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Excluded taxa

1. *Grimmia hamulosa* Lesq. in Mem. Calif. Acad. Sci. 1: 14. 1868.

Type: [U.S.A. California]: Hab. gravelly soil. Mt. Dana, 10,000 ft. alt., s.d., *Bolander 388* (Lecto-: NY; isolecto-: NY) (lectotypified by MUÑOZ, 2000c: 100).

The guide cells are arranged in a median position (**Fig. 52.1.1** from *Bolander 388*, lecto-type NY). By definition the guide cells in *Grimmia* are in a ventral position. The character 'medianly arranged guide cells' suggests a connection to the genus *Schistidium* on the basis of this character being found in *S. maritimum* (Turner ex Scott, Robert) Bruch & Schimp. (DEGUCHI, 1979: 233, Fig. 54) and *S. teretinerve* (**Fig. 52.11.1**). The character 'medianly arranged guide cells' is exceptional in the genus *Schistidium*.

The ventral side of the peristome teeth are ornamented with fine papillae in horizontally, vertically or obliquely arranged rows or striae, an arrangement not seen in the genus *Grimmia*.

2. *Grimmia brevirostris* R. S. Williams in Bryologist 23: 52. 1920.

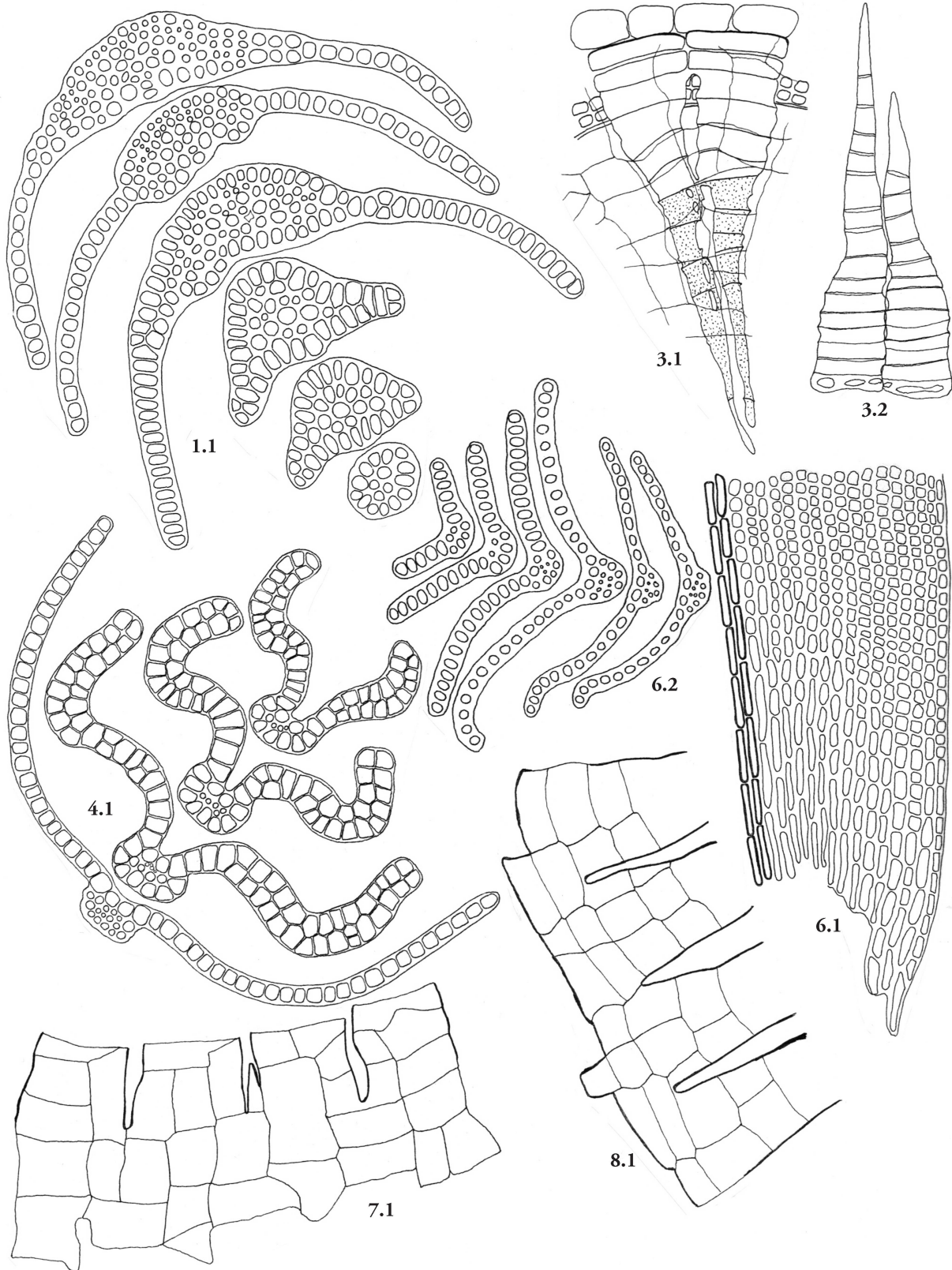
Type: [U.S.A. California]: Plumas Co. On rocks, Bucks Ranch. Alt. 6000 ft., VII.1900, *Leiberg 5445* (Lecto-: NY; isolecto-: NY) (lectotypified and synonymized with *G. hamulosa* Lesq. by MUÑOZ, 2000c: 100).

