

## Taxonomy of the *Grevillea brachystylis* species complex (Proteaceae)

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### Abstract

Keighery, G.J. Taxonomy of the *Grevillea brachystylis* species complex (Proteaceae). Nuytsia 7(2): 125-131 (1990). Material formerly included in *Grevillea brachystylis* is shown to comprise two distinct species, one undescribed. *Grevillea bronwenae* is described, and illustrated. This new species is confined to the northern margin of the Blackwood Plateau, whereas *Grevillea brachystylis* contains two distinct subspecies occurring on the Swan and Scott coastal plains.

### Introduction

The genus *Grevillea* has recently been studied by McGillivray, who has published a list of new taxa (McGillivray 1986).

McGillivray has a relatively broad species concept within this large genus and he has left a series of species complexes as single units. As an example, the populations studied in this paper were considered to form a single variable species (Marriott 1986) and specimens at PERTH are annotated as such by McGillivray.

*Grevillea brachystylis* is confined to the Swan and Scott coastal plains and the Blackwood Plateau of south-western Australia. Horticulturalists and field botanists alike have recognized the existence of distinct forms within the species. This paper presents the results of field and herbarium studies on the conservation status and variability of *Grevillea brachystylis* that indicate that the variation is discontinuous and that the Blackwood Plateau populations comprise a distinct species.

### Methods

During the flowering season of 1986/87 areas of remnant bushland, state forest and conservation reserves covering the natural range of *Grevillea brachystylis* were surveyed for the occurrence of this species. Observations were made on the habit, habitat, vegetative and floral morphology of these populations. Comparisons are made on the basis of fresh material.

Utilizing this material the populations were found to differ significantly in habitat, habit, the angle of the leaves to the stem, shape of the flower, perianth, pistil and pollen presenter. These characters are occasionally discernible on herbarium material, but form a major character sequence readily obtained by field observations. Characters of habit, leaf presentation, the form of the perianth, pistil and pollen presenter are constant and significant characters in this complex and elsewhere in the genus *Grevillea* (author, pers. obs.). These differences are difficult to describe but are presented in illustrations.

### Results

Field surveys carried out in 1986/87 showed that populations occurred in three disjunct regions, namely Swan Plain, Scott Plain and Blackwood Plateau. Tabulation of a wide range of vegetative and floral characters (Table 1) clearly demonstrates that the Blackwood Plateau populations are markedly different from the other plains populations. These differences are reinforced by habitat differences (see under species descriptions) and floral characters (Figures 1 and 2).

There are no intermediate populations, and populations of *Grevillea brachystylis* and *Grevillea bronwenae*, occurring within 100 metres of each other on Queen Elizabeth Road, maintain the differences.

Clearly the Blackwood Plateau populations should be given specific status. The two disjunct coastal plain forms differ in minor characters (habit, colour of pollen presenter) and are thus given subspecific status.

### Taxonomy

1. *Grevillea brachystylis* Meissn. in Lehm., Pl. Preiss. 1: 538 (1845); 252 loc. cit. 2: *Type*: Mocloy's Plain, Sussex District, 20.12.1839, J.A.L. Preiss 714 (holo: NY, photo seen).

Much branched, prostrate or decumbent to erect *shrub* with branches to 2 m long. *Stems* slender, shiny red with current years growth almost glabrous except at ends,  $\pm 1$  mm wide. *Leaves* erect, linear-lanceolate, 64-87 x 8-10 mm; margin recurved; upper surface smooth green; under surface densely hairy-white; apex acute or pungent with a black point 0.5-1 mm long. *Inflorescence* axillary, 6-7 flowered. *Peduncle* 4-6 mm with long, densely pubescent with short silver hairs. *Basal bract of inflorescence* lanceolate-ovate, brown; apex acute,  $\pm 7$  mm long, densely hairy. *Bracts/bracteoles subtending flowers* normally 3, imbricate, ovate; brown, 3-4 x 5 mm, pubescent, persistent; apex acute. *Pedicel* 3.5-4.5 mm long. *Perianth* red, slightly saccate, 7-8 mm long; limb 6 mm long, sparingly hirsute. *Pistil* 7-9 mm long; stipe 3 mm long; ovary 0.5 mm long. *Pollen presenter* 3-4 mm long, red or pale purple. *Ovary* densely hairy. *Nectary* yellow, c. 1 mm long, producing copious nectar. *Capsule* 10-11 mm long, sparsely hairy with retained style. *Seed* elliptic, supervolute,  $\pm 7$  mm long, brown; eliasome white,  $\pm 2$  mm long. Figure 1.

