A new species of Restionaceae from south-western Western Australia

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Abstract

Dixon, K.W., Meney, K.A. and Pate, J.S. A new species of Restionaceae from south-western Western Australia. Nuytsia 9(1): 91-94 (1993). *Restio isomorphus* is a new species of Australian Restionaceae from a restricted area in the south-west of Western Australia. Rhizome morphology and ecological factors likely to influence the conservation status of this species are discussed.

Introduction

Western Australia contains approximately 110 species of Restionaceae representing over three-quarters of the known Australasian species. However, since the publication of Carlquist (1976) and more recently, Briggs *et al.* (1990), there has been no published description of new taxa in Western Australia pending resolution of the generic classification of the Australian Restionaceae by Dr B.G. Briggs and Dr L.A.S. Johnson.

This paper describes one of a suite of species collected as part of a broad-based botanical and ecological survey of the family in Western Australia (Meney & Dixon 1988, Meney, Pate & Dixon 1990a, Meney, Pate & Dixon 1990b, Pate, Meney & Dixon 1991). Most of the new taxa are geographically restricted, are limited to a few individuals in vulnerable habitats and/or are fire-sensitive. Thus special management considerations will be necessary to ensure the long-term survival of the species.

Restio isomorphus K.W. Dixon and K.A. Meney, sp. nov. (Figure 1)

Planta dioica spicis maribus femineisque similibus, rhizomate breviter repente, tomentoso, culmis erectis, viridibus, sparsim ramosis; culmorum vaginae ad basim purpurescentes, lateralibus marginibus expansis.

Typus: South-western Western Australia, South-west Botanical Province, Scott River along Governor Broome Road and Dennis Road (115° 17' E, 34° 15' S), December 1988, *Meney & Dixon* (KM 110, female plant) (holotype: PERTH; isotype: K, SYD). Growing in shallow sandy soils over lateritic ironstone often with a perched water-table during winter and spring.

Habit. Plants tufting to shortly creeping, 45 cm in diameter, roughly circular.

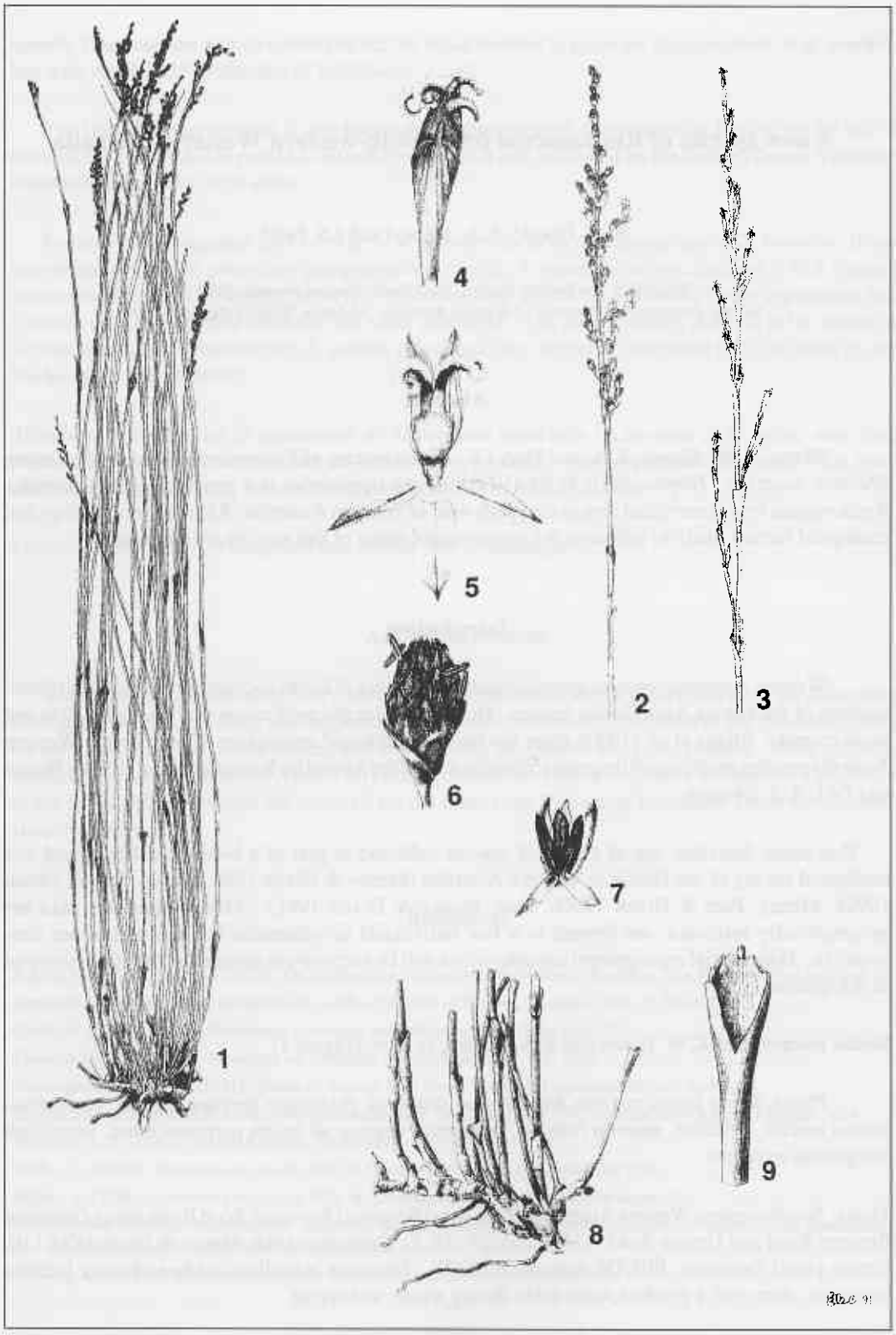

Figure 1. *Restio isomorphus*. 1 - sketch of plant (x0.25); 2 - single female culm (x0.5); 3 - single male culm (x0.5); 4 - female spikelet (x5); 5 - female flower opened out (x5); 6 - male spikelet (x5); 7 - male flower opened out (x5); 8 - rhizome and lower culm bases (x0.5); 9 - culm sheath (x2).

