

AUSTRALIAN BIOLOGICAL RESOURCES STUDY



FLOODPLAIN FLORA

A flora of the coastal floodplains
of the Northern Territory, Australia

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Extract: Goodeniaceae

GOODENIACEAE

Herbs, shrubs or sometimes scramblers, viscid or variously hairy. *Leaves* alternate or sometimes opposite, simple, often with axillary tufts of hair; stipules absent. *Flowers* bisexual, protandrous, solitary or in dichasia, thyrses, racemes, umbels, spikes or heads. *Calyx* of 5 free or connate sepals, sometimes some sepals reduced. *Corolla* sympetalous, valvate, zygomorphic, bilabiate or the upper lip deeply slit and the corolla unilabiate (fan-like), sometimes pouched. *Stamens* 5, alternate with the corolla lobes, opposite sepals; filaments free from the corolla or attached at the base of the tube; anthers tetrasporangiate and dithecal and opening by longitudinal slits, free or connate and forming a tube into which pollen is shed. *Gynoecium* usually of (1) 2 (4) carpels united to form a compound superior, half-inferior or inferior ovary; ovules 1–many per locule; style entire or 2–4-fid, each branch terminating in a hollow cup (indusium) in which the stigmatic surface is located, with indusium collecting pollen as the style grows up through the anthers. *Fruit* a capsule, drupe or nut or rarely separating transversely into woody segments. *Seeds* with a straight embryo; endosperm copious and oily.

The family consists of perhaps 12 genera (including *Brunonia* which is commonly but unjustifiably placed in the monotypic family Brunoniaceae) and about 400 species. Mostly confined to Australia and New Guinea but with *Scaevola taccada* occurring on strand lines of both the Atlantic and Indian Oceans and on islands of the Pacific. Carolin *et al.* (1992) also recorded *Goodenia pilosa* as extending from Australia to Indonesia, southern China and the Philippines and *Selliera radicans* for Australia, New Zealand and Chile.

GOODENIA Sm.

Annual or perennial *herbs* or rarely low shrubs. *Leaves* radical or alternate. *Calyx* tube usually adnate to the ovary. *Corolla* sometimes with a pouch or spur, usually bilabiate; corolla lobes 5 and winged, with 2 adaxial lobes longer than the 3 abaxial lobes; adaxial lobes sometimes auriculate. *Stamens* free. *Ovary* usually 2-locular; ovules rarely 1 per locule, usually in 2 rows in each locule. *Style* unbranched or 2–4-fid; branches each with an indusium. *Fruit* usually a capsule, rarely a nut or drupe. *Seeds* flat, usually winged.

A genus of *c.* 190 species, with most confined to Australia. In NT about 70 species, with perhaps six on floodplains.

This treatment follows Carolin (1979, 1992). Examination of DNA collections not seen by Carolin suggests that the circumscription and status of some NT taxa will be altered following detailed revision.

Carolin (1992) referred to *G. porphyrea*, *G. purpurea*, *G. quadrifida* and *G. symonii* as having racemose inflorescences. Due to the large size of the leafy-bracts, the flowers are more likely to be interpreted as being solitary in leaf axils and are here described as such. In contrast, in *G. lamprosperma* and *G. purpurascens* flowers are more obviously held in inflorescences, with the leaf-like bracts being considerably smaller than in other species.

- 1 Style unbranched; flowers in more or less distinct inflorescences 2
- 1: Style 3- or 4-fid; flowers usually not in obvious inflorescences but appearing to be solitary and axillary rather than in leafy racemes 3
- 2 Corolla yellow; capsule more or less glabrous (*1*) **G. lamprosperma**
- 2: Corolla pink or purple; capsule pubescent **G. purpurascens**
- 3 Style 4-fid (*1*:) **G. quadrifida**
- 3: Style 3-fid 4
- 4 Seed surface warty; corolla with glandular hairs externally (*3*:) **G. purpurea**
- 4: Seed surface with reticulate pattern but smooth; corolla with simple eglandular hairs externally 5
- 5 Pedicels with conspicuous indumentum of glandular hairs, often somewhat cottony eglandular hairs also present; largest leaves *c.* 6.5 cm long (*4*:) **G. symonii**
- 5: Pedicels with glandular hairs absent or inconspicuous, eglandular hairs coarse; largest leaves to *c.* 16 cm long **G. porphyrea**

