New subspecies of *Goodenia drummondii* and *G. laevis* (Goodeniaceae) from the south-west of Western Australia

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Abstract

Sage, L.W. New subspecies of *Goodenia drummondii* and *G. laevis* (Goodeniaceae) from the south-west of Western Australia. *Nuytsia* 12(2): 233–238 (1998). *Goodenia drummondii* subsp. *megaphylla* Sage and *G. laevis* subsp. *humifusa* Sage are described and mapped. In both cases the new subspecies is geographically distinct from the typical subspecies. *G. drummondii* subsp. *megaphylla* grows taller than the typical subspecies, has leaves that are longer, longer corolla lobes and longer flowering spikes. *G. laevis* subsp. *humifusa* differs from the typical subspecies in its prostrate rather than erect habit and in its broader leaves that are sometimes lobed.

Introduction

Carolin's (1992: 171) treatment of *Goodenia helmsii* (E. Pritz.) Carolin (Goodeniaceae) in the "Flora of Australia" mentions a collection (*A.S. George* 464) that "has leaves 6 cm long...in many ways approaching *G. drummondii*". The author was able to rediscover this population with the help of eminent botanist Alex George, whose collection was made in 1960, and to locate several additional specimens and new populations of the same taxon. From studying this material, the author determined that recognition of a new subspecies of *G. drummondii* was required.

Goodenia laevis Benth. is described in the "Flora of Australia" as being "procumbent or ascending" (Bentham 1868: 61). Charles Gardner noted on his collection of *G. laevis* from Lake King, (C.A. Gardner *s.n.*, Nov. 1931) that it appeared to match the type collection "but some stems are erect: all leaves are smaller than mine". Examination of *G. laevis* material at PERTH by the author revealed that there are two distinct variants of the species. The variants are geographically and morphologically distinct and therefore the author has decided that a new subspecies of *G. laevis* also requires recognition.

Taxonomy

Key to the subspecies of *Goodenia drummondii*

Longest leaves to 7.8 cm long, 0.3–2.2 mm wide, entire; corolla 6–8.3 mm long, lobes 3.2–4.3 mm long; flowering spike to 44 cm long (Armadale to Northam area) ..... subsp. **megaphylla**

Longest leaves to 4 cm long, 1.0–4.0 mm wide, dentate; corolla *c.* 6 mm long, lobes *c.* 2.5 mm long; flowering spike to 20 cm long (Kalbarri National Park to Latham) ..... subsp. **drummondii**

Goodenia drummondii Carolin subsp. **megaphylla** Sage, *subsp. nov.*

Differt a *Goodenia drummondii* subsp. *drummondii* foliis et floribus grandioribus, lobis florum grandioribus, et statura majore.

Typus: Darling Range, east of Armadale [precise locality withheld for conservation purposes], Western Australia, *L.W. Sage* 951, 27 November 1996 (*holo:* PERTH 04782763; *iso:* AD, CANB, K, MEL, NY, PERTH (6 sheets)).

Erect shrub to 1.2 m tall, glabrous except for a few hairs in the leaf axils. *Leaves* cauline, fasciculate, linear, entire, flat, thick; main stem leaves 1.2–7.8 cm long, 0.3–2.2 mm wide. *Inflorescence* a spike to 44 cm; bracts linear to triangular, 1.7–2.5 mm long, not exceeding the sepals, acute; bracteoles similar, 1.2–1.6 mm long. *Sepals* narrowly ovate, 1–1.7 mm long, acute. *Corolla* white with purplish spots in the throat, 6–8.3 mm long; lobes equal, 3.2–4.3 mm long, wings 0.3–0.6 mm wide. *Staminal filaments c.* 2.5 mm long; anthers 1–1.5 mm long.

Other specimens examined [precise localities withheld]. WESTERN AUSTRALIA: Off Brookton Highway, 19 Nov. 1981, *R.J. Cranfield* 1978 (PERTH); Type locality, 1 Jan. 1960, *A.S. George* 464 (PERTH); SW of Northam, 12 Nov. 1985, *G.J. Keighery & J.J. Alford* 478 (PERTH); SW of York, 14 Nov. 1996, *L.W. Sage* 945 (PERTH); Karragullen, 27 Nov. 1996, *L.W. Sage* 953 (PERTH); Karragullen, 27 Nov. 1996, *L.W. Sage* 954 (PERTH); Boyagin, 30 Dec. 1981, *K.J. Wallace* 922 (PERTH).

