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Terje Klokk

# MIRE AND FOREST VEGETATION FROM KLÆBU, CENTRAL NORWAY

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# MIRE AND FOREST VEGETATION FROM KLÆBU, CENTRAL NORWAY

by

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ABSTRACT

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36 mire communities are subjectively arranged along the vegetation gradients poor - rich, mud bottom - hummock, and partly mire margin - mire expanse. There are 13 from ombrotrophic mire, 10 from poor fen, 4 from intermediate fen, 5 from rich fen, and 4 from extremely rich fen. Seven forest associations are recognized, viz. *Barbilophozio-Pinetum* Br.-Bl. et Sissingh 1939 em. K.-Lund 1967, *Chamaemoro-Piceetum* K.-Lund 1962, *Melico-Piceetum* K.-Lund 1962, *Equiseto palustris-Salicetum* ass. prov., *Alno (incanae)Prunetum* K.-Lund ex. Aune 1973, and *Ulmo-Tilieteum boreale* ass. prov. The *Vaccinium-Cornus suecica-Hylocomium splendens* community (Tab. IX) is also a forest community.

Ordination (RA) of forest analyses mainly confirms the subjective classification. The variation along the first and second axis, in the ordination diagram of forest analyses, is interpreted as a poor - rich gradient and a moisture gradient, respectively.

Exchangeable $Ca^{++}$ and pH (mires only) are positively correlated with a poor - rich gradient.

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CONTENTS

## INVESTIGATION AREA

The investigated area includes the northern part of Klæbu rural district, 20 km south of Trondheim (Fig. 1). Most of the area lies between 150-400 m a.s.l., with the highest point 537 m a.s.l. and the lowest 99 m a.s.l. West of the river Nidelva the terrain gradually rises towards Vassfjellet (710 m a.s.l.). The clay soil area closest to the river, is cultivated. Elsewhere spruce forest dominates the landscape, with scattered stands of pine forest on shallow soil and borders of grey alder along the Nidelva and brooks. Pine is more frequent at altitudes of 400-500 m a.s.l., especially in the eastern part of the area, but the stands are small. The two most common mire complexes are exentric ombrotrophic bogs, in the lowest parts (150-200 m a.s.l.), and sloping fens.

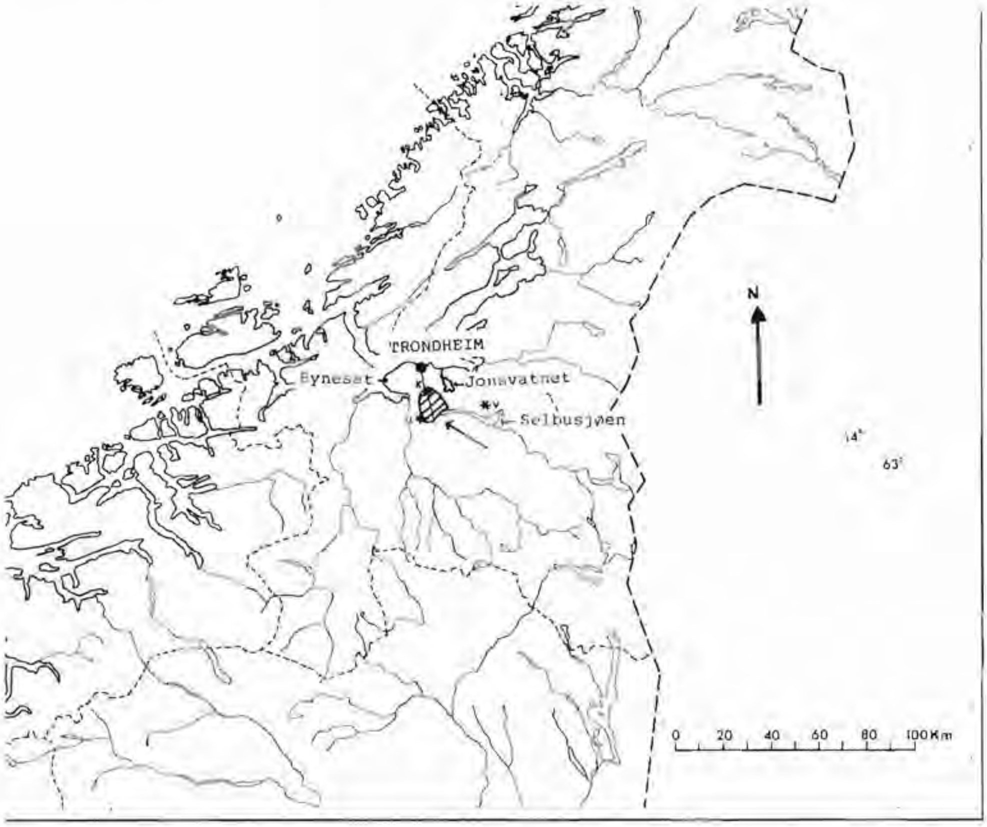


Fig. 1. Survey map, investigation area hatched (x = precipitation stations, K = Klæbu, L = Løksmyr, V = Vennafjell).

GEOLOGY

This section is mainly based on Wolff (1968). The investigated area consists of cambro-silurian sedimented rocks, represented by the Støren-group and lower Hovin-group (Fig. 2).

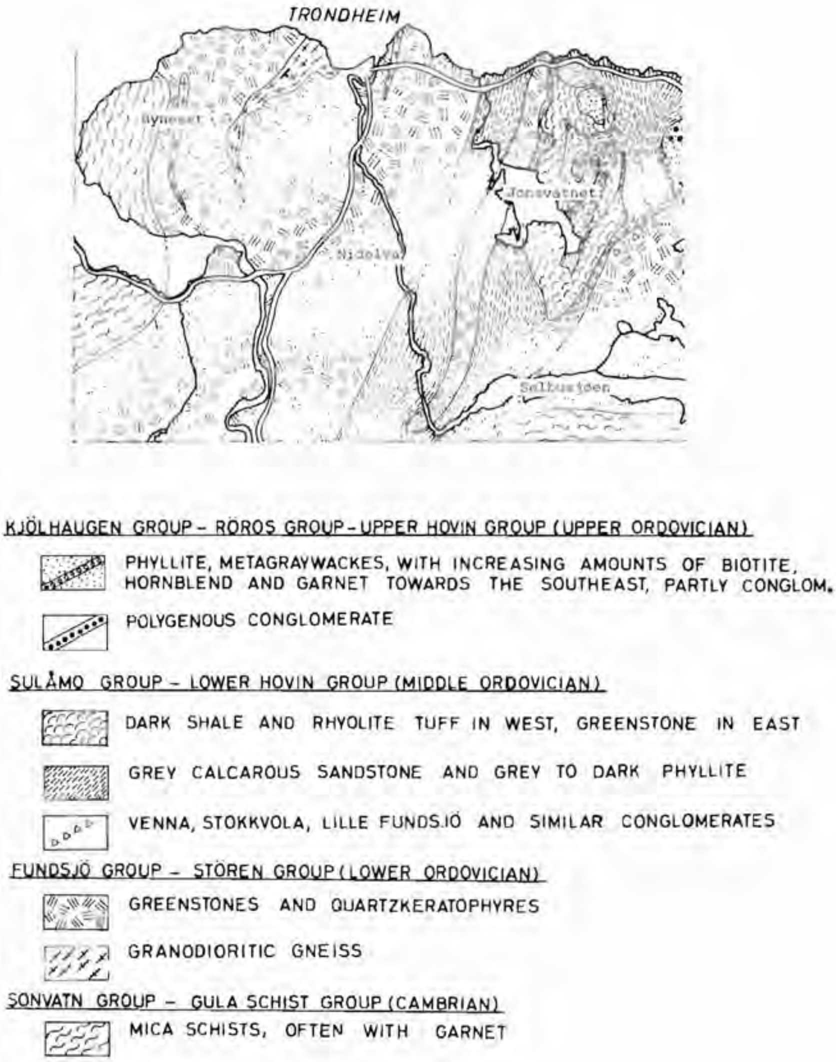


Fig. 2. Geological map (after Wolff 1976).

The geological formations are younger from west to east. At Byneset the Støren-group dominates, with greenstone as the dominant rock. Towards the east the younger lower Hovin-group predominates. In the border zone between, a conglomerate with pebbles occurs frequently. The Hovin-group consists of fine grained sedimentary rocks such as sandstone and schists. This layer is deposited above the greenstone of the Støren group.

A wedge of greenstone passes lake Jonsvatnet and reaches the outlet of lake Selbusjøen. East of this wedge the rocks of the Hovin-group dominate. The Caledonian foldings caused the present positions of the various layers.

Within the investigated area the highest sea level after the last glacial age was approximately 180 m higher than the present level. At lower levels fine grained deposits, mostly clay dominate the landscape.

A marked moraine (the "Heimdal-morain") passes the area in the direction south-north (Carstens 1919). This moraine is covered by homogenous spruce forest.

## CLIMATE

Within the investigated area there are two precipitation stations, Klæbu at 63°18'N - 10°28'E and Løksmyr at 63°14'N - 10° 27'E. Both stations are situated at low altitudes, 143 and 170 m a.s.l., respectively. Data from the Vennafjell station 63°20'N - 10°39'E (671 m a.s.l.) is included. These three stations together are considered to be representative for the area under investigation.

Neighbouring stations which also measure temperature are Tyholt Trondheim 63°25'N - 10°26'E (113 m a.s.l.) and Selbu 63°12'N - 11°07'E (197 m a.s.l.). The latter is considered more representative.

The humidity index of Martonné (Dahl 1950) is calculated,

$$H = \frac{\text{Yearly precipitation}}{\text{Yearly mean temperature } ^{\circ}\text{C} + 10}$$

The humidity index of Martonné of the Tyholt-Trondheim station is 57 and that of the Selbu station 58. Precipitation

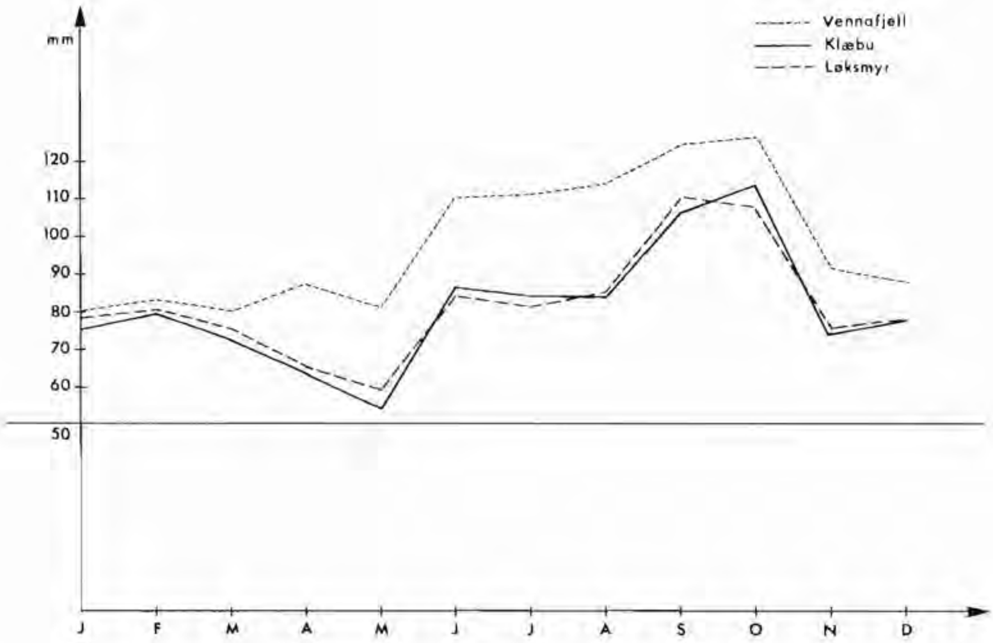


Fig. 3. Precipitation norms for the period 1931-1960 for the stations Klæbu, Løksmyr and Vennafjell.

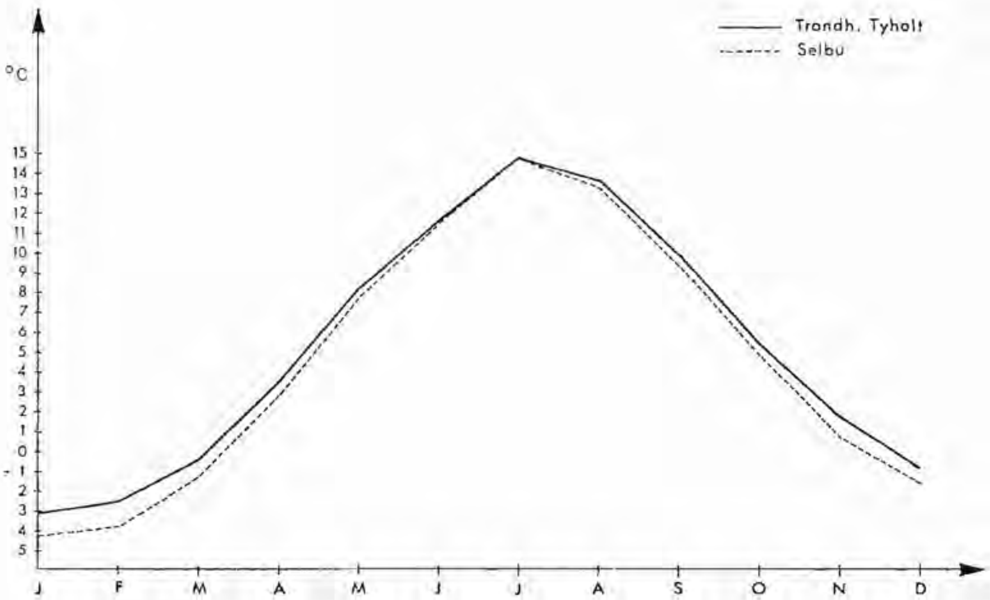


Fig. 4. Temperature norms for the periode 1931-1960 for the stations Trondheim-Tyholt and Selbu.

values of the stations within the investigated area are higher than those of the Tyholt-Trondheim and Selbu stations. Based on precipitation at the station Løksmyr (Fig. 3) and a mean temperature between Tyholt-Trondheim and Selbu (Fig. 4), the estimated representative humidity index of Klæbu (humidity index of Martonné) is 66. This is a relatively high value considering the distance to the coast (Dahl 1950).

The hygroterm of Amman (Amman 1929)

$$A = \frac{\text{Yearly precipitation cm} \times \text{Yearly mean temperature } ^{\circ}\text{C}}{\text{Mean temperature of warmest month} - \text{mean temperature of coldest month}}$$

gives values of 25 and 20 for Tyholt-Trondheim and Selbu, respectively, and a value of 26 corresponding to the humidity index of 66 as calculated above. This illustrates the suboceanic climate in the area.

Calculated from temperature figures of Tyholt-Trondheim and Selbu, July is the warmest month (mean 14,6 - 14,7$^{\circ}$C) and January the coldest one (- 3,1 - - 4,2$^{\circ}$C). The latter January temperature is probably more representative of the area.

## METHODS AND NOMENCLATURE

555 relevés were recorded. The field methods are constant in each main type of vegetation, however, different sizes of relevés are used.

According to Fennoscandian mire tradition small relevés were used, 0.25 m$^2$ in open mires and 1 m$^2$ in shrub/tree covered mires. Larger relevés in shrub/tree covered mires are used to get a more satisfactory estimate of the degree of cover in shrub and tree layers. Moreover the mosaic is not so fine-meshed as in open mires.

In the forests (including the damp forests) relevés of 4 m$^2$ are used. Five relevés are recorded in each stand, both in mire and forest vegetation.

A stand is defined according to Dahl & Hadac (1949). Analysing by small relevés makes it possible to maintain a very strict homogeneity definition (Dahl 1967). Within the stand the relevés are subjectively distributed to encompass the possible variation

(Sjörs 1948).

Cover is noted according the the scale of Hult-Sernander, with some modifications. The main criticism against this scale is that cover degree 5 is too wide (Poore 1955). Cover degree 6 (> 3/4 cover) has been used in the present study (see also Steen 1956, Moen 1970, Fransson 1972). Species with cover degree 1, but only 1-2 individuals are noted with +.

Soil samples were analysed for pH (mires only), and exchangeable potassium, calcium, and magnesium. Potassium is calculated by means of flame photometry, and calcium and magnesium by atomicabsorbtion-spectrometry. pH was measured in water pressed from the peat. After precipitation for 12 hours pH was measured in the supernatant.

Similar stands are grouped together in Tables. The forest communities are grouped in a hierarchial system, following the system of Kielland-Lund (1962, 1967 a, 1971, 1973). The mire analyses are calssified in communities, and the communities are arranged along the poor - rich and mud bottom - hummock gradients. Open mires are separated from tree/shrub (> 10% cover of shrub- and/or tree layer) covered mires. Some communities are divided into variants based on dominant relations. The mire communities usually correspond approximately to the association level, but sometimes correspond to a lower level.

Differential species and characteristic species are defined according to Braun-Blanquet (1964). Constant species are species with > 80% frequency.

Some of the subjective classifications are compared with numerical classifications obtained from the computer programme TABORD (Persson 1977, van der Maarel et al. 1978). The numerical treatment also includes use of the ordination technique reciprocal averaging (RA) (Hill 1973). For evaluation of this technique in relation to other ordination techniques see e.g. Orloci (1978), Whittaker & Gauch (1978), and van der Maarel (1979).

With some exceptions the nomenclature follows Lid (1974; vascular plants), Nyholm (1954-1969; mosses), Arnell (1956; liverworts), and Dahl & Krogh (1973; lichens). Species are not separated within the *Alchemilla vulgaris* group, *Hieracium*, and *Taraxacum*. *Empetrum nigrum* and *E. hermaphroditum* are not separated on sterile collections. *Drepanocladus intermedius* (Lindb.) Warnst. is regarded as a distinct species (cf. Sjörs 1948, Fransson 1972, Malmer 1973). Species within the *Sphagnum Subsecunda* group are not separated. *Sphagnum fallax* includes *S. angustifolium*, *S. fallax* s.str., and *S. flexuosum*. *Rhytidiadelphus calvescens/R. squarrosus* is handled collectively. Species are not separated within the liverwort genera *Calypogeia*, *Cephalozia*, *Cephaloziella*, *Lophozia*, *Pellia*, *Scapania*, and partly *Riccardia*. To facilitate the field work *Cladopodiella fluitans* and *Gymnocolea inflata* were not separated (cf. Flatberg 1970). Concerning '*Leiocolea borealis*' see Frisvoll & Moen (1981).

## FLORISTIC ELEMENTS

The investigated area belongs to the northern spruce forest region of the boreale zone (Sjörs 1967).

A characteristic feature of the lowland flora of central parts of Trøndelag is the occurrence of several different floristic elements. The relatively humid climate is reflected in flora and vegetation with a large number of species with a suboceanic distribution.

A southern termophilous element is represented in south and south-west faced slopes with a warm local climate.

Some mountain species occur in Trøndelag at lower altitudes than in southern Norway (Flatberg & Sæther 1974). Some of these grow within the area at levels of 150-300 m a.s.l.

Few species with an eastern Fennoscandian distribution occur in the area.

The distribution of species and the categorising of different floristic elements are based on Dahl (1950), Nyholm (1954-69), Arnell (1956), Fægri (1960), Lye (1968), Størmer (1969), Hultén (1971), Gjærevoll (1972), Lid (1974), Flatberg & Sæther (1974), the authors' experiences during the field work, and data obtained from collections at the Museum of The Royal Norwegian Society of Sciences and Letters, Trondheim (TRH).

## The suboceanic element

Species indlucded in this element have a Fennoscandian suboceanic distribution and/or have their main distribution along the western coast of Norway (Flatberg 1970). The following species with a suboceanic distribution are found in the investigated area or its closest surroundings (w - weaker suboceanic tendency, * - species that belong to a thermophilous southern coastal element);

| | |
|---|---|
| Blechnum spicant | *Polystichum braunii |
| Carex hostiana | Ranunculus flammula |
| C. pulicaris | Succisa pratensis (w) |
| C. tumidicarpa | Thelypteris limbosperma |
| Erica tetralix | Bazzania trilobata |
| *Festuca altissima | Dicranum leioneuron (w) |
| *Galium odoratum | Eurhynchium striatum |
| Juncus bulbosus | Mnium hornum |
| J. conglomeratus | M. undulatum |
| J. effusus | Plagiothecium undulatum |
| Lycopodium inundatum | Racomitrium lanuginosum (w) |
| Myrica gale | Rhytidiadelphus loreus (w) |
| Narthecium ossifragum | Sphagnum imbricatum |
| Plantago lanceolata | S. quinquefarium |
| | S. strictum |

The suboceanic element is a geographic element including species with a different ecology, and there are presumably different ecological factors limiting their distribution. *Rhynchospora alba* and *R. fusca*, both occurring in the area are often regarded as suboceanic species, but are considered to be "lowland species" in the present study (see also Flatberg 1970).

Some species which are regarded as indicators of fen vegetation in more continental parts of Fennoscandia occur in oceanic areas in ombrotrophic vegetation (Skogen 1969, Flatberg 1976). *Carex pauciflora, Narthecium ossifragum, Sphagnum papillosum,* and *S. pulchrum* all grow in ombrotrophic mires in the area. *Racomitrium lanuginosum* is dominant in hummocks and the *Scirpus caespitosus-Sphagnum rubellum-S. tenellum* hollow community are oceanic features in the ombrotrophic vegetation (Skogen 1969, Flatberg 1970).

The mire communities show most resemblance to analogous communities in humid areas in Fennoscandia.

## Other elements

Several thermophilous species with a southern distribution in Norway have their northern limit in Trøndelag. At their northern limits they grow on steep south facing slopes and screes with a favourable local climate and eutrophic soil (Gjærevoll 1972). The following species with a southern distribution in Norway grow within the investigated area (w - weaker thermophilous tendency);

| | |
|---|---|
| Corylus avellana | Hypericum hirsutum |
| Ulmus glabra | Lactuca muralis |
| Geum urbanum (w) | Polygonatum odoratum |
| Hepatica nobilis (w) | Satureja acinos |
| Humulus lupulus (w) | Viola mirabilis |

This group also includes species with varying ecology, probably belonging to several floristic elements.

Most species with an eastern Fennoscandian distribution are not found in the invesitgation area. However, the following species are exceptions:

| | |
|---|---|
| Picea abies | Eriophorum gracile |
| Carex buxbaumii | Ranunculus peltatus |
| C. chordorrhiza | Scheuchzeria palustris |
| Aconitum septentrionale | Viola rupestris |
| | Sphagnum majus |

In Trøndelag several mountain species grow at low altitudes, often on north facing rocks and screes (Dahl 1950, Flatberg & Sæther 1974). The following mountain species are found in localities lower than 300 m a.s.l. in the investigation are:

| | |
|---|---|
| Poa alpina | Oxyria digyna |
| Alchemilla alpina | Saxifraga cotyledon |
| Cerastium alpinum | Sedum rosea |

# MIRE VEGETATION

## Hydrotopographic complexes

Moen (1973) lists eight types of complexes for Norway, viz. four ombrotrophic and four minerotrophic. The two dominating complexes within the investigated area are excentric raised bogs and sloping fens. Most of the large excentric raised bogs are situated in the lower regions of the area. The sloping fens are rich, especially in the western parts of the area. In the eastern regions poor fens are common. "Ribbed" minerotrophic complexes occur scattered over the area.

## Local variations in vegetation

Fennoscandian mire literature distinguishes between three main local "directions of variation" in vegetation, viz. the poor -rich gradient, the mud bottom - hummock gradient, and the mire expanse - mire margin gradient (Sjörs 1948, 1950, Ruuhijärvi 1960, Malmer 1962 a, Sonesson 1970, and Moen 1973).

The main gradient for classification in the present paper is the poor - rich gradient. The mire expanse - mire margin gradient distinguishes only between tree-/shrub covered mires and open mires.

The distribution of species along the three local gradients on Tabs. I, II, and III is based on the arrangement of the communities in the present paper.

Tab. I. Distribution of species groups along the poor - rich gradient. ——— common, - - - - scattered.

| | Bog | Fen | | | |
|---|---|---|---|---|---|
| | | Poor | Intermed. | Rich | Extremely rich |
| Carex hostiana | | | | | ——— |
| C. lepidocarpa | | | | | ——— |
| Schoenus ferrugineus | | | | | ——— |
| Leiocolea rutheana | | | | | ——— |
| | | | | | |
| Carex buxbaumii | | | | ——— | ——— |
| C. flava | | | | ——— | ——— |
| Eriophorum latifolium | | | | ——— | ——— |
| Thalictrum alpinum | | | | ——— | ——— |
| Calliergon trifarium | | | | ——— | ——— |
| Drepanocladus intermedius | | | | ——— | ——— |
| Sphagnum warnstorfii | | | | ——— | ——— |
| Leiocolea borealis | | | | ——— | ——— |
| | | | | | |
| Campylium stellatum | | | - - - | ——— | ——— |
| Drepanocladus revolvens | | | - - - | ——— | ——— |
| Scorpidium scorpioides | | | - - - | ——— | ——— |
| | | | | | |
| Selaginella selaginoides | | | ——— | ——— | ——— |
| Tofieldia pusilla | | | ——— | ——— | ——— |
| Drepanocladus badius | | | ——— | ——— | ——— |
| D. exannulatus | | | ——— | ——— | ——— |
| | | | | | |
| Sphagnum subnitens | | | ——— | ——— | - - - |
| S. sect. Subsecunda | | | ——— | ——— | - - - |
| Viola palustris | | | ——— | ——— | - - - |
| | | | | | |
| Carex lasiocarpa | | ——— | ——— | ——— | ——— |
| C. rostrata | | ——— | ——— | ——— | ——— |
| Eriophorum angustifolium | | ——— | ——— | ——— | ——— |
| Molinia caerulea | | ——— | ——— | ——— | ——— |
| Equisetum fluviatile | | ——— | ——— | ——— | ——— |
| Menyanthes trifoliata | | ——— | ——— | ——— | ——— |
| Pinguicula vulgaris | | ——— | ——— | ——— | ——— |
| Potentilla erecta | | ——— | ——— | ——— | ——— |
| | | | | | |
| Eriophorum vaginatum | ——— | ——— | - - - | | |
| Rubus chamaemorus | ——— | ——— | - - - | | |
| Calliergon stramineum | ——— | ——— | - - - | | |
| Drepanocladus schulzei | ——— | ——— | - - - | | |
| Sphagnum fallax | ——— | ——— | - - - | | |
| S. fuscum | ——— | ——— | - - - | | |
| S. lindbergii | ——— | ——— | - - - | | |
| S. magellanicum | ——— | ——— | - - - | | |
| S. nemoreum | ——— | ——— | - - - | | |
| S. papillosum | ——— | ——— | - - - | | |
| S. tenellum | ——— | ——— | - - - | | |
| Cladopodiella fluit./Gymnoc.infl. | ——— | ——— | - - - | | |
| | | | | | |
| Scheuchzeria palustris | ——— | | | | |
| Sphagnum cuspidatum | ——— | | | | |
| | | | | | |
| Andromeda polifolia | ——— | ——— | ——— | ——— | ——— |
| Carex limosa | ——— | ——— | ——— | ——— | ——— |
| Drosera anglica | ——— | ——— | ——— | ——— | ——— |
| D. rotundifolia | ——— | ——— | ——— | ——— | ——— |
| Myrica gale | ——— | ——— | ——— | ——— | ——— |
| Oxycoccus microcarpus | ——— | ——— | ——— | ——— | ——— |
| O. quadripetalus | ——— | ——— | ——— | ——— | ——— |

Tab. II. Distribution of species groups along the mud bottom - hummock gradient, ——— common, -------- scattered.

| | Mud bottom | Carpet | Lawn | Hummock |
|---|---|---|---|---|
| Equisetum fluviatile | ——— | | | |
| Utricularia intermedia | ——— | | | |
| Scheuchzeria palustris | ——— | -------- | | |
| Carex limosa | ——— | ——— | | |
| Juncus stygius | ——— | ——— | | |
| Rhynchospora alba | ——— | ——— | | |
| Drepanocladus exannulatus | ——— | ——— | | |
| D. schulzei | ——— | ——— | | |
| Sphagnum cuspidatum | ——— | ——— | | |
| S. lindbergii | ——— | ——— | | |
| Drosera anglica | ——— | ——— | -------- | |
| Menyanthes trifoliata | ——— | ——— | -------- | |
| Scorpidium scorpioides | ——— | ——— | -------- | |
| Sphagnum majus | ——— | ——— | -------- | |
| Carex lasiocarpa | ——— | ——— | ——— | |
| C. rostrata | ——— | ——— | ——— | |
| Eriophorum angustifolium | ——— | ——— | ——— | |
| Cladopodiella fluit./Gymnoc.infl. | ——— | ——— | ——— | |
| Sphagnum pulchrum | | ——— | | |
| S. riparium | | ——— | | |
| Carex chordorrhiza | | ——— | -------- | |
| Sphagnum subnitens | | ——— | -------- | |
| Scirpus caespitosus | | -------- | ——— | |
| S. hudsohnianus | | -------- | ——— | |
| Selaginella selaginoides | | -------- | ——— | |
| Campylium stellatum | | -------- | ——— | |
| Drepanocladus intermedius | | -------- | ——— | |
| Sphagnum papillosum | | -------- | ——— | |
| S. tenellum | | -------- | ——— | |
| S. compactum | | -------- | ——— | |
| Narthecium ossifragum | | | ——— | |
| Molinia caerulea | | | ——— | |
| Tofieldia pusilla | | | ——— | |
| Drepanocladus badius | | | ——— | -------- |
| Oxycoccus microcarpus | | -------- | ——— | ——— |
| O. quadripetalus | | -------- | ——— | ——— |
| Calypogeia sp(p). | | -------- | ——— | ——— |
| Dicranum leioneuron | | | ——— | ——— |
| Sphagnum rubellum | | | ——— | ——— |
| Lepidozia setacea | | | ——— | ——— |
| Ptilidium ciliare | | | ——— | ——— |
| Mylia anomala | | | ——— | ——— |
| Cephalozia sp(p). | | | ——— | ——— |
| Cephaloziella sp(p). | | | ——— | ——— |
| Calluna vulgaris | | | | ——— |
| Empetrum spp. | | | | ——— |
| Plurozium schreberi | | | | ——— |
| Polytricum juniperinum var. gracilis | | | | ——— |
| Sphagnum fuscum | | | | ——— |
| Racomitrium lanuginosum | | | | ——— |
| Cladonia alpestris | | | | ——— |
| C. rangiferina | | | | ——— |
| C. arbuscula | | | | ——— |
| Drosera rotundifolia | -------- | ——— | ——— | ——— |
| Andromeda polifolia | ——— | ——— | ——— | ——— |
| Eriophorum vaginatum | ——— | ——— | ——— | ——— |

