Suo 38 (3—4): 63—70, 1987

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OBSERVATIONS ON SPHAGNUM SPECIES AND THEIR RELATION TO VEGETATION AND ECOLOGICAL FACTORS IN ÖSTANBERG STORMOSSEN, SOUTHERN FINLAND

HAVAINTOJA RAHKASAMMALLAJEISTA JA NIIDEN SUHTEISTA KASVILLISUUTEEN JA YMPÄRISTÖTEKIJÖIHIN BROMARVIN ÖSTANBERG STORMOSSENILLA

Heikkilä, R. & Löytönen, M. 1987: Observations on Sphagnum species and their relation to vegetation and ecological factors in Östanberg Stormossen, southern Finland. (Tiivistelmä: Havaintoja rahkasammallajeista ja niiden suhteista kasvillisuuteen ja ympäristötekijöihin Bromarvin Östanberg Stormossenilla). — Suo 38: 63—70. Helsinki.

The relations between *Sphagnum* species, vegetation, and the macrotopographical and microtopographical environmental gradients of a plateau bog located on the southern coast of Finland were studied. A profile was levelled from the mire margin to the mire centre and 16 sample plots were located along the profile. The vegetation of each sample plot was described using coverage percentages. The mire water level, pH, and specific conductivity were measured for each plot. Samples of the capitula of different species of *Sphagnum* were taken and they were measured for water content. Hummock surfaces were predominant in the mire centre. The hollows were relatively dry ombrotrophic, small sedge bogs. The mire margin fen was mostly mesotrophic. In the northern part of the mire there was also a eutrophic flark fen. In the mire centre the pH was 4 or less and the specific conductivity ranged from 10 to 25 μS/cm. In the mire margin fen the pH ranged from 4.7 to 5.7 and the specific conductivity was c. 50 μS/cm. The water content of the capitula of the *Sphagna* was in general high, ranging from 300 to 3000 %. In the hollows of the mire centre the water content of *Sphagnum tenellum* was as low as 15 %.

Key words: mire vegetation, ecology, plateau bog, water content, *Sphagnum*.

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INTRODUCTION

Mire vegetation studies have a long and continuous tradition in Finland ranging from Cajander (1913) to the present days. The ecology of the vegetation has been studied much less, although the few examples by Havas (1961), Reinikainen et al. (1984), and Heikkilä (1987) must be mentioned. More attention has been paid to the ecology of single plant species. As early as in the 1920's and 1930's the relationships between pH and mire plants were studied by Warén, Kivinen, Kotilainen, and Pankakoski (see Ruuhijärvi 1983). A major work in this field was also carried out by Lumiala (1944). He studied the relationships between the water table and the occurrence of mire plants; this resulted in a division of the plants into ecological groups.

The ecological amplitudes of many mire habitats and plant species are fairly well known (e.g. Ruuhijärvi 1983; Sjörs 1983; Eurola et al. 1984). A number of detailed quantitative studies dealing with peat mosses have recently been published (e.g. Vitt et al. 1975; Horton et al. 1979; Vitt & Slack 1984; Rydin 1985a).

The aim of this study was to examine the relationship between the vegetation and the different *Sphagnum* species, and to determine how both of these relate to the main ecological factors: the water table, pH and specific conductivity, along a profile from the mire margin to its centre in a plateau bog on the southern coast of Finland.

STUDY AREA

Östanberg Stormossen (45 ha, Figs. 1 and 2) is located 59°57'45" N 22°58'00" E in the zone of plateau bogs (Ruuhijärvi 1982) in the hemiboreal region on the southern coast of Finland (Ahti et al. 1968). The mire lies 19 m above sea level. The mean annual temperature is 5.3 °C, the mean annual rainfall is 554.7 mm, and the wind blows predominantly from the SW. The climatic data are from the Hanko Tvärminne station for the period 1963—1975 (Heino 1976). The mire lies beside an esker which belongs to the II Salpausselkä ridge (Fogelberg & Seppälä 1978), and seepagewater influence is evident in the mire margin.

