

1. Setae shorter than urns; capsules immersed in perichaetial leaves.....2
1. Setae longer than urns; capsules emergent or exerted above perichaetial leaves..... 5
2. Plants less than 2.0 cm high; setae curved when moist; capsules asymmetric, ventricose at base..... 3
2. Plants more than 2.0 cm high; setae straight when moist; capsules symmetric, not ventricose at base..... 4
3. Peristome absent; capsules subglobose; leaves keeled.....1. *G. anodon*
3. Peristome present; capsules ovoid; leaves concave..... 19. *G. poecilostoma*
4. Leaves lanceolate, keeled above; margins recurved; basal juxtacostal cells with sinuose, thick walls; perichaetial leaves similar to upper vegetative leaves..... 18. *G. pilifera*
4. Leaves oblong-ovate, concave; margins plane or incurved; basal juxtacostal cells with straight, thin walls; perichaetial leaves with membranous and pallid margins..... 22. *G. tergestina*
5. Capsules emergent, more or less concealed in hair-point of perichaetial leaves..... 7. *G. funalis*
5. Capsules exerted above perichaetial leaves.....6
6. Setae straight when moist; capsules erect, smooth.....7
6. Setae curved when moist; capsules horizontal to pendent, ribbed.....18
7. Leaves muticous.....8
7. Leaves with hyaline hair-points.....11
8. Leaves keeled above, with more or less acute apices; margins recurved on one side..... 9
8. Leaves concave, with rounded-obtuse apices; margins plane.....10
9. Leaves obtusely keeled, oblong-lanceolate to lingulate-lanceolate, upper leaf cells bistratose; flagelliform branches absent.....2. *G. atrata*
9. Leaves sharply keeled, lanceolate from a narrowly ovate base; upper leaf cells unistratose except margins; flagelliform branches present.....9. *G. handelii*
10. Leaves ovate to broadly ovate; basal cells near margins subquadrate; plants only up to 1 cm high16. *G. obtusifolia*
10. Leaves oblong-lanceolate; basal cells near margins rectangular; plants up to 3 cm high 23. *G. unicolor*
11. Leaves concave; costa flattened..... 12
11. Leaves keeled; costa terete.....14
12. Upper and median leaf cells bulging, obviously unituberculate.....14. *G. mammosa*
12. Upper and median leaf cells flat, smooth or nearly so.....13
13. Plants up to 1.5 cm high; leaves oblong-ovate to oblong-lanceolate, with a short upper part..... 11. *G. laevigata*
13. Plants robust, up to 3.0 cm high; leaves lanceolate from ovate base, with a long upper part..... 17. *G. ovalis*
14. Margins plane on both sides below..... 15
14. Margins recurved on one side below..... 16
15. Basal cells near margins elongate-rectangular, with thin walls; calyptrae mitriform; annuli well developed; autoicous.....4. *G. donniana*
15. Basal cells near margins quadrate to short-rectangular, with distinctly thick transverse walls; calyptrae cucullate; annuli wanting; dioicous.....15. *G. montana*
16. Plants often reddish brown; leaves very shortly hair-pointed or muticous; dioicous..... 6. *G. elongata*
16. Plants yellowish green to green or dark green; leaves long hair-pointed; autoicous..... 17
17. Basal juxtacostal cells with straight walls; basal cells near margins with much thickened, transverse walls; plants small, up to 1 cm high; annuli wanting; calyptrae cucullate..... 21. *G. reflexidens*
17. Basal juxtacostal cells with sinuose walls; basal cells near margins with slightly thickened transverse walls; plants large, up to 3 cm high; annuli well developed; calyptrae mitriform 12. *G. longirostris*
18. Upper cells 2–3(–4)-stratose, distinctly papillose; costa convex on abaxial side of leaf..... 5. *G. elatior*

- 18. Upper cells unistratose except margins, smooth; costa flat on abaxial side of leaf..... 19
- 19. Hyaline hair-points long, up to 1/2 to the full length of leaf..... 20
- 19. Hyaline hair-points short, less than 1/4 the length of leaf..... 21
- 20. Leaves lanceolate with coarsely denticulate, decurrent hair-points; basal juxtacostal cells with sinuose walls.....3. *G. decipiens*
- 20. Leaves oblong-lanceolate or elliptic with slender, nearly smooth, non-decurrent hair-points; basal juxtacostal cells with straight walls..... 20. *G. pulvinata*
- 21. Leaves linear-lanceolate with elongate, subulate upper part, length:width ratio 5–6:1..... 10. *G. incurva*
- 21. Leaves lanceolate, length:width ratio 3–4:1.....22
- 22. Setae very short, only up to 2 mm long; capsules ovoid-globose to oblong-ovoid; peristome teeth lanceolate, divided above.....8. *G. fuscolutea*
- 22. Setae up to 5–7 mm long; capsules subcylindrical to cylindrical; peristome teeth linear-lanceolate, undivided above.....13. *G. macrotheca*

