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SPECIES PLANTARUM

FLORA OF THE WORLD

Part 5. PRIONIACEAE

by Sioban L. Munro, Jan Kirschner & H. Peter Linder



Department of the Environment and Heritage

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INTRODUCTION

Species Plantarum aims to provide in concise format, and with standardised data fields, basic taxonomic information on the vascular plants of the world, including accepted names and synonyms with bibliographic data, types of names, keys and descriptions from family to varietal levels, geographical distributions, ecological information and other related matters, and to publish it in both hard copy and electronic form.

The format of the *Species Plantarum* is based on that of *Flora of Australia*, with some departures made necessary by the different scale of the project. Initially at least, the series is being edited and published for the Species Plantarum Project and IOPI by the Australian Biological Resources Study (ABRS), producers of *Flora of Australia*.

Treatments are contributed on a voluntary basis. Each part of *Species Plantarum* is intended to provide a complete account of a family, subfamily, large genus or other related taxonomic group. While treatments of small families may be shorter, it is intended that contributions will, in general, cover at least 50 to 100 species. The taxonomy adopted is that of the author, although the family delimitations recommended are initially those of R.K.Brummitt, *Vascular Plant Families and Genera* (1992). The order of taxa within families, genera and species in the *Species Plantarum* is intended to reflect natural relationships, so far as this is possible in a linear sequence.

Maps are provided for each species, or in those cases where infraspecific taxa are recognised, for each of the terminal taxa. Distribution maps are based on those in S.Hollis & R.K.Brummitt, *World Geographical Scheme for Recording Plant Distributions* (1992), and the 'countries' adopted are those of Level 3 and 4 of that work. Description of distribution follows the same work, with a two-digit code for regions and a three-letter code for the 'country'. Upper case letters for the 'country' indicate native distribution; lower case letters indicate that the taxon is only present in that 'country' as an introduced and naturalised plant. If a taxon is extinct in a 'country', this is indicated by a dagger. Distribution of species as cultivated plants is not included.

Misapplied and invalid names are, in general, omitted. Journal titles are abbreviated according to G.D.R.Bridson & E.R.Smith, *Botanico-Periodicum-Huntianum / Supplementum* (1991). Book titles are abbreviated according to F.A.Stafleu & R.S.Cowan, *Taxonomic Literature* (2nd edn) Vols 1–7, and *Supplements* (1976–), except that upper case initial letters are used for proper names and significant words. Authors of plant names are abbreviated according to R.K.Brummitt & C.E.Powell, *Authors of Plant Names* (1992).

A separate part, *Introduction to the Series*, provides a history of the project, a glossary, guide for contributors and key to the conventions used in describing distribution. These resources will also be available on the World Wide Web, initially through the ABRS site (currently <http://www.anbg.gov.au/abrs/flora/spplant/spplant.htm>) with links from the IOPI site (currently <http://life.csu.edu.au/iopi/iopihome>) and others.

Editor

Canberra, 2001

PRIONIACEAE

S.L. Munro¹, J. Kirschner² & H.P. Linder¹

Prioniaceae S.L.Munro & H.P.Linder, *Syst. Bot.* 23: 51 (1998)

Type: *Prionium* E.Mey.

Perennial hygrophytes; rhizome aerial, woody, suberect, later decumbent, often branched, covered with fibrous remains of old leaf bases, with adventitious roots at nodes. Leaves numerous, tristichously inserted in dense terminal rosettes; leaf sheath short, closed, later dissected; blade rigid, tough, glaucous, long acuminate, V-shaped in the middle, triangular near apex in T.S.; margins and keel with upward-pointing prickly serrulation; prickles multicellular; vascular bundles numerous, in one row, later with figure-of-eight-shaped air-canal; stomata paracytic in slight longitudinal furrows. Inflorescence a terminal, much branched panicle; branchlets bearing many flowers; lateral branchlets subtended by funnel-shaped bracts sheathing at base; bract blade reduced to scariose linear-triangular projection or \pm lanceolate. Floral bracteoles absent. Flowers hermaphrodite. Perianth glumaceous; tepals 6, free, \pm equal, \pm coriaceous, to 4 mm long. Stamens 6; anthers basifixed, tetrasporangiate, dehiscence lateral; filaments glabrous; microsporogenesis simultaneous; pollen in tetrads, trinucleate. Ovary superior, trilocular, \pm ovoid. Ovules numerous, bitegmic, crassinucellate, anatropous; embryo sac of *Polygonum*-type; placentation axile; endosperm helobial. Style absent; stigmas three, papillose. Capsule \pm obovoid, loculicidal, many-seeded. Embryo of the Onagrad type with *Juncus* variation. Seeds minute; seed coat developed from both integuments; outer seed coat loose; appendages absent.