Tab. III. Distribution of species groups on open and tree/shrub covered mires. ——— common, -------- scattered.

| | Mire margin | Mire expanse |
|---|---|---|
| Alnus incana | ——— | |
| Agrostis canina | ——— | |
| Carex echinata | ——— | |
| C. nigra | ——— | |
| Deschampsia caespitosa | ——— | |
| Anemone nemorosa | ——— | |
| Cornus suecica | ——— | |
| Crepis paludosa | ——— | |
| Filipendula ulmaria | ——— | |
| Galium boreale | ——— | |
| Geranium sylvaticum | ——— | |
| Hieracium spp. | ——— | |
| Melampyrum pratense | ——— | |
| Saussurea alpina | ——— | |
| Calliergonella cuspidata | ——— | |
| Dicranum majus | ——— | |
| D. scoparium | ——— | |
| Hylocomium splendens | ——— | |
| Mnium pseudopunctatum | ——— | |
| M. seligeri | ——— | |
| Sphagnum fallax | ——— | |
| S. russowii | ——— | |
| Chiloscyphus polyanthus | ——— | |
| Obtusifolium obtusum | ——— | |
| Tritomaria quinquedentata | ——— | |
| | | |
| Picea abies | ——— | - - - - |
| Pinus sylvestris | ——— | - - - - |
| Vaccinium myrtillus | ——— | - - - - |
| V. uliginosum | ——— | - - - - |
| V. vitis-idaea | ——— | - - - - |
| Potentilla erecta | ——— | - - - - |
| Trientalis europaea | ——— | - - - - |
| Aulacomnium palustre | ——— | - - - - |
| S. nemoreum | ——— | - - - - |
| | | |
| Drosera anglica | - - - - | ——— |
| D. rotundifolia | - - - - | ——— |
| S. fuscum | - - - - | ——— |
| S. subnitens | - - - - | ——— |
| | | |
| Carex limosa | | ——— |
| Juncus stygius | | ——— |
| Scirpus caespitosus | | ——— |
| Rhynchospora alba | | ——— |
| Scheuchzeria palustris | | ——— |
| Schoenus ferrugineus | | ——— |
| Utricularia intermedia | | ——— |
| Drepanocladus schulzei | | ——— |
| Racomitrium lanuginosum | | ——— |
| Scorpidium scorpioides | | ——— |
| Sphagnum compactum | | ——— |
| S. cuspidatum | | ——— |
| S. lindbergii | | ——— |
| S. pulchrum | | ——— |
| S. majus | | ——— |
| S. rubellum | | ——— |
| S. tenellum | | ——— |
| Cladopodiella fluit./Gymnoc. infl. | | ——— |
| | | |
| Andromeda polifolia | ——— | ——— |
| Calluna vulgaris | ——— | ——— |
| Empetrum spp. | ——— | ——— |
| Oxycoccus microcarpus | ——— | ——— |
| O. quadripetalus | ——— | ——— |
| Carex lasiocarpa | ——— | ——— |
| C. pauciflora | ——— | ——— |
| C. rostrata | ——— | ——— |
| Eriophorum angustifolium | ——— | ——— |
| E. latifolium | ——— | ——— |
| E. vaginatum | ——— | ——— |
| Menyanthes trifoliata | ——— | ——— |
| Molinia caerulea | ——— | ——— |
| Pinguicula vulgaris | ——— | ——— |
| Pleurozium schreberi | ——— | ——— |
| Sphagnum warnstofii | ——— | ——— |
| Ptilidium ciliare | ——— | ——— |
| Riccardia pinguis | ——— | ——— |

## SYNOPSIS OF THE MIRE COMMUNITIES

| | |
|---|---|
| Ombrotrophic mire | |
| Open | |
| Hollow | |
| Mud bottom | *Scheuchzeria palustris-Sphagnum cuspidatum* community |
| | *Carex limosa-Cladopodiella fluitans/Gymnocolea inflata* community |
| Mud bottom/carpet | *Carex limosa-Rhynchospora alba-Drepanocladus schulzei-Cladopodiella fluitans/Gymnocolea inflata* community |
| Carpet | *Eriophorum vaginatum-Sphagnum cuspidatum-S. majus-S. pulchrum* community |
| | *Sphagnum magellanicum-S. pulchrum* community |
| Lawn | *Scirpus caespitosus-Sphagnum rubellum-S. tenellum* community |
| Hummock | *Calluna vulgaris-Drosera rotundifolia-Rubus chamaemorus-Sphagnum fuscum* community |
| | *Calluna vulgaris-Pleurozium schreberi-Polytrichum juniperinum var. gracilius* community |
| | *Dicranum leioneuron-Sphagnum nemoreum* community |
| | *Racomitrium lanuginosum-Cladonia* community |
| | *Cladonia* community |
| | *Sphagnum fuscum* community |
| Tree/shrub covered | *Vaccinium-Cornus suecica-Hylocomium splendens* community |
| Minerotrophic mire | |
| Poor fen | |
| Open | |
| Mud bottom | *Carex limosa-Menyanthes trifoliata* community |
| Carpet | *Eriophorum angustifolium-Sphagnum pulchrum* community |
| | *Carex rostrata-Sphagnum riparium* community |
| | *Drosera rotundifolia-Sphagnum magellanicum* community |
| | *Carex limosa-Sphagnum papillosum-S. majus* community |

| | |
|---|---|
| Carpet/lawn | *Scirpus caespitosus-Sphagnum compactum - Cladopodiella fluitans/Gymnocolea inflata* community |
| Lawn | *Scirpus caespitosus-Sphagnum tenellum* community |
| | Molinia caerulea-Scirpus caespitosus-Narthecium ossifragum community |
| Tree-/shrub covered | *Empetrum-Cornus suecica-Sphagnum fallax* community |
| | *Molinia caerulea-Narthecium ossifragum* community |
| Intermediate fen | |
| Open | |
| Mud bottom | *Equisetum fluviatile-Utricularia intermedia-Scorpidium scorpioides* community |
| | Carex limosa-C. livida community |
| Carpet | *Molinia caerulea-Sphagnum subnitens* community |
| Lawn | *Molinia caerulea-Scirpus caespitosus-Sphagnum papillosum-Sphagnum sect. Subsecunda* community |
| Rich fen | |
| Open | |
| Mud bottom | *Carex rostrata-Equisetum fluviatile* community |
| Mud bottom/carpet | *Scorpidium scorpioides* community |
| Lawn | *Carex dioica-Sphagnum subnites-S. warnstorfii* community |
| | *Molinia caerulea-Scirpus caespitosus-Campylium stellatum* community |
| Tree-/shrub covered | *Molinia caerulea-Potentilla erecta-Campylium stellatum* community |
| Extremely rich fen | |
| Open | |
| Carpet | *Carex limosa-Scirpus quinqueflorus-Scorpidium scorpioides* community |
| Lawn | *Campylium stellatum-Drepanocladus intermedius* community |
| | *Schoenus ferrugineus-Campylium stellatum-Drepanocladus intermedius* community |
| Tree-/shrub covered | *Potentilla erecta-Campylium stellatum-Drepanocladus intermedius* community |

## OMBROTROPHIC VEGETATION

Large ombrotrophic mire complexes are common in the lowest parts of the area (150-200 m a.s.l.). They are all of the excentric raised bog type, with variously developed hummock banks. The lagg is narrow, approximately 1 m wide. Inside the lagg is a 10-30 m broad zone with pine forest and heather dominant in the field layer.

No outstanding floristic feature unites ombrotrophic vegetation as a whole (Fransson 1972). Only *Andromeda polifolia* and *Eriophorum vaginatum* grow throughout; along the mud bottom-hummock gradient as well as the mire expanse - mire margin gradient. *Drosera rotundifolia* is found along the mud bottom - hummock gradient, but it is a preferential mire expanse species.

The most common dominants in ombrotrophic vegetation are *Sphagnum cuspidatum* and *Carex limosa* in the lowest levels of hollows, *S. magellanicum* in carpets, *Scirpus caespitosus* and *S. tenellum* in lawns, and *Calluna vulgaris*, *Racomitrium lanuginosum*, *S. fuscum*, and *Cladonia* species in hummocks.

Although no outstanding floristic feature is common between hollows and hummocks, it is reasonable to emphasize the close interdependence between hollows and hummocks, together forming an ecological whole (see Du Rietz 1949). In Cajander (1913) and Nordhagen (1943) a separate phytosociological handling of hollow and hummock vegetation has obscured "Die Mineralbodenwasserzeigergrenze" (Du Rietz 1949). These authors have joined the ombrotrophic hollow vegetation with corresponding fen vegetation.

Compared with the regional complexes in the IBP-proposal (Malmer 1973) the complexes within the investigated area are closest to the *Rubellum-fuscum* complex, with *Sphagnum magellanicum* as an important hollow dominant. *Racomitrium lanuginosum* is a common hummock dominant on some mires (cf. *Racomitrium*-complex sensu Malmer 1973, see also Flatberg (1976)). Concerning the *Rubellum*-complex type "Komosse", Osvald (1923)) some of its oceanic species, *Erica tetralix* and *Sphagnum imbricatum* are lacking, except for *S. imbricatum* that occurs twice within the investigated area (K.I. Flatberg, pers. inform). Moreover, *Sphagnum rubellum* is not dominant in hummocks.

The *Cladonia* community and *Sphagnum fuscum* community form a transition between the mire expance and mire margin vegetation.

The *Vaccinium-Cornus suecica-Hylocomium splendens* community is a pure margin community.

## Open bog

### Hollow vegetation

*Scheuchzeria palustris-Sphagnum cuspidatum* community (Tab VII).

The relevés are from a wet hollow mud bottom in the eastern part of the area (350 m a.s.l.).

The level of the ground water is high; *Sphagnum cuspidatum* floats in the water. *S. cuspidatum*-dominated communities are more common in ombrotrophic mires than in fens, and this species is one of the few preferentially ombrotrophic species.

The *Scheuchzeria palustris-Sphagnum cuspidatum* community is limited to small, wet mud bottom hollows on ombrotrophic mires.

Osvald (1923) reports a *Scheuchzeria palustris-Sphagnum cuspidatum* association from Komosse, in which sometimes only the two species naming the association occur. *S. cuspidatum* vegetation with *Scheuchzeria palustris* is described by Melin (1917), Sjörs (1948), Eurola (1962), Malmer (1962 a), and Fransson (1972). *S. cuspidatum* has a southerly Fennoscandina distribution (Malmer 1966), and *S. cuspidatum* dominated communities in bogs do not occur in Northern Finland (Eurola 1962).

*Carex limosa-Cladipodiella fluitans/Gymnocolea inflata* community (Tab. VII)

In mud bottoms with oxidized peat the hepatics *Cladopodiella fluitans/Gymnocolea inflata* are among the most common dominants. The community has a patchy distribution, often with very small stands. Where the two hepatics are not dense, the peat is covered by a layer of algae. *Sphagnum* species have scattered occurrences. The field layer is sparsely developed and may be absent. Species occurring are *Andromeda polifolia*, *Carex limosa*, and *Drosera anglica*.

The *Cladopodiella fluitans/Gymnocolea inflata-Drepanocladus fluitans* community of Flatberg (1970) is analogous to this community. An alga taxon is often used to name the community. Fransson (1972) divides his *Cuspidatetum*-association into three subassociations, of which one is *zygogonietosum* (see also Sjörs 1948).

*Carex limosa-Rhynchospora alba-Drepanocladus schulzei-Cladopodiella fluitans/Gymnocolea inflata* community (Tab. VII)

The transition between mud bottom and carpet is gradual. The *Sphagnum* mat is split up, and the field layer is sparse. Constant species are *Carex limosa*, *Rhynchospora alba*, *Drepanocladus schulzei*, and *Cladopodiella fluitans/Gymnocolea inflata*. *Eriophorum vaginatum* indicating a higher level than the two previously mentioned communities. Mat-forming *Sphagna* and species such as *Eriophorum vaginatum*, *Sphagnum lindbergii*, and *Drepanocladus schulzei* differ from these communities.

Two variants with *Sphagnum cuspidatum* and *S. papillosum* dominance, respectively, are separated. The *S. cuspidatum* variant is a transition community between mud bottom and carpet.

In eastern Fennoscandia *S. papillosum* and *S. pulchrum* grow only in fens (Ruuhijärvi 1960). Both species occur in the *S. cuspidatum* variant, which is presumed to be an ombrotrophic community. Both are found in ombrotrophic mires in western Norway (Skogen 1966, Flatberg 1970, Moen & Selnes 1979) and in South-Western Sweden (Fransson 1972).

The *Eriophorum vaginatum-Sphagnum cuspidatum* association of Svensson (1965) is similar.

*Eriophorum vaginatum-Sphagnum cuspidatum-S. majus-S. pulchrum* community (Tab. VII)

In this community the importance of *Sphagnum cuspidatum* diminishes and other *Sphagna* predominate, primarily *S. pulchrum* and *S. major*.

The ground water level is high, during most of the growing season water occurs a few cm below the top of the *Sphagnum* mat. *S. pulchrum* grows in a zone above the *cuspidatum* level in hollow pools. *S. majus* individuals grow scattered in the *pulchrum* mat.

*Carex limosa* and *Eriophorum vaginatum* are constans together with the three *Sphagnum* species mentioned. *S. pulchrum*, dominant in ombrotrophic carpets, is described by Skogen (1966), and *S. pulchrum* is frequently reported in bogs in western Norway (Flatberg 1976).

*Sphagnum magellanicum-S. pulchrum* community (Tab. VII)

*Sphagnum magellanicum* is one of the most common species in hollows in the area and the surrounding area (Klokk 1974). *S. magellanicum* has a wide amplitude along the mud bottom - hummock gradient, but has its main distribution in carpets. The ground water level is relatively high, 6-10 cm from the top of the *Sphagnum* mat during the growing season. The *S. magellanicum* mats are dense and other *Sphagnum* species grow sparsely. Vascular plants are not well established in these mats.

In addition to *S. magellanicum* the constants are *Andromeda polifolia*, *Eriophorum vaginatum*, and *S. pulchrum*.

The community has few differential species in comparison to other carpet communities, but it is best characterised by the dominance of *S. magellanicum*. *S. magellanicum* is reported as dominant in the upper hollow level in *Rubello-Fuscion* bogs (type "Skagerhultmosse") (Du Rietz 1949) (see also Flatberg 1976). According to Sjörs (1948) *S. magellanicum* is common in large hollows in the western part of the Bergslagen area. Svensson (1965) and Fransson (1972) report *S. magellanicum*-dominated stands in a wide amplitude along the mud bottom - hummock gradient.

*Scirpus caespitosus-Sphagnum rubellum-S. tenellum* community (Tab. VII)

This is the lawn community of the hollows, and it is quantitatively the most important ombrotrophic community.

*Sphagnum tenellum*-dominated hollows are common in the investigated area. *Scirpus caespitosus* dominates the field layer and emphasizes the lawn character of the community. Other important field layer species are *Andromeda polifolia*, *Eriophorum vaginatum*, *Drosera anglica* and *D. rotundifolia*.

*S. tenellum* is dominant and constant in the bottom layer; *S. rubellum* is also constant. Several hepatics, absent in the densest and most homogenous *Sphagnum* mats occur, viz. *Cephalozia* sp (p), *Cladopodiella fluitans/Gymnocolea inflata*, *Lepidozia setacea*, and *Ptilidium ciliare*.

*S. tenellum*-dominated hollow communities are common in Fennoscandia and are reported by Osvald (1923), Eurola (1962), Svensson (1965), Skogen (1966), Flatberg (1970), and Fransson (1972).

Hummock vegetation

*Calluna vulgaris-Drosera rotundifolia-Rubus chamaemorus-Sphagnum fuscum* community (Tab. VIII)

This is quantitatively the most important hummock community on the large excentric raised bogs in the lower parts of the area.

*Calluna vulgaris* and *Sphagnum fuscum* are dominants in the field and bottom layer, respectively. *Sphagnum rubellum* grows in the lower part of *fuscum* hummocks and is constant in the community. Other frequent species are *Empetrum* sp (p), *Oxycoccus microcarpus*, *Eriophorum vaginatum*, *Drosera rotundifolia*, *Rubus chamaemorus*, and *Mylia anomala*. *Scirpus caespitosus*, *Sphagnum fuscum*, *S. rubellum*, *Lepidozia setacea*, and *Mylia anomala* are preferentially differential species distinguishable from other hummock communities. Stand (B) is a *Myrica* variant of an ombrotrophic site in an ombro-minerotrophic complex. Occurrences of *Carex pauciflora*, *Myrica gale*, and *Calliergon stramineum* suggests this stand may not be ombrotrophic. In eastern Fennoscandia these species are considered to grow only in fens. Sjörs (1948) uses them to differentiate between species of fens and bogs. He also mentions that in South-West Sweden *Myrica* may grow in ombrotrophic sites (see also Skogen (1966) and Flatberg (1976) from western Norway, and Sjörs (1971)). Flatberg (1970) reports *Carex pauciflora* and *Calliergon stramineum* ombrotrophic in Nordmyra (10 km west of the investigated area).

Both Sjörs (1948) and Fransson (1972) assign all ombrotrophic hummock vegetation to one association. Fransson (1972) separates *Calluno-fuscetum* into five facies according to different dominants in the bottom layer. His *S. fuscum* facies are phytosociologically close to the *Calluna vulgaris - Drosera rotundifolia - Rubus chamaemorus - Sphagnum fuscum* community. The *Calluna vulgaris - Drosera rotundifolia - Rubus chamaemorus - Sphagnum fuscum* community of Flatberg (1970) is also a parallel.

*Calluna vulgaris-Pleurozium schreberi-Polytrichum juniperinum* var. *gracilius* community (Tab. VIII)

This community occurs on hummocks on some of the large excentric raised bogs, and is characterized by the dominance of *Pleurozium schreberi*. Other constants are *Andromeda polifolia*, *Calluna* *vulgaris*, *Empetrum* sp(p), *Eriophorum vaginatum*, and *Polytrichum juniperinum* var. *gracilius*. The low importance of *Sphangum* and *Cladonia* species is a negative characteristic of the community. *P. schreberi* and *P. juniperinum* var. *gracilius* are preferentially differential species distinguishing from other communities.

*Pleurozium schreberi*-dominated ombrotrophic mire expanse hummock vegetation is described by Sjörs (1946), Persson (1961), Sonesson (1970), Flatberg (1970, 1976), Moen et al. (1976), and Moen & Selnes (1979).

*Dicranum leioneuron-Sphagnum nemoreum* community (Tabe. VIII)

Some hummock tops are totally dominated by *Dicranum leioneuron*. This hummock vegetation is observed in only one of the excentric raised bogs. *D. leioneuron* dominates hummocks in the same amplitude as *Pleurozium schreberi*, and they dominate alternate hummocks on the same mire. *D. leironeuron* and *Sphagnum nemoreum* are preferentially differential species distinguishing the community from other hummock communites.

The *Cetraria islandica* variant occurs at at somewhat lower level as indicated by *Scirpus caespitosus*.

*Racomitrium lanuginosum-Cladonia* community (Tab. VIII)

This is a common hummock community which occurs at higher altitudes (350-500 m a.s.l.). In the large excentric complexes at lower altitudes *Racomitrium lanuginosum* rarely dominates the hummocks, this indicates that the higher altitudes have a more humid climate (cf. precipitation values of the station Vennafjell, Fig. 3).

*Cladonia alpestris*, *C. rangiferina*, *C. arbuscula*, and *R. lanuginosum* are alternating dominants in the bottom layer. *Racomitrium* hummocks are large with some margin character indicated by *Vaccinium myrtillus* and *V. uliginosum*. A differential species distinguishable from other hummock vegetation is *R. lanuginosum*, and the three mentioned *Cladonia* species are preferential species. The two relevés 31 and 32 (Tab. VIII) are from dense stands of *Cladonia alpestris*, where other cryptogams are scarce. However, scattered individuals of *Pleurozium schreberi* and *Ptilidium ciliare* are characteristic of *C. alpestris* hummocks.

*R. lanuginosum*-dominated hummock vegetation is an oceanic feature of ombrotrophic mire vegetation in Fennoscandia, reported only from coast areas or other humid areas (Skogen 1966, Flatberg 1970, 1976, Moen & Selnes 1979).

## Tree-/shrub-covered bog

*Cladonia* community (Tab. IX)

This community is phytosociological closely related to the *Cladonia*-dominated mire expanse vegetation. *Racomitrium lanuginosum* is more scattered than in corresponding mire expanse vegetation (mire expanse in a geographic sense) (see also Flatberg 1970).

Three *Vaccinium* species indicate the margin character, but the phytosociological difference from the mire expanse *Racomitrium lanuginosum-Cladonia* community is not significant.

*Sphagnum fuscum* community (Tab. IX)

*Sphagnum fuscum* has a strong affinity with mire expanse. The margin character is weak, only indicated by *Vaccinium* species.

Near the margin of the mire *S. fuscum* grows in small flat hummocks, in time probably becoming pure margin vegetation. Phytosociologically the *Sphagnum fuscum* community may be listed to the *Calluna vulgaris-Drosera rotundifolia-Rubus chamaemorus* community.

*Vaccinium-Cornus suecica-Hylocomium splendens* community (Tab. IX)

This is the only pure mire margin community on ombrotrophic mire. The community usually occurs in a zone between the mire expanse and the mineral soil, but sometimes it occurs in depressions isolated from a mire expanse.

The tree layer consists of pine trees up to 15-20 m in height. *Picea abies* occurs scattered in the shrub layer, rarely higher than 1 m. *Calluna vulgaris*, *Empetrum hermaphroditum*, and the *Vaccinium* species dominate the field layer. The bottom layer is well developed with a mixture of spruce forest mosses and oligotrophic *Sphagna*.

The margin character is strong, and the following species are differential species distinguishing from the two previous communities and the mire expanse hummock vegetation: *Picea abies*, *Deschampsia flexuosa*, *Cornus suecica*, *Dicranum majus*, *Hylocomium splendens*, and *Barbilophozia lycopodioides*.

The *Vaccinium-Cornus suecica-Hylocomium splendens* community may be assigned to *Vaccinio uliginosi-Pinetum* (Kleist 1929). Out of the 21 species Kielland-Lund (1973) assigns to this association, 18 are common in the *Vaccinium-Cornus suecica-Hylocomium splendens* community. Aune (1973) mentions associations described in the literature synonymous with *Vaccinio uliginosi-Pinetum*. In addition to those mentioned by Aune (1973), several papers on mire vegetation describe similar vegetation. From Finland i.a. Ruuhijärvi (1960) reports phytosociologically similar vegetation. As mentioned in his paper *Ledum palustre* and *Carex globularis* are common in this vegetation in eastern Fennoscandia (see also Sjörs 1948).

The *Pinus-Vaccinium* assocition of Sjörs (1948) and *Vaccinietum uliginosi* association of Fransson (1972) show good correlations with the described *Vaccinium-Cornus suecica-Hylocomium splendens* community.

Compared with analogous vegetation in Sjörs (1948), Ruuhijärvi (1960), Fransson (1972) (Tab. IX) shows a higher frequency of *Deschampsia flexuosa*, and the mosses *Hylocomium splendens*, *Pleurozium schreberi*, and *Ptilium crista-castrensis* are more frequent dominants than *Sphagna*.

## POOR FEN

In the eastern parts of the area slightly sloping poor fens predominate the mire vegetation. Some of these are former hay cut areas. Fens with a greater angle of inclination are usually rich.

Most of the species growing in poor fens also grow in bogs, the poor fens differ from the latter by stable occurrences of minerotrophic indicators. The most common indicators are *Carex lasiocarpa*, *C. rostrata*, *Molinia caerulea*, and *Menyanthes trifoliata*. All of them except for *Menyanthes*, are relatively indifferent along the mud bottom - hummock gradient.

Poor fens differ from intermediate and rich fens since they lack eutrophic species. Poor fens have no positive differential species distinguishable from richer fens.

The division between bogs and fens is stressed by the strict use of character species of minerotrophic vegetation. This is considered to be one of the most important dividing lines in mire vegetation (Du Rietz 1949). As mentioned by Flatberg (1970) situations may occur where a thick layer of ombrogenic peat causes ombrogenic wet of soil, but species with deep roots nevertheless reach ground water influenced by minerotrophy. These mires are regarded as fens (cf. "extreme poor fen" Du Rietz 1949) since indicators of minerotrophy are present.

Poor fens are negatively distinguishable from richer fens by the less exclusive eutrophic indicators of the intermediate fen. The "transitional poor fen" (övergångsfattigkärr") of Witting (1947) is regarded as intermediate fen (see also Du Rietz 1949).

The most common species in the tree/shrub layer of poor fens are *Betula pubescens* and *Picea abies*. The margin character of the *Empetrum-Cornus suecica-Sphagnum fallax* community is distinct. The *Molinia caerulea-Narthecium ossifragum* community is, however, a transitional community between mire margin and mire expanse.

## Open poor fen

### *Carex limosa-Menyanthes trifoliata* community (Tab. X)

The analyses are from wet flarks in a poor flark fen. The ground water was exposed, 0-10 cm deep water covering dark brown mud. The community represents the wet end of the mud bottom - hummock gradient. Mud bottom communities of this kind have no net peat production (Sjörs 1948).

Constants are *Carex lasiocarpa*, *C. limosa*, and *Menyanthes trifoliata*. *Utricularia intermedia* in stand B indicates more eutrophic conditions in this stand. It is a common problem to place communities extremely poor in species along the poor - rich gradient. The wet flark vegetation shows relatively little variation according to different nutrient condition of adjacent mire vegetation.

### *Eriophorum angustifolium-Sphagnum pulchrum* community (Tab. X)

Both the separated variants represent lowest level of closed *Sphagnum* mats, the carpet level.

*Sphagnum lindbergii* is most frequent at higher altitudes in the area. The analyses of the *Sphagnum lindbergii - Drepanocladus schulzei* variant are recorded on an extremely poor fen, 440 m a.s.l. *Eriophorum angustifolium* and *Menyanthes trifoliata* are the only indicators of minerotrophy. Hepatics have difficulties in establishing themselves in dense *S. lindbergii* mats.

*S. lindbergii* has a northern distribution in Fennoscandia (Sjörs 1948, Malmer 1966, Fransson 1972). In the "*Sphagnum*-Rimpiweissmore" (Ruuhijärvi 1960) *S. lindbergii* gradually increases in importance towards the north.

The *Sphagnum lindbergii-Drepanocladus schulzei* variant is structurally similar to *Carex rotundata-D. schulzei* vegetation of Sonesson (1970), where *D. schulzei* and *S. lindbergii* dominate in a separated *S. lindbergii* variant, and *Sphagnum lindbergii*-vegetation of Elveland (1976).

The *Sphagnum pulchrum* variant is uninfluenced by altitude within the area (see also Fransson 1972). *S. pulchrum* has its main distribution in south-western parts of Fennoscandia (Waldheim & Weimark 1943, Sjörs 1948).

*Carex rostrata-Sphagnum riparium* community (Tab. X)

*Sphagnum riparium* rarely dominates in mire vegetation in the area. The analyses are based on a carpet stand adjacent to a small lake. Mean ground water level was 12 cm below the top of the *Sphagnum* mat on the day the analyses were recorded. The community is poor in species (cf. Sonesson 1970) and is homogenous. Except for scattered individuals of *Drepanocladus schulzei*, the moss mat is a pure population of *S. riparium*. The homogeneity is stressed by the fact that all four field layer species are constants.

*S. riparium*-dominated communities are described by e.g. Sjörs (1948), Persson (1961), and Sonesson (1970).

*Drosera rotundifolia-Sphagnum magellanicum* community (Tab. X)

This is a transition community between carpet and lawn. *Carex limosa* and *Drosera anglica* are preferantially differential species of carpet and mud bottom as opposed to lawn. *Sphagnum fuscum* and *S. rubellum* grow scattered on small elevations indicating a succession towards hummock vegetation. *S. magellanicum* is more dominant in bogs than in fens in the area (see also Klokk 1974).

*Carex limosa-Sphagnum papillosum-S. majus* community (Tab. X)

*Sphagnum papillosum* prefers lawns, but it is here dominant in a typical carpet community. The analyses are from a stand near a small lake, where *S. papillosum* mats form the lowest *Sphagnum* level. *Carex limosa, Drepanocladus schulzei,* and *Sphagnum majus* emphasize the carpet character.

