A new subspecies in *Muehlenbeckia horrida* (Polygonaceae) from Western Australia

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Abstract

K.L. Wilson. A new subspecies in *Muehlenbeckia horrida* (Polygonaceae) from Western Australia. Nuytsia 11 (1): 133-138 (1996). The rare, endemic *Muehlenbeckia horrida* subspecies *abdita* K.L. Wilson, *subsp. nov.*, is described. A lectotype is designated for *M. horrida.*

Introduction

Muehlenbeckia horrida H. Gross is a small shrubby species that has previously been considered to be restricted to inland south-eastern Australia. Typically, it grows in silty soil in and beside seasonally dry inland lakes and streams. The most northerly locality is the bank of the Barwon River at Brewarrina in north-western New South Wales; it occurs sporadically farther south to north-western Victoria and in South Australia in the Murray River region and near Andamooka. It is distinctive in the genus in generally having four perianth segments rather than the five segments that are nearly universal in the rest of the species. Rarely a few flowers in an inflorescence of typical *M. horrida* will be found to have five segments.

In the last two decades, several collections have been made of a *Muehlenbeckia* growing in the seasonally wet bed of a (freshwater) lake south-west of Newdegate, Western Australia. Besides examining these collections, I saw the taxon in the field in November 1994. It is generally similar to typical *M. horrida,* and like that taxon is suckering in habit but is apparently somewhat taller at maturity. It further differs from the typical form in having more divaricate and intricate branching, fewer leaves, and usually five perianth segments in the flower. Its stems also lack the minutely warty ornamentation seen on all but the oldest stems in the typical form. It is here described as a new subspecies of *M. horrida,* based on these morphological differences and its geographic segregation.

The opportunity is taken to designate a lectotype for the name *M. horrida,* which was based on three collections from eastern Australia.

Taxonomic treatment

Muehlenbeckia horrida H. Gross, Bot. Jahrb. Syst. 49: 347 (1913). *Type citation:* 'Aust.: *leg. St Eloy d'Alton* n. 4 male; Lake Buloke, June 1892, fl. female *(C. Walter);* Donald Victoria *(sine collectore).* - Herb. Melbourne.' *Type:* Lake Buloke, Victoria, June 1892, *C. Walter; (lecto* (here designated): B ex MEL, female).

Depauperate erect to divaricate-intricate *subshrub* 0.3-1.2 m high, suckering to *c.* 2 m diameter. *Older stems* grey-white and glaucous, with age becoming brown with flaky or corky bark; younger stems pale to reddish, often somewhat glaucous, irregularly striate or verrucose; branchlets sometimes terminally spinescent. *Leaves* usually densely crowded on short (*c.* 2 mm long) lateral branchlets, eventually deciduous, semi-succulent, rarely glaucous, simple, sessile; blade linear with abaxial groove, 10-55 mm long, 0.7-1.5 mm wide; base truncate; margins rounded, flat to recurved; apex acute. *Flowers* 3-5 per cluster at stem nodes or on short lateral branchlets. *Perianth* in fruiting stage much thickened, mostly 4-angled, tough and corky when dry. *Stamens* 6-8; anthers 0.8-1.5 mm long. *Nut* trigonous, 2.0-3.0 mm long, dark brown, shining, smooth.

Notes. The lectotype is the only syntype that I found in B, where many of Hugo Gross's types and other specimens are held; it has been determined as *M. horrida* by Gross. In MEL, there is a possible residual syntype (Donald, *Dr Curdie* (male, MEL 79607), but that has not been annotated by Gross. No specimen collected by St Eloy d'Alton that could be considered a possible type has been found in B or MEL.

The two subspecies are distinguished most obviously by the number of perianth segments and the stem surfaces. Perianth segments are four in subsp. *horrida* and five in subsp. *abdita*; rarely five segments will be found in a few flowers on a plant in subsp. *horrida* or similarly four in subsp. *abdita.* The stems of the new subspecies lack the warty protuberances seen on those of the typical subspecies (Figure 1). As seen in close-up, the protuberances are rather more rounded and regular than 'warty' (or 'verrucose') suggests and they have a crater-like central depression, but the term 'warty' ('verrucose') is appropriate for what is visible at low magnification. In addition, the new subspecies has a more divaricate and intricate branching habit, and tends to have few or no leaves by the time of flowering, whereas the typical subspecies is more erect and less divaricately branched and usually has numerous leaves associated with the flowering branches.

