A key to *Aglaia* (Meliaceae) in Australia, with a description of a new species, *A. cooperae*, from Cape York Peninsula, Queensland

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Abstract

An introduction and a key to the 12 species of *Aglaia* Lour. known from mainland Australia are presented. *Aglaia cooperae*, endemic to vine thicket on sand on Silver Plains in the Cape York Peninsula of Queensland, is described as new, illustrated and named after the author and naturalist, Wendy Cooper.

Introduction

The genus *Aglaia* Lour., with 120 species currently recognised, is the largest in the family Meliaceae. It occurs in Indomalaysia, Australasia and the Western Pacific, from India to Samoa and from southwest China to northern Australia (Pannell 1992). Twelve species of these small to medium sized, dioecious, tropical trees have been recorded in northern and north-eastern tropical Australia, mainly on the eastern side of the far north of Queensland, where four or five species are endemic, but also in Kimberley, Arnhem, Carpentaria, Burdekin and Dawson. All 12 species are found in Queensland, two are also found in the Northern Territory and one in the Kimberley region of Western Australia. During preparation of the *Flora of Australia* account, a new species, *A. cooperae*, has been recognised. It is described here and named in honour of Wendy Cooper, whose book, illustrated by William T. Cooper, superbly evokes the fruits of the Queensland rainforest.

*Amoora* is included in *Aglaia* (Pennington & Styles 1975). Dehiscence of the fruit is the only constant distinguishing feature between the two genera (dehiscent in *Amoora* and indehiscent in *Aglaia*), but since this is not consistently correlated with any other more frequently available character, identification of the separate genera, if they were maintained, would often not be possible. However, molecular investigation of the genus thus circumscribed, suggests that it is paraphyletic and that it encompasses three monophyletic lineages, section *Amoora*, section *Neoaglaia* and section *Aglaia* (Muellner et al. 2005). This investigation also places *Aglaia tomentosa* from Australia in a different clade from specimens of that species from western Malesia, in spite of their morphological similarity. *Aglaia ferruginea* is therefore recognised as distinct from *A. tomentosa* and endemic to Australia in the present account. Additional publications on the phylogeny, history and biogeography of *Aglaia* are in press and in preparation, but they do not affect the names of any other Australian *Aglaia* species.

The small or tiny flowers are complex in structure and highly perfumed, especially in male plants. All species have a fleshy aril. This usually completely surrounds the seed, but in *A. elaeagnoidea* from the Kimberley region, it is vestigial and the pericarp is fleshy. The fruits or arillate seeds are eaten, and the cleaned seeds dispersed.

![Fig. 1. Holotype of *Aglaia cooperae* Pannell (P.I.Forster PIF 17031 BRI).](image)
Key to Australian species of *Aglaia*

C&C indicates a page reference to watercolour illustrations of fruits and to line-drawing of leaves in Cooper & Cooper (2004).

