



A synopsis of *Justicia* L. (Acanthaceae) in Australia

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Abstract

Eleven *Justicia* species are enumerated for Australia (excluding *Justicia* sect. *Rostellaria*), of which three are naturalised. Two new combinations are made: *Justicia muelleri* (R.M.Barker) A.R.Bean and *Justicia rhadinophylla* (Lepschi) A.R.Bean. An identification key is provided, and notes are given on distribution and habitat.

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Introduction

Justicia L. is a worldwide genus of the Acanthaceae comprising hundreds of species. It is recognized by having bilabiate corolla, with the upper lip entire or slightly bilobed and the lower lip 3-lobed, androecium with two exerted stamens, asymmetrical or divergent bithecous anthers and the clavate capsule with a sterile base and four seeds attached to the modified hook-shaped funicle (Souza et al. 2020)

The circumscription of the genus has waxed and waned over the past 200 years. Barker (1986) adopted a narrow view of *Justicia* and included six genera in subtribe *Justiciinae* for Australia: *Calophanoides* (C.B.Clarke) Ridl., *Rhaphidospora* Nees, *Rostellularia* Rchb., *Anisostachya* Nees, *Sarojusticia* Bremek. and *Justicia*. Later, Barker (1996) placed *Sarojusticia* and *Calophanoides* in the synonymy of *Harnieria* Solms. Barker (1986) included *Anisostachya tenella* (Nees) Lindau as naturalised in Australia, but it is known only from one (possibly cultivated)

specimen collected in 1891, and so it is here regarded as not present in Australia.

Worldwide research on the phylogeny and classification of Acanthaceae over the past few decades has resulted in a broader circumscription of *Justicia* (Scotland & Volleson 2000; Volleson 2010; Kiel et al. 2017; Kiel et al. 2018; McDade et al. 2021), and all these segregate genera except *Anisostachya* are now regarded as synonyms of it (Manzitto-Tripp et al. 2022), based on both morphological and molecular data. Kiel et al. (2017) stated that only 12-15% of justicioid species have been sampled for DNA. This means there is still some uncertainty about generic limits. Hence, future name changes at the generic level are possible, but I believe that the use of *Justicia* is the best option for the Australian species because any potential changes are many years away, and the narrowly-circumscribed genera currently used in Australia are almost impossible to define.

This synopsis includes all native and naturalised species of *Justicia* occurring in Australia except for those belong-

ing to *Justicia* sect. *Rostellaria* T.Anderson (syn. *Rostellaria* Rchb.); these have been revised separately (Bean 2026b). Eleven species of *Justicia* are enumerated here, including two species recently published by the current author (Bean 2026a). Two new combinations are made, viz. *Justicia muelleri* (R.M.Barker) A.R.Bean and *Justicia rhadinophylla* (Lepschi) A.R.Bean for taxa endemic to Western Australia.

Methods

This paper is based on the study of herbarium specimens from BRI, as well as images of specimens held at DNA and CANB. Plant images from the iNaturalist website were examined to assess corolla colour of some taxa, and distributional data from this website were used for the naturalised species. Images of type specimens were examined on Jstor Global Plants. Species are treated in alphabetical order.

Key to the species of *Justicia* in Australia

- 1 Inflorescence comprising 1-5 sessile or subsessile flowers in axils of leaves or leaf-like bracts and with internodes clearly visible between whorls **2**
- 1 Inflorescence pedunculate, either a terminal spike with internodes usually not visible, or a terminal/axillary panicle **7**
- 2 Largest leaves 15-30 mm wide; bracts orbicular to obcordate, much smaller than leaves **J. hygrophiloides**
- 2 Largest leaves 1-9 mm wide; bracts linear to broadly ovate, similar to leaves **3**
- 3 Leaves with 2-3(-4) pairs of lobes; stigma 1.5-2 times wider than style **J. kempeana**
- 3 Leaf margins entire or undulate; stigma 1-1.5 times wider than style **4**
- 4 Stems with spreading hairs 0.3-0.7 mm long **J. densipila**
- 4 Stems with spreading hairs 0.1-0.2 mm long, or hairs appressed, or stems glabrous **5**
- 5 Leaves narrowly oblong to linear, 6-12 times longer than wide **J. rhadinophylla**
- 5 Leaves elliptical to narrowly obovate, 1.7-4.5 times longer than wide **6**
- 6 Capsules 8-11 mm long; shrub to 1m high; corolla tube and upper lobes white **J. muelleri**
- 6 Capsules 6.5-7.6 mm long; small shrub 10-25 cm high; corolla tube and upper lobes pink **J. aprica**
- 7 Inflorescence paniculate; bracts and bracteoles 1-1.5 mm long, at the base of the pedicel and hence remote from calyx **8**
- 7 Inflorescence spicate; bracts and bracteoles 3-20 mm long, adjacent to and surrounding calyx **9**
- 8 Innocuous shrub; leaves ovate to broadly ovate, petiolate, margins crenulate; peduncles hairy **J. cavernarum**
- 8 Spinescent shrub; leaves linear to narrowly elliptic, sessile, margins entire; peduncles glabrous **J. bonneyana**