The carpet association *Carex rostrata-pauciflora-Sphagnum papillosum* (Sjörs 1948) and parts of *Rhynchospora-papilletosum* (Fransson 1972) are similar vegetation types.

*Scirpus caespitosus-Sphagnum compactum-Cladopodiella fluitans/Gymncolea inflata* community (Tab. XI)

*Sphagnum compactum* and *Cladopodiella fluitans/Gymnocolea inflata* dominated fens cover large areas at high altitudes in the area. *S. compactum* is the most common *Sphagnum* dominant in lawns on extremely poor fens. A characteristic feature of the community is a split *Sphagnum* mat, with small spots of open oxidized peat, often with *Cladopodiella fluitans/Gymnocolea inflata*. This description also characterises the locality of *Lycopodium inundatum* (see also Sjörs 1948).

Increased frequency of *S. compactum* dominated communities at higher altitudes is mentionded by e.g. Ruuhijärvi (1960) and Fransson (1972). Both the *Sphagnetum compacti*-association of Fransson (1972) and the *Sphagnum compactum*-"Weissmoore" of Ruuhijärvi (1960) have the same floristic characteristics as the present community.

*Scirpus caespitosus-Sphagnum tenellum* community (Tab. XI)

*Sphagnum tenellum* and *S. papillosum* are the most common dominants in lawns of poor fens.

Constants are *Andromeda polifolia, Eriophorum vaginatum, Scirpus caespitosus, Drosera rotundifolia, Sphagnum tenellum,* and *Cladopodiella fluitans/Gymnocolea inflata*. *Scirpus caespitosus* is the field layer dominant. The following species are preferentially differential species distinguishable from other lawn poor fen vegetation, *Empetrum* sp(p), *Oxycoccus microcarpus, O. quadripetalus, Eriophorum vaginatum, Scirpus caespitosus, Sphagnum tenellum, Ptilidium ciliare, Lepidozia setacea,* and *Mylia anomala*.

*Sphagnum subnitens* occurs in one stand. This species is in Fennoscandia often regarded as a characteristic species of intermediate fens. In the investigated area, *S. subnitens* also grows scattered in poor fens. In western Norway *S. subnitens* is also found in bogs (Skogen 1969, Flatberg 1976).

The main distribution of the *Sphagnum tenellum* variant occurs at a lower level than the *S. papillosum* variant, this is indicated by the occurrence of *Drosera anglica*, *Drepanocladus schulzei*, and by *Sphagnum majus* in the former and *S. rubellum* in the latter. The community is similar to *S. tenellum* dominated hollow vegetation.

Both Sjörs (1948) and Fransson (1972) mention two lawn communities in poor fens with *Scirpus caespitosus*, *Sphagnum papillosum*, and *S. tenellum* dominance. Although *Molinia caerulea* occurs in Table XI, the two communities without *Molinia*, viz. *Scirpus caespitosus-Carex paucilfora-Sphagnum tenellum-papillosum* association (Sjörs 1948) and *Trichophoro-papilletosum* (Fransson 1972), are most similar.

*Molinia caerulea-Scirpus caespitosus-Narthecium ossifragum* community (Tab. XI)

*Narthecium* mats usually occur in patches in mire vegetation, but sometimes they cover the whole mire. This is a characteristic lawn community with dense firm mats of *Narthecium* and a sparse bottom layer. The community is poor in species and is homogenous. *Andromeda polifolia* has its highest mean cover value in this community.

*Narthecium*-dominated communities in Fennoscandia only occur in humid areas, Skogen (1976), Moen (1975), and Flatberg (1976) from western Norway, Fransson (1972) from south-western Sweden, and Sjörs (1948) and Fransson (1963) from western Jämtland, Central Sweden.

## Tree-/shrub covered poor fen

*Empetrum-Cornus suecica-Sphagnum fallax* community (Tab. XII)

The most frequent field layer dominants are *Calluna vulgaris*, *Scirpus caespitosus*, and *Rubus chamaemorus*, and *Sphagnum fallax* is the bottom layer dominant. The margin character is indicated by *Betula pubescens*, *Vaccinium* spp., *Cornus suecica*, *Dicranum majus*, *Pleurozium schreberi*, *Sphagnum fallax*, *S. russowii*, and *Obtusifolium obtusum*. These are also preferential or exclusive differential species distinguishing from poor fen mire expanse communities.

*Betula-Eriophorum vaginatum-Carex pauciflora-fusca-Sphagnum parvifolium* association (Sjörs 1948) and *Pauciflora-parvifolietum* association (Fransson 1972) are similar communities.

*Molinia caerulea-Narthecium ossifragum* community (Tab. XII)

The margin character is weak, indicated by *Vaccinium* spp. *Narthecium* totally dominates the field layer, and the bottom layer is sparse. Phytosociologically this forms a transition between mire margin and mire expanse, and the floristic difference against the mire expanse *Molinia caerulea-Scirpus caespitosus-Narthecium ossifragum* community is small.

## INTERMEDIATE FEN (OPEN)

Intermediate fens are most common in eastern parts of the area at altitudes 300-400 m a.s.l.

Intermediate mud bottoms and carpets do not cover large continuous areas but occur in small flarks. On "ribbed" mires with low hummock banks ("ribs") the flarks often have intermediate vegetation and the "ribs" poor fen vegetation. Situations also occur with rich fen vegetation in the lower levels and intermediate fen vegetation in the higher levels, i.e. *Sphagnum subnitens* mat surrounded by *Scorpidium* or *Campylium* vegetation.

A characteristic feature of intermediate fens is the simultanous occurrence of poor fen species and less exclusive rich fen species (Sjörs 1948, Flatberg 1970). The intermediate fen has no exclusive character species sensu stricto, but *Sphagnum subnitens* has its main occurrence there. The less exclusive rich fen species are differential species distinguising from poor fens, viz. *Carex dioica*, *Selaginella selaginoides*, *Tofieldia pusilla*, *Campylium stellatum*, *Drepanocladus badius*, *D. exannulatus*, *D. revolvens* s.str., *Scorpidium scorpioides*, *Sphagnum* Sect. *Subsecunda* species, and *S.*

*warnstorfii*. Most of the field layer dominants also grow in poor fens, i.e. *Carex rostrata*, *Molinia caerulea*, and *Scirpus caespitosus*. Some species grow in poor and intermediate fens, but not in rich and extremely rich fens (Tab. II).

The amplitude of the intermediate fen along the poor-rich gradient is in accordance with Sjörs (1952). The transition towards poor fens is gradual within the area, sometimes with just one scattered indicator species of intermediate fens. This parallels the relationship of the extremely poor fen to ombrotrophic mire. Localization along the poor - rich gradient has been strictly defined according to the indicator value of the species indicating the highest value of eutrophy. Mud bottom and lawn communities are difficult to separate from poor fens. Many of the slightly sloping fens (3-4$^{o}$ slope) in the eastern parts of the area are "poor" intermediate fens.

In Fennoscandina papers before 1952, where vegetation is analysed along gradients, fens are classified as poor, medium rich, and extremely rich fens (i.e. Du Rietz 1949). In 1952 Sjörs wrote "... but in North Fennoscandia, there is often a kind of fen where some of the less exclusive species of rich fens mix with species of poor fens ...". Sjörs (1952) notes that several authors described communities with the species comination mentioned, e.g. Cajander (1913), Melin (1917), Nordhagen (1928), Kivinen (1935), and Sjörs (1946, 1948, 1950). Sjörs (1952) introduced the term "intermediate fen" for these mires. Definitions in the present paper of the less exclusive rich fen species are in accordance with Sjörs (1952), except for *Carex flava*, *Saussurea alpina*, and *Paludella squarrosa* which in the present paper are regarded as rich fen species.

The northerly distribution tendency of intermediate fens is also emphasized by Malmer (1973).

### *Equisetum fluviatile-Utricularia intermedia-Scorpidium scorpioides* community (Tab. XIII)

Field and bottom layers are sparse. Differential species distinguishing from poor fen mud bottom are *Utricularia intermedia*, *Drepanocladus exannulatus*, and *Scorpidium scorpioides*. *S. scorpioides* has its main distribution in rich and extremely rich fens, but occurs scattered in intermediate fens. The floristic difference from rich mud bottom communities is small.

*Carex limosa-C. livida* community (Tab. XIII)

*Carex livida*-dominated flarks are only observed at higher altitudes in the eastern parts of the area.

Ground water level was exposed the day the analysis was recorded. The bottom layer is sparse. *Cladopodiella fluitans/Gymnocolea inflata* are the only bryophytes. The field layer is homogenous with *Carex livida* as the only dominant.

*C. livida* dominated mire vegetation is common in subalpine and alpine areas, see Nordhagen (1943). Sjörs (1948) mentions *C. livida* in all of his three mud bottom associations, but the most similar is the *Carex limosa-chordorrhiza-livida*-mud bottom-association. Almost identical is the *Carex limosa-C. livida* mud bottom reported by Elveland (1976).

*Molinia caerulea-Sphagnum subnitens* community (Tab. XIII)

The community is dominated by dense brown-violet mats of *Sphagnum subnitens*. *S. subnitens* has a clumped distribution, forming a mosaic with wetter surroundings. Stand F deviates by having a higher number of species. It should be regarded as a transitional community towards lawn.

Field layer dominants are *Molinia caerulea*, *Scirpus caespitosus*, and *Menynathes trifoliata*; with *Myrica* dominating in one stand. Indicator species of intermediate fen are not dominants, except for *S. subnitens*. Differential species distinguishing from poor fens are *Carex dioica*, *Selaginella selaginoides*, *Tofieldia pusilla*, *Campylium stellatum*, *Drepanocladus badius*, *D. revolvens* s.str. *Sphagnum Sect. Subsecunda* species, and *S. warnstorfii*. *Campylium stellatum* and *Drepanocladus revolvens* s.str. only grow scattered in intermediate fens. Preferentially differential species are *Viola palustris*, *S. subnitens*, and *Odontoschisma elongatum*.

The transition towards lawn is gradual, represented by stand F, and differential species distinguishing from intermediate lawn are few. *Carex limosa* is the only exclusive species and *Menyanthes* is a preferential differential species.

Flatberg (1970) describes several *S. subnitens* dominated communities in intermediate fens, where *S. warnstorfii* is codominant in most of them (see also Moen 1970). The *Molinia caerulea-Sphagnum subnitens* community is similar to *S. subnitens* dominated parts of the *subfulvetum*-association of Fransson (1972). Sjörs' (1948) *Scirpus caespitosus-Molinia-Sphagnum papillosum-Warnstorfianum*-association is also similar in spite of other dominants in the bottom layer.

*Molinia caerulea-Scirpus caespitosus-Sphagnum papillosum-S. Sect. Subsecunda* community (Tab. XIII)

Intermediate lawn vegetation is common in the eastern part of the area, sometimes covering the whole mire. This vegetation has few indicator species of intermediate fen vegetation.

Frequent species which are also found in poor fens are *Molinia caerulea, Scirpus caespitosus, Drosera rotundifolia, Sphagnum papillosum,* and *Cladopodiella fluitans/Gymnocolea inflata*. Exclusive differential species distinguishing from poor fens are *Selaginella selaginoides, Campylium stellatum, Drepanocladus badius*, and *Sphagnum Sect. Subsecunda* species.

Similar vegetation is the *Scirpus caespitosus-Molinia-Sphagnum papillosum*-association (Sjörs 1948) and the *Scirpus caespitosus-Sphagnum papillosum-rubellum-subnitens* community (Flatberg 1970).

## RICH FEN

Rich fens have many species in common with extremely rich fens, but they lack the exclusive character species of the latter. The field layer dominants are the same as in intermediate and poor fens, but the bottom layer dominants differ. *Scorpidium scorpioides, Campylium stellatum,* and *Drepanocladus* species replace the *Sphagna*. Differential (preferential-p) species distinguishing from intermediate fens are *Carex flava, Eriophorum latifolium, Thalictrum alpinum, Campylium stellatum (p), Drepanocladus revolvens s.str. (p), D. intermedius, Scorpidium scorpioides (p),* and *Leiocolea borealis.*

Until the separation of intermediate fens (Sjörs 1952), the rich mire vegetation was classified as "transition rich fen" ("övergåengsrikkärr") and extremely rich fen (Witting 1947, Du Rietz 1949). In the present paper rich fen is used synonymously with "medium rich fen" (Sjörs 1967, Fransson 1972, Malmer 1973). Compared with the hierarchial system of Nordhagen (1943), the rich fen occurs in several alliances, however, the main part is found in *Caricion* canescentis-Goodenowii, and mud bottom and carpet communities in *Stygio-Caricion limosae.*

## Open rich fen

### *Carex rostrata-Equisetum fluviatile* community (Tab. XIV)

Ground water was exposed on the day the analyses were recorded. A brook runs close by and causes periodic limnic wet of soil. The community represents a transition towards pure limnic vegetation. The low number of species gives little data for the placing of the community along the poor - rich gradient. Although *Bryum pseudotriquetrum* is a preferential, extremely rich fen indicator, the community is best included in the rich fen category.

### *Scorpidium scorpioides* community (Tab. XIV)

*Scorpidium scorpioides* occurs mainly in carpets and grows scattered in mud bottoms and lawns. Stands B, C, and D are transitions towards mud bottom with a discontinous bottom layer. The *Scorpidium scorpioides* community includes all *Scorpidium* dominated vegetation on rich fen (Persson 1961, Sonesson 1970, Moen 1970).

In the bottom layer *Drepanocladus revolvens s. str.* is sometimes co-dominant. The field layer dominants are the same as in poor and intermediate fens, indicators of rich fen may be absent. The qualitative difference from intermediate mud buttom - carpet vegetation is not significant, but *S. scorpioides* and *D. revolvens s. str.* never dominate in intermediate fens.

The *Rhynchosporea fusca* variant occurs as small islands in mosaic with mud bottom vegetation. *Odontoschisma elongatum* is here noted with its highest cover value. *R. fusca* seems to have the same amplitude as *R. alba* along the mud bottom - hummock gradient. The phytosociological relationship with extremely rich *Scorpidium* vegetation is obvious, but the *Scorpidium scorpioides* community lacks the exclusive indicators of extremely rich fens.

### *Carex dioica-Sphagnum subnitens-S. warnstorfii* community (Tab. XIV)

This community is uncommon and covers only small areas. It is an upper lawn community with scattered, lowgrowing *Calluna*. *Sphagnum warnstorfii* mats are similar in appearance to *S. subnitens* mats. The field layer species are mainly the less exclusive rich fen species, viz. *Carex dioica*, *Tofieldia pusilla*, *Drepanocladus badius*, and *Sphagnum subnitens*. Dominance of *S. warnstorfii* and constant occurrence of *Campylium stellatum* are reasons for including the community in the rich fen category.

In the series *Scorpidium-Drepanocladus-Campylietum-Tomentypnum-Fuscetum* (Du Rietz 1949) the present community corresponds to *Tomentypnum* level. Flatberg (1970) separates three *S. warnstorfii* dominated communities, where the two intermediate fen communities belong to higher levels. Fransson (1972) includes corresponding vegetation in *Tomentypnetum* (see also Du Rietz 1949). Fransson (1972) emphasizes the northern distribution tendency of *S. warnstorfii*.

*Molinia caerulea-Scirpus caespitosus-Campylium stellatum* community (Tab. XIV)

The change in vegetation from *Scorpidium* to *Campylium* level is gradual. *Drepanocladus revolvens* s. str. occurs mainly in an intermediate zone between these levels. *Scirpus caespitosus* and *Campylium stellatum* are the most frequent dominants in rich fen lawn vegetation in the area. Differential species distinguishing from intermediate lawn vegetation are *Eriophorum latifolium*, *Thalictrum alpinum*, *Drepanocladus intermedius*, and *Leiocolea borealis*. *D. intermedius* mainly occurs in extremely rich fens.

*Campylium* dominated vegetation is described by Booberg (1939), Sjörs (1948), Ruuhijärvii (1960), Flatberg (1970), Moen (1970), and Fransson (1972).

## Tree-/shrub covered rich fen

*Molinia caerulea-Potentilla erecta-Campylium stellatum* community (Tab. XIV)

The community is similar to the mire expanse *Molinia caerulea-Scirpus caespitosus-Campylium stellatum* community with common dominants. Mire margin species are differential species distinguishing from this community, viz. *Carex echinata*, *Saussurea alpina*, *Trientalis europaea*, *Calliergonella cuspidata*, and *Tritomaria quinquedentata*. *Potentilla erecta* is preferential mire margin species. Communities mentioned in connection with *Molinia caerulea-Scirpus caespitosus-Campylium stellatum* community also have relevance to the present community.

## EXTREMELY RICH FEN

Character species of extremely rich fens are few in the lowland of Central Norway, and some of them are rare. Mud bottoms and carpets in particular have few character species. The dominants are common with rich fens, particularly the bottom layer dominants.

The dense *Schoenus ferrugineus* mats form a characteristic community, with a very sparse bottom layer. Exclusive extremely rich fen indicator species in the area are *Carex lepidocarpa*, *C. hostiana*, *Schoenus ferrugineus*, and *Leiocolea rutheana*. Preferential indicators are *Scirpus quinqueflorus*, *Triglochin palustre*, *Bryum pseudotriquetrum*, *Cinclidium stygium*, and *Drepanocladus intermedius*.

*Du Rietz (1949) regards C. lepidocarpa* and *Schoenus ferrugineus* as indicators of extremely rich fens. Extremely rich fen in the IBP proposal (Malmer 1973), corresponds to this category in the present paper. The extremely rich fen communities within the investigated area are not dealt with by Nordahgen (1943), but a lowland equivalent, *Schoenion ferruginei*, to *Caricion atrofuscae-saxatilis* is mentioned. Differential species of the former distinghuishing from the latter are *Schoenus ferrugineus* and *Carex hostiana*, and the extremely rich fen in the present paper can be assigned to *Schoenion ferruginei*.

### Open extremely rich fen

#### *Carex limosa-Scirpus quinqueflorus-Scorpidium scorpioides* community (Tab. XV)

The analysed stand grows near a *Schoenus* stand. The community is homogenous, poor in species, and with a sparse field layer. The only indicator of extremely rich fen is *Carex lepidocarpa*.

*Carex limosa, Drosera anglica, Menyanthes trifoliata*, and *Scorpidium scorpioides* characterize the wet habitat conditions, all of them being strong preferential differential species distinguishing from lawn vegetation.

Several authors, dealing with mire vegetation, unite the *Scorpidium* vegetation (Du Rietz 1949, Persson 1961, Sonesson 1970, Moen 1970). A phytosociologically close relationship with *Scorpidium scorpioides* community from rich fen is obvious.

*Campylium stellatum-Drepanocladus intermedius* community (Tab. XV)

This is quantitatively the most important extremely rich fen community in the area. The vegetation of the steep sloping fens in western parts of the area should be included in this community. *Scirpus caespitosus* is dominant. Other frequent field layer species also grow in poor, intermediate, and rich fens. The two bottom layer dominants are *Campylium stellatum* and *Drepanocladus intermedius*. Extremely rich fen indicators are few and have low frequencies, viz. *Carex hostiana, C. lepidocarpa*, and *Leiocolea rutheana*.

*Scirpus caespitosus* and *S. hudsonianus* are differential species distinguishing from the other extremely rich lawn community. Du Rietz (1949) separates a *Drepanocladetum* and a *Campylietum* association with different amplitudes along the mud bottom - hummock gradient. Fransson (1972) finds it difficult to separate these levels and unites them to a *Campylium-revolvetum* association. Other authors describing *Drepanocladus/Campylium* vegetation are Sjörs (1948), Persson (1961), Fransson (1963), Flatberg (1970), and Moen (1970).

*Schoenus ferrugineus-Campylium stellatum-Drepanocladus intermedius* community (Tab. XV)

*Schoenus* vegetation forms two characteristic types, viz. dense continuous mats and single tussocks surrounded by wet oxidized peat.

The community is poor in species and the bottom layer is sparse or absent, this is caused by the growth form of *Schoenus*. Except for *Schoenus* all species are common in other rich and extremely rich lawn communities.

*Schoenus* dominated vegetation is described by i.a. Sjörs (1948), Flatberg (1970), and Moen (1970).

### Tree-/shrub covered extremely rich fen

*Potentilla erecta-Campylium stellatum-Drepanocladus intermedius* community (Tab. XV)

This is the mire community most rich in species. Characteristic for extremely rich mire margin vegetation is the occurrence of species from eutrophic forests (Sjörs 1948). *Crepis paludosa, Filipendula ulmaria, Calliergonella cuspidata,* and *Mnium seligeri* are frequent, and they are differential species distinguishing from corresponding rich margin vegetation. The margin character is further characterized by *Salix aurita, Carex echinata, Hierochloë odorata, Juncus articulatus, Equisetum palustre, Galium boreale, Trientalis europaea,* and *Fissidens adianthoides.*

The IBP proposal has no synonymous community, however, the present community has common features with "brunmossrika skogskärrkompleks" and "örtrika skogskärrkompleks" (Malmer 1973). *Betula-Filipendula Ulmaria-Sphagnum Warnstorfianum* association (Sjörs 1948) is closely related to the present community.

## THE FOREST VEGETATION

### Systematics of the forest communities

Class *Vaccinio-Piceeta*
- Order *Cladonio-Vaccinetalia*
  - Alliance *Phyllodoco-Vaccinion*
    - Association *Vaccinio uliginosi-Pinetum* (see the *Vaccinium-Cornus suecica-Hylocomium splendens* community, Tab. IX)
    - Association *Barbilophozio-Pinetum*
      - Subassociation *cladonietosum*
      - Subassociation *hylocomietosum*
- Order *Vaccinio-Piceetalia*
  - Alliance *Vaccinio-Piceion*
    - Association *Chamaemoro-Piceetum*
    - Association *Eu-Piceetum*
      - Subassociation *myrtilletosum*

Subassociation *dryopteridetosum*
Subassociation *blechnetosum*
Association *Melico-Piceetum*
Subassociation *convallarietosum*
Subassociation *typicum*
Subassociation *calliergonelletosum*
Class *Alnetea glutinosae*
Order *Salicetalia auritae*
Alliance *Alno-Salicion pentandrae*
Association *Equiseto palustris-Salicetum*
Class *Querco-Fagetea*
Order *Fagetalia sylvatica*
Alliance *Alno-Padion*
Association *Alno (incanae)-Prunetum*
Subassociation *aconitetosum*
Alliance *Tilio-Acerion*
Association *Ulmo-Tilietum boreale*

ASSOCIATION *CHAMAEMORO-PICEETUM* KIELLAND-LUND 1962 (Tab. XVI)

This is a mesotrophic damp forest on peat ground of varying thickness. Stands belonging to this association grow in depressions with stagnating ground water or in border areas between mires and mineral soil.

The tree layer is sparse with low growing *Betula pubescens*, *Picea abies*, and *Pinus sylvestris*.

In the field layer *Vaccinium myrtillus*, *Cornus suecica*, and *Rubus chamaemorus* are constants and dominants. Preferential character species, which also have their main distribution in this association are *Juncus filiformis*, *Equisetum sylvaticum*, and *Listera cordata*.

*Sphagnum fallax* and *S. girgensohnii* dominate in the bottom layer. *S. centrale*, *S. magellanicum*, and *S. nemoreum* are local dominants.

Constants in the table are *Empetrum sp(p).*, *Vaccinium myrtillus*, *V. vitis-idaea*, *Cornus suecica*, *Rubus chamaemorus*, *Hylocomium splendens*, *Plagiothecium undulatum*, *Pleurozium schreberi*, *Sphagnum fallax*, and *S. girgensohnii*.

There is a mixture of species from mineral soil and mire species, but some species occur primarily in this community.

The most closely related mire community is the poor fen margin *Empetrum-Cornus suecica-Sphagnum fallax* community. Differential species which distinguish from this community are *Deschampsia flexuosa, Gymnocarpium dryopteris, Hylocomium splendens, Ptilium crista-castrensis, Rhytidiadelphus loreus*, and *Tritomaria quinquedentata*.

Differential species which distinguish from the oligotrophic damp forest *Vaccinio uliginosi-Pinetum* are *Betula pubescens, Carex echinata, C. nigra, Juncus filiformis, Gymnocarpium dryopteris, Equisetum sylvaticum, Listera cordata, Maianthemum bifolium*, and *Polytrichum commune*.

In the IBP proposal (Kielland-Lund 1971) the mesotrophic damp forest belongs to *Chamaemoro-Piceetum* Kielland-Lund 1962 in the forest system, and to "vitmossrika" and "risrika skogskärrkomplex" in the mire system (Malmer 1971). The community seems common in the boreale coniferious region (Arnborg 1943, Malmström 1949, Samuelsson 1960, Kielland-Lund 1962, Sjörs 1971, Kjelvik 1978). In the subalpine region a parallel birch forest occurs (see e.g. Moen & Moen 1975, Moen 1976).

## ASSOCIATION *EQUISETO PALUSTRIS-SALICETUM* ASS. PROV. (TAB. XVII)

Eutrophic damp forests are rare within the area. Stands that belong to this community are of two kinds. The most common occurrence is in wet habitats with stagnating ground water, forming a mosaic with tree covered tussocks. In such locations (stands A and B) only the wet area between the tussocks has been analysed. The community also occurs on wet slopes (stands C and D) with a somewhat lower ground water level. Further investigations will probably show the need for more than one association of rich damp forests.

The most frequent tree layer species are *Alnus incana* and low growing *Picea abies*. In the shrub layer *Salix* species predominate.

*Comarum palustre, Menyanthes trifoliata*, and partly *Filipendula ulmaria* dominate the field layer in the wet mosaic type. The bottom layer of this type is totally dominated by *Mnium* species.

Generally the "wet part" of the mosaic type is more homogenous and less rich in species than the "drier" type which resembles wet stands of *Melico-Piceetum-calliergonelletosum*, and the transition towards the latter is gradual.

In the IBP system (Kielland-Lund 1971, 1973) *Equiseto palustris-Salicetum* corresponds to *Calamagrostio (purpureae)-Salicetum pentandrae*. Further investigations are needed to clarify the phytosociology of these forests.

## ASSOCIATION *BARBILOPHOZIO-PINETUM* BR.-BL. ET SISSINGH 1939 EM. KIELLAND-LUND 1967 (TAB. XVIII)

This is the most oligotrophic forest association on mineral soil. The pine forest stands of this community are small, occurring in areas with shallow soil. Within the investigation area the community is most frequent at altitudes above 300 m. *Pinus sylvestris* competes unfavourably with *Picea abies* on moraine materiale in lower areas.

Tree and shrub layers are sparse, with *Pinus sylvestris* and scattered incidences of *Betula pubescens* and *Picea abies*.

The field layer is dominated by dwarf shrub species and very few grasses and herbs. *Calluna* dominates in both subassociations. *Empetrum hermaphroditum* and *Vaccinium* species occur in *cladonietosum*, but in *hylocomietosum* they are constant and co-dominant. Exclusive differential species in the latter subassociation distinguishing from the former are *Linnea borealis*, *Deschampsia flexuosa*, *Cornus suecica*, and *Melampyrum pratense*.

Differences between the two subassociations are distinct in the bottom layers. In *cladonietosum Racomitrium lanuginosum* and *Cladonia* species dominate; in *hylocomietosum* they are replaced by *Eu-Piceetum* species.

Most species in *hylocomietosum* also grow in oligotrophic *Eu-Piceetum* forests. Differential species which distinguish these forests are *Calluna vulgaris* and *Empetrum hermaphroditum*.

*Cladonietosum* occurs on very shallow soil, often with only a thin layer of raw humus covering rocks, and frequently as fragments in *hylocomietosum* vegetation. In *hylocomietosum* the soil is deeper, but even here it only consists of raw humus. On deeper soil with some mineral content *hylocomietosum* is replaced by *Eu-Piceetum myrtilletosum*. To the west of the distribution area of *Picea abies* forests the vicarious association of *Barbilophozio-Pinetum*, *Bazzanio-Pinetum* normally has a podsol profile or a podsol ranker (Aune 1973).

Kielland-Lund (1967 a) distinguishes between an eastern/ northern and a vicarious western oligotrophic humid pine forest type in Norway, *Barbilophozio-Pinetum* and *Bazzanio-Pinetum*, respectively. Four of the differential species of *Bazzanio-Pinetum* (Kielland-Lund 1967 a) occur in my analyses, viz. *Blechnum spicant*, *Rhytidiadelphus loreus*, *Barbilophozia barbata*, and *Racomitrium lanuginosum*. The latter is frequent in *cladonietosum*, but the others only occur once. Both differential species of *Barbilophozio-Pinetum* viz. *Barbilophozia lycopodioides* and *Orthocaulis floerkei* are frequent (*hylocomietosum*). *Andromeda polifolia* and *Dicranum majus* are considered to be differential species of *Bazzanio-Pinetum* (Aune 1973). Both species occur, the former in *cladonietosum* and the latter in *hylocomietosum*. The species content indicates a position between *Barbilophozio-Pinetum* and *Bazzanio-Pinetum*. Absence or low frequencies of characteristic *Bazzanio-Pinetum* species such as *Blechnum spicant*, *Sphagnum quinquefarium*, *Barbilophozia barbata*, and *Bazzania trilobata*, is the main reason for including the community in *Barbilophozio-Pinetum*.

The appearance of *cladonietosum* is similar to *Cladonio-Pinetum* K.-Lund 1967. In the opinion of the present author *Cladonio-Pinetum* does not occur in middle or western Central Norway, and *Cladonia* dominated stands (often fragments) occurring here must be included in *Barbilophozio-Pinetum* or *Bazzanio-Pinetum*. Omberg (1980) reports a parallel to *cladonietosum* from SW Norway, "*Racomitrio lanuginosi-Pinetum* prov. ass.".