Key to subspecies

1 Perianth 4-lobed, rarely 5-lobed in a few flowers on a plant; all but oldest stems with warty surface ..... subsp. **horrida**

1: Perianth 5-lobed, rarely 4-lobed in a few flowers on a plant; all stems lacking warty protuberances ..... subsp. **abdita**

Muehlenbeckia horrida subsp. **horrida**

Plants mostly 0.3-0.6 m high (rarely to 1 m). *Stems* erect, occasionally with short divaricate branchlets near apex; all but the oldest stems minutely warty. *Leaves* numerous (rarely few). *Perianth segments* 4, rarely 5 in a few flowers on a plant. (Figure 1A-D)

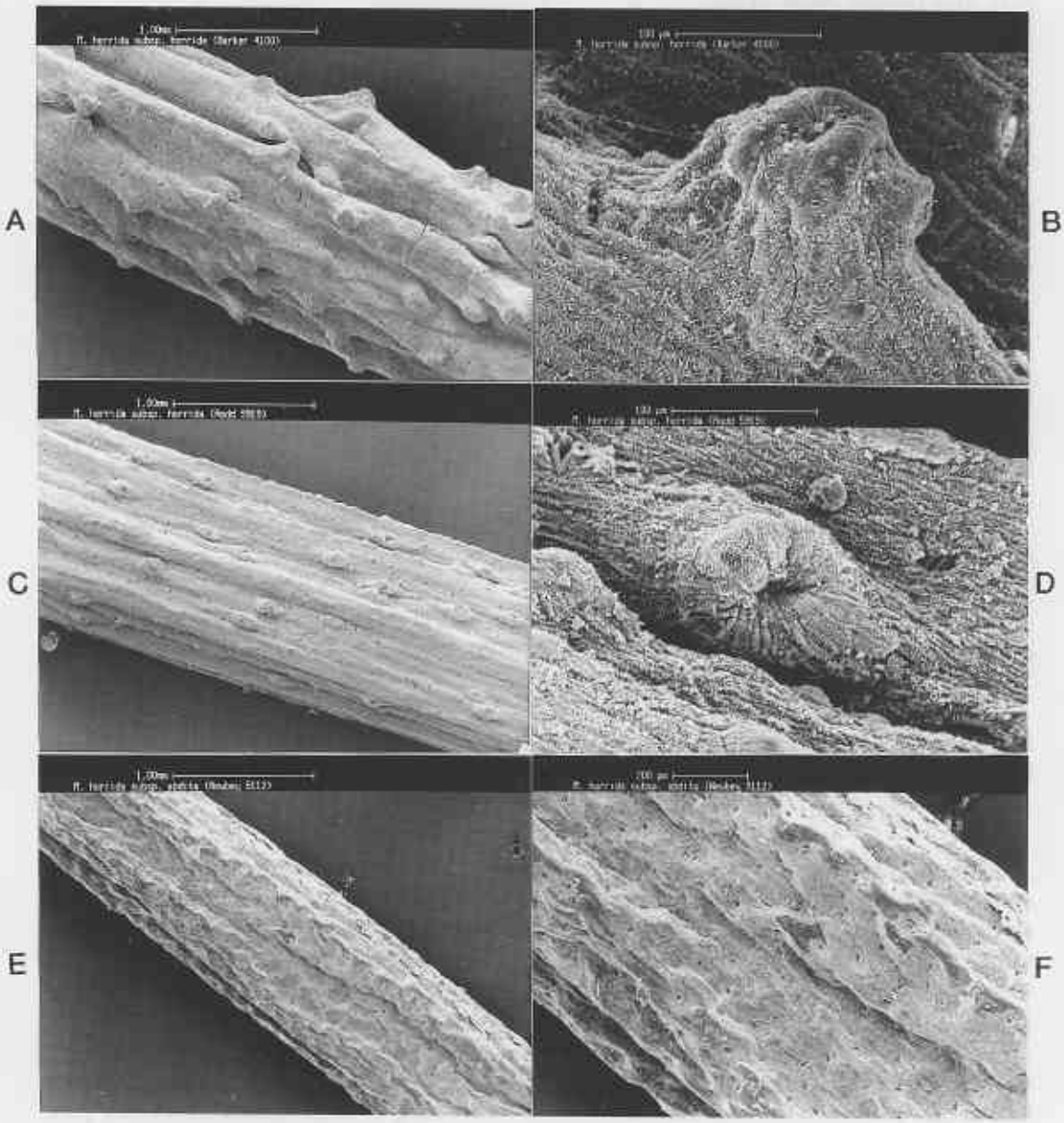

Figure 1. SEM micrographs of dried stem surfaces. A-D *Muehlenbeckia horrida* subsp. *horrida* A - rather densely and prominently warty surface as seen in some South Australian specimens; B - close-up view of a protuberance; C - less warty surface as seen in most specimens from Victoria and New South Wales; D - close-up view of a protuberance; E, F - *M. horrida* subsp. *abdita* E - stem without protuberances; F - close-up view of same stem. Material used: *Barker* 4100 (A, B); *Rodd* 5919 (C, D); *Newbey* 5112 (E, F).