The ventral side of the peristome teeth are ornamented with fine papillae in horizontally, vertically or obliquely arranged rows or striae (WILLIAMS, 1920: 53, Tab. III, Fig. 4), a feature not present in the genus *Grimmia*.

0.1 mm
1.1, 3.1-2, 4.1,
6.1-2, 7.1, 8.1

Figure 52.— Taxa excluded: **1.1**, *Grimmia hamulosa* Lesq., transverse section of leaf; **3.1-2**, *Grimmia indica* (Dixon & P. de la Varde) Goffinet & Greven, peristome teeth, ventral side; **4.1**, *Grimmia jacquinii* var. *subimberbis* Lindb., transverse section of leaf; **6.1**, *Racomitrium microphyllum* M. Fleisch., cells in leaf base; **6.2**, transverse section of leaf; **7.1**, *Grimmia molesta* J. Muñoz, base of peristome, partly, ventral side; **8.1**, *Hydrogrimmia mollis* (Bruch & Schimp.) Loeske, base of peristome, partly, ventral side.

Excluded taxa



Excluded taxa

3. *Grimmia indica* (Dixon & P. de la Varde) Goffinet & Greven in J. Bryol. 22: 141. 2000.
 ≡ *Trigonodictyon indicum* Dixon & P. de la Varde in Ann. Cryptog. Exot. 1: 40. 1928.
Type: INDIA: Pambar Torrent, Kodaikanal, Pulney Hills, 8.II.1927, *Foreau 815* (Holo-: BM; isolecto-: MO).
 = *Grimmia apophysata* Gangulee in Nova Hedwigia 12: 428. 1967.
Type: [INDIA]: Sikkim, 11.000', s.d., *Kurz 2344* (Iso-: BM, G, NY) (synonymized by MUÑOZ & PANDO, 2000: 37).

The differentiation of the basal paracostal cells conspicuously below the transitional part of the leaf and the barely expressed guide cells in the lower part of the leaf are features that are not seen in any other species of *Grimmia*.

The strongly marked apophysis of the capsule, the twisting of the seta in a dry state in the lower half from the right to the left and in the upper half from the left to the right, the peristome teeth (**Fig. 52.3.1**, from *Long 17120*, E, G) that are hyaline in the upper half, with an anastomose of two or even three teeth, teeth that are not separated in the lower half but united in pairs down to the insertion (**Fig. 52.3.2**, from *Long 17120*, E, G), and the thin inner peristome plates where the 2:3 pattern of the haplolepidous peristome is not recognizable, are all features unknown in the genus *Grimmia*.