Östanberg Stormossen is a plateau bog with a flat, almost treeless centre which is characterized by nonconcentric hummocks and hollows. The hummocks are fairly low (maximum height 35 cm) with relatively gently sloping edges. The margin slope is nearly unnoticeable and narrow, and it is characterized by a *Ledum* pine bog which has a rather dense tree cover. The mire margin fen is very narrow (only a few meters) except in the northern part where it widens to the width of 80 m. Its site type is mostly mesotrophic tall sedge fen, but in the northern part there is also a eutrophic flark fen (Fig. 3).

Fig. 2. A view of the centre of Östanberg Stormossen.

Kuva 2. Näkymä Östanberg Stormossenin keskustasta.

Fig. 3. The mire margin fen in the northern part of Östanberg Stormossen. The margin slope is in the background.

Kuva 3. Östanberg Stormossenin pohjoisreunan laideneva. Reunaluisu näkyy taustalla.

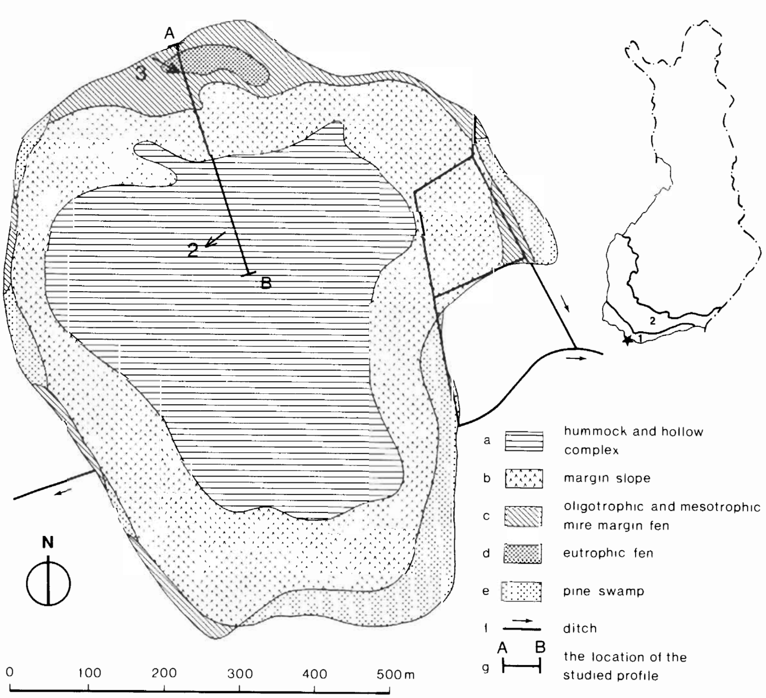

Fig. 1. The vegetation zones of Östanberg Stormossen, Bromarv, Southern Finland. In the index map 1 = plateau bogs, 2 = concentric bogs (zones according to Ruuhijärvi 1982). The location of Östanberg Stormossen is indicated by a star. The arrows indicate the photo views of Figs. 2 and 3.

Kuva 1. Östanberg Stormossenin kasvillisuusvyöhykkeet. a = keidasräme, b = reunaluisu, c = oligotrofinen ja mesotrofinen laideneva, d = letto, e = minerotrofinen räme, f = oja, g = profiilin sijainti. Indeksikartassa 1 = laakiokeidassuot, 2 = konsentriset keidassuot. Suoyhdistymätyyppivyöhykkeet Ruuhijärven (1982) mukaan. Tähti osoittaa suon sijainnin. Nuolet osoittavat kuvien 2 ja 3 kuvauspaikan ja -suunnan.