The species contains two subspecies.

#### 1a. *G. brachystylis* Meissn. subsp. *brachystylis*

A much branched, prostrate or decumbent shrub with branches to 60 cm long. Pollen presenter red.

*Specimens examined*. WESTERN AUSTRALIA: Busselton, 27 Sept. 1944, C.A. Gardner s.n. (PERTH); Yoongarillup, R.D. Royce 3806 (PERTH); Busselton area, (33° 40' S, 115° 35' E), A.R. Fairall 2557 (KPBG); 3 km E of Busselton, S. Paust 117 (PERTH); Ruabon, G.J. Keighery 1022 (PERTH); Fish Road Nature Reserve, G.J. Keighery 9484 (PERTH).

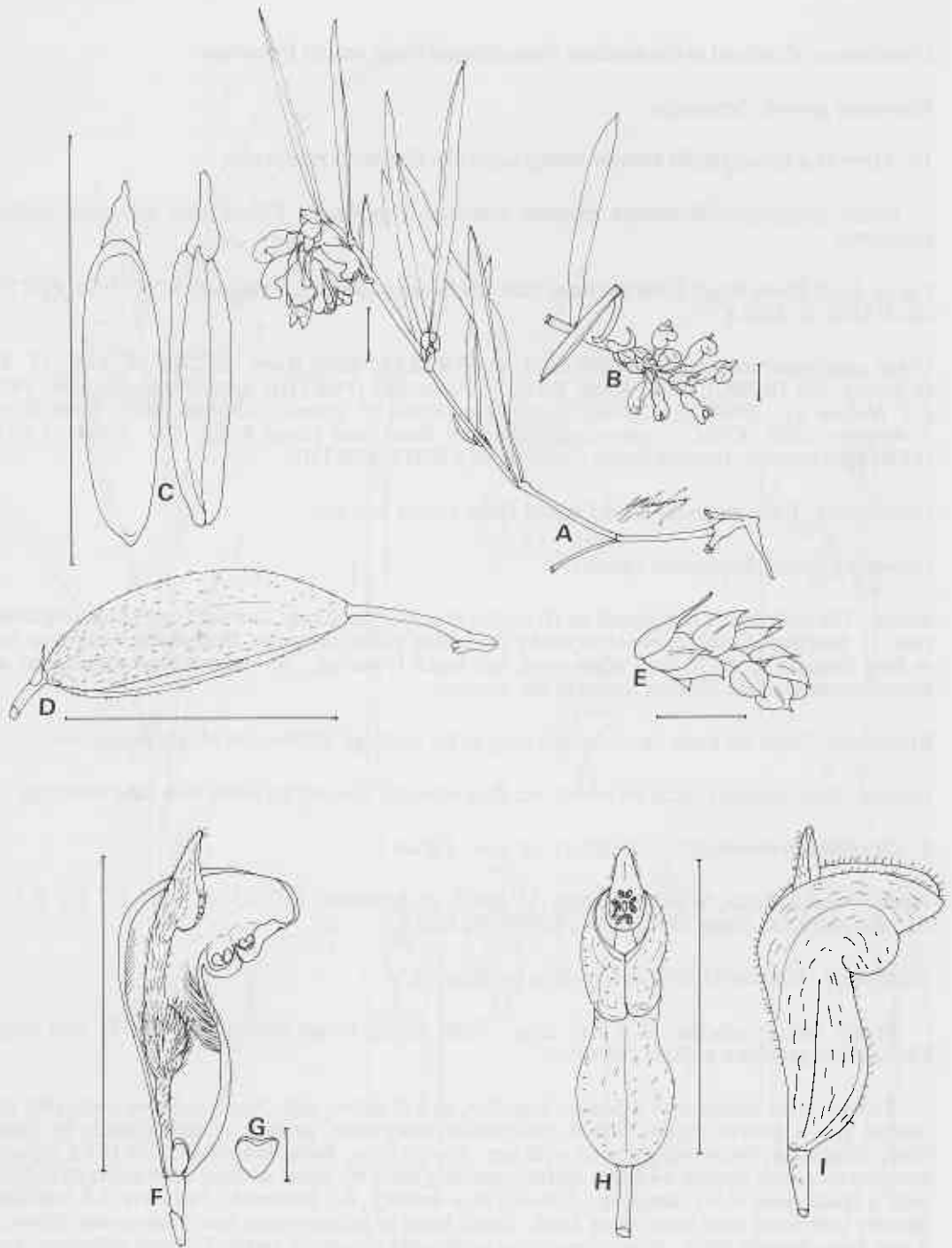


Figure 1. *Grevillea brachystylis* Meissn. A - Habit. B - Inflorescence. C - Seed. D - Capsule. E - Inflorescence in bract showing bracteoles. F - Lateral section of flower. G - Nectary. H - Front view of flower. I - Side view of flower. A, B, E-I *G.J. Keighery* 1022. C, D *G.J. Keighery* 9484. Scale bar = 10 mm, except G = 1 mm.

*Distribution.* Confined to the southern Swan Coastal Plain, east of Busselton.

*Flowering period.* September.

1b. *Grevillea brachystylis* Meissn. subsp. *australis* Keighery, subsp. nov.

Frutex prostratus vel erectus robustus ramis ad 2 m longis. Flores rubri, praebitor pollinis purpureus.

*Typus:* Scott River Road, Scott National Park, 29 January 1988, G.J. Keighery 9711 (holo: PERTH; iso: CANB, K, MEL).

*Other specimens examined.* WESTERN AUSTRALIA: Scott River (34° 15' S, 115° 15' E), D. Young 348 (KPBG); Scott River Road, S. Paust 263 (PERTH); Scott River, 20 Sept. 1973, E.C. Nelson s.n. (PERTH, CANB); Scott River Road, H. Demarz 4334 (KPBG); Scott River, E. Wittwer 2205 (KPBG); intersection Courtney Road and Payne Road, G.J. Keighery 9579 (PERTH); Governor Broome Road, G.J. Keighery 10343 (PERTH).

*Distribution.* Endemic to the Scott Coastal Plain, east of Augusta.

*Flowering period.* September-January.

