Flora of South Australia
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PASSIFLORACEAE[1]

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Woody or herbaceous vines, climbing by axillary tendrils, sometimes herbs or shrubs or trees (not in Australia); leaves alternate, very rarely opposite, simple, lobed or rarely compound, with or without glands on petioles and stem; stipules minute or conspicuous, usually persistent, occasionally deciduous. **Flowers** in 1 to many flowered cymes, rarely racemes, actinomorphic, bisexual or functionally unisexual, sessile or pedicellate; sepals (3–) 5 (–8); petals alternate to the sepals, petals equal to sepals in number, free or connate at the base; corona absent or present with 1 or more rows of appendages, filaments or scales usually forming a bright and showy structure between the petals and stamens; stamens (4–) 5 (–many), usually alternate with the petals, filaments free or connate on the hypanthium or on androgynophore; anthers 2-locular, dehiscing longitudinally; ovary superior, (2–) 3 (–6) united carpels, unilocular, parietal placentation; styles free or usually basally connate. **Fruit** a berry or capsule; seeds often with a fleshy aril and bony testa.

About 27 genera and 935 species (APGIII 2009, Stevens 2010) found throughout the tropics and subtropical regions with some species reaching temperate areas. In Australia there are 4 native species in 2 genera (*Passiflora* and *Adenia* Forssk.) with none native to S.A., but there are 3 potentially naturalised species of *Passiflora* in S.A.

Malesherbiaceae and Turneraceae are long known close allies of the family and are now included in Passifloraceae (APGIII 2009). The androgynophore is a column composed of the ovary on a long stalk to which the stamens are attached. The staminal filaments form a connate tube and the stamens continue past the ovary, then becoming free, holding anthers.

Reference: Entwistle (1996).

1. PASSIFLORA L.

Sp. Pl. 2: 955 (1753).
(Latin, *passio* passion, suffering, *flos* flower; from association of floral parts with Christian religious symbolism of the crucifixion with the corona representing the thorns, the anthers the wounds and the styles the nails.)

Herbaceous or woody climbers (in S.A.), rarely erect herbs, shrubs or small trees; leaves spirally arranged (in S.A.), petiolate, often glands on petiole, lobed, margins entire or variously toothed sometimes with glands; stipules 2, ranging from minute and deciduous to large and leaf-like. **Flowers** solitary or sometimes 2, usually with an un-branched tendril, often showy; 2–3 bracts; sepals 5; petals 5 or sometimes absent, petals membranous, alternate with the sepals; corona outgrowths from the base of the petals and sepals often at the top of the floral cup, consists of 1 but normally several series of distinct filaments, rarely tubular, outer rows normally conspicuous free, inner rows normally shorter less conspicuous sometimes united into a membrane covering the nectary chamber known as the operculum; nectary present under operculum or between inner most coronal row and androgynophore; androgynophore present, mostly

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elongate; stamen 5 (–8); filaments connate at base and surrounds or is adnate to the androgynophore; anthers linear, ovate or oblong, 2-celled; ovary borne on the androgynophore unilocular, placentation parietal; styles and stigmas 3 (–4); styles free or united at the base. **Fruit** a berry (in S.A.), indehiscent, containing mucilaginous pulp; seeds more or less compressed, reticulate, punctulate or transversely grooved. **Passion flowers**.

400–500 species, mostly in tropical and warm America with about 20 species in Indomalesia. In Australia, 3 native species 2, occurring in Qld, N.S.W., Vic. and Tas. (Satterthwait 1982). Numerous taxa have become widely naturalised outside their native range now occupying a pan-tropical distribution. There are about 8 naturalised taxa in Australia.

For morphological details regarding the operculum and androgynophore see Ulmer & MacDougal (2004).

Many taxa are cultivated as ornamental garden plants or for their edible fruit. The edible pulp is used in foods such as yogurts, cakes, desserts and sweets, as well as in drinks.

Reference: Degener (1932, 1933), Spencer (1997), Sattherwait (1982), Ulmer & MacDougal (2004), Wagner *et al.* (1990).

