

## *Grevillea kulikup* (Proteaceae: Grevilleoideae: Hakeinae) a rare new species from south-west Western Australia

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### Abstract

*Grevillea kulikup* Olde is described along with details of habitat, associated flora and conservation status. The recently discovered new species is known from a single population of less than 20 individuals. The most recent key to related species is modified.

### Introduction

A new species is described here to recognise a morphologically distinct population from its current designation as *Grevillea acropogon* Makinson. *Grevillea acropogon* is a threatened species in southwestern Australia that was known from only a single population near Lake Unicup (Makinson 2000; Department of Environment and Conservation 2010). A supposed additional population was discovered some 50 km north on a private property near Kulikup in 2001 by local resident Anne Staniforth-Smith. From 2013, the population was monitored by local volunteer M. Sowry, who reported the number of plants in the population to the Department of Biodiversity, Conservation and Attractions (DBCA). In 2015, local discussions began on the morphological differences between the two populations and their possible importance. During sampling for a recent student project aiming to use population genomic data to inform the conservation management of these two populations, it was noted again that they were not morphologically uniform. The genetic analyses were thus adapted to assess the evolutionary relationship of these two populations relative to other closely related species. These molecular analyses confirmed that the two populations are not conspecific and will be published in a forthcoming paper following completion of the student project. To expedite conservation actions, here we document the morphological variation and describe the Kulikup population as a new species, *Grevillea kulikup*. The species is morphologically similar to *G. acropogon* and *G. ripicola* A.S.George and thus is placed tentatively in the Thelemanniana Group (Group 14 *sensu* Olde & Marriott 1994), the monophyly of which has been called into question by Hevroy (2016). Four species, additional to those recognised in the *Flora of Australia* treatment (Makinson 2000), were recently added by Olde & Keighery (2022). The most recent key to species (Olde & Keighery 2022) is modified below.

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## Amended key to the *Grevillea thelemanniana* Group

From Olde & Keighery (2022: 335–337)

- 3: Pistils 20–25 mm long; leaf rachis angularly refracted at all nodes; outer surface of perianth dull *in vivo*; leaf lobes 0.8–1.1 mm wide, linear, the under-surface enclosed by margins or not when dry, sericeous or villous in the grooves beside the midvein; simple leaves never present; intramarginal veins not evident on leaf upper surface ..... 3A
- 3A: Pistils 20–22 mm long; leaves and branchlets glabrous or with appressed hairs (near Lake Unicup) ..... ***G. acropogon***
- 3A: Pistils 24–25 mm long; leaves and branchlets villous (Kulikup) ..... ***G. kulikup***

## Taxonomy

### *Grevillea kulikup* Olde, sp. nov.

**Type:** Western Australia: Kulikup (precise locality details withheld for conservation reasons), *P.M. Olde* 23/27, 9 September 2023 (holo: PERTH; iso: AD, BRI, CANB, K, MEL, NE, NSW, P).

Spreading, grey-green, seed-obligate shrubs 0.5–1 m high, 2–3 m wide. *Branchlets* reddish to yellow, subterete, openly and consistently villous with irregularly oriented biramous hairs up to 2 mm long. *New growth* loosely villous. *Leaves* 1–2 cm long, 2.5–3.5 cm wide, dorsiventral, spreading, subsessile, divided, divaricately complex, tri-pinnatisect or partly so, with 3–7 primary lobes, the lobes all similar, linear; *primary lateral lobes* 12–15 mm long, 20–30 mm wide, the rachis c. 1 mm wide, spreading to patent, usually in subopposite pairs, the proximal pair always with tertiary division; *secondary lateral lobes* 15 mm long, 15 mm wide, with a further trisected division, opposite or not, usually straight; *tertiary lateral lobes* c. 7 mm long; *terminal lobe* 10–13 mm long; *ultimate leaf lobes* 16–30 per leaf, 7–15(–17) mm long, c. 1 mm wide; *basal rachis node* 5–7 mm long; *leaf base* linear; *margins* loosely and smoothly revolute; *lobe apices* scarcely pungent; *adaxial surface* loosely villous to hispid, dull, the midvein obscure to evident and slightly raised; *abaxial surface* mostly or wholly enclosed except for midveins, sometimes lamina narrowly exposed beside the midvein and then villous; *texture* plially coriaceous. *Conflorescence* decurved, subterminal, shortly and broadly secund, 18–24-flowered, usually simple, occasionally 3-branched, acropetal; *buds* ovoid, pedunculate; *peduncles* c. 10 mm long, wiry, hispid; *rachis* 15–20 mm long, glabrous, sometimes a few appressed hairs at base; *common bracts* 0.7 mm long, 0.5 mm wide, ovate, glabrous-ciliate, sometimes a few spreading long hairs scattered on the abaxial surface. *Flower colour* red except the ovary and the style-end green, the nectary and anthers white. *Flowers* zygomorphic, inodorous, acroscopic; *pedicels* 4 mm long, 2 mm wide, glabrous, dilated gradually at the apex; *torus* 0.8–1 mm wide, oblique, cupuliform; *nectary* broadly u-shaped, scarcely evident above the toral rim, the margin thick along the sides, flattened and sub-linguiform at centre-face. *Pistils* 24–25 mm long, glabrous; *gynophore* 3 mm long, slightly incurved, not compressed, inserted towards the dorsal side of the torus; *ovary* 1.5 mm long, 1.2 mm wide at base, triangular, smooth, the base not ridged, retrorse; *style-end*