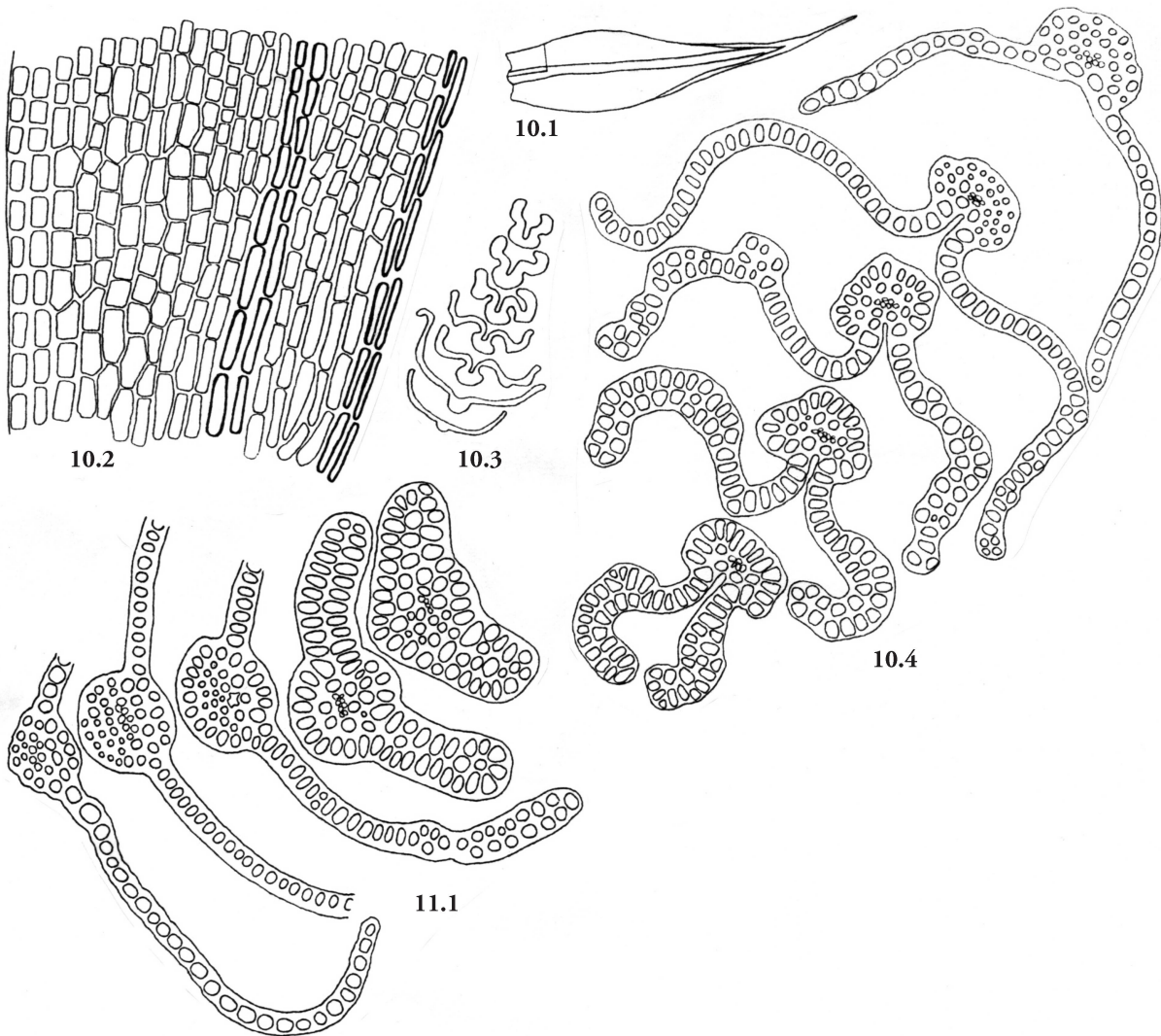
4. *Grimmia jacquinii* var. *subimberbis* Lindb. in Öfvers. Kongl. Vetensk.-Akad. Förh. 23: 552. 1867.
Type: [NORWAY]. Spitsbergen: Amsterdam-Island, 1861, *Holmgren s.n.* (Lecto-: H-SOL) (lectotypified and synonymized with *G. caespiticia* (Brid.) Jur. by MUÑOZ, 1998b: 387).

Comparison of the transverse leaf sections of *G. jacquinii* var. *subimberbis* (**Fig. 52.4.1**, from *Holmgren s.n.*) with that of *G. caespiticia* (**Fig. 9.13**, from *Maier 9231*, G) shows strong differences. The costal architecture of *G. jacquinii* var. *subimberbis* alone indicates that the synonymization of it with *G. caespiticia* is erroneous but suggests an affinity of it to the genus *Coscinodon*.

