Grimmia elongata Kaulfuss – in J. Sturm et al. ,
Deutschl. Flora 2 (15). 1816.

Type: Austria, Steiermark, leg. G.F. Kaulfuss, lectotype, designated by Geissler & Maier (1995), B.
Synonyms: *Grimmia andreaeacea* C. Müll., *G. decalvata* Card., *G. fuliginosa* Schimp., *G. incurva* var. *rhaetica* Amann, *G. montana* var. *epilosa* Delogne, *G. patula* Bruch, *G. tolucensis* Card., *G. vulcanica* Besch.
Distribution: Afr. Am.1,2,4,6. As.1,2,3,5. Eur.

Description

Grimmia elongata forms dense, green – brown - black cushions or patches, leaves crowded, appressed and straight to slightly twisted when dry, erecto-patent, somewhat rigid when moist, of ± uniform length throughout stem, lanceolate, keeled in upper part, costa weak at base, firm and channeled above, projecting on dorsal side, hair-points very short in upper leaves, lower leaves muticous, margin narrowly recurved, usually on one side. The distal areolation is unistratose, in places bistratose, mid-leaf cells short-rectangular with sinuose and incrassate walls, basal marginal cells rectangular with smooth walls, basal juxtacostal cells elongate and chlorophyllous with slightly incrassate smooth walls. Sexuality dioicous, capsules on straight seta occasionally present, they are emergent to shortly exserted, ovoid, smooth with conical to rostrate operculum.

Discussion

G. elongata was discovered by Kaulfuss in 1812 at the Seethaler Alpe in Steiermark, Austria. It is a boreal-alpine species from acidic rock with a main distribution above 2000 m and a preference for damp, north facing outcrops, ridges and ledges, where it can be found in extended brown-green-blackish, frequently hemisperical sand-filled cushions. In Belgium, it was found but not recognized in 1870, close to the French border at 400 m altitude. In 2002, the species was still there (Greven & Sotiaux 2003). Associating, and in the field difficult from *G. elongata* to distinguish species are *G. incurva* f. *brevifolia*, *G. funalis* and *Racomitrium sudeticum*. The leaves of *G. elongata* are under the microscope rather simular to those of *G. fuscolutea,* having the same yellow colour and cell pattern, and sinuosely incrassate upper and mid-leaf cells which in the basal part rather suddenly change into pellucid, smooth, thin-walled cells. However, the leaves of *G. fuscolutea* have longer hair-points and are more ovate-lanceolate with stronger recurved leaf margins. The differences in the field are numerous. *G. fuscolutea*

is autoicous, usually fertile, forming rounded yellow-green cushions, while *G. elongata* is dioicous, usually not fertile, forming brownish to blackish cushions, which in herbaria become frequently dark rust-coloured. Misleading can be that in the same habitat may grow small, nearly hairless cushions of male *G. funalis* and cushions of *G. incurva* fo. *brevifolia*. These plants resemble *G. elongata* and can be confused with it easily, however, different leaf form and areolation may distinguish them. Loeske wrote that he sometimes not for sure could distinguish *G. elongata* from *G. incurva* f. *brevifolia*. I can imagine Loeskes problems but having seen many specimens from both taxa, I think that I could always distinguish them. In my opinion are the most important differences: totally black, muticous, nearly linear, somewhat homomallous leaves in *G. incurva* f. *brevifolia*, against brownish-black, very short-hair-pointed, lanceolate, slightly crisped leaves in *G. elongata*. Under the microscope are important, midleaf cells with nodular thickenings or hardly sinuose walls in *G. incurva* f. *brevifolia,* against midleaf cells being conspicous sinuosely incrassate, however without nodular thickenings, in *G. elongata*. *G. elongata* is closely related to the Himalayan endemic *G. redunca*, and Maier (2002) erroneously synonymised *G. redunca* with *G. elatior*. Both species share a growth form in reddish-brown tufts, and leaves with rectangular to elongate basal cells with smooth walls, in mid-leaf abruptly changing into rectangular cells with sinuose and incrassate walls. However, *G. redunca* has a cylindrical capsule on a cygneous seta, and subulate leaves.

Specimens examined

Andorra. Riu de l'Ovier, Cami de la Plana, alt. 1350 m, leg. A. Sotiaux, nr. 12230; **Austria.** Steiermark, Gotstalkessel, Serkauer Jinkens, leg. J. Glowacki; Pitztal, St. Leonhard-Plangeroth, Kaunergrathütte, alt. 2850 m, leg. H. Kutzelnigg; Ost Tirol, Matreier Tauerntal, Messerlingwand, alt. 2400 m, leg. K. Koppe; Steiermark, Schladminger Tauern, alt. 1980 m, leg. R. Düll; Oetztal, Kühtai, Drei Seeen Hütte, alt. 2310 m, leg. H.C. Greven, nr. 2657; Oetztal, Hochsölden, Rettenbachtal, alt. 2800 m, leg. R. Düll; Hohe Tauern, Heiligenblut, Kl. Fleischtal, Zirmsee, alt. 2530 m, leg. H.C. Greven, nr. 3024/3026; Carinthia, Kreutzeckgruppe, Hochtristen, alt. 2400 m, leg. H.C. Greven, nr. 3027; Carinthia, Kreutzeckgruppe, Radlberger alm, Hoher Stand, alt. 2087 m, leg. H.C. Greven, nr. 3028; Carinthia, Kreutzeckgruppe, Naszfeldriegel, alt. 2150 m, leg. H.C. Greven, nr. 3029 m; **Germany.** Bavaria, Gr. Arbor, Kluftgipfel, alt. 1450 m, leg. F. and K. Koppe; Schwartzwald, Todtnau, alt. 740 m. leg. R. Düll; **Poland.** Tatry Zachodnie, Dolina Wyznia, alt. 1720 m, leg. S. Lisowski; **Sweden.** Torne Lapmark, Torneträsk, Rissajaure, alt. 870 m, leg. A.C. Crundwell; Lule Lappmark, Pellorippe, leg. T. Vestergren; Lule Lappmark,

Kvikkjokk, leg. H. Holmgren; Lule Lappmark, Jokkmokk, leg. C. Jensen & W Arnell; **Turkey.** Prov. Coruh (Artvin), Savval Tepe, above Murgul, alt. 2200 m, leg. Davis & Hedge.

References

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Maier, E. 2002. The genus *Grimmia* Musci, Grimmaceae) in the Himalaya. Candollea 57: 143-218.