1. Indumentum solely or partly of peltate scales, visible with a hand lens
   1. Scales white or pale brown, numerous or densely covering the lower leaflet surface ................................................................. *A. argentea* Bl. Northern Queensland, Thailand to Solomon Islands — C&C 284
   2. Scales thickly coating lower leaflet surface, completely concealing the lamina .................................................. *A. elaeagnoides* (A.Juss.) Benth. North and east Queensland, north-east Western Australia, Indonesia to New Guinea, Vanuatu, Samoan Islands and New Caledonia — C&C 285
   3. Scales few to numerous but rarely overlapping on lower leaflet surface
   4. Leaflets (1–) 3–7; scales large, numerous on lower leaflet surface .......................................................... *A. spectabilis* (Miq) Jain & Bennet North-east Queensland — C&C 286, as *A. silvestris* (M.Roem.) Merr. 
   5. Flowers with 3 petals; fruits 3-locular, dehiscent
   6. Undersurface of midrib with stellate scales absent or sparse amongst the peltate scales; staminal tube with 5 deep lobes, the margins densely hairy and the anthers inserted on the inside .......................... *A. euryanthera* Harms North-east Queensland, New Guinea — C&C 285
   7. Pits absent or few on leaflet surfaces; staminal tube obovoid with a pin-prick aperture; anthers 5, included ................................................................. *A. brassii* Merr. & L.M.Perry North-east Queensland, New Guinea, Solomon Islands — C&C 284
   8. Indumentum of peltate scales only; leaflet margins recurved; staminal tube subglobose with 3 anthers ........................................................................ *A. cooperae* Pannell North-east Queensland — C&C 286, as *A. ferruginea* C.T.White & W.D.Francis
   9. Flowers with 4 or 5 petals; fruits 1- or 2-locular, indehiscent
   10. Leaflets with reticulation not subprominent and barely or not at all visible; hairs and scales conspicuous, dark reddish-brown; fruits small, maximum 2.5 cm in diameter .......................................................... *A. meridionalis* Pannell North-east Queensland — C&C 285
   11. Indumentum of mainly stellate hairs, numerous on lower leaflet surface, sometimes with fewer stellate scales interspersed
   12. Hairs with some arms much longer than the rest; reticulation brown on lower leaflet surface
      when dry ................................................................. *A. ferruginea* C.T.White & W.D.Francis North-east Queensland — C&C 286, as *Aglaia tomentosa* Teijm. & Binn.
   14. Pits numerous on the lower leaflet surface; staminal tube shallowly cup-shaped with a wide aperture ........................................................................ *A. sapindina* (F.Muell.) Harms North-east Queensland and northern Northern Territory, Maluku to Bougainville — C&C 285
   15. Pits absent or few on the lower leaflet surfaces; staminal tube obovoid with pin-prick aperture ........................................................................ *A. brassii* Merr. & L.M.Perry North-east Queensland, New Guinea, Solomon Islands — C&C 284

2. Scales dark reddish- or purplish-brown, mainly on midrib and scattered elsewhere on lower leaflet surface
   5. Flowers with 2 or 3 petals; fruits 3-locular, dehiscent ................. *A. australiensis* Pannell North-east Queensland — C&C 284
   6. Undersurface of midrib with stellate scales absent or sparse amongst the peltate scales; staminal tube not deeply lobed, anthers not hairy
   7. Pits numerous on one or both leaflet surfaces
   8. Indumentum of peltate scales only; leaflet margins recurved; staminal tube subglobose with 3 anthers ........................................................................ *A. cooperae* Pannell North-east Queensland — C&C 286, as *A. ferruginea* C.T.White & W.D.Francis
   9. Flowers with 4 or 5 petals; fruits 1- or 2-locular, indehiscent
   10. Leaflets with reticulation subprominent or visible on lower surface when dry; hairs and scales inconspicuous, pale brown; fruits large, maximum 8 cm in diameter .............. *A. spectabilis* (Miq) Jain & Bennet North Queensland, India, through Indomalesia and Melanesia to Santa Cruz — C&C 286
   11. Indumentum of mainly stellate hairs, numerous on lower leaflet surface, sometimes with fewer stellate scales interspersed
   12. Hairs with arms of similar lengths; reticulation usually white or pale brown on lower leaflet surface when dry ........................................................................ *A. brownii* Pannell North-east Queensland, northern Northern Territory, New Guinea — C&C 285
   13. Scales sparse to densely covering the midrib and scattered on the rest of lower leaflet surface
   14. Pits numerous on the lower leaflet surface; staminal tube shallowly cup-shaped with a wide aperture ........................................................................ *A. sapindina* (F.Muell.) Harms North-east Queensland and northern Northern Territory, Maluku to Bougainville — C&C 285
   15. Pits absent or few on the lower leaflet surfaces; staminal tube obovoid with pin-prick aperture ........................................................................ *A. brassii* Merr. & L.M.Perry North-east Queensland, New Guinea, Solomon Islands — C&C 284

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by birds such as the Cassowary, *Casuarius cassuarius* (Linnaeus, 1758), Pied Imperial Pigeon, *Ducula bicolor* (Scopoli, 1786), Victoria's Riflebirds, *Ptiloris victoriae* (Gould, 1850), Spotted Catbirds, *Ailuroedus melanotis* (G.R.Gray, 1858) and Wompoo Fruit-doves, *Ptilinopus magnificus* (Temminck, 1821), feed on fruits of *Aglaia ferruginea*, but they are likely to destroy the seeds.