G. lamprosperma F.Muell.

Annual or perennial *herbs* to 50 cm tall, glabrous or glabrescent, with a thick tap root. *Leaves* oblanceolate or linear, 3–10 cm long, 0.3–1 cm wide, with margins entire or dentate, slightly fleshy and somewhat glaucous. *Flowers* in racemes to 35 cm long. *Calyx* with sepals somewhat triangular, 0.5–2 mm long. *Corolla* 7–10 mm long, yellow, with an anterior pouch; abaxial lobes 1.5–3 mm long and their wings 0.5–1.5 mm wide. *Style* unbranched; indusium oblong, 1 mm long. *Fruit* a capsule, ellipsoidal, 4–9 mm long, glabrous or nearly so. *Seeds* flattened, ovate or elliptical in outline, *c.* 0.5 mm across, yellowish brown, with a narrow wing. *Flowering & fruiting*: all months. Fig. 34 (*Leach 2980*).

Northern Australia (WA, NT, Qld). In NT mainly south of 15°S but known from the Adelaide River floodplain. Grows on seasonally wet sites such as creek beds and claypans. Closely related to *G. purpurascens* but readily differentiated by the yellow, not pinkish or purplish corolla.

G. porphyrea (Carolin) Carolin

Calogyne porphyrea Carolin

Herbs; branches prostrate to decumbent and to *c.* 50 cm long, with indumentum of stiff, white, septate hairs. *Leaves* mostly linear or narrowly oblong or lanceolate, 3–16 cm long, 0.2–0.6 cm wide; margins dentate; upper leaves smaller than lower and often with 2 teeth to 12 mm long at their base. *Flowers* solitary in axils, with pedicels 1–4 cm long; stiff eglandular hairs prominent. *Calyx* with stiff, eglandular white hairs prominent; sepals lanceolate or narrowly elliptic, 4–5 mm long. *Corolla* 9–15 mm long, often purplish, with stiff white hairs externally and scattered hairs inside; abaxial lobes 2–6 mm long; wings *c.* 1 mm wide. *Style* 3-fid; median indusium truncate-obovate and 1.5 mm long. *Fruit* a 2-valved capsule, subglobular, 3.5–6 mm diam. *Seeds* elliptic, 3–4 mm long, 2 mm wide, smooth, yellowish brown, with a prominent rim. *Flowering & fruiting*: mainly Feb.–Aug. Fig. 34 (*Cowie 4090*).

Primarily a species of black soil floodplains and endemic to the Top End. Localities include the Fogg Dam area, Kapalga, Koolpinyah Station, Marrakai Plains and the Lake Finnis region. Also recorded from sandy soil adjoining saline coastal flats on Melville Island and on the edge of swamps.

Carolin (1992) described the corolla as being purple, but it is variously recorded by collectors as being blue, mauve, light purple, pinkish brown, apricot and brown, pink-mauve and mauve-brown.