Selected specimens examined. NEW SOUTH WALES: Brewarrina, beside Barwon River, 6 Nov. 1986, *K.L. Wilson* 6863, 6864 (male, NSW), 6865 (female, NSW); 35 km N of Barham on road to Moulamein, 7 Nov. 1986, *A. Rodd* 5919 & *J. Gentle* (female, NSW); Barham, 9 Oct. 1947, *D.G. May* (female, NSW 4479).
VICTORIA: Mildura, 3 Sep. 1981, *M.G. Corrick* 7437 (female and male, MEL, AD, NSW); Terrick Terrick Flora Reserve, 5 Sep. 1985, *A.C. Beauglehole* 80055 (male, MEL, NSW).
SOUTH AUSTRALIA: Lake Campbell, Roxby Downs Station, 18 Aug. 1971, *B. Lay* 393 (male, AD); Walkers Flat, *c.* 90 km ENE of Adelaide, *N. Donner* 1010 (immature, AD); east side of River Murray by ferry crossing at Walkers Flat, 21 Aug. 1980, *W.R. Barker & R.M. Barker* 4100 (male, AD, NSW).

Distribution and habitat. Occurs sporadically from Brewarrina in north-western New South Wales to north-western Victoria and South Australia in the Murray River region and near Andamooka. Typically growing in silty soil in and beside dry inland lakes and on banks of streams.

Discussion. Specimens of the typical subspecies from South Australia tend to be more divaricately branched and have more prominently and abundantly warty stems than those from farther east, but they match the latter in number of perianth segments and other characters.

Muehlenbeckia horrida subsp. **abdita** K.L. Wilson, *subsp. nov.*

A subspecie typica perianthio 5-partito (rarissimo 4), caulibus plus minusve intricatis everrucosisque, differt.

Typus: NE of Pingrup [precise locality withheld], Western Australia, 30 August 1978, *K. Newbey* 5112 *p.p.*; (*holo:* NSW, female; *iso:* CANB, K, MEL, PERTH (2 sheets)). The other material in *Newbey* 5112 is male material of the same taxon.

Plants 0.6-1.2 m high. *Main stems* spreading to more or less erect but divaricately to intricately branched; stems not minutely warty. *Perianth segments* 5, rarely 4 in a few flowers on a plant. (Figures 1E,F,2)

Specimens examined. WESTERN AUSTRALIA: NE of Pingrup [precise locality withheld], 10 Feb. 1973, *K. Newbey* 3678 (immature, PERTH); 30 Aug. 1978, *K. Newbey* 5112 (2 sheets, (male & female *(holotype)*, PERTH, K, MEL, NSW); 13 Jan. 1988, *S. Halse* (male, PERTH); 6 Nov. 1994, *K. Wilson* 8793 & *K. Frank* (female, NSW, PERTH).

Distribution and habitat. Known only from the one population in the bed of a freshwater lake south-west of Newdegate. The lake is dry for much of the year but "may be completely covered with water for a few months" according to a note on the type collection. Water has been to about 1 m deep in the lake in past years, and the lake has been used for water-skiing in some winters (A. Coates, pers. comm.).

Etymology. The epithet is taken from the Latin adjective *abditus* - secret, hidden, referring to the isolated occurrence of this taxon, so far from the other populations of the species.

Conservation status. This is a Priority 1 taxon (CALM Conservation Codes for Western Australian Flora). It is only known from the one population in what is becoming a rare habitat: the bed of an inland freshwater lake. The taxon is common on the bed of the lake and I would estimate the population at

