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**Artikel:** Alpine Rasengesellschaften auf Silikatgestein bei Davos : mit farbiger Vegetationskarte 1:2500 = Alpine grassland communities upon silicate substrate near Davos : with a coloured vegetation map 1:2500

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1978) sono conseguenza di una diversa scelta delle superfici dei rilievi floristici. Presso gli autori citati quest'ultime sono disposte in maniera discreta al fine di ottenere associazioni nettamente distinte tra di loro, nel presente lavoro invece in maniera continua. Differenze riconducibili a fattori climatici o fitogeografici sono di importanza secondaria.

- Per il rilevamento cartografico della vegetazione furono elaborate una chiave principale e tre chiavi secondarie, cioè una per ogni gradiente vegetazionale. Le unità transitorie tra due gradienti furono incluse in entrambi le chiavi relative (cap. 5.1, risp. annessi 5-8).
- Con l'aiuto di fotografie aeree a colori facilitanti l'orientamento nel terreno e di un'ortofotografia (fig. 11, p. 67) fu allestita una carta fitosociologica di 56 ettari nella scala 1:2500.
- La rappresentazione degli aggruppamenti erbacei alpini dal punto di vista fitosociologico e della loro ripartizione spaziale, raggiunge nella presente carta un grado di dettaglio superiore a quello delle altre carte comparabili finora apparse.
- La grande ricchezza di diversi tipi di vegetazione su uno spazio minimo che traspare dalla carta è da ricondurre in gran parte a variazioni della situazione geomorfologica.

Summary: Alpine grassland communities upon silicate substrate near Davos with a coloured vegetation map 1:2500

In this work the author presents a detailed study of the vegetation and stations of an alpine zone near Davos (Switzerland). This area consists mainly of acidic silicate substrate, and, to a lesser extent, of calcareous schists. The climate rather continental has an annual mean temperature of around  $-1^{\circ}\text{C}$  to  $-3^{\circ}\text{C}$  and an annual precipitation amount of about 1200 mm.

More than 200 relevés constitute the basis of this study. They were first compared mathematically (using the correspondence-, cluster- and principal component analysis), then ordinated by hand into four tables, and finally classified according to habitat factors (chap. 3).

Results:

- thirteen units of local validity were distinguished:
  - 1 spring-fens
  - 2 snow-beds with mosses
  - 3 extreme snow-beds with few mosses
  - 4 not very extreme snow-beds
  - 5 cool and sunny slopes
  - 6 fairly dry slopes
  - 7 warm slopes at the limit of the subalpine zone
  - 8 fairly warm slopes relatively rich in bases
  - 9 steep slopes relatively rich in bases

- 10 windy ridges relatively rich in bases
- 11 strong windy tops and ridges, poor in bases
- 12 wind sheltered steep slopes with unstable soils
- 13 shady, rather humid slopes

Units 4, 5 and 11 have been further subdivided (see annex 2).

- The sequences of vegetation units 2-3-4b-5-6-7, 2-3-4a-13-12-11, and 9-10 form three vegetation gradients. These gradients are easy to recognize from the correspondence analysis (reciprocal averaging) of the vegetation relevés made both on their floristic composition (see chap. 4.3.1 and fig. 7), as well as on their mean indicator values (chap. 4.3.2 and fig. 9).
- These vegetation gradients correlate closely with the duration of the snow cover (see chap. 4.3.3), which is mainly determined by the relief (chap. 4.2).
- The vegetation units 1,2,3,7,9, and 10 correspond to the *Eriophoretum scheuchzeri*, *Polytrichetum sexangularis*, *Salicetum herbaceae*, *Festucetum halleri*, *Festuco-Trifolietum thalii* and *Elynetum*. The remaining units, which represent more than half the vegetation relevés, lie outside of the variation range of each association according to the tables of BRAUN-BLANQUET (1969) and OBERDORFER (1977, 1978). They fall into the gaps or the transitions between two and occasionally three associations (chap. 4.1.1, 6.1 and annexes 2-4).
- The differences between the vegetation units described here and the associations described by BRAUN-BLANQUET (1969) and OBERDORFER (1977, 1978) are due to a different choice of the relevés surfaces. In these quoted studies, the distribution of the surfaces has been more or less "discreet" in order to clearly determine distinct associations, whereas in this study the surfaces have been continual. Differences in the vegetation due to differences in climate or in geographical plant distribution seem to be less important here.
- In order to map the 13 vegetation units, a main phytosociological key and three partially overlapping keys (one for each vegetation gradient) have been elaborated (chap. 5.1, annexes 5-8).
- A phytosociological map (endscale 1:2500) of an area of 56 hectares has been drawn with the help of coloured aerial photographs, which greatly facilitated orientation in the field sites, and with the use of an orthophotography (fig. 11, p. 67).
- Among the phytosociological maps for similar regions published up to now, the present map constitutes the finest spatial and phytosociological resolution for alpine grassland vegetation.
- The rich variety of vegetation types on such a small area one can see on the map is mostly due to changes in the relief.

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