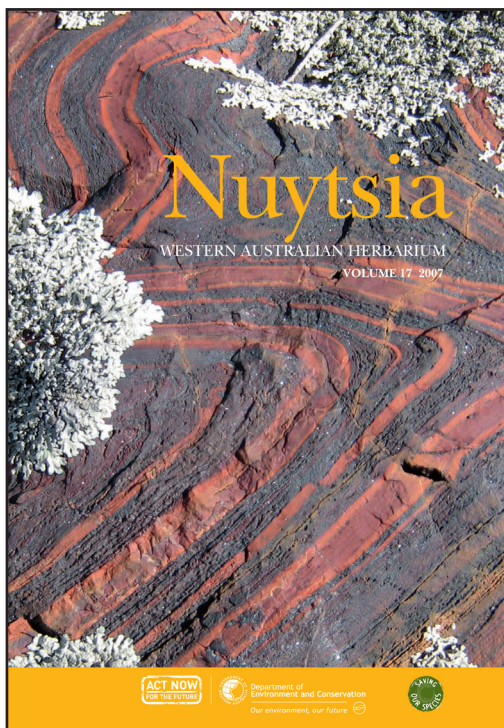


Nuytsia

WESTERN AUSTRALIA'S JOURNAL OF SYSTEMATIC BOTANY

ISSN 0085-4417



Barrett, R.L.

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Nuytsia 17: 61–66 (2007)

**A special edition
funded by the Western
Australian Government's
'Saving our Species'
biodiversity conservation
initiative.**

All enquiries and manuscripts should be directed to:

The Editor – NUYTSIA
Western Australian Herbarium
Dept of Environment and Conservation
Locked Bag 104 Bentley Delivery Centre
Western Australia 6983
AUSTRALIA

Telephone: +61 8 9334 0500
Facsimile: +61 8 9334 0515
Email: nuytsia@dec.wa.gov.au
Web: science.dec.wa.gov.au/nuytsia/



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***Lepidosperma gahnioides*, a new species of Cyperaceae from the Ravensthorpe region, Western Australia**

Russell L. Barrett

Botanic Gardens and Parks Authority, Kings Park and Botanic Garden, West Perth, Western Australia 6005
School of Plant Biology, The University of Western Australia, 35 Stirling Highway, Crawley, Western Australia 6009

Abstract

Barrett, R.L. *Lepidosperma gahnioides*, a new species of Cyperaceae from the Ravensthorpe region, Western Australia. *Nuytsia* 17: 61–66 (2007). *Lepidosperma gahnioides* R.L.Barrett is here described as a new species. This species has a restricted distribution from the Ravensthorpe Range north to Lake Ace, in southern Western Australia, and is potentially threatened by present and proposed mining activities.

Introduction

Recent surveys of the Ravensthorpe Range and surrounding areas, including Bandalup Hill and Kundip, have revealed a great regional diversity of taxa within *Lepidosperma* Labill. Potentially more than twenty species occur in this area, the majority of which are currently unnamed. The region is of high geological and topographic complexity, resulting in a large number of adjacent habitat types, many of which are occupied by *Lepidosperma* species with relatively specific habitat requirements; a factor which limits their potential distribution. While taxonomic investigation is ongoing for most of these putative taxa, one species is very clearly morphologically distinct, has a unique DNA sequence (External Transcribed Spacer 1; Barrett *et al.* in prep.), appears to be locally restricted in distribution and may be threatened by mining and exploration activities. *Lepidosperma gahnioides* R.L.Barrett is therefore named here, prior to the taxonomic resolution of other regional congeners, to highlight its conservation significance and to draw attention to the large number of unique taxa in the region.

Methods

All material cited has been examined. Several populations of this taxon have been examined in the field. The description is based on dried herbarium material. One unusual term is explained here: the angle of the spread of the culms and leaves (collectively grouped in ramets; often fan-shaped in some species) from the base of the rhizome branch is given to provide an indication of the growth habit of the plants. Additional information about descriptions of *Lepidosperma* species is provided in Barrett (2007, this issue). Precise localities are withheld for Declared Rare and Priority species due to conservation concerns. Herbarium acronyms follow Holmgren and Holmgren (1998–) except for RAV, which represents the Western Australian regional herbarium at Ravensthorpe. The distribution map was created in DIVA-GIS freeware Version 5.2.0.2. (<http://www.diva-gis.org>) using coordinate

data from PERTH collections, and shows Interim Biogeographic Regionalisation for Australia (IBRA) Version 6.1 boundaries (Department of the Environment and Water Resources 2007).

