

2. **Grimmia** Hedw. zi-e xian shu

Sp. Musc. Frond. 75. 1801. *Bryum* sect. *Grimmia* (Hedw.) Relhan, Fl. Cantab. (ed. 2), 2: 424. 1802.

Gasterogrimmia (Schimp.) Buyss., Feuille Jeunes Naturalistes 13: 63. 1883.

Plants small to robust, green to yellowish green above, dark green to brownish or blackish below, in dense tufts or cushions or sometimes in loose tufts. *Stems* erect, moderately branched from innovations, with or without central strand in cross section. *Leaves* imbricate, erect or somewhat contorted when dry, erect-spreading to wide-spreading when moist, ovate, ovate-lanceolate to oblong-ovate or linear-lanceolate, keeled or concave, mucicous or ending in a hyaline hair-point; leaf margins recurved, plane or slightly incurved, mostly bistratose above; costa strong, single, percurrent, subpercurrent or ending below the leaf apex, terete or flattened, smooth on abaxial surface, consisting of nearly homogeneous cells to small median or abaxial cells in transverse section; upper leaf cells small, irregularly quadrate to short-rectangular, unistratose or bistratose to 3–4-stratose, obscure, with thick, more or less sinuose walls, smooth or papillose; basal leaf cells near margins subquadrate, quadrate to rectangular, thin-walled or with transverse walls thicker than longitudinal ones; juxtacostal cells elongate, with thin or thick, straight or sinuose walls. *Autoicous* or dioicous. *Perichaetial leaves* similar to vegetative ones, but larger, loosely areolate or differentiated with membranous and pallid margins. *Setae* straight or arcuate, long or shorter than the urn, erect or twisted to left when dry; capsules erect or horizontal to pendent, immersed to long-exserted, obovate, oblong-ovate, subglobose or cylindric, smooth to ribbed; annuli well developed, consisting of quadrate to short-rectangular or rectangular cells with thick walls, sometimes wanting; exothecial cells mostly elongate-hexagonal, thin-walled; stomata at base of the urn; opercula conic or convex, without or with short or long, erect to somewhat oblique beak; columella persistent, not falling with opercula; peristome teeth 16, haplolepideous, mostly well developed, reddish brown to yellowish brown, erect, lanceolate to linear-lanceolate, entire or imperfectly perforate and split above, papillose on both the outer and inner surface, outer plates thicker than inner ones, sometimes peristome reduced or absent. *Calyptrae* small, covering only upper portion of the urn, mitrate or cucullate, smooth. *Spores* small, 7–16 μm in diameter, green to yellowish green, smooth to more or less granulose or papillose.