Rhizome elongated, variable in length, 2-3 mm in diameter, densely villous on young rhizomes but weathering with age, with broadly deltoid, closely appressed scale leaves, 0.3-0.4 mm long, glossy and deciduous. *Cataphylls* 2-4, 7-14 mm long, straw-coloured, closely appressed, chartaceous, acute to mucronate and persistent. *Culms* simple, glabrous, green flushed with purple at internodes, finely striate, 60-70 cm tall, 1-1.2 mm wide, erect and parallel, solid, chlorenchyma of two layers of palisade cells, stomata superficial. *Culm sheaths* 5-7, sterile and 9-14 fertile per culm, 1.5-2.1 cm long with a 1-2 mm long often deciduous mucro, appressed at base with flared lateral margins, striate, scarious, purple grading to fawn towards apex, persistent. *Male spikelets* erect, ovoid, 3-4 mm long, 2-3 mm wide, 2-3 per subtending inflorescence bract on short 1-2 mm long pedicels; subtending inflorescence bract broadly obovate, 2-3 mm long with a 1 mm long mucro; lower 1-2 glumes infertile, upper 10-25 glumes fertile, glossy, coppery-bronze aging grey, margins entire. *Male flowers* sub-sessile; tepals 5, 2 outer and 3 inner, 2.5 mm long, linear-lanceolate, flat; margins pale, membranous with rust-brown tips, lateral tepals keeled, glabrous, inner tepals slightly shorter and broader. *Stamens* 3, stout, exserted, pistallode absent. *Female spikelets* erect, narrow-ovoid to ovoid, 5-7 mm long, 1-1.8 mm wide, sessile; bracts 4, usually all fertile, sub-equal, keeled, red-brown, 3-5 mm long with a 1 mm long mucro and shortly fimbriate margins; spikelets solitary in upper 5-8 subtending inflorescence bracts, lower inflorescence bracts often subtending 1.5-7 cm long branches each terminating in 3-6(8) single spikelets; subtending inflorescence bracts similar to those on male plants. *Female flowers*: tepals 5(6), linear-lanceolate, acute, 3-3.5 mm long, pale to hyaline, outer tepals keeled with hairs, inner tepals only slightly keeled and glabrous; style red, divided to base with two style branches, stigma white, ovary bilocular, 1 mm wide, 1.2 mm long, compressed with two lateral raised sutures; staminodes absent. *Fruit* a capsule, glossy, chestnut brown to dark brown, 1.8-2.0 mm wide. *Seed* small, 1.5 x 1 mm, reniform, black, with white ridges.

Flowering period. Late February to April; *seed dehiscence:* November-December.

Affinities. Restio isomorphus shows affinity with *Restio stenandra* (Briggs and Johnson *ined.*) in plant habit and spikelet morphology but is distinct in possessing superficially similar male and female spikelets and in the flared purple and fawn culm sheaths. The species favours shallow white or red sandy soils over lateritic ironstone which is seasonally wet. The culms are erect and arise from a 1.5-2 cm deep subsurface more or less creeping rhizome. The rhizome morphology fits category type B_3 (Pate, Meney and Dixon 1991) and does not contain starch. The plants are killed by fire and regenerate from seed. The conservation status of the species warrants investigation as it is of limited local distribution; its known range is less than 5 km with the plants confined to ironstone soils which are poorly reserved (only one small area exists in Scott River National Park).

Etymology. The specific epithet is derived from the Greek *isos*, equal and *morphe*, form, referring to the similar male and female spikelets.

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References

Carlquist, S. (1976). *Alexgeorgea*, a bizarre new genus of Restionaceae from Western Australia. Austral. J. Bot. 24: 281-95.

Johnson, L.A.S. and Briggs, B.G. (1990). The species of *Alexgeorgea*, a Western Australian genus of the Restionaceae. Austral. Syst. Bot. 3: 751-8.

Meney K.A. and Dixon K.W. (1988). Phenology, reproductive biology and seed development in four rush and sedge species from Western Australia. Austral. J. Bot. 36: 711-26.

Meney K.A., Pate J.S.and Dixon K.W. (1990a). Phenology of growth and resource deployment in *Alexgeorgea nitens* (Nees) Johnson and Briggs (Restionaceae) - a clonal species from south-west Western Australia. Austral. J. Bot. 38: 543-57.

Meney K.A., Pate J.S. and Dixon K.W. (1990b). Comparative morphology, anatomy, phenology and reproductive biology of *Alexgeorgea* species (Restionaceae) from south-west Western Australia. Austral. J. Bot. 38: 523-41.

Pate J.S., Meney K.A. and Dixon K.W. (1991). Contrasting growth and morphological characteristics of fire-sensitive (obligate seeder) and fire-resistant (resprouter) species of Restionaceae (S. Hemisphere restiads) from South-Western Australia. Austral. J. Bot. 39: 505-25.