## ASSOCIATION *EU-PICEETUM* KIELLAND-LUND 1962 (TAB. XIX)

This is the dominating community in he area. The most common substratum is flat or slightly sloping moraine ground. On some of the steeper slopes it is replaced by *Melico-Piceetum*.

The tree layer is dense and homogenous, species other than *Picea abies* have scattered occurrence.

The shrub layer is often absent in dense spruce forests, but small individuals (<1,5 m) of *Sorbus aucuparia* are frequent.

The field layer is poor in species and homogenous (especially in *myrtilletosum*). *Vaccinium myrtillus* in *myrtilletosum* (sometimes also in *dryopteridetosum*) and small ferns in *dryopteridetosum* characterize the physiognomy. Sterile *Deschampsia flexuosa* is always present.

The bottom layer is well developed, totally covering the ground. There are no distinct differences between the two subassociations. *Hylocomium splendens* and *Rhytidiadelphus loreus* are alternating dominants, and *Ptilium crista-castrensis* co-dominats.

Constants in the association table are *Picea abies*, *Vaccinium myrtillus*, *Deschampsia flexuosa*, *Dicranum majus*, *Hylocomium splendens*, *Plagiothecium undulatum*, and *Rhytidiadelphus loreus*. Differential species dinstinguishing from *Barbilophozio-Pinetum* are *Gymnocarpium dryopteris*, *Maianthemum bifolium*, *Trientalis europaea*, and *Plagiothecium undulatum*.

*Myrtilletosum* vegetation grows on the flat moraines. The soil profile is a podsol. The raw humus layer is normally 5-10 cm thick. Below this is a bleached soil layer approximately 5 cm thick. *Myrtilletosum* has no exclusive differential species which distinguish from the two other subassociations in *Eu-Piceetum*.

In *Dryopteridetosum* the soil profile is a semi-podsol. The characteristic layers in a podsol are identifiable, but not distinctly separated. *Dryopteridetosum* vegetation occurs on slightly sloping moraine ground. Exclusive differential species distinguishing from *myrtilletosum* are *Thelypteris phegopteris*, *Oxalis acetosella*, *Anemone nemorosa*, and *Plagiochila major*.

*Blechnetosum* vegetation only occurs in the higher regions of the area. In the eastern parts the community is common at altitudes above 450 m a.s.l., but occurs scattered at lower altitudes in areas with long lasting snow cover. The tree layer is sparse with low growing *Picea abies* and *Betula pubescens*. Dominance of *Cornus suecica* and *Blechnum spicant* differs from *Myrtilletosum* and *Dryopteridetosum*. The species mentioned are generally more frequent in humid areas. *Cornus suecica* may also be favoured by better light conditions in *blechnetosum*. *Blechnetosum* mostly occurs in sloping terrains and the podsol profile is slightly developed, like that in *dryopteridetosum*.

The variation in vegetation from *myrtilletosum* to dryopteridetosum is interpreted as being caused by a moisture gradient. *Blechnetosum* occurs in the most humid areas (cf. station Vennafjell, Fig. 3).

*Eu-Piceetum* includes the mesotrophic *Vaccinium* and/or fern dominated spruce forests. Some authors also include corresponding western birch/pine forests in *Eu-Piceetum* (Omberg 1980, Rodvelt & Sekse 1980), others establish substituting associations (Kielland-Lund 1971, 1973 "*Corno-Pinetum*", Aune 1973 "*Corno-Betuletum*"). *Eu-Piceetum* and its substitute parallels are usually separated into three subassociations, viz. a poor *Vaccinium* dominated one (*myrtilletosum*), a small fern dominated one (*drypteridetosum*), and a tall fern dominated one (*athyrietosum*) (Kielland-Lund 1971, 1973, Aune 1973, Kjelvik 1978). Aune (1973) also separates a *thelypteridetosum* subassociation. Well defined stands of *athyrietosum* are not found within the investigation area. The few tall fern dominated slopes observed also have some eutrophic species, and this vegetation is included in *Melico-Piceetum*.

*Cornus* dominated vegetation within *Eu-Piceetum* is described by Omberg (1980) and Rodvelt & Sekse (1980) as a variant of *myrtilletosum*. *Cornus* predominates in *blechnetosum*, but *blechnetosum* is regarded as more eutrophic than *myrtilletosum*. It is floristically well separated from *myrtilletosum*, and is therefore regarded as a subassociation.

## ASSOCIATION *MELICO-PICEETUM* KIELLAND-LUND 1962 (TAB. XX)

*Melico-Piceetum* includes the eutrophic spruce forest on mineral soil. In the area there are three distinct communities belonging to this association, which the present paper separates at subassociation level, viz. *convallarietosum*, *typicum*, and *calliergonelletosum*. The *convallarietosum* analyses are recorded from a steep south-west facing slope with some rocks. Stands with this vegetation occurring scattered adjacent to a scree area with *Ulmo-Tilietum* vegetation. The species content is a mixture of some thermophilous species and *Piceetea* species with different nutritiential demands. The soil layer is thin, consisting of brown aggregated mull and some stones.

The tree and shrub layers are sparse with *Betula pubescens*, *Picea abies*, *Pinus sylvestris*, *Populus tremula*, and *Sorbus aucuparia*.

The field layer is rich in species, although the mean cover value is low. Local character species are *Carex digitata*, *Festuca ovina*, and *Convallaria majalis*.

The moss layer is similar to that of oligotrophic/mesotrophic *Piceeta* forests. *Hylocomium splendens* is dominant; the only species indicating eutrophic conditions is *Rhytidiadelphus triquetrus*.

The ordination diagram (Fig. 9) illustrates the close relationship with the subassociation *typicum*. Differential species distinguishing from the latter are *Corylus avellana*, *Convallaria majalis*, *Dactylis glomerata*, *Festuca ovina*, *Poa nemoralis*, *Galium boreale*, *Solidago virgaurea*, and *Vicia sylvatica*.

The subassociation *typicum* occurs on slopes with eutrophic, soligenous ground water. The soil layer is thick and consists of grey/brown to brown mull. This community often occurs in narrow borders on steep banks along brooks where the *typicum* vegetation gradually changes in direction towards *calliergonelletosum*.

*Picea abies* has almost optimal conditions in this community. *Alnus incana* is frequent in the tree layer. In the field layer lignous plants are replaced by grasses and herbs. *Vaccinium* species are frequent, but never dominant. Dominants are *Anemone nemorosa*, *Thelypteris phegopteris*, and *Geranium sylvaticum*.

*Rhytidiadelphus triquetrus* is constant and dominant in the bottom layer and *R. loreus* is co-dominant.

Differential species distinguishing against *convallarietosum* are *Crepis paludosa*, *Thelypteris phegopteris*, *Geum rivale*, *Ptilium crista-castrensis*, *Rhytidiadelphus loreus*, and *R. calvescens/squarrosus*. The variation in vegetation along the series *convallarietosum-typicum-calliergonelletosum* is interpreted as beeing caused by a moisture gradient.

*Calliergonelletosum* stands are only observed as fragments in steep brook ravines. *Picea abies* usually has optimal moisture conditions in this association, but on wet faces (stand A) the optimal water conditions are exceeded.

The field layer is characterized by tall herbs and the absence of *Vaccinium* species. Dominants are *Filipendula ulmaria* and

*Lactuca alpina*. *Aconitum septentrionale* is observed as a local dominant in fragments of *calliergonelletosum*, but does not occur in the table. The tall herbs mentioned (except for *Filipendula ulmaria*) and the absence of *Vaccinium* species distinghuish the field layer from *Melico-Piceetum typicum*.

*Brachythecium rivulare*, *Calliergonella cuspidata*, and *Cirriphyllum piliferum* are alternating dominants in the bottom layer.

The species content resembles that of the grey alder forest (Fig. 9), and exclusive differential species are few. Further analyses would probably give several more *Piceetea* species. From tables in the present paper only *Caltha palustris*, *Calliergonella cuspidata*, *Mnium pseudopunctatum*, and *Chiloscyphus polyanthus* are differential species distinguishing from *Alno (incana)-Prunetum aconitetosum*. *Caltha palustris* occurs on wet facies in grey alder forests (Klokk 1980).

Kielland-Lund (1971, 1973) includes the eutrophic spruce forests in *Melico (nutantis)-Piceetum*. *Melico-Piceetum* also includes the calciphilous pine forests (subassociation *pinetosum*). Marker (1969) includes the latter community in *Melico-Pinetum*. Bjørndalen (1980 a) describes four geographically substituting associations of Scandinavian calciphilous pine forests. The northern *Epipacto atrorubentis-Betuletum*, which often occurs in south facing screes, may be considered a subsitute of *Ulmo-Tilietum* or other termophilous leaf forests (Bjørndalen 1980 a). The similarity with the "low herb spruce forest" of Kielland-Lund (1967 b) is considerable, but *convallarietosum* is assigned to the northern substitute of calciphilous pine forests mentioned (Bjørndalen 1980 a, 1980 b).

The subassociation *typicum* in the present paper has some hygrophilous species which do not occur in the southern parallel (Kielland-Lund 1967 b, 1971, 1973). The species content in southern descriptions is intermediate between *convallarietosum* and *typicum* in the present paper. The corresponding community in the classification-key of vegetation mapping in Central Norway is "spruce forest rich in grasses and herbs" (Moen et al. 1976).

Kielland-Lund (1971, 1973) and Kjelvik (1978) assigns the eutrophic tall herb spruce forests to *athyrietosum* in *Melico-Piceetum*. Bjørndalen (1978) separates this vegetations from *Melico-Piceetum*, and establishes an association *Aconito-Piceetum* (see also Kielland-Lund 1962). Bjørndalen (1980 a) also suggests a northern association *Lactuco alpinae-Piceetum*. As mentioned above, the *Alno-Padion* character is considerable in the *calliergonelletosum* (cf. Bjørndalen 1978, 1980 a). The tall herb spruce forest occurs only fragmentarily within the investigation area and the analyses are few, but further investigations will probably indicate the necessity for an association including the tall herb spruce forests in Central Norway. At present the *calliergonelletosum* analyses are assigned to the *Melico-Piceetum* table.

The different kinds of the non thermophilous boreale tall herb vegetation are floristically similar. To test the classification of this vegetation numerical methods were applied on Fennoscandian tall herb vegetation including subalpine birch forests, spruce forests, and grey alder forests.

The RA-diagram in Fig. 5 is based on 20 tall herb communities including 144 randomly selected species of vascular plants. The variation on axis 1 is correlated with and altitudinal gradient, from the subalpine birch forest to the lowland grey alder forest. The diagram indicates the possibility of separating the three types of tall herb vegetation. The same data were run on the TABORD-program with a classification identical to that marked in the ordination diagram. The birch group (*Lactucion alpinae*) and the grey alder group (*Alno-Padion*) had several "characteristic species" at the significance level of 99.9%, but the spruce forest had none. Characteristic species of the birch forest were *Chamaenerion angustifolium*, *Cirsium heterophyllum*, *Luzula multiflora*, *Myosotis decumbens*, *Phleum commutatum*, and *Saussurea alpina*. Characteristic species of the grey alder forest were *Dactylis glomerata*, *Epilobium montanum*, *Geum urbanum*, *Prunus padus*, *Ranunculus repens*, *Roegneria canina*, and *Urtica dioica*. This illustrates the intermediate position of the spruce forest indicated by the variation along the first axis.

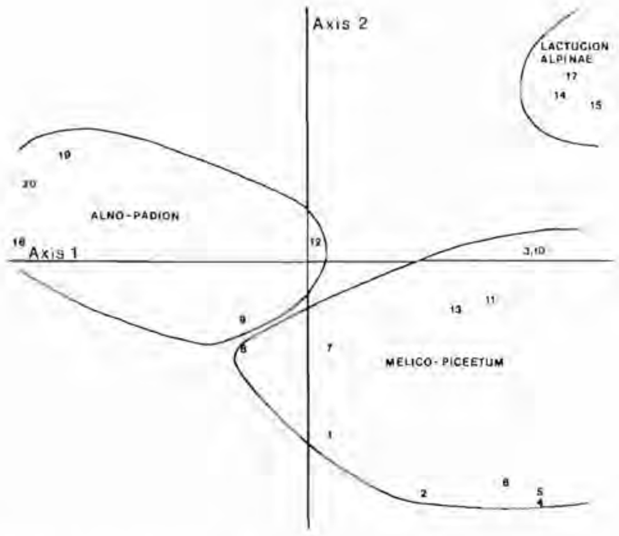


Fig. 5. Ordination diagram of 20 communities of tall herb forests from Scandinavia.

1: *Aconito-Piceetum typicum* (Bjørndalen 1978). 2: *Eu-Piceetum athyrietosum* (Bjørndalen 1978). 3: *Melico-Piceetum athyrietosum* (Kjelvik 1978). 4: *Aconito-Piceetum* (*Anemone hepatica* "type") (Kielland-Lund 1962). 5: *Aconito-Piceetum* (*Pyrola rotundifolia* "type") (Kielland-Lund 1962). 6: *Aconito-Piceetum* (*Athyrium alpestre* "type") (Kielland-Lund 1962). 7: *Poa remota-Aconitum septentrionale* ass. (Kielland-Lund 1962). 8: *Melico-Piceetum calliergonelletosum* (present paper). 9: *Alno* (*incanae*)-*Prunetum aconitetosum* (present paper). 10: *Aconitum septentrionale*"förbundet" (Arnborg 1943). 11: *Aconitum*-"skogar" (Malmström 1949). 12: "Högört - grälskog" (Sjörs 1960). 13: Tall-herb meadow forests (Holmen 1965). 14: "Högstaude björkeskog"-*Aconitum* "samf." (Moen 1978). 15: "Högstaude björkeskog"-*Geranium* "samf." (Moen 1978). 16: "Högstaude björkeskog" *Filipendula-Equisetum* "samf" (Moen 1978). 17: *Betuletum geraniosum subalpinum-Aconitum-Polygon. vertic.* var. (Nordhagen 1943). 18: *Alno* (*incanae*)-*Prunetum aconitetosum* (Klokk 1980). 19: *Aconito-Alnetum* "typisk var." (Fremstad 1976). 20: *Aconito-Alnetum*, *Matteuccia* "var." (Fremstad 1976).

## ASSOCIATION *ALNO (INCANAE)-PRUNTEUM* KIELLAND-LUND EX. AUNE 1973 (TAB. XXI)

Grey alder forests in the area grow on clayey soil in ravines. Flat river bank terraces, a common habitat of grey alder forests in Central Norway (Aune 1973, Klokk 1978, 1980), are not observed within the investigated area. Most of the grey alder forests are adjacent to cultivated land and are influenced by grazing. *Alnus incana* is affected favourably by grazing for two reasons, firstly because of the bitter taste (Sjörs 1949), and secondly its resistance to trampling (Sjörs 1960, 1967). The grazing intensity is closely correlated to dominance of *Deschampsia caespitosa* (Steen 1958, Kielland-Lund 1962, Olsson 1975, Klokk 1980). Accordingly stand C in table XXI should be the stand most strongly influenced by grazing. Stand E shows the most common spring aspect in grey alder forests, with total dominance of *Anemone nemorosa*.

The grey alder forests are characterized by a dense tree layer, a luxuriant field layer which is medium rich in species, and a discontinuous moss mat in the bottom layer.

Constant in the table are *Alnus incana*, *Filipendula ulmaria*, *Oxalis acetosella*, *Rubus idaeus*, *Cirriphyllum piliferum*, and *Rhytidiadelphus triquetrus*. The grey alder forest normally differs from eutrophic spruce forests in the absence of *Piceteea* species such as *Vaccinium myrtillus*, *Deschampsia flexuosa*, *Dicranum majus*, and *Barbilopozia lycopodioides* (cf. Gjerlaug 1973, Kielland-Lund 1973) (notice, however, discussion of *calliergonelletosum* and Fig. 7). The present ravine grey alder forest belongs to the subassociation *aconitetosum* in *Alno (incanae)-Prunetum*. For further sociological discussion of *aconitetosum* see Klokk (1980). From Central Norway *Alnus incana* dominated forests are described by Aune (1973), Fremstad (1979), and Klokk (1980, 1981). For phytosociological discussion of *Alnus incana* hillside forests see also Fremstad & Øvstedal (1978).

ASSOCIATION *ULMO-TILIETUM BOREALE* ASS. PROV. (TAB. XXII)

The analyses are recorded in the only forest stand of *Ulmus glabra* in the area, a steep south/west facing scree slope.

The tree layer is sparse, but several species occur. The quantitatively most important species are *Ulmus glabra* and *Alnus incana*.

The field layer is luxuriant and heterogenous, with *Matteuccia struthiopteris* as the main dominant. *Pteridium aquilinum*, *Rubus idaeus*, and *Stachys sylvatica* are local dominants.

None of the spcies in the bottom layer are dominant (cf. Fremstad 1979) although some of them are frequent, viz. *Eurhynchium praelongum*, *Rhytidiadelphus triquetrus*, *Rhodobryum roseum*, and *Thuidium philibertii*. Litter of *Matteuccia*, bare soil, and rocks predominate the ground.

The constants in the table are also common in non thermophilous grey alder forests, viz. *Circaea alpina*, *Filipendula ulmaria*, *Matteuccia struthiopteris*, *Oxalis acetosella*, *Rubus idaeus*, and *Stellaria nemoreum*. Differential species distinghuishing from *Alno (incanae)-Prunetum* are *Ulmus glabra*, *Galium odoratum*, *Scrophularia nodosa*, and *Viola mirabilis*.

Thermophilous deciduous forests are reported from Central Norway by Aune (1973), Holten (1978), Fremstad (1979), and Steen (1979). The thermophilous deciduous forests are assigned by Aune (1973), Fremstad (1979), and Steen (1979) to *Ulmo-Tilietum* (see also Seibert 1969, Bjørnstad 1971, Kielland-Lund 1971, 1973). Fremstad (1979) establishes a new association *Alno-Ulmetum glabrae* from Orkladalen, regarded as a northern substitute of *Alno-Fraxinetum*. According to tables in Fremstad (1979) *Alno-Ulmetum glabrae* includes thermophilous species such as *Galium odoratum*, *Hypericum hirsutum*, *Lathyrus vernus*, *Moehringia trinerva*, and *Viola mirabilis*. According to Fremstad (1979) most of the thermophilous deciduous forests in Central Norway belong to *Alno-Ulmetum glabrae* and very few of them to *Ulmo-Tilietum*. Aune (1973) prefers to assign his *Ulmus* forest from Hemne to a north-western race of *Ulmo-Tilietum*. Most of the thermophilous species characterizing the rich deciduous forest in Central Norway are at their northern limit of distribution. See floristic descriptions of rich deciduous forest localities in Central Norway in Holten (1978). As mentioned by Aune (1973) and Fremstad (1979) further investigations are needed; the most luxuriant forests in Central Norway, in the middle and inner parts of the Trondheimsfjord area, are not yet investigated phytosociologically. Just as it is necessary to establish a boreal association of *Alno-Fraxinetum*, it would also be desirable to establish a northern association of *Ulmo-Tilietum*. Many of the thermophilous species characterizing *Ulmo-Tilietum* in southern Norway (Seibert 1969, Bjørnstad 1971, Kielland-Lund 1971, 1973) do not occur in Central Norway, and the floristic similarity between southern and Central Norwegian *Ulmo-Tilietum* analyses is low (Aune 1973, Fremstad 1979). *Ulmus glabra* and *Corylus avellana* grow in most of the Central Norwegian *Ulmo-Tilietum* localities and should be suitable taxa to identify the northern substitute of *Ulmo-Tilietum*. However, "*Corylo-Ulmetum glabare*" is suggested as the name of an oceanic luxuriant substitute of *Ulmo-Tilietum* (Blom 1980), characterized by some south-western species not occurring in Central Norway. Perhaps this name should be reserved for the northern association, and one of the south/western species used in the name of the western association (see differential species of "*Corylo-Ulmetum glabrae*" against *Ulmo-Tilietum* in Blom (1980)). At present the northern association of *Ulmo-Tilietum* is referred to as *Ulmo-Tilietum boreale*, to which the thermophilous forest in the present paper is assigned.

To test the possibility of maintaining at least two thermophilous *Ulmus* forest associations in Central Norway numerical methods were applied on 62 stand analyses from the papers of Aune (1973), Fremstad (1979), Steen (1979), Klokk (1980), and the present paper. In Fig. 6, 62 stands of *Alnus incana* and *Ulmus glabra* dominated forests from Central Norway are ordinated. If all the available analyses in a table were not used, a random selection was made. The ordination is based on 136 randomly selected species of vascular plants. The variation along axis 1 is interpreted as a temperature gradient from the non thermophilous *Alno (incanae)-Prunetum* to exclusive *Ulmo-Tilietum* communities.

The intermediate thermophilous character of *Alno-Ulmetum glabrae* (Fremstad 1979) is illustrated on the ordination diagram. The weak *Ulmo-Tilietum*-character of *Ulmo-Tilietum boreale* in the present paper, using strict definition of *Ulmo-Tilietum*, is emphasized. The data were also run on TABORD for separation into three

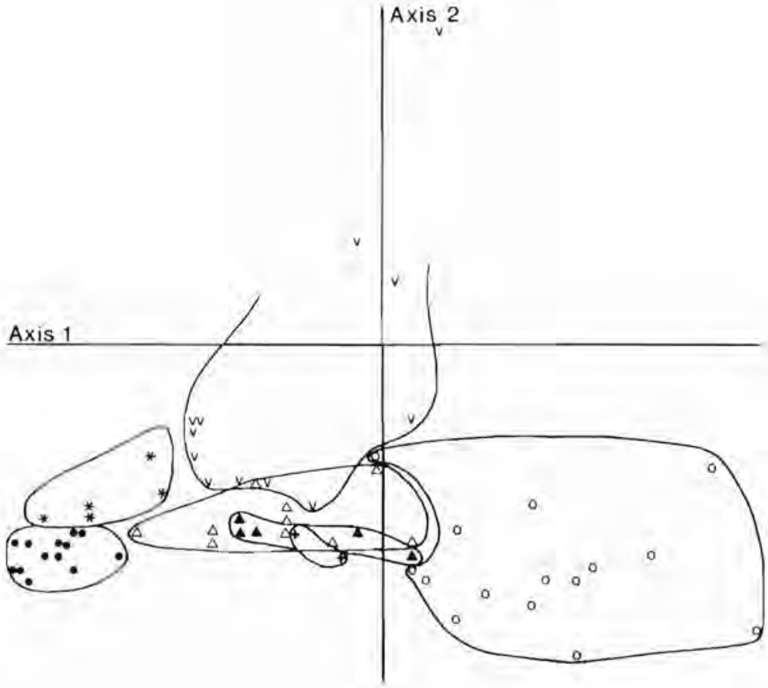


Fig. 6. Ordination diagram of 62 *Alnus incana* and *Alnus incana/ Ulmus glabra* stand from Central Norway.

- ● *Ulmo-Tilietum* (Fremstad 1979)
- * *Ulmo-Tilietum* (Aune 1973)
- V *Ulmo-Tilietum* (Steen 1979)
- \+ *Ulmo-Tilietum boreale* in the present paper
- Δ *Alno-Ulmetum glabrae* (Fremstad 1979 (typicum var.))
- ▲ *Alno-Ulmetum glabrae* (Fremstad 1979 (*Matteuccia* var.))
- 0 *Alno (incanae)-Prunetum aconitetosum* (Klokk 1980)

clusters, and TABORD also identified a gradient corresponding to the first axis in the ordination diagram (Fig. 7 and 8, Tab. VI). The o-marks, outside the clusters represent stands from the residual group in TABORD. In both TABORD runs (cf. Fig. 7 and 8) the index used was "similarity ratio" and the threshold value vas 0,3. In conclusion it seems possible to separate at least one less thermophilous association differing from *Ulmo-Tilietum* s.str. in Central Norway.

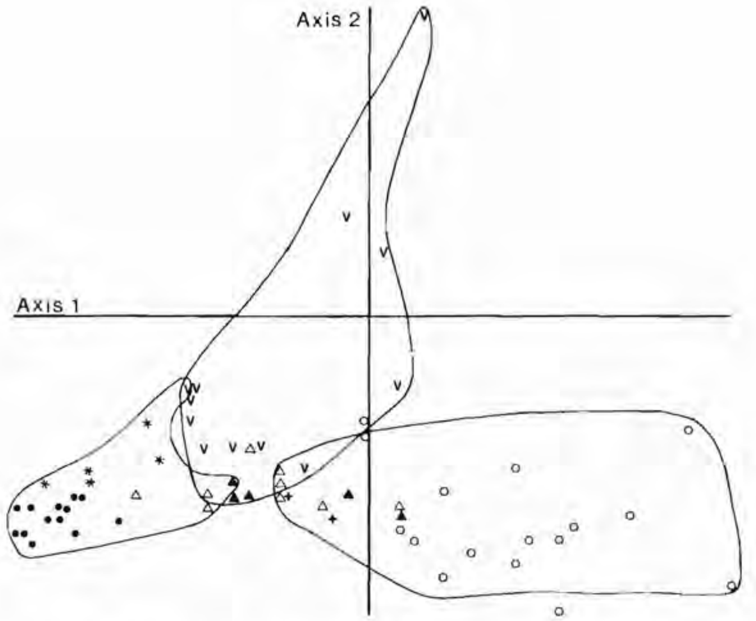


Fig. 7. The three TABORD clusters marked (quantitative index) in the ordination diagram, showing the correlation with the analyses in the papers mentioned in Fig. 6.

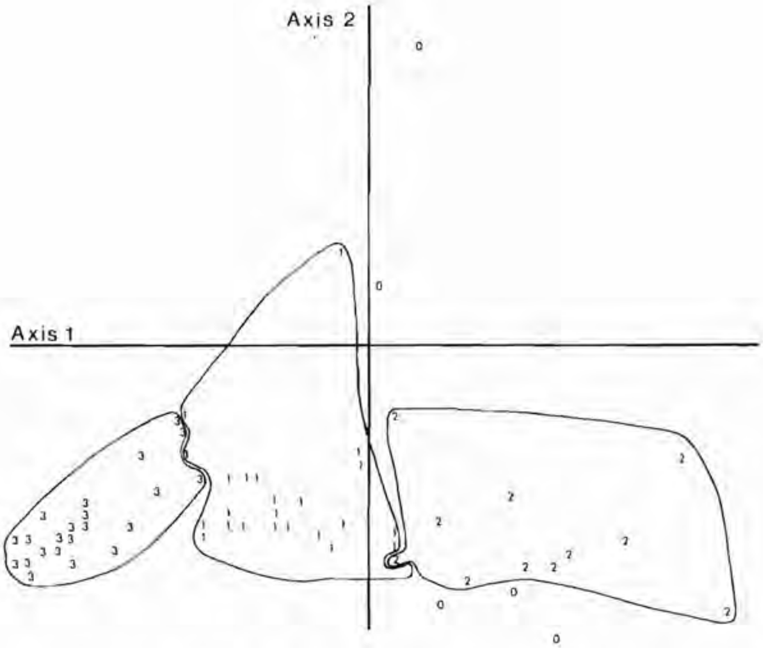


Fig. 8. The distribution of the TABORD-clusters in the ordination diagram. Qualitative index used in the classification.

Tab. VI. Distribution of 62 analyses of *Alnus incana* and *Alnus incana-Ulmus glabra* forests from Central Norway on the three TABORD-clusters marked in Fig. 7.
a: Quantitative index used in the classification.
b: Qualitative index used in the classification.

| a | Cluster 1 | Cluster 2 | Cluster 3 |
|---|---|---|---|
| Ulmo-Tilietum Fremstad 1979 | | | 13 |
| Ulmo-Tilietum Aune 1973 | | | 5 |
| Ulmo-Tilietum Steen 1979 | 11 | | 1 |
| "Ulmo-Tilietum boreale" | | 2 | |
| Alno-Ulmetum glabrae Fremstad 1979 | 5 | 7 | 3 |
| Alno (incanae)-Prunetum aconitetosum Klokk 1980 | 1 | 13 | |

| b | Cluster 1 | Cluster 2 | Cluster 3 |
|---|---|---|---|
| Ulmo-Tilietum Fremstad 1979 | | | 13 |
| Ulmo-Tilietum Aune 1973 | | | 5 |
| Ulmo-Tilietum Steen 1979 | 6 | 1 | 3 |
| "Ulmo-Tilietum borele" | 2 | | |
| Alno-Ulmetum glabrae Fremstad 1979 | 14 | | 1 |
| Alno (incanae)-Prunetum aconitetosum Klokk 1980 | 2 | 10 | |

## GRADIENTS IN THE FOREST VEGETATION

The RA ordination of 42 forest stand analyses (Fig. 9) is based on 132 vascular plants. Mean value of cover degree was calculated for each stand.