- | | | |
|-----------|--|-----------------------------|
| 9 | Bracts white, yellow or red | 10 |
| 9 | Bracts green | 11 |
| 10 | Bracts white with dark veins; leaves and branchlets glabrous | J. betonica |
| 10 | Bracts yellow to red; leaves and branchlets pubescent | J. brandegeana |
| 11 | Calyx lobes 5; bracts spatulate | J. carthaginensis |
| 11 | Calyx lobes 4; bracts lanceolate to broadly elliptical | J. sect. Rostellaria |

Taxonomy

Justicia aprica A.R.Bean

Justicia aprica A.R.Bean, Aust. J. Taxonomy 113: 2 (2026). Type: Queensland. About 8km E of Lake Dalrymple, 19 June 1998, *E.J. Thompson CHA545 & G.P. Turpin* (holo: BRI (1 sheet + spirit); iso: MEL).

Distribution and habitat: *Justicia aprica* is endemic to Australia, and is confined to northern Queensland. It usually grows in *Acacia shirleyi* woodland on hillslopes, sometimes with *Eucalyptus howittiana* or *E. thozetiana*.

Justicia betonica L.

Justicia betonica L., Sp. Pl. 1: 15 (1753); *Adhatoda betonica* (L.) Nees in Wall., Pl. Asiat. Rar. 3(12): 102 (1832); *Ecbolium betonica* (L.) Kuntze, Rev. Gen. Pl. 2: 487 (1891); *Nicoteba betonica* (L.) Lindau, Bot. Jahrb. Syst. 18: 56 (1893). Type: Sri Lanka, undated, *P. Hermann s.n.* (lecto: BM 000621793), *vide* Immelman in Bothalia 16: 40 (1986).

Distribution and habitat: *Justicia betonica* is native to tropical and subtropical areas of east Africa, but is now widely naturalised in southern Asia, Australia, the Pacific islands, and warmer parts of North and South America. In Australia, it is naturalised along the east coast from Cairns (Queensland) to Coffs Harbour (New South Wales). It grows in disturbed eucalypt forest, rainforest margins or low-lying waste ground.

Justicia bonneyana F.Muell.

Justicia bonneyana F.Muell., Wing's Southern Science Rec. 2: 74 (1882); *Ecbolium bonneyanum* (F. Muell.) O.Kuntze, Rev. Gen. Pl. 2: 980 (1891); *Justicia procumbens* var. *bonneyana* (F. Muell.) Domin, Biblioth. Bot. 89: 604 (1929). Type: New South Wales. Near Mt Murchison, anno 1879, *F. Bonney s.n.* (lecto: MEL 86988, *vide* Barker (1986); isolecto: NSW 151899).

Chloanthes bonneyana F.Muell., Fragm. 10: 73 (1876); *Hemistemon bonneyi* F.Muell., Fragm. 10: 73 (1876), pro syn.; *Rhaphidospora bonneyana* (F.Muell.) R.M.Barker, J. Adelaide Bot. Gard. 9: 233 (1986). Type: New South Wales. Holotype: Trans flumen Darlingi, beyond Mt Murchison, undated, *F. Bonney 2* (holo: MEL 69138).

Distribution and habitat: *Justicia bonneyana* is endemic to Australia, and it extends from the Idalia National Park, Queensland to near Wilcannia, New South Wales.

It grows in shallow soil amongst boulders, on steep slopes or in watercourses, in association with *Acacia catenulata*, *A. petraea* or *Eremophila* spp.

