



## 111 CONVULVACEAE <sup>1</sup>

AM Gray <sup>2</sup>

Annual or perennial herbs, shrubs or climbing or trailing plants, sometimes leafless parasites with stem haustoria (*Cuscuta*), rarely trees; glabrous or pubescent; milky sap often present. Leaves exstipulate, alternate, simple, entire to deeply lobed, or sometimes reduced to scales or absent. Inflorescences usually axillary, racemes, cymes or compound cymose clusters, or sometimes flower solitary; bracts and bracteoles usually present. Flowers small or large and showy, actinomorphic, rarely slightly zygomorphic, bisexual, occasionally cleistogamous. Sepals (3)4–5(6), usually free or united at base, persistent. Corolla campanulate, tubular or urceolate, rarely rotate or trumpet-shaped, (3)4–5(6) lobed. Stamens 5; filaments fused to the base of the corolla and alternating with the lobes or inserted at the throat between the lobes, sometimes narrow-triangular and subtended by fimbriate scales (*Cuscuta*); anthers 2-celled, dehiscing by longitudinal slits. Disc usually present. Ovary superior, 2(3–4) locular; ovules (1)2 per locule; styles 1(2), entire, free or forked; stigmas linear or capitate. Fruit a dry or thinly fleshy capsule, sometimes a berry, or indehiscent. Seeds 4 or 6, sometimes fewer by abortion; endosperm scanty.

A family of about 57 genera and 1600 species; virtually cosmopolitan but mainly in tropical and sub-tropical regions. In Australia there are about 20 genera and 110 species; 5 genera, 13 species (9 native) in Tasmania. Convolvaceae are placed in the Solanales near Solanaceae. *Cuscuta* has often been placed in its own monogeneric family.

The family is of some economical and horticultural importance. Several species of *Ipomoea* L. have starchy, edible tubers, such as *I. batatas* (L.) Lam. (Sweet Potato) and several native species which were eaten extensively by Aboriginal people. *Ipomoea purga* (Wender.) Hayne is the source of the medicinal purgative Jalap. Some exotic species of *Ipomoea* (Morning Glory) are cultivated for their flamboyant, colourful flowers. Species of *Dichondra* (Kidney Weed) are occasionally used as a lawn substitute. Some exotic species of *Calystegia* and *Convolvulus* (Bindweed) and *Cuscuta* (Dodder) are occasionally aggressive and troublesome weeds in pastures, crops and neglected gardens.

Synonymy: Cuscutaceae, Dichondraceae.

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

|    |   |                      |
|----|---|----------------------|
| 1. | Twining parasites with red or yellowish filiform stems; leaves minute, scale-like         | <b>1 Cuscuta</b>     |
| 1: | Green or grey leafy non-parasitic plants; stems ascending, creeping, climbing or trailing | 2                    |
| 2. | Sepals joined, tubular-campanulate, tube longer than the lobes                            | <b>3 Wilsonia</b>    |
| 2: | Sepals free or joined at the extreme base and then tube very short                        | 3                    |
| 3. | Corolla rotate; tube c. 1 mm long; flowers occasionally cleistogamous                     | <b>2 Dichondra</b>   |
| 3: | Corolla funnel-shaped; tube 5–60 mm long; flowers always opening                          | 4                    |
| 4. | Bracteoles 1–3 mm long, distinctly distant from the calyx                                 | <b>4 Convolvulus</b> |
| 4: | Bracteoles 6–30 mm long, over-lapping and usually obscuring the calyx                     | <b>5 Calystegia</b>  |

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## 1 CUSCUTA

*Cuscuta* L., *Sp. Pl.* 1: 124 (1753).

Synonymy: *Grammica* Lour., *Fl. Cochinch.* edn 1, 1: 98, 170 (1790).

Parasitic annuals or perennials; stems red or yellowish, filiform, twining, attached to the host plant by haustoria; soon after attachment to a host plant, the stem withers near the base, breaking connection with the roots (thus parasitism is complete). Leaves reduced to very small non-green scales. Inflorescences axillary, simple or compound cymose clusters; bracts present. Flowers small, actinomorphic, bisexual. Sepals (3)4–5, free or united at the base, persistent. Corolla urceolate or campanulate, distinctly (3)4–5 lobed, lobes imbricate in bud. Stamens inserted at the throat of the corolla tube, alternating with the lobes; filaments narrow-triangular, subtended by fimbriate scales; anthers 2-celled, dehiscent by longitudinal slits. Ovary 2-locular; ovules 2 per locule; styles free or united; stigmas linear or capitate. Fruit a dry or thinly fleshy capsule, indehiscent or circumscissile. Seeds 4, or less by abortion, granular; endosperm scanty.

A cosmopolitan genus of about 180 species; 10 species (4 endemic, 6 naturalized) in Australia; 3 species (1 native, 2 naturalized) in Tasmania.