The RA diagram mainly confirms the subjective classification of forest communities, most of the communities are well separated in the ordination diagram. The poor pine forests have most of the dominant field layer species in common, and despite some moisture indicators in the damp forest, *Vaccinio uliginosi-Pinetum boreale* and *Barbilophozio-Pinetum* are not distinctly separated along any of

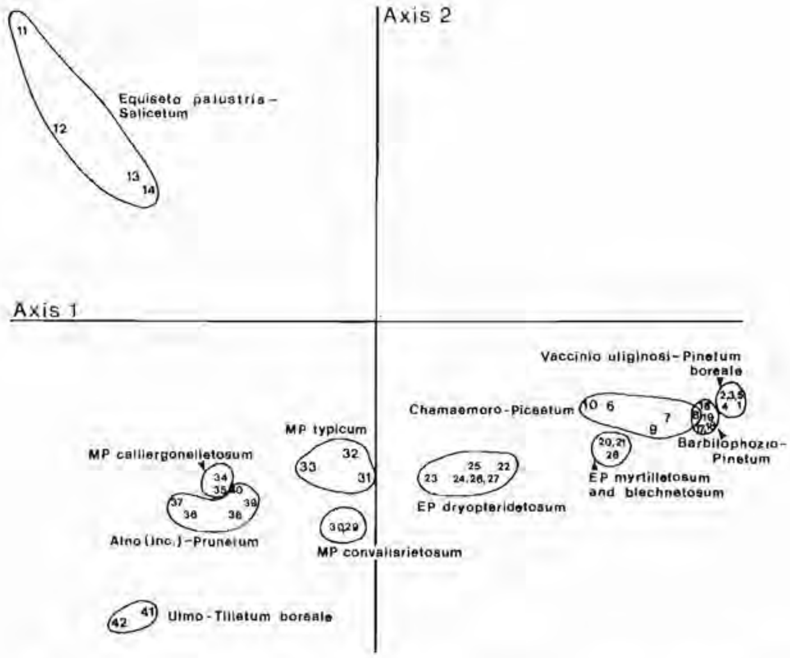


Fig. 9. RA ordination of 42 forest analyses. (EP = *Eu-Piceetum*, MP = *Melico-Piceetum*).

the two first axes. The close floristic relationship between the two tall herb communities *Melico-Piceetum calliergonelletosum* and *Alno (incanae)-Prunetum* is illustrated.

The variation described along the first axis is interpreted as a poor - rich gradient, with the poor pine and spruce forests to the right, the mesotrophic *Eu-Picetum dryopteridetosum* in the middle, and the rich forests to the left (cf. also Tab. V). It is also interesting to observe the parallell sites between a mineral soil community and the assumed "corresponding" damp forest, viz. *Barbilophozio-Pinetum* and *Vaccinio uliginosi-Pinetum boreale*, *Eu-Piceetum* and *Chamaemoro-Piceetum*, and *Melico-Piceetum* and *Equiseto palustris-Salicetum*.

The variation along axis 2 is correlated with a moisture gradient. The rich damp forest *Equiseto palustris-Salicetum*, also the wettest of the damp forests, as indicated on Fig. 9, is well separated from the other rich forests. The appearance of *Barbilophozio-Pinetum* on the right of axis 1 is, however, in conflict with this interpreation; this is probably due to the large number of common field layer species between the two poor pine forests described. When interpreting the higher axis the general "arch" effect of RA also should be kept in mind (Hill & Gauch 1980).

In conclusion the main floristic variation between the described forest communities may be explained by different nutritient conditions (a poor - rich gradient) and different moisture conditions (a moisture gradient).

## SOIL SAMPLES

The pH values from mires show good correlation with the poor - rich gradient (Fig. 10) (cf. Witting 1947, 1948, 1948, Malmer 1962 b). The pH samples are from lawn communities. The highest pH was measured in the *Schoenus ferrugineus-Campylium stellatum-Drepanocladus intermedius* community. Also exchangeable $Ca^{++}$ is positively correlated with the poor - rich gradient (Malmer & Sjörs 1955, Malmer 1962 b). The $K^{+}$ and $Mg^{++}$ values show little variation (Tab. IV).

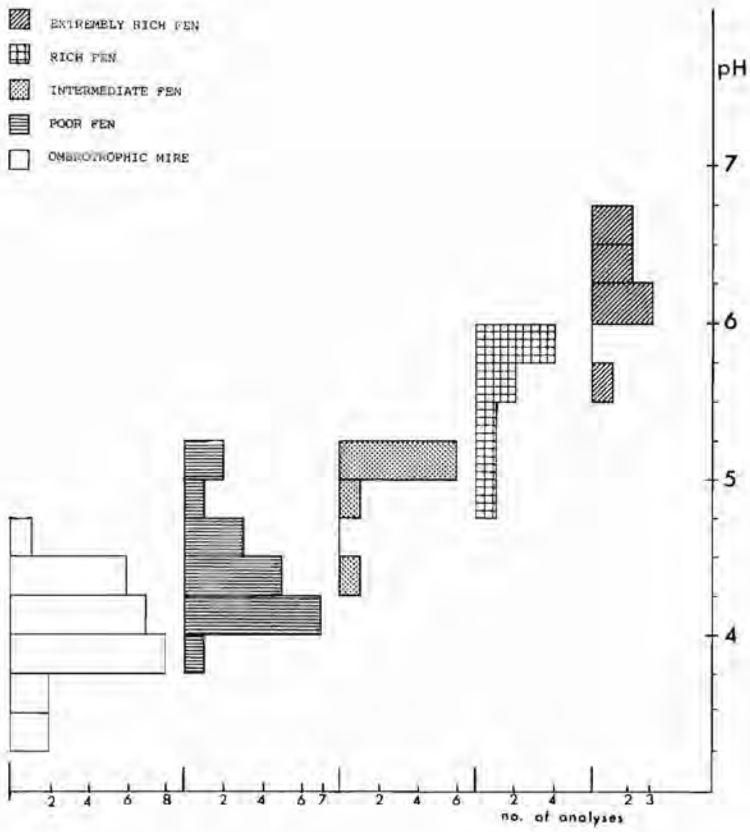


Fig. 10. pH values of mire communities along the poor - rich gradient.

Tab. IV. Exchangeable $Ca^{++}$, $K^{+}$, and $Mg^{++}$ in upper peat layer (5-15 cm) of mire communities along the poor - rich gradient (g/kg dry weight).

| | Ca | K | Mg |
|---|---|---|---|
| Open ombrotrophic bog (lawn) | 0.7 | 0.6 | 1.9 |
| Open poor fen (lawn) | 1.8 | 0.3 | 1.0 |
| Open intermediate fen (lawn) | 2.5 | 0.3 | 0.6 |
| Open extremely rich fen (lawn) | 15.0 | 0.4 | 0.6 |

Tab. V. Exchangeable $Ca^{++}$, $K^{+}$, and $Mg^{++}$ in upper soil layer (5-15 cm) of the forest communities (g/kg dry weight).

| | Ca | K | Mg |
|---|---|---|---|
| Chamaemoro-Piceetum | 2.9 | 0.2 | 1.1 |
| Equiseto palustris-Salicetum | 13.9 | 0.1 | 0.9 |
| Barbilophozio-Pinetum | 1.1 | 1.3 | 2.3 |
| Eu-Piceetum myrtilletosum | 1.4 | 1.2 | 0.9 |
| Eu-Piceetum dryopteridetosum | 1.1 | 1.6 | 0.9 |
| Melico-Piceetum typicum | 4.1 | 0.6 | 0.6 |
| Melico-Piceetum calliergonelletosum | 6.9 | 0.1 | 0.1 |
| Alno (incanae)-Prunetum aconitetosum | 3.9 | 0.6 | 1.3 |
| Ulmo-Tilietum boreale | 7.4 | 0.4 | 1.1 |

Exchangeable $Ca^{++}$ is also positively correlated with the poor - rich gradient in the forest vegetation, corresponding to the first axis on Fig. 6. The $K^{+}$ and $Mg^{++}$ values are small and with little variation (Tab. V). $Ca^{++}$-, $K^{+}$-, and $Mg^{++}$-values are based on only one sample for a representative stand of each community.

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# SUMMARY

Phytosociological and ecological studies on mire and forest vegetation were carried out in Klæbu, Central Norway. The main part of the investigation area was between the altitudes 150-400 m a.s.l. The geology is dominated by cambro-silurian sedimented rocks. The climate is suboceanic with a July mean temperature of 14,6-14,7°C and a January mean of -3,1 - -4,2°C. The suboceanic climate is confirmed by the high number of species with a Fennoscandina suboceanic distribution in the area.

The mire vegetation is calssified in 36 communities subjectively arranged along the gradients poor - rich, mud bottom - hummock, and partly mire margin - mire expanse. The latter gradient only distinguishes between open mires and tree/shrub covered mires. The boundary between ombrotrophic and minerotrophic vegetation is stressed. Four types of minerotrophic mires are separated along the poor - rich gradient, viz. poor, intermediate, rich , and extremely rich fens. Three damp forests, viz. *Vaccinium-Cornus suecica-Hylocomium splendens* community (synonymous with *Vaccinio uliginosi-Pinetum*), *Chamaemoro-Piceetum*, and *Equiseto palustris-Salicetum* are separated along a poor - rich gradient.

The only pine forest community on mineral soil in the area is *Barbilophozio-Pinetum*, which grows on shallow soil, frequently occurring at altitudes above 300 m a.s.l. The dominant community on moraine ground is *Eu-Piceetum*, this is separated into three subassociations, viz. *myrtilletosum* with dominance of *Vaccinium myrtillus*, *dryopteridetosum* with dominance of *V. myrtillus* and small ferns, and *blechnetosum* with co-dominance of *Blechnum spicant* and *Cornus suecica*. *Blechnetosum* is frequent only at altitudes above 450 m.

The eutrophic spruce forests are assigned to the association *Melico-Piceetum*. The three subassociations *convallarietosum*, *typicum*, and *calliergonelletosum* represent a moisture gradient. Wet stands of *calliergonelletosum* gradually turn to rich damp forests. *Convallarietosum* grows on a steep slope adjacent to a *Ulmo-Tilietum boreale* stand. The tall herb dominated *calliergonelletosum* has several species in common with the grey alder forests (cf. Bjørndalen 1978, 1980 a). The grey alder forests in clay ravines are assigned to the subassociation *aconitetosum* in *Alno (incanae)-Prunetum* (see

Klokk 1980). The thermophilous *Ulmus glabra* forest, which only occurs on a south-west facing scree slope, is assigned to *Ulmo-Tilietum boreale* ass. prov.

Numerical methods, including the classification program TABORD (van der Maarel et al. 1978) and the ordination method reciprocal averaging (RA) (Hill 1973) were applied. The numerical treatment of *Ulmus glabra* and *Alnus incana* forests (also including data from other authors) indicates the possibility of separating an exclusive thermophilous community, an intermediate slight thermophilous one, and a non-thermophilous one (Figs. 6, 7, 8). RA was run on 20 Scandinavian communities including different kinds of tall herb vegetation. The main types, i.e. spruce forest, grey alder forest, and birch forest are well separated on the diagram (Fig. 5).

The pH values on the investigated mires are positively correlated with the subjectively arranged communities along the poor - rich gradient. Exchangeable $Ca^{++}$ in the upper soil layer is positively correlated with the poor - rich gradient within the series: mires, damp forests, and forests on mineral soil, with the highest values in extremely rich mires, *Equiseto palustris-Salicetum*, and *Ulmo-Tilietum boreale*.

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Tab. VII. Open ombrotrophic mire (mud bottom, carpet, lawn).

| | Scheuchz. palustr.- Sphagnum cuspida.- commu. | | | | Car.lim.- Clad.flu./ Gymn.inf.- commu. | | | Car. lim.- Rhync. al.- Drep. schul.- Clad. flu./ Gymno. in.- commu. | | | | Erioph. vag.- Sph. cusp.- S. majus- S. pulchrum- commu. | | | | | Sph. magell.- S. pulchrum- commu. | | | | | Scirpus caespitosus- S. rubellum- S. tenellum-commu. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stand | A | | | | B | | | C | | D | | E | | | | | F | | | | | G | | | | H | | | | I | | | |
| Relevé No. (0,25 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| Slope in grades | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 3 | 2 | 2 | 0 |
| Aspect | - | - | - | - | - | - | - | - | - | S | S | - | - | NW | NW | NW | - | W | - | S | W | - | - | - | S | - | - | S | - | E | E | E | - |
| Date | 21/7-73 | | | | 25/7-73 | | | 25/7-73 | | | | 31/8-73 | | | | | 3/8-73 | | | | | 20/6-72 | | | | 12/7-72 | | | | 13/7-72 | | | |
| pH | 4.3-4.3 | | | | 4.4-4.5 | | | 4.4-4.4 | | | 4.5 | 4.3-4.4 | | | | | 4.4 | | | | | 4.0-4.1 | | | | 4.2 | | | | 3.9-4.0 | | | |
| No. of vasc. plants | 1 | 1 | 1 | 1 | 2 | 3 | 4 | 4 | 3 | 5 | 5 | 2 | 2 | 3 | 2 | 2 | 5 | 3 | 2 | 3 | 2 | 4 | 7 | 6 | 5 | 6 | 3 | 5 | 6 | 5 | 4 | 5 | 6 |
| No. of cryptogams | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 8 | 8 | 4 | 4 | 4 | 3 | 4 | 2 | 5 | 3 | 3 | 2 | 9 | 7 | 5 | 9 | 7 | 6 | 5 | 6 | 6 | 9 | 4 | 6 |
| Tot. num. of species | 2 | 2 | 2 | 2 | 3 | 4 | 5 | 8 | 7 | 13 | 13 | 6 | 6 | 7 | 5 | 6 | 7 | 8 | 5 | 7 | 5 | 13 | 14 | 11 | 14 | 13 | 9 | 10 | 12 | 11 | 13 | 9 | 12 |
| Andromeda polifolia | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Betula nana | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | . | . | . | . | . | . | . | . | + | . | . | . |
| Oxycoccus quadripetalus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . |
| Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | + | + | + | + | . | + | . | . | . | . | + |
| Carex limosa | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum vaginatum | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | . | 1 | 1 |
| Scirpus caespitosus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 4 |
| Drosera anglica | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 |
| D. rotundifolia | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| Rhynchospora alba | . | . | . | . | . | 1 | 1 | 2 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . |
| Rubus chamaemorus | . | . | . | . | . | . | . | . | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Scheuchzeria palustris | 2 | 2 | 2 | 2 | 1 | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Dicranum leioneuron | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | . | . | 1 | . | . |
| Drepanocladus schulzei | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Sphagnum cuspidatum | 6 | 6 | 6 | 6 | . | . | . | 5 | 5 | . | 1 | 3 | 3 | 4 | 4 | 4 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. fallax | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | 2 | 1 | 2 | . |
| S. fuscum | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. lindbergii | . | . | . | . | . | . | . | 3 | 3 | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. magellanicum | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | 6 | 6 | 6 | 6 | 6 | . | . | . | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 |
| S. papillosum | . | . | . | . | . | . | . | . | . | 5 | 5 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | 6 | . | 5 |
| S. majus | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. pulchrum | . | . | . | . | . | . | . | . | . | 3 | 3 | 6 | 6 | 5 | 5 | 5 | 1 | 1 | 2 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . |
| S. rubellum | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| S. tenellum | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 6 | 6 | 6 | 5 | 5 | 6 | 6 | 5 | 6 | 1 | 6 | 4 |
| Cephalozia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | . | . | 1 |
| Cephaloziella sp. | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |
| Cladop.fluit./Gymnoc.inflata | . | . | . | . | 6 | 6 | 6 | 3 | 4 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Lepidozia setacea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | . | 1 | . | 1 | . | . |
| Mylia anomala | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | . | . | . | . | . |
| Ptilidium ciliare | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Cladonia squamosa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . |
| Algae/bare peat | . | . | . | . | 2 | 2 | 2 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

Additional species: Empetrum sp. 23(+), Calliergon stramineum 22(1), Calypogeia sp. 31(1), Cladonia rangiferina 23(+).

Tab. VIII. Open ombrotrohpic mire (hummock).

| | Calluna-Drosera rot.- Rubus chamaemorus- Sph. fuscum-commu. | | | | | | | | | | | | | | | Calluna- Pleurozz. schreb.- Polytrichum jun. var. gr.-commu. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stand | A | | | | | | | B | | | | | C | | | D | | | | | | | E | |
| Relevé No. (0,25 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Slope in grades | 20 | 32 | 6 | 7 | 4 | 14 | 10 | 2 | 8 | 8 | 2 | 4 | 11 | 17 | 11 | 22 | 6 | 3 | 12 | 15 | 10 | 24 | 10 | 6 |
| Aspect | N | N | E | E | S | S | S | S | S | S | S | S | E | S | S | N | E | W | W | W | W | E | E | E |
| Date | 3/8-73 | | | | | | | 16/7-73 | | | | | 20/6-72 | | | 3/8-73 | | | | | | | 3/8-73 | |
| pH | 4.3 | | | | | | | 4.7 | | | | | - | | | 3.5-3.8 | | | | | | | 3.7 | |
| No. of vasc. plants | 5 | 5 | 8 | 8 | 8 | 8 | 8 | 11 | 9 | 9 | 12 | 9 | 7 | 8 | 7 | 7 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 |
| No. of cryptogams | 6 | 8 | 3 | 3 | 4 | 2 | 7 | 9 | 12 | 10 | 10 | 11 | 9 | 10 | 11 | 8 | 6 | 4 | 7 | 10 | 6 | 3 | 4 | 5 |
| Tot. num. of species | 11 | 13 | 11 | 11 | 12 | 11 | 15 | 20 | 21 | 19 | 22 | 20 | 16 | 18 | 18 | 15 | 11 | 9 | 12 | 15 | 11 | 9 | 10 | 11 |
| Andromeda polifolia | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 |
| Betula nana | . | . | 4 | 1 | 1 | 1 | 2 | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| Calluna vulgaris | . | . | 5 | 2 | 3 | 3 | 5 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 1 | 3 | 4 | 3 | 1 | . | 1 | . |
| Empetrum sp(p). | . | 1 | 1 | 2 | 2 | 1 | . | 1 | . | . | 1 | . | . | 1 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 3 | 1 | 1 |
| Oxycoccus microcarpus | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | 1 | . | . | 1 | 1 | 1 |
| O. quadripetalus | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . |
| Pinus sylvestris | . | . | . | . | . | . | + | + | + | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Vaccinium myrtillus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| V. uliginosum | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . |
| Myrica gale | . | . | . | . | . | . | . | 4 | 4 | 4 | 4 | + | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum vaginatum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Scirpus caespitosus | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| Drosera rotundifolia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | 1 | . |
| Rubus chamaemorus | . | . | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | . | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | . | 2 |
| Dicranum leioneuron | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | 1 | 1 | . | 3 |
| D. undulatum | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | 1 | 1 | 1 | . | . | 1 |
| Pleurozium schreberi | . | . | . | . | 1 | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 3 | 4 |
| Polytrichum juniperinum var. gracilius | 4 | 4 | . | . | . | . | . | . | . | . | 2 | 1 | . | . | . | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 5 | 5 |
| Racomitrium lanuginosum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 4 | . | . | . | . | . | . |
| Sphagnum fuscum | 6 | 5 | 6 | 6 | 6 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 4 | 6 | 6 | 3 | . | . | . | 1 | . | . | . | . |
| S. magellanicum | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | 1 | . | . | . | . | . | . | . | . | . |
| S. nemoreum | . | . | . | . | 1 | 2 | 2 | . | . | . | . | . | . | 1 | 1 | 1 | . | . | 1 | 1 | . | . | 4 | 1 |
| S. rubellum | 3 | 3 | 3 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . |
| Calypogeia sp(p). | 1 | 1 | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . | . |
| Cephalozia sp(p). | 1 | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . |
| Lepidozia setacea | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . |
| Mylia anomala | 2 | . | 2 | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . |
| Ptilidium ciliare | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | 1 | 1 | . | . | . | . |
| Riccardia sp(p). | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cetraria islandica | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cladonia alpestris | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | 1 | . | 1 | . | . | . |
| C. rangiferina | . | 1 | . | . | . | . | . | . | . | . | . | . | 3 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| C. arbuscula | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 4 | 1 | 1 | 1 | + | + | 1 | 1 | 1 | . | . | . |
| C. uncialis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . |

| | Dicr. lei.- Sph. nem.- commu. D. lei- var. | | | Dicr. lei.- Sph. nem.- commu. C. isl.- var. | | | Racomitrium lanuginosum - Cladonia - commu. | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stand | F | | | G | | | H | | I | | | | J | | | K | | | | L | | | | M | | | | N | | | | |
| Relevé No. (0,25 $m^2$) | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 |
| Slope in grades | 18 | 0 | 12 | 8 | 6 | 12 | 18 | 6 | 8 | 8 | 18 | 2 | 10 | 8 | 3 | 14 | 18 | 10 | 14 | 20 | 11 | 14 | 20 | 12 | 6 | 15 | 12 | 12 | 10 | 18 | 10 | 5 |
| Aspect | N | - | N | N | S | E | E | W | S | W | E | E | S | S | S | S | S | S | S | S | S | S | S | N | N | S | N | E | S | E | S | N |
| Date | 3/8-73 | | | 3/8-73 | | | 25/7-73 | | 7/7-73 | | | | 1/8-73 | | | 1/8-73 | | | | 7/8-73 | | | | 31/7-73 | | | | 7/8-73 | | | | |
| pH | 3.9-4.1 | | | 4.3 | | | 4.2 | | 4.0-4.2 | | | | 3.3-3.4 | | | 3.4-3.6 | | | | 4.0 | | | | 3.3-3.8 | | | | 3.9 | | | | |
| No. of vasc. plants | 7 | 3 | 5 | 7 | 6 | 7 | 5 | 5 | 5 | 5 | 6 | 4 | 5 | 5 | 5 | 7 | 6 | 8 | 5 | 4 | 5 | 4 | 4 | 5 | 6 | 5 | 3 | 4 | 5 | 3 | 2 | 5 |
| No. of cryptogams | 3 | 8 | 8 | 9 | 8 | 7 | 3 | 3 | 7 | 6 | 6 | 6 | 8 | 5 | 5 | 5 | 13 | 9 | 5 | 4 | 4 | 4 | 6 | 3 | 5 | 5 | 4 | 4 | 2 | 3 | 3 | 4 |
| Tot. num. of species | 10 | 11 | 13 | 16 | 14 | 14 | 8 | 8 | 12 | 11 | 12 | 10 | 13 | 10 | 10 | 12 | 19 | 17 | 10 | 8 | 9 | 8 | 10 | 8 | 11 | 10 | 7 | 8 | 7 | 6 | 5 | 9 |
| Andromeda polifolia | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | . | 1 | 1 | 1 | 2 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Betula nana | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | . | . | . | 1 | . | . | 1 |
| Calluna vulgaris | . | . | 2 | 4 | 4 | 4 | 4 | 3 | 2 | 3 | 2 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | . | 4 | 1 | 4 | 1 | 4 | 4 | 4 | 4 | 3 | 2 | . | . | 3 |
| Empetrum sp(p). | 1 | . | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 2 | 2 | . | . | . | . | . | . | . | . | . | . |
| Oxycoccus microcarpus | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . |
| O. quadripetalus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pinus sylvestris | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Vaccinium myrtillus | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | . | 1 | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . |
| V. uliginosum | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | 2 | 1 | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . |
| Myrica gale | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum vaginatum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 |
| Scirpus caespitosus | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Drosera rotundifolia | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rubus chamaemorus | 2 | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 |
| Dicranum leioneuron | 6 | 5 | 4 | 1 | 3 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D. undulatum | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| Pleurozium schreberi | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| Polytrichum juniperinum var. gracilius | 4 | 2 | 4 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . |
| Racomitrium lanuginosum | . | . | . | . | . | . | . | . | 3 | 2 | 4 | 4 | 1 | 1 | 4 | 4 | 1 | 1 | 2 | 3 | 4 | 1 | 2 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Sphagnum fuscum | . | 2 | 2 | 1 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. magellanicum | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. nemoreum | . | 4 | 5 | 4 | 5 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. rubellum | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calypogeia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cephalozia sp(p). | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lepidozia setacea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Mylia anomala | 1 | 1 | . | 2 | 3 | 2 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ptilidium ciliare | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | 1 | 1 | . | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . |
| Riccardia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cetraria islandica | . | . | . | 5 | 4 | 5 | . | . | 1 | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cladonia alpestris | . | . | . | . | . | . | 6 | 6 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | 2 |
| C. rangiferina | . | . | . | . | . | 1 | . | . | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 4 | 2 | 4 | 4 | 6 | 5 | . | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| C. arbuscula | . | . | 1 | 1 | . | . | . | . | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 6 | 5 | 5 | 6 | 5 | 4 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 |
| C. uncialis | . | . | . | . | . | 1 | . | . | 1 | 1 | . | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 2 | . | . | . | . | . |

Additional species: Empetrum hermaphroditum 37(1), 40(1), 42(1), 50(1), Carex pauciflora (11(1), Calliergon stramineum 9(1), 12(1), Dicranum elongatum 37(1), Pohlia nutans 10(1), 23(1), Sphagnum fallax 11(1), Sphagnum papillosum 8(1), 9(1), Cladopodiella fluitans/Gymnocolea inflata 8(1), 9(1), Cladonia bellidiflora 41(1), 42(1), 43(1), Cladonia crispata 41(1), 52(1), Cladonia deformis 42(1), Cladonia digitata 41(1), Cladonia furcata 41(1), Cladonia gonecha 41(1), Cladonia squamosa 41(1), 42(1).

Tab. IX. Tree/shrub-covered ombrotrophic mire.

| | Cladonia - commu. | | | | | | | | | | | Sph. fuscum-commu. | | | | | | Vaccinium - Cornus suecica - Hylocomium splendens - commu. | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | S. fusc.-var. | | | | S. nem.-var. | | | | | | | | | | | | | | | | | | | | | | | | |
| Stand | | A | | | B | | | | C | | | | D | | | | E | | F | | | | G | | | | | H | | | | | I | | | | | J | | |
| Releve No. (1 m²) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Slope in grades | 12 | 6 | 3 | 1 | 8 | 4 | 3 | 2 | 4 | 0 | 1 | 16 | 0 | 8 | 6 | 12 | 3 | 6 | 12 | 2 | 8 | 2 | 2 | 15 | 4 | 5 | 4 | 0 | 0 | 2 | 4 | 7 | 8 | 6 | 5 | 8 | 6 | 3 | 6 | 4 |
| Aspect | E | SW | E | W | W | NW | E | E | SE | - | S | N | - | W | W | W | W | W | W | W | S | S | S | SE | SW | E | W | W | W | W | N | N | N | N | N | W | W | W | W | W |
| Date | | 15/8-72 | | | 10/7-72 | | | | 13/7-72 | | | | 16/8-72 | | | | 10/7-72 | | 27/7-73 | | | | 21/6-72 | | | | | 10/7-72 | | | | | 15/8-72 | | | | | 14/8-72 | | |
| pH | | 3.7-4.0 | | | 3.8-4.2 | | | | 4.1-4.2 | | | | 3.6-4.2 | | | | 3.8-4.2 | | - | | | | 4.0 | | | | | - | | | | | - | | | | | - | | |
| No. of vasc. plants | 7 | 7 | 5 | 8 | 9 | 9 | 12 | 7 | 10 | 8 | 10 | 9 | 8 | 10 | 9 | 11 | 8 | 10 | 10 | 10 | 13 | 13 | 13 | 12 | 12 | 11 | 10 | 11 | 13 | 10 | 10 | 11 | 11 | 8 | 8 | 13 | 13 | 13 | 14 | 11 |
| No. of cryptogams | 6 | 7 | 6 | 12 | 11 | 13 | 10 | 9 | 12 | 11 | 7 | 6 | 11 | 1 | 3 | 4 | 15 | 4 | 5 | 3 | 8 | 6 | 6 | 5 | 10 | 7 | 9 | 12 | 10 | 10 | 4 | 5 | 8 | 5 | 5 | 10 | 11 | 11 | 8 | 9 |
| Tot. num. of species | 13 | 14 | 11 | 20 | 20 | 22 | 22 | 16 | 22 | 19 | 17 | 15 | 19 | 11 | 12 | 15 | 23 | 14 | 15 | 13 | 21 | 19 | 19 | 17 | 22 | 18 | 19 | 23 | 23 | 20 | 14 | 16 | 19 | 13 | 13 | 23 | 24 | 24 | 22 | 20 |
| A Pinus sylvestris | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | 3 | . | 4 | 4 | 2 | 3 | 3 | 2 | 3 | . | 5 | . | 2 | 2 | . | 5 | 3 | 3 | . | . | . | 1 | . | . | . |
| B Picea abies | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . |
| Pinus sylvestris | . | . | . | . | 3 | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Andromeda polifolia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Betula nana | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 1 | 1 | . |
| Calluna vulgaris | 1 | 2 | 3 | 4 | 5 | 4 | 4 | 2 | 3 | 4 | 4 | 3 | 3 | 1 | 3 | 2 | 5 | 3 | 3 | 4 | 2 | 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 1 | 3 | 2 | 1 | 2 | 4 | 5 | 4 | 3 | 3 |
| Empetrum hermaphroditum | . | . | . | . | 1 | 2 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 3 | 3 | 2 | 4 | 2 | 3 | 5 | 4 | 4 | 2 | . | . | . | . | . | 2 | 2 | 3 | 3 | 3 |
| E. nigrum | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | 2 | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E. sp(p). | 2 | 1 | 2 | 1 | . | . | 2 | 1 | 2 | 3 | 3 | 3 | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 2 | 2 | 2 | . | . | . | . | . |
| Oxycoccus microcarpus | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . |
| O. quadripetalus | . | 1 | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | . | 1 | . | 1 | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | . | 1 | . |
| Picea abies | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Pinus sylvestris | . | . | . | . | + | + | 1 | 1 | 1 | . | 1 | . | . | . | . | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . |
| Vaccinium myrtillus | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | . | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| V. uliginosum | 2 | . | . | . | . | . | 1 | . | . | 2 | . | 2 | . | 1 | . | 1 | . | 3 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | . | 3 | 3 | 1 | 2 | 2 | 2 | 2 |
| V. vitis-idaea | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | 1 | . | 1 | 1 | 2 | . | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | . | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| Carex pauciflora | . | . | . | 1 | . | + | 1 | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Deschampsia flexuosa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | + | . | . | . | 1 | . | . | . | 1 | 1 | 1 | 1 |
| Eriophorum vaginatum | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | . | 2 | 2 | 1 | 1 | 1 | 1 | . | . | 1 | . |
| Scirpus caespitosus | . | . | . | . | 1 | . | 2 | 2 | 2 | . | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cornus suecica | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Drosera rotundifolia | . | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Melampyrum pratense | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Rubus chamaemorus | 1 | . | . | 3 | 2 | 3 | 1 | 1 | 1 | . | 2 | 1 | 3 | 2 | . | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 4 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 |
| D Dicranum leioneuron | . | 1 | 1 | 1 | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D. majus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | 1 | 1 |
| D. scoparium | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| D. undulatum | . | 1 | . | 1 | . | 1 | . | . | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . | 1 | . | 1 | 1 |
| Hylocomium splendens | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 | . | 4 | 4 | 5 | 5 | 6 | 5 | 5 | 2 | 5 | 4 | 3 | 4 | 2 | 2 | 2 | 1 | 5 | 5 | 3 | 2 | 2 | 1 | 3 |
| Pleurozium schreberi | 6 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | . | 1 | 1 | 1 | 5 | 4 | 4 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 4 | 1 | 5 | 5 | 1 | 2 | 4 | 2 | 2 | 3 | 1 | 2 |
| Polytrichum juniperinum var. gracilius | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . | . | . |
| Ptilium crista-castrensis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | . | 1 | . | 1 | 3 | 1 | 3 | 5 | 4 |
| Racomitrium lanuginosum | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sphagnum fallax | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 2 | 6 | 1 | 1 | . | 6 | 1 | . | . |
| S. fuscum | . | . | . | 2 | 2 | 1 | 2 | . | 1 | 2 | 2 | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. magellanicum | . | . | . | . | . | . | 6 | . | 1 | 1 | 4 | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | . |
| S. nemoreum | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 6 | 4 | . | . | . | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 6 | . | . | . | . | . | 2 | 1 | 1 | 3 | . |
| S. rubellum | . | . | . | 2 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. russowii | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | . | . | . |
| Barbilophozia lycopodioides | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | . | 1 | 1 | 1 |
| Calypogeia sp(p). | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | . | . | 1 | . | . | . | 1 | . | . | . |
| Cephalozia sp(p). | . | . | . | 1 | 1 | . | . | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Lepidozia setacea | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Mylia anomala | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |
| Ptilidium ciliare | . | 1 | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 |
| Cladonia alpestris | . | . | . | 1 | 1 | . | . | 1 | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. rangiferina | 2 | 5 | 4 | 1 | 4 | 2 | 1 | 5 | 4 | 3 | . | . | 1 | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| C. arbuscula | 1 | 3 | 5 | 2 | 4 | 1 | 1 | 4 | 3 | 1 | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |

Additional species: Betula pubescens 38(1), Calliergon stramineum 17(1), Dicranum fuscescens 3(1), Dicranum polysetum 38(1), Sphagnum compactum 17(1), 17(1), Sphagnum girgensohnii 23(1), Sphagnum papillosum 21(1), Barbilophozia barbata 27(1), 30(1), 35(1), 38(1), Cephaloziella sp(p). 1(1), 17(1), Cladopodiella fluitans/Gymnocolea inflata 13(1), Lophozia sp(p). 1(1), 6(1), 28(1), Obtusifolium obtusum 36(1), Ortocaulis attenuatus 3(1), Ortocaulis cf. binsteadii 28(1), Ortocaulis kunzeanus 40(1), Cladonia forcata 36(1).