Justicia brandegeana Wassh. & L.B.Sm.

Justicia brandegeana Wassh. & L.B.Sm., Fl. Illustr. Catarin. 1: 102 (1969), as '*brandegeana*'; *Beloperone guttata* Brandege, Univ. Calif. Publ. Bot. 4: 278 (1912); *Calliaspidia guttata* (Brandegee) Bremek., *Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk.*, Sect. 2, 45(2): 54 (1948); *Drejerella guttata* (Brandegee) Bremek., Philipp. J. Sci. 80: 14 (1952). Type: Mexico. Along Rio Gallinas, August 1911, C.A. Purpus 5263 (holo: UC; iso: F, GH, NY, US).

Distribution and habitat: *Justicia brandegeana* is native to Mexico, Honduras, El Salvador and Guatemala (POWO 2025). It is widely cultivated in tropical and subtropical countries, and sometimes naturalised. In Australia it is sparingly naturalised in Queensland (near Proserpine and in the Brisbane area) and in New South Wales as far south as Wollongong. It has been found growing in disturbed bushland close to urban areas.

Note: *Justicia brandegeana* is a *nom. nov.* The epithet *guttata* is pre-occupied in *Justicia* by *J. guttata* Wall. (1830).

Justicia carthaginensis Jacq.

Justicia carthaginensis Jacq., Enum. Pl. Carib. 11 (1760); *Adhatoda carthaginensis* (Jacq.) Nees in A.D.C., Prodr. 11: 403 (1847); *Beloperone carthaginensis* (Jacq.) Benth. & Hook.f., Gen. Pl. 2: 1111 (1876). Neotype: t. 7 in Select. stirp. amer. hist. ed. 2 (1780), *vide* Carnevali *et al.* (2024). Epitype: Colombia. Isla Tierra Bomba, 11 November 2021, T. Pinzón 53 (epi: JBGP; isoe: ANDES, CICY, GH, MO, K), *vide* Carnevali *et al.* (2024).

Distribution and habitat: *Justicia carthaginensis* is native to Central America, the Caribbean islands and northern South America (Carnevali *et al.* 2024). In Australia, it is naturalised only in the vicinity of Darwin, Northern Territory, where it is found in disturbed forest, on roadsides and in orchards in shady places.

Justicia cavernarum F.Muell.

Justicia cavernarum F.Muell., *Fragm.* 6: 91 (1867); *Ecbolium cavernarum* (F.Muell.) Kuntze, *Rev. gen. pl.* 2: 980 (1891); *Rhaphidospora cavernarum* (F.Muell.) R.M.Barker, J. Adelaide Bot. Gard. 9: 232 (1986). Type: Queensland. Caves Mountain [near Rockhampton], undated, A. Thozet 485 (holo: MEL 601967).

Justicia platyphylla S.Moore, J. Bot. 58: 193 (1920); *Rhaphidospora platyphylla* (F.Muell.) Bremek., Nova Guinea, new series 8: 193 (1957), *nom. inval.*; *Rhaphidospora platyphylla* (F.Muell.) Bremek. ex A.R.Bean, *Austrobaileya* 10: 85 (2017). Type: Papua New Guinea. Astrolabe Range, 1 August 1918, C.T. White 270 (holo: BM; iso: BRI).

Distribution and habitat: *Justicia cavernarum* occurs in Papua New Guinea (Port Moresby area), north-eastern

Queensland (Iron Range to Mt Molloy) and central Queensland (Rockhampton area). It grows in deciduous vine forest or semi-evergreen vine thicket on brown or reddish sandy soils.

Note: The type specimens of *J. platyphylla* and *J. cavernarum* differ greatly in leaf size and indumentum and inflorescence complexity. However, when all specimens are assembled, there is a wide range of morphology, seemingly forming a continuum between these types. As there does not appear to be any way to consistently distinguish *J. cavernarum* from *J. platyphylla*, the latter is here reduced to synonymy.

Justicia densipila A.R.Bean

Justicia densipila A.R.Bean, *Australian J. Taxonomy* 113: 4 (2026). Type: Queensland. Near lookout, Return Creek Falls, Taravale, NW of Townsville, 16 May 2009, A.R. Bean 28860 & R. Jensen (holo: BRI).