- |    |   |                               |
|----|---|-------------------------------|
| 1. | Flowers in dense axillary clusters; stigmas linear                                      | <b>1 <i>C. epithymum</i></b>  |
| 1: | Flowers in loose, few-flowered, axillary clusters; stigmas capitate                     | 2                             |
| 2. | Calyx nearly as long as the corolla tube; corolla lobes as long or longer than the tube | <b>2 <i>C. tasmanica</i></b>  |
| 2: | Calyx much shorter than the corolla tube; corolla lobes shorter than the tube           | <b>3 <i>C. suaveolens</i></b> |

**1 \* *Cuscuta epithymum*** (L.) L., *Syst. Veg.* edn 1, 140 (1774)

*Lesser Dodder*

*Cuscuta europaea* var. *epithymum* L., *Sp. Pl.* 1: 124 (1753).

*Illustrations:* Johnson, *Fl. S. Austral.* 3: 1139, fig. 527d (1986); Johnson, *Fl. New South Wales* 3: 375 (1992); Jeanes, *Fl. Victoria* 4: 378, fig. 73a (1999).

Stems pale yellow, reddish or purple, filiform. Inflorescence a dense cluster c. 10 mm diam.; subtending bract, obtuse, 1–2 mm long; pedicels 0–0.5 mm long. Calyx 1.5–2.5 mm long, divided almost to the base; lobes unequal, longer than the tube, ovate-triangular, with a small, bladder-like keel. Corolla white, pinkish or translucent, urceolate, 2.5–4 mm long; lobes triangular, acute, equal to or slightly longer than the tube. Scales subtending stamens oblong, shorter than or equal to the tube, very shortly fringed. Stamens exserted; filaments erect, shorter than the corolla lobes. Styles free, linear, filiform. Capsule sub-globose, c. 2 mm diam., circumscissile. Seeds c. 1 mm long. Flowering & fruiting Dec.–Mar.

Tas. (TSE); also naturalized in WA, SA, Qld, NSW, Vic., New Zealand; native to Europe, Mediterranean region. An occasional but widespread plant in the south-east of the state. A weedy species that has been observed growing on species of *Coprosma*, *Epacris* and *Trifolium*. Listed as a Declared Weed under the *Weed Management Act* 1999.

**2 *Cuscuta tasmanica*** Engelm., *Trans. Acad. Sci. St. Louis* 11: 512 (1840)

*Golden Dodder*

*Illustrations:* Johnson, *Fl. New South Wales* 3: 374 (1992); Jeanes, *Fl. Victoria* 4: 378, fig. 73c (1999); Gilfedder *et al.*, *The Nature of the Midlands* 83 (2003).

Stems twining, pale yellow. Inflorescence a loose, few-flowered cluster; subtending bract, obtuse, c. 1.5 mm long; pedicels mostly 3–6 mm long. Calyx 1.5–2 mm long, almost equalling the corolla tube, divided nearly to the base; lobes unequal, obtuse. Corolla pale creamy-white, campanulate, 3–4 mm long; lobes uneven, ovate-oblong, obtuse, equal to or a little longer than the tube. Scales subtending stamens erect, equal to, or longer than corolla tube; fringe dense, to 0.5 mm long. Stamens almost sessile at the throat of the corolla. Styles free;

stigmas large, capitate, lobed. Capsule depressed-globose, c. 3.5 mm diam., indehiscent. Seeds 1.5–2 mm long. Flowering & fruiting Nov.-Feb.

Tas. (FLI, TNM, TSE); also WA, SA, NSW, Vic. In Tasmania, the species has been observed growing on the margins of salt and brackish marshes in the central north, and the south-east and north-east coasts. It has been recorded as parasitic on *Selliera radicans* Cav. and species of *Wilsonia*. Listed as Rare under the *Tasmanian Threatened Species Protection Act 1995*.

NOTE: Examination of the 12 sheets of *C. tasmanica* held at the Tasmanian Herbarium, as well as a single sheet from Melbourne, has indicated that the greater majority of flowers possess stigmas which are much shorter than as depicted in the *Flora of Victoria* (Jeanes 1999; p. 378, fig. 73c). This apparent discrepancy may be due to a developmental phenomenon whereby the styles elongate at or during late anthesis, to become exerted beyond the top of the corolla tube in older flowers. Or perhaps, more probably, it may indicate protandry or heterostyly, conditions not hitherto observed or described in previous accounts of this genus or it is, possibly, variation between the different populations.

**3 \* *Cuscuta suaveolens*** Ser., *Ann. Sci. Phys. Nat. Lyon* 3: 519 (1840)

*Fringed Dodder*

*Illustrations:* Johnson, *Fl. New South Wales* 3: 374 (1992); Jeanes, *Fl. Victoria* 4: 378, fig. 73d (1999).