*Notes.* The collections designated as *Grevillea brachystylis* subsp. *australis* can be distinguished from *G. brachystylis* subsp. *brachystylis* by the purple pollen presenter, the branches being up to 2 m long (instead of 40-70 cm), often erect, and much branched. No intermediate populations are known because of the disjunct nature of the species.

*Etymology.* From the Latin *australis*, referring to the southern distribution of this subspecies.

*Habitat.* Both varieties occur on winter wet flats normally covered by heath with sand over clay.

2. *Grevillea bronwenae* G.J. Keighery, sp. nov. Figure 2.

*Typus:* Sabina Road, Whicher Range, 15 km S of Busselton (33° 45' S, 115° 27' E), B.J. & G.J. Keighery s.n. (holo: PERTH; iso: CANB, K, MEL).

*Illustration.* Marriott (1986), as *Grevillea brachystylis*.

Frutex erectus gracilis, ad 1.5 m altus. Folia erecta, lineari-lanceolata, 104-127 mm longa. Flores rubri, praebitor pollinis purpureus.

Slender erect *shrub*, with 1-5 main branches, to 1.6 metres tall. *Stems* ± 2 mm wide, dull red; current year's growth slightly ribbed; ribs reddish marginally, green, covered centrally by dense, short, bifid hairs, becoming glabrous with age. *Leaves* erect, linear-lanceolate, 104-127 x 5-6 mm; margins recurved, scabrid on upper surface, sparsely hairy on lower surface; apex acute or pungent with a black point 0.5-1 mm long. *Inflorescence* axillary, 6-7 flowered. *Peduncle* 4-6 mm long, densely pubescent with short silver hairs. *Basal bract of inflorescence* lanceolate-ovate, brown, ± 5 mm long, densely hairy. *Bracts/bracteoles subtending flowers* 3, ovate, 1-2 mm, caducous; apex acute. *Pedicel* 6-8 mm long. *Perianth* red, yellow under anther pockets, 11-14 x 4 mm, square in T.S., sparsely hairy. *Pistil* 10-11 mm long; stipe 3 mm long; ovary 0.5 mm long. *Pollen presenter* 3 mm long, purple or dark violet. *Ovary* densely hairy. *Capsule* 8-9 mm long, with retained style. *Seed* elliptic, supervolute, ± 6 mm long; eliasome white, ± 2 mm long.