METHODS

A profile was taken from the mire margin to the centre, and the profile was levelled to the accuracy of one cm (Figs. 1 and 4). The location of the profile was chosen to obtain the greatest possible variation in the vegetation. Sixteen sample plots of 1 m^2 were located so that they represented most of the different habitats along the profile. The sample plots were chosen so that their surface was even and there was only little variation in the water level. The sample plots were numbered from the centre to the mire margin. The vegetation of each sample plot was described using cover percentages (scale +, 0.5, 1, 2, 3, 5, 7, 10, 15 . . . 85, 90, 93, 95, 97, 98, 99, 100). The vegetation was classified according to the Finnish tradition and the nomenclature of Ruuhijärvi (1983). The nomenclature of vascular plants was taken from Hämet-Ahti et al. (1986) and that of bryophytes from Koponen et al. (1977).

The mire water level was measured at each sample plot to the accuracy of one cm on the 10th of July, 1986, after a ten-day period of no precipitation. The pH of the mire water was measured for each sample plot *in situ* using a Portatest 655 portable pH meter. In the most acid sites, the meter evidently gave values slightly too low due to the high humus content of the mire water (Brezinski 1983). Surface water samples were collected in plastic bottles at each sample plot and the specific conductivity of the samples was measured in the laboratory by a WTW LF 91 conductivity meter. These measurements were corrected using the pH correction table given by Sjörs (1950). The water content of the capitula of the *Sphagnum* was measured for 35 samples representing 11 species. Each sample consisted of at least 10 capitula taken from different places of the sample plot. The water content is given in percentages of dry weight.

RESULTS

The sample plots numbered 1 and 4 represent *Sphagnum fuscum* pine bogs. Plot number 15 is located on a hummock in the eutrophic flark fen, and number 9 represents a *Ledum* pine bog. Plots number 2, 3, 5, and 6 are located on ombrotrophic small sedge bogs, and plots 7, and 8 are situated on hollow bogs. Sample plots 10, 12, and 14 represent oligotrophic to mesotrophic tall sedge fens, number 11 represents a eutrophic *Sphagnum warnstorfii* fen, and numbers 13 and 16 are situated on eutrophic flark fens (Table 1).

The pH of the mire water was 3.4—4.0 for ombrotrophic plots, and 3.9—5.7 for

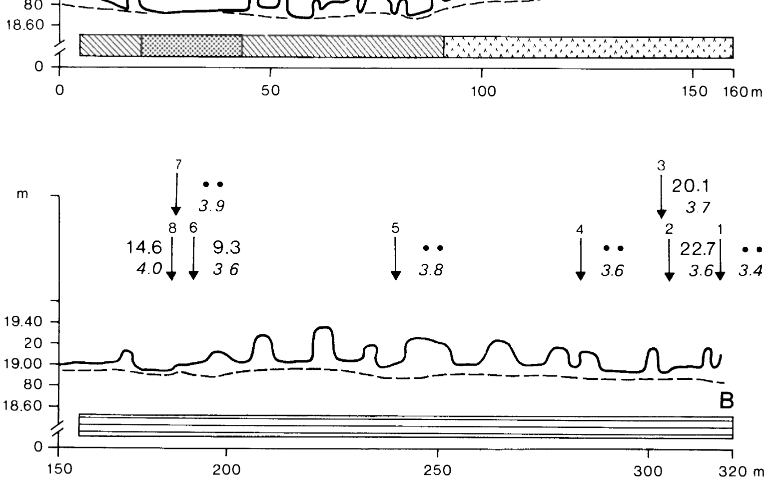

Fig. 4. The profile of the northern part of Östanberg Stormossen. 1 = the surface of the mire, 2 = the water level of the mire, 3 = the number of the sample plot, 4 = the specific conductivity of the mire water (µS/cm), 5 = the pH of the mire water, 6 = no data available. The vertical bar shows the vegetation zones (for explanation, see fig. 1).

