

Eremophila willsmithii Edginton (Scrophulariaceae), a new species from south-western Queensland, Australia

M.A. Edginton¹

Summary

Edginton, M.A. (2024). *Eremophila willsmithii* Edginton (Scrophulariaceae), a new species from south-western Queensland, Australia. *Austrobaileya* **14**: 1–11. *Eremophila willsmithii* is described and illustrated. Notes on ecology and distribution are provided. The known distribution of the new species is restricted to the vicinity of Eromanga.

Key Words: Scrophulariaceae; Myoporaceae; *Eremophila*; *Eremophila willsmithii*; flora of Australia; flora of Queensland; taxonomy; new species; Eromanga

¹Queensland Herbarium and Biodiversity Science, Department of Environment, Science and Innovation, Brisbane Botanic Gardens, Mt Coot-tha Road, Toowong, Queensland 4066, Australia. E-mail: Mark.Edginton@des.qld.gov.au

Introduction

The genus *Eremophila* R.Br. is widespread throughout Australia (centres of diversity and endemism are primarily semiarid and arid areas), with Western Australia having the most species (Chinnock 2007). Traditionally, *Eremophila* was placed within Myoporaceae; however, a review by Tank *et al.* (2006) of molecular phylogenetic studies supported the inclusion of the family within Scrophulariaceae with reduction to tribal status (Tribe Myoporeae). Recent molecular studies of Myoporeae using nuclear ribosomal and plastid DNA sequence data (Fowler *et al.* 2020; Fowler *et al.* 2021; Gericke *et al.* 2021) have indicated that the non-*Eremophila* genera in Myoporeae are nested in *Eremophila*, and that the sections of *Eremophila sensu* Chinnock (2007) are paraphyletic.

There are currently 233 recognised species of *Eremophila* (Australian Plant Census 2023). Since Chinnock's 2007 revision, many phrase-named taxa have been proposed and the species being described here has been recognised as distinct for 10 years (Edginton 2013), although it was first collected in 1997.

Material and methods

This study is based upon the examination of dried herbarium material and label data from the Queensland Herbarium (BRI), as well as photos of plants in habitat. All existing specimens of *Eremophila willsmithii* were examined. No spirit material has been collected, although floral parts were rehydrated to facilitate drawing and photographing. All photographs in the field were taken by J.L. Silcock. All photos of dried material were taken by the author, apart from the type specimen courtesy of M. Fabillo.

Taxonomy

Eremophila willsmithii Edginton, *sp. nov.*

A shrub or small tree, with foliage that is glabrous, non-resinous; stems that are tuberculate with tubercles becoming obscure with age; leaves that are alternate and scattered, mostly lanceolate to elliptic. It has 1–3 flowers per axil, with a \pm zygomorphic deep pink or lilac to red corolla. The corolla upper lip has 2 obtuse to sub-acute lobes, while the lower lip has 3 obtuse to sub-acute lobes. The stamens are in 2 pairs, 1 pair not or barely exerted beyond the

petals, the other pair exerted well beyond. Fruits are conical-ovoid to cylindrical-conical, moderately pubescent with up to 1 mm long eglandular hairs and sparse shorter glandular hairs. **Type:** Australia. Queensland. GREGORY SOUTH DISTRICT: West of Eromanga, 14 August 1997, *E.R. Anderson 5069* (holo: BRI [AQ657985]).

Eremophila sp. (Eromanga E.R.Anderson 5069): Edginton (2013); Silcock *et al.* (2014).