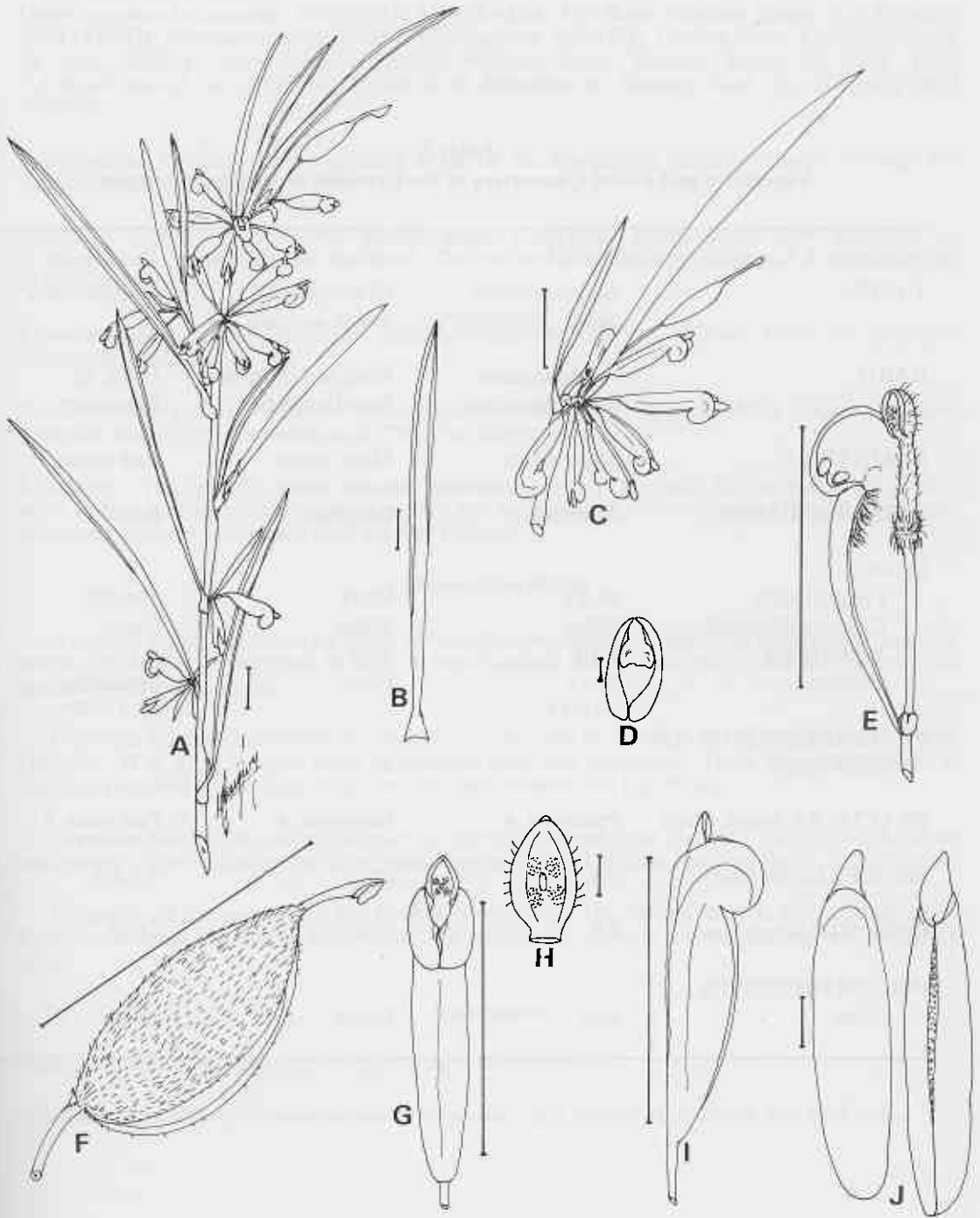


Figure 2. *Grevillea bronwenae* Keighery. A - Habit. B - Leaf. C - Inflorescence. D - Top view of flower. E - Lateral section of flower. F - Fruit. G - Front view of flower. H - Pollen presenter. I - Side view of flower. J - Seed. A-E, G, H, I *B.J. & G.J. Keighery* s.n. (holo: PERTH). F, J *G.J. Keighery* 9471. Scale bar = 10 mm, except D, H, J = 1 mm.

**Table 1.**  
**Vegetative and Floral Characters of the *Grevillea brachystylis* complex**

TAXON	<i>G. brachystylis</i> subsp. <i>brachystylis</i>	<i>G. brachystylis</i> subsp. <i>australis</i>	<i>G. bronwenae</i>
HABIT	Prostrate stems from lignotuber	Erect and prostrate from lignotuber	Erect, no lignotuber
BRANCHING	Many stems	Many stems	Few stems
RESPONSE TO FIRE	Resprouts	Resprouts	Killed
LEAF			
Length (mm)	64-87	62-91	104-127
Colour underneath	White	White	Green
Width (mm)	8-10	9-10	4.5
Position	Erect (at 90°)	Erect	Spreading (at 45-60°)
INFLORESCENCE BRACT length (mm)	5	5	7
BRACTEOLE length (mm)	Persistent, 4	Persistent, 4	Caducous, 2
PEDICEL length (mm)	6-8	6-8	3.5-4.5
PERIANTH length (mm)	7-8	7-9	11-14
POLLEN PRESENTER colour	Red	Purple	Purple

*Other specimens examined.* WESTERN AUSTRALIA: Hill Road, Whicher Range, G.J. Keighery 3634 (KPBG); Jarrahwood, Aug. 1949, E. Salisbury s.n. (PERTH); Darling Scarp, E of Jarrahwood, 21 June 1965, C. Davies s.n. (PERTH); Whicher Road, Whicher Range, 29 Sept. 1979, T.J. Hawkeswood s.n. (PERTH); 19 km S of Busselton on Nannup Road, G.J. Keighery 9471 (PERTH).

*Distribution.* Confined to the northern edges of the Blackwood Plateau, between Nannup and Busselton.

*Habitat.* Grows on sand over laterite under *Eucalyptus haematoxylon* low woodland or *E. marginata*/*E. calophylla* low woodland. The species forms dense populations 5-8 years after fire in this area.