Stems yellowish, occasionally rather stout. Inflorescence a loose, few-flowered axillary cluster; subtending bract obtuse, c. 1.5 mm long; pedicels mostly 3–6 mm long. Calyx 1.5–2 mm long, much shorter than the corolla tube; lobes almost equal, triangular-ovate, acute. Corolla white, campanulate 3–4 mm long; lobes triangular to triangular-ovate, acute, much shorter than the tube. Scales subtending stamens oblong, scarcely as long as the corolla tube; fringe dense. Filaments of stamens 0.5–0.8 mm long; anthers as long as the filaments. Styles free; stigmas capitate. Capsule globose, c. 3.5 mm diam., indehiscent. Seeds 1.5–2 mm long. Flowering & fruiting Dec.-Apr.

Tas. (TNS); also naturalized in SA, NSW, Vic.; native to South America. A weedy species recorded in the north of the state at a Vegetable Research Station on a weedy *Solanum* species. Listed as a Declared Weed under the *Weed Management Act 1999*.

## 2 DICHONDRA

*Dichondra* J.R.Forst. & G.Forst., *Char. Gen. Pl.* edn. 1: 39, t. 20 (1775).

Perennial herbs with creeping (sometimes subterranean) prostrate stems. Leaves petiolate, simple, entire. Flowers axillary, solitary, bracteolate. Sepals 5, free or united only at base, subequal. Corolla campanulate, 5-lobed, lobes induplicate-valvate or slightly imbricate, glabrous. Stamens 5, inserted between the corolla lobes (in Australia); filaments almost equal, glabrous. Ovary glabrous, deeply 2-lobed; ovules 2 per lobe; styles 2, inserted between the lobes; stigmas capitate. Capsule deeply 2-lobed, indehiscent or irregularly 2-valved and dehiscing irregularly; lobes pilose (in Australia). Seeds 1(2) per lobe, smooth.

A genus of about 15 species found mainly in tropical regions; 2 species in Australia.

**1 *Dichondra repens*** J.R.Forst. & G.Forst., *Char. Gen. Pl.* 40, t. 20 (1776)

*Kidney Weed*

*Illustrations:* Johnson, *Fl. S. Austral.* 3: 1141, fig. 528a (1986); Johnson, *Fl. New South Wales* 3: 375 (1992); Jeanes, *Fl. Victoria* 4: 368, fig. 71a (1999); Gilfedder *et al.*, *The Nature of the Midlands* 136 (2003); Richardson *et al.*, *Weeds of The South-East, an identification Guide for Australia* 233 (2006).

Perennial herbs; vegetative parts softly puberulous; stems prostrate (sometimes subterranean), creeping, rooting at the nodes, much branched and forming large patches. Leaves alternate or clustered due to development on short, nodal shoots; petioles slender, erect or spreading, 1–8 times as long as the lamina; lamina reniform to

sub-orbicular, 5–25 mm long, (5–)10–25(–35) mm wide, base cordate, apex rounded or emarginate. Flowers solitary, axillary, on filiform pedicels usually shorter than the petioles. Calyx 2.5–4.5 mm long, shortly united at the base; lobes oblong-elliptic. Corolla pale greenish-yellow, rotate; tube to 1 mm long; lobes 1.5–3.5 mm long, ovate-elliptic, glabrous. Capsule deeply 2-lobed, lobes shorter than the calyx. Seeds usually 2, dark brown, c. 1–1.5 mm diam., ellipsoid. Flowering & fruiting Sep.-Apr.

Tas. (BEL, FLI, KIN, TCH, TNM, TNS, TSE, TWE); also in WA, SA, Qld, NSW, Vic., New Zealand; widespread in temperate and tropical regions of both hemispheres. Widespread and very common throughout the state and found in dry, sandy or stony soils, in open heaths, woodlands and coastal situations, from sea-level to c. 500 m alt. Occasionally the species invades and establishes as a weed in suburban lawns and gardens; conversely, it has been used as an alternative to grasses in lawn applications.

Curtis (1967), in *The Student's Flora of Tasmania*, refers to the possibility of another taxon in Tasmania, with the comment: "Certain Tasmanian plants which are distinctive in habit have retained their differences when transplanted and grown side by side in approximately uniform conditions. Further study of these variants is necessary". An undescribed species was noted by both Jeanes (1996) and Johnson (1992) which is now called *Dichondra* sp. *Inglewood* (J.M.Dalby 86/93) *Qld Herbarium* (APC, APNI). Whether this matches the undescribed form alluded to by Curtis (1967) requires further research.

### 3 WILSONIA

*Wilsonia* R.Br., *Prodr. Nov. Holland.* 490 (1810).