Distribution. Extends from east of Armadale in the Darling Range to Boyagin and north to south-west of Northam. This area is part of the Northern Forest Region and is included in Darling Botanical District of the South West Botanical Province of Western Australia. (Figure 1)

Habitat. G. drummondii subsp. *megaphylla* is mostly associated with granite outcropping in the northern Jarrah forest, but occurs in Wandoo woodland over laterite at the most northern population south-west of Northam.

Flowering period. November to late December or early January.

Conservation status. Priority Three should be considered for this subspecies as there are only six known populations. Of these populations, one is under immediate threat as it occurs on a roadside and in private property, one is in a nature reserve and the rest in State forest.

Etymology. The specific epithet - *megaphylla*, alludes to the relatively large maximum leaf length of the subspecies.

Affinities. Goodenia drummondii subsp. *megaphylla* can be distinguished from subsp. *drummondii* by its entire rather than dentate leaves, longer maximum leaf length, larger corolla with longer lobes, and larger flowering spike. It also tends to be a larger plant than subsp. *drummondii*. Subsp. *drummondii* occurs further north, extending from Kalbarri National Park to south-east of Latham.

Discussion. Goodenia drummondii is closely related to *G. helmsii*, differing in having longer leaves, corolla and flowering spike, and no copious axillary wool. The two species appear to intergrade to some degree, though evidence for this is restricted to only four sheets at the Western Australian Herbarium (PERTH). *G. helmsii* is distributed further inland in the south-west than *G. drummondii*, mostly in the wheatbelt, while the intergradation of the two species seems to be centred at Wongan Hills.

There are also collections of typical *G. helmsii* which have leaves longer than the 5 mm maximum length described in the "Flora of Australia" (Carolin 1992) and hence would fail to key out correctly there. This problem could be readily overcome by modifying couplet 7 of the key on page 152 as follows:

7 Leaves 10–78 mm long, with little axillary wool; corolla 5.5–8.3 mm long ..... **G. drummondii**

7: Leaves 2–5.5 mm long, with copious axillary wool; corolla 4–5.5 mm long ..... **G. helmsii**

Goodenia laevis Benth., Fl. Austral. 4: 61 (1868). *Type:* Phillips Range, Western Australia, *G. Maxwell* (*lecto*, here selected: K (right hand upper portion), photo PERTH).

Typification. The K sheet on which the Maxwell type is mounted has a mixed collection consisting of two separate pieces, the upper piece being the narrow-leaved variant and the lower piece being the broad-leaved variant of *G. laevis*. Bentham (1868: 61) in "Flora Australiensis" apparently included both variants in his description of *G. laevis*, the lower piece used for the 'lower leaves' and the upper piece for the 'upper leaves' of his sentence "Lower leaves oblong-cuneate, obtuse, with 2 or 3 coarse teeth or lobes, narrowed into a short petiole, 1 to 1 1/2 in. long, upper ones narrow-linear, entire all rather thick and smooth". The upper right hand piece with the narrow leaves is here is selected as the lectotype of *G. laevis* because it is a larger specimen.

Notes. The description of *G. laevis* given in Carolin (1992) apparently applies only to the new subspecies as no specimens of the typical subspecies appear to have been mapped and certainly none has been cited.

Key to the subspecies of *Goodenia laevis*

Prostrate habit; leaves narrowly to widely spathulate, the larger ones 23–43 mm long and 5–13 mm wide, sometimes with two lobes near the apex (Ravensthorpe to Dumbleyung region) ..... subsp. **humifusa**

Erect habit; leaves linear to rarely narrowly spathulate, the larger ones 15–25 mm long and 1–3 mm wide, entire (inland Esperance region) ..... subsp. **laevis**

Goodenia laevis Benth. subsp. **humifusa** Sage, *subsp. nov.*

Habitus prostratus. Folia late spathulata vel anguste spathulata, ad 7 cm longa, 13 mm lata, interdum versus apicem lobis 2 ornatis.

Typus: 0.5 km north of Hatters Hill, *c.* 41 km north-east of Lake King, 32° 49' 01"S, 119° 59' 00" E, Western Australia, 13 November 1979, *K.R. Newbey* 6549 (*holo:* PERTH 02607735, *iso:* CANB).