Kuva 4. Profiili Östanberg Stormossenin pohjoisosasta. 1 = suon pinta, 2 = suoveden taso, 3 = näytealan numero, 4 = suoveden johtokyky, 5 = suoveden pH, 6 = tieto puuttuu. Profiilin alla oleva rasteri osoittaa suokasvillisuusvyöhykkeen (ks. selitykset kuva 1).

Sample plot No. *Näyteala*	1	4	15	9	2	3	5	6	7	8	10	14	12	11	13	16	
FIELD LAYER, *KENTTÄKERROS*																	
Dwarf shrubs, *Varvut*																	
Calluna vulgaris	40	20	5	30	—	—	—	—	—	—	—	—	—	2	—	—	11—25
Empetrum nigrum	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	25
Vaccinium microcarpum	5	1	—	+	—	—	+	—	—	—	—	—	—	—	—	—	15—25
Betula pubescens	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
Pinus sylvestris	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	25
Ledum palustre	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—	25
Andromeda polifolia	2	3	3	1	10	—	3	.5	1	—	—	+	.5	+	—	+	0—25
Vaccinium oxycoccos	.5	2	.5	7	20	5	3	7	1	+	3	5	2	3	+	+	0—25
Myrica gale	—	—	7	—	—	—	—	—	—	—	3	5	1	5	—	2	0—14
Sedges and grasses, *Saramaiset ja heinät*																	
Eriophorum vaginatum	3	5	—	2	10	2	2	5	—	—	—	—	—	—	—	—	4—25
Carex limosa	—	—	—	—	—	+	—	—	—	—	1	—	3	—	5	1	10—11
Rhynochospora alba	—	—	+	—	—	—	—	—	.5	+	30	+	—	—	—	20	0—14
Carex rostrata	—	—	3	—	—	—	—	—	—	—	2	—	—	1	—	+	0—14
C. lasiocarpa	—	—	1	—	—	—	—	—	—	—	—	10	5	3	3	—	1—14
Eriophorum angustifolium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	.5	0
Phragmites australis	—	—	+	—	—	—	—	—	—	—	3	+	10	5	3	+	0—14
Trichophorum alpinum	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	12
Herbs, *Ruohot*																	
Rubus chamaemorus	10	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
Drosera rotundifolia	+	5	+	—	—	+	.5	5	—	—	2	2	5	2	+	+	0.25
D. anglica	—	—	—	—	+	—	—	—	—	1	—	—	2	—	—	7	0—11
Scheuchzeria palustris	—	—	—	—	—	—	—	—	1	.5	—	—	—	—	—	—	4—6
Menyanthes trifoliata	—	—	—	—	—	—	—	—	—	—	2	5	7	3	5	—	1—12
Drosera intermedia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	0
GROUND LAYER, *POHJAKERROS*																	
Liverworts, *Maksasammalet*																	
Mylia anomala	1	15	—	—	—	—	+	+	—	—	—	—	—	—	—	—	15—25
Cladopodiella fluitans	—	—	—	—	+	—	+	—	—	—	—	—	—	+	—	—	10—15
Lophozia sphagnicola	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	12
Aneura pinguis	—	—	—	—	—	—	—	—	—	—	—	—	—	+	10	+	0—12
Peat mosses, *Rahkasammalet*																	
Sphagnum angustifolium	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
S. fuscum	30	60	—	40	—	—	—	—	—	—	—	—	—	—	—	—	25
S. rubellum	65	25	100	—	—	—	10	70	—	—	—	—	—	5	—	—	12—25
S. magellanicum	—	—	—	60	—	—	—	—	—	—	—	—	—	—	—	5	0—25
S. russowii	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	12
S. tenellum	—	—	—	—	90	+	80	25	—	—	—	—	—	—	—	—	4—17
S. balticum	—	—	—	—	—	20	10	5	20	—	—	—	—	—	—	—	4—17
S. cuspidatum	—	—	—	—	5	80	—	—	—	60	—	—	—	—	—	—	4—10
S. majus	—	—	—	—	—	—	—	—	80	40	15	—	—	—	—	—	4—6
S. papillosum	—	—	+	—	—	—	—	—	—	—	5	90	—	10	—	10	0—12
S. fallax	—	—	—	—	—	—	—	—	—	—	30	—	—	—	—	—	6
S. subnitens	—	—	—	—	—	—	—	—	—	—	—	+	100	—	—	3	0—11
S. warnstorfii	—	—	—	—	—	—	—	—	—	—	—	—	—	60	—	+	0—12
S. subsecundum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	3	0—1
Mosses, *Sammalet*																	
Dicranum leioneuron	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	25
Pohlia nutans	—	—	—	+	—	—	—	—	—	—	—	—	—	+	—	—	12—25
Aulacomnium palustre	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	12
Drepanocladus fluitans	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	4
Calliergon stramineum	—	—	—	—	—	—	—	—	—	—	—	—	+	2	—	—	11—12
Drepanocladus exannulatus	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	+	0—1
Dicranum bonjeanii	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	12
Drepanocladus badius	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	0
Scorpidium scorpioides	—	—	—	—	—	—	—	—	—	—	—	—	—	—	60	30	0—1
Drepanocladus revolvens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	0
Campylium stellatum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	0
Lichens, *Jäkälät*																	
Cladonia coccifera	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
C. rangiferina	1	+	—	+	—	—	—	—	—	—	—	—	—	—	—	—	25
Icmadophila ericetorum	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
Cladonia squamosa	—	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	10
Litter, *Karike*	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	
Mud + water	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	38	
Water level cm *Veden pinta, cm*	25	25	14	>25	10	4	15	17	6	4	6	10	11	12	1	0	