Taxonomy

Lepidosperma gahnioides R.L.Barrett, *sp. nov.*

Habitus *Gahnia lanigerae* (R.Br.) Benth. similis; culmi tenuissimi, subteretes, glauci; inflorescentia reducta, compacta.

Typus: Bandalup Hill, east of Ravensthorpe, Western Australia [precise locality withheld for conservation purposes], 26 October 2006, R.L. Barrett 3510 (*holo*: PERTH 07543875; *iso*: AD, BM, CANB, K, MEL, NE, NSW).

Lepidosperma sp. Kundip (G.F. Craig 6011), Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au> [accessed 2 August 2007].

Tufted perennial with very short rhizomes. *Culms* and *leaves* spirodistichous; leaf to culm ratio 0.6–1.1:1; angle of fan (ramet) spread 5–10°. *Leaves* rigid, erect, subterete, finely ridged with 10–14 stomatal rows, grey-green, somewhat glaucous, often with dry tips curling somewhat like *Gahnia* spp., margin smooth to the touch, slightly rough under a dissecting microscope (40×), 10–38 cm tall, 0.35–0.47 mm wide, 0.29–0.39 mm thick; sheath brown, glabrous, base fibrous, without resin. *Culms* as for leaves but more ridged, with 14–18 stomatal rows, 17–34 cm tall, 0.40–0.48 mm wide, 0.34–0.40 mm thick. *Inflorescence* ovate to broadly lanceolate in outline, 10–19 mm long, 4–8 mm wide, with few very short lateral branches, 1 lateral branch per node; basal lateral branch 7.2–9.6 mm long with 3–6 spikelets; involucre bract 13–86 mm long. *Spikelets* 3.3–4.2 mm long, the upper flower bisexual, the lower flower functionally male. *Glumes* 5–7, rusty-brown with short, appressed hairs scattered across the surface, the apex acute, apiculate; lowest 3 or 4 glumes sterile; fertile glumes 2.7–2.9 mm long, 0.8–1.1 mm wide. *Stamens* 3; *anthers* 1.08–1.54 mm long including the apical appendage, 0.23–0.28 mm wide; filaments 1.4–1.6 mm long. *Style* 3-fid, *c.* 1.5 mm to branches which are *c.* 0.6 mm long; style caducous, base not forming a cap. *Nut* pale brown, becoming white with age, smooth, with 3 fine ribs, ovoid–obovoid in outline, terete in section, 1.8–2.0 mm long, 0.8–1.0 mm wide; epidermal cells ovate in outline. *Hypogynous scales* 6, falling with the nut, broadly triangular, white, 0.75–1.05 mm long; apex acuminate, lacking hairs. (Figure 1)

Other specimens examined. WESTERN AUSTRALIA: [localities withheld] 23 Jan. 2005, L. Ang 10812 A (PERTH); 25 Oct. 2006, R.L. Barrett 3474 (NE, NSW, PERTH, RAV.); 25 Oct. 2006, R.L. Barrett 3496 (NE, NSW, PERTH, RAV.); 11 Dec. 2003, G.F. Craig 6011 (PERTH); 2005, N. Eveleigh 10801 (PERTH); 2 May 1985, K.R. Newbey 10929 (PERTH).

Distribution and habitat. Only known from a small area between Kundip and Bandalup Hill, near Ravensthorpe, and a single collection from near Lake Ace, *c.* 45 km to the north (Figure 2). Occurs in open woodland with tall shrubs or mid-dense mallee and open low shrubs on rocky loam soils. On Bandalup Hill, the loam soils are associated with mineral-rich rocks which are actively being mined for their nickel content. *Lepidosperma gahnioides* shows a preference for mid-slope sites with high gravel/rock content, suggesting it may have quite specific habitat requirements. Associated species include mallee species *Eucalyptus occidentalis* and *E. flocktoniae*, shrub species *Acacia glaucoptera*,



Figure 1. Holotype of *Lepidosperma gahnioides* (R.L. Barrett 3510; PERTH).