Small perennial undershrubs; stems prostrate or weakly ascending. Leaves sessile or shortly petiolate, simple, entire, fleshy. Flowers solitary in leaf axils; bracteoles absent. Calyx tubular-campanulate, 5-lobed; lobes shorter than the tube, bearded on the adaxial surface, persistent. Corolla salver-shaped, tube narrow, 5-lobed; lobes glabrous, oblong, spreading or recurved, imbricate in bud, margins induplicate. Stamens 5; filaments almost equal, glabrous. Ovary partly or completely 2-locular with 1(2) erect ovules in each loculus; style 1, terminal, bifid; stigmas capitate or ovoid. Capsule obovoid, shorter than calyx, indehiscent.

An Australian genus of 3 species.

- |    |   |                          |
|----|---|--------------------------|
| 1. | Leaves imbricate, distichous, appressed silvery-hairy; corolla tube about as long as the calyx; stamens and styles barely exerted; anthers scarcely spirally twisted after dehiscence                     | <b>1 W. humilis</b>      |
| 1: | Leaves alternate or clustered, green, glabrous or variously hirsute-hairy; corolla tube much longer than the calyx; stamens and styles much exerted; anthers distinctly spirally twisted after dehiscence | 2                        |
| 2. | Leaves linear-lanceolate to linear-obovate, glabrous  | <b>2 W. backhousei</b>   |
| 2: | Leaves broad-ovate to ovate-spathulate, variously hirsute-hairy   | <b>3 W. rotundifolia</b> |

**1 *Wilsonia humilis*** R.Br., *Prodr. Fl. Nov. Holland.* 490 (1810)

*Silky Wilsonia*

*Frankenia cymbifolia* Hook., *Hooker's Icon. Pl.* 3: t. 265 (1840). *Wilsonia humilis* var. *spinescens* Benth., *Fl. Austral.* 4: 40 (1868). *Wilsonia humilis* var. *macrophylla* Diels, *Bot. Jahrb. Systematic* (1904).

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 500, fig.112 (1967); Kirkpatrick *et al.*, *City Parks & Cemeteries: Tasmania's Remnant Grasslands & Grassy Woodlands* 3, pl. 24-3 (1988); Johnson, *Fl. New South Wales* 3: 376 (1992); Jeanes, *Fl. Victoria* 4: 368, fig. 71d (1999).

Small subshrubs with a short rootstock bearing a number of prostrate or weakly ascending branches, spreading to 15–30 cm, often rooting at the distal portion and spreading further. Leaves sessile, 1.5–4 mm long, 1–3 mm wide, imbricate, distichous, crowded on short lateral branches, ovate to lanceolate or oblong, thick, concave,

grey-green with silvery appressed hairs, apex rounded. Flowers sessile, solitary at the tips of short branches. Calyx tubular, 4–6 mm long; lobes triangular, much shorter than the tube, both surfaces silky pubescent. Corolla white, tube almost as long as the calyx; lobes 2–3 mm long, narrow-oblong, acute. Anthers inserted just below the throat, shortly exerted, scarcely spirally twisted after dehiscence. Ovary 1–2 locular; style divided at about the middle to 2 branches; stigmas capitate. Capsule c. 3 mm long, enclosed within the persistent calyx. Flowering & fruiting Dec.–Mar.

Tas. (FLI, TSE); also in WA, SA, NSW?, Vic. Scattered and very localized in coastal salt-marshes in the east and north of the state. Listed as Rare under the *Tasmanian Threatened Species Protection Act 1995*.

**2 *Wilsonia backhousei*** Hook.f., *London J. Bot.* 6: 275 (1847) [as *W. backhousii*] *Narrowleaf Wilsonia*

*Illustrations:* Curtis, *The Student's Flora of Tasmania* 3: 500, fig.113 (1967); Johnson, *Fl. New South Wales* 3: 375 (1992); Jeanes, *Fl. Victoria* 4: 368, fig. 71a (1999).

Small undershrub, often with a woody rhizome creeping through muddy ground and bearing stout, ascending or procumbent branches, to c. 5–15 cm high. Leaves sessile, 5–15(–20) mm long, 1–3 mm wide, linear-lanceolate to linear-obovate, fleshy, terete, more or less glabrous, apex blunt or acute to mucronate. Flowers solitary, sessile or on pedicels to 1.5 mm long. Calyx tubular 6–7 mm long; lobes triangular, much shorter than the tube, adaxial surface of the tube pubescent, abaxial surface glabrous. Corolla white, tube about twice as long as the calyx; lobes narrow-triangular, 2–4 mm long, spreading and recurved. Stamens much exerted; filaments inserted on the tube c. 1–1.5 mm below the throat; anthers dehiscing longitudinally, spirally twisting after dehiscence. Ovary 1–2-locular; styles 2; stigmas ovoid, exerted to about the level of the stamens. Capsule c. 3 mm long. Flowering Nov.–Jan.; fruiting Jan.–Mar.

Tas. (FLI, TSE); also in WA, SA, NSW, Vic. Scattered and localized at the upper margins of coastal salt-marshes in the east and north of the state.