1. Some or all leaves with more than 3 lobes, margins entire ..... 1. **P. caerulea**
1: All leaves with 3 lobes, occasional unlobed when young, margins serrate
   2. Plants pubescent at least on young stems, petioles and under side of leaves; flowers with a distinct floral tube ..... 3. **P. tarminiana**
   2: Plants glabrous or almost so; floral tube ± absent..... 2. **P. edulis**

1. ***Passiflora caerulea** L., *Sp. Pl.* 2: 959 (1753) — **Illustr.:** O.Degener, *Passiflora caerulea*, *Fl. Hawaiiensis* fam. 250 (1934); *Fl. Victoria* 3: 378, fig. 78c (1996); R.D.Spencer, *Hort. Fl. S.E. Austral.* 2: 415 (1997); T.Ulmer & J.M.MacDougal, *Passiflora:* 282 (2004).

   Woody vine, glabrous; stem, striate, grooved; stipules 1–2 × 0.5–1 cm, semi-ovate to sub-reniform; petioles 1.5–4 cm in length with 2–4 (–6) stalked (up to 0.01 cm) glands; leaves 4–16 × 6–18 cm, palmate with (3–) 5 (–9) lobes, lobes to two thirds their length or usually near to the base, occasionally glandular in sinuses. **Flowers** solitary, white blue blackish purple, (6–) 7–9 (–10) cm diameter; peduncles 3–7 cm long; bracts 1.5–2.7 × 1–2.3 cm, pale green, entire, free; floral tube ± absent; sepals white inside, green outside, 2–3.5 × 1.3–1.8 cm, slightly keeled terminated with an awn; petals white, oblong, 2–3.8 × 0.8–1.4 cm; corona: 4 series, blue in upper third, white at middle and blackish purple at the base, outer 2 series (0.8–) 1.5–2.5 cm long, inner series 0.1–0.2 cm long; stamens 5; carpels 3. **Fruit** ovoid or subglobose, (4–) 5–7 × 3–4 cm, orange-yellow, edible; seeds obcordate, reticulate 0.5–0.6 cm, black to brown . **Passion flower, blue passion flower. Fig. 1A, Pl. 1A.**

   S.A.: *LE, *FR, *MU, *SL; *Qld; *N.S.W.; *Vic. Native to Argentina, Brazil and Paraguay. Flowers: August to Jan.

   Has been hybridised with several species, and grows well in cool areas. Sometimes used as a stock for other species, known to sucker. Questionably naturalised based on the small number of collections, none of which indicate that the plant is spreading from original plantings. Used as a rootstock for 'Nellie Kelly', one of the commonest cultivars grown in S.A.

   Commonly cultivated in Australia for its flowers and naturalised in the south-eastern States. The plant seems to persist when established in the wild. Naturalising and spreading in S.A., so far listed as 'questionably naturalised' in the State.

2. ***Passiflora edulis** Sims, *Bot. Mag.* 45: pl. 1989 (1818). — **Illustr.:** O.Degener. *Passiflora edulis, Fl. Hawaiiensis* fam. 250 (1932); R.D.Spencer, *Hort. Fl. S.E. Austral.* 2*:* 415 (1997); W.L.Wagner, *Manual of flowering plants of Hawai'i.* pl. 143 (1990); T.Ulmer & J.M.MacDougal, *Passiflora* 289 (2004).

   Woody climber, glabrous; stem, grooved; stipules (0.8–) 1–1.3 × 0.1–0.2 cm, Linear -lanceolate, entire; petioles 1–3.5 cm long in South Australian material (in literature: 3–4 cm), with 2 glands; leaves 5–25 × 5–25 cm, 3-lobed, serrate, young leaves occasionally unlobed. **Flowers** solitary, white and purple, (5–) 6–8 cm diameter; peduncles 2–6 cm long; bracts 1.7–2.5 × 0.8–1.5 cm, serrate, free; floral tube ± absent; sepals white inside, green outside, 2–3.3 × 0.7–1 cm, slightly keeled with an awn 0.3–0.6 cm; petals white, oblong, 1.8–2.9 × 0.5–0.8 cm; corona: 4–5 series, white and wavy in the upper half, purple or dark in basal half, outer series 1–2.3 cm long, inner series 0.1–0.3 cm long; stamens 5; pistils 3. **Fruit** globose to ellipsois, 4–6 × 4–5 cm, dull brown to purple when ripe;