The family contains a single species, *Prionium serratum*, limited in its distribution to the South Western Cape, NE Eastern Cape (Pondoland) and southern Kwazulu-Natal, South Africa. Restricted to streams and river margins on oligotrophic soils.

Prionium was previously included in the Juncaceae from the earliest authors to Buchenau (1875, 1888, 1890), Cutler (1969) and Simpson (1995). It was also suggested to have affinities to Restionaceae (De Laharpe, 1825) and Thurniaceae (Chase *et al.*, 2000). Cutler (1965) was the first to suggest that the strange leaf anatomy of *Prionium* warranted its removal from the Juncaceae. Plunkett *et al.* (1996) presented a phylogeny of the Cyperales based on *rbcL* sequence data in which the *Juncaceae* including *Prionium* were paraphyletic, the Cyperaceae falling between that genus and the rest of the Juncaceae. *Prionium* has a bizarre growth form relative to the Juncaceae, a peculiar leaf anatomy, the presence of flavone c-glycosides in its tissues (Williams & Harborne, 1975) and carpels fused in the ovary region only (i.e. style lacking). These features, in addition to the basal position of *Prionium* in Juncales, led Munro & Linder (1998) to remove *Prionium* from Juncaceae and to recognise a new family, Prioniaceae.

F.Buchenau, Monographie der Juncaceen vom Cap, *Abh. Naturwiss. Vereine Bremen* 4: 393–512 (1875); F.Buchenau, Juncaceae in A.Engler & K.Prantl, *Nat. Pflanzenfam.* 2(5): 1–7 (1888); F.Buchenau, Monographia Juncacearum. *Bot. Jahrb. Syst.* 12: 1–495 (1890); F.Buchenau, Ueber den Aufbau des Palmiet-Schilfes (*Prionium serratum* Drège) aus dem Caplande. Eine morphologisch - anatomische studie, *Biblioth. Bot.* 27: 1–26 (1893); D.F.Cutler, Juncales, in C.R.Metcalf, *Anatomy of the Monocotyledons* IV: 65–69 (1969); C.A.Williams & J.B.Harborne, Luteolin and daphnetin derivatives in the Juncaceae and their systematic significance, *Biochem. Syst. & Ecol.* 3: 181–190 (1975); G.M.Plunkett, D.E.Soltis, P.S.Soltis & R.E.Brooks, Phylogenetic relationships between the Juncaceae and Cyperaceae: insights from *rbcL* sequence data, *Amer. J. Bot.* 82: 520–525 (1995); D.Simpson, Relationships within Juncales in P.J.Rudall, P.J.Cribb, D.F.Cutler & C.J.Humphries (eds.), *Monocotyledons: Systematics and Evolution*, 497–509 (1995);

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S.L.Munro & H.P.Linder, The embryology and systematic relationships of *Prionium serratum* (Juncaceae: Juncales), *Amer. J. Bot.* 84: 850–860 (1997); S.L.Munro & H.P.Linder, The phylogenetic position of *Prionium* (Juncaceae) within the order Juncales based on morphological and *rbcL* sequence data. *Syst. Bot.* 23: 43–55 (1998); M.W.Chase, D.E.Soltis, P.S.Soltis, P.J.Rudall, M.F.Fay, W.H.Hahn, S.Sullivan, J.Joseph, M.Molvray, P.J.Kores, T.J.Givnish, K.J.Sytsma & J.C.Pires, Higher-level systematics of the monocotyledons: an assessment of current knowledge and a new classification, in K.L.Wilson & D.A.Morrison (eds), *Monocots Systematics and Evolution*, 3–16 (2000).

PRIONIUM

Prionium E. Mey., *Linnaea* 7: 130 (1832)

Type: *Prionium palmita* (Licht.) E. Mey.

Juncus subg. *Prionoschoenus* Rchb., *Consp. Regn. Veg.* 1: 63 (1828), *nom. inval.*

Prionoschoenus Kuntze, in T.Post & C.E.O.Kuntze, *Lex. Gen. Phan.* 460 (1903) *nom. superfl. illeg.*

T: *Prionoschoenus serratus* (L.f.) Kuntze.

A monotypic genus, confined to South Africa.

***Prionium serratum* (L.f.) Drège ex E. Mey., in J.F.Drège, *Zwei Pflanzengeogr. Dokum.* 10 (1843)**

Juncus serratus L.f., *Suppl. Pl.* 208 (1781); *Prionoschoenus serratus* (L.f.) Kuntze, in T.Post & C.E.O.Kuntze, *Lex. Gen. Phan.* 460 (1903). T: [South Africa], Cape, [C.P.]Thunberg, lecto: LINN 449.50, *fide* A.A.Obermeyer, *Fl. S. Afr.* 4/2: 71 (1985) as ‘holo’; iso: UPS.

