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VOLUME 1

P.S. Short & I.D. Cowie (eds)



PASSIFLORACEAE

P.S. Short

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Territory**

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PASSIFLORACEAE

P.S. Short

Herbaceous or woody *vines* with axillary tendrils. *Leaves* alternate, petiolate, entire or lobed, commonly with extrafloral nectaries (glands) on the petiole; stipules usually present. *Flowers* bisexual or unisexual, actinomorphic, solitary or in mostly cymose inflorescences, often with an elongated androgynophore or a short gynophore. *Calyx* of 5 sepals, free or connate below. *Petals* 5, alternate with the sepals, free or on a gynophore; an extrastaminal corona of 1 or more rows of filament-like processes, membranous appendages or scales often present. *Stamens* 4–10, free or on an androgynophore; anthers tetrasporangiate and dithecal, dehiscing by longitudinal slits. *Gynoecium* of 2–5 carpels united to form a superior 1-locular ovary which is sessile or on a gynophore; placentation parietal, placentas 3–5; styles 1 or 3–5, usually connate at the base. *Fruit* a berry or capsule. *Seeds* usually many, commonly pitted, with a fleshy aril.

The Passion Flower or Passion Fruit family is essentially pantropical and following Cronquist's (1981) circumscription contains 17 or 18 genera and 700–750 species. More recent studies have led to the inclusion of Malesherbiaceae and Turneraceae within the family (*e.g.* Mabberley 2008).

In Australia the Passifloraceae (*sensu* Cronquist) are represented by two genera and 11 species (seven naturalised), with three species in the N.T., including the D.R.

Taxonomic references: de Wilde (1972); Cronquist (1981); Satterthwait (1982); Judd *et al.* (1999); Feuillet (2004); Feuillet & MacDougal (2007); (Mabberley 2008).

- | | | |
|----|--|-------------------|
| 1 | Leaves with lamina never lobed; flowers unisexual, small, corona absent; ripe fruit red, splitting into 3 segments | Adenia |
| 1: | Leaves with lamina commonly or always lobed; flowers bisexual, large, corona present; ripe fruit globose, indehiscent, yellowish or purple to black | Passiflora |

ADENIA Forssk.

Woody, perennial, tuberous and fibrous-rooted *vines* or (not Australia) pachycaul trees and caudiciform succulents, mostly dioecious. *Leaves* alternate, simple, entire or lobed, the lamina with 2 basal, vascularised nectaries (glands). *Flowers* small, in few to many-flowered, tendril-bearing inflorescences with minute bracts. *Sepals* 5 and in a tube. *Petals* 5, inserted on the rim of the floral tube at the base of the calyx tube and smaller than the sepals. *Corona* absent or present (but not in Australia). *Stamens* 5, reduced to staminodes in female flowers. *Ovary* on a short gynophore in female flowers, vestigial in male flowers. *Styles* 3 (4, 5); stigmas papillate. *Fruit* a 1-celled but 3-valved capsule.

With *c.* 100 species this genus is the second largest in the family and ranges from subtropical and tropical regions of Africa to south-east Asia and islands of the Pacific. It has centres of diversity in eastern Africa and Madagascar and is only represented in Australia by one species.

Taxonomic references: de Wilde (1972); Satterthwait (1982); Hearn (2006).

A. heterophylla subsp. **australis** (R. Br. ex DC.) W.J. de Wilde

Modecca australis R. Br.

Perennial *vine*, glabrous, commonly dioecious but sometimes with both male and female flowers in the same inflorescence. *Tendrils* simple, to *c.* 13 cm long. *Leaves* with petiole 1–7 cm long; lamina very widely ovate to ovate, 3.5–21 cm long, 2.5–18 cm wide, somewhat membranous, basally broadly obtuse to cordate, commonly with a conspicuous

apical tip; stipules minute. *Flowers* stipitate. *Calyx* lobes triangular, *c.* 1–3 mm long. *Petals* narrowly triangular, 1.5–4 mm long. *Staminal* filaments connate for about half their length; anthers 3–5 mm long. *Capsule* pendulous, ellipsoidal or narrowly obovoid, 3.5–6.5 cm long, *c.* 2–3 cm diam., the smooth outer surface yellow-green, ripening to red. *Seeds* 7–8 mm long, flattened, subcircular in outline, pitted. *Flowering & fruiting* throughout the year.

Fig. 1 (*Leach 3657 & 4208*); Pl. 1 (unvouchered).