A prostrate, woody *subshrub*, glabrous; stems to *c.* 50 cm long. *Leaves* narrowly to widely spathulate, 23–43 mm long, 5–13 mm wide, entire or with two lobes near the apex, apex acute to rounded.

Other specimens examined. Near Jerdacuttup River, 11 miles [18 km] E of Ravensthorpe, 33° 26' 12" S, 120° 01' 53" E, 27 Oct. 1963, *T.E.H. Aplin* 2688 (PERTH, CANB); 14 km E of Ravensthorpe, 33° 36'S, 120° 10' S, 10 Jan. 1979, *B. Barnsley et al.* BB 467 (PERTH); Tarin Rock, 33° 07' E, 118° 14' S, 29 Oct. 1962, *J.S. Beard* 2154 (PERTH); 10 miles [16 km] E of Ravensthorpe, 33°34' 47" S, 120° 12' 39" E, 2 Sep. 1968, *E.M. Bennett* 2738 (PERTH, CANB); 20 miles [32 km] E of Dumbleyung, 33° 18' 47" S, 118° 04' 22" E, 12 Nov. 1931, *W.E. Blackall* 1343 (PERTH); Elverton [Elverdton] roadside off Ravensthorpe–Esperance road, 33° 37' 35" E, 120° 08' 24" E, 29 Oct. 1988, *E.J. Croxford* 6239 (PERTH); Lake King, 33° 05' 30" S, 119° 41' 06" E, Nov. 1931, *C.A. Gardner s.n.* (PERTH); N of Needilup, 33° 57' 11" S, 118° 46' 30" E, 29 Oct. 1965, *A.S. George* 7019 (PERTH); 2 km E of Lake King, 33° 05' S, 119° 41' E, 15 Sep. 1993, *M. Gustafsson et K. Bremer* 134 (PERTH); Diggers Rock, Forrestania, 32° 43' E, 119° 50' 53" E, 9 Dec. 1964, *F. Lullfitz* L3976 (PERTH); Bandalup Creek, E of Ravensthorpe, 33° 36' 17" S, 120° 18' 11" E, 6 Oct. 1966, *F. Lullfitz* 5488 (PERTH); 3 miles [5 km] SE of Ravensthorpe, 33° 36' 38" S, 120° 04' 43" E, 13 Dec. 1964, *K.R. Newbey* 1722 (PERTH); Frank Hann National Park, 33° 00' 18" S, 120° 05' 30" E, 10 Dec. 1971, *R.D. Royce* 10235 (PERTH, CANB); 5 km E of Ravensthorpe, 33° 34' 47" S, 120° 05' 43" E, 8 Oct. 1966, *P.G. Wilson* 5531 (PERTH 02889218, CANB).

Distribution. Found from just east of Ravensthorpe, south to Jerramungup, west to Dumbleyung and north to Digger Rocks. (Figure 1)

Habitat. This subspecies can be found in loamy clay or sand, in open mallee shrublands.

Flowering period. August to early January.

Conservation status. Goodenia laevis subsp. *humifusa* is common throughout its range.

Etymology. From the Latin *humifusa* - lying down, alluding to the prostrate habit of the subspecies.

Notes. G. laevis subsp. *humifusa* can readily be distinguished from subsp. *laevis* by its prostrate habit, widely spathulate to narrowly spathulate leaves to 13 mm wide and its more western distribution in the Ravensthorpe to Dumbleyung region of the wheatbelt of southern Western Australia.

Goodenia laevis Benth. subsp. **laevis**

Erect woody *subshrub*, glabrous; stems to 25 cm long. *Leaves* mostly linear, rarely narrowly spathulate, 15–25 mm long, 1–3 mm wide, entire, apex mostly acute, entire.