Tab. X. Open poor fen (mud bottom, carpet).

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Carex limosa - Menyanthes trifoliata - commu. | | | | | | | | | Erioph. angustifolium - Sph. pulchrum - commu. | | | | | | | | | | | Carex rost.- Sph. ripar.- commu. | | | | | Drosera rot. - Sph. magella- commu. | | | | | Carex lim.- Sph. pap.- S.majus commu. - | | | |
| | | | | | | | | | | Sph. lindb.- Drep.schu. var. | | | | | | Sph. pulchrum- var. | | | | | | | | | | | | | | | | | | |
| Stand | A | | | | | B | | | | C | | | | | | D | | | | | E | | | | | F | | G | | | H | | | |
| Relevé No. (0,25 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
| Slope in grades | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 0 |
| Aspect | - | - | - | - | - | - | - | - | - | - | N | N | - | E | N | SW | SW | SW | W | NW | - | - | - | - | - | - | - | E | W | W | - | - | - | - |
| Date | 19/7-73 | | | | | 18/8-73 | | | | 8/8-73 | | | | | | 19/7-73 | | | | | 1/8-73 | | | | | 1/8-73 | | 7/8-73 | | | 1/8-73 | | | |
| pH | 4.7-5.1 | | | | | 5.0-5.1 | | | | 4.2 | | | | | | - | | | | | 4.5-4.6 | | | | | 4.2 | | 4.4-4.6 | | | 4.2 | | | |
| No. of vasc. plants | 4 | 3 | 3 | 4 | 3 | 4 | 5 | 5 | 5 | 2 | 2 | 1 | 3 | 2 | 5 | 5 | 5 | 6 | 8 | 6 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 7 | 8 | 6 | 6 | 6 | 4 |
| No. of cryptogams | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 5 | 5 | 5 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 7 | 7 | 8 | 10 | 10 | 5 | 7 | 7 | 7 |
| Tot. num. of species | 4 | 3 | 3 | 4 | 3 | 4 | 5 | 5 | 5 | 6 | 7 | 5 | 8 | 7 | 9 | 8 | 8 | 8 | 20 | 8 | 6 | 6 | 6 | 5 | 5 | 12 | 12 | 12 | 17 | 18 | 11 | 13 | 13 | 11 |
| Andromeda polifolia | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| Betula nana | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | . |
| Carex lasiocarpa | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| C. limosa | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C. rostrata | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 4 | 4 | 4 | 4 | 3 | 1 | . | . | . | 1 | 1 | . | . | . |
| Eriophorum angustifolium | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 2 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . |
| E. vaginatum | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . |
| Scirpus caespitosus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | . | . | . | . |
| Drosera anglica | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . |
| D. rotundifolia | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Equisetum fluviatile | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Menyanthes trifoliata | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | . | . | . | . |
| Rhynchospora alba | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rubus chamaemorus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 |
| Scheuchzeria palustris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . |
| Utricularia intermedia | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Dicranum leioneuron | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| D. undulatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . |
| Drepanocladus schulzei | . | . | . | . | . | . | . | . | . | 4 | 4 | 4 | 5 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sphagnum balticum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . |
| S. compactum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| S. fuscum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 2 | 1 | 1 | 1 | . | . | . | . |
| S. lindbergii | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 4 | 4 | 6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. magellanicum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 5 | 5 | . | . | . | . |
| S. majus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | 2 | 3 | . | . | . | 1 | 2 | 1 | 1 |
| S. papillosum | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | . | . | . | . | . | 1 | 1 | 3 | 3 | 3 | 6 | 6 | 6 | 6 |
| S. pulchrum | . | . | . | . | . | . | . | . | . | 4 | 3 | 3 | 2 | 3 | . | 6 | 6 | 6 | 6 | 6 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . | . |
| S. riparium | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 6 | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . | . |
| S. rubellum | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . |
| S. tenellum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 |
| Calypogeia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | 1 | 1 | 1 |
| Cladop. fluit./Gymnoc. inflata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| Lepidozia setacea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |
| "gytje"/bare peat | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

Tab. XI. Open poor fen (carpet/lawn, lawn).

| | Scirpus caesp. - Sph. comp. - Cladop. fluitans/ Gymnoc. inflata - commu. | | | | | | | | Scirpus caespitosus - Sphagnum tenellum - commu. | | | | | | | | | | | | | | | | | | | Molinia caerulea-Scirp. caespito.-Narthecium ossi.-commu. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lycopodium inund.-var. | | | Sci. caesp.-Sph.comp.-Cl. fluit./Gymn. inf. var. | | | | | Sphagnum papillosum-var. | | | | | | | | | | | | Sphagnum tenellum-var. | | | | | | | | | | | |
| Stand | | A | | | | B | | | | C | | | | D | | | | E | | | | F | | | | G | | | | H | | |
| Relevé No. (0,25 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| Slope in grades | 1 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 10 | 13 | 10 | 7 | 9 | 6 | 7 | 6 | 4 | 6 | 3 | 6 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | 5 | 6 |
| Aspect | S | S | S | E | E | E | E | E | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | N | N | N | N | N | NE | NE | W | W | W | W | W |
| Date | | 7/8-73 | | | | 1/8-73 | | | | 14/7-72 | | | | 17/7-73 | | | | 19/7-73 | | | | 24/7-73 | | | | 17/7-73 | | | | 21/7-73 | | |
| pH | | 4.7-5.1 | | | | 4.0-4.1 | | | | 4.2-4.5 | | | | 4.2 | | | | - | | | | 4.3 | | | | 4.2 | | | | 4.3-4.5 | | |
| No. of vasc. plants | 10 | 7 | 8 | 5 | 7 | 9 | 6 | 5 | 12 | 14 | 13 | 15 | 12 | 8 | 8 | 9 | 9 | 8 | 7 | 6 | 8 | 5 | 5 | 5 | 5 | 6 | 7 | 5 | 6 | 5 | 5 | 6 |
| No. of cryptogams | 2 | 4 | 5 | 6 | 4 | 5 | 4 | 4 | 11 | 10 | 8 | 9 | 6 | 7 | 7 | 7 | 9 | 6 | 7 | 7 | 6 | 7 | 4 | 5 | 4 | 5 | 4 | 0 | 0 | 0 | 0 | 0 |
| Tot. num. of species | 12 | 11 | 13 | 11 | 11 | 14 | 10 | 9 | 23 | 24 | 21 | 24 | 18 | 15 | 15 | 16 | 18 | 14 | 14 | 13 | 14 | 12 | 9 | 10 | 9 | 11 | 11 | 5 | 6 | 5 | 5 | 6 |
| Andromeda polifolia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 2 | 1 | 2 |
| Betula nana | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B. pubescens | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calluna vulgaris | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Empetrum sp(p). | . | . | . | . | . | . | . | + | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| Oxycoccus microcarpus | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . |
| O. quadripetalus | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . |
| Pinus sylvestris | . | . | . | . | . | . | . | . | 1 | + | + | + | + | + | . | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Carex limosa | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. rostrata | . | 1 | 1 | . | . | 1 | . | 1 | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Eriophorum angustifolium | 1 | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| E. vaginatum | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . |
| Molinia caerulea | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 3 | 2 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Scirpus caespitosus | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 1 | 3 | 2 | 3 | 1 | 2 | 2 | 1 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 2 | 1 | 1 | 1 | 1 | 1 |
| Drosera anglica | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . |
| D. rotundifolia | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 | . | . | . | . | . |
| Lycopodium inundatum | 5 | 4 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Menyanthes trifoliata | . | . | . | . | . | . | . | . | 3 | 1 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Narthecium ossifragum | 1 | 2 | 5 | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 5 | 5 |
| Rubus chamaemorus | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Scheuchzeria palustris | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Trientalis europaea | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calliergon stramineum | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Dicranum leioneuron | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . |
| D. schulzei | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . |
| Polytrichum juniperinum var. gracilius | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sphagnum compactum | . | 2 | 5 | 5 | 5 | 6 | 5 | 5 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. fallax | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. magellanicum | . | . | . | . | . | . | . | . | 4 | 3 | 3 | 2 | 4 | . | . | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| S. majus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . |
| S. papillosum | . | . | 1 | 1 | . | 1 | . | . | 4 | 4 | 5 | 5 | 4 | 6 | 6 | 6 | 5 | 5 | 6 | 5 | . | . | . | . | . | 1 | 1 | . | . | . | . | . |
| S. pulchrum | . | 3 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. rubellum | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 2 | . | . | . | 2 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| S. subnitens | . | . | . | . | . | . | . | . | 2 | 2 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. tenellum | . | . | . | 3 | 4 | 3 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 2 | 1 | 1 | 2 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | . | . | . | . | . |
| Calypogeia sp(p). | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . |
| Cladop. fluit./Gymnoc. inflata | 5 | 5 | 2 | 4 | 4 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | . | . | . | . | . |
| Lepidozia setacea | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | 1 | . | . | 1 | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . |
| Mylia anomala | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Odontoschisma elongatum | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ptilidium ciliare | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . |
| litter | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 5 | 5 |

Additional species: Vaccinium uliginosum 19(1), Carex lasiocarpa 9(1), Carex pauciflora 10(1), Cornus suecica 13(1), Pinguicula vulgaris 12(1), Potentilla erecta 12(1), Drepanocladus badius 15(1), Sphagnum fuscum 9(1), Cephalozia sp. 13(1).

Tab. XII. Tree shrub covered poor fen.

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Empetrum - Cornus suecica - Sphagnum fallax - commu. | | | | | | | | | | | | | | | | | | | | Molinia caeru.- Narthec. ossi.- commu. | | | | |
| Stand | | | A | | | | | B | | | | | C | | | | | D | | | | | E | | |
| Relevé No. (1 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Slope in grades | 2 | 4 | 3 | 0 | 4 | 6 | 8 | 6 | 4 | 5 | 2 | 3 | 0 | 8 | 3 | 4 | 5 | 6 | 7 | 6 | 2 | 8 | 6 | 8 | 10 |
| Aspect | E | E | E | - | E | E | E | E | E | E | NE | NE | - | E | E | E | E | E | E | E | W | W | W | W | W |
| Date | | | 5/7-72 | | | | | 10/7-72 | | | | | 7/8-72 | | | | | 7/8-72 | | | | | 9/8-72 | | |
| pH | | | 4.4-4.5 | | | | | - | | | | | 4.2-4.6 | | | | | 4.1-4.2 | | | | | 4.0 | | |
| No. of vasc. plants | 18 | 17 | 14 | 14 | 18 | 17 | 14 | 11 | 11 | 9 | 16 | 19 | 18 | 17 | 18 | 10 | 11 | 15 | 13 | 9 | 7 | 9 | 10 | 10 | 9 |
| No. of cryptogams | 10 | 8 | 7 | 9 | 5 | 13 | 12 | 16 | 10 | 7 | 9 | 12 | 9 | 9 | 10 | 10 | 11 | 13 | 16 | 11 | 4 | 1 | 1 | 3 | 2 |
| Tot. num. of species | 28 | 25 | 21 | 23 | 23 | 30 | 26 | 27 | 21 | 16 | 25 | 31 | 27 | 26 | 28 | 20 | 22 | 28 | 29 | 20 | 11 | 10 | 11 | 13 | 11 |
| A Pinus sylvestris | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B Betula pubescens | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Andromeda polifolia | 1 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Betula pubescens | 1 | 1 | 1 | 1 | . | 1 | + | + | . | 1 | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Calluna vulgaris | 1 | 1 | . | . | 1 | 2 | 2 | 1 | 3 | 1 | 3 | 2 | 3 | 1 | 1 | . | . | . | . | . | . | 4 | 4 | 5 | 2 |
| Empetrum hermaphroditum | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 3 | . | . | 2 | . | . | . | . | . |
| E. sp(p). | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 2 | 2 | 1 | 1 | 2 | . | 1 | 2 | . | . | . | 1 | 1 | . |
| Lycopodium annotinum | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . |
| Oxycoccus microcarpus | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . |
| O. quadripetalus | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | . | . | . | . | . |
| Picea abies | 1 | 1 | . | . | + | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . |
| Pinus sylvestris | . | 1 | . | + | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . |
| Vaccinium myrtillus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 1 | . | 1 | . |
| V. uliginosum | 2 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 2 | 1 |
| Carex nigra | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| C. pauciflora | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | 1 | . | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . |
| C. rostrata | 1 | 1 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum angustifolium | 2 | 2 | 2 | 1 | 2 | 1 | 1 | . | 1 | 1 | 1 | 2 | 1 | 2 | 2 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| E. vaginatum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 2 | . | . | . | . | . |
| Molinia caerulea | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 2 | 2 | 2 | . | . | 1 | 2 | . | 2 | 3 | 2 | 2 | 2 |
| Scirpus caespitosus | 2 | 3 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 2 | 1 | 3 | 4 | . | . | 4 | 4 | . | 2 | 2 | 2 | 1 | 2 |
| Cornus suecica | 1 | 1 | 1 | . | 1 | . | . | . | . | . | 2 | 1 | 1 | . | 3 | 3 | 1 | 1 | 2 | 2 | . | . | . | . | . |
| Dactylorhiza maculata | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . |
| Drosera rotundifolia | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | . | . | . | . | . |
| Narthecium ossifragum | . | . | . | . | . | . | 5 | . | . | . | . | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 5 | 5 |
| Potentilla erecta | . | . | . | . | . | 1 | . | . | . | . | 2 | 2 | 2 | 2 | 2 | . | . | 1 | 2 | . | . | 1 | 1 | . | 1 |
| Rubus chamaemorus | 3 | 3 | 2 | 1 | 1 | 1 | . | 1 | 1 | . | 2 | 1 | 1 | . | 1 | 2 | 2 | 1 | 1 | 1 | . | . | 1 | 1 | 1 |
| Trientalis europaea | 1 | . | . | . | 1 | 1 | . | . | . | . | 2 | 1 | 1 | 1 | 2 | . | . | . | . | . | 1 | . | . | . | . |
| D Aulacomnium palustre | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Calliergon stramineum | 1 | 1 | . | 1 | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 1 | 1 | . | . | 1 | 1 | . | . | . | . | . | . |
| D. majus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 2 | 1 | 1 | . | . | . | . | . | . |
| D. undulatum | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 1 | 1 | 2 | 1 | 1 | . | . | . | . | . |
| Pleurozium schreberi | . | . | . | . | . | 1 | 1 | 1 | . | . | 1 | . | 1 | . | . | 2 | 3 | 1 | 1 | . | . | . | 1 | 1 | . |
| Polytrichum juniperinum var. gracilius | 1 | . | . | . | . | 3 | . | 2 | 1 | . | 1 | 1 | 4 | . | . | . | . | . | 1 | 3 | . | . | . | . | . |
| Sphagnum compactum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| S. fallax | 6 | 6 | 6 | 5 | 6 | 1 | 2 | 1 | 1 | . | 2 | 2 | 1 | 6 | 5 | 2 | 5 | 1 | 1 | 1 | . | . | . | . | . |
| S. fuscum | 1 | . | . | . | . | 5 | 2 | 4 | 1 | . | . | 1 | 2 | 2 | . | . | 1 | . | . | 6 | . | . | . | . | . |
| S. magellanicum | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 5 | 4 | 5 | . | 4 | . | . | . | . | 1 | . | . | . | . | . |
| S. nemoreum | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | . | 1 | 1 | 5 | 2 | . | . | 2 | . | . | . | . | . |
| S. papillosum | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 6 | 1 | . | . | . | 1 | . | . | . | . | 4 | . | . | . | . | . | . |
| S. rubellum | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | . | . | 2 | . | . | . | . | 1 | 2 | 3 | 1 | . | . | . | . | . |
| S. russowii | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | . | . | 1 | . | . | . | . | . | . |
| S. tenellum | . | . | . | . | . | . | 1 | . | . | 6 | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | 1 |
| Calypogeia sp(p). | 1 | 1 | . | 1 | . | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Cephalozia sp(p). | . | . | . | . | . | 1 | . | 1 | . | . | 1 | 1 | . | . | . | 1 | 1 | . | 1 | 1 | 1 | . | . | . | . |
| Cladop. fluit./Gymnoc. inflata | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | 1 | . | 1 | 1 | . | 1 | . | 1 | 1 | 1 | . | 1 | . | . | . | . |
| Lepidozia setacea | . | . | 1 | . | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Mylia anomala | . | 1 | . | . | . | 1 | 1 | 2 | 1 | . | . | . | 1 | . | . | . | 1 | 1 | 3 | 2 | . | 2 | . | 1 | . |
| Ptilidium ciliare | 1 | . | . | 1 | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 2 | 2 | . | . | . | . | . | . |

Additional species: Alnus incana B 12(2), Vaccinium vitis-idaea 1(1), 16(1), Carex echinata 13(1), 15(1), Carex panicea 14(1), Nardus stricta 14(1), Melampyrum pratense 16(1), 17(1), Pinguicula vulgaris 7(1), Selaginella selaginoides 12(1), 15(1), 16(1), 18(1), 19(1), Odontoschisma elongatum 8(1), Scapania sp(p). 4(1), 18(1).

Tab. XIII. Open intermediate fen.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Equ. fluviatile-Utric. interm.-Scorp. sco.-com. | | | | | | | Carex limosa-Carex livida-commu. | | | | | Molinia caerulea-Spn. subnitens - commu. | | | | | | | | | | | | | | | Molinia caerulea-Scirpus caesp.-Sph. pap.-S. sect. Subsecunda - commu. | | | | | | | | | | | | | | |
| Stand | A | | | B | | | | C | | | | | D | | | | | E | | | | | F | | | | | G | | | | | H | | | | | I | | | | |
| Relevé No. (0.25 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
| Date | 17/-72 | | | 31/7-73 | | | | 7/8-73 | | | | | 17/7-73 | | | | | 10/8-73 | | | | | 21/7-72 | | | | | 17/7-72 | | | | | 21/7-72 | | | | | 11/7-72 | | | | |
| pH | - | | | 5.1-5-1 | | | | 5.1-5.3 | | | | | 5.2-5.2 | | | | | 5.0-5.0 | | | | | 5.0-5.0 | | | | | 4.9-5.0 | | | | | 5.1-5.2 | | | | | 4.4-4.5 | | | | |
| No. of vasc. plants | 3 | 5 | 4 | 7 | 6 | 5 | 5 | 3 | 3 | 3 | 5 | 4 | 9 | 10 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 17 | 14 | 12 | 12 | 14 | 14 | 13 | 15 | 13 | 11 | 10 | 10 | 11 | 9 | 9 | 17 | 12 | 16 | 16 | 15 |
| No. of cryptogams | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 7 | 8 | 6 | 5 | 7 | 12 | 8 | 8 | 12 | 5 | 8 | 10 | 11 | 10 | 7 | 10 | 10 | 9 | 7 | 7 | 11 | 13 | 13 | 14 | 14 |
| To. num. of species | 4 | 6 | 5 | 9 | 8 | 7 | 7 | 4 | 4 | 4 | 6 | 5 | 13 | 11 | 9 | 10 | 10 | 16 | 18 | 16 | 15 | 17 | 29 | 22 | 20 | 24 | 19 | 22 | 23 | 26 | 23 | 18 | 20 | 20 | 20 | 16 | 16 | 28 | 25 | 29 | 32 | 29 |
| Andromeda polifolia | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Betula pubescens | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| Calluna vulgaris | . | . | . | . | . | . | . | . | . | . | . | . | . | + | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 |
| Myrica gale | . | . | . | . | . | . | . | . | . | . | . | . | 4 | 4 | 4 | 4 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Oxycoccus microcarpus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | 1 | 1 | . | . | . | 1 | 1 | . | . | 1 | . | . | . | 1 |
| O. quadripetalus | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | + | + | + | + | + | . | . | . | . | . | . | . | . | . | . | + | . | + | . | . | . | . | . | . | . | . | . | . | . | . |
| Carex chordorrhiza | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . |
| C. dioica | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. lasiocarpa | . | . | . | 1 | 1 | 2 | 2 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| C. limosa | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. livida | . | . | . | . | . | . | . | 4 | 4 | 4 | 4 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. pauciflora | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . | . | 1 | . |
| C. rostrata | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . |
| Equisetum fluviatile | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum angustifolium | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . | . | . | . | . |
| E. vaginatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Molinia caerulea | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 4 | 2 | 1 | 3 | 1 | 3 | 2 | 1 | 2 |
| Scirpus caespitosus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 | 1 | 4 | 4 | 5 | 3 | 4 | 1 | 3 | 4 | 3 | 1 |
| Drosera anglica | . | . | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | . | 1 | 1 | . |
| D. rotundifolia | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 2 | 1 |
| Menyanthes trifoliata | . | . | . | 2 | 2 | 2 | 2 | . | . | . | 1 | 1 | . | . | . | . | . | 3 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . |
| Narthecium ossifragum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 2 | 1 | 1 | 1 | . | . | 3 | . | . | 2 | 1 | . | 1 | . | 1 | 1 | 1 | 2 | 2 |
| Phragmites communis | 2 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pinguicula vulgaris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | 1 | . | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Potentilla erecta | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | . | 1 | 1 | . | . | 1 | 1 | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 |
| Selaginella selaginoides | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Tofieldia pusilla | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . |
| Trientalis europaea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . |
| Utricularia intermedia | . | 1 | 1 | 2 | 2 | 3 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Viola palustris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calliergon stramineum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 |
| Campylium stellatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | + | . | . | 1 | + | . | + | . | . | . | 1 | . | . | 1 | 1 | . | 1 | . | . | . | . | + | . | . |
| Dicranum leioneuron | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| Drepanocladus badius | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| D. exannulatus | . | . | . | 1 | 2 | 2 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| D. revolvens s.str. | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Scorpidium scorpioides | + | 1 | + | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sphagnum balticum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| S. fallax | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . |
| S. papillosum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | . | 5 | 5 | 6 | 6 | 1 | 4 | 1 | 1 | 2 | 5 | 3 | 3 | 4 | 4 | 3 |
| S. rubellum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | 1 | 3 | 3 | 1 | 3 |
| S. subnitens | . | . | . | . | . | . | . | . | . | . | . | . | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 6 | 2 | 1 | 1 | 1 | . | 1 | . | . | . | . | 5 | 1 | . | 1 | 1 |
| S. sect. Subsecunda | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | 5 | 2 | 5 | 6 | 3 | 2 | 1 | 2 | 2 | 1 | . |
| S. tenellum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 3 | 1 | 1 | 3 |
| S. warnstorfii | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calypogeia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 |
| Cladop. fluit./Gymnoc. inflata | . | . | . | . | . | . | . | 1 | 1 | 2 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 |
| Lepidozia setacea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | . | 1 | 1 |
| Odontoschisma elongatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Ptilidium ciliare | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Riccardia pinguis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 |
| R. sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 |
| Scapania sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . |
| "gytje"/bare peat | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

Additional species: Betula nana 22(1), 27(1), Empetrum sp(p). 40(1), 41(1), Lycopodium annotinum 38(1), 39(1), Vaccinium vitis-idaea 40(1), Equisetum palustre 2(1), Rubus chamaemorus 40(1), Sphagnum compactum 34(1), Sphagnum fuscum 26(2), 41(1), Sphagnum lindbergii 40(1), 41 (1), Sphagnum pulchrum 34(1), 35(1), Mylia anomala 30(1).

Tab. XIV. Rich fen.

