

Tüfels Chilen. Es wäre sicher interessant, mehr über diese schutzbedürftigen Standorte und deren Flora zu wissen, um Unterschiede und Gemeinsamkeiten in Bezug auf die Moosflora herauszuarbeiten.

#### Literatur

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## *Grimmia* Hedw. in the canton of Valais, Switzerland

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The broad, east-west running Rhône valley between Brig and Sion, central part of the Swiss canton of Valais, houses a large number of *Grimmia* Hedw. habitats. From this valley, three glens meander through to the north : Lac de Tseuzier (1777 m), Leukerbad (1402 m) and Fafleralp (1787 m). To the south : Lac de Dix (2364 m), Arolla (1998 m), Lac de Moiry (2249 m), Zermatt (1616 m) and Saas-Fee (1792 m). The diversity in rock formation, from basic limestone, via neutral basalt, to acidic granite, combined with plenty, sunny to shaded rockwalls, and scattered boulders form a rich scale of biotops. From 15-25 July 2008, from Guttet, a small settlement north-east of Leuk, some excursions, directed on the inventory of Grimmiads, were executed; 22 species were encountered.

On south-facing limestone rock walls and sunny staple walls around vineyards, *Grimmia orbicularis*, *G. anodon* and *G. ovalis* are common species. The usually very common *Grimmia pulvinata* was only found a few times. In Guttet, we found a concrete wall, covered over some meters with the autoicous, always richly fruiting, *Grimmia anodon*. On this wall, also some cushions of *Grimmia tergestina* and *Grimmia caespiticia* were found. At Brentjong, east of Leuk, outcrops sandstone. Here, the *Grimmiatum commutata-campestris* association, with *Grimmia ovalis* and *G. laevigata* is frequently present. Along the road Guttet-Feschel-Erschmatt-Jeizinen, four, in the field difficult to distinguish Grimmiads, occur : *Grimmia alpestris*, *G. sessitana*, *G. caespiticia* and *G. montana*.

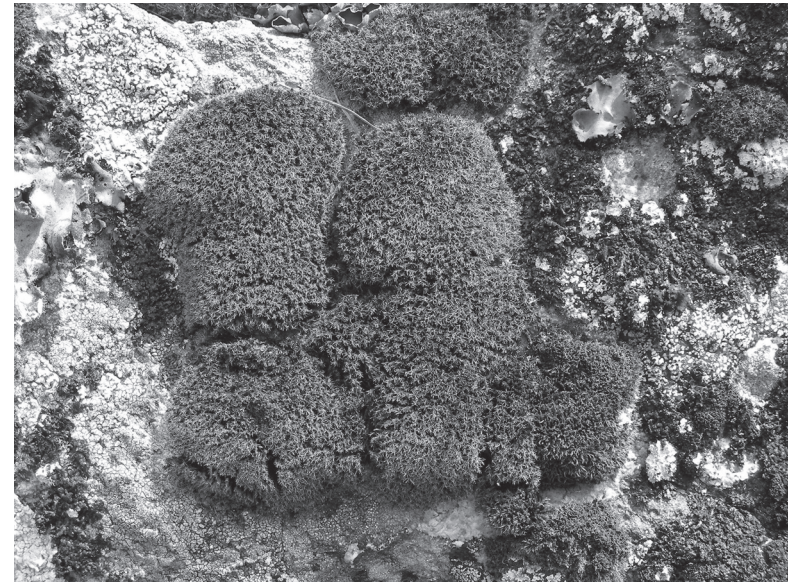


Figure 1

Val d'Anniviers ends at Glacier de Moiry (2440 m). On scattered boulders between Lac de Moiry and the glacier, *Grimmia alpestris* is very common; at some places *G. caespiticia*, *G. donniana* and *G. sessitana* also occurs. A few kilometers beneath the reservoir, big boulders are situated along a fordable stream. On these, the form-rich *Grimmia elatior* is growing abundantly; this species is rich in forms because male plants grow in darkgreen low mats with hardly visible hairpoints on the leaf tips, greatly deviating from the much higher, long-hairpointed female plants. Where both forms grow close together, capsules on curved setae are not rare. Also commonly occurring is *Grimmia funalis*, characterized by grayish-green cushions, which break up easily, falling apart in clusters and straight single plants with a string-like appearance, caused by the spirally twisted leaves round the stem. Also rather common here is *Grimmia longirostris* (= *G. affinis*). This autoicous species grows usually in rounded cushions with two generations of sporophytes on straight setae, brown urns from the previous year and yellow-green young capsules, still with calyptrae, produced in this year. On the slanting side of a big boulder, an extended vegetation of *Grimmia unicolor* was encountered.

