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## ***Gahnia halmaturina* (Cyperaceae: Schoeneae), a new species from Kangaroo Island, South Australia**

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### **Abstract**

As a precursor to the fifth edition of the *Flora of South Australia*, *Gahnia halmaturina* R.L.Barrett & K.L.Wilson is described as a new species from Kangaroo Island. This species was previously known by the phrase name *Gahnia sp. West Bay* (B.M.Overton 2685) R.L.Taplin. A revised key to South Australian species of *Gahnia* is provided.

**Keywords:** Cyperaceae, Schoeneae, *Gahnia*, South Australia, Kangaroo Island, taxonomy.

### **Introduction**

Systematic studies in Cyperaceae, tribe Schoeneae, have shown that there are a number of undescribed taxa in many of the Australian genera. A potentially new species on Kangaroo Island was first collected in 1998 by Bev Overton and was unknown when the previous edition of the *Flora of South Australia* (Jessop & Weber 1986) was published. Rosemary Taplin gave it the informal name *Gahnia sp. West Bay* (B.M.Overton 2685) R.L.Taplin in the South Australian Herbarium (Barker et al. 2005). Study of herbarium material of this taxon and comparison with collections of all other named Australian species of *Gahnia* J.R.Forst. & G.Forst. have confirmed that it represents a novel species. Molecular data have confirmed the relationships of this taxon (Barrett et al., unpubl.). The description is based on herbarium material.

### ***Gahnia halmaturina* R.L.Barrett & K.L.Wilson, *sp. nov.***

*Gahniae hystrii* J.M.Black similis, sed habitu altiore, inflorescentia non contracta, foliis longioribus flexuosisque non pungentibus, antheris quattuor, differt. *Gahniae microstachyae* (R.Br.) Benth. similis, sed foliis non applanatis, spiculis grandioribus pallidisque distinguitur. Ab ambobus speciebus foliis culmisque papillatis distinguitur.

**Typus:** South Australia: Kangaroo Island: Flinders Chase National Park, West Bay Creek S Tributary, 2.3 km E of West Bay, N side of West Bay track, 35°53'20"S, 136°37'50"E, 12 Apr. 1999, B.M. Overton 2744 (holo.: AD 99920049; iso.: NSW).

*Gahnia sp. West Bay* (B.M.Overton 2685) R.L.Taplin in W.R. Barker et al., J. Adelaide Bot. Gard. Suppl. 1: 189 (2005).

*Tufted perennial* with short, compact rhizomes. *Culms* and *leaves* spirodistichous; leaf to culm length ratio 0.6–0.9:1. *Leaves* flexuose, erect to spreading, margins tightly inrolled when dried, sometimes appearing terete with a groove on one side, finely striate, dull green (pale to cream at base), not glaucous, covered in very fine papillae, silica bodies prominent on upper surface, 23–70 cm long, 0.7–1.8 mm wide (when dried and margins inrolled), 0.2–0.5 mm thick (when flat); margins very finely scabrous due to papillae; sheath 3.5–10 cm long, pinkish brown to dark chocolate-brown, finely striate and covered in very fine papillae; *ligule* a pale band of tissue, glabrous, c. 0.5 mm high. *Culms* terete, often paler than leaves, otherwise as for leaves, 14–65 cm tall, 0.7–1.7 mm diam. *Inflorescence* ± linear in outline, 7–16 cm long, 7–20 mm wide, with several lateral branches, 1 lateral branch per node; basal lateral branch 18–95 mm long (note majority of peduncle is hidden by sheath of involucral bract) with 9–19 spikelets; primary involucral bract 20–31 cm long, leaf-like. *Spikelets* 3.6–4.4 mm long, the upper flower bisexual, the lower flower functionally male; *glumes* c. 10, pale to dark brown, darkest at the keel, glabrous, apex obtuse, mucronate; lowest 6 glumes sterile; fertile upper glumes 2.5–3.1 mm long, c. 1.1 mm wide (when incurved). *Stamens* 4; anthers 1.3–1.7 mm long, 0.3–0.5 mm wide, apical appendage 0.2–0.3 mm long; filaments