Adenia heterophylla, found throughout much of south-east Asia and northern Australia, is a highly variable species “in which rather arbitrarily four largely allopatric subspecies ... are recognised” (de Wilde 1972, p. 425). Two of these are in Australia. Subspecies *australis* occurs in eastern Java, Lesser Sunda Island and northern Australia (W.A., N.T., Qld) and subsp. *heterophylla* in Qld.

Common in vine thickets and monsoon forest in the Top End and recorded from an array of substrates, *i.e.* laterite, coastal dunes, sandstone, limestone and granite.

Some specimens from the Kimberley region of W.A. have 3-lobed leaves but all of the N.T. specimens examined have unlobed leaves.

PASSIFLORA L.

Vines, climbing by tendrils. *Leaves* alternate, entire or lobed; petiole with or without a pair of extrafloral nectaries (glands); stipules present. *Flowers* bisexual, showy. *Sepals* 5, free, sometimes petal-like. *Petals* absent or 5 and membranous, alternating with sepals. *Corona* present, in 1–several series, outer ones of filament-like processes and the inner one membranous. *Stamens* 5, adnate to the gynophore and forming an androgynophore. *Ovary* on an elongated gynophore. *Styles* 3, stigmas capitate. *Fruit* a berry. ***Passion Flowers, Passion Fruit.***

A genus of *c.* 500 species centred in the American tropics; three native and seven naturalised in Australia. Two species are weeds in the N.T. and several others, including the edible Passion Fruit, *P. edulis*, are cultivated.

Species of *Passiflora* typically display rhythmical flowering, with only one or several flowers on any single plant opening each day over a prolonged period of flowering and with individual flowers remaining open for no more than a day.

Taxonomic references: Satterthwait (1982); Ulmer & MacDougal (2004); Hansen *et al.* (2006).

- | | | |
|----|---|---------------------|
| 1 | Petioles lacking glands; stipules, leaves and bracts with prominent stalked glandular hairs; ripe fruit yellow-orange | *P. foetida |
| 1: | Petioles with 2 glands; vegetative parts pubescent but stalked glandular hairs absent; ripe fruit blackish | *P. suberosa |

***P. foetida** L.

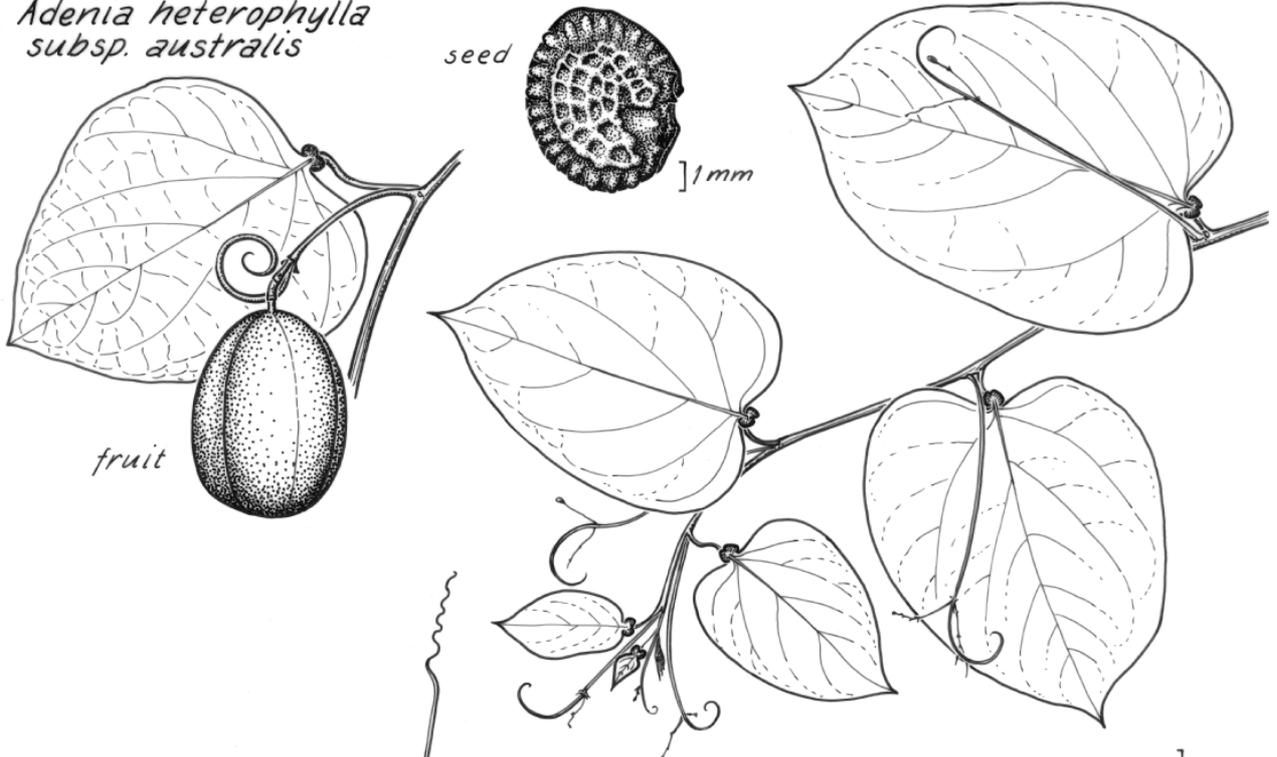
Vines, pubescent, with both erect, non-glandular hairs and stalked glandular hairs (principally on the stipules, leaves and bracts) which on crushing give the plant a foetid odour. *Leaves* with petiole 1.5–5.5 cm long, lacking a pair of glands; lamina widely ovate to ovate, 4–15 cm long, 3–13 cm wide, 3-lobed, basally cordate, apically acute; stipules dissected. *Flowers* 3–5 cm diam., solitary, on pedicels 3–4 cm long, with 3 dissected bracts, the bracts 1–3.5 cm long. *Sepals* 1–2 cm long, membranous, white to greenish. *Petals* 1–2 cm long, white or purplish. *Outer corona* of white or purplish thread-like processes. *Inner corona* membranous. *Fruit* globular, 1.5–3 cm diam., pale green, ripening to yellow-orange. *Flowering & fruiting* throughout the year. ***Stinking Passion Flower.***