**3 *Wilsonia rotundifolia*** Hook., *Icon. Pl.* 5: t. 410 (1841) *Roundleaf Wilsonia*

*Wilsonia ovalifolia* F.Muell. ex Hallier f., *Bot. Jahrb. Systematic* 16: 532 (1893).

*Illustrations:* Johnson, *Fl. New South Wales* 3: 376 (1992); Jeanes, *Fl. Victoria* 4: 368, fig. 71e (1999); Gilfedder *et al.*, *The Nature of the Midlands* 124 (2003).

Small sub-shrub with prostrate, spreading branches, hirsute with spreading hairs. Leaves sometimes clustered, sessile or shortly petiolate, 1.4–5(–7) mm long, 1–3 mm wide, glabrescent to sparsely hirsute; lamina broad-ovate with apex acute, or oblong-spathulate with apex obtuse. Flowers solitary, subsessile. Calyx tubular, 4.5–5 mm long; lobes triangular, c.  $\frac{1}{3}$  length of the tube, both surfaces hirsute. Corolla white, tube 4.5–5 mm long; lobes oblong-elliptic, 2–3 mm long, acute. Stamens strongly exerted; filaments inserted just below the throat; anthers spirally twisted after dehiscence. Ovary completely or partially 2-locular; style divided just below the middle into 2 branches, strongly exerted beyond the throat of the corolla; stigmas capitate. Capsule c. 3 mm long. Flowering Nov.–Feb.; fruiting Jan.–Mar..

Tas. (TNM, TSE); also WA, SA, NSW, Vic. Recorded from a few localities in the central north and the east coast of the state, at the upper margins of coastal salt-marshes and inland salt-pans. Listed as Rare under the *Tasmanian Threatened Species Protection Act 1995*.

## 4 CONVULVULUS

*Convolvulus* L., *Sp. Pl.* 1: 153 (1753).

Synonymy: *Pharbitis* Choisy, *Convolv. Oriental.* 483 (1834); *Ipomoea* series *Pharbitis* (Choisy) Benth., *Fl. Austral.* 4: 413, 416 (1868). *Plesiagopus* Raf., *Fl. Tellur.* 4: 78 (1838).

Perennial or rarely annual herbs, glabrous or with simple hairs; stems trailing or climbing, or rarely sub-shrubs, sometimes woody at the base. Leaves alternate, petiolate, simple, entire to deeply lobed, sometimes sagittate or hastate. Inflorescences axillary or terminal. Inflorescences cymose, 1(–3)-flowered; bracteoles small, distant from the calyx. Calyx deeply 5-lobed, lobes imbricate, almost free, equal or sub-equal. Corolla funnel-shaped or campanulate, entire or slightly 5-lobed; mid-petaline ridges distinctly hairy, rarely glabrous. Stamens 5, enclosed, sub-equal, adnate to the corolla tube near its base; filaments terete above, expanded and flattened below, tuberculate at the base. Ovary 2-celled, glabrous; ovules 2 per cell; style 1, terminal; stigma 2-lobed, lobes linear or oblong. Capsule ovoid or globose, dehiscent longitudinally into 2–4 valves; seeds 4 per capsule, often verrucose, usually glabrous.

A genus of about 220–250 species; cosmopolitan but mainly in temperate and subtropical regions of the world; 6 species (1 endemic, 1 naturalized) in Australia; 2 species (1 native, 1 naturalized) in Tasmania.

Key reference: Johnson (2001).

- |    |   |                                  |
|----|---|----------------------------------|
| 1. | Leaves and stems sparsely to moderately hairy; leaves either ovate-hastate in outline, margins crenate or deeply lobed; or, upper or all leaves narrow linear with lobed or entire basal auricles | <b>1 <i>C. angustissimus</i></b> |
| 1: | Plant more or less glabrous; leaves oblong or ovate-hastate, or sagittate, margins entire   | <b>2 <i>C. arvensis</i></b>      |

### 1 *Convolvulus angustissimus* R.Br., *Prodr. Fl. Nov. Holland.* 482 (1810) subsp. **angustissimus**

*Blushing Bindweed*

*Convolvulus erubescens* var. *angustissimus* (R.Br.) Choisy, *Prodr. (Candolle)* 9: 412 (1845). *Convolvulus adscendens* de Vreise, *Pl. Preiss.* 1(3): 346 (1845). *Convolvulus acaulis* Choisy, *Prodr. (Candolle)* 9: 406 (1845). *Convolvulus subpinnatifidus* de Vreise, *Pl. Preiss.* 1(3): 347 (1845). *Convolvulus erubescens* sensu G.Bentham, *Fl. Austral.* 4: 429 (1867); W.M.Curtis, *The Student's Flora of Tasmania* 3: 497 (1967), non Sims (1807).