Shrub or small tree 1.5–6 metres tall; foliage glabrous. **Branches** ± terete, becoming ± square in cross-section near tips with broad rounded ribs below leaf insertions, tuberculate with the tubercles becoming obscure on old branches, non-resinous, red-brown to brown, becoming grey with age. **Leaves** alternate and scattered, mostly spreading, some ascending to erect, especially at tips of branches; leaf blades mostly lanceolate to elliptic, some narrowly obovate, 40–60(–90) mm long, 5–10 mm wide, non-resinous, mid-green to dark green, new growth yellow-green; apex usually acute, occasionally sub-acute to obtuse, especially when leaves narrowly obovate; base tapers gradually to an indistinct short petiole; margins entire. **Flowers** 1–3 per axil; flowering and fruiting pedicels ± flattened, thickening and widening distally to become ± rectangular in cross-section, 8–20 mm long, initially green, becoming maroon or almost black. **Sepals** 5, ± broadly triangular, slightly imbricate towards base but otherwise free, not noticeably enlarging in fruit, ± equal, 3.5–4.5 mm long, *c.* 2.5 mm wide; apex acute, very slightly acuminate; outer surface glabrous except for moderately dense, short simple glandular hairs at and near margins for entire length, and sparser, longer simple eglandular hairs at the margin basally extending distally to half way to or almost to the apex; inner surface of the sepals moderately hairy with short glandular hairs, and some sparse longer, simple eglandular hairs, the eglandular hairs denser at the margins in the lower half of the sepal; green to maroon or almost black. **Corolla** ± zygomorphic, 2-lipped, deep pink or lilac to red, 20–31 mm long; upper lip 7–9 mm long, lobes 4–5 mm long, obtuse to sub-acute; lower lip 6–8 mm long, 3-lobed, lobes

obtuse to sub-acute; tube 10–18 mm long, bulbous at base, moderately constricted above ovary then gradually dilating distally; inner and outer surface of tubes and lobes sparsely to moderately pubescent with colourless glandular hairs 0.2–0.5 mm long. **Stamens** 4; anthers *c.* 2.5 mm long, glabrous, in 2 pairs, 1 pair barely or not quite exerted beyond the petals, the other pair exerted well beyond the petals; filaments glabrous. **Ovary** conical-ovoid to narrowly conical-ovoid, apparently bilocular initially, but probably becoming 4-locular by development of 2 placental septa, densely pubescent with long, white simple eglandular hairs *c.* 1 mm long, sparse shorter glandular hairs also present. **Style** 18–32 mm, moderately pubescent proximally with simple eglandular hairs *c.* 1mm long and shorter glandular hairs (only near base), eglandular hair density gradually reducing distally, glabrous on distal 15–50 per cent of style. **Fruit** conical-ovoid to cylindrical-conical, 8–22 mm long, 4–7 mm wide, exocarp papery, whitish to red-brown, moderately pubescent with long (*c.* 1 mm) eglandular hairs, sparse shorter glandular hairs also present; endocarp red-brown in dried specimens, crustaceous. **Figs. 1–12. Suggested common name:** Boondock emu bush.

Additional specimens examined: Australia. Queensland. GREGORY SOUTH DISTRICT: 67 km SW of Eromanga, May 2012, *Powell 12* (BRI); 1.3 km N of Cunnamulla opal mine, ‘Boondock’, Sep 2013, *Silcock JSL1578 & McRae* (BRI); Road to Daryl opal mine, W of Eromanga, Oct 2021, *Silcock JSL2323 & al.* (BRI); Near Buckarooola Road, *c.* 74.2 km directly SW of Eromanga, Jul 2021, *Richter & Pennay s.n.* (BRI [AQ1027453]).

Distribution and habitat: *Eremophila willsmithii* is known from north-west to south-west of Eromanga, in south-western Queensland (**Map 1**). The species is known to grow along drainage lines or creeks, in sandy clay loam or stony sandy loam soils. Collections have been made from a *Eucalyptus camaldulensis* Denh. woodland, a fringing *Acacia georginae* F.M.Bailey open shrubland, or in predominantly *A. cambagei* R.T.Baker woodland. Other associated species include *Acacia aneura* F.Muell. ex Benth., *Eremophila oppositifolia* R.Br., *E. glabra* (R.Br.) Ostenf., *Jasminum didymum* subsp. *lineare* (R.Br.) P.S.Green,