Figure 52. cont.— Taxa excluded: **10.1-4**, *Grimmia reflexidens* Müll. Hal., leaf, cells in leaf base, outlines of transverse leaf sections, transverse section of leaf; **11.1**, *Schistidium* (?) *teretinerve* Limpr. transverse section of leaf.

[**1.1**, *Bolander 388* (NY); **3.1-2**, *Long 17120* (E, G); **4.1**, *Holmgren s.n.* (H-SOL); **6.1-2**, *Fleischer s.n.* (FH); **7.1**, *Hegewald & Hegewald 5480* (MO); **8.1**, *Hedderson 5015* (BOL, G); **10.1-4**, *Pöppig s.n.* (BM); **11.1**, *Breidler s.n.* (BP)]

Excluded taxa



0.1 mm | 0.4 mm | 1 mm
10.2, 10.4, 11.1 | 10.3 | 10.1

Excluded taxa

5. *Grimmia mariniana* Sayre in Bryologist 58: 323. 1955.

Type: U.S.A. California. Marin County: On exposed rocks, north-facing, very summit of Mt. Tamalpais; in small black cushions, not in association with other mosses, 8.IV.1953, *Steere s.n.* (Lecto-: NY) (lectotypified by MUÑOZ & PANDO, 2000: 53).

Sporophyte characters suggest an affinity of it to the genus *Coscinodon*: after dehiscence the capsule mouth is flared, the fragments of the peristome teeth are divided into fine divisions, the trabeculae are scarcely expressed, the spore sac is fixed on a stalk, creating an enlarged air space reaching the orifice (LIMPRICHT, 1889: 718), and the operculum is convex and mammillate.

6. *Racomitrium microphyllum* M. Fleisch., Musci Buitenzorg: 377. 1904.

≡ *Grimmia microphylla* (M. Fleisch.) M. Fleisch., Musci Buitenzorg: 1650. 1923.

Type: [INDONESIA]. Ost-Java: Ardjoenogeb. Waliran, 2700 m, s.d., *Fleischer s.n.* (Holo-: FH) (synonymized with *G. trichophylla* Grev. by DEGUCCI, 1986: 328).

Following the protologue for *R. microphyllum*, FLEISCHER (1904: 377) notes that the plants are growing “an Rinde” [on bark]. The primary indication that this taxon does not belong to *Grimmia* is the epiphytic habit, supported by the cell pattern at the leaf base near the costa (Fig. 52.6.1, from *Fleischer s.n.*, holotype, FH), with cells which are short below the transitional part. In *Grimmia* species these cells are elongate up to the transitional part. A transverse section (Fig. 52.6.2, from *Fleischer s.n.*, holotype, FH) shows that the costal anatomy of *G. microphylla* is different from that of *Grimmia*, using *G. trichophylla* (Fig. 50.9, from *Siegel s.n.*, G) as an example. Because a sporophyte is lacking from the type specimen of *R. microphyllum*, and no other material was available, the taxon is treated here as insufficiently known.

Note.— The taxon is not cited in EDDY (1990).

7. *Grimmia molesta* J. Muñoz in Ann. Missouri Bot. Gard. 86: 152. 1999.

Type: PERU. Arequipa Province: Arequipa am Weg nach Puno, 16°20'S, 71°30'W, Fels, 4000 m, 3.V.1973, *Hegewald & Hegewald 5480* (Holo-: MO; iso-: MA, NY).

The species is neither *Schistidium apocarpum* (Hedw.) Bruch & Schimp. (as noted on the label of the holotype specimen), nor a member of the genus *Grimmia* because the peristome teeth are not divided down to the insertion (Fig. 52.7.1, from *Hegewald & Hegewald 5480*, MO). They arise, arranged in pairs, from a basal membrane of two to three rows of cells. In addition, the 2:3 pattern of the peristomial formula defining haplolepidous peristomes is not expressed. The examination is based on the unique type collections thus this taxon is considered as insufficiently known.

Excluded taxa

8. *Hydrogrimmia mollis* (Bruch & Schimp.) Loeske, Stud. Morph. Syst. Laubm.: 108. 1910.

≡ *Grimmia mollis* Bruch & Schimp., Bryol. Eur. 42, *Grimmia* Suppl. 1. 1849.

≡ *Grimmia orthotrichoides* Hartm., Handb. Skand. Fl. ed. 5: 378. 1849.

Type: NORWAY: Goustafield, VII.1846, *Holmgren s.n.* (Holo-: BM).