*Illustrations* (all as *C. erubescens*): Johnson, *Fl. S. Austral.* 3: 1136, fig. 526c (1986); Johnson, *Fl. New South Wales* 3: 383 (1992); Jeanes, *Fl. Victoria* 4: 373, fig. 72f (1999); Gilfedder *et al.*, *The Nature of the Midlands* 108 (2003); Richardson *et al.*, *Weeds of The South-East, an identification Guide for Australia* 232 (2006); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, 4<sup>th</sup> edn, 131 (2008).

Perennial herb; almost glabrous to sparsely pubescent; stems stout, often much branched, trailing and twining, to 40 cm long or more. Leaves sparsely to moderately hairy with ascending to erect hairs; petioles 5–30 mm long; lamina 1.5–5.5 cm long, 1–35 mm wide, ovate to oblong-lanceolate in outline, base hastate or sagittate, margins crenate, toothed or lobed, sometimes only at the base, or those of the upper leaves entire, apex acute, rounded or emarginate. Inflorescence cymose, 1(–3)-flowered; peduncles 5–50 mm long; bracteoles linear to ovate, 1–3 mm long, inserted at or a little above the middle; pedicels 2–15 mm long, shorter than peduncles. Sepals elliptic to obovate, 4–7 mm long, pubescent, rarely glabrous, apex rounded or bluntly pointed. Corolla reddish, pale pink or white, funnel-shaped, 12–20 mm long and in diam.; lobes very short, bluntly pointed, abaxial surface pubescent along the mid-petaline ridge. Ovary surrounded at the base by a nectar-secreting disc; style base persistent. Capsule globose, 4–6 mm long, slightly longer than the persistent calyx, dehiscent by 2 valves. Seeds dark brown, c. 4 mm long, more or less muricate. Flowering Oct.–Mar.; fruiting Nov.–Mar.

Tas. (BEL, FLI, TCH, TNM, TSE, TSR); also WA, SA, Qld, NSW, Vic. Widespread and frequent in dry grass-lands, roadside banks and open woodlands, from sea-level to c. 500 m alt., in the north and east of the state.

A further three subspecies are recognised, none of which occur in Tasmania: *C. angustissimus* subsp. *fililobus* (Wawra) R.W.Johnson (NSW, Vic.); *C. angustissimus* subsp. *omnigracilis* R.W.Johnson (Vic.); *C. angustissimus* subsp. *peninsularum* R.W.Johnson (SA) (Johnson 2001).

## 2 \* *Convolvulus arvensis* L., *Sp. Pl.* 1: 153 (1753)

*Field Bindweed*

*Illustrations:* Hyde-Wyatt & Morris, *Tasmanian Weed Handbook* 89, fig. 64 (1975); Johnson, *Fl. New South Wales* 3: 383 (1992); Jeanes, *Fl. Victoria* 4: 373, fig. 72i (1999); Richardson *et al.*, *Weeds of the South-East, an identification Guide for Australia* 232 (2006).

Perennial herb with long-branched, deeply penetrating rhizomes; stems slender, procumbent, trailing or twining, to 60 cm long or more, young stems and shoots pubescent but becoming glabrous later. Leaves glabrous or sparsely hairy with ascending hairs; petioles 5–25 mm long; lamina 2–6 cm long, 3–30 mm wide, ovate, oblong or lanceolate in outline, base hastate or sagittate, margins and basal lobes entire, apex acute to mucronate. Inflorescences cymose, 1(–3) flowered; peduncles 20–40 mm long; bracteoles linear or subulate, 1–3 mm long, inserted at or a little above the middle; pedicels 5–15 mm long. Sepals obovate-oblong, 3–5 mm long, apex bluntly pointed or truncate to emarginate, glabrous or puberulent. Corolla pale pink or white, often with deeper pink stripes along the mid-petaline ridges, funnel-shaped, 15–25(–30) mm long, and c. the same in diam. Ovary surrounded at the base by a nectar-secreting disc; style base persistent. Capsule globose, c. 4 mm diam., slightly longer than the persistent calyx. Seeds glabrous, granular. Flowering Nov.–May; fruiting Jan.–May.

Tas. (TNM, TSE); also naturalized in WA, SA, Qld, NSW, Vic.; native to Eurasia. Widespread and frequent in grass-lands, degraded pastures and waste places in the north and east of the state. It is a weed of some concern in vegetable growing areas, being aggressive and difficult to control, particularly in crops which offer little competition.

## 5 CALYSTEGIA

*Calystegia* R.Br., *Prodr. Fl. Nov. Holland.* 483: (1810).

Synonymy: *Volvulus* Medik., *Philosophische Botanic* 42 (1791). *Convolvulus* section *Calystegia* (R.Br.) Benth., *Fl. Austral.* 4: 428, 430 (1868).