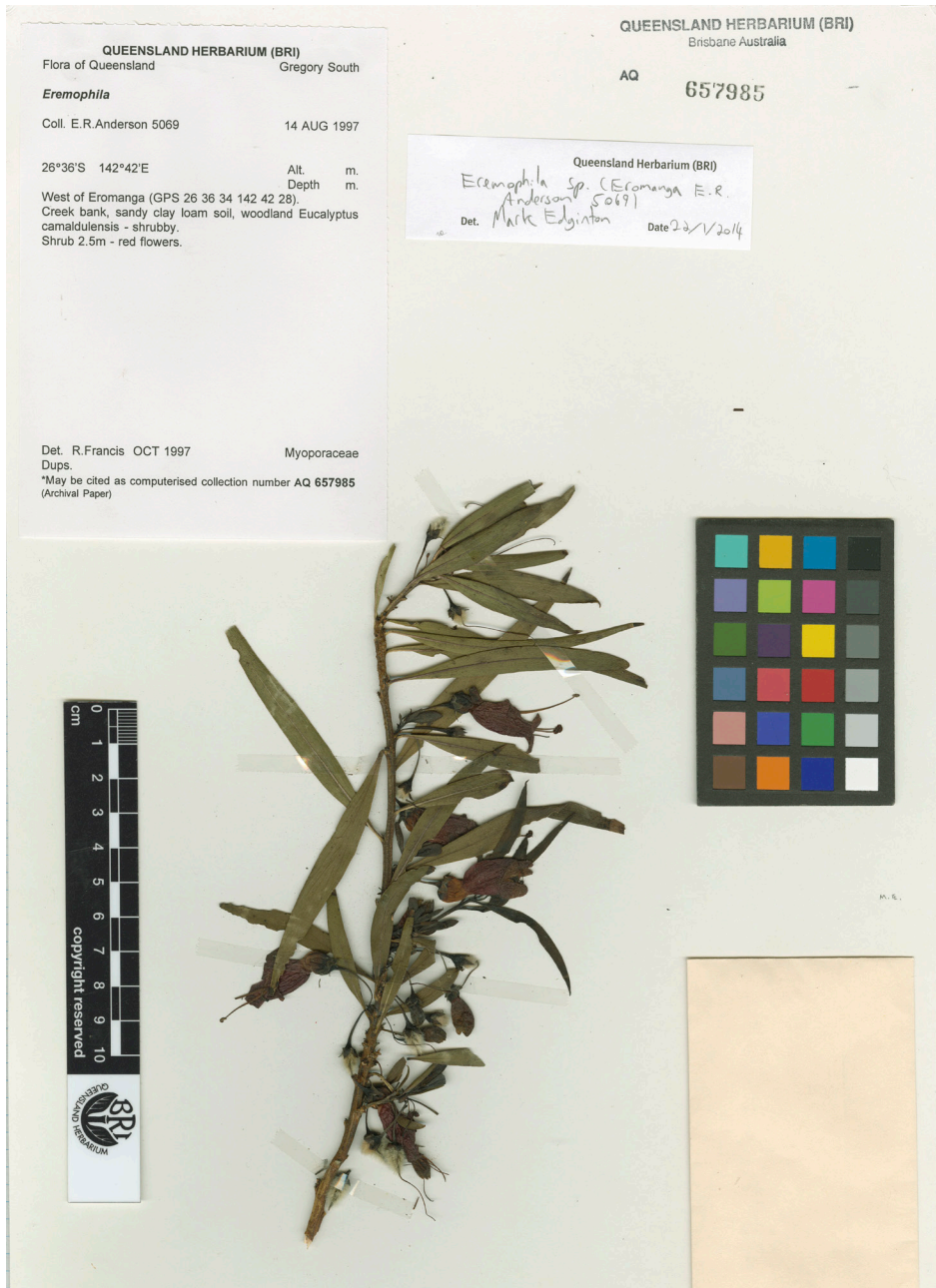


Fig. 1. Holotype of *Eremophila willsmithii* (Anderson 5069, BRI). Photo: M. Fabillo.



