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



HERNANDIACEAE

P.S. Short

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HERNANDIACEAE

P.S. Short

Trees, shrubs or vines, evergreen or deciduous. *Leaves* alternate, simple or few-lobed or palmately compound (not Australia), pinnately or palmately veined; stipules absent. *Flowers* unisexual or bisexual, actinomorphic, in axillary or terminal thyrses or dichasia. *Bracteoles* accrescent in pistillate flowers or absent. *Perianth* segments (tepals) 4–8 in a single whorl or 3–5 tepals in each of 2 or more whorls, mostly imbricate. *Stamens* 3–7 in a single whorl, opposite or alternate with the tepals; filaments commonly with basal nectariferous appendages; anthers bilocular, opening by valves. *Gynoecium* an inferior, single carpel; ovule solitary, pendulous; style short to elongate and with a terminal stigma. *Fruit* a nut, often with lateral or terminal wings or enclosed by bracteoles. *Seeds* lacking endosperm; cotyledons large.

A family of four genera and *c.* 60 species and widespread throughout the tropics. Represented in Australia and the N.T. by *Gyrocarpus* and *Hernandia*, both of which are treated although only *Gyrocarpus* is found in the D.R.

Taxonomic references: Cronquist (1981); Kubitzki (1970, 1993, 2004); Verdcourt (1985); Duyfjes (1996); Telford (2007).

- | | | |
|----|--|-------------------|
| 1 | Nut with 2 apical, propeller-like wings | Gyrocarpus |
| 1: | Nut not winged, surrounded by an inflated cupule | Hernandia |

GYROCARPUS Jacq.

Deciduous, andromonoecious *trees*. *Leaves* simple, entire or 3–5-lobed; veins palmate. *Inflorescence* of axillary or terminal dichasia, ebracteate. *Flowers* small, numerous, male and bisexual but mostly male, at maturity the axes of the dichasia robust and woody. *Tepals* 4–8 in a single whorl. *Stamens* 4–5 and alternating with staminodes. *Ovary* rudimentary in male flowers, in bisexual flowers obconic, the terminal sigmoid style with a capitate stigma. *Nut* longitudinally ribbed, with 2 apical wings produced from meristems arising from the ovary wall.

Pantropical genus of three species, with *G. americanus* in Australia.

Taxonomic references: Kubitzki (1970, 1993, 2004); Duyfjes (1996); Schatz (2001); Renner & Weerasooriya (2002); Telford (2007).

G. americanus Jacq.

G. rugosus R. Br.

G. sphenopterus R. Br.

Trees 6–12 m tall, bark smooth and shiny, grey to silvery or bronze-coloured, variably scaly. *Leaves* with petioles 4.5–14 cm long; lamina depressed ovate to ovate or subtriangular or widely elliptic in outline, 4.5–17.5 cm long, 6–21 cm wide, unlobed or with 3 or 5 often prominent lobes, basally often somewhat truncate to cordate but sometimes the lamina basally tapering and acute, apically acute to acuminate, surfaces glabrous or sparsely to densely hairy, often discoloured with the lower surface the paler and the most hairy; veins conspicuous with 3 or 5 main basal veins; new leaves bright green. *Inflorescences* terminal, 10–13 (17) cm long, manifestly hairy throughout

(including tepals), major axes subterete to somewhat flattened, striate. *Tepals* *c.* 5–7. *Male flowers*: stamens 4, 1.45–2 mm long, manifestly exceeding tepals; filaments with scattered hairs and (?always) alternating with 4 small glands; anthers yellow-brown, 0.6–0.8 mm long and with 2, whitish apical valves. *Bisexual flowers*: ovary densely hairy. *Nut* ellipsoid, 14–20 mm long, 9–14 mm diam., with *c.* 8 longitudinal ribs and with coarse transverse wrinkles (at least when dry) in at least the basal half, brown; wings spatulate, curved, 35–110 mm long, 10–20 mm wide, brown. *Flowering* Nov.–Mar. *Fruiting* Mar.–July. **Stinkwood, Helicopter Tree, Propeller Tree.**

Fig. 1 (*Cowie 3785; Wightman 2475*); Pl. 1 (unvouchered).

