

# Review of *Dichelachne* (Gramineae) in Australia

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## Abstract

Jacobs, S.W.L.<sup>1</sup>, McClay, K.L.<sup>1</sup> & Simon, B.K.<sup>2</sup> (<sup>1</sup> National Herbarium of New South Wales, Royal Botanic Gardens, Sydney, N.S.W., Australia, 2000; <sup>2</sup> Queensland Herbarium, Meiers Rd., Indooroopilly, Queensland, Australia, 4068) 1993. Notes on *Dichelachne* (Gramineae) in Australia. *Telopea* 5(2): 325–328. *Dichelachne* in Australia is assessed. Seven species are recognised and a key provided. The type of *D. parva* is a mixed collection; the name is lectotypified and the species redefined. The relationships between the species are discussed.

## Introduction

Veldkamp (1974) revised *Dichelachne*, recognising three species, *D. crinita*, *D. micrantha* and *D. rara* with two subspecies in *D. rara*; all taxa growing in Australia. Edgar and Connor (1982) realised that Veldkamp's treatment did not adequately reflect the situation in New Zealand, and in their treatment recognised five species viz., *D. crinita*, *D. micrantha*, *D. sieberiana*, *D. rara* and *D. inaequiglumis*. Although these five species also grow and can be distinguished in Australia, they did not represent all the variation present here (Connor, pers. comm.) resulting in a large residue of specimens that made treatments difficult. So the old treatment lingered on and there has been an unfortunate delay in incorporating the results of the New Zealand study into the Australian grass literature. Simon (1982) described a further species, *D. parva* and also was the first to include the five species recognised in New Zealand in a key to Australian grasses (Simon, 1990). Morris (1991) recognised four species in Tasmania, including *D. sieberiana* in *D. rara*. *D. hirtella* is the most recent addition, described from northern Victoria and southern New South Wales by Walsh (1992).

While preparing the *Dichelachne* treatment (Jacobs & McClay, in press) for the final volume of the *Flora of New South Wales* it became clear that we now had enough names to deal sensibly with the variation in Australian *Dichelachne*. It also became clear that there was a problem with the type, and in the circumscription of *D. parva* but that this could be clarified by lectotypification and redefining the species.

There is still considerable variation within *Dichelachne* and publication of further taxa is quite probable.

## *Dichelachne parva* B.K. Simon

### (i) Lectotypification

The type of *D. parva* (Queensland, near Wyberba, Blake 4600, BRI 061721) consists of two depauperate plants. The plant on the right is a small specimen of, but otherwise a good match for, *D. inaequiglumis* (Hack. ex Cheesem.) Edgar & Connor. The plant on the left represents an apparently endemic Australian species that does not appear



to have any other name. It is distinguished from all other species of *Dichelachne* in having smaller lemmas (mostly <4 mm) longer than the lower glume, smaller florets, and in the inflorescence being sparse with fine flexuous branches. This specimen is here designated as the **lectotype** of *D. parva*.

### (ii) Circumscription

The original description of *D. parva* included information from both specimens on the type sheet. Consequently the description needs emending and a revised description is supplied here.

Tufted perennial to 0.8 m tall. *Culms* erect, smooth, glabrous, sometimes scaberulous below node; nodes 4–5, glabrous. *Leaves* mostly basal; sheath tightly enclosing culm, becoming loose with age, smooth and glabrous or scaberulous; ligule a membranous rim 0.7–1.5 mm long, obtuse, erose, glabrous, one side usually with an auricular lobe 1.2–2.5 mm long, about twice as long as the ligule; blade flat or inrolled, to 20 cm long, 1–2.5 mm wide, glabrous, abaxial surface scaberulous, adaxial surface sometimes smooth. *Inflorescence* paniculate, open, narrow, 5–28 cm long, 1–3 cm wide; branches lax, flexuous; rhachis scaberulous, glabrous. *Spikelets* 3.5–4 mm long (excluding awn), 0.7–1 mm wide, laterally compressed, floret 1, bisexual; pedicel 0.5–4 mm long, scaberulous. *Glumes* unequal, 1-nerved, keeled, glabrous, smooth, upper margin sometimes membranous, keel scabrous; lower glume lanceolate, acute, 2.3–3.2 mm long, 80–90% as long as lemma; upper glume narrowly lanceolate, attenuate, 2.8–4 mm long, 80–100% the length of the lemma. *Lemma* lanceolate, 2.8–4 mm long (excluding awn), subterminally awned from below a membranous 2-toothed tip, 5-nerved, keeled, glabrous except for the callus, scaberulous; membranous tip 0.3–1 mm long, lateral nerves extending as teeth c. 0.1 mm long; awn 6.5–12 mm long, scaberulous, slightly twisted, at maturity once-geniculate and more strongly twisted; callus with crinkly hairs 0.2–1.2 mm long. *Palea* subequal to lemma, hyaline, 2-nerved, 2-keeled, smooth, glabrous, keels scabrous. *Lodicules* 2, membranous, linear-lanceolate, c. 0.6 mm long. *Anthers* 3, 0.3–0.5 mm long, usually cream, sometimes purple-brown when whole inflorescence purple-tinged. *Caryopsis* c. 3 mm long, embryo c. 10% of embryo length. No obvious rhachilla extension.

**DISTRIBUTION:** the Darling Downs district of Queensland, Central Coast, Central and Southern Tablelands and South Western Slopes of New South Wales and across into northern Victoria. Mostly on better soils or in damp spots on sandstone or granite, usually in woodland.