**Taxonomy**

*Aglaia* Lour.

Fl. Cochinch., 173 (1790), nom. cons. — Type: *A. odorata* Lour.


Trees, dioecious, indumentum of stellate hairs and or stellate or peltate scales. Leaves in spirals, usually (always in Australia) imparipinnate, sometimes simple (not in Australia). Inflorescences axillary panicles, male (always in Australia) imparipinnate, sometimes simple or stellate or peltate scales. Leaves in spirals, usually simply coriaceous, margin recurved and face of the leaflets more or less truncate. Petiole 1.5–7 cm long, 1–3 cm wide, dark reddish-brown peltate scales, which have a fimbriate margin, numerous to dense on midrib of leaflets below, absent or few on rest of lower surface. Leaves 6.5–20.5 cm long, 8–20 cm wide; petiole 1.5–7 cm. Leaflets 5–7, elliptical, 2.5–9 cm long, 1–3 cm wide, coriaceous, margin slightly recurved, cuneate at base, rounded or acuminate at apex, the obtuse acumen to c. 5 (–10) mm long; lateral veins 9–11, curved upwards near the margin and anastomosing, reticulation usually subprominent below and sometimes above; upper and lower leaflet surfaces with numerous pits. Inflorescence 2.5–3 cm long. Flowers 2.5–3 mm long, 2.5–3 mm wide, pedicel c. 2 mm long. Calyx cup-shaped, divided into 5 rounded lobes. Petals 3, densely

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3. *A. sapindina* and *A. ferruginea* (as *A. tomentosa*): Cooper & Cooper (2004).
6. Cooper & Cooper (2004), as *A. tomentosa*.

A genus of 120 species distributed in Indomalesia, Australasia and the Western Pacific, from India to Samoa and from southwest China to northern Australia (Pannell 1992).

The fruits are often more useful than the tiny flowers for identifying species of *Aglaia*, but mature fruits are rarely collected. References to watercolour illustrations of the fruits and to line-drawing of the leaves in Cooper & Cooper (2004) are indicated in the key to Australian species (see opposite page).

One species in the key, referred to as *Aglaia* sp. Iron Range (Legge 21), is known from only one fruiting specimen. More material, including flowers, might show that this specimen belongs to the species *A. silvestris*, which is widespread and variable outside Australia or that it is a new species, endemic to Australia.

**General references**


*Aglaia cooperae* Pannell, sp. nov.

Affinis *A. brassii* Merr. & L.M.Perry sed foliolis magis coriaceis margin recurvo et faciebus foliolarum ambabus conspicue foveolatis, flore petalis et antheris tribus tantum proviso et tubo staminali apertura latiore instructo differt.

**Holotypus**: Queensland. Cook District: Silver Plains, S of Scrubby Creek and W of Colmer Point, 27 June 1995, P.I. Forster PIF 17031 (BRI, Fig. 1).