*Flowering period.* June-December, peaking August-November. Mature fruits are produced November-February.

*Discussion.* *Grevillea bronwenae* is an attractive horticultural subject, and is frequently grown under the name *Grevillea brachystylis* "Whicher Range Form".

*Etymology.* The specific epithet honours Bronwen Keighery, my wife, for her help both in field work in this and many other studies and for her assistance in maintaining our family during my numerous absences in the field over the past 15 years.

### Conservation Status

Although highly restricted, the range of *Grevillea bronwenae* is entirely in State Forest, much of which lies within the proposed Whicher Range National Park. This species does not seem to be under any immediate threat.

*Grevillea brachystylis* subsp. *brachystylis* was located at 20 sites on the Swan Coastal Plain. However, 17 of these are road verge populations with little protection. Three populations occur in actual or proposed nature reserves at Yoongarillup, Ruabon and Fish Road.

*Grevillea brachystylis* subsp. *australis* is currently known from six sites, four of which are on road verges. Two (including the type population) are located in Scott National Park.

Currently all the above taxa are located in reserves. The variety most at risk appears to be *Grevillea brachystylis* subsp. *brachystylis* for which the reserves and populations are relatively small.

### References

Marriott, N. (1986). Newly cultivated *Grevillea*. Australian Plants 13: 335-340.

McGillivray, D.J. (1986). "New Names in *Grevillea* (Proteaceae)." (D.J. McGillivray: Castle Hill, New South Wales.)