

# GIGASPERMACEAE

*Ilma G. Stone*†

**Gigaspermaceae** Lindb., *Öfvers. Förh. Kongl. Svenska Vetensk.-Akad.* 21: 592 (1865)

Type: *Gigaspermum* Lindb.

Plants small, with a pale fleshy branched subterranean rhizome. Primary stem without a central strand, leafless except for minute scales at the apices, producing sterile erect club-shaped male and female leafy aerial shoots. Rhizoids numerous, colourless. Aerial shoots often comose. Leaves cochleariform; margin entire to minutely serrulate; costa absent or (not in Australia) present; laminal cells large, smooth, lax, thin-walled.

Calyptra minute, fleeting. Capsules erect, immersed or (not in Australia) exserted, globose to urn-shaped; operculum present or (not in Australia) absent, gymnostomous. Exothecial cells lax, thin-walled; stomata large at base of theca; guard cells 1 (not in Australia) or 2. Spores large.

A family of six small genera only one of which, *Gigaspermum*, occurs in Australia; also in the Mediterranean area, southern Africa, Madagascar, Central America (Mexico) and New Zealand. Formerly sometimes included in the Funariaceae.

## References

- Brotherus, V.F. (1924), Gigaspermaceae, *Nat. Pflanzenfam.*, 2nd edn, 10: 314–316 (1924).
- Fife, A.J. (1980), The affinities of *Costesia* and *Neosharpiella* and notes on the Gigaspermaceae (Musci), *Bryologist* 83: 466–476.
- Magill, R.E. (1987), Gigaspermaceae, *Fl. Southern Africa: Bryophyta* 1(2): 299–303.

## GIGASPERMUM

*Gigaspermum* Lindb., *Öfvers. Förh. Kongl. Svenska Vetensk.-Akad.* 21: 599 (1865); from the Greek *gigas* (giant) and *spermus* (-seeded), in reference to the very large spores.

Type: *G. repens* (Hook.) Müll.Hal.

Monoicous. Plants with an extensive perennial rhizome with erect shoots that often branch verticillately. Shoots numerous, short, forming low compact silvery turfs on soil. Leaves distant to overlapping, delicate, pale green or white, erecto-patent when dry, patent when moist, weakly or strongly cuspidate, often recurved; ecostate.

Perichaetial leaves broadly ovate, upper ones much larger, white and papery at maturity; apex variable, narrowly acuminate, usually tapering to a long flexuose often recurved hairpoint; margin entire to denticulate above. Calyptra minutely mitrate. Setae rudimentary. Capsules immersed, urceolate; operculum a flattened dome with a minute apiculus. Spores angular.

A genus of two or three species, one of which occurs in Australia.

## References

- Scott, G.A.M. & Stone, I.G. (1976), *The Mosses of Southern Australia* 250–252.

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Cite as: I.G.Stone, *Australian Mosses Online*. 37. *Gigaspermaceae*.  
[http://www.anbg.gov.au/abrs/Mosses\\_online/Gigaspermaceae.pdf](http://www.anbg.gov.au/abrs/Mosses_online/Gigaspermaceae.pdf) (2012)

Herrnstadt, I., Heyn, C.C. & Crosby, M.R. (1980), New data on the moss genus *Gigaspermum*, *Bryologist* 83: 537–541.

Catcheside, D.G. (1980), *Mosses of South Australia* 217–218.

Delgadillo, C. & Cardenas, A. (1991), Notes on ephemeral mosses from Mexico, including *Bruchia paricutinensis* sp. nov., *Bryologist* 94: 294–297.