LOESKE (1910: 108), established the monotypic genus *Hydrogrimmia* Loeske. He stated an uncertain connection of this extremely differentiated taxon to the genus *Grimmia*. The peristome teeth arise from a basal membrane of two to three rows of plates. They are not separated down to the insertion (**Fig. 52.8.1**, from *Hedderston 5015*, BOL, G) as is the case in species of the genus *Grimmia*. In addition, the 2:3 pattern of the peristomial formula defining Haplolepidous peristomes is not expressed. At the base of the teeth, on their dorsal side, fragments of peristome plates may be observed.

9. *Grimmia pitardii* Corb. in Bull. Soc. Bot. France 56: LVI. 1910.

≡ *Campylostelium pitardii* (Corb.) E. Maier in Candollea 53: 301. 1998.

Type: TUNISIA. Matmata: Oued Jir, in humidis, II.1907, *Pitard s.n.* (Iso-: G).

= *Grimmia gibbosa* S. Agnew in J. Bryol. 7: 339. 1973.

See discussion in MAIER (1998: 301-308).

10. *Grimmia reflexidens* Müll. Hal., Syn. Musc. Frond. 1: 795. 1849.

≡ *Coscinodon reflexidens* (Müll. Hal.) Ochrya in Polish Polar Research 25: 116. 2004.

Type: [CHILE]: *Grimmia reflexidens* inter *Dryptodon consobrinus* Kze. Chile, s.d., *Pöppig s.n.* (Lecto-: BM) (**Fig. 52.10.1-4**, from *Pöppig s.n.*, BM, reproduced from MAIER, 2002b: 222).

See discussion in MAIER (2002b: 224).

11. *Grimmia teretinervis* Limpr. in Jahresber. Schles. Ges. Vaterl. Cult. 61: 216. 1884.

≡ *Schistidium teretinerve* (Limpr.) Limpr., Laubm. Deutschl. 1: 717. 1889.

Type: [AUSTRIA]. Steiermark: *Gr. incohaerens*, Steierm. Jauerberg bei Weitenstein Kalk 6-700 m, 25.V.1879, *Breidler s.n.* (Lecto-: BP [Herbarium Limpricht], lectotypified here) (**Fig. 52.11.1**, from *Breidler s.n.*, BP).

Excluded taxa

The transverse section of the costa of this taxon shows the guide cells arranged in a median position (**Fig. 52.11.1**, from *Breidler s.n.*, BP, Herb. Limpricht). By definition the guide cells in *Grimmia* are in a ventral position. However, the costal architecture of *G. teretinervis* suggests an affinity to *Schistidium maritimum* (DEGUCHI, 1979: 233, Fig. 54). Given these facts, together with the attribution of the unpublished name '*Grimmia incohaerens* [incoherent]' to the specimen by Breidler, and Limpricht's doubt on the taxonomic position of *G. teretinervis*, it is proposed to cite the taxon as *Schistidium teretinerve* (Limpr.) Limpr., in spite of the character "guide cells in median position", at present known in the genus *Schistidium* only from *S. maritimum* and *S. teretinerve* (Limpr.) Limpr.

CRUM (2004: 176) reports *G. teretinervis* from Ontario (USA) and mentions that "it shows some resemblance to the *Schistidium* group".

12. *Grimmia trinervis* R. S. Williams in Bull. New York Bot. Gard. 3: 124. 1903.

≡ *Coscinodon trinervis* (R. S. Williams) Broth. in Biblioth. Bot. 87: 52. 1916.

Type: PERU. [Puno]: Juliaca, 3780 m, on dry sandstone, 15.V.1902, *Williams 2814* (Holo-: NY).

The description and the arguments given by HASTINGS (1996: 418-422) demonstrate the affinity of *G. trinervis* with the genus *Coscinodon* rather than the genus *Grimmia*. Furthermore, the holotype specimen of *G. trinervis* (*Williams 2814*, NY), has a flared capsule and the spore sac is attached to the capsule rim. The resulting air space is clearly visible. Following LIMPRICHT (1889: 719) a spore sac attached to the capsule rim and presence of a big air space are characteristics of the genus *Coscinodon*. The capsule anatomy of *C. cribrosus* (Hedw.) Spruce and *C. calyptratus* (Drumm.) C. E. O. Jensen are good examples of this.

Excluded taxa