Perennial herbs, more or less glabrous, hairs, when present simple; stems trailing, twining or climbing. Leaves simple, entire or lobed, often sagittate or hastate, petiolate. Inflorescences axillary; bracteoles large, inserted immediately below and enclosing the calyx. Inflorescence usually a solitary flower (in Tasmania), or rarely a few-flowered cyme. Sepals 5, free, subequal. Corolla white or pink, funnel-shaped or campanulate, entire or shallowly 5-lobed, distinct mid-petaline ridge present. Stamens 5, subequal, included; filaments hairy along fused basal margins. Ovary 1- or incompletely 2-locular, glabrous; ovules 4; style 1; stigma 2-lobed, lobes oblong or elliptic. Capsule ovoid or globose, dehiscent longitudinally into 4 valves. Seeds 4 per capsule, glabrous, smooth.

A genus of about 26 species, mainly in temperate regions of the world; 4 species (1 naturalized) in Australia all of which occur in Tasmania.

1. Leaves more or less fleshy, reniform, apex rounded or emarginate; bracteoles slightly shorter than calyx; stems trailing, rarely twining (coastal habitats)
- 1: Leaves membranous, ovate to lanceolate, apex acute; bracteoles longer than the calyx; stems twining (not always coastal)

**1 *C. soldanella***

2

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| 2. | Corolla < 2.5 cm long; bracteoles more or less orbicular, usually < 1 cm long; peduncles shorter than petioles  | <b>2 C. marginata</b> |
| 2: | Corolla > 2.5 cm long; bracteoles more or less ovate, ≥ 1 cm long; peduncles longer than petioles   | 3                     |
| 3. | Bracteoles 1.5–2 cm long, < 15 mm wide, not overlapping, apex acute, base flat or keeled; capsule subglobose, 7–8 mm long                                   | <b>3 C. sepium</b>    |
| 3: | Bracteoles 2–3.5 cm long, > 15 mm wide, overlapping, apex blunt, base conspicuously inflated, more or less cordate and keeled; capsule ovoid, 10–12 mm long | <b>4 C. silvatica</b> |

**1 Calystegia soldanella** (L.) Roem. & Schult., *Syst. Veg.* 4: 184 (1819)*Sea Bindweed*

*Convolvulus soldanella* L., *Sp. Pl.* 1: 159 (1753); *Calystegia soldanella* (L.) R.Br., *Prodr. Fl. Nov. Holland.* 483 (1810), *nom. inval.*; *Convolvulus sepium* var. *soldanella* (L.) C.Moore & Betche, *Handb. Fl. N.S.W.* 329 (1893). *Calystegia reniformis* R.Br., *Prodr. Fl. Nov. Holland.* 484 (1810); *Convolvulus reniformis* (R.Br.) Spreng., *Syst. Veg.* 1: 590 (1824). *Convolvulus sepium* var. *saldanella* F.Muell., *Fragm. (Mueller)* 9(72): 78 (1875), *nom. inval.* *Calystegia soldanella* var. *australis* Endl., *Prodr. Fl. Norfolk.* 52 (1883).

*Illustrations:* Johnson, *Fl. New South Wales* 3: 381 (1992); Jeanes, *Fl. Victoria* 4: 373 fig. 72 b (1999).

A glabrous perennial herb with wide-spreading rhizomes; aerial stems slender, trailing or rarely twining, much branched and sometimes forming patches 1–2+ m across. Leaves: petiole 1–6 cm long, longer than lamina; lamina ± reniform, (1)2–5 cm long, 2–6 cm wide, somewhat fleshy, base cordate, margins undulate, apex rounded to emarginate. Peduncles 1.5–7 cm long, longer than the petioles; bracteoles 2, broad-ovate, 1–1.5 cm long, slightly shorter than the calyx, apex obtuse or rounded. Sepals subequal, 0.8–1.6 cm long, broad-ovate. Corolla white, pink or purplish, funnel-shaped, 3–5 cm long. Ovary surrounded at the base by a nectar-secreting disc. Capsule ovoid, 12–15 mm long, apiculate. Flowering Oct.–Feb.; fruiting Mar.

Tas. (BEL, FLI, TSE); also Qld, NSW, Vic., New Zealand. Scattered and infrequent in the east and the north-east of the state. A useful sand-binding plant due to its rhizomatous habit and matted, trailing stems. Listed as Rare under the *Tasmanian Threatened Species Protection Act 1995*.

**2 Calystegia marginata** R.Br., *Prodr. Fl. Nov. Holland.* 483 (1810)*Forest Bindweed*

*Volvulus marginatus* (R.Br.) Kuntze, *Revis. Gen. Pl.* 2: 447 (1810); *Convolvulus marginatus* (R.Br.), *Syst. Veg. [Spreng.]* 1: 603 (1824).

*Illustrations:* Johnson, *Fl. New South Wales* 3: 382 (1992); Jeanes, *Fl. Victoria* 4: 373 fig. 72c (1999).