**SELECTED SPECIMENS:** QUEENSLAND: near Wyberba, Blake 4600 21 Jan 1933, lectotype (BRI); Girraween National Park (28°56'S, 151°50'E) Norris 485 & Jacobs, 4 Feb 1986 (NSW). NEW SOUTH WALES: Central Coast: Culoul Range (33°12'S, 150°34'E) D. Benson 1210, 17 Aug 1976 (NSW); Hornsby, Blakely, Oct 1921 (NSW 7855); Rhodes, Deane, Apr 1887 (NSW 7853); Cheltenham, Vickery, 23 Dec 1947 (NSW 7852). Central Tablelands: Katoomba, Blake 13926, 22 Jan 1939 (BRI, NSW); Blackheath, Vickery, 16 Mar 1935 (NSW). Southern Tablelands: Munderoo State Forest, McBarron 2811, 26 Dec 1948 (NSW). South Western Slopes: 7 km E of Kyeamba, Lloyd s.n. 27 Nov 1980 (NSW). VICTORIA: Mt Stanley, McBarron 2945, 3 Jan 1949 (NSW).

### (iv) Relationships

Simon (1982) expressed some concern that *D. parva* may be reduced to a variety of *D. rara* after further study, but later (Simon, 1984) he stated that there was a closer affinity of *D. parva* with *D. inaequiglumis* and *D. sieberiana* when examination of the paper by Edgar and Connor (1982) showed that the name *D. rara* had been widely misapplied to the two latter species. Our (Jacobs & McClay, in press) study of the



specimens for the Flora of New South Wales project indicates that *D. parva* is most closely related to *D. inaequiglumis* but is quite distinct from that species. The distinctions are summarised in the key below.

### Key to Australian species of *Dichelachne*

- 1 Awn 25 mm long or longer; inflorescence dense with the obvious long awns semi-erect or spreading; usually on sand ..... ***D. crinita***
- 1\* Awn less than 25 mm long; inflorescence open or dense, the awns not as obvious; on various soils ..... 2
- 2 Lemma less than 4 mm long ..... 3
- 2\* Lemma 4 mm or more long ..... 4
- 3 Lemma longer than at least the lower glume; inflorescence sparse with flexuous branches ..... ***D. parva***
- 3\* Lemma shorter than both glumes; inflorescence more or less contracted and the branches not flexuous ..... ***D. micrantha***
- 4 Lemma usually 6 mm or more long, hispid-pubescent; plants often hairy ..... ***D. hirtella***
- 4\* Lemma mostly less than 6 mm long, hispid, scabrous or glabrous; plants sometimes hairy (*D. sieberiana*) ..... 5
- 5 Lemma distinctly longer than lower glume, often longer than both glumes ..... ***D. inaequiglumis***
- 5\* Lemma shorter than or subequal to lower glume ..... 6
- 6 Culms and nodes hairy or scabrous-pubescent; lemma usually scabrous ..... ***D. sieberiana***
- 6\* Culms and nodes glabrous; lemma mostly smooth, sometimes scabrous ..... ***D. rara***

### Other species

As Morris (1991) indicated, *D. sieberiana* seems most closely allied to *D. rara*. There seems to be more variation in both species in Australia than recorded for New Zealand by Edgar and Connor (1982). The main distinguishing features here seem to be the hairy culms and nodes of *D. sieberiana*. These characters are traditionally viewed with caution in Australia as hairiness has a tendency to increase with increasing dryness and can be environmentally influenced. As well as the hairiness though *D. sieberiana* has lemmas subequal to the lower glume and the lemma surface more or less scabrous. True *D. rara* has glumes with attenuate tips that much exceed the mostly smooth-surfaced lemma, and the nodes (especially) and the culms are



glabrous. There are some specimens intermediate in some characters with glumes only slightly longer than the lemma and some with slightly scabrous lemmas. We have included these 'intermediate' specimens with *D. rara* here but suspect that further study may uncover further taxa. A species with a contracted inflorescence and an awn less than 10 mm long from south-eastern Queensland (*D. sp. Simon 3221* in Simon 1990) requires further investigation.

*D. hirtella* is part of the *D. rara* – *D. sieberiana* complex, differing from the other two mostly in the larger spikelet parts and larger and denser inflorescence. The lemma surface of *D. hirtella* is more scabrous than in *D. sieberiana*, whereas the lemma surface of *D. rara* is less scabrous again, often smooth. *D. hirtella* frequently (but not always) has hairy culms and nodes similar to *D. sieberiana*, and the relative length of the lemma to the glumes can be similar in both species. The character distribution among these taxa is a bit erratic but the taxa can be sorted without too much difficulty and the resultant classification is an improvement on the previous one.

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### References

- Edgar, E. & Connor, H.E. (1982) *Dichelachne* (Gramineae) in New Zealand. *New Zealand Journal of Botany* 20: 303–309.
- Jacobs, S.W.L. & McClay, K.L. (in press) *Dichelachne*, in Harden, G.J., *Flora of New South Wales* vol. 4. (New South Wales University Press: Sydney).
- Morris, D.I. (1991) *The grasses of Tasmania*. Tasmanian Herbarium Occasional Publication No. 3.
- Simon, B.K. (1982) New species of Gramineae from south-eastern Queensland. *Austrobaileya* 1: 455–467.
- Simon, B.K. (1984) Corrigenda. *Austrobaileya* 2: 108.
- Simon, B.K. (1990) *A key to Australian grasses*. Queensland Department of Primary Industries Information Series Q189019.
- Veldkamp, J.F. (1974) A taxonomic revision of *Dichelachne* Endl. (Gramineae) with some new combinations in *Stipa* L. and *Oryzopsis* Michx. *Blumea* 22: 5–12.
- Walsh, N.G. (1992) New taxa in Victorian Poaceae (2). *Muelleria* 7: 451–456.

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