◀ Table 1. The vegetation of the plots. Cover is in %, + indicates < 0,5 % cover, water level in the last column indicates height above water table in cm. Plots 1 and 4 represent *Sphagnum fuscum* pine bog, 15 is located on a hummock in the eutrophic flark fen, 9 represents *Ledum* pine bog, 2—6 represent ombrotrophic small sedge bogs, 7—8 are hollow bogs, 10, 14, and 12 represent tall sedge fens, plot 11 represents a eutrophic *Sphagnum warnstorfii* fen, and 13 and 16 represent eutrophic flark fens.

◀ *Taulukko 1. Näytealojen kasvillisuus. Kasvien peittävyys on ilmoitettu prosentteina. Alle 0,5 %:n peittävyyttä ilmaisee +. Viimeisessä sarakkeessa on ilmoitettu suoveden korkeuden vaihteluväli. Näytealat 1 ja 4 edustavat rahkarämeitä, 15 on tehty rimpileton mättäältä, 9 isovarpurämeeltä, 2—6 edustavat ombrotrofisia lyhytkorsinevoja, 7 ja 8 kuljunevoja, 10, 12 ja 14 suursaranevoja ja 11 varsinaista lettoa sekä 13 ja 16 rimpilettoa.*

minetrophic ones. The corrected specific conductivity ranged from 9.3 to 22.7 μS/cm in ombrotrophic sites, and from 25.1 to 55.7 in minerotrophic sites (Fig. 4). No significant differences were observed in pH and specific conductivity between the hummocks and hollows in the mire centre and the margin slope. The pH of the oligotrophic fens and hummocks in the fen did not differ from that of the mire centre. The conductivity, however, was somewhat higher, especially in the hummock surrounded by a eutrophic fen (plot 15).

The water level in the centre of the mire was at least 25 cm below the mire surface in the hummock vegetation, while in the open bogs it ranged from 4 to 17 cm. In the mire margin fens, the water level ranged from 0 to 12 cm below the mire surface. On a relatively high hummock in the mire margin fen, the water level was 14 cm below the surface of the hummock (Fig. 4).

