Muehlenbeckia tuggeranong (Polygonaceae), a new species from the Canberra district

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Abstract

Makinson, R.O. (Australian National Herbarium, GPO Box 1600, Canberra ACT, 2601, Australia; email: rom@anbg.gov.au) and D.J. Mallinson (Australian National Botanic Gardens, GPO Box 1777, Canberra ACT, 2601, Australia), 1997. Muehlenbeckia tuggeranong *(Polygonaceae), a new species from the Canberra district.* Telopea *7(3): 215–219.* The new taxon **Muehlenbeckia tuggeranong** Mallinson is described and illustrated, with notes on distinctions from related species.

Introduction

Muehlenbeckia is a genus of about 30 species, occurring in Australia, New Guinea, New Zealand, and Central and South America. There are 14 species native to Australia, of which 12 are endemic; *M. zippelii* (Meisn.) Danser occurs also in New Guinea, and *M. axillaris* (Hook. f.) Endl. occurs also in New Zealand.

A treatment of the N.S.W. taxa has recently been published for the *Flora of New South Wales* (Wilson, 1990), and a review of the whole genus for *the Flora of Australia* (Wilson & Makinson, in prep.) is expected to be published in 1998.

In January 1997, one of us (Mallinson) discovered a female plant of *Muehlenbeckia* in the Murrumbidgee River Corridor Reserve near Tuggeranong, a southern satellite township of Canberra. Subsequent extensive searches by both of us, with colleagues, participants in the Australian National Herbarium's 1997 Student Botanical Interns Program, and ACT Parks & Conservation Service staff, have located only six more plants, all male. Checks of herbaria CANB and NSW, and the ACT Parks & Conservation Service herbarium reveal no previous collections of this species. This paper names and decribes the new species; a subsequent paper (Mallinson et al., in prep.) will discuss distribution, ecology, and conservation status of the species. The description below is based on fresh, dried, and pickled material and on field observations.

Taxonomy

Muehlenbeckia tuggeranong *Mallinson,* **sp. nov.**

M. axillari (Hook. f.) Endl. similis sed habitu laxo procumbenti vel cumulato usque ad 1 m alto, 2 m lato, inflorescentiis terminalibus, foliis oblongioribus, differt.

Type: New South Wales: Southern Tablelands: Australian Capital Territory, c. 2 km SW from Tuggeranong Town Centre; Murrumbidgee River Corridor Reserve, Pine Island section; east bank of river, rocky slope above river … *R.O. Makinson 1602 & A. Lyne*, 20 Jan 1997, ♂; holo CANB; iso HO, MEL, NSW.

Dioecious or rarely hermaphrodite shrub, loosely procumbent or sprawling, eventually becoming a mounded loosely tangled wiry mass to c. 1 m high and 1–2 m

across. Stems wiry, brownish, weakly and irregularly longitudinally striate; bark firm with short transverse fissures appearing with age. Leaves alternate, persistent, green, not glaucous, simple, petiolate, solitary, well-spaced along stems; petioles 0.5–3 mm long; lamina 5–13 mm long, 2 to 4 mm wide, more or less oblong to elliptical or narrowly oblong-obovate, or subpanduriform (laterally and obtusely expanded at the base on one or both margins); surfaces glabrous and concolorous; apex obtuse to obtuse-acuminate or rarely truncate or emarginate; margin entire. Inflorescences terminal (sometimes on short lateral branchlets) or very rarely axillary, simple or very rarely 2-branched, (5–) 12–20 mm long (from subtending leaf to apex), bearing (1–) 3–9 flowers in a lax spike. Flowers unisexual or rarely hermaphrodite, 4–5 mm diam. Perianth 5-merous, united in the basal third, segments free above and petaloid, cream-green, not or scarcely succulent in fruiting stage. Anthers 0.5–0.7 mm long. Ovary salmon-pink to reddish brown. Nut (slightly immature) trigonous, c. 2.5 mm long, mid-brown, surface very finely colliculose to more or less smooth.

Bibliographic citation of this species should be as *Muehlenbeckia tuggeranong* Mallinson in Makinson & Mallinson.

Etymology: the epithet is taken from Tuggeranong town, a southern satellite township of Canberra, as a noun in apposition; the only known site of the species is about 2 km from the town centre. The place-name is from an Aboriginal word meaning 'cold plains'; it is unclear whether the word is from the Ngunawal, Walgalu, or Ngarigo language.

Variation: habit of *M. tuggeranong* varies from loosely procumbent with branches to c. 80 cm long, to a mounded loose tangle up to c. 1 m high and 1–2 m across.