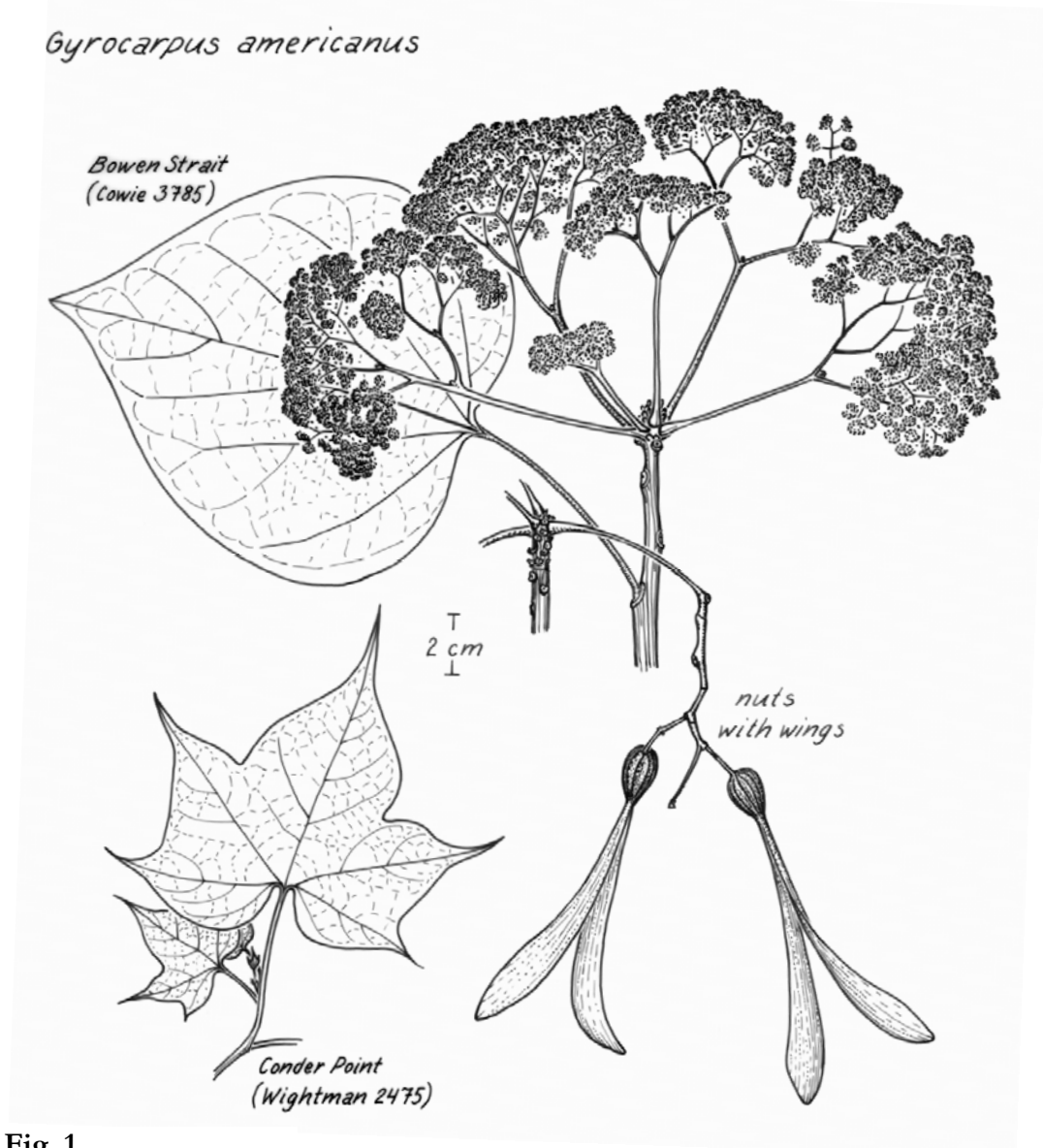


Fig. 1

A highly variable species found throughout tropical regions of the world (Australia: W.A., N.T., Qld). In the N.T. it extends south from the coast to about Tennant Creek and accordingly occupies a range of habitats, including coastal vine thickets (e.g. East Point and Channel Island), open woodland and both sandstone and limestone outcrops.

The above description is based on all N.T. specimens and not just those from the D.R., where the specimens seen invariably have 3- or 5-lobed leaves (e.g. *Wightman 2475* from Conder Point, Melville Island).

Kubitzki (1970) recognised eight subspecies, including three in Australia. Duyfjes (1996) noted that in Malesia more work is required to clarify the position of the taxa recognised by Kubitzki, and similar sentiments have been expressed by Schatz (2001), Renner & Weerasooriya (2002) and Telford (2007). There seems no doubt that some

of the subspecies recognised by him are indeed good species, while the circumscription of others needs further investigation. The latter is the case for Australia. Examination of specimens for this account suggests that the subsp. *pachyphyllus* – in which specimens have entire, slightly leathery leaves and come from inland N.T. and neighbouring W.A. – should be recognised, but the thinner-leaved, coastal and near-coastal specimens referred to subsp. *americanus* and subsp. *sphenopterus* (R. Br.) Kubitzki require further investigation, there being considerable variation in the lobing and vestiture of the leaves. Following both Kubitzki (1970) and Telford (2007), all specimens from the D.R. are seemingly of subsp. *americanus*.

