 Nov. 1843, R.C. Gunn 448 (K 215594, lower leftmost specimen on sheet as indicated in Fig. 4, photo!). Residual syntypes: Penquite, 9 Nov. 1843, *R.C. Gunn 448* (K000215595 photo!, HO3405!); New Norfolk, 2 Nov. 1839, R.C. Gunn 448 (K000215593 photo!)

*D. hookeri* R.P. Gibson, B.J. Conn & Conran *sensu* R.P. Gibson et al., *Austral. Syst. Bot.* 25: 66 (2012) *p.p.*; A. Messina, *Vicflora* (2015, accessed 12 Jan 2018) *p.p.*

Tuberous perennial *herb* to 30 cm tall, forming loose colonies. *Tubers* pink or red externally. *Stems* erect, simple or branched from the upper nodes, occasionally branched from the base but generally with one clearly dominant main stem, green to red, often suffused orange or red near the base. *Basal rosette leaves* moderately well-developed, usually present at flowering; petiole flattened, 3–14 mm long, lamina 5–10 mm in diameter, semi-orbicular-lunate, not peltate. *Lower cauline leaves* sometimes reduced to a petiole with a minute unexpanded lamina; *upper cauline leaves* yellow-green, sometimes reddish; petiole 7–10 mm long; lamina crescent-shaped, auriculate, peltate, 5–6 mm in diameter. *Inflorescence* subtended by several vegetative internodes, (5–)8–22(–30+) mm high, yellow-



**Figure 3.** Lectotype of *Drosera hookeri* (highlighted). Note the multi-stemmed habit and fruit ripening near ground level. Reproduced with permission of Kew.



**Fig. 4.** Lectotype of *Drosera gunniana* (highlighted). Note erect, single-stemmed habit. Reproduced with permission of Kew.

green or reddish, branching from the top one or two vegetative nodes, or unbranched; *flowers* in axillary and terminal racemes; *bracts* lanceolate, fimbriate, hairy. *Flower buds* approximately spherical. *Sepals* green or blackish, 3–5 mm long and wide, only loosely clasping the capsule or spreading after anthesis, margins fimbriate, apex truncate; indumentum dense 0.8–1.2 mm long, scarcely longer on the margins, the same colour as the sepal lamina. *Petals* pink or white, 5–8 mm long, obovate, drying pink. *Seeds* black, ovoid to almost cylindrical with a short neck, 0.5 mm long, c. 0.25 mm wide, surface reticulated.

**Selected specimens examined: NEW SOUTH WALES.** Near Tucabia, *F.M. Isaac 1006* (MEL152927); Pound Creek Station, 0.6 km ESE of farmhouse, *P.H. Weston 2632* (NSW610367); 59 Park River Close, Mulgoa, *R. Gibson 1* (NSW413172). **SOUTH AUSTRALIA.** Newland Head Conservation Park, Parsons Beach Area, *D.E. Murfet 7617* (AD265691); Berkins Scrub Native Forest Reserve, *D.E. Murfet 4573* (AD156383); Nuriootpa, *D.J.E. Whibley 1432* (AD96816115); Sandy Creek (ca. 45 Km north-east of

Adelaide), *M. Fagg 224* (AD96719018). **TASMANIA.** New Norfolk, 1834, *R.C. Gunn s.n.* (HO3413); 'Glen Leith' [Plenty], 9.x.1839, *R.C. Gunn 448* (HO38070); 'Formosa', Cressy, 7.x.1842, *R.C. Gunn s.n.* (HO3409); Proctors Road, Hobart, *A.M. Olsen s.n.* (HO411564); Deep Bay, Cape Barren Island, *P. Collier 3515* (HO118339); Valley Rivulet, north of Broadmarsh, *P. Collier 3468* (HO118492); 'Forest Hall', Cleveland, *H.&A. Wapstra s.n.* (HO528564); Pontville. Ford Road. Informal crown reserve on the SE side of the Jordan River ford, *M.F. de Salas 49* (HO564701); Fingal-Avoca Road, 100m past picnic area, *M.F. de Salas 67* (HO563478); Valleyfield Road just W of Macquarie Road intersection, N side of road, *M.F. de Salas 275* (HO568008); Exeter, junction of West Tamar Highway and Beaton Street, north Side of Beaton Street, west side of highway, in mowed area in front of houses, *M.F. de Salas 395* (HO571067); Hobart Airport. Approximately 250 m southwest of airport roundabout, off Cranston Parade, *M.F. de Salas 421* (HO572652); Fingal, Mangana Road, approximately 500 m SW of Mathinna Road and bridge over South Esk River, *M.F. de Salas 1045* (HO575874). **VICTORIA.** Rushworth Forest; c. 4 km due west of Baillieston, *M.G. Corrick 7893* (HO52025); Golton Track about 10 km W of Dadswell Bridge, *D.E. Murfet 4535*