Most plants found are either male or female, but one plant bears apparently hermaphrodite flowers, with both pollen-laden anthers and well-developed late ovaries; whether they are functionally hermaphrodite is unknown. Dioecy is the usual condition in *Muehlenbeckia* but occasional instances of monoecy and hermaphroditism are known in some other species.

Leaves of this species show considerable variation in form (see Fig. 1b). Most leaves on the only female plant found are narrowly oblong to subpanduriform (laterally and obtusely expanded at the base on one or both margins, sometimes almost obtusely subhastate), and obtuse to obtuse-acuminate or occasionally truncate or slightly emarginate at the apex. Most leaves seen on male plants are oblong-elliptical to narrowly oblong-obovate (with occasional leaves subpanduriform), and apically obtuse to obtuse-acuminate. In the absence of other fully mature female plants, it is unclear whether the variation is strongly correlated with gender or with age of the plant, or neither.

Distribution: known only from flood terraces on the eastern bank of the Murrumbidgee River near Tuggeranong on the southern outskirts of Canberra, Australian Capital Territory (N.S.W. Southern Tablelands botanical district), where it occurs at an altitude of c. 550 m, in areas of rocky outcrops with pockets of silty sand soil.

Diagnosis and affinities: *M. tuggeranong* is distinguished from similar species by its procumbent or sprawling to loose mounded habit, its wiry stems, its oblong to oblong-elliptical or -obovate or subpanduriform leaves, and its usually terminal inflorescences.

M. tuggeranong is similar in many respects to *M. axillaris*. Both species have a non-upright habit with wiry, mostly weakly woody stems (rarely massively woody in *M. axillaris*), rough bark, short solitary persistent leaves, small inflorescences (relative to other Australian species), the perianth not or only slightly fleshy in the fruiting stage, a smooth trigonous fruit, and an apparent preference for flood-terrace habitats