Fig. 2. *Eremophila willsmithii* habit (Silcock JSL2323 & al., BRI). Photo: J. Silcock.



Fig. 3. *Eremophila willsmithii* habit (Silcock JSL2323 & al., BRI). Photo: J. Silcock.



Fig. 4. *Eremophila willsmithii*. A. branching habit $\times 1$. B. flower $\times 2$. C. fruit with style on calyx and petiole $\times 2$. A & C from Powell 12 (BRI). B from Anderson 5069 (BRI). Del. W. Smith.



Fig. 5. Typical narrow leaf on dried specimen of *Eremophila willsmithii* (Anderson 5069, BRI).

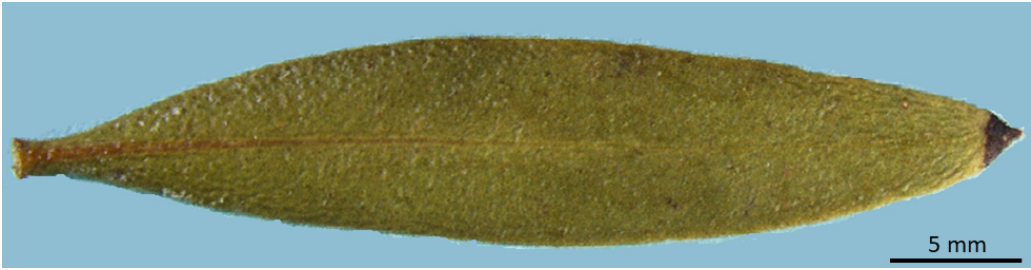


Fig. 6. Less common broader leaf on dried specimen of *Eremophila willsmithii* (Powell 12, BRI).



Fig. 7. Dried fruit of *Eremophila willsmithii* (Powell 12, BRI).

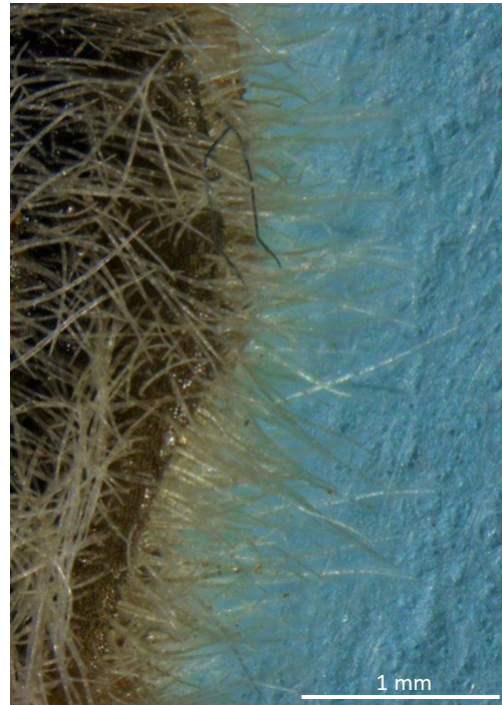


Fig. 8. Simple glandular hairs on fruit of *Eremophila willsmithii* (Powell 12, BRI).



Fig. 9. *Eremophila willsmithii* fruits and foliage (Silcock JSL2323 & al., BRI). Photo: J. Silcock.



Fig. 10. *Eremophila willsmithii* flower in side-view; fruits and foliage (Silcock JSL2323 & al., BRI). Photo: J. Silcock.