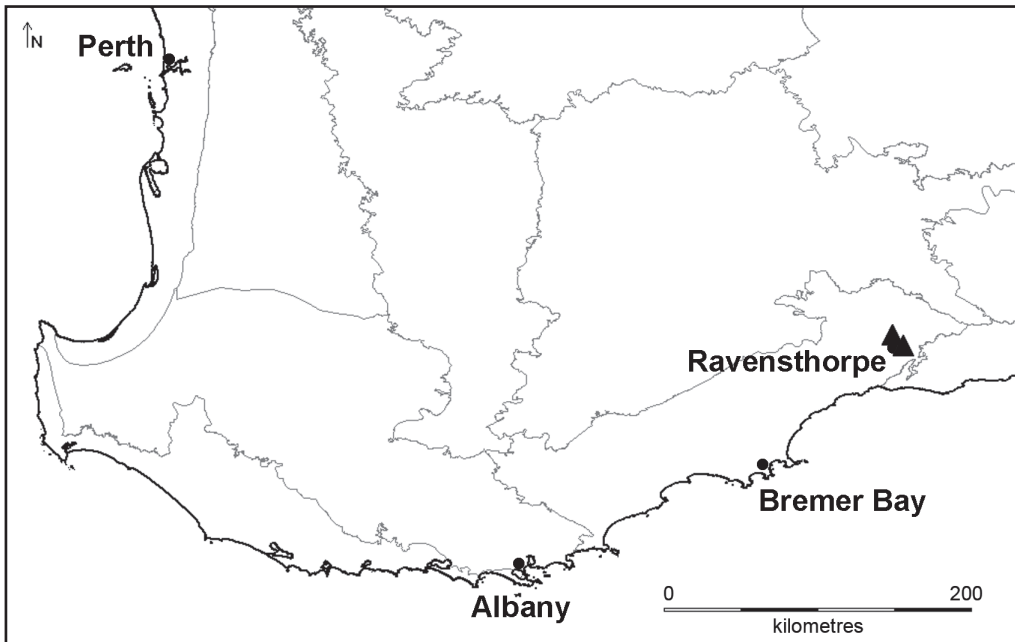


Figure 2. Distribution of *Lepidosperma gahnioides* (▲) in south-west Western Australia.

Daviesia anceps, *Hakea commutata*, *H. verrucosa*, *Melaleuca acuminata*, *M. hamata*, *M. lateriflora*, *Rhagodia crassifolia*, *Santalum acuminatum* and *Templetonia retusa*, with *Austrostipa elegantissima*, *Cooperookia polygalacea* and *Gahnia lanigera*.

Phenology. Fresh flowering not observed, expected to be late autumn. Mature seed recorded for October.

Conservation status. Recently listed as Priority Two under the Department of Environment and Conservation's (DEC) Conservation Codes for Western Australian Flora. The Lake Ace population is in a nature reserve, and is the only one known that is not subject to mining activities.

Etymology. The epithet refers to the high degree of morphological similarity of this species to *Gahnia lanigera* (R.Br.) Benth. with which it often grows, regularly intermixed.

Notes. Plants are intensely clonal with clumps recorded as growing up to 2 m × 0.7 m in extent.

This species has no morphologically similar allies. Molecular data (Barrett *et al.*, in prep.) suggests that it is most closely related to a group of species including *L. amansiferrum* R.L.Barrett, from which it is highly morphologically distinct. *Lepidosperma amansiferrum* and allied taxa are distinguished by having compressed, distichous culms and leaves with conspicuous hairs on the margins, the hairs often coated in red resin. Other species it may be confused with in the Ravensthorpe region are *L. gracile* R.Br. *s. lat.*, *L. tenue* Benth. *s. lat.* and *L. carphoides* Benth., all of which have much thicker culms, which are not finely ridged, and more robust inflorescences, which are usually more branched. *Lepidosperma gracile* also has compressed rather than subterete culms. *Lepidosperma gahnioides* is

most likely to be confused with *Gahnia lanigera*, which can be distinguished by the ciliate leaf nodes and inflorescences with clusters of branchlets at the nodes subtended by a leaf-like bract.

Acknowledgements

I am grateful to Gillian Craig who first recognised the distinctiveness of this species and for sharing her extensive field knowledge of the Ravensthorpe area. Sam Atkinson, Jonathon Austin, Kylie Goldfinch and Anna McNamara at Landcare Services are particularly thanked for their assistance in accessing sites on Bandalup Hill. Ravensthorpe Nickel Operations is thanked for permission to access sites on Bandalup Hill. Alex George is thanked for correcting the Latin diagnosis. Kelly Shepherd and Juliet Wege ('Saving Our Species' biodiversity conservation initiative) are thanked for their assistance with the mapping software. Kevin Thiele and Ryonen Butcher are thanked for comments which significantly improved the manuscript.

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