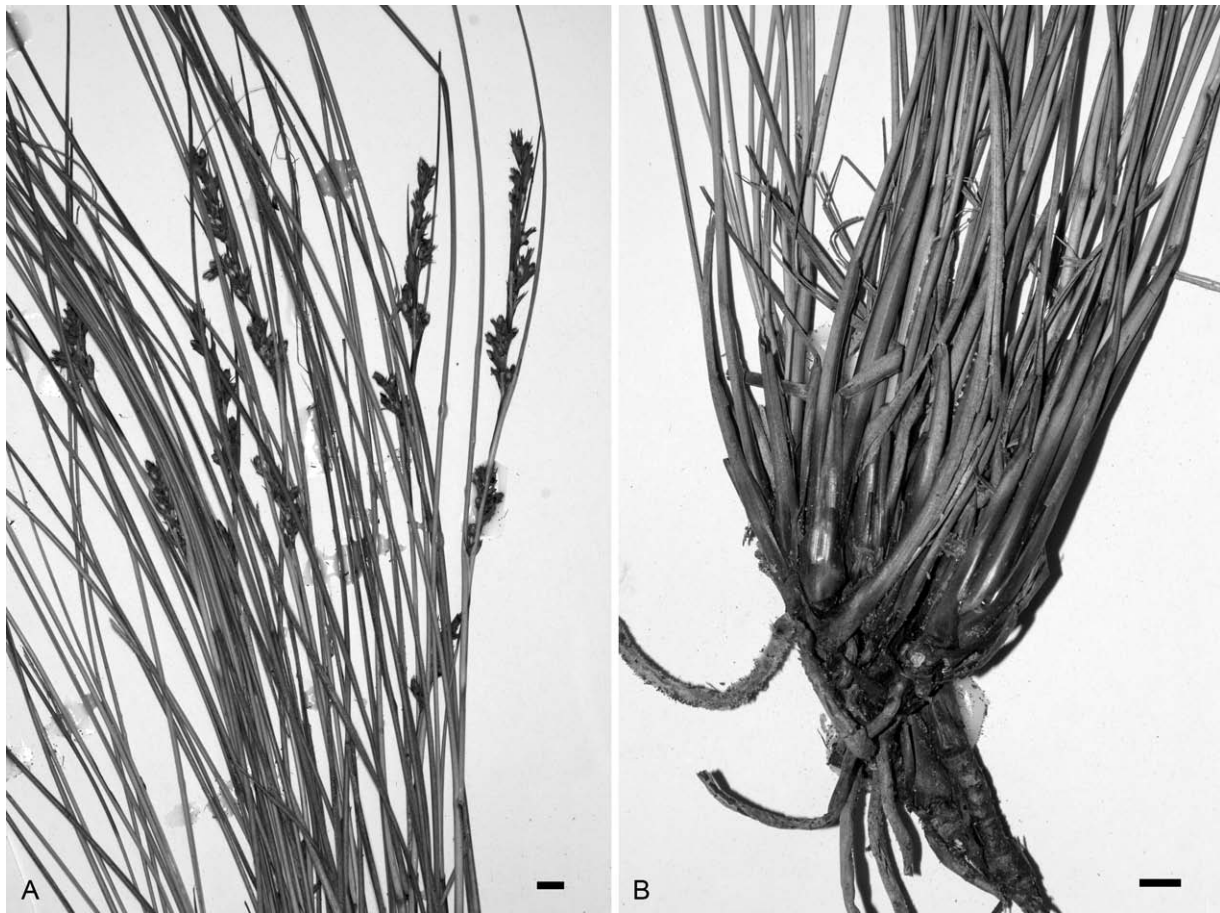


Fig. 1. *Gahnia halmaturina*: A inflorescences; B culm bases. Scale bar: 1 cm. B.M. Overton 2744.