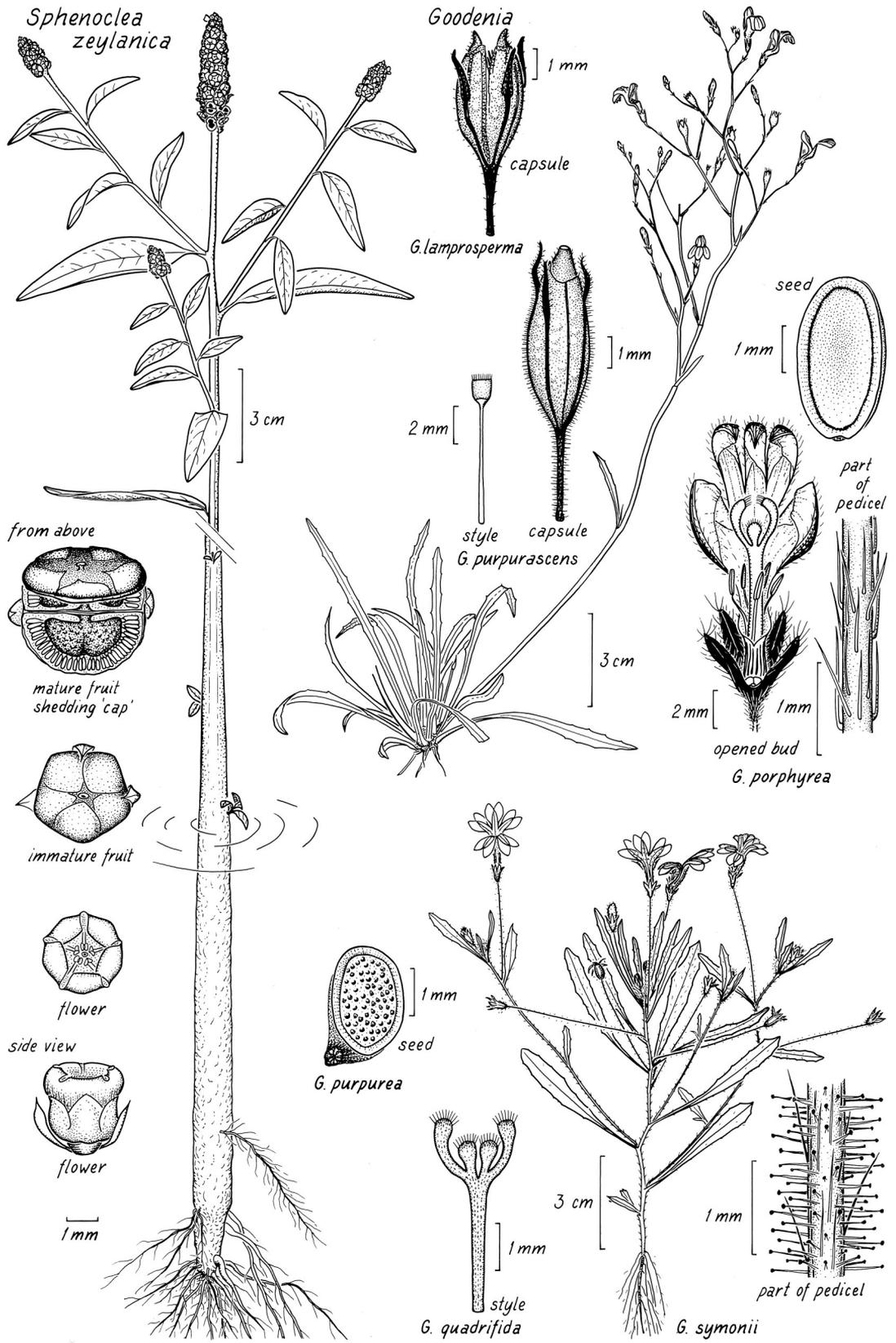


FIGURE 34

G. purpurascens R.Br.

Annual or short-lived perennial *herbs* to *c.* 80 cm tall, glabrescent. *Leaves* mostly basal, ascending, linear or oblanceolate, 3–20 cm long, 0.2–1.5 cm wide, commonly glaucous but young leaves usually densely hairy; margins sparsely and minutely dentate. *Flowers* in spreading thyrses or panicles to *c.* 30 cm long. *Calyx* with sepals triangular, 1–1.5 mm long. *Corolla* 7–12 mm long, pink or purple, with an anterior pouch, externally with glandular and simple eglandular hairs; wings 1–2 mm wide. *Style* unbranched; indusium oblong and 1.5 mm long. *Fruit* ovoid or subglobular, 2–6 mm long, pubescent. *Seeds* oval or elliptic in outline, 0.4–0.9 mm across, yellowish brown, smooth, with a narrow wing. *Flowering & fruiting*: all months. Fig. 34 (*Madsen 4*).

New Guinea and northern Australia (WA, NT, Qld). In NT common and widespread in the Top End, extending south to Borroloola. Usually grows on heavy clay soils on floodplains or on sandy or rocky soils in creek beds. Similar to *G. lamprosperma* but with purple flowers and a pubescent capsule.

G. purpurea (F.Muell.) Carolin

Calogyne purpurea F.Muell.