The Mattertal leads to Zermatt, along the road, at Täsch, on sunny boulders *Grimmia elatior* was abundantly present. Other species found were : *Grimmia laevigata*, *G. alpestris*, *G. montana* and a *Grimmia*, growing in extremely hairy cushions, in the field identified as *Grimmia funalis*. Microscopical research showed, however, that it was *Grimmia pilosissima*, a species, not previously recorded from Switzerland. It was described by Herzog (1911) from Punta la Marmora in the distant Gennargentu mountains in Sardinia. The plants grow in grayish rounded cushions with long, in dry state, curved hairpoints (Fig. 1).

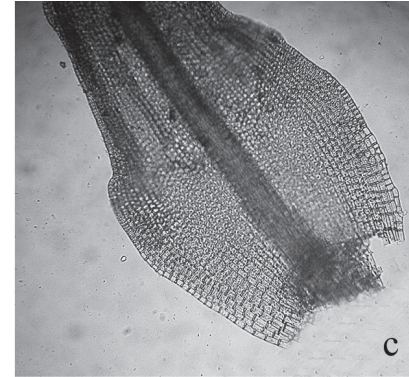
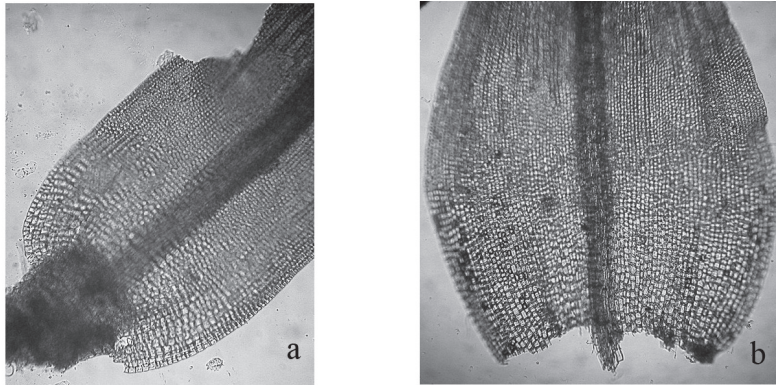


Figure 2. *Grimmia spinosissima* from three localities : a. Löttschental; b. Sardinia; c. Matteredal.

The leaves are ovate-lanceolate, the basal areolation is nearly uniform with for the majority quadrate to short-rectangular chlorophyllous cells with thickened transverse walls and thin longitudinal walls (Fig. 2).

A detailed description can be found in Greven (1994).

On both sides of the Rhône valley, high tops stand out against the horizon. On these tops, e.g. Eggishorn (2927 m), the ecological circumstances are so extreme that only *Grimmia incurva* and *G. alpestris* can survive. *Grimmia incurva* inhabits protected places, between rocks or even on the underside of boulders, it is here the most commonly occurring species. Male plants with lanceolate leaves and barely visible hair-points, and female plants with linear leaves, and, with handlense, clearly visible hair-points, grow frequently in mixed cushions and sporophytes on curved setae were usually present.

In the Löttschental, between Blatten and Fafleralp, on a rockformation along the road, *Grimmia ovalis*, *G. alpestris*, *G. montana*, *G. ramondii* (= *Dryptodon patens*) and again *G. pilosissima* were found. With this second record in one week, it is acceptable that *Grimmia pilosissima* should occur in more localities in Switzerland, but that it up to now has been overlooked or not recognized and possibly as *Grimmia montana* or *G. ovalis* stored in herbaria. The Löttschental ends in Fafleralp (1787 m), surrounded by three glaciers, as a result of this, there is a permanent high air humidity. This could be noticed by the rich occurrence of sporulating dioicous *Grimmia* taxa, which usually are sterile. On boulders in the larch forest, close to the parking lot, extended vegetations of the hygrophilous *Grimmia anomala* and *G. hartmanii* were found, however, both without sporophytes. Richly fruiting species in Fafleralp were : *Grimmia elatior*, *G. longirostris*, *G. mühlenbeckii* and *G. ramondii*.

In Val d'Hérens, not far from Les Haudères, on a slanting rock, overflowed by seepage water, *Grimmia unicolor* was found. Higher up in the valley, at Arolla, in a small stream, coming from a glacier, the hydrophilous *Grimmia mollis* was growing partly submers. That in some parts of Wallis, Grimmias can be absent was shown when, in Leukerbad, we took a chairlift to the Gemmi-

pass (2314 m). Arrived above, we found the occurring rock Wettersteinkalk. This substrate is for a bryologist a no-go area, because on this extremely solid rock no protonema can settle; only in fissures, some *Schistidium* and *Pottiaceae* were found.

With the exception of *Grimmia pilosissima*, all above cited Grimmias are, according to the website of NISM (Nationales Inventar der Schweizer Moosflora), known from Valais. In the past, also have been found : *Grimmia crinita* (one record, Schnyder 1991), *G. decipiens*, *G. dissimulata* (one record Maier 1995), *G. elongata*, *G. torquata* and *G. trichophylla*.

#### References

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