Fig. 1 (*Wightman 3516*); Pl. 2 (unvouchered).

A highly polymorphic species in need of critical revision (Ulmer & MacDougal 2004) this species is native to tropical America and a weed in other tropical regions of the world, including Africa, south-east Asia and Australia (W.A., N.T., Qld, N.S.W.).

In 1891 it was reported that “*Passiflora foetida*, although introduced hardly ten years ago, is suffocating already, to a great extent, the undergrowth of the forest near Fannie Bay, and as the fruit is relished by birds and natives, this plant promises to become a great nuisance” (Holtze 1892, p. 2). Growing in an array of vegetation types, from open forest to monsoon thickets, as well as in gardens, the species is now common throughout much of northern N.T., with records from as far south as *c.* 18° S, *e.g.* at Elliott and on Wollogorang Station.

Adenia heterophylla
subsp. australis



Passiflora

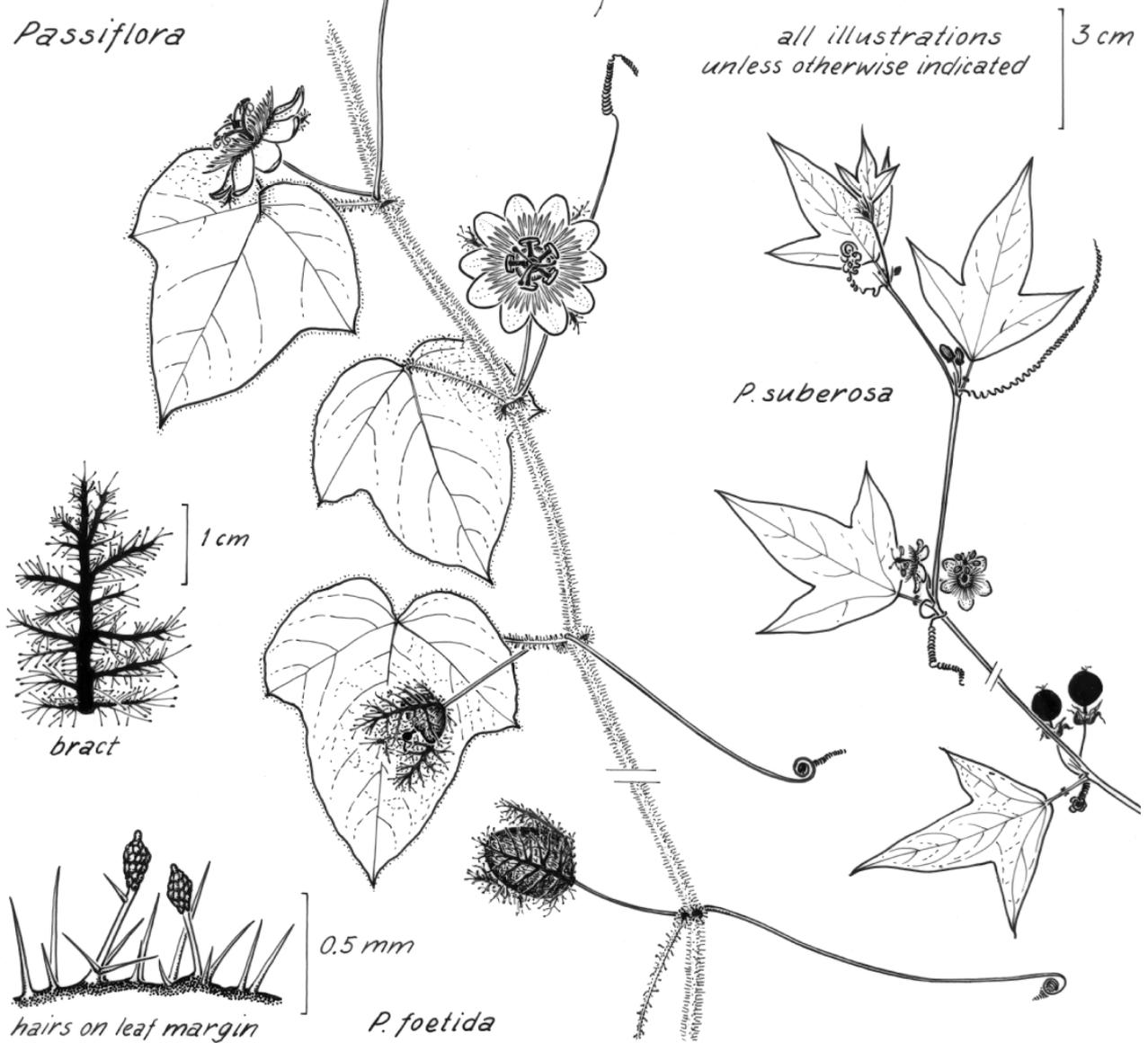


Fig. 1

Flowers in several Top End populations have been observed to open early in the morning and close about noon.

Ripe fruits of this plant are widely eaten without ill effect. However, Everist (1974) noted that, as they contain hydrocyanic acid, green fruits and leaves may be toxic to livestock if eaten in large quantities.

Smith & Wightman (1990) and Smith *et al.* (1993) recorded that some Aboriginal people use the skin of the fruit to treat fungal infections, including ringworm, and that asthma sufferers inhale the fumes from this foetid plant to assist their breathing.

