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Summary

The present investigations are dealing with vegetation and site factors of peat bogs in the surroundings of Rothenthurm (cantons of Schwyz and Zug, Switzerland). Systematic networks were layed in order to obtain the outmost objectivity of sampling. 183 samples were scored; vegetation data, site factors and relations between those two sets were successively analysed, various quantitative methods being employed.

The studied vegetation can be described as a structure consisting of 5 gradients (Chapter 5.1.4. and Fig. 10). About 40 % of the variance found in the phytosociological data probably are of "random origin" (Chapter 8.1.2.).

21 site factors were determined: the principal water analyses comprised Ca^{++}, Mg^{++}, Na^{+} and K^{+} content as well as the pH and the electric conductivity of the water. As to the peat, the exchangeable ions of Ca^{++}, Mg^{++}, Na^{+}, K^{+} and H^{+}, the phosphate content and the pH as well as the cation exchange capacity, the base saturation and the ash were studied. The duration lines of the water table were investigated in all the survey plots for determining the water economy.

As a result, four groups of site factors were distinguished (Chapter 6.4., Fig. 18):

1. Acid-base conditions of water and peat;
2. Factors connected with physical conditions of peat;
3. Water economy of the peat bog;
4. Electric conductivity of the water.

It should be mentioned that the last aforementioned factor turned out to be rather independant upon the others.

Relations between the vegetational set-up and the site factors proved to be differentiated. The highest affinity was found in respect to the pH of the turf, then to exchangeable H^{+} ions, the phosphate content of the peat, the pH of the water, the base saturation, the content of Ca^{++} of the water and the cation exchange capacity (Chapters 7.1.5. and 7.2.3., Fig. 28).

The diversity of vegetation tended to increase with the degreee of decomposition of the peat. The best correlation was found between the number of species per square meter and the ash in the peat; it was followed by the cation exchange capacity and the exchangeable hydrogen ions (Chapter 7.1.6).

The present study bring about:

1. An information about resemblance structure of the vegetation data in a geometric similarity model (factor analysis, Figs. 9b and 10);
2. A proposal of the classification of the vegetation data (cluster analysis, discriminant analysis, Figs 11 and 15);
3. A description of alteration of several site factors along a vegetational gradient (trend surface analysis, Chapters 7.1.1. and 7.2.1.);
4. Mean values and standard deviations of the measured site factors in the proposed units of vegetation (Figs 29-32);
5. Considerations on a site characterization based on vegetation and vice versa (direct ordination, Figs. 35-36, correlation between site and ordination, discriminant analysis, Fig. 28).

It is concluded that the base saturation of the peat represents as good a criterion for the ecological classification of peat bogs as the commonly used Ca^{++} concentration of the water (Chapter 8.1.2.).

The use of the present results in explaining the function of excentric peat bogs is discussed, the system analysis being considered as an effective method.