Grimmia funalis (Schwägrichen) Bruch & Schimper –
Bryol. Eur. 3: 119. 1845.

Type: Poland, Sudeten mts, leg. C. Ludwig, lectotype, designated by Geissler & Maier (1995), G.
Synonyms: *Dryptodon funalis* (Schwägr.) Brid., *Grimmia calvescens* Kindb., *G. cernua* Nees & Hornsch., *G. horni* Stirt., *G. ryanii* Bryhn, *G. spiralis* Hook., *Trichostomum funalis* Schwägr.
Distribution: Am.1.As.1. Eur.

Description

Grimmia funalis forms dense, greyish-green, usually spherical cushions, breaking up readily, falling apart into clusters and single shoots; characteristic yellowish flagelliform innovations are usually present, leaves appressed, of ± uniform length throughout stem, usually spirally arranged when dry, patent when moist, lanceolate, keeled above, costa weak below, projecting on dorsal side, hair-points long and denticulate, in male plants very short to absent, margins plane or recur-ved on one side. Distal areolation bistratose, mid-leaf cells short-rectangular with extreme sinuose and incrassate walls, basal marginal cells short-rectangular, hyaline, basal juxtacostal cells linear and yellow with incrassate, ± sinuose walls. Sexuality dioicous, capsules on arcuate setae are occasionally present, they are obloid, exserted, concealed in hair-points with a conical to rostellate operculum.

Discussion:

Grimmia funalis is frequently misidentified because it is extremely variable in height, colour and length of the hair-points. In optimal conditions, it forms extremely dense greyish-green cushions which break up easily, falling apart into clusters and straight single plants. A distinct feature is the string-like appearance of dry shoots, formed by the leaves, spirally twisted round the stem, however, I have also seen populations without such spirally twisted leaves. Under the microscope, the mid-leaf areolation with yellowish, short-rectangular, very incrassate and sinuose cell walls is characteristic. *G. calvescens*, *G. imberbis* and *G. ryanii* are male plants of *G. funalis*, which grow in separate cushions with muticous to short-hairpointed leaves, deviating greatly from the much higher, long-haired female plants. These male plants might be confused with *G. elongata* which frequently grows in the same habitat. However, in *G. elongata* the basal cells are elongate, pellucid, smooth and thin-walled or only slightly incrassate.

Specimens examined

Andorra. Vallée du Madrio, Sentier du Madrid, alt. 1250 m, leg. Ph. de Zuttere, nr. 8217; Val d'Incles, alt. 2500 m, leg. H.C. Greven, nr. 2658; Valleée de Madria, alt. 1250 m, leg. A. Sotiaux, nr. 8217; **Austria.** Carinthia, Hermagor, Guggen-berg, alt. 1090 m, leg. H.C. Greven, nr. 3064; Pitztal, Sagebachschlucht, alt. 1400 m, leg. R. Düll; Pitztal, Wurmbachtal, alt. 2520 m, leg. R. Düll; Oetztal, Kühtai, alt. 2310 m, leg. H.C. Greven, nr. 2113, 2119; Oetztal, Tumpen, alt. 938 m, leg. H.C. Greven, nr. 2114; Hohe Tauern, Heiligenblut, Kl. Fleischtal, Zirmsee, alt. 2530 m, leg. H.C. Greven, nr. 3030, 3034; Carinthia, Kreutzeckgruppe, Radlberger Alm, Hoher Stand, alt. 2087 m, leg. H.C. Greven, nr. 3031; Carinthia, Kreutzeckgruppe, Naszfeldriegel, alt. 2150 m, leg. H.C. Greven, nr. 3035; Carinthia, Kreutzeckgruppe, Hochtristen, alt. 2400 m, leg. H.C. Greven, nr. 3033; **Corsica**.Mte. Cinto, alt. 1520-1820 m, leg. H.C. Greven, nr. 2921, 2922, 2923; Col de Vergio, Cricche, alt. 1710 m, leg. H.C. Greven, nr. 2919, 2920; **France**. Cantal, St. Pierre, Puy Violent, alt. 1570 m, leg. Ph. de Zuttere, nr. 20334; The Vosges, Col de la Schlucht, Sentier des Roches, alt. 1200 m, leg. Ph. de Zuttere, nr. 13872; Puy-de-Dome, Mt. Doré, leg. Ph. de Zuttere, nr. 20313, Pyrenees, Bigorre, Gavarnie, Col de Boucheron, alt. 2280 m, leg. H.C. Greven, nr. 2106, 2110, 2116, 2121; Hautes Alpes, Massif des Ecrins, La Bérarde, alt. 1700 m, leg. H.C. Greven, nr. 2108, 2109; **Germany.** Schwartzwald, Feldberg, alt. 1200 m, leg. H. van Melick, nr. 85619; **Iceland.** Kleivarvatn, leg. H.C. Greven, nr. 2122; Asbyrgi, leg. H.C. Greven, nr. 2123; **Italy.** Valtellina, Valle del Forno, alt. 1900 m, leg. M. Anzei; **Norway.** Dovre, Kongsvoll, alt. 1200 m, leg. N.C. Kindberg; **Slovakia.** Vysoke Tatra, Velka Studena, leg. Pilous; **Spain**: Lleida, Valle de St. Nicolau, alt. 1300 m, leg. Casas; Asturias, Ubina, El Posticlin, alt. 200 m, leg. Aedo; **Switzerland.** Wallis, Val d'Hérens, Ferpècle, alt. 1820 m, leg. H.C. Greven, nr. 2115, 2118; **Turkey.** Prov. Trabzon, Bayburt-Of, alt. 2400 m, leg. Stainton & Henderson, nr. 6205B; Prov. Rize, Rize-Ispir, alt. 3000 m, leg. Stainton & Henderson, nr. 6280B; Prov. Coruh (Artvin), Tepe above Murgul, alt. 2900 m, leg. Davis & Hedge; **Wales**. Dolgellau, alt. 150 m, leg. H.C. Greven, nr. 2111; Snowdonia, Llyn Idwal, alt. 120 m, leg. H.C. Greven, nr. 2112.

References:

Deguchi, H. 1978. A revision of the genera *Grimmia*, *Schistidium* and *Coscinodon* (Musci) of Japan. J. Sci. Hiroshima Univ. Ser. B., Div. 2, Bot. 16: 121-256.

Greven, H.C. 1995. *Grimmia* Hedw. in Europe. Backhuys Publishers, Leiden, The Netherlands.