The water content of the capitula of the *Sphagna* growing on hummock ranged from 350 to 1020 % of dry weight in pure stands (Table 2). When the mire water level was low, the water content was also low. When growing in mixed stands with other *Sphagna* at the intermediate or flark level, the water content of *Sphagnum rubellum* and *S. magellanicum* was clearly higher, ranging from 1130 to 2700 %, than in pure stands. The water content of the species growing at the intermediate or flark level was in general higher than 1000 %, except for the *S. tenellum* growing in the relatively dry hollows in the centre of the mire. In pure stands, its water content was very low, only 15—20 %. In mixed stands with *S. balticum* or *S. rubellum*, the water content was clearly higher, ranging from 290 to 520 %. However, when *S. balticum* and *S. rubellum* were growing together with *S. tenellum*, their water content was much higher.

DISCUSSION

Östanberg Stormossen differs to some extent from typical plateau bogs, which are only found along the southern coast of Finland (Ruuhijärvi 1982). The margin slope of the bog is lower and its centre is drier than in large mires. The vegetation of the mire centre — especially the great abundance of *Sphagnum rubellum* and *S. tenellum* — is typical of small plateau bogs, and the mire is surrounded by a well-developed minerotrophic mire margin fen. Part of the mire margin is eutrophic, which nowadays is a rare feature found only in a few virgin mires located along the southern coast of Finland. The differences listed above are due to the small size of the bog, since large mires of this type (those covering several km^2) have a high margin slope and a wet centre with hollows and bog pools (Ruuhijärvi 1983).

The field layer of the *Sphagnum fuscum* pine bogs, which were predominant on the hummock level at the centre of this mire, is typical of the plateau bogs in Finland. *Calluna vulgaris* is the dominant species of the field layer. In the ground layer, *Sphagnum rubellum* is exceptionally abundant (Table 1, plots 1 and 4), a feature seldom found in Finnish mires (Eurola et al. 1984). The dominant species on the hummocks in the mire margin fen is *S. rubellum* (Table 1, plot 15).

The margin slope is a *Ledum*-dwarf shrub-pine bog. The vegetation of the margin slope is, however, close to the *Sphagnum fuscum* pine bogs found in the centre of this mire (Ruuhijärvi 1983). The main differences between these two types of pine bogs in Östanberg Stormossen are the abundance of *S. magellanicum* and *Ledum palustre*, and the absence of *Sphagnum rubellum* in the *Ledum*-dwarf shrub-pine bog (Table 1, plot 9). The tree cover is much denser on the margin slope than in the mire centre.

The nutrient status of the mire margin fen varies from oligotrophy to eutrophy (see Ruuhijärvi 1983). The site types of the mire margin fen are eutrophic flark fen (plots 13

Table 2. The water content of the capitula of the *Sphagna*. The additional species growing in mixed stands are given in column 3.

Taulukko 2. Rahkasammalten latvusten vesipitoisuus. Sekakasvustoissa esiintyvät seuralaislajit ovat sarakkeessa 3.

Plot No.	Species *Laji*	Additional species *Seuralaislajit*	Height above water table cm *Vedenpinnan yläpuolella, cm*	Water % *Vesipitoisuus %*
1	*S. fuscum*		25	450
4	"		25	670
9	"		>25	500
15	*S. rubellum*		14	1020
17	"		17	960
4	"		25	460
1	"		25	350
11	"	*S. papillosum*	12	1130
5	"	*S. tenellum*	15	1850
9	*S. magellanicum*		>25	530
16	"		0	2700
2	*S. tenellum*		10	15
5	"		15	20
5	"	*S. balticum, S. rub.*	15	520
6	"	*S. rubellum*	17	290
3	*S. balticum*		4	1460
7	"	*S. majus*	6	1300
5	"	*S. tenellum*	15	810
3	*S. cuspidatum*		4	1760
8	"	*S. majus*	4	1860
8	*S. majus*	*S. cuspidatum*	4	1740
7	"	*S. balticum*	6	990
16	*S. papillosum*		0	2150
16	"		0	1640
10	"		6	990
14	"		10	1720
14	"	*S. subnitens*	10	840
11	"	*S. warnst., Dicr. bonj.*	12	1030
10	*S. fallax*		6	1920
10	"		6	1990
11	*S. warnstorfii*	*Dicranum bonjeanii*	12	1150
12	*S. subnitens*		11	1080
16	"	*S. magellanicum*	0	3070
14	"	*S. papillosum*	10	1190
13	*S. subsecundum*	*Scorpidium scorpioides*	1	2650