Glabrous, twining perennial herbs. Leaves: petiole 2–8 cm long, shorter than lamina; lamina ovate to lanceolate, 3–19 cm long, 1.5–8 cm wide, base sagittate to hastate, basal lobes toothed or shallowly lobed, margins undulate, apex acuminate. Peduncles 5–10(–25) mm long, shorter than petioles; bracteoles almost orbicular, 6–10(–12) mm long, equal to or longer than the calyx, apex rounded to emarginate, often mucronulate. Sepals 5–7 mm long. Corolla white to pale mauve, c. 2 cm long. Capsule globose, 5–7 mm long. Flowering Feb.–Mar.; fruiting Jul.

Tas. (FLI); also in Qld, NSW, Vic., New Zealand. Recorded only once from Tasmania at Cape Barren Island, growing in light scrub in a steep creek bed. The description and phenology details are based largely on interstate material.



**3 *Calystegia sepium* (L.) R.Br., *Prodr. Fl. Nov. Holland.* 483 (1810) subsp. **sepium** *Swamp Bindweed****Convolvulus sepium* L., *Sp. Pl.* 1: 153 (1753).*Illustrations:* Johnson, *Fl. S. Austral.* 3: 1136, fig. 526b (1986); Johnson, *Fl. New South Wales* 3: 382 (1992); Jeanes, *Fl. Victoria* 4: 373 fig. 72d (1999); Richardson *et al.*, *Weeds of the South-East, an identification Guide for Australia* 231 (2006).

Large, glabrous, perennial herbs with wide-spreading rhizomes; aerial stems slender, stoloniferous or climbing up to 3 m over supporting vegetation, the stems twining dextrorsely. Leaves: petiole 1.5–5 cm long, shorter than the blade; lamina ovate to lanceolate, 4–10 cm long, 2–8 cm wide, or occasionally larger, glabrous or nearly so, base sagittate to hastate, basal lobes entire to shallowly lobed, margins undulate, apex acute. Peduncles 3–12 cm long, longer than the petioles and sometimes longer than the leaves; bracteoles 2, ovate-cordate, 15–20(–25) mm long, overlapping only toward the base, longer than the calyx which they surround and almost conceal, base flat, or slightly keeled, apex acute. Sepals subequal, ovate-lanceolate, 10–15 mm long. Corolla white or occasionally flushed with pink, funnel-shaped, 4–6 cm long. Ovary incompletely 2-locular, surrounded at the base by a thick, 5-angled nectar-secreting disc. Capsule ovoid to subglobose, 7–8 mm long, surrounded by the persistent calyx and bracteoles. Flowering Jan.-Apr.; fruiting Feb.-May.

Tas. (FLI, TWE); also in WA, SA, NSW, Vic., New Zealand; also native in temperate Europe, Africa, America. Earlier presumed extinct in Tasmania, now known to occur locally and infrequently in some estuarine and coastal habitats in the north and west of the state. The other subspecies found in Australia is *C. sepium* subsp. *roseata* Brummitt which is found in South Australia and Victoria.

**4 \* *Calystegia silvatica* (Kit.) Griseb., *Spic. Fl. Rumel.* 1: 74 (1843) subsp. **silvatica** *Great Bindweed****Convolvulus silvaticus* Kit., *Neues J. Bot.* 1(1): 163 (1805).*Illustrations:* Johnson, *Fl. New South Wales* 3: 382 (1992); Jeanes, *Fl. Victoria* 4: 373 fig. 72 e (1999); Richardson *et al.*, *Weeds of the South-East, an identification Guide for Australia* 231 (2006).

Glabrous perennial herbs; stems robust, twining. Leaves ovate to broad-ovate, mostly 5–10 cm long, 3–10 cm wide, base cordate, basal lobes shallowly lobed, margins undulate, apex shortly acuminate-mucronate; petiole 4–8 cm long. Peduncles 8–20(–30) cm long, much longer than the petioles; bracteoles 2, broad-ovate, 2–3.5 cm long, overlapping for almost entire length, longer than, and enclosing calyx, base much inflated, slightly keeled, apex rounded to truncate, emarginate. Sepals 1.5–2 cm long. Corolla white or the outer surfaces with pinkish-lilac streaks along the mid-petaline ridges, 4–7 cm long. Capsule ovoid, 10–12 mm long, enclosed by persistent calyx and bracteoles. Flowering & fruiting Nov.-May.

Tas. (FLI, TSE); also naturalized in NSW, Vic.; native in SE Europe. Common in many localities in the north and south-east of the state. A garden escape that is now a well established weed plant, widespread and often rampant in waste places, municipal tip-sites, railway embankments and agricultural land. Difficult to control due to its rhizomatous habit. Two further subspecies, *C. silvatica* subsp. *disjuncta* Brummitt and *C. silvatica* subsp. *fraternifolia* (Mack. & Bush) Brummitt occur in South Australia and Victoria.

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