***Gigaspermum repens* (Hook.) Lindb., Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 21: 599 (1865)**

*Anictangium repens* Hook., *Musc. Exot.* 2: 8, pl. 106 (1819); *Anoetangium repens* (Hook.) Steud., *Nomencl. Bot.* 2: 58 (1824); *Schistidium repens* (Hook.) Brid., *Bryol. Univ.* 1: 120 (1826); *Physcomitrium repens* (Hook.) Müll.Hal., *Syn. Musc. Frond.* 2: 544 (1851); *Hedwigia repens* (Hook.) Wilson, in J.D.Hooker, *Fl. Nov.-Zel.* 2: 92 ('1855') [1854]; *Leptangium repens* (Hook.) Mitt., *J. Linn. Soc., Bot.* 4: 79 (1860). T: [W.A.] 1791, *A.Menzies*; holo: BM.

*Gigaspermum subrepens* Müll.Hal., *Genera Musc. Frond.* 130 (1900). T: Swan R., W.A., 1839–40, *L.Preiss*; B n.v. (probably destroyed).

Illustrations: G.A.M.Scott & I.G.Stone, *The Mosses of Southern Australia* 251, pl. 47 (1976); I.Herrnstadt, C.C.Heyn & M.R.Crosby, *Bryologist* 83: 539, fig. 2; 540, fig. 4 (1980); R.E.Magill, *Fl. Southern Africa: Bryophyta* 1(1): 295, fig. 84 (1981).

Autoicous. Vegetative shoots 1–5 mm long. Leaves often oblate, c. 0.5 mm long; laminal cells subquadrate, short-rectangular or rhomboidal, 20–25 µm wide. Male and female shoots numerous, to 20 or more, 1–3 mm tall, either formed simultaneously or the more slender male shoots first, followed and overtopped by the female shoots which can be lateral or form within a perigonium.

Perigonial leaves to 1 mm long, reflexed, hairpointed; antheridia terminal, with filamentous paraphyses. Perichaetial leaves 2–5 mm long at maturity; laminal cells rectangular to rhomboidal, 70–130 × 20–25 µm. Capsules c. 1 mm wide, wide-mouthed after the loss of the operculum. Spores 100–150 µm, coarsely granulose, brown.

Occurs in all Australian States and mainland Territories, but most common in inland, semi-arid areas on bare earth, red sandy loam, river silts and lateritic outcrops; also in higher rainfall areas on rocky limestone outcrops and rocky basaltic soils, from sea level to c. 1000 m. Also recorded from southern Africa, Madagascar, Mexico and New Zealand.

W.A.: 54 km S of Nanutarra, *I.G.Stone* 23507 (MEL). N.T.: Wallaby Gorge area, George Gill Ra., *A.C.Beaglehole* (MEL). S.A.: Koonalda, *I.G.Stone* 6950 (MEL). Qld: Millstream Falls, Ravenshoe, *I.G.Stone* 8628 (MEL). N.S.W.: Tibooburra, *I.G.Stone* 5260 (MEL). Vic.: Boundary Bend, *I.G.Stone* 1374 (MEL). Tas.: Rocky Tom, *K.Felton* (HO).

Plants growing in mallee areas can colonise square metres of undisturbed, bare ground with a low, dense silvery turf, surviving by perennial, oil-filled, rhizomatous underground stems and producing capsules in favourable seasons. On limestone ledges with higher rainfall, the aerial shoots are taller (to 10 mm), not as compact, and with distant lower leaves. The points on the leaves are extremely variable, and the appearance of the plant itself varies depending on the stage of development of the perichaetial leaves, a feature that is also influenced by climatic conditions. Once common on undisturbed roadsides, but now greatly reduced by weed cover and the use of fertilizers.

*Gigaspermum subrepens* was characterised by having more pointed leaves (Scott & Stone, 1976), while *G. mouretii* Corb., from the Mediterranean region, apparently differs only in having paroicous sexuality. It is doubtfully distinct from *G. repens*.

### Excluded Name

*Gigaspermum tumidum* (Mitt.) Lindb. ex Paris, *Index Bryol.* 511 (1896)

*Leptangium tumidum* Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 66 (1882). T: Tas., W.Archer s.n.; holo: NY n.v., fide I.Herrnstadt et al., op. cit. 536 (1980).

This is conspecific with *Pleurophascum grandiglobum* Lindb. (Pleurophascaceae).