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Macromycetes in the communities of *Scheuchzerio-Caricetea nigrae* in the Pomerania region (NW Poland)

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The paper presents results of mycocoenological studies conducted in 7 peat-bogs located mainly in the western part of Pomerania. The research was carried out in 1999-2000 within patches of 4 plant associations: *Caricetum lasiocarpae, Caricetum limosae, Rhynchosporetum albae* and *Eriophoro angustifolii-Sphagnetum recurvii*. Regarding floristic and mycological aspects, the communities studied consist of low number of species. The group of fungal species which formed synusia characteristic of peat-bog communities was clearly distinguished, among them the taxa connected with *Sphagnum* spp.

Key words: macrofungi, mycocoenology, plant communities, *Rynchosporion albae, Caricion lasiocarpae*, peat-bogs

INTRODUCTION

Recently more attention has been drawn to determine the species diversity of macromycetes in plant communities that have not been thoroughly studied mycologically. They include, among the others, peat-bog communities. In general, except for a few papers (Bujakiewicz and Fiklewicz 1963; Fiklewicz-Sobstyl 1965; Friedrich 1997), the peat-bog fungi in Poland have not been a main subject of research but most frequently they have been regarded to be only an aspect of more complex studies (Nespiak 1959; Lisiewska 1978, 1991-1992; Bujakiewicz 1981, 1986; Friedrich 1985 (1986), 1994; Flisińska 1987 (1988); Łuszczyński 2000). There is a lack of data on macrofungi present within peat-bog ecosystems in many regions of Poland, e.g. Mazury and Suwalszczyzna or the Pomeranian Lakelands. Consequently, studies were undertaken to determine the participation of macrofungi within the peat-bog communities in the Pomerania region (Stasińska and Sotek 2003, 2004).

The paper presents results of mycocoenological studies conducted in plant associations of *Scheuchzerio-Caricetea nigrae* class within the selected Pomeranian peat-bogs.

METHODS

The research was conducted in 1999-2000 in 7 peat-bogs located near villages: Bonin, Czertyń, Kazimierz, Kołowo, Ścienne, Ziemomyśl, and Żółwia Błoć located (excepting Kazimierz) in the western part of Pomerania (Fig. 1). A total of 19 plots (40-180 m^2) were selected for mycological research within patches of *Caricetum lasiocarpae, Caricetum limosae, Rhynchosporetum albae* and *Eriophoro angustifolii-Sphagnetum recurvii* communities and phytosociological relevés were performed using the Braun-Blanquet method. The nomenclature of communities was taken from Jasnowski et al. (1968), Dirssen (1982) and Matuszkiewicz (2001). The nomenclature of vascular plants was adopted after Mirek et al. (2002) and that of mosses from Corley et al. (1981).

Mycological observations were performed mainly once a month from April to November. Mycocoenological relevés were arranged in the table with regard to the humidity of location starting with the most humid patches. Species of fungi were listed as bioecological groups and arranged according to the frequency and abundance of their occurrence. The number of records and abundance were given for each taxon based on the scale of Jahn et al. (1967).

The species nomenclature of *Ascomycota* follows Hansen and Knudsen (2000) whereas the species nomenclature of *Basidiomycota* was taken, among the