Distribution and habitat: *Justicia densipila* is endemic to Australia, and is known from two locations in northern Queensland. It grows on granitic or lateritic ridges in sandy soil, in eucalypt woodland with shrubby understorey.

Justicia hygrophiloides F.Muell.

Justicia hygrophiloides F.Muell., *Fragm.* 6:89 (1867); *Ecbolium hygrophiloides* (F.Muell.) Kuntze, *Rev. Gen. Pl.* 2: 980 (1891); *Calophanoides hygrophiloides* (F.Muell.) R.M.Barker, J. Adelaide Bot. Gard. 9: 237 (1986); *Harnieria hygrophiloides* (F.Muell.) R.M.Barker, J. Adelaide Bot. Gard. 17: 149 (1996). Type: Queensland. Top of Coast Range, Rockingham Bay, 3 May 1865, J. Dallachy s.n. (lecto: MEL 601975), *vide* Barker (1986).

Distribution and habitat: *Justicia hygrophiloides* is endemic to Australia. It occurs in coastal areas and adjacent ranges from Windsor Tableland (Queensland) to Nymboida (New South Wales). It typically grows in Araucarian notophyll vine forest or equivalent on red or brown loamy soils.

Justicia kempeana F.Muell.

Justicia kempeana F.Muell., *Fragm.* 11: 101 (1880); *Ecbolium kempeanum* (F. Muell.) Kuntze, *Rev. Gen. Pl.* 2: 980 (1891); *Sarojusticia kempeana* (F. Muell.) Bremek. ex H.Eichler, *Suppl. Black's Fl. S. Austral.* 284 (1965); *Sarojusticia kempeana* subsp. *kempeana*, J. Adelaide Bot. Gard. 9: 242 (1986); *Harnieria kempeana* (F.Muell.) R.M.Barker, J. Adelaide Bot. Gard. 17: 150 (1996). Type: Northern Territory. Prope McDonnell's Range, anno 1879, F.A.H. Kempe 87 (lecto: MEL 601997), *vide* Barker (1986).

Distribution and habitat: *Justicia kempeana* is endemic to Australia, and is confined to the Alice Springs area of Northern Territory. It grows in rocky hillsides and gorges, in shallow sandy-loam soils.

Justicia muelleri (R.M.Barker) A.R.Bean comb. et stat. nov.

Sarojusticia kempeana subsp. *muelleri* R.M.Barker, J. Adelaide Bot. Gard. 9: 243 (1986); *Harnieria kempeana* subsp. *muelleri* (R.M.Barker) R.M.Barker, J. Adelaide Bot. Gard. 17: 150 (1996). Type: Western Australia. Along the road between Wiluna and Meekatharra (c. 120 km W of Wiluna), Glengarry Range South, 26 September 1975, J.Z. Weber 4829 (holo: AD; iso: PERTH).

Distribution and habitat: *Justicia muelleri* is endemic to Western Australia. It extends from Tom Price in the Pilbara bioregion south to Leonora (Kalgoorlie area). It grows in open shrubland with an understorey of *Triodia* or other grasses, sometimes associated with lateritic breakaways.

Notes: *Justicia muelleri* differs from *J. kempeana* by the elliptical or oblanceolate leaves and bracts with margins entire or irregularly crenate, stems with appressed white hairs, the white upper corolla lobe, and the stigma < 1.5 times the width of the style.

Justicia rhadinophylla (Lepschi) A.R.Bean comb. et stat. nov.

Justicia rhadinophylla (Lepschi) A.R.Bean comb. et stat. nov.; *Harnieria kempeana* subsp. *rhadinophylla* Lepschi, J. Adelaide Bot. Gard. 17: 153 (1996). Type: Western Australia. North West Cape, c. 10 km S of the centre of Exmouth, 24 July 1995, M.E. Trudgen 12864 (holo: PERTH 04177878; iso: AD, CANB, K, L)

Distribution and habitat: *Justicia rhadinophylla* is endemic to Australia, and known only from the Cape Range in Western Australia. It grows along watercourses adjacent to limestone rocks.

Notes: *Justicia rhadinophylla* differs from *J. kempeana* by the slender entire leaves and bracts, and the stigma < 1.5 times the width of the style. *J. rhadinophylla* differs from *J. muelleri* by the purple upper corolla lobe and the much longer and narrower leaves.

Disclosures

No conflict of interest.

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