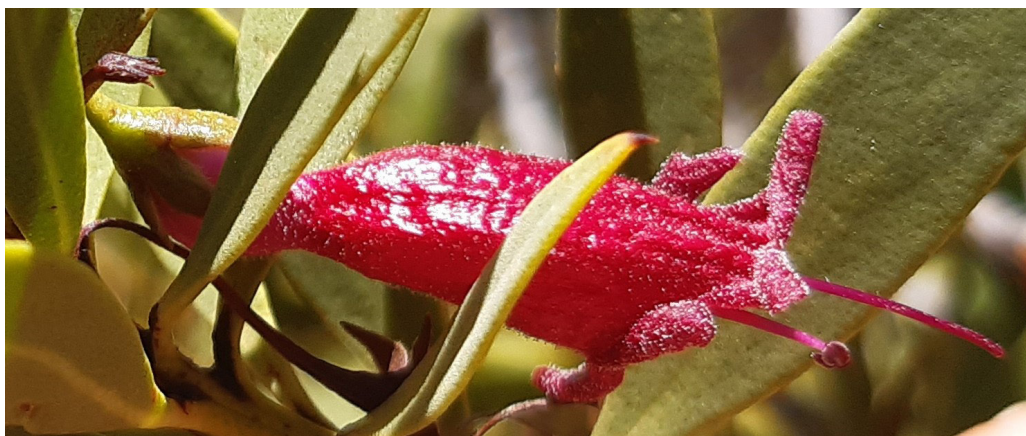


Fig. 11. *Eremophila willsmithii* flower in side-view with foliage (Silcock JSL2323 & al., BRI). Photo: J. Silcock.



Fig. 12. *Eremophila willsmithii* flower in oblique front-view with foliage (Silcock JSL2323 & al., BRI). Photo: J. Silcock.

Senna artemisioides subsp. *oligophylla* (F.Muell.) Randell, *Abutilon leucopetalum* (F.Muell.) F.Muell. ex Benth., *Chenopodium nitrariaceum* (F.Muell.) F.Muell. ex Benth., *Enchylaena tomentosa* R.Br., *Salsola australis* R.Br., *Sclerolaena muricata* (Moq.) Domin and *Solanum ellipticum* R.Br.

Phenology: The observed flowering and fruiting times of the various herbarium specimens of *Eremophila willsmithii* suggest that both flowering and fruiting can occur at any time of year, probably as a result of rain.

Affinities: The putative phylogenetic relationships of *Eremophila willsmithii* within the genus are currently unknown. Based on morphology, this species does not align with Chinnock's (2007) sections (either *Amphichilus* (A.DC.) L.S.Sm. or *Platyichilus* (Benth.) F.Muell.), nor does it align with the clade groupings (D5, D6) of Fowler *et al.* (2021) for these taxa. The latter authors acknowledge

that the nodes of the preferred phylogenetic tree lacks solid support to confidently assign new sectional or intrageneric groupings to the sampled species.

Eremophila willsmithii is not likely to be confused with any other taxon in the genus. Superficially (at the macro level), it most resembles *E. longifolia* (R.Br.) F.Muell.; however, *E. willsmithii* has foliage that is glabrous (vs. appressed pubescent on *E. longifolia*), leaves which are mostly 40–60 mm long (vs. 50–160 mm on *E. longifolia*), lamina that are lanceolate to elliptic (linear-lanceolate to linear-falcate on *E. longifolia*), and corollas which are deep pink to lilac to red, unspotted (vs. dull brick red, rarely yellow, spotted on lobes and inside of tube on *E. longifolia*). The new species has a densely pubescent conical-ovoid to narrowly conical-ovoid ovary (vs. glabrous or very rarely sparsely hairy ovoid ovary on *E. longifolia*)



Will Smith at the Queensland Herbarium sometime in the 1980s.

and a conical-ovoid to cylindrical-conical moderately pubescent fruit (vs. subglobular to ovoid-oblong glabrous fruit on *E. longifolia*).

Conservation status: A status of ‘Vulnerable’ for this species (as *Eremophila* sp. (Eromanga E.R.Anderson 5069)) under Queensland’s *Nature Conservation Act 1992* was recommended by Silcock *et al.* (2014) using IUCN criteria; however, the species remains unlisted and a formal nomination is required.

