

**10. *Grimmia atrata* Mielichhofer ex Hornsch. - Flora 2: 85.
1819.**

Type: Austria, Salzburg, Grosarl, Schwarzwand, leg. Mielichhofer, 1814, lectotype, designated by Deguchi (1978), B!; isolectotype F.

Synonyms: *Dryptodon atratus* (Hornsch.) Hartm., *Grimmia strictifolia* Mitt., *G. tristicha* Herzog, *G. tristicha* var. *comosa* Herz., *G. tristichoides* Marg.

Distribution: Am. As.2,3. Eur.

Description

Grimmia atrata grows in variable dark green to black patches, frequently rust-coloured below, the leaves are appressed and straight to curved when dry, erectopatient when moist, lanceolate to ligulate, tapering to blunt cucullate apex, keeled above, the costa projects on dorsal side, hair-points are absent, the margins are recurved below, incurved above. The distal areolation is unistratose with bistratose ridges to completely bistratose, the mid-leaf cells are rectangular with nearly smooth to sinuately incrassate walls, occasionally with incrassate and nodulose walls, basal marginal cells are in 1-3 rows quadrate, hyaline with thickened transverse walls, basal juxtacostal cells are rectangular with smooth to slightly sinuose walls. The sexuality is dioicous, capsules on straight setae are occasionally present, they are longly exserted, obloid to cylindric, the operculum is conic to rostrate

Discussion:

Grimmia atrata is usually the only *Grimmia* known by geologists because it is an indicator for heavy metal-bearing rock. It was discovered by Mielichhofer in an abandoned copper mine in the Hohe Tauern in Austria. The species is very variable, having a preference for damp gneiss and mica schists, the tufts are often orange inside from the presence of heavy metal oxides. Because of the curved upper leaves and the absence of hair-points, it does not have the appearance of a *Grimmia* and as a result of this it has previously been placed in a separate genus, *Dryptodon*, intermediate between *Grimmia* and *Racomitrium*. In densely shaded habitats, it grows in loose patches, the cell pattern showing a near absence of sinuosity. I found such plants in an old iron mine shaft in North Wales (Greven 1995). In the spring of 2002, I found *G. atrata* in Sikkim (India) on dry rock at Tsongo Lake, alt. 12.400 ft. In this locality, the plants were richly fruiting with cylindrical capsules with conic operculi and appressed, conspicuously glossy leaves with extremely

incrassate nodulose cell walls. Maier (2002) synonymized *Grimmia atrata* with the Himalayan endemic *Grimmia ochyriana* Muñoz. Greven (2008) made it clear that this synonymy was incorrect.

Specimens examined

Andorra. Bixessari, sentier vers Aixas, alt. 1150 m, leg. A. Sotiaux, nr. 8323, 08-07-1988; Arinsal, Torrent Ribal, alt. 1600 m, leg. A. Sotiaux, 22-06-1989; **Austria.** Groszarltal, Hüttschlag, Schwartzwand, alt. 1900 m, leg. G. Schwab, 28-08-1978; Steiermark, Stadminger Tauern, Hochgalling, leg. J. Glowacki, 03-09-1891; Oetztal, Obergurgl, Hohe Mut, alt. 2550, leg. G. Schwab, 29-07-1987; Carinthia, Hermagor, Guggenberg, alt. 1090 m, leg. H.C. Greven, nr. 3014, 3015, 19-07-1994; **Belgium.** Stavelot-Francorchamps, Bois de la Ville, leg. H. van Melick, 24-12-1984; **Czechia.** Bohemia, Montes Krkonoše, alt. 1200 m, leg. Pilous, 01-06-1974; **France.** Ardennes, Moulin de Révin, alt. 200 m, leg. Ph. de Zuttere, nr. 17146; Pyrenees, Pic Peric, R'au de la Llose, alt. 2400 m, leg. R.J. Bijlsma, nr. 2247, 07-08-1979; **Scotland.** Aberdeen, Coire Ceanmore, Glen Ballater, leg. E.C. Wallace, 18-08-1975; Aberdeen, Loch Kinder Corrie, leg. U. Duncan; Angus, Caenlochan Glen, alt. 850 m, leg. D.G. Long & B.M. Murray, nr. 12812; Cor Eirach Cairnwell, leg. W. Smith; Aberdeenshire, Loch Kandor, Braemar, Leg. G.E. Hunt; E. Ross, Ben Wyvis, alt. 780 m, leg. D.G. Long & B.M. Murray, nr. 14767; **Wales.** Mount Snowdon, alt. 1085 m, leg. H.C. Greven, nr. 2010, 30-07-1993; Nat. Park Snowdonia, Waunfawr-C, Ystrad-isaf, alt. 70 m, leg. H.C. Greven, nr. 2012, 2013, 2014, 2015, 29-07-1993; Beddgelert, leg. H.C. Greven, nr. 2648. **Bolivia.** Hochtal von Viloco, Herzog 3170, as *G. tristicha* Herzog, BM, (L); Hochtal von Viloco, 4700 m, Herzog 3188, as *G. tristicha* var. *comosa* Herzog, L; Chojnacota, 4750 m, Herzog 2979, (L). **China.** Shensi, Mac-wan-sam mountains, leg. Father Hugh, 1898, BM, herbarium Dixon as *Grimmia obtusifolia* Dix; **Sikkim.** East Sikkim, Tsongo Lake, alt. 12.400 ft, leg. H.C. Greven nr. Sik. 2,3,4, 11-03-2002;

References

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- Maier, E. 2002. The genus *Grimmia* (Musci, Grimmiaceae) in the Himalaya.
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