Acorus palmita Licht., *Reisen Suedl. Afr.* 2: 258, 1812; *Prionium palmita* (Licht.) E. Mey., *Linnaea* 7: 131 (1832). T: [South Africa], Cape, Table Mountain, [C.F.]Ecklon; neo: S, *fide* S.L.Munro, J.Kirschner & H.P.Linder, *Sp. Plantarum* 5: 3 (2001).

Illustrations: F.Buchenau, *Bot. Jahrb. Syst.* 12: 72 (1890); F.Buchenau, *Bibl. Bot.* 27: 2 (1893); A.A.Obermeyer, in A.A.Obermeyer, J.Lewis & R.B.Faden, *Fl. S. Afr.* 4/2: 72 (1985).

Maps: H.Weimarck, *Svensk Bot. Tidskr.* 40: 173 (1946); A.A.Obermeyer, in A.A.Obermeyer, J.Lewis & R.B.Faden, *Fl. S. Afr.* 4/2: 73 (1985).

Glabrous perennials to 3 m, forming thickets across rivers. Woody rhizomes 2–6 (–8) cm in diam., erect, later decumbent, branching basally or (in older plants) also distally, covered with old persistent blackish fibrous net-like remains of leaf bases. Roots stout, to c. 4–5 mm in diam., containing much aerenchyma. Leaf: sheath short with margins membranous, abruptly narrowing in the blade; blade rigid, glaucous, to c. 80 (–100) cm long, c. 0.7–2.0 cm wide, gradually narrowing to subobtuse tip; margins and keel prickly, upwardly serrulate. Inflorescence an erect terminal much branched panicle to 0.5 m in height, ±narrowly ovoid in outline; flowering branchlets 6–8 cm long, subtended by funnel-shaped ±entire bracts with open blade to one side; bracts larger towards the base of the branch and present at nodes of stem; bract sheath base noduliform, with sheath constituting up to one third of total bract length. Flowers solitary or in c. 2 or 3-flowered loose clusters; peduncles c. 0.5–1.0 mm. Tepals ±equal, glabrous, ±ovate, 2.9–3.8 (–4.0) mm long, c. 1.1–1.4 mm wide, straw-brown to light brown, ±coriaceous; outer tepals keeled, slightly cucullate near apex and apiculate; inner tepals ±flat to slightly cucullate near apex; margins very narrow, distally ±broader, ±membranous, not distinct. Stamens 6, ±equalling perianth at the beginning of anthesis, later exerted up to 1–1.5 mm; anthers (0.9–) 1.0–1.3 mm long; filaments elongating, 1–2 (–2.5) mm long; stigmas sessile, thick, 0.3–0.5 mm long. Capsule ±obovoid to subglobose, ±obtuse, shorter or slightly shorter than perianth, pale brown to brown; capsule segments c. 1.7–2.2 mm long, c. 1.5 mm wide; mucro to 0.1 mm long. Seeds obliquely oblong-ovoid, c. 0.8–1.0 mm long, 0.25–0.30 mm wide, slightly curved on one side; outer seed coat loose, cell outlines clearly visible on surface; appendages absent. Chromosome number unknown (numerous, very small chromosomes). Fig. 1 and cover.

PRIONIACEAE (*Pronium*)

Endemic in South Africa (Cape Provinces and Kwazulu Natal), extending from Gifberg in the South Western Cape to Port Edward in Southern Kwazulu-Natal. 27: CPP, NAT. *Pronium serratum* forms dense, monospecific stands, usually in the beds of streams and rivers. The clumps of rhizomes trap soil and detritus, thereby building up river beds, ameliorating flooding events, and filtering water. Map 1.

27. CAPE PROVINCES: Kogelberg St. Forest, Palmiet R, *F.J.Kruger 143* (NBG); Fransch Hoek Mtns, 11 Dec. 1934, *Hafström* (S); below the top of Franschoek Pass, *J.P.H.Acocks 3852* (S); Camps Bay, near Blinkwater Stream, *O.Albörn 360* (LD); Berg River near Paarl, *J.F.Drège a* (K); Duivenhoks River, *H.P.Linder 5891* (BOL); Klein Bosch River, Tsitsikamma district, *H.G.Fourcade 366* (BOL); Cape, Albany, Howieson's Port, *Cheadle 736* (K); Eastern Cape, Stormsrivier, 830 m, 15 xi 1894, *F.R.R.Schlechter 5987* (PRC). KWAZULU-NATAL: St Michaels-on-Sea, *R.G.Strey 8288* (K); Port Edward, *R.G.Strey 7764* (K).

APPENDIX

Pronium palmita (Licht.) E. Mey., *Linnaea* 7: 131 (1832).

T: [South Africa], Cape, Table Mountain, [*C.F.]Ecklon*; neo: S, here nominated.