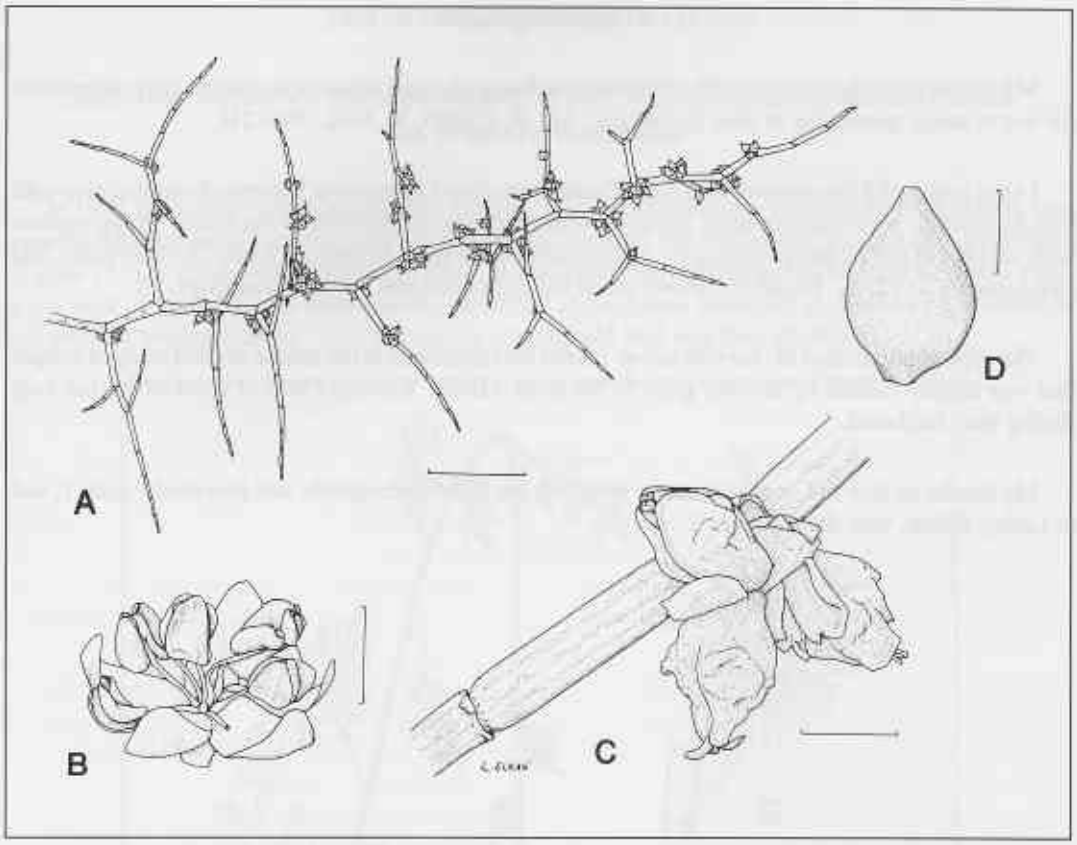

Figure 2. *Muehlenbeckia horrida* subsp. *abdita* A - branch with clusters of flowers at nodes; B - male flower showing dehisced anthers; C - cluster of flowers enclosing immature nuts; D - nut. Scale bars: A = 20 mm; B, C = 2 mm; D = 1 mm. Drawn from male part of *Newbey* 5112 (A, B); female part of *Newbey* 5112 - the holotype (C, D).

more than 100 individuals in November 1994 although the plants were only just starting to re-grow after inundation and were not easy to see. The lake and surrounding shrublands are proclaimed as a water reserve but increased saline drainage from the farmed lands surrounding the reserve represents an increasing hazard for the reserve. Indeed, samphire plants (Chenopodiaceae) were in evidence in the bed of the lake in 1994, suggesting that salinity is already increasing. The taxon is in urgent need of further survey and assessment of its conservation status.

Discussion. Differs from the typical subspecies as outlined above.

Further study of subsp. *abdita* is also needed to understand more about how the plants survive inundation, which occurs intermittently. When the site was visited in November 1994, the surface of the lake bed was nearly completely dry and the plants were shooting from rootstocks, most older above-ground stems being dead. Any plans to alter the water regime, either as to depth or duration, need careful consideration.

Acknowledgements

My thanks go to the curators of the following herbaria who sent material on loan or gave permission for me to study specimens at their institution: AD, B, CANB, K, MEL, PERTH.

I have had useful discussions with Anne Coates and other biologists in Western Australia, also with Bob Makinson, who was originally involved with preparing a treatment of the family Polygonaceae with me here in NSW, partly funded by an Australian Biological Resources Study (ABRS) grant, and subsequently at CBG. Elizabeth Brown made helpful comments on the manuscript.

The type population of *M. horrida* subsp. *abdita* was examined in the course of field study of sedges that was largely funded by another grant to me from ABRS. Kristina Frank is thanked for her help during that fieldwork.

My thanks go also to Leonie Stanberg, who took the SEM micrographs and prepared Figure 1, and to Lesley Elkan, who drew Figure 2.