14. GIGASPERMACEAE Lindberg

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Plants minute, with upright branches arising from pale, fleshy, subterranean, aphyllous stems. **Leaves** crowded distally, broadly concave, ovate, elliptic to obovate costa single or absent; cell walls of lamina often thickened at corners. **Sexual condition** paroicous [synoicous, or occasionally dioicous]. **Seta** short to moderately elongate. **Capsule** globose or hemispheric, commonly spongy or wrinkled, immersed or exserted, gymnostomous or cleistocarpous. **Calyptra** very small, conic [mitrate], fugacious.

Genera 6, species 9 (1 in the flora): s United States, usually Southern Hemisphere.

The major defining feature of Gigaspermaceae is the fleshy, underground stem from which short gametophore branches are produced in abundance. Sporophyte features differentiate the six, mostly monotypic genera, *Chamaebryum* Thériot & Dixon in South Africa, *Costesia* Thériot in South America, *Gigaspermum* Lindberg in Mexico, South Africa, Australia, and Pacific Islands (New Zealand), *Lorentziella* in southern United States and South America, *Neosharpiella* H. Robinson & Delgadillo in Mexico and South America, and *Oedipodiella* Dixon in South Africa.

SELECTED REFERENCE Fife, A. J. 1980. The affinities of *Costesia* and *Neosharpiella* and notes on the Gigaspermaceae (Musci). Bryologist 83: 466–476.

1. LORENTZIELLA Müller Hal., Linnaea 42: 229. 1879 • [For Paul Günter Lorentz, 1835–1881, German bryologist]

Leaves imbricate distally, concave, broadly ovate to elliptic, abruptly narrowed to a long awn; costa narrow, extending to base of awn. **Capsule** immersed to slightly emergent, base truncate, operculum not differentiated.

Species 1 or 2 (1 in the flora): United States, s South America.

Lorentziella is a genus of minute, ephemeral mosses comprising one, or at most two, species. The perennial, subterranean stem or rhizome system gives rise to upright, above-ground plants in late fall–early winter. Above-ground plants are produced in abundance during mild, wet winters but less commonly when conditions are dry. The broadly concave leaves completely surround the globose, cleistocarpous capsules of immersed sporophytes. The glaucous, blue-

green color of the above-ground plants is reminiscent of *Bryum argenteum* while their cabbage shape resembles a small *Funaria* gametophyte prior to elongation of seta.

SELECTED REFERENCES Lawton, E. 1953. *Lorentziella*, a moss genus new to North America. Bull. Torrey Bot. Club 80: 279–288. Rushing, A. E. and J. A. Snider. 1980. Observations on sporophyte development in *Lorentziella imbricata* (Mitt.) Broth. J. Hattori Bot. Lab. 47: 35–44.

1. Lorentziella imbricata (Mitten) Brotherus in H. G. A. Engler and K. Prantl, Nat. Pflanzenfam. 216[I,3]: 511. 1903 F

Leptangium imbricatum Mitten, J. Linn. Soc., Bot. 12: 240. 1869; *Acaulon runyonii* Grout; *A. megalosporum* Grout

Plants small, bulbiform in shape with distally densely crowded leaves, light green to glaucous, in dense clusters or tufts. **Stems** above ground erect, 2–5 mm. **Leaves** 1.5–4 mm; proximal leaves less crowded, ovate with acute tips; margins entire to weakly serrate; distal laminal cells elongate, oblong-hexagonal to short-rhomboidal; proximal laminal cells quadrate to short-rectangular. **Sexual condition** paroecious with antheridia in naked clusters in axils of distal leaves. **Seta** short, less than 0.25 mm. **Capsule** immersed to slightly emergent when mature and fully expanded, pale green, cleistocarpous, globose to ellipsoidal or ovate with a truncate base, 1–1.5 mm long, 1–2 mm in diameter; stomata at base of capsule with a central opening in an imperfectly divided single, 2-nucleate guard cell. **Calyptra** narrowly conic, covering tip of capsule. **Spores** of 2 sizes: large, faintly granulose, yellow-brown, 120–160 µm, and small, densely granular, shriveled, 32–73 µm.

Capsules mature winter. Often found in loose soil at granitic outcrop margins in association with *Selaginella*; low to moderate elevations; Tex.; South America (Argentina, Paraguay, Uruguay).

Lorentziella imbricata is known from Bastrop, Brazos, Burnet, Cameron, Gillespie, Llano, and Travis counties in central Texas. It is named for the closely imbricate distal leaves. In Texas, fertilization and sporophyte growth occur in the winter months and by late spring little trace of the above-ground plants remain. Spores have been described as angular, probably due to packing and space constraints within the capsule. Stomata have been described as having a single guard cell with a central opening or two guard cells. Careful study of guard cells reveals that most are single-celled, 2-nucleate with a central opening.