**Illustration.** W. Cooper & W.T. Cooper, loc. cit., as *Aglaia* sp. Silver Plains (leaf and leaflet only).

Small tree or multi-stemmed shrub 3–6 m high; bark pale reddish-brown, flaking in thick oblong scales. Twigs, petioles, rachis and petiolules, inflorescences, infructescences, calyces and fruits densely covered with, dark reddish-brown peltate scales, which have a fimbriate margin, numerous to dense on midrib of leaflets below, absent or few on rest of lower surface. Leaves 6.5–20.5 cm long, 8–20 cm wide; petiole 1.5–7 cm. Leaflets 5–7, elliptical, 2.5–9 cm long, 1–3 cm wide, coriaceous, margin slightly recurved, cuneate at base, rounded or acuminate at apex, the obtuse acumen to c. 5 (–10) mm long; lateral veins 9–11, curved upwards near the margin and anastomosing, reticulation usually subprominent below and sometimes above; upper and lower leaflet surfaces with numerous pits. Inflorescence 2.5–3 cm long. Flowers 2.5–3 mm long, 2.5–3 mm wide, pedicel c. 2 mm long. Calyx cup-shaped, divided into 5 rounded lobes. Petals 3, densely...
Fig. 2. *Aglaia cooperae*. a flowering branch; b flower; c fruiting branch; d lower leaf surface. Scale: a, c 1 cm; b, d 1 mm. a, b P.I.Forster PIF 17031; b, c B.Hyland 10296.
covered with scales on the exposed surfaces. Staminal tube c. 2.2 mm long and c. 2.2 mm wide, subglobose, aperture triangular, c. 1 mm wide; tube thickened below anthers and with numerous pale brown stellate scales on the inner surface. Anthers 3, c. 0.5 mm long, c. 0.7 mm wide, ovoid, sessile, inserted in the uppermost 1/4 of the tube and just protruding. Ovary c. 1.2 mm long c. 1 mm wide, stigma sessile with two minute apical lobes, loculi two, each with two ovules. Infructescence 4.4–7.5 cm long, c. 1.5 cm wide. Fruit 1.7–2.5 cm long, 1–2 cm wide, subglobose, orange brown. Seed 1, enclosed in a brown aril. Fig. 2.

**Distribution and habitat.** Endemic to Australia. Occurs to the east of the McIlwraith Range on the Cape York Peninsula, Queensland, from the Nesbit River south of Iron Range to Massy Creek on Silver Plains, between latitudes 13°33’ and 13°53’ S. It is common in the Silver Plains area. Grows mainly in semi-deciduous or deciduous vine thickets, usually on (ancient) sand dunes, in evergreen notophyll thicket or rain forest, at altitudes 20 and 70 m. Associated species recorded are: *Beilschmedia peninsularis* B.Hyland, *Canthium* spp., *Eugenia* spp., *Xanthostemon youngii* C.T.White & W.D.Francis and *Terminalia sericocarpa* F.Muell.

**Note.** *Aglaia cooperae* differs from *A. brassii* Merr. & L.M.Perry in that the leaflets are more coriaceous, the leaflet margins are recurved and both leaflet surfaces are conspicuously pitted. The flower differs from that of *A. brassii* in that there are only three petals, the staminal tube has a wider aperture and there are only three anthers. This species belongs to sect. *Aglaia*, because the fruit is indistinct, but three petals are not found in any other species in this section and three anthers are not found in any other species in the genus. The bark, which is flaking in thick scales, is also unusual for sect. *Aglaia* (Fig. 3).

**Etymology.** The species is named after author and naturalist Wendy Cooper, who drew my attention to this species as distinct from *Aglaia brassii* (in litt.; Cooper & Cooper 2004).

**Specimens examined**

**QUEENSLAND.** **Cook District:** Scrubby Ck between the Rocky and Chester Rivers, Silver Plains Sm, 13 Nov 1990, D.G.Fell 02249 (QRS); 4.5 km WSW of the Nesbit R. mouth, 57 km NE of Coen, Silver Plains SLPF, Cape York Peninsula, 17 Aug. 1993, D.G.Fell, R.Jensen, G.Barnes DGF 3450 (BRI); 3 km N of Massey Ck Crossing, Silver Plains Sm, 15 June 1992, P.I.Forster, G.Sankowsky & M.C.Tucker PIF 10578 (QRS); Nesbit R. near mouth, Silver Plains, 4 July 1997, P.I.Forster, R. Jensen, M.C.Tucker PIF 21373 (BRI); Between Massey Ck and Rocky R., 20 Feb. 1980, B.Hyland 10296 (FHO, QRS); Silver Plains, 2 km N of Rocky R., 22 June 1999, G.Sankowsky 01678 (QRS); 8 km N of crossing on Massey Ck, on road between Silver Plains Sm and Rocky R., Oct 1969, L.J.Webb & J.G.Tracey 9734 (BRI, FHO).

**Acknowledgments**

I am grateful to Wendy Cooper for her interest in the genus *Aglaia*, for persuading me that *A. cooperae* is distinct from *A. brassii*, and for her comments on the manuscript, to Rosemary Wise for preparing the line drawing, to Robert Mill (E) for translating the diagnosis into Latin and to Stephen Harris (OXF/FHO) for his comments on the manuscript.

**References**