gradually expanded; *pollen-presenter* 1.3 mm long, 0.8 mm wide, oblique, oblong with rounded corners, the surface with a slight central boss surrounded by a narrow flange c. 0.2 mm wide. *Perianth* 9 mm long, 1.5 mm wide, narrowly ovoid, subregular in late bud, becoming quickly zygomorphic pre-anthesis, the tube coherent except along the dorsal suture, outside glabrous, inside subglabrous in the basal 4 mm, densely bearded at the curve, the perianth falling as a coherent unit after anthesis; *limb* 0.8 mm long, 1.3 mm wide, depressed spheroidal, sparsely sericeous, revolute at anthesis; *tepals* attached inside the toral rim, markedly papillose on the margins; *tepal-limbs* with spreading rusty hairs at the tip, separating and rolling back after anthesis. *Follicles* 15 mm long, 5 mm wide, 5 mm deep, narrowly obovoid, truncate at base; *style* persistent, emergent from the acute apex; *exocarp* smooth, soon cracking; *mesocarp* crustaceous; *endocarp* smooth, concolorous; *pericarp* c. 0.3 mm across at suture. *Seeds* not seen. (Figures 1, 2A–E)

**Diagnostic characters:** Similar to *G. acropogon* Makinson (Figs 2F–H, 3) but differing in its branchlets and leaves with a persistent, loosely villous indumentum (versus glabrous or with appressed hairs), the division of each leaf more complex, (widest leaves with c. 30 ultimate lobes versus 16) and with a higher proportion of lobes with tertiary development (all or most versus none or occasional), the proximal lobes always with tertiary division (versus occasional or tertiary division absent), the basal leaf rachis node longer (5–7 mm versus 3–5 mm long); its pistils slightly longer (24–25 mm long versus 20–22 mm long), the ovary with base retrorse (versus obliquely truncate); the nectary obscure (scarcely rising above the toral rim) (versus prominent and rising c. 0.2 mm above the toral rim).

**Distribution:** Western Australia. Occurs in the Boyup Brook Local Government Area where it is known only from a single population at the type locality.

**Phenology:** Flowers from late winter to spring.

**Habitat and ecology:** Shrub in open seasonally damp woodland heath dominated by *Eucalyptus wandoo* with *Banksia nivea* Labill. subsp. *nivea*, *Hakea lissocarpha* R.Br., *Hibbertia depilipes* K.R.Thiele, *Leptospermum erubescens* Schauer, *Xanthorrhoea preissii* Endl. and *Loxocarya striata* (F.Muell.) B.G.Briggs & L.A.S.Johnson. Soils are grey sandy loam with laterite.

**Conservation status:** Despite extensive survey, the species is only known from a single population of less than 20 plants and is therefore in urgent need of conservation assessment.

**Etymology:** The epithet *kulikup* is a place name of Aboriginal Noongar origin but its meaning is uncertain. The name was first applied to a nearby railway siding but was later gazetted for the townsite and surrounding 283 sq km area. The epithet is used here as an indeclinable noun in apposition.





**Figure 1.** *Grevillea kulikup*. A. Habit and habitat. B, C. Leaves and flowers. Photos: A, B: P. Olde; C: A. Crawford.





**Figure 2.** A–E: *Grevillea kulkup*, detail from holotype and isotypes. A. Habit of branchlet with inflorescence. B. Leaf. C. Trifid leaf apex showing indumentum. D. Carpel. E. Fruit. Voucher: P.M. Olde 23/27 (NSW, P, PERTH). F–H: *Grevillea acropogon*. F. Habit of branchlet with inflorescence. G. Leaf. H. Carpel. Voucher: P.M. Olde 01/151 & N. Marriott (NSW 535102). Illustration by Catherine Wardrop.



**Figure 3.** Flowers and leaves of *Grevillea acropogon*. Photo: K. Stokes.

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