### Key to Tasmanian *Drosera*

- 1 Leaves in a basal rosette only; tubers absent .....2
- 1: Leaves cauline, basal rosette present or absent at flowering time; plant with a vertical rhizome arising from a globose tuber .....6
- 2 Leaf lamina deeply divided into two or occasionally more, linear lobes ..... *D. binata*
- 2: Leaf lamina entire .....3
- 3 Stipules present, conspicuous, scarious .....4
- 3: Stipules absent or small and fused to the petiole .....5
- 4 Flowers solitary, minute, on slender scapes; leaf lamina orbicular ..... *D. pygmaea*
- 4: Flowers few to many on a narrow secund raceme; leaf lamina spatulate ..... *D. spatulata*
- 5 Leaves orbicular, < 2 cm long; peduncle glandular-pubescent..... *D. glanduligera*
- 5: Leaves linear-oblong; peduncle glabrous .....6
- 6 Number of glandular leaves (3–)4–6, 20–70 mm long; outer, non-glandular leaves reduced or absent ..... *D. arcturi*
- 6: Number of glandular leaves 1–2, 60–100(–200) mm long; outer, non-glandular leaves present, spreading..... *D. murfetii*
- 7 Stem leaves orbicular, peltate, lacking angular lobes; stems trailing, scrambling or climbing ..... *D. macrantha*
- 7: Stem leaves lunate, the margins extended as 2 angular lobes; stems erect .....8
- 8 Sepals glabrous ..... *D. auriculata*
- 8: Sepals hirsute .....9
- 9 Stems very slender, unbranched, frequently leafless in the upper half; basal rosette leaves red; seeds narrow-turbinate, slightly arcuate..... *D. peltata*
- 9: Stems branched or unbranched, leafy to the inflorescences; basal rosette leaves yellow to green; seeds ovoid to ampulliform or cylindrical .....10
- 10 Plant up to 10 cm high with a distinctly yellow-green colour; tubers white; stems often several or if solitary then branched from near the base; inflorescences from lower and upper nodes; sepal indumentum sparse, < 0.6 mm long; petals white, drying white, 4–4.5 mm long ..... *D. hookeri*
- 10: Plant (5–)8–22(–30+) cm high with a pale olive-green to dark red colour; tubers pink or red; stems usually solitary, or branched in the upper half; inflorescence from the upper nodes only; sepal indumentum dense, > 0.8 mm long, often > 1 mm; petals white or pink, drying pink, 5–8 mm long ..... *D. gunniana*

(MEL2375318A); Terrick Terrick National Park. Eastern boundary ca. 600 m west-north-west of Reigel's Rock, W.A. *Gebert* 330 (MEL2375996); Mount Lawson State Park, A.C. *Beaughlehole* 90378 (MEL1577687); 6.5 km E of Warrak, c. 3 km SSE of Ben Nevis, I.C. *Clarke* 1958 (MEL1582379); Little Desert National Park. East Camp grounds, track towards park boundary, B.M. *Overton* 1081 (MEL1576629); 5km E of Lake Lawloit, A.C. *Beaughlehole* 84215 (MEL1577679); Pine Mountain National Park, A.C. *Beaughlehole* 88745 (MEL1577685); Approx. 10km NE of Lancefield, Boland Rd?? access track due N of Mt William winery, A.C. *Cochrane* 243 (MEL2052384).

**Distribution and ecology:** Woodland, grassy woodland and extending onto open, grassy habitats such as lawns, in New South Wales, Victoria, South Australia and Tasmania, at low to mid elevations. Flowering Sep.–Nov. and dormant during the summer months.

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