***P. suberosa** L.

Vines with a cream-coloured corky lower stem, vegetative parts pubescent, hairs non-glandular. *Leaves* with petiole 0.7–2 cm long, with a pair of extrafloral nectaries (glands) commonly about the middle; lamina 3–10 cm long, manifestly 3-lobed (or some entire, not seen in N.T. specimens),

discolorous, glabrous or hairy; stipules narrowly triangular, 3–4 mm long, entire. *Flowers* c. 1.5–2 cm diam., solitary or in pairs, pedicels 0.7–1.4 cm long. *Sepals* somewhat triangular, 4.5–6 mm long, greenish-yellow. *Petals* absent. *Outer corona* in 2 rows, the outer row of apically dilated, thread-like processes and a shorter inner row of processes with long-papillate apices. *Inner corona* membranous. *Fruit* ovoid to globose, c. 1 cm diam., green before ripening to blackish. *Flowering & fruiting* throughout the year. **Corky Passion Flower.**

Fig. 1 (*Parker 177*); Pl. 3 (unvouchered).

Native to South America but a weed in many tropical regions including Hawaii, south-east Asia and Australia (N.T., Qld). In the N.T. confined to the D.R. where it is found in rainforest thickets. It was first collected in 1958 from Nightcliff. Other localities include (with first date of collection from that locality) Holmes Jungle (1973), Gunn Point (1996) and Cape Hotham (1997).

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Pl. 1 *Adenia heterophylla* subsp. *australis*
(Photos: B.M. Stuckey)



Pl. 2 *Passiflora foetida* (Photo: B.M. Stuckey)



Pl. 3 *Passiflora suberosa* (Photo: B.M. Stuckey)