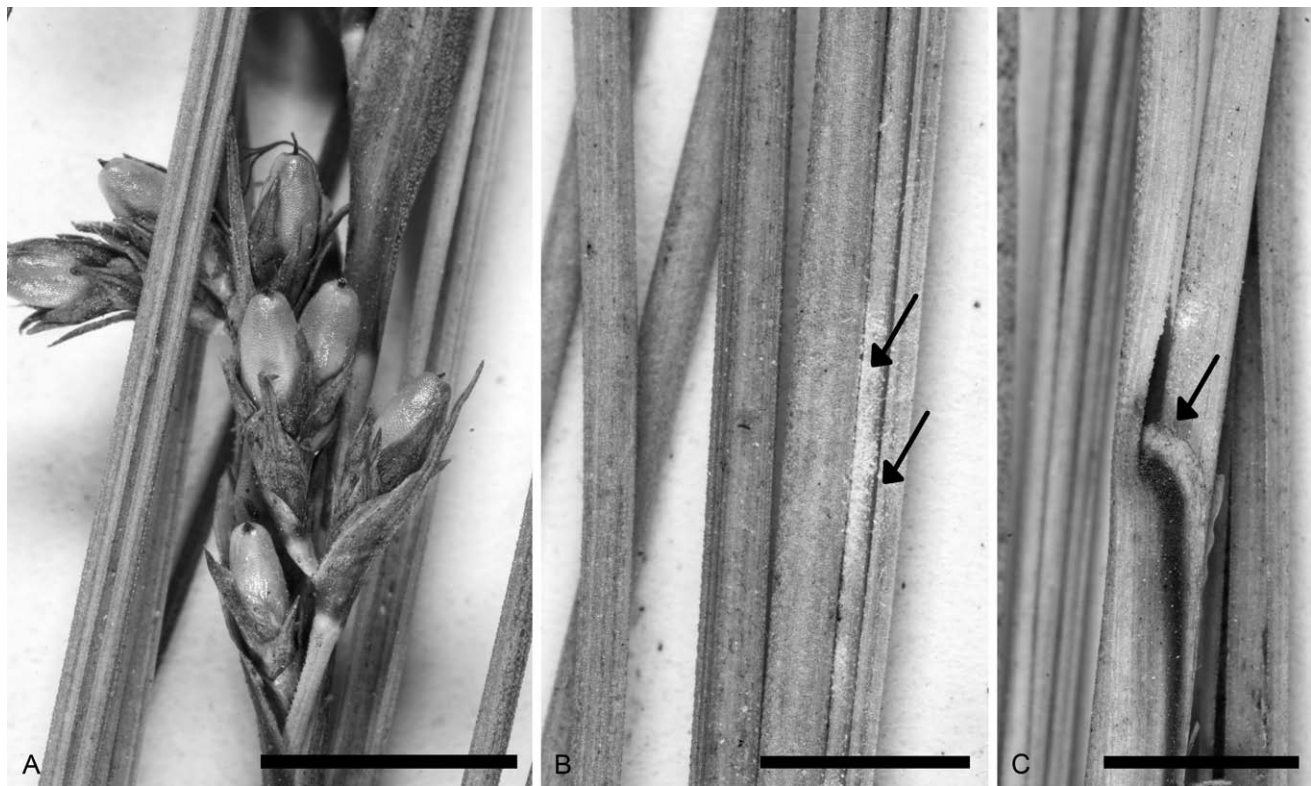


Fig. 2. *Gahnia halmaturina*: A spikelets; B leaf margins (arrows); C leaf ligule (arrow). Scale bar: 5 mm. B.M. Overton 2744.

3.0–3.7 mm long at maturity. *Style* 3-fid (occasionally 1 of these further branched dichotomously, producing a 4-fid style), undivided portion c. 1.9 mm long, branches 1.6–2.2 mm long. *Nut* not held by the staminal filaments at maturity, cream to pale brown, smooth, narrowly ovate in outline, tapering towards the base, terete in cross-section to obscurely 3-angled, 3.0–3.3 mm long, 1.05–1.18 mm wide; epidermal cells narrowly oblong to subhexagonal or almost linear in outline. **Figs 1, 2, 3.**

*Distribution and habitat.* Endemic to Kangaroo Island, apparently restricted to the vicinity of West Bay in Flinders Chase National Park. This species is only known from the margins of freshwater creeks, growing on rocky areas along the banks and floodplains.

*Phenology.* Flowering recorded for April–May. Fruit collected in April, May and August.

*Conservation status.* Listed as ‘Rare’ (under its phrase name synonym) in Schedule 9 of National Parks and Wildlife 1972, 2008 Amendment (South Australia), as reflected in Barker et al. (2005). Based on collection notes, at least 1,200 individuals are known from several subpopulations over a distance of about 1.5 km. Given the limited distribution, the current listing is considered to be appropriate.

*Etymology.* Derived from *Halmaturus*, a generic name once applied to kangaroos (Smith 1870), ultimately derived from the Greek *halme*, a leap or bound, and commonly used as an epithet for species from Kangaroo Island.

*Notes.* Molecular data place this species as related to *Gahnia hystrix* J.M.Black, also endemic to Kangaroo Island, and *G. trifida* Labill. (Barrett 2012). *G. halmaturina* and *G. hystrix* are very easily distinguished by their growth habit and habitat, *G. hystrix* being a small cushion-forming plant growing on limestone, while *G. halmaturina* is a much taller, clumping plant growing on creek margins. The two are somewhat morphologically similar in having leaves exceeding the inflorescence and relatively few, large spikelets. *Gahnia trifida* is easily distinguished in the field from *G. halmaturina* by its much larger stature.