Relevés 1–25 (A–F)

| | A | | | | | B | | | | | C | | | D | | | E | | | | | F | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community | C. rostr.-Equisetum fluviatil.-commu. | | | | | Scorpidium scorpioides - commu.: Rhyn. fu.-var. | | | | | Scorpidium scorpioides - commu.: Scorpidium scorpioides var. | | | | | | | | | | | | | | |
| Relevé No. (0.25 and 1 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Slope in grades | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 | 4 | 4 |
| Aspect | - | - | - | - | - | - | - | - | - | - | N | N | N | - | - | - | - | - | - | - | - | E | E | E | E |
| Date | 16/7-73 | | | | | 14/8-73 | | | | | 18/8-73 | | | 17/7-73 | | | 17/7-73 | | | | | 19/7-73 | | | |
| pH | 5.9-5.9 | | | | | 5.0-5.3 | | | | | 4.7-4.8 | | | 5.9-6.0 | | | 5.6-5.7 | | | | | 5.5-5.7 | | | |
| No. of vasc. plants | 3 | 3 | 3 | 3 | 4 | 11 | 14 | 8 | 6 | 9 | 6 | 3 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 6 | 7 | 8 | 10 | 10 | 11 |
| No. of cryptogams | 0 | 1 | 1 | 1 | 0 | 7 | 6 | 5 | 4 | 4 | 6 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 5 | 7 | 6 | 6 |
| Tot. num. of species | 3 | 4 | 4 | 4 | 4 | 18 | 20 | 13 | 12 | 13 | 13 | 8 | 8 | 5 | 6 | 6 | 7 | 7 | 8 | 6 | 8 | 13 | 17 | 16 | 17 |
| B Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Andromeda polifolia | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| Betula nana | . | . | . | . | . | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B. pubescens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calluna vulgaris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| Oxycoccus microcarpus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| O. quadripetalus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Carex chordorrhiza | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 4 | 4 | 4 | . | . | . | . |
| C. dioica | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. echinata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. flava | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. lasiocarpa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. limosa | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | . | 2 | . | . | . | . | . |
| C. panicea | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | . | . | 1 | . | . | . | . | . | . |
| C. rostrata | 5 | 5 | 5 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . |
| C. tumidicarpa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Equisetum fluviatile | 3 | 3 | 3 | 3 | 3 | . | . | . | . | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . |
| E. palustre | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eriophorum angustifolium | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 |
| E. latifolium | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Juncus stygius | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| Molinia caerulea | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 4 | 4 | . | 4 |
| Rhynchospora alba | . | . | . | . | . | . | 3 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| R. fusca | . | . | . | . | . | 4 | 4 | 4 | 4 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Scirpus caespitosus | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 |
| S. hudsonianus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 | . | 3 |
| Drosera anglica | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | . |
| Euphrasia frigida | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Menyanthes trifoliata | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . |
| Narthecium ossifragum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 1 | 2 | 1 |
| Parnassia palustris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Pedicularis palustris | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pinguicula vulgaris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Potentilla erecta | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Saussurea alpina | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Selaginella selaginoides | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| Succisa pratensis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Thalictrum alpinum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Tofieldia pusilla | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 |
| Trientalis europaea | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Utricularia intermedia | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . |
| D Calliergon sarmentosum | . | . | . | . | . | 1 | 1 | . | . | . | 2 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . |
| C. trifarium | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calliergonella cuspidata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Campylium stellatum | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| Drepanocladus badius | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D. exannulatus | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| D. intermedius | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D. revolvens s.str. | . | . | . | . | . | 5 | 3 | 1 | 1 | 3 | 4 | 4 | 4 | . | . | . | . | . | . | . | . | 5 | 5 | 5 | 5 |
| Scorpidium scorpioides | . | 1 | . | . | . | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 3 | 3 | 3 | 3 |
| Sphagnum rubellum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. subnitens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. sect. Subsecunda | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| S. warnstorfii | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Cephalozia sp(p). | . | . | . | . | . | 1 | 1 | 1 | 1 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lophozia borealis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Leiocolea rutheana | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Odontoschisma elongatum | . | . | . | . | . | 1 | 1 | 4 | 4 | 4 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 |
| Riccardia pinguis | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| R. sp(p). | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| "gytje"/bare peat | 6 | 6 | 6 | 6 | 6 | 2 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | . | . | . | . | . | . | . | . | . |

Relevés 26–54 (G–L)

| | G | | | | H | | | | | I | | | | | J | | | | | K | | | | | L | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community | C. dioica-S. subnit.-S. warns.-commu. | | | | Molinia caerulea-Scirpus caespitosus-Campylium stellatum-commu. | | | | | | | | | | Molinia caerulea - Potentilla erecta - Campylium stellatum-commu. | | | | | | | | | | | | | | |
| Relevé No. (0.25 and 1 $m^2$) | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
| Slope in grades | 2 | 2 | 2 | 4 | 4 | 4 | 3 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 6 | 3 | 4 | 8 | 8 | 10 | 9 | 5 | 11 | 8 | 8 | 8 | 7 |
| Aspect | E | E | E | E | W | W | W | W | W | N | N | N | N | N | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Date | 7/8-73 | | | | 24/7-72 | | | | | 9/8-72 | | | | | 21/7-72 | | | | | 4/8-72 | | | | | 9/8-72 | | | | |
| pH | 5.9-6.0 | | | | 5.7-6.0 | | | | | - | | | | | 5.4-5.5 | | | | | - | | | | | - | | | | |
| No. of vasc. plants | 12 | 15 | 14 | 14 | 16 | 14 | 13 | 13 | 14 | 11 | 12 | 12 | 12 | 9 | 15 | 18 | 15 | 17 | 18 | 21 | 18 | 15 | 17 | 19 | 16 | 16 | 21 | 18 | 23 |
| No. of cryptogams | 5 | 5 | 6 | 4 | 6 | 10 | 7 | 6 | 7 | 6 | 5 | 9 | 6 | 6 | 6 | 7 | 12 | 10 | 8 | 9 | 5 | 6 | 5 | 7 | 5 | 6 | 5 | 5 | 5 |
| Tot. num. of species | 17 | 20 | 20 | 18 | 22 | 24 | 20 | 19 | 21 | 17 | 17 | 21 | 18 | 15 | 21 | 25 | 28 | 27 | 26 | 30 | 23 | 21 | 22 | 26 | 21 | 22 | 26 | 26 | 28 |
| B Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 | 1 | . | . | . |
| C Andromeda polifolia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | 1 |
| Betula nana | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| B. pubescens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | 1 |
| Calluna vulgaris | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 1 | . | . | . |
| Oxycoccus microcarpus | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| O. quadripetalus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | 1 | 1 | . | . | . | 1 |
| Pinus sylvestris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | + | + | + | . | + | + | + | + | + | + | + | . | . | + | . |
| Carex chordorrhiza | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . |
| C. dioica | 2 | 2 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. echinata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | . | . | 1 |
| C. flava | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | 1 |
| C. lasiocarpa | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | . | . | 1 | . | . | 2 | 2 | 2 | 1 | 2 | . | . | . | . | . | . | . | . | . | 1 |
| C. limosa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. panicea | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| C. rostrata | 1 | . | . | 1 | 1 | 1 | 2 | . | 1 | . | . | . | 1 | . | 1 | 1 | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . |
| C. tumidicarpa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | 1 | . | . | . | . |
| Equisetum fluviatile | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E. palustre | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 |
| Eriophorum angustifolium | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | . | 1 | 1 |
| E. latifolium | . | . | . | . | 1 | 1 | . | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Juncus stygius | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Molinia caerulea | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 2 | 2 | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 1 | 3 | 2 | 4 | 2 | 4 | 4 | 3 | 2 | 3 |
| Rhynchospora alba | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| R. fusca | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Scirpus caespitosus | . | 1 | 1 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 |
| S. hudsonianus | . | 1 | . | 1 | 1 | 1 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |
| Drosera anglica | . | . | . | . | . | . | . | . | . | 1 | 2 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Euphrasia frigida | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 | . | 1 | 1 | 1 | . | . | . | 1 | 1 |
| Menyanthes trifoliata | . | . | . | . | 2 | . | . | . | . | . | 1 | 1 | . | . | 1 | 3 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . |
| Narthecium ossifragum | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 1 | . | . | . | 1 | 3 | 2 | . | 1 | 2 |
| Parnassia palustris | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 |
| Pedicularis palustris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pinguicula vulgaris | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | . | . | 1 | . | 1 | . |
| Potentilla erecta | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | . | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | 3 | 1 | 2 |
| Saussurea alpina | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | . | . | . | . |
| Selaginella selaginoides | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Succisa pratensis | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Thalictrum alpinum | . | . | . | . | 1 | 3 | 2 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Tofieldia pusilla | . | 1 | 1 | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . | 1 | . | 1 | 1 | 1 |
| Trientalis europaea | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | 1 | . | 1 |
| Utricularia intermedia | . | . | . | . | . | . | . | . | . | 1 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D Calliergon sarmentosum | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | . | . | . | . | 1 | . |
| C. trifarium | . | . | . | . | . | 1 | 1 | 1 | . | . | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| Calliergonella cuspidata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . |
| Campylium stellatum | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 5 | 1 | 6 | 1 | 5 | 6 | 6 | 1 | 1 | 1 | 1 | 3 | 4 | 1 | 5 | 3 | 1 | 3 | 3 | 1 | 6 | 5 |
| Drepanocladus badius | 1 | 1 | 1 | 1 | 5 | 4 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| D. exannulatus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D. intermedius | . | . | . | . | 3 | 3 | 2 | 2 | 1 | . | . | 1 | . | . | . | . | . | . | . | 1 | . | 2 | 1 | . | . | 2 | . | 1 | 1 |
| D. revolvens s.str. | . | . | . | . | 1 | 1 | . | 1 | 1 | 1 | . | . | 1 | . | 4 | 3 | 2 | 2 | 2 | . | . | 2 | . | . | 1 | . | . | . | . |
| Scorpidium scorpioides | . | . | . | . | . | 1 | 1 | . | . | 1 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Sphagnum rubellum | 3 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| S. subnitens | 3 | 2 | 3 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | 1 | 4 | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . |
| S. sect. Subsecunda | . | . | . | . | 2 | 1 | . | . | 6 | . | . | 3 | . | 1 | 6 | 5 | 5 | 5 | 4 | 3 | 6 | . | 5 | 1 | 3 | . | . | 1 | . |
| S. warnstorfii | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 | . | . | 6 | . | . | 6 | 1 | 2 |
| Cephalozia sp(p). | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Lophozia borealis | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . |
| Leiocolea rutheana | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Odontoschisma elongatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| Riccardia pinguis | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| R. sp(p). | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 |
| "gytje"/bare peat | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

Additional species: Vaccinium myrtillus 52(1), Vaccinium uliginosum 46(1), Calamagrostis purpurea 52(1), Carex buxbaumii 46(1), Carex flava x tumidicarpa 45(1), 47(1), Carex hostiana x tumidicarpa 48(1), 50(1), Carex lepidocarpa 33(1), 52(1), Carex nigra (52(1), Nardus stricta 41(1), Anemone nemorosa 54(1), Dactylorhiza maculata 53(1), Galium boreale 46(1), 52(1), Listera ovata 28(1), Rubus saxatilis 52(1), Scheuchzeria palustris 6(1), 7(1), Triglochin palustre 15(1), Utricularia minor 7(1), Viola palustris 52(1), Bryum pseudotriquetrum 52(1), Dicranum undulatum 49(1), Onchophorus virens 31(1), Chiloscyphus pallescens 52(1), Lepidozia setacea 43(1), Ortocaulis cf. binsteadii (1), Saccobasis polita 40(1), 45(1).

Tab. XV. [illegible]

| | C. limos.- Scorp. sc.- comm. / Campylium stell. - Drepanocladus interm.-comm. / Schoenus ferrug.- Campylium stell.- Drep. interm. - / Potentilla erecta - Campylium stellatum - Drep. interm. - comm. |
|---|---|
| Stand | [illegible] |
| Relevé No. | [illegible] |
| Slope in grades | [illegible] |
| Aspect | [illegible] |
| Date | [illegible] |
| pH | [illegible] |
| No. of vasc. plants | [illegible] |
| No. of cryptogams | [illegible] |
| Tot. num. of species | [illegible] |
| B Betula pubescens | [illegible] |
| Salix nerita | [illegible] |
| C Andromeda polifolia | [illegible] |
| Betula nana | [illegible] |
| B. pubescens | [illegible] |
| Calluna vulgaris | [illegible] |
| Empetrum sp(p). | [illegible] |
| Myrica gale | [illegible] |
| Oxycoccus microcarpus | [illegible] |
| O. quadripetalus | [illegible] |
| Picea abies | [illegible] |
| Agrostis canina | [illegible] |
| Carex chordorrhiza | [illegible] |
| C. dioica | [illegible] |
| C. echinata | [illegible] |
| C. flava | [illegible] |
| C. hostiana | [illegible] |
| C. lasiocarpa | [illegible] |
| C. lepidocarpa | [illegible] |
| C. limosa | [illegible] |
| C. nigra | [illegible] |
| C. panicea | [illegible] |
| C. pulicaris | [illegible] |
| C. rostrata | [illegible] |
| C. tumidicarpa | [illegible] |
| Deschampsia caespitosa | [illegible] |
| Equisetum fluviatile | [illegible] |
| E. palustre | [illegible] |
| Eriophorum angustifolium | [illegible] |
| E. latifolium | [illegible] |
| Festuca rubra | [illegible] |
| Hierochloe odorata | [illegible] |
| Juncus articulatus | [illegible] |
| Molinia caerulea | [illegible] |
| Nardus stricta | [illegible] |
| Schoenus ferrugineus | [illegible] |
| Scirpus caespitosus | [illegible] |
| S. hudsonianus | [illegible] |
| S. quinqueflorus | [illegible] |
| Alchemilla sp(p). | [illegible] |
| Anemone nemorosa | [illegible] |
| Crepis paludosa | [illegible] |
| Dactylorchis incarnata | [illegible] |
| D. maculata | [illegible] |
| Drosera anglica | [illegible] |
| D. rotundifolia | [illegible] |
| Euphrasia frigida | [illegible] |
| Filipendula ulmaria | [illegible] |
| Galium boreale | [illegible] |
| Geranium silvaticum | [illegible] |
| Hieracium sp(p). | [illegible] |
| Menyanthes trifoliata | [illegible] |
| Parnassia palustris | [illegible] |
| Pedicularis palustris | [illegible] |
| Phragmites communis | [illegible] |
| Pinguicula vulgaris | [illegible] |
| Potentilla erecta | [illegible] |
| Prunella vulgaris | [illegible] |
| Saussurea alpina | [illegible] |
| Selaginella selaginoides | [illegible] |
| Succisa pratensis | [illegible] |
| Thalictrum alpinum | [illegible] |
| Tofieldia pusilla | [illegible] |
| Trientalis europaea | [illegible] |
| Triglochin palustre | [illegible] |
| Viola palustris | [illegible] |
| D Aulacomnium palustre | [illegible] |
| Bryum pseudotriquetrum | [illegible] |
| Calliergon trifarium | [illegible] |
| Calliergonella cuspidata | [illegible] |
| Campylium stellatum | [illegible] |
| Cinclidium stygium | [illegible] |
| Drepanocladus badius | [illegible] |
| D. intermedius | [illegible] |
| D. revolvens | [illegible] |
| Fissidens adianthoides | [illegible] |
| Mnium pseudopunctatum | [illegible] |
| M. seligeri | [illegible] |
| Paludella squarrosa | [illegible] |
| Scorpidium scorpioides | [illegible] |
| Sphagnum fallax | [illegible] |
| S. rubellum | [illegible] |
| S. sect. Subsecunda | [illegible] |
| S. warnstorfii | [illegible] |
| Tomenthypnum nitens | [illegible] |
| Jamesoniella rubescens | [illegible] |
| Lophozia borealis | [illegible] |
| Riccardia pinguis | [illegible] |
| R. sp(p) | [illegible] |
| Scapania sp.(p) | [illegible] |
| Bare peat | [illegible] |

Additional species: Alnus incana B 49(1), Pinus sylvestris C 9(1), 11(1), 12(1), 37(1), Salix caprea C 41(1), Vaccinium uliginosum 42(1), 43(1), Anthoxanthum odoratum 47(1), 50(1), Calamagrostis purpurea 46(1), Carex capillaris 47(1), Eriophorum vaginatum 16(1), Cirsium palustre 49(1), Gymnadenia conopsea 41(1), Narthecium ossifragum 12(1), Rhynchospora alba 3(1), 4(1), 7(1), 8(1), Utricularia intermedia 2(1), 3(1), Calliergon giganteum 14(1), 45(1), 49(1), Calliergon sarmentosum 16(1), Calliergon stramineum 19(1), 42(1), Fissidens osmundoides 43(1), Hypnum pratense 49(1), 51(1), Mnium affine 40(1), 45(1), Mnium punctatum 15(1), Sphagnum subnitens 10(1), Chiloscyphus polyanthus 49(1), 51(1), Odontoschisma elongatum 9(1), Sacchobasis polita 33(1), 38(1), Tritomaria quinquedentata 47(1), 49(1).

Tab. XVI. Ass. *Chamaemoro-Piceetum* K.-Lund 1962.

| Stand | | | A | | | | | B | | | | | C | | | | | D | | | | | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Relevé No. (4 m²) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Slope in grades | 14 | 12 | 13 | 12 | 14 | 11 | 6 | 11 | 8 | 6 | 7 | 5 | 5 | 0 | 1 | 9 | 7 | 7 | 3 | 11 | 0 | 2 | 1 | 3 | 1 |
| Aspect | E | E | E | E | E | N | NW | NW | W | NW | SE | S | SE | - | SW | W | W | W | W | W | - | E | W | N | E |
| Date | | | 16/6-72 | | | | | 4/6-72 | | | | | 11/7-72 | | | | | 14/7-72 | | | | | 10/8-72 | | |
| pH | | | 4.0-4.2 | | | | | - | | | | | 4.2 | | | | | 4.2 | | | | | - | | |
| No. of vasc. plants | 22 | 26 | 22 | 19 | 18 | 15 | 14 | 14 | 14 | 15 | 11 | 11 | 9 | 9 | 13 | 11 | 13 | 10 | 10 | 11 | 20 | 18 | 18 | 16 | 20 |
| No. of cryptogams | 7 | 10 | 12 | 13 | 13 | 9 | 13 | 15 | 12 | 16 | 12 | 10 | 11 | 14 | 13 | 16 | 14 | 14 | 15 | 10 | 12 | 14 | 12 | 16 | 14 |
| Tot. num. of species | 29 | 36 | 34 | 32 | 31 | 24 | 27 | 29 | 26 | 31 | 23 | 21 | 20 | 23 | 26 | 27 | 27 | 24 | 25 | 21 | 32 | 32 | 30 | 32 | 34 |
| A Betula pubescens | . | . | . | . | . | 1 | 1 | . | . | . | . | 3 | . | . | 5 | . | . | 2 | 3 | 1 | . | . | . | . | . |
| Picea abies | 1 | . | . | 3 | 1 | 1 | . | . | 1 | 1 | . | 3 | . | 2 | 1 | 1 | 1 | . | 2 | 2 | 1 | . | . | . | 2 |
| Pinus sylvestris | . | . | . | . | . | . | 2 | 1 | 1 | . | 3 | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . |
| B Betula pubescens | . | . | . | . | . | 1 | 1 | . | . | . | . | 3 | . | . | 5 | . | . | 2 | 3 | 1 | . | . | . | . | . |
| Picea abies | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . |
| C Betula pubescens | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . |
| Calluna vulgaris | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | 1 | 1 | . | . | . | . | 1 | 2 | 1 | 3 | 1 |
| Empetrum sp(p). | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| Linnaea borealis | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Lycopodium annotinum | . | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | . | . | 1 |
| Picea abies | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | + | . | . | 1 | . | . | 1 | . | . | . | 1 | . | 1 |
| Pinus sylvestris | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |
| Vaccinium myrtillus | 4 | 3 | 3 | 3 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 6 | 5 | 5 | 5 | 1 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 3 |
| V. uliginosum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | . | . | 2 | 1 | 1 | 2 | 1 | . | . | . | . | . | . | 1 | 1 | . | . |
| V. vitis-idaea | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| Carex echinata | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 |
| C. nigra | . | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 3 | 3 | 1 | 1 |
| Deschampsia flexuosa | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Equisetum sylvaticum | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | . | . | . | . | . | 1 | 1 | . | . | . | 1 | 1 | . | 1 | . |
| Eriophorum angustifolium | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E. vaginatum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Luzula pilosa | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Cornus suecica | 1 | 3 | 2 | 3 | 2 | 3 | 2 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 3 | 2 | 2 | 4 | 4 | 4 | 4 | 3 |
| Gymnocarpium dryopteris | 1 | 1 | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | 1 | . | 1 | . | 2 |
| Listera cordata | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| Maianthemum bifolium | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 |
| Melampyrum pratense | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | 1 | . |
| Potentilla erecta | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Rubus chamaemorus | 2 | 2 | 1 | 2 | 1 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 3 | 2 | 3 | 4 | 4 |
| Trientalis europaea | 1 | 1 | 1 | . | 1 | . | . | 1 | 1 | 1 | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| D Aulacomnium palustre | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Calliergon stramineum | 1 | 1 | . | 1 | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | . | . | . | . | . | 1 | . |
| Dicranum majus | . | . | 1 | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | . |
| D. scoparium | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Hylocomium splendens | . | 1 | 1 | 1 | 1 | . | 1 | 5 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 |
| Mnium pseudopunctatum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| Plagiothecium undulatum | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Pleurozium schreberi | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Polytrichum commune | 1 | 2 | 3 | 1 | 1 | . | . | 1 | . | 1 | . | . | . | . | . | 1 | . | . | 1 | . | 2 | 2 | 4 | 1 | 1 |
| P. juniperinum var. gracile | . | 1 | 1 | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ptilium crista-castrensis | . | . | 1 | . | . | . | . | . | 1 | . | 1 | . | . | 1 | 1 | 1 | . | . | . | . | 1 | 2 | 1 | 2 | 1 |
| Rhytidiadelphus loreus | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | 1 | 1 | . | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sphagnum centrale | . | . | . | . | 1 | 3 | 1 | 1 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| S. fallax | 6 | 5 | 2 | 3 | 6 | 6 | 5 | 1 | 1 | 6 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 5 | 4 | 5 |
| S. girgensohnii | 1 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 2 | 6 | 5 | 3 | 2 | 2 |
| S. magellanicum | . | . | . | . | . | 1 | 2 | 1 | . | . | . | . | . | . | . | . | 1 | 2 | 6 | 5 | . | . | . | . | . |
| S. nemoreum | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 3 | 3 | . | 2 | 1 | . | 1 | 1 | 1 | . | . | . |
| S. russowii | 1 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . |
| Barbilophozia lycopodioides | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | . | . | 1 | . | . | . | 2 | . | 1 | . |
| Calypogeia sp(p). | . | . | 1 | 1 | 1 | . | 1 | . | . | 1 | 1 | . | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . |
| Cephalozia sp(p). | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | 1 | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . |
| Obtusifolium obtusum | . | . | . | 1 | 1 | . | 1 | . | . | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | 1 | . | 1 |
| Ptilidium ciliare | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | . |

Additional species: Andromeda polifolia 15(1), Oxycoccus quadripetalus 2(1), 17(1), Agrostis tenuis 21(1), 23(1), 24(1), 25(1), Carex pauciflora 17(1), Juncus filiformis 2(1), 3(1), 21(1), 25(1), Molinia caerulea 12(1), Nardus stricta 1(1), 2(1), 6(1), Blechnum spicant 2(1), 3(1), Dactylorhiza maculata 1(1), 7(1), 11(1), Melampyrum sp(p). 3(1), 4(1), Dicranum polysetum 19(1), 22(1), 24(1), 25(1), Dicranum undulatum 23(1), Polytrichum cf. formosum 13(1), Rhytidiadelphus calvescens/squarrosus 11(1), Rhytidiadelphus triquetrus 11(1), Cephaloziella sp. 16/1), Harpanthus flotowianus 15(1), 21(1), 24(1), 25(1), Orthocaulis floerkei 4(1), 14(1), 25(1), Orthocaulis kunzeanus 21(1), Pellia sp. 24(1). Tritomaria quinquedentata 9(1), 10(1), 22(1), 25(1).

Tab. XVII. Ass. *Equiseto palustris-Salicetum* ass. prov.

| Stand | A | | | | B | | | | C | D |
|---|---|---|---|---|---|---|---|---|---|---|
| Relevé No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Area $m^2$ | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 25 |
| Aspect | - | - | - | - | - | - | - | - | E | N |
| Slope in grades | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 4 |
| Date | 9/7-73 | | | | 9/7-73 | | | | 31/8-78 | 21/8-78 |
| No. of vascular plants | 14 | 10 | 10 | 10 | 10 | 12 | 11 | 8 | 14 | 21 |
| No. of cryptogams | 4 | 6 | 4 | 5 | 8 | 6 | 6 | 5 | 9 | 11 |
| Tot. number of species | 18 | 16 | 14 | 15 | 18 | 18 | 17 | 13 | 23 | 32 |
| A Alnus incana | 2 | 1 | . | 2 | . | . | 1 | . | 1 | . |
| Betula pubescens | . | . | . | . | . | 1 | 2 | . | . | . |
| Picea abies | 1 | . | 1 | . | . | 1 | 1 | . | . | 1 |
| Salix pentandra | . | . | . | . | . | . | . | 2 | . | . |
| B Alnus incana | . | . | 2 | 1 | . | . | . | . | . | . |
| Betula pubescens | 1 | . | . | . | . | . | . | . | . | . |
| Picea abies | . | . | . | . | . | . | . | . | . | 1 |
| Salix glauca | . | . | . | . | . | 2 | . | 1 | . | . |
| S. myrsinifolia | 1 | 2 | 2 | . | . | . | . | . | . | . |
| S. pentandra | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . |
| C Calamagrostis purpurea | 1 | 1 | . | . | . | 1 | 1 | 1 | . | . |
| Carex canescens | . | 1 | . | . | . | . | . | . | 3 | 1 |
| C. echinata | . | . | . | . | . | . | . | . | 1 | 1 |
| C. nigra | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 2 |
| Deschampsia caespitosa | . | . | . | . | . | . | . | . | 1 | 1 |
| Equisetum palustre | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 |
| E. pratense | . | . | . | . | 1 | 1 | 1 | 1 | . | . |
| Juncus articulatus | . | . | . | . | . | . | . | . | 1 | 1 |
| J. filiformis | . | . | . | . | . | . | . | . | 2 | 2 |
| Anemone nemorosa | . | . | . | . | . | . | . | . | 1 | 1 |
| Caltha palustris | 2 | 1 | 1 | 1 | . | 1 | . | . | 2 | 1 |
| Comarum palustre | 5 | 5 | 5 | 5 | 1 | 1 | 1 | 2 | . | . |
| Filipendula ulmaria | 1 | . | 1 | 1 | 2 | 2 | 3 | 3 | . | . |
| Galium palustre | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 2 | . |
| Geum rivale | 1 | . | . | . | 1 | 1 | . | . | . | 4 |
| Menyanthes trifoliata | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | . | . |
| D Bryum pseudotriquetrum | . | . | . | . | 1 | 1 | 1 | 1 | . | . |
| Calliergon giganteum | 1 | 3 | 1 | 3 | . | . | 1 | . | . | 2 |
| Calliergonella cuspidata | . | . | . | . | 2 | 1 | 1 | 1 | 1 | . |
| Climacium dendroides | . | . | . | . | 1 | . | . | . | 1 | 2 |
| Hylocomium splendens | . | . | . | . | . | . | . | . | 1 | 1 |
| Mnium pseudopunctatum | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | . | 1 |
| M. rugicum | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | . | 1 |
| M. seligeri | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | . | 2 |
| Rhytidiadelphus calvescens | . | . | . | . | . | . | . | . | 2 | 3 |
| Sphagnum squarrosum | . | 1 | . | 1 | . | 1 | . | . | . | . |
| Riccardia pinguis | . | 1 | . | . | . | . | . | . | 1 | . |

Additional species: Sorbus aucuparia A 1(1), Salix aurita B 4(1), Salix phylicifolia 5(1), Carex vaginata 10(1), Luzula multiflora 10(1), Poa palustris 10(1), Poa trivialis 10(1), Cirsium palustre 9(1), Galium uliginosum 10(1), Myosotis scorpioides 9 (1), Polygonum viviparum 10(1), Ranunculus acris 10(1), Ranunculus repens 9(1), Rumex acetosa 10(1), Trifolium repens 10(1), Tussilago farfara 9(1), Atrichum undulatum 10(1), Calliergon stramineum 9(1), Cirriphyllum piliferum 9(1), Drepanocladus uncinatus 10(1), Philonotis fontana 10(2), Sphagnum girgensohnii 9(1), Sphagnum teres 9(1), Chiloscyphus polyanthus 5(1), Pellia sp. 5(1), Cladonia crispata 10(1).

Tab. XVIII. Ass. *Barbilophozio-Pinetum* Br.-Bl. et Sissing em. K.-Lund 1962.

| | cladonietosum | | | | | | | | | | hylocomietosum | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Racomitrium lanugino-var. | | | | | Cladonia-var. | | | | | | | | | | | | | | | | | | | |
| Stand | | | A | | | | | B | | | | | C | | | | | D | | | | | E | | |
| Relevé No. (4 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Slope in grades | 13 | 0 | 18 | 0 | 10 | 18 | 20 | 20 | 17 | 20 | 8 | 3 | 7 | 4 | 12 | 10 | 8 | 7 | 17 | 7 | 16 | 12 | 9 | 14 | 12 |
| Aspect | S | – | W | – | W | SW | S | S | S | S | SE | E | SE | S | S | S | S | E | W | SW | NE | NE | E | E | NE |
| Date | | | 10/7-72 | | | | | 16/8-73 | | | | | 10/7-72 | | | | | 11/7-72 | | | | | 14/7-72 | | |
| No. of vasc. plants | 4 | 7 | 4 | 7 | 7 | 5 | 3 | 3 | 3 | 3 | 10 | 9 | 9 | 11 | 10 | 8 | 10 | 10 | 11 | 9 | 9 | 9 | 8 | 12 | 8 |
| No. of cryptogams | 6 | 5 | 5 | 4 | 6 | 5 | 7 | 6 | 5 | 5 | 6 | 6 | 6 | 8 | 6 | 9 | 10 | 10 | 11 | 7 | 9 | 12 | 9 | 8 | 9 |
| Tot. num. of species | 10 | 12 | 10 | 11 | 13 | 10 | 10 | 9 | 8 | 8 | 16 | 15 | 15 | 19 | 16 | 17 | 20 | 20 | 22 | 16 | 18 | 21 | 27 | 20 | 17 |
| A Betula pubescens | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . |
| Pinus sylvestris | . | . | . | . | 4 | 3 | . | . | . | . | 2 | 5 | 2 | 3 | 2 | 2 | 2 | 2 | 4 | 4 | 2 | 4 | . | . | . |
| B Picea abies | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 1 | . | . | . | . | . | . |
| Pinus sylvestris | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Andromeda polifolia | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Calluna vulgaris | 3 | 4 | 3 | 1 | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 4 | 5 | 3 | 3 | 3 | 2 | 3 | 2 |
| Empetrum hermaphroditum | . | 1 | . | . | 4 | 1 | 1 | 1 | 1 | 1 | 3 | 5 | 2 | 2 | 3 | 4 | 3 | 5 | 3 | 5 | 3 | 4 | 4 | 3 | 3 |
| E. sp(p). | 1 | . | 1 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Linnaea borealis | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . |
| Pinus sylvestris | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . |
| Vaccinium myrtillus | . | 1 | . | 1 | . | . | . | . | . | . | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 1 | 3 | 3 | 3 | 4 | 4 |
| V. uliginosum | . | 1 | . | 1 | 1 | . | . | . | . | . | 1 | . | . | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 4 | 2 | 3 |
| V. vitis-idaea | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 |
| Deschampsia flexuosa | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| Cornus suecica | . | . | . | . | . | . | . | . | . | . | 3 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Melampyrum pratense | . | . | . | . | . | . | . | . | . | . | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Rubus chamaemorus | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D Dicranum fuscescens | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . |
| D. majus | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | 1 | . | 1 | 1 | . | . | . | . | . |
| D. scoparium | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| Hylocomium splendens | . | . | . | . | 1 | . | . | . | . | . | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 5 | 6 | 5 | 3 | 2 | 2 | 2 |
| Pleurozium schreberi | . | 1 | 1 | . | 1 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |
| Polytrichum commune | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . |
| Ptilium crista-castrensis | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| Racomitrium lanuginosum | 6 | 6 | 2 | 6 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sphagnum nemoreum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | 2 | 4 | 5 | 5 |
| Barbilophozia lycopodioides | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 1 | 1 | . | 1 | . | 1 | 1 | 1 | . | . |
| Calypogeia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | . | . |
| Orthocaulis floerkei | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | . | 1 | . | . |
| Ptilidium ciliare | 1 | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 |
| Cladonia alpestris | 3 | 3 | 5 | 2 | 4 | 5 | 5 | 5 | 5 | 5 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C. rangiferina | 1 | 1 | 2 | 1 | 2 | 3 | 4 | 4 | 3 | 3 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 |
| C. arbuscula | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |

Additional species: Sorbus aucuparia C 18(1), 24(1), Blechnum spicant 24(1), Rhytidiadelphus loreus 15(1), 23(1), Sphagnum russowii 25(1), Barbilophozia barbata 19(1), Obtusifolium obtusum 18(1), Scapania sp. 22(1), Tritomaria quinquedentata 18(1), 25(1), Hepaticae sp(p). 19(1), 22(1), Cladonia furcata 7(1), Cladonia uncialis 2(1).