and 16), mesotrophic flark fen, mesotrophic *Sphagnum papillosum* fen (plot 14), meso-eutrophic *Sphagnum warnstorfii* fen (plot 11), and oligotrophic sedge fen (Plot 10, see Table 1). The vegetation is typical of the site types (Eurola et al. 1984).

The mesotrophic and eutrophic fens could not be separated using the measurements of pH and specific conductivity. The observed pH and conductivity measurements of the different site types are similar to the results obtained by Malmer (1986) from Swedish material. The fact that the pH and conductivity of the mire water did not differ in the mesotrophic and eutrophic fens means that the differences in the vegetation must be explained by the differences in hydrological conditions. The eutrophic sites (plots 13 and 16) were wet and water was clearly seen to flow from west to east along the mire margin fen.

The mesotrophic sites (plots 12 and 14) were drier and no flow of water was observed. This indicates that a continuous flow of water supplied the eutrophic vegetation with additional nutrients. Parallel observations have been made earlier by Reinikainen et al. (1984).

The relation between the observed pH values and the *Sphagnum* species followed the pattern given by Andrus (1986). Also, the relation between the specific conductivity of the mire water and the *Sphagnum* species repeats the results reviewed by Andrus (1986).

The observations concerning the relation between the plant species and the mire water level are in general similar to earlier results by Lumiala (1944). The only exceptions were *Calluna vulgaris, Drosera rotundifolia*, and *Sphagnum warnstorfii,* which were found in wetter habitats than those described by him. The distribution of the species along the microtopographical gradients followed the general pattern given in many earlier papers (e.g. Sjörs 1948; Vitt el al. 1975; Vitt & Slack 1984; Andrus 1986).

The observations on the water content of the capitula of the different *Sphagnum* species for the most part supported earlier results (e.g. Vitt et al. 1975; Silvola & Aaltonen 1984; Rydin 1985b). Generally, the water content was high when the water level was high. When comparing different species growing at the same level above the mire water, the water content of hummock species was higher than that of hollow species (Rydin 1985b) (Table 2). When growing in pure stands relatively high above the water table, *Sphagnum tenellum* dried out so that the water content was only 15—20 %. The water level was low due to a rainless period of ten days before the field measurements (see Lindholm & Markkula 1984; Reinikainen et al. 1984), which is quite usual in this area during the summer. When the water content of *S. tenellum* is so low, its photosynthesis is halted (Rydin & McDonald 1985a, 1985b). In spite of this, *S. tenellum* was growing in large pure stands in the mire centre. In mixed stands with *S. rubellum* at the edges of the hollows, the water content of *S. tenellum* was about 20 times higher than in pure stands, due to the greater ability of *S. rubellum* to store water in dry conditions (see Rydin 1985b). The water content of *S. rubellum* as well seems to be higher in mixed stands than in pure stands (see Rydin 1985b), but most of the pure stands are drier than the mixed stands (Table2).

In the minerotropchic mire margin fens, the robust *Sphagnum* species *S. papillosum* and *S. magellanicum* seem to be less effective in storing water than the others — *S. fallax, S. subnitens, S. warnstorfii* and *S. subsecundum* (Table 2). This is due to the weaker ability of the robust species to store and transport water between the branches and the leaves (Hayward & Clymo 1982). Although the observations are few, the above results support the results obtained by studying the *Sphagnum* species of ombrotrophic bogs.