Fig. 1. Passion fruit branches with flowers and fruits. **A**, ***Passiflora caerulea***. **B**, ***P. edulis***. **C**, ***P. tarminiana***. *Illustration by G.R.M. Dashorst.*

seeds ovoid c. 0.6 × 0.4 cm, minutely reticulate, brown. **Passion fruit, purple passion fruit, purple granadilla. Fig. 1B, Pl. 1B.**

S.A.: *FR; *W.A.; *Qld; *N.S.W.; *Vic.; also *NI (Norfolk Island) and *LHI (Lord Howe Island). Native to Brazil and Paraguay.

Only known from one collection in the Flinders Ranges from a single plant that was removed after collection. Doubtfully naturalised but further investigation is required.

Fruit is edible. Cultivated for its ornamental flowers and fruit. Commercially important and grown for its fruits, mostly in Qld and N.S.W. The species is naturalised in other States and care needs to be taken to ensure that it does not spread in S.A.

3. *__Passiflora tarminiana__ Coppens & V.Barney, *Novon* 11: 9 (2001). — *Passiflora mollissima auct. non* (Kunth) L.H.Bailey: Satterthwait, *Fl. Austral.* 8: 154 (1982). — **Illustr.:** T.Ulmer & J.M.MacDougal, *Passiflora,* 356, plates 12, 15, 25, 31 & 287, (2004).

   Woody climber, pubescent, with axillary tendrils, stem striate; stipules 0.4–0.7 × 0.2–0.3 cm, sub-reniform, serrate at base, soon deciduous; petioles (1–) 1.5– 4 cm long, with 2–8 glands, leaves 5.5–11 (–16) × 7–16 (–29) cm, 3-lobed, serrate, upper surface near glabrous. **Flowers** solitary, light pink, 8–18 cm diameter; peduncles 3–10cm long; bracts 3–5 × 2–3 cm, connate for half their length, entire; floral tube cylindrical (5–) 6–8 × 0.7–1 cm, light green; sepals pink, 4.5–6 × 1.2–2.5 cm, with an awn 0.3–0.4 cm long; petals pink, oblong 4–5.5 × 1.2–2 cm; corona: 1 series, reduced to a purple ring with white teeth; stamens 5; pistils 3. **Fruit** ellipsoid, obovate to oblong, 10–14 × 3.5–4.5 cm, yellow to orange-yellow; seeds asymmetrically ovoid, 0.6–0.4 cm, reticulate, reddish brown. **Banana passionfruit. Fig. 1C, Pl. 1C–D.**

   S.A.: *EP, *SL, *SE; *Qld; *N.S.W.; *Vic.; *Tas. Native of the American Andes and grown throughout the area for its edible fruit. Also introduced in many parts of the tropics where it has become weedy.

   This species originally went by the name of *P. mollissima*. Research by Coppens & Barney (2001) split *Passiflora tarminiana* from *P. mollissima* (Ulmer & MacDougal 2004).

   The species spreads both vegetatively and by seeds, which are dispersed by animals when eating the fruits (birds, pigs, foxes, etc.). It has the potential to become more widely naturalised.

   Due to its edible fruit this species is important economically. Cultivated as an ornamental and for its edible fruit in Australia. Originally used as stock for 'Nellie Kelly' grafted passionfruits, but replaced with *P. caerulea* in the 1950s.