Much of southwest Queensland remains poorly explored in terms of the flora. Immediately beyond the known distribution of *Eremophila willsmithii* are the unsurveyed Canaway and Coleman Ranges to the north and McGregor Range to the south; these areas may contain additional populations that would have implications for both management and classification of the species status. Surveys of the Grey Range and other Tertiary

sandstone ranges to the north and east found no populations of this species, suggesting the distributional range is genuinely restricted (J. Silcock pers. comm., 2022). Evidence of an existing threatening processes is based on grazing by goats at one location; therefore, this threatening process may exist elsewhere, or may arise elsewhere in the future (*ibid.*).

Etymology: The new species is named for William (‘Will’) Smith (23 April 1954 to 26 May 2023). Will became the Queensland Herbarium’s illustrator in 1985. From the early days of his employment, he was chiefly engaged to provide the illustrative and accurate line drawings that have supported species descriptions by Queensland Herbarium botanists, until his retirement in May 2019. Most notably, his illustrations were an important contribution to the Queensland Herbarium’s taxonomic journal, *Austrobaileya*.

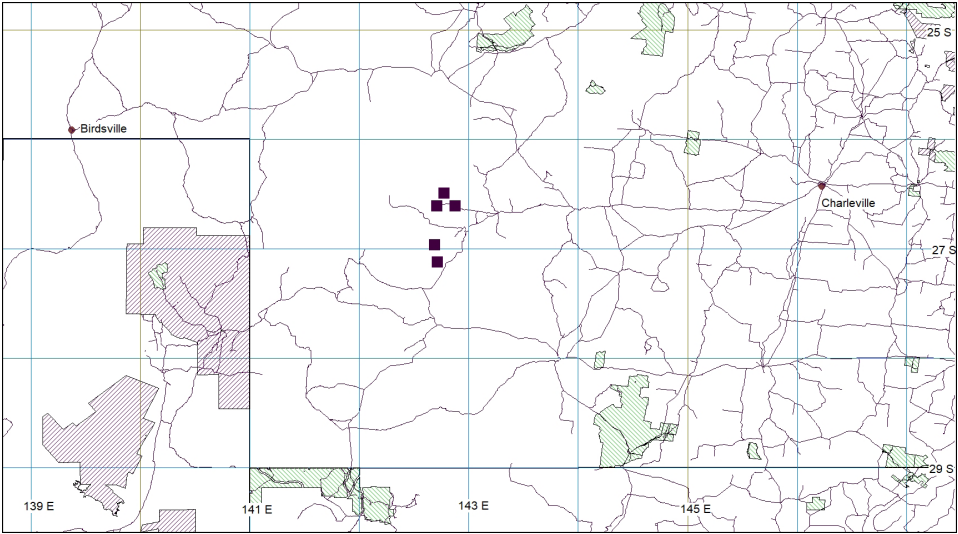
A suggested common name of ‘Boondook emu bush’ was recommended by Jenny Silcock, who has collected *E. willsmithii* at Boondook (pronounced ‘Boondock’) Station, NW of Eromanga. The recommended common name is spelt phonetically in this paper, rather than as per the original ‘Boondook’, because it is virtually inevitable that either the pronunciation or the spelling will be corrupted by common usage if the original spelling is used initially, so ‘Boondock’ is used to avoid confusion. This common name is phonetically pleasing, easy to remember and recognises the contribution made by the management of the Boondook property in allowing access.

Acknowledgments

I wish to thank Will Smith (Queensland Herbarium) for the illustrative drawings, Tony Bean (Queensland Herbarium) for the generation of the distribution map, Dr Melody Fabillo for editing work on the illustrations and provision of the image of the type specimen, and Dr Jenny Silcock (University of Queensland) for the field photos and advice on threat classification.

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Map 1. Distribution of *Eremophila willsmithii* in south-west Queensland. Shaded areas indicate conservation reserves.