The common name of Stinkwood is in reference to the unpleasant odour produced by burning its wood. The other names, Propeller Tree and Helicopter Tree, refer to the shape of the wings of the fruit and the twirling motion made by

fruit when they fall from the tree. This twirling motion aids dispersal from parent trees but the wide coastal distribution of the species presumably reflects effective dispersal by sea. Fruit have a spongy mesocarp and are capable of floating in sea water for several months (*e.g.* Kubitzki 2004).

Aboriginal people use the light, soft wood to make coolamons. Stems are also used to make spears for fish, charcoal is used on fresh cuts and sores, and an infusion made from roots and leaves is also used to treat cuts (*e.g.* Wightman & Andrews 1989).

HERNANDIA L.

Evergreen, monoecious *trees* or shrubs. *Leaves* simple, rarely 3–5-lobed, peltate or not; veins palmate or not. *Inflorescence* mostly terminal thyrses with long peduncles, the ultimate partial inflorescences 3-flowered cymes each surrounded by usually 4 bracts and usually comprising 2 lateral, pedicelled male flowers surrounding a single, sessile or shortly pedicelled female flower. *Tepals* in 2 rows, with 3–5 in each row. *Stamens* 3–6, filaments free or partly connate and each with 2 basal glandular appendages; staminodes lacking in female flowers. *Ovary* somewhat laterally compressed, obconic, style sigmoid or straight and surrounded by free or connate glands, stigma dilated or irregularly lobed; lacking or rudimentary in male flowers. *Nut* often inconspicuously longitudinally ribbed, enveloped by accrescent bracteoles forming a bivalvate envelope (not N.T.) or by fused bracteoles forming a cupulate envelope (cupule).

Pantropical genus of perhaps 23 species, with three in Australia and one in the N.T.

Taxonomic references: Kubitzki (1970, 1993, 2004); Duyfjes (1996); Telford (2007).

H. nymphaeifolia (C. Presl) Kubitzki

Biasolettia nymphaeifolia C. Presl

Trees to *c.* 20 m tall, bark light grey, subcircular scars prominent on twigs. *Leaves* entire, peltate; petiole 3–15 cm long and attached 0.5–4 cm from the margin of the lamina; lamina widely ovate to ovate, 6–35 cm long, 5.5–22 cm wide, glabrous, discolorous, shiny above and dull below, with 5–7 major nerves radiating from the insertion of the petiole, apex acute or subacuminate. *Inflorescences* with striated peduncles 7–12 cm long; bracts 2–5.5 mm long, 1–3 mm wide; all parts of the inflorescence pubescent, the bracts and the *c.* 3.5–5 mm long tepals with a dense, whitish indumentum of short hairs. *Male flowers* with pedicels 2–2.5 mm long; stamens 3; filaments *c.* 1.5 mm long and densely white-puberulous, each with glands to *c.* 1 mm long, free or fused between stamens; anthers *c.* 1.2–1.3 mm long. *Female flowers* on shorter pedicels than male; style *c.* 3 mm long, papillose, with 4 basal glands, stigma apparently orange. *Nuts c.* 25 mm long, 20 mm diam., dark brown or black, obscurely

8-ribbed and with an apical boss, enclosed in an inflated, fleshy, white or apparently sometimes pale green or pinkish-red cupule with a terminal round orifice. *Flowering c.* March. *Fruiting c.* July.

Pl. 2 (*Kerrigan 1140*).

Widespread in coastal regions of the Old World tropics, from east Africa to Malesia, Australia (N.T., Qld) and Polynesia. Only known in the N.T. from the eastern Arnhem Land coast, *i.e.* from a vine thicket on coastal limestone cliffs at Port Bradshaw, and vine forest on a dune swale at Manalimandja Point, Groote Eylandt. Drift fruit have been collected from Yirrkala.

As with *Gyrocarpus* the presence of a spongy mesocarp allows fruit to float for at least several months (Kubitzki 2004) and it has been noted elsewhere that propagules found on beaches are commonly viable and easily germinate after scarification (Smith 1999). Fruit bats are known to eat the fresh, fleshy cupule (Smith 1999) but whether they also eat the fruit does not seem to have been recorded.

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Pl. 1 *Gyrocarpus americanus* (Photos: J. Brock)

Pl. 2 *Hernandia nymphaeifolia*
(Photos: R.A. Kerrigan)