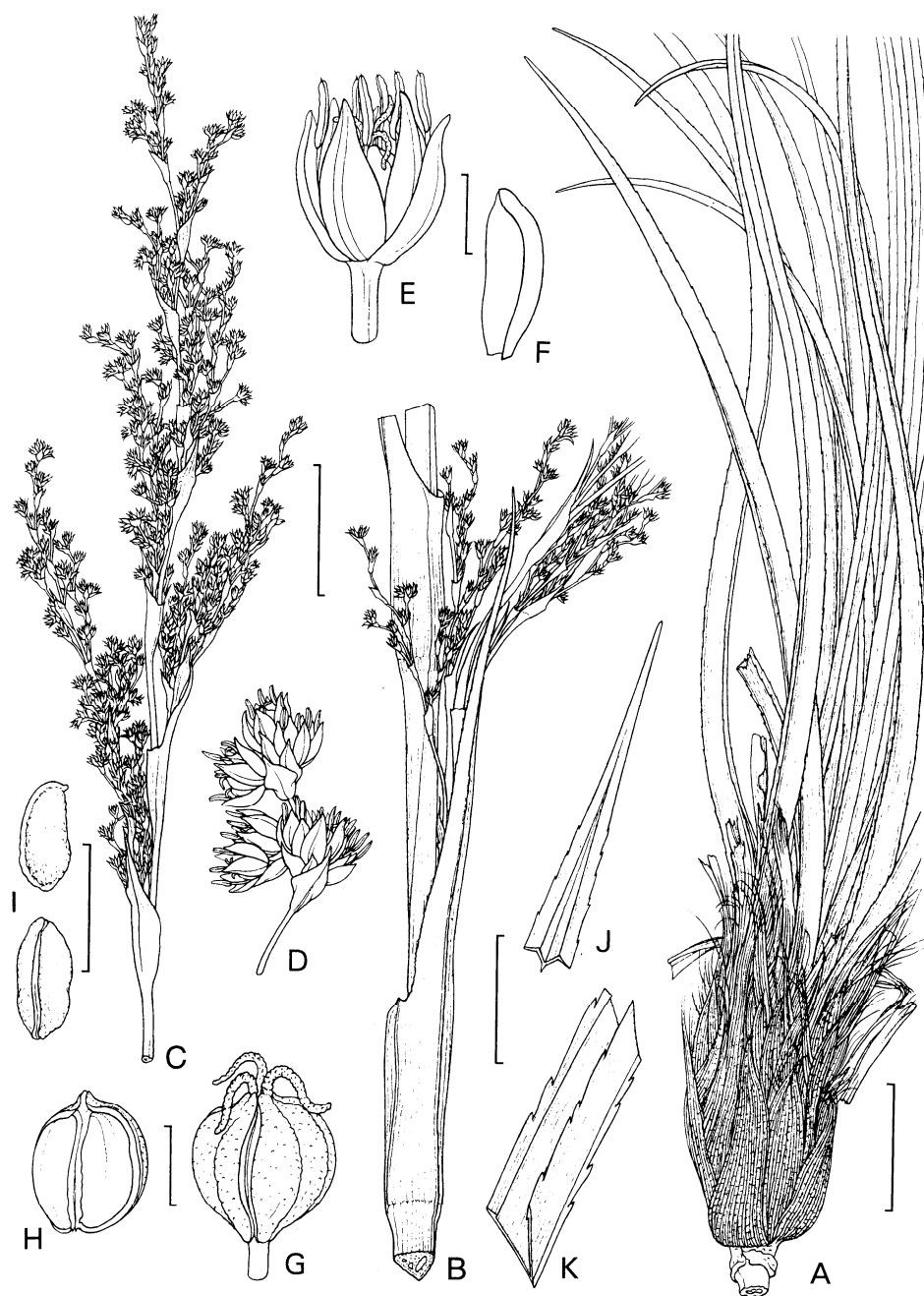


Figure 1. *Prionium serratum*. **A**, base of leaf rosette (young plant; in older specimens rootstock much stouter); **B**, lower part of inflorescence with sheathing bract; **C**, branch of inflorescence; **D**, terminal flower clusters; **E**, flower; **F**, exterior tepal; **G**, gynoecium; **H**, capsule segment with a septum; **I**, seeds; **J**, leaf apex; **K**, a section of the middle part of leaf (A–K, *J.P.H.Acocks 3852*, S). Scale bars: **A** = 12 mm; **B**, **C**, **J**, **K** = 30 mm; **E**–**H** = 2 mm; **I** = 1 mm. Drawn by Ms E. Smrčinová.

PRIONIACEAE (*Pronium*)

MAPS

Number in brackets refers to page on which the taxon is described.



1. *Prionium serratum* (2)

PRIONIACEAE

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