Tab. XIX. Ass. *Eu-Piceetum* K.-Lund. 1962.

| | myrtilletosum | | | | | | | | | | dryopteridetosum | | | | | | | | | | | | | | | | | | | | | | | | | blechnetosum | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stand | A | | | | | B | | | | | C | | | | | D | | | | | E | | | | | F | | | | | G | | | | | I | | | | | | | | | | | | | | |
| Relevé No. (4 m²) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| Slope in grades | 18 | 24 | 12 | 19 | 18 | 3 | 2 | 2 | 6 | 2 | 0 | 1 | 0 | 0 | 2 | 16 | 26 | 24 | 20 | 23 | 21 | 22 | 21 | 24 | 26 | 22 | 18 | 24 | 20 | 21 | 26 | 28 | 25 | 20 | 29 | 20 | 21 | 29 | 26 | 30 | 34 | 32 | 32 | 26 | 24 | 30 | 32 | 33 | 34 | 30 |
| Aspect | S | S | S | S | S | N | NE | E | N | S | - | E | - | - | E | E | E | E | E | E | E | E | E | E | E | N | N | N | N | N | N | N | N | N | N | W | W | W | W | W | E | E | E | E | E | E | E | E | E | E |
| Date | 15/6-72 | | | | | 20/6-72 | | | | | 10/8-72 | | | | | 15/8-72 | | | | | 18/8-72 | | | | | 18/8-72 | | | | | 16/8-72 | | | | | 19/8-72 | | | | | 16/8-73 | | | | | | | | | |
| No. of vasc. plants | 10 | 11 | 8 | 6 | 8 | 10 | 14 | 12 | 11 | 12 | 12 | 13 | 14 | 15 | 13 | 12 | 13 | 15 | 15 | 12 | 10 | 7 | 12 | 9 | 6 | 12 | 13 | 15 | 15 | 12 | 15 | 13 | 12 | 14 | 13 | 17 | 14 | 15 | 15 | 13 | 13 | 13 | 10 | 11 | 8 | 10 | 15 | 11 | 10 | 13 |
| No. of cryptogams | 8 | 8 | 11 | 9 | 9 | 10 | 13 | 9 | 8 | 14 | 8 | 10 | 8 | 7 | 8 | 10 | 9 | 8 | 8 | 8 | 10 | 10 | 10 | 11 | 9 | 8 | 11 | 9 | 9 | 8 | 11 | 11 | 10 | 10 | 9 | 13 | 13 | 8 | 8 | 7 | 10 | 7 | 9 | 7 | 7 | 5 | 5 | 9 | 6 | 6 |
| Tot. num. of species | 20 | 19 | 19 | 15 | 17 | 20 | 27 | 21 | 19 | 26 | 20 | 23 | 22 | 22 | 21 | 22 | 22 | 23 | 23 | 20 | 20 | 17 | 22 | 20 | 15 | 20 | 24 | 24 | 24 | 20 | 26 | 24 | 22 | 24 | 22 | 30 | 27 | 23 | 23 | 20 | 23 | 20 | 19 | 18 | 15 | 15 | 20 | 20 | 16 | 19 |
| A Betula pubescens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | 4 | 4 | . | . | . | . | 3 | . | . | . |
| Picea abies | 2 | 1 | 2 | 4 | . | 2 | 3 | 1 | 1 | 2 | . | 2 | 4 | 5 | 4 | 3 | 3 | 3 | 5 | 4 | 4 | 5 | 3 | . | 5 | 5 | . | 4 | 4 | . | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 5 | 3 | 5 | . | 2 | . | 3 | . | 4 | 3 | . | . | . |
| Sorbus aucuparia | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| B Betula pubescens | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Picea abies | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Betula pubescens | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . |
| Empetrum hermaphroditum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 1 |
| Lycopodium annotinum | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | 1 | 1 | . | . |
| Picea abies | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | . | 1 | 1 | 1 | . | . | . | 1 | 1 | 1 | . |
| Vaccinium myrtillus | 5 | 5 | 6 | 4 | 6 | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 3 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | . | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 4 |
| V. vitis-idaea | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 2 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | 1 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 |
| Deschampsia flexuosa | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Equisetum sylvaticum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Luzula pilosa | 1 | 1 | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Melica nutans | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| Anemone nemorosa | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Athyrium filix-femina | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | 2 | 1 | 3 | 3 | . | . | . | . | . | . | . | . | . | . |
| Blechnum spicant | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 2 | 1 | 1 | 1 | 1 | 4 | 3 | 4 | 4 | 3 | 5 | 3 | . | 3 | 5 |
| Cornus suecica | . | . | . | . | . | . | 1 | 2 | 1 | 1 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | 3 | 3 | 3 | 3 | 4 | 2 | 3 | 2 | 3 | 3 |
| Dryopteris assimilis | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | 1 | . | 1 | . | . | 1 | 2 | . | . | . | . | . | . | . | 1 | 2 | . | 1 | 1 | 2 | 1 | 2 | 5 | 2 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . |
| Gymnocarpium dryopteris | 1 | 1 | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 1 | . | 1 | . | . | . | . | 1 | 1 | . | . |
| Linnaea borealis | 1 | 1 | 1 | . | 1 | . | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Listera cordata | . | . | . | . | . | 1 | . | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| Maianthemum bifolium | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | . | 1 | 2 | 2 | 1 | 2 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Melampyrum pratense | 1 | 1 | 1 | 1 | 2 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| M. sylvaticum | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Oxalis acetosella | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Potentilla erecta | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Thelypteris limbosperma | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 4 | 3 | 3 | . | . | . | . | . | 3 | . | 3 | . | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| Trientalis europaea | 1 | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | . | 1 | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | . | 1 | . | 1 | 1 |
| D Dicranum majus | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 3 | . | . | . | . | . | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 3 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| D. scoparium | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | 2 | 1 | . | . | . | . | . | 1 | 1 | . |
| Hylocomium splendens | 5 | 5 | 5 | 4 | 6 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 5 | 4 | 5 | 5 | 5 | 3 | 4 | 3 | 4 | 4 | 4 | 1 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 1 | 1 | 1 | 2 | 1 | 4 | 4 | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 4 |
| Plagiothecium undulatum | . | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 3 | . | . | 4 | . | 1 | . | . | . | . | 1 |
| Pleurozium schreberi | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 3 | 3 | 1 | 4 | 4 | 4 | 4 | 4 | 4 | 3 |
| Polytrichum commune | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 1 | 1 | 1 | 1 | . | 2 | 1 | 4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P. formosum | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ptilium crista-castrensis | 1 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 4 | 4 | 4 | 2 | 4 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rhytidiadelphus loreus | 2 | 1 | 2 | 4 | 1 | 1 | 2 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 1 | 1 | 4 | 1 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 6 | 6 | 3 | 3 | 1 | 4 | 4 | 3 | 3 | 3 | 2 | 4 | 2 | 2 | 3 |
| Sphagnum girgensohnii | . | . | . | . | . | 6 | 3 | . | 6 | 4 | . | . | . | . | . | 2 | 1 | . | . | . | . | . | . | 4 | . | 2 | 5 | 3 | 4 | 3 | 1 | 3 | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 2 | . | . | . | . | . |
| S. nemoreum | . | . | . | . | . | 1 | 1 | . | 1 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Barbilophozia barbata | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| B. lycopodioides | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| Obtusifolium obtusum | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| Orthocaulis floerkei | . | . | 1 | . | . | 1 | 1 | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| Plagiochila major | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Tritomaria quinquedentata | . | . | . | . | . | 1 | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . |
| Hepaticae sp(p). | . | . | 1 | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| litter/bare soil | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 |

Additonal species: Alnus incana A 28(2), Calluna vulgaris 41(1), 50(1), Anthoxanthum odoratum 13(1), 23(1), 36(1), Nardus stricta 41(1), 44(1), Dryopteris filix-mas 36(2), 38(1), 39(2), Geranium sylvaticum 28(1), Hieracium sp. 24(1), Orthilia secunda 34(1), Solidago virgaurea 14(1), Hylocomium umbratum 36(1), 37(1), 39(1), 40(1), 43(1), Cephalozia sp. 27(1), Lophocolea cf. bidentata 8(1), 32(1), 36(1), 37(1), 38(1).

Tab. XX. Ass. *Melica-Piceetum* K.-Lund 1962.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | convallarietosum | | | | | | | | typicum | | | | | | | | | | | | | | | calliergonelletosum | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | Filipendula ulm.-var. | | | | | Lact. a.-var. | | |
| Stand | A | | | | | | B | | A | | | | | B | | | | | C | | | | | A | | | | | B | | |
| Relevé No. (1 m$^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Slope in grades | 35 | 35 | 44 | 40 | 39 | 42 | 42 | 40 | 15 | 16 | 18 | 18 | 20 | 13 | 11 | 12 | 12 | 8 | 2 | 0 | 0 | 0 | 2 | 4 | 5 | 4 | 5 | 7 | 20 | 15 | 3 |
| Aspect | W | W | W | W | W | W | W | W | E | E | E | E | E | E | E | E | E | E | S | - | - | - | W | E | E | E | E | E | N | N | N |
| Date | 22/8-73 | | | | | | 10/7-72 | | 20/6-72 | | | | | 5/7-72 | | | | | 10/7-72 | | | | | 9/7-73 | | | | | 9/7-73 | | |
| No. of vasc. plants | 25 | 22 | 25 | 25 | 24 | 25 | 23 | 21 | 17 | 25 | 22 | 21 | 26 | 26 | 25 | 27 | 34 | 23 | 22 | 17 | 19 | 17 | 17 | 12 | 9 | 11 | 10 | 10 | 14 | 15 | 14 |
| No. of cryptogams | 2 | 10 | 5 | 5 | 5 | 5 | 4 | 4 | 13 | 7 | 16 | 8 | 11 | 6 | 9 | 18 | 13 | 6 | 11 | 9 | 9 | 10 | 9 | 9 | 9 | 9 | 8 | 10 | 9 | 7 | 7 |
| Tot. num. of species | 27 | 32 | 30 | 30 | 29 | 30 | 27 | 25 | 30 | 32 | 38 | 29 | 37 | 32 | 34 | 45 | 47 | 29 | 33 | 26 | 28 | 27 | 26 | 21 | 18 | 20 | 18 | 20 | 23 | 22 | 21 |
| A Alnus incana | . | . | . | . | . | . | . | . | . | . | . | 4 | . | . | 2 | 2 | 2 | 3 | . | 3 | 2 | 3 | 3 | . | . | . | . | . | . | . | . |
| Betula pubescens | 4 | 1 | 3 | 2 | 3 | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Picea abies | 2 | . | . | . | . | . | 4 | 4 | 2 | . | . | 2 | 3 | 5 | 5 | 1 | 1 | 1 | 4 | 2 | 2 | . | 1 | 1 | . | 3 | . | . | . | . | . |
| Sorbus aucuparia | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B Alnus incana | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | 1 | 1 | 2 | . | . | . | . | . | . | . | . | . | . | . | . |
| Corylus avellana | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Picea abies | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Alnus incana | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . |
| Linnaea borealis | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lycopodium annotinum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Picea abies | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . |
| Vaccinium myrtillus | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| V. vitis-idaea | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | + | + | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Anthoxanthum odoratum | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Carex digitata | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| Dactylis glomerata | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Deschampsia caespitosa | . | 1 | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | . | . | . | . | . | 1 | . | . |
| Equisetum pratense | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 |
| E. silvaticum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | 1 | 1 | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Festuca ovina | . | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Luzula pilosa | . | 1 | . | 1 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | 1 | 1 | 1 | . | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Melica nutans | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Poa nemoralis | . | . | . | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . |
| Alchemilla sp(p). | . | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . |
| Anemone nemorosa | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 2 | 3 | 2 | 4 | 4 | 2 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| Athyrium filix-femina | . | . | . | . | . | . | . | . | 1 | . | 2 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Blechnum spicant | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Caltha palustris | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 |
| Cirsium heterophyllum | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Convallaria majalis | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Crepis paludosa | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Chrysosplenium alternifolium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dryopteris filix-mas | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | 2 | . | 3 |
| Gymnocarpium dryopteris | 1 | 1 | . | . | . | . | 1 | . | 4 | 3 | 1 | 1 | . | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | . | 1 | 2 | 2 | . | 1 | 1 |
| Thelypteris phegopteris | . | . | . | . | . | . | . | . | 2 | 4 | 2 | 2 | 1 | 5 | 3 | 3 | 3 | 5 | . | . | 1 | 1 | 2 | . | . | . | . | . | 1 | 1 | . |
| D. carthusiana | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . |
| Filipendula ulmaria | . | 1 | . | . | . | . | . | . | 1 | 1 | 3 | 1 | . | . | . | 1 | 2 | . | . | . | 1 | . | 1 | 5 | 6 | 6 | 6 | 6 | . | . | . |
| Fragaria vesca | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | 1 | . | . | . | 1 | 2 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Galium boreale | . | 1 | 1 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Geranium sylvaticum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Geum rivale | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | 1 | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 |
| Hieracium sp(p). | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Hypericum maculatum | 1 | . | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lactuca alpina | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 5 | 5 | 5 |
| Maianthemum bifolium | 1 | 1 | 2 | . | 1 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Melampyrum sp(p). | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Oxalis acetosella | 2 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 |
| Potentilla erecta | . | . | . | . | . | 1 | . | . | . | 1 | . | . | 1 | 1 | 1 | 3 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Prunella vulgaris | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ranunculus acris | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| R. repens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 1 | . |
| Rubus idaeus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | . | . | . |
| R. saxatilis | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 4 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Solidago virgaurea | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Stellaria nemorum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| Trientalis europaea | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| Valeriana sambucifolia | 1 | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Veronica chamaedrys | . | . | 1 | . | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| V. officinalis | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | 1 | . | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Vicia sylvatica | 1 | . | . | 1 | 1 | 1 | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D Brachythecium rivulare | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 5 | 1 | . | 5 | . | . | . |
| Calliergonella cuspidata | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 4 | 4 | 1 | 2 | 2 | 4 | 3 | 1 |
| Cirriphyllum piliferum | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | 1 | 1 | . | . | . | 1 | 1 | . | 1 | 1 | 6 | 5 | 2 | 4 | 2 | 1 |
| Dicranum majus | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Hylocomium splendens | 6 | 5 | 6 | 5 | 5 | 4 | 5 | 5 | 2 | . | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 |
| H. umbratum | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Mnium affine | . | . | . | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 |
| M. punctatum | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . |
| M. pseudopunctatum | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 3 | . |
| Plagiothecium undulatum | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Pleurozium schreberi | . | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Polytrichum formosum | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| Ptilium crista-castrensis | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | . | 4 | 1 | . | . | 1 | . | . | . | . | . | . | . | . |
| Rhytidiadelphus calv./squarrosus | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | . | . | . | 1 | 1 | 5 | 2 | 1 | 3 | 1 | 1 | 3 | 5 |
| R. loreus | . | . | . | . | . | . | . | . | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | . | 1 | 2 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 3 |
| R. triquetrus | 2 | 3 | 3 | 4 | 4 | 5 | 4 | 3 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 3 | 4 | . | . | 6 | 6 | 6 | 6 | . | . | . | . | . | . | . | . |
| Rhodobryum roseum | . | . | 1 | . | . | . | . | 1 | 1 | . | 1 | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| Barbilophozia barbata | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B. lycopodioides | . | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Chiloscyphus polyanthus | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 2 | 1 | . | . |
| Plagiochila cf. asplenioides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P. major | . | 1 | . | 1 | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 |
| Lophocolea cf. bidentata | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . | . |
| Pellia sp(p). | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . |

Additional species: Pinus sylvestris A 3(2), Betula pubescens B 5(1), 18(1), Juniperus communis B 2(2), C 2(2), Salix caprea B 15(1), Salix nigricans B 15(1), Populus tremula C 1(1, Salix sp. C 10(1), Agrostis tenuis 3(1), Calamagrostis purpurea 17(1), Carex pallescens 16(1), Carex vaginata 17(2), 18(1), Deschampsia flexuosa 11(1), 19(1), Campanula rotundifolia 3(1), Cornus suecica 16(1), Dryopteris assimilis 1(1), 24(1), Lactuca muralis 7(1), 8(1), Melampyrum sylvaticum 14(1), 17(1), 31(1), Paris quadrifolia 31(1), Pinguicula vulgaris 13(1), Polygonum viviparum 17(1), Pteridium aquilinum 10(1), Orthilia secunda 1(1), 4(1), Selaginella selaginoides 16(1), Succisa pratensis 5(1), Urtica dioica 31(1), Vicia sepium 3(1), Atrichum undulatum 8(1), Brachythecium cf. mildeanum 27(1), Brachythecium reflexum 11(1), Dicranum scoparium 2(1), 7(1), Drepanocladus uncinatus 11(1), 19(1), Mnium hornum 16(1), Mnium seligeri 16(1), Mnium undulatum 16(1), Obtusifolium obtusum 15(1), Orthocaulis sp. 2(1), Plagiothecium denticulatum 28(1), Porella plathyphylla 2(1), Hepaticae sp(p). 16(1), 17(1), Nephroma arcticum 3(1), 4(1), Peltigera leucophlebia 2(1), bare soil 7(2), 8(3).

Tab. XXI. Ass. *Alno (incanae)-Prunetum* K.-Lund ex Aune 1973.

| Stand | | | A | | | | | B | | | | | C | | | | | D | | | | | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Relevé No. (4 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Slope in grades | 24 | 13 | 16 | 20 | 20 | 22 | 26 | 20 | 26 | 32 | 32 | 26 | 21 | 25 | 30 | 18 | 20 | 20 | 22 | 20 | 19 | 18 | 20 | 21 | 20 |
| Aspect | W | W | W | W | W | W | W | W | W | W | S | S | S | S | S | W | W | W | W | NW | N | N | N | N | N |
| Date | | | 13/7-72 | | | | | 13/7-72 | | | | | 20/7-72 | | | | | 10/7-73 | | | | | 8/6-73 | | |
| No. of vasc. plants | 13 | 12 | 12 | 14 | 15 | 13 | 14 | 11 | 10 | 13 | 14 | 13 | 11 | 14 | 10 | 17 | 15 | 15 | 13 | 11 | 12 | 12 | 11 | 12 | 12 |
| No. of cryptogams | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 6 | 5 | 5 | 6 | 7 | 7 | 7 | 7 | 4 | 5 | 6 | 6 | 6 |
| Tot. num. of species | 18 | 17 | 17 | 19 | 20 | 18 | 19 | 16 | 15 | 18 | 20 | 18 | 17 | 10 | 15 | 23 | 22 | 22 | 20 | 18 | 16 | 17 | 17 | 18 | 18 |
| A Alnus incana | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 2 | 4 | 3 | 4 | 4 | 4 | 4 |
| Picea abies | . | . | . | . | . | 5 | . | 3 | . | 5 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Prunus padus | . | . | . | . | . | . | 1 | . | 1 | . | . | . | . | . | . | . | . | 5 | . | . | . | . | . | . | . |
| B Alnus incana | . | . | . | . | . | . | 1 | 1 | . | . | 2 | . | . | 4 | 3 | 1 | 1 | . | . | . | . | . | . | . | . |
| Picea abies | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Prunus padus | . | . | . | . | . | . | . | . | 1 | 3 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . |
| Sorbus aucuparia | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C Alnus incana | 1 | 1 | 1 | . | 1 | . | 1 | 1 | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Prunus padus | 1 | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . |
| Sorbus aucuparia | . | . | . | . | 1 | 1 | . | . | . | . | 1 | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . |
| Deschampsia caespitosa | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | . | . | . | . | 1 |
| Aconitum septentrionale | 1 | 3 | 4 | 2 | 4 | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Anemone nemorosa | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 6 | 6 | 6 | 6 |
| Circaea alpina | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 2 | 1 | . | . | . | . | . | . | . | . | . | . |
| Crepis paludosa | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 |
| Chrysosplenium alternifolium | 1 | 1 | 1 | 1 | . | . | 1 | . | . | 1 | . | 1 | . | 1 | . | . | 1 | 1 | 2 | 2 | . | . | . | . | . |
| Thelypteris phegopteris | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 | . |
| Epilobium montanum | . | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . |
| Equisetum pratense | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 | 3 | 3 | 3 |
| E. sylvaticum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 |
| Filipendula ulmaria | 4 | 3 | 4 | 4 | 1 | 4 | 2 | 5 | 4 | 4 | . | . | . | . | . | 4 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| Fragaria vesca | . | . | . | . | . | . | . | . | . | . | 2 | 1 | 1 | 1 | 3 | . | . | . | . | . | . | . | . | . | . |
| Geranium sylvaticum | . | . | . | 2 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |
| Geum rivale | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | . | 1 | . | 1 | 1 | . | 1 | 1 | 1 | . | . | . | . | . |
| Gymnocarpium dryopteris | . | . | . | . | . | . | . | . | . | . | . | 1 | 2 | . | . | 1 | 1 | 1 | 1 | . | 2 | . | . | 1 | 1 |
| Lactuca alpina | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | 5 | 5 | 2 | 2 |
| Oxalis acetosella | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| Paris quadrifolia | 1 | 1 | 1 | 1 | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | . | . |
| Ranunculus acris | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| R. repens | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 | 1 | 1 | . | . | . | . | . |
| Rubus idaeus | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 4 | . | 5 | 5 | 5 | 5 | 5 | 2 | 1 | 1 | 2 | 1 |
| Stellaria nemorum | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 2 | 2 | 2 | 2 | 2 | . | . | . | . | . |
| Veronica chamaedrys | . | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| D Brachythecium reflexum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| B. rivulare | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Cirriphyllum piliferum | 5 | 5 | 2 | 5 | 3 | 3 | 6 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 3 | 3 |
| Eurhynchium praelongum | 2 | 2 | 1 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Mnium affine | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| M. undulatum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . |
| Rhytidiadelphus calv. /squarros | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | . | . | . | . | . |
| R. loreus | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 |
| R. triquetrus | 2 | 3 | 3 | 2 | 1 | 4 | 1 | 2 | 1 | 1 | 5 | 5 | 4 | 1 | 5 | . | 3 | 2 | 2 | 2 | . | 2 | 1 | 2 | 3 |
| Rhodobryum roseum | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| Plagiochila major | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 |

Additional species: Betula pubescens A 16(1), Picea abies A 6(5), 8(3), 10(5), B 14(1), Sorbus aucuparia B 6(1), C 5(1), 6(1), 11(1), 17(1), Carex vaginata 18(1), Melica nutans 13(1), Athyrium filix-femina 1(1), 14(1), Dryopteris assimilis 21(1), 23(1), Dryopteris filix-mas 4(1), Dryopteris carthusiana 19(1), Galium aparine 14(1), 16(1), 17(1), Geum urbanum 6(1), Maianthemum bifolium 16(1), 17(1), 18(1), Solidago virgaurea 16(1), 17(1), Stachys sylvatica 5(4), Taraxacum sp. 11(1), Viola palustris 16(1), 17(1), Viola riviniana 11(1), 12(1), 15(1), Thuidium philibertii 11(1), Plagiochila cf. asplenoides 1(1).

Tab. XXII. "*Ulmo-Tilietum boreale*" ass. prov..

| Stand | | | | | A | | | | | | | B | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Relevé No. (4 $m^2$) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Slope in grades | 25 | 30 | 35 | 42 | 40 | 40 | 42 | 43 | 40 | 44 | 37 | 38 | 40 |
| Aspect | W | W | W | W | W | W | W | W | W | W | W | W | W |
| Date | | | | | 8/6-73 | | | | | | | 10/7-73 | |
| No. of vasc. plants | 13 | 14 | 18 | 14 | 13 | 9 | 12 | 16 | 19 | 14 | 14 | 13 | 15 |
| No. of cryptogams | 6 | 2 | 7 | 6 | 3 | 5 | 5 | 8 | 1 | 1 | 8 | 5 | 5 |
| Tot. num. of species | 19 | 16 | 25 | 20 | 16 | 14 | 17 | 24 | 20 | 15 | 22 | 18 | 20 |
| A Alnus incana | . | . | . | 5 | 3 | . | . | . | 3 | 4 | . | 4 | . |
| Prunus padus | . | . | . | 4 | 4 | . | . | . | 2 | . | . | . | . |
| Ulmus glabra | 4 | . | . | . | . | 4 | 5 | 5 | . | . | . | . | . |
| B Alnus incana | . | . | . | . | 1 | . | . | . | . | . | . | . | . |
| Ulmus glabra | 1 | . | . | . | 1 | . | . | . | . | . | . | . | . |
| C Dactylis glomerata | . | . | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . |
| Deschampsia caespitosa | . | 1 | 3 | 1 | 1 | 1 | 2 | 2 | . | . | . | . | 1 |
| Melica nutans | . | 1 | 1 | 1 | . | . | . | 1 | . | . | . | . | . |
| Roegneria canina | . | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 1 | . |
| Aconitum septentrionale | 2 | 2 | . | . | 1 | . | . | . | . | 1 | . | . | . |
| Anemone nemorosa | 3 | 3 | 3 | . | . | . | . | . | . | . | 1 | 1 | 1 |
| Campanula latifolia | 1 | . | . | . | . | . | . | . | 2 | . | . | 1 | 1 |
| Circaea alpina | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Cystopteris fragilis | . | . | . | . | . | . | . | 1 | . | 1 | 1 | . | . |
| Filipendula ulmaria | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | . | 1 | 1 | 1 |
| Galium odoratum | 2 | . | . | . | . | . | . | . | . | . | 2 | 2 | 2 |
| Geranium robertianum | . | 1 | . | . | . | . | . | . | 1 | 1 | . | . | . |
| G. sylvaticum | . | 1 | . | 1 | . | . | 1 | . | 1 | . | . | . | . |
| Matteuccia struthiopteris | 5 | 5 | . | 5 | 5 | 5 | 5 | 5 | 3 | . | 6 | 6 | 6 |
| Oxalis acetosella | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Pteridium aquilinum | 1 | 1 | 2 | . | . | . | . | 2 | 4 | 5 | . | . | . |
| Rubus idaeus | 1 | 1 | 1 | 4 | 4 | 3 | 4 | 3 | 2 | . | 1 | . | 1 |
| Stachys sylvatica | . | 2 | 5 | . | . | . | . | . | 5 | . | 1 | 1 | 2 |
| Stellaria nemorum | 2 | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 2 |
| Urtica dioica | . | . | . | . | 1 | . | . | . | . | . | 1 | 1 | 1 |
| Valeriana sambucifolia | . | . | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | . |
| Viola mirabilis | . | . | 1 | 1 | 1 | . | 1 | 1 | 1 | 1 | . | . | 1 |
| D Atrichum undulatum | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . |
| Brachythecium reflexum | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 |
| B. starkei | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . |
| Cirriphyllum piliferum | . | . | . | 1 | . | 1 | 1 | 1 | . | . | 1 | . | . |
| Eurhynchium praelongum | 1 | 1 | 1 | 1 | . | . | . | . | 1 | 1 | 1 | . | 1 |
| E. striatum | . | 1 | . | 1 | . | . | . | . | . | . | 1 | . | 1 |
| E. angustirete | . | . | 2 | . | . | . | . | . | . | . | . | 1 | 1 |
| Mnium affine | 1 | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . |
| Rhytidiadelphus triquetrus | 1 | . | 1 | 1 | 1 | . | . | 1 | . | . | 1 | . | 1 |
| Rhodobryum roseum | 1 | . | . | 1 | 1 | . | . | 1 | . | . | 1 | 1 | . |
| Thuidium philibertii | 1 | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . |
| rocks/bare soil | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

Additional species: Salix caprea A 11(2), Sorbus aucuparia B 3(1), Carex digitata 3(1), Chrysosplenium alternifolium 11(1), 12(1), Epilobium montanum 3(1), 13(1), Fragaria vesca 7(1), 8(1), Geum urbanum 11(1), 12(1), Melandrium rubrum 1(1), Paris quadrifolia 9(1), 10(1), Scrophularia nodosa 13(1), Veronica chamaedrys 3(1), Vicia sylvatica 9(2), 10(1), Brachythecium cf. mildeanum 1(1), 11(1), Hylocomium splendens 3(1), 12(1), Mnium undulatum 9(1), Rhytidiadelphus loreus 3(1), Conocephalum conicum 11(1), Porella platyphylla 11(1).