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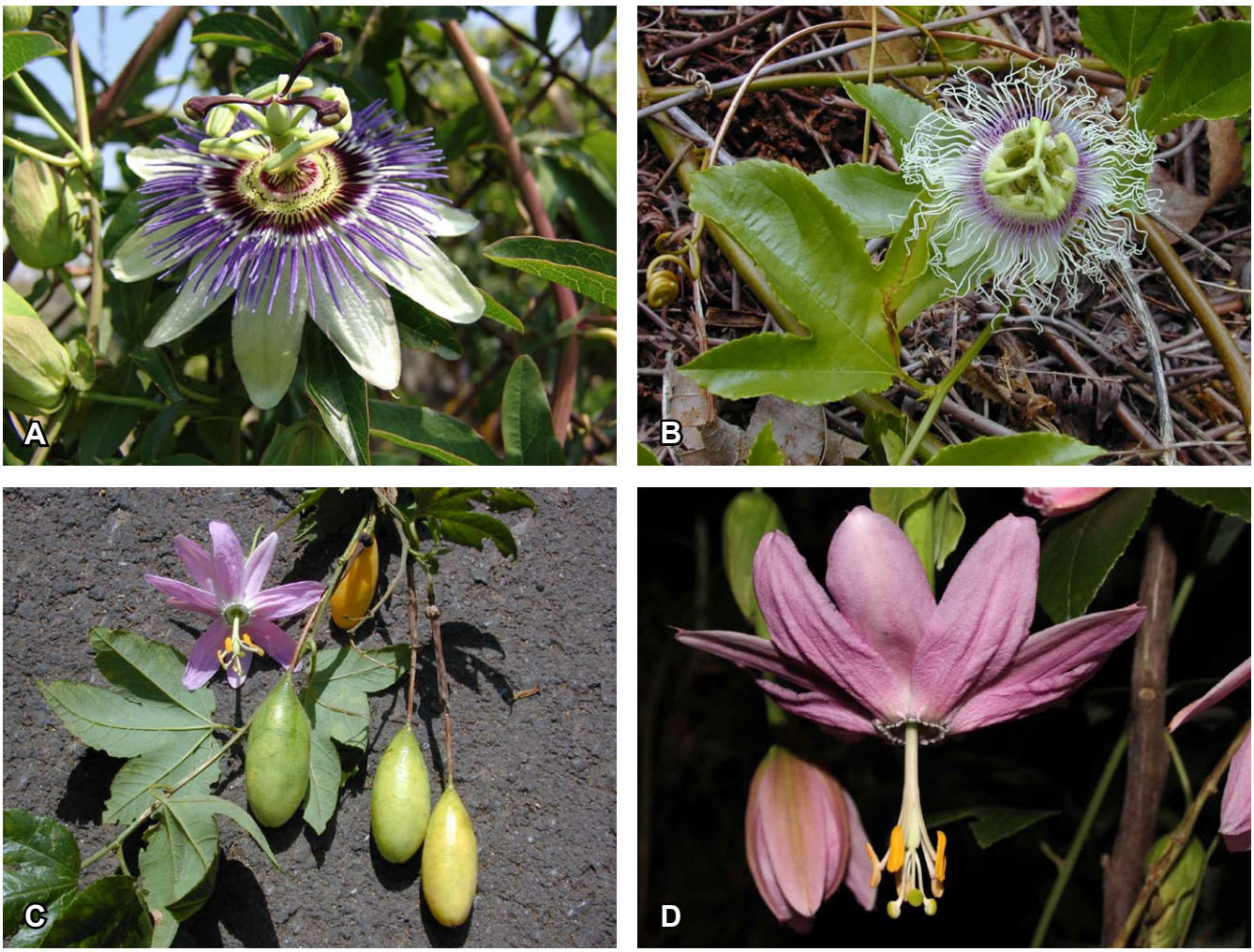

Pl. 1. ***Passiflora.*** **A**, ***P. caerulea***, flower, cultivated in South Central Farm, California. **B**, ***P. edulis***, flower, Hawaii. **C–D**, ***P. tarminiana***, Hawaii: C, branch with flower and fruits; D, flower. *Photos: A, J. McIntosh; B–C, F. & K. Starr; D, M. Antheunisse.*