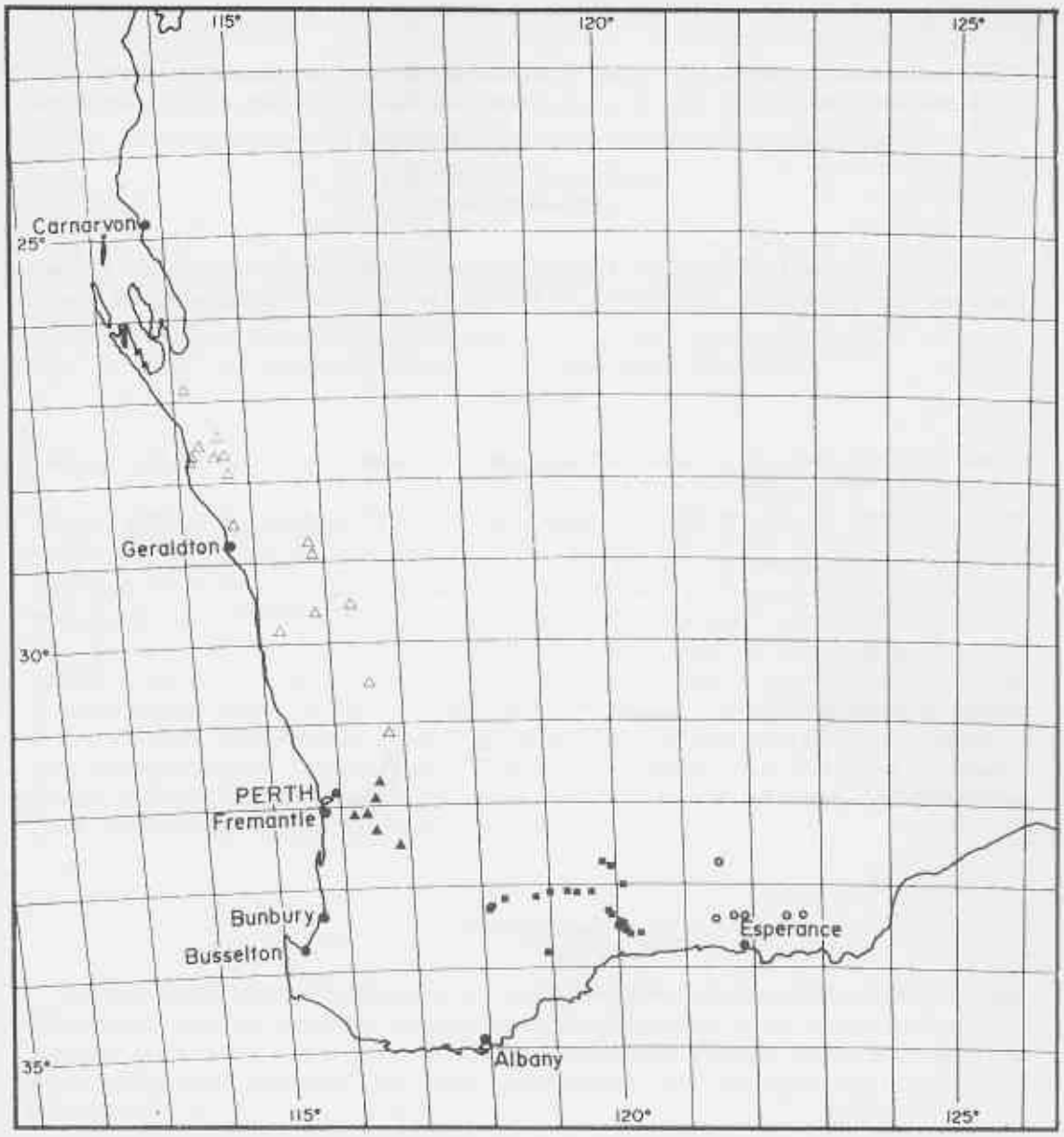

Figure 1. Distribution map of *Goodenia drummondii* subsp. *drummondii* △, *G. drummondii* subsp. *megaphylla* ▲, *G. laevis* subsp. *laevis* ○ and *G. laevis* subsp. *humifusa* ■.

Other specimens examined [precise localities withheld]. S of Mt Ney, Aug. 1983, *M.A. Burgman* 1708 (PERTH); Kumarl, Apr. 1938, *L.A. Horbury* 36 (PERTH); SE of Mt Beaumont, 10 Nov. 1980, *K.R. Newbey* 7996 (PERTH); N of Gibson, 9 Nov. 1982, *A. Strid* 21263 (PERTH); Scadden, 24 Dec. 1995, *C.D. Turley* 10/1295 (PERTH); E of Scadden, 2 Dec. 1982, *P. van der Moezel* PGV242 (PERTH).

Distribution. Occurs inland from Esperance to Scadden siding and Mt Ney. (Figure 1)

Habitat. Found in well drained sandy loam or laterite.

Flowering period. August to December, with one occurrence in April.

Conservation status. Goodenia laevis subsp. *laevis* is known from only six populations, two possibly in a reserve, therefore a Priority Three for poorly known taxa should be considered for this subspecies.

Acknowledgements

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References

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