ACKNOWLEDGEMENTS

We wish to thank Dr. Håkan Rydin and Dr. Pekka Isoviita for most valuable comments. The English language was skillfully checked by Ms Laurel Bush, MA. The figures were prepared in their final form by Ms Iris Lampila and Ms Leena Heiskanen. We wish to express our warmest thanks to all of them.

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TIIVISTELMÄ:

HAVAINTOJA RAHKASAMMALLAJEISTA JA NIIDEN SUHTEISTA KASVILLISUUTEEN JA YMPÄRISTÖTEKIJÖIHIN BROMARVIN ÖSTANBERG STROMOSSENILLA

Tutkimuksen tarkoitus oli selvittää kasvillisuuden sekä suur- ja pienpinnanmuotoihin liittyvien ympäristötekijöiden suhteita eteläsuomalaisella laakiokeidassuolla. Suon reunalta keskustaan vaaittiin 300 m pitkä profiili, jonka varrelta valittiin 16 näytealaa. Näytealoilta kuvattiin kasvillisuus prosenttipeittävyyksin. Lisäksi näytealoilta mitattiin suoveden korkeus, pH ja johtokyky. Eri rahkasammallajien latvuksista (ylin 1 cm) otettiin näytteitä, joista määritettiin vesipitoisuus.

Suon keskusten kermit ja kuljut ovat sijoittuneet epäsäännöllisesti eivätkä muodosta samankeskisiä kehiä kuten konsentrisilla kilpikeitailla. Kermit ovat niukkapuustoista kanervarahkarämettä ja pienialaiset kuljut enimmäkseen ombrotrofista lyhytkorsinevaa, jonka valtasammalia ovat *Sphagnum balticum* ja *S. tenellum*. Lähellä reunaluisua on muutama märempi *S. majus* ja *S. cuspidatum* -valtainen kulju. Reunaluisu on matala ja kapea. Se on kohtalaisen runsaspuustoista isovarpurämettä. Laide on suurimmaksi osaksi hyvin kapea, vain pohjoisreunalla se leviää noin 80 m levyiseksi. Laidenevat ovat pääasiassa mesotrofisia, pohjoisreunan laiteen keskellä on rimpilettojuotti. Reunarämeet ovat hyvin kapeita eikä reunakorpia ole lainkaan.

Suon keskustassa, reunaluisulla ja laiteen oligotrofisella nevalla pH oli 4 tai sen alle ja johtokyky vaihteli välillä 10—25 μS/cm. Laiteen mesotrofisissa ja eutrofisissa osissa pH vaihteli välillä 4.7—5.7 ja johtokyky oli noin 50 μS/cm. Rahkasammalten latvusten vesipitoisuus oli yleensä korkea (300—3000 %). Alimmat arvot mitattiin mättäiltä ja korkeimmat märimmiltä laidenevoilta. Mittausta edeltänyt 10 päivän poutakausi oli aiheuttanut *Sphagnum tenellum*in kuivumisen puhtaissa kasvustoissa suon keskustan kuivimmissa kuljuissa siten, että vesipitoisuus oli laskenut jopa 15 %:iin. Sekakasvustoissa vesipitoisuus oli huomattavasti korkeampi (300—400 %). Tämä johtuu siitä, että *S. tenellum* hentona ja harvalehtisenä lajina ei pysty pidättämään vettä niin hyvin kuin monet sen seuralaislajit (ks. Rydin 1985b).

Laiteen mesotrofisen nevan ja leton pH ja johtokyky olivat samaa luokkaa. Letolla vesi virtasi silminnähtävästi, joten ero kasvillisuudessa johtuu ilmeisesti virtauksen aiheuttamasta vaihtuvaravinteisuudesta. Virtaava vesi näyttää olevan peräisin suota reunustavasta II Salpausselkään kuuluvasta reunamuodostumasta.

Received 23.III.1987
Approved 18.VI.1987