This species is superficially similar to *Gahnia microstachya* (R.Br.) Benth. from New South Wales, Victoria and Tasmania, differing from that species in the inflorescence being held below the level of the leaves, the leaves not clearly flattened and spread more evenly along the culms rather than all strongly clustered at the base, and the larger, paler spikelets. *G. microstachya* prefers dry rocky sites (Wilson 1993).

Both *Gahnia hystrix* and *G. microstachya* lack the distinctive papillae found on the leaf blades and sheaths and culms of *G. halmaturina*.

*Other specimens examined.*

SOUTH AUSTRALIA. **Kangaroo Island:** Track to Cape Borda from West Bay, 1.7 km N of gate from West Bay track (200 m upstream), 3 May 2006, *D.J. Duval 471*, *A. Quarmby & R.T. Taplin* (AD; K n.v.); Flinders Chase National Park, 2.3 km E of West Bay camping ground, 2nd West Bay creeklet, 12 Feb. 1998, *B.M. Overton 2685* (AD, PERTH); 12 Aug. 1998, *B.M. Overton 2697* (AD, PERTH); West Bay, Flinders Chase National Park, at West Bay Creek fork, almost 2 km E

**Key to *Gahnia* species in South Australia** (adapted from Jessop & Weber 1986)

- 1. Inflorescence held within plant, shorter than the leaves, small, not paniculate; spikelets 4–19
  - 2. Spikelets 9–19 in a shortly branched inflorescence; plant to 70 cm tall ..... *G. halmaturina*
  - 2: Spikelets c. 4 in a simple spike-like inflorescence; dwarf plant ..... *G. hystrix*
- 1: Inflorescence distinctly longer than the leaves (occasionally less in *G. ancistrophylla* but then leaf tips are distinctively coiled), paniculate; spikelets numerous
  - 3. Mature nut adhering to the persistent staminal filaments; culms stout, usually 1–2 m high; glumes and bracts broadish, never long-acuminate; nut 2–4 mm long, shining
    - 4. Glumes 12–17, the lowest 7–10 much shorter, all more or less obtuse, the lowermost without awns ..... *G. clarkei*
    - 4: Glumes 5–10, of similar length, mostly acute, the lowermost long-mucronate ..... *G. sieberiana*
  - 3: Mature nut never held by the staminal filaments; culms slender, usually 15–100 cm high; at least the outer bracts long-acuminate; nut c. 2 mm long or less, often dull or greyish
    - 5. Spikelets 1-flowered, densely clustered
      - 6. Lower leaf-like bracts of inflorescence smooth or minutely scabrid, conspicuously reddish-purple below; nut c. 5 mm long, more or less linear to very narrow-ovate in outline, triquetrous in cross-section, pale yellow-brown to very dark brown ..... *G. filum*
      - 6: Lower leaf-like bracts of inflorescence coarsely scabrid, green or slightly yellow-tinted below; nut 2–2.5 mm long, narrow-obovate to narrow-elliptical in outline, trigonous in cross-section, grey to black .. *G. trifida*
    - 5: Spikelets 2-flowered, more or less loosely arranged
      - 7. Ligule a dark brown chartaceous band to 2 mm wide; panicle broadly oblong with branches somewhat spreading or even recurved ..... *G. radula*
      - 7: Ligule ciliate to woolly with hairs 2–4 mm long; panicle linear or linear-lanceolate with branches stiffly erect
        - 8. Leaves very scabrous at least on the margins in the upper half ..... *G. deusta*
        - 8: Leaves smooth
          - 9. Leaves with curved or coiled filiform tips; leaf sheaths dull ..... *G. ancistrophylla*
          - 9: Leaves with straight tips; basal leaf sheaths shining at least in part ..... *G. lanigera*