Herbs with prostrate to ascending branches to 40 cm long, with an indumentum of antrorse eglandular hairs and glandular hairs. *Leaves* sessile, oblanceolate or linear, 1–18 cm long, 0.2–1.4 cm wide, entire or sparsely and shallowly dentate; upper leaves smaller and often with acute basal lobes. *Flowers* solitary in axils, with pedicels 1–5 cm long, conspicuously hairy with both long-glandular and long-eglandular hairs. *Calyx* with a dense indumentum of glandular and eglandular hairs; sepals narrowly elliptic, 2–4 mm long. *Corolla* mauve, purplish or violet, 8–13 mm long, externally with glandular hairs; abaxial lobes 3–4 mm long; wings *c.* 1.5 mm wide. *Style* 3-fid; median indusium square and *c.* 1 mm long; lateral indusia smaller. *Fruit* globular, 3–4 mm diam.; valves gaping. *Seeds* elliptic, 2 mm long, pale yellowish brown, with wart-like outgrowths. *Flowering & fruiting*: mainly Apr.–Aug. Fig. 34 (*Fox 857*).

Endemic to the Darwin and Alligator rivers regions, localities including the Fogg Dam region, Elizabeth River, Howard River and Berry Springs. Mainly grows in sandy soils in woodland and seasonal swamps but may occur on floodplains.

G. quadrifida (Carolin) Carolin

Calogyne quadrifida Carolin

Annual *herbs* with branches to 30 cm long, mainly glabrous but upper axes and inflorescences with glandular and eglandular hairs. *Leaves* sessile, linear or narrowly oblanceolate, 2–8 cm long, 0.2–0.5 cm wide; margins entire or obscurely dentate; young leaves hairy, becoming glabrous with age; upper leaves often with 2 acute basal lobes to 15 mm long. *Flowers* solitary in axils, with pedicels 1–4 cm long, conspicuously hairy with short eglandular and glandular hairs present. *Calyx* with a dense indumentum of glandular and eglandular hairs; sepals narrowly lanceolate, 1–3 mm long. *Corolla* purplish, 8–12 mm long, externally with glandular and eglandular hairs; abaxial lobes 2–4 mm long; wings 1–2 mm wide. *Style* 4-fid; central indusia oblong, *c.* 1 mm long. *Fruit* subglobular, 2–3 mm diam.; valves gaping. *Seeds* elliptic, 2 mm long, 1.5 mm wide, yellowish brown, with wart-like outgrowths and with a distinct rim. *Flowering & fruiting*: Mar.–May. Fig. 34 (*Byrnes 854*).

A rare species only known from floodplains of Hardy Creek (Mary River floodplain) and the upper Adelaide River. Closely related to *G. purpurea* but having a 4-fid style.

G. symonii (Carolin) Carolin

Calogyne symonii Carolin

Herbs with branches prostrate to erect and to 20 cm long; indumentum of glandular and eglandular strigose hairs present throughout, thickest on young parts and ovary. *Leaves*

sessile but long-tapering to the base, oblanceolate to narrowly oblanceolate, 1–7 cm long, 0.3–1.5 cm wide, decreasing in size up the stem; margins shallowly dentate. *Flowers* solitary in axils; pedicels 1–4.5 cm long, with both glandular and eglandular hairs conspicuous; eglandular hairs often fine and somewhat cottony. *Calyx* with a sparse to pronounced indumentum of eglandular and often glandular hairs; sepals lanceolate or narrowly elliptic, 3–4 mm long. *Corolla* purplish or with reddish or orange colouration, 8–17 mm long, externally with coarse, appressed eglandular hairs; abaxial lobes 2–6 mm long, wings *c.* 1 mm wide. *Style* 3-fid; median indusium oblong, *c.* 0.5 mm long; lateral indusia smaller. *Fruit* ovoid, *c.* 4 mm diam.; valves not gaping. *Seeds* elliptic, 3–4 mm long, *c.* 2 mm wide, greyish yellow, minutely reticulate but more or less smooth. *Flowering & fruiting*: Feb.–June. Fig. 34 (*Egan 5327*).

Endemic to the Top End, ranging from Elizabeth River to Nhulunbuy. Usually on seasonally waterlogged sandy soils and may be found on floodplains. Localities include Howard Springs, seasonally flooded *Melaleuca viridiflora* woodland at Wildman River Reserve, Elizabeth River and Mary River.

Described by Carolin (1979, 1992) as having purple flowers, but collectors' notes indicate that they may also be brick red, orange-pink or reddish brown.