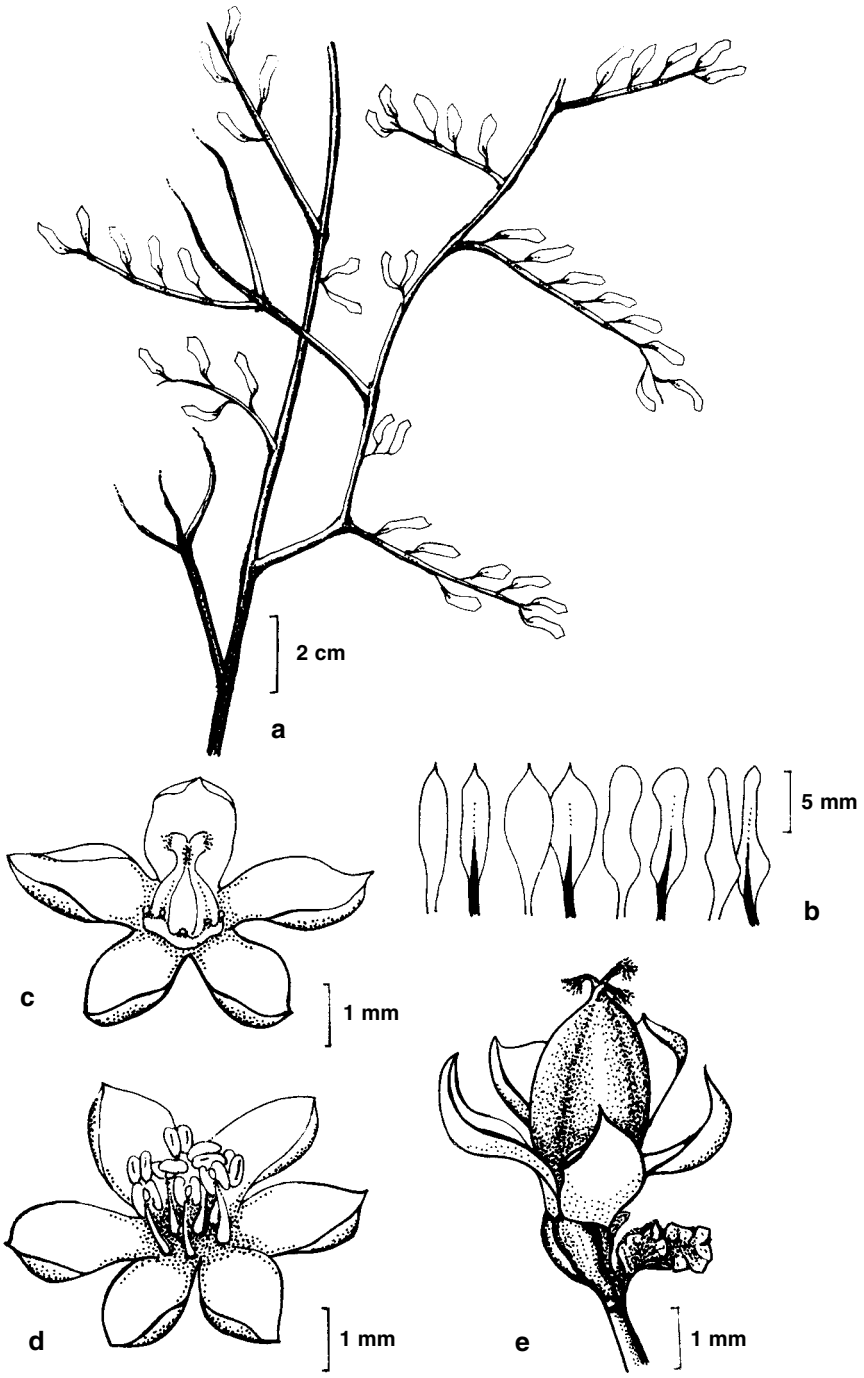

Fig. 1. *Muehlenbeckia tuggeranong*. **a,** branch. **b,** leaves, showing variation in shape (from various specimens). **c,** female flower (*Makinson 1598* et al.). **d,** male flower (*Makinson 1599* et al.). **e,** nut, showing persistent perianth (*Makinson 1598* et al.). Scale bars: a, 2 cm; b, 5 mm; c–e, 1 mm.

(with flood disturbance, rather than fire as in some other *Muehlenbeckia* species, likely to be a critical factor in population dynamics). It seems likely that *M. axillaris* is the most closely related Australian species to *M. tuggeranong*.

M. axillaris however has a much more strictly prostrate habit (the stems rarely more than 2–3 cm above the substrate), the leaf lamina is elliptical to suborbicular and 3–8 mm long, and the inflorescences are mostly axillary (rarely a few terminal on short lateral branchlets). *M. axillaris* occurs at higher altitudes (680–1200 m a.s.l.) in the A.C.T., N.S.W. Southern Highlands, and Victoria, with old records from the N.S.W. Northern Tablelands at similar altitudes near Walcha, and (*A. Cunningham*, specimen not seen, cited in Bentham 1870: 275) from the 'Fish River' (Oberon) area of the N.S.W. Central Tablelands. *M. axillaris* also occurs in Tasmania and New Zealand. The nearest known occurrences of *M. axillaris* to the *M. tuggeranong* site are about 25 km ESE in the Googong Reservoir area (alt. c. 680 m), and 35 km away on the upper Cotter River system (alt. c. 1010 m).

M. astonii from New Zealand is also similar to *M. tuggeranong* in habit, but is not known to reach the same size, often has distinctly divaricating branchlets not seen in *M. tuggeranong*, and has a broader ovate to suborbicular or obcordate leaf lamina, usually more than 4 mm wide, and usually axillary inflorescences.

M. complexa (A. Cunn.) Meisn., a native of New Zealand and Lord Howe Island, is sometimes cultivated in Australia but is not known to be naturalised, although it is sometimes persistent in old garden sites. It has a dense mounded to twining or liane habit, the leaf lamina usually broadly ovate to obovate or suborbicular and 4–10 mm wide (never tending oblong), petioles up to 10 mm long, and the inflorescences usually axillary.

M. debilis Petrie, a New Zealand endemic, has leaves often very similar to *M. tuggeranong* in their size, oblong-elliptical shape, and irregular occurrence of obtuse lobes near the base on one or both margins; it also has a similar habit, and occupies similar habitats (flood terraces). It differs from *M. tuggeranong* in its more strongly striate stems, greater variability in leaf shape, and longer mostly axillary inflorescences (3–4 cm long in male plants, compared to 0.5–2 cm long in *M. tuggeranong*). Leaf form, habit, and habitat are suggestive of a possible close relationship between these two species.

Selected specimens: New South Wales: Southern Tablelands: Australian Capital Territory, Murrumbidgee River Corridor Reserve, Pine Island Section, *R.O. Makinson 1598* et al, 12 Jan. 1997, ♀ (CANB, NSW); [same loc.] *1599* ♂ (CANB, NSW).

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References

Bentham, G. (1870) Polygonaceae. *Flora Australiensis,* vol. 5. (L. Reeve & Co., London).
Wilson, K.L. (1990) Polygonaceae. Pp. 284–7 in Harden, G.J., (ed.), *Flora of New South Wales,* vol. 1. (New South Wales University Press: Kensington).

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