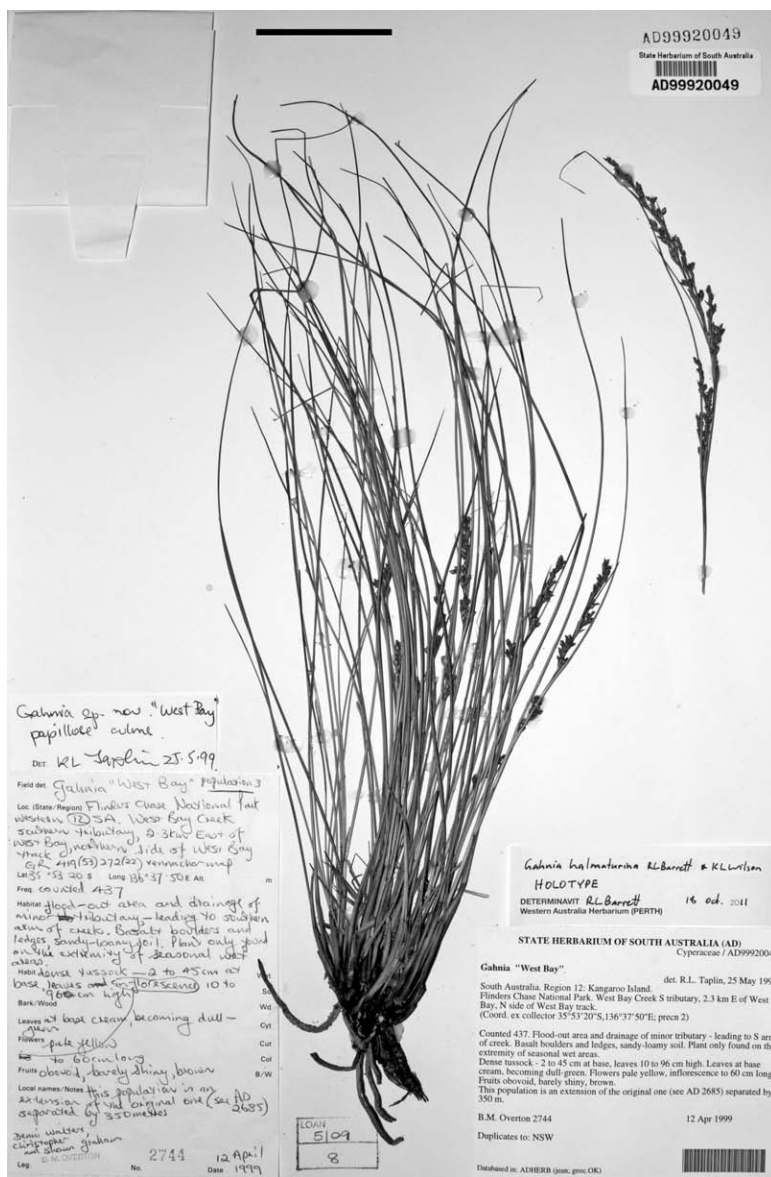


Fig. 3. Holotype of *Gahnia halmaturina* (AD), B.M. Overton 2744. Scale bar: 5 cm.

of west coast, 11 Apr. 1999, B.M. Overton 2743, D. Walters, C. Graham & S. Graham (AD); Flinders Chase National Park, West Bay Creek, upper portion of S tributary, 400 m E of gate to old Cape Borda track, 12 Apr. 1999, B.M. Overton 2745, D. Walters, C. Graham & S. Graham (AD, NSW); Flinders Chase National Park, West Bay Creek, N tributary, 1.7 km N of West Bay track on old Cape Borda track, 12 Apr. 1999, B.M. Overton 2746, D. Walters, C. Graham & S. Graham (AD); Southern tributary of West Bay creek, 2.3 km E of West Bay camp ground northern side of West Bay track, Flinders Chase National Park, 12 Apr. 1999, B.M. Overton BM 2749, D. Walters, C. Graham, S. Graham (AD, PERTH: 2 sheets).

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**References**

Barker, W.R., Barker, R.M., Jessop, J.P. & Vonow, H.P. (eds.) (2005). *Census of South Australian vascular plants: edition 5.00*. Botanic Gardens of Adelaide & State Herbarium: Adelaide. [Journal of the Adelaide Botanic Gardens Supplement 1.]  
 Barrett, R.L. (2012). Systematic studies in Cyperaceae tribe Schoeneae: *Lepidosperma* and allied genera. PhD thesis, The University of Western Australia.  
 Jessop, J.P. & Weber, J.Z. (1986). Cyperaceae. In: Jessop, J.P. & Toelken, H.R. (eds), *Flora of South Australia* 4: 2001–2053. (South Australian Government Printing Division: Adelaide.)  
 Smith, W. (1870). *Dr Smith's smaller English-Latin dictionary*. (John Murray: London).  
 Wilson, K.L. 1993. Cyperaceae. In: Harden, G.J. (ed.), *Flora of New South Wales* 4: 293–396. (University of New South Wales Press: Kensington.).