Key to *Grimmia* (utilizing gametophytic characters)

- 1. Leaves muticous, without hyaline hair-points..... 2
- 1. Leaves with hyaline hair-points (at least the upper stem leaves).....5
- 2. Leaves keeled above, with more or less acute apices; margins recurved on one side..... 3
- 2. Leaves concave, with rounded-obtuse apices; margins plane..... 4
- 3. Leaves slightly keeled, lingulate-lanceolate; upper cells bistratose; flagelliform branches absent2. *G. atrata*
- 3. Leaves strongly keeled, lanceolate from a narrowly ovate base; upper cells unistratose except margins; flagelliform branches present.....9. *G. handelii*
- 4. Leaves ovate to broadly ovate; basal cells near margins subquadrate; plants only up to 1 cm high16. *G. obtusifolia*
- 4. Leaves oblong-lanceolate; basal cells near margins rectangular; plants up to 3 cm high..... 23. *G. unicolor*
- 5. Upper leaf cells distinctly papillose.....6
- 5. Upper leaf cells smooth or nearly so..... 7
- 6. Leaves concave; costa broad, flattened; margins plane; plants small, up to 1.5 cm; upper cells unituberculate.....14. *G. mammosa*
- 6. Leaves keeled; costa terete and convex on dorsal side of leaf; margins revolute on one side; plants robust, up to 5–6 cm high; upper cells irregularly papillose..... 5. *G. elatior*
- 7. Leaves concave.....8
- 7. Leaves keeled.....12
- 8. Basal marginal leaf cells elongate-rectangular with thin walls.....9
- 8. Basal marginal leaf cells, oblate, quadrate to short-rectangular, with thicker transverse walls..... 10
- 9. Plants small, leaves less than 2.0 mm long; leaf hair-points denticulate; autoicous..... 1. *G. anodon*
- 9. Plants robust, leaves more than 2.4 mm, long; leaf hair-points nearly smooth; dioicous..... 22. *G. tergestina*
- 10. Basal marginal leaf cells oblate; plants up to 1.5 cm high..... 11. *G. laevigata*
- 10. Basal marginal leaf cells quadrate to short-rectangular; plants up to 3.0 cm high..... 11
- 11. Basal juxtacostal leaf cells long-rectangular (1–8:1), with sinuose walls..... 17. *G. ovalis*
- 11. Basal juxtacostal leaf cells short-rectangular (1–4:1), with straight walls..... 19. *G. poecilostoma*
- 12. Leaf margins plane on both sides.....13
- 12. Leaf margins recurved on one or both sides..... 14
- 13. Basal leaf cells near margins elongate-rectangular, with rather thin walls; autoicous..... 4. *G. donniana*
- 13. Basal leaf cells near margins quadrate to short-rectangular, with thick transverse walls; dioicous15. *G. montana*
- 14. Hyaline hair-points long, up to 1/2 the laminal length.....15
- 14. Hyaline hair-points short, less than 1/4 the laminal length.....17

15. Leaves usually spirally twisted when dry; plants often with thread-like stems..... 7. *G. funalis*
15. Leaves not spirally curved when dry; plants lacking thread-like stems..... 16
16. Leaves lanceolate with coarsely denticulate, decurrent hyaline hair-points; basal juxtacostal cells sinuose-walled.....3. *G. decipiens*
16. Leaves oblong-lanceolate or elliptical, with narrow, faintly toothed, non-decurrent hyaline hair-points; basal juxtacostal cells straight-walled..... 20. *G. pulvinata*
17. Leaves linear-lanceolate with an elongate, subulate upper part, length:width ratio ca. 5–6:1..... 10. *G. incurva*
17. Leaves lanceolate with a short upper part, length:width ratio 3–4:1..... 18
18. Basal juxtacostal cells smooth or nearly so; upper cells unistratose except at margin..... 19
18. Basal juxtacostal cells sinuose; upper cells bistratose.....22
19. Basal cells near margins with transverse walls much thicker than longitudinal ones..... 21. *G. reflexidens*
19. Basal cells near margins with thin walls..... 20
20. Plants often reddish brown; leaves with very short hair-points or mucous; dioicous..... 6. *G. elongata*
20. Plants dark green to dark brown; leaves with hair-points; autoicous.....21
21. Upper and median cells slightly sinuose; perigonia not located below perichaetia..... 13. *G. macrotheca*
21. Upper and median cells strongly sinuose; perigonia located just below perichaetia..... 8. *G. fuscolutea*
22. Stems with a well developed central strand; leaves lanceolate, without forming a shoulder; autoicous.....12. *G. longirostris*
22. Stems without a well developed central strand; leaves from ovate base suddenly narrowed toward the apex, forming a shoulder; dioicous..... 18. *G. pilifera*