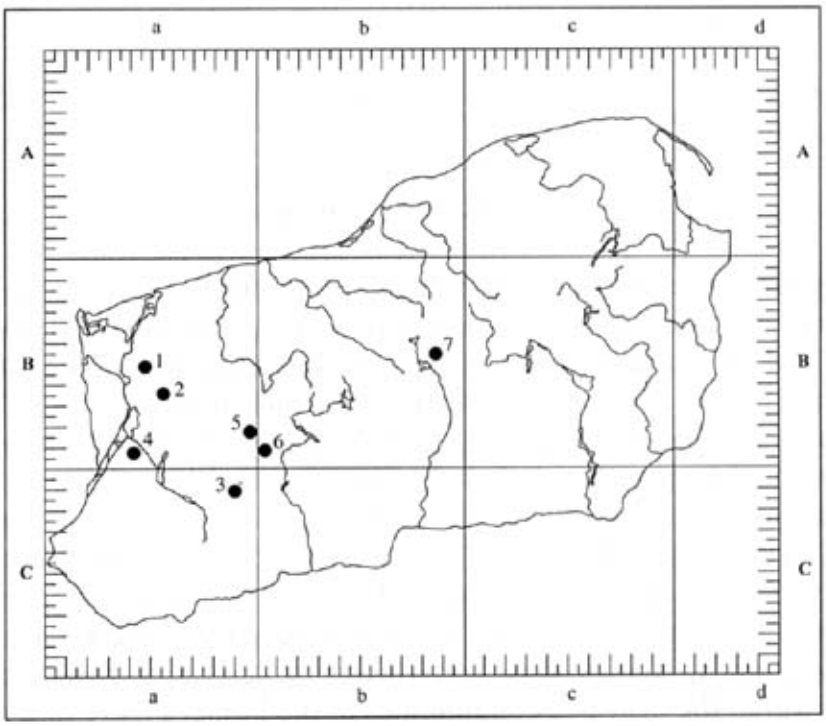

Fig. 1. Location of the investigated peat bogs: 1 – Zielonczyn, 2 – Żółwia Błoć, 3 – Bonin, 4 – Kołowo, 5 – Ścienne, 6 – Czertyń, 7 – Kazimierz.

others, from Kochman and Majewski (1973), Nespiak (1981), Breitenbach and Kränzlin (1986-2000), Maas Geesteranus (1992), Watling and Gregory (1993), Bas et al. (1995-2001), Gumińska (1997) and Skirgiełło (1998).

The collection of macrofungi and vascular plants was deposited in the herbarium of the Department of Botany and Nature Conservation, University of Szczecin (SZUB).

PHYTO- AND MYCOCOENOLOGICAL CHARACTERISTICS OF PLANT COMMUNITIES

Mycocoenological observations were conducted within patches of 4 plant associations: *Scheuchzerio-Caricetea nigrae* (Nordh.1937) R. Tx 1937.

Scheuchzerietalia palustris Nordh. 1937

Rynchosporion albae Koch 1926

1. *Caricetum limosae* Br.-Bl. 1921
2. *Rhynchosporetum albae* Koch 1926
3. *Eriophoro angustifolii-Sphagnetum recurvii* Jasnowski et al. 1968

Caricion lasiocarpae Vanden Bergh. ap. Lebrun et all. 1949

4. *Caricetum lasiocarpae* Koch 1926

Phytosociological characteristics of studied communities

The association of ***Caricetum lasiocarpae*** observed within studied objects usually forms a characteristic narrow belt adjacent to overgrowing, dystrophic lakes. *Carex lasiocarpa* and *Sphagnum fallax* (Tab. 1, relevés 1-3) contribute to its formation to the greatest extent. A significant contribution of *Sphagnum cuspidatum, Menyanthes trifoliata* and *Carex rostrata* (Tab. 1, relevé 2) is also observed in some patches. In Kazimierz, this association is present also in the secondary localities, where it covers quite significant areas of overgrowing post-peat pits. Apart from a dominant *Carex lasiocarpa*, also *Sphagnum obtusum* (the second characteristic species of this association), *Sph. cuspidatum*, and *Agrostis canina* play an important role there. Moreover, juvenile individuals of *Pinus sylvestris*, *Betula pendula* and *B. pubescens* occur (Tab. 1, relevé 3).

Patches of ***Caricetum limosae*** are formed in the most watered places. They are a component of the quaking bog of overgrowing, dystrophic lakes or occupy constantly flooded local depressions. Species characteristic of the association: *Carex limosa* and *Scheuzeria palustris*, frequently occur together, yet one of them is then clearly dominant (Tab. 1, relevés 4-10). *Sphagnum fallax* and *Oxycoccus palustris* constantly and frequently contribute to a great extent to the association structure within the studied area, which leads to formation of *Caricetum limosae sphagnetosum fallacis* (Osvald 23) Krisai 72 subassociation.

Association of ***Rhynchosporetum albae*** occurs as small patches, yet it is quite common. The communities are formed at the shores of dystrophic lakes and in plain, humid peat-bog depressions and occupy less hydrated habitats if compared to *Caricetum limosae*. Water frequently does not flow over the moss layer there. *Rhynchospora alba* and *Sphagnum fallax* contribute to the floristic composition of the associa-

Table 1

Plant associations of *Scheuchzerio-Caricetea nigrae* (Nordh. 1937) R. Tx. 1937 class in some peat-bogs of Pomerania (NW Poland)

Successive number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Peat-bog community	*C. las.*			*C. lim.*						*Rh. alb.*					*E. a.- Sph.*				
Peat-bog	Z	Ka	Ka	Ś	Ka	Z	B	B	Ka	B	Ka	Z	Cz	ŻB	Ka	B	ŻB	K	Ś
Data: day	01	24	05	19	28	01	20	20	28	20	28	28	19	30	24	20	30	24	14
month	07	07	07	06	07	07	06	06	07	06	07	07	06	05	07	06	05	07	09
year	99	02	00	01	01	99	00	00	01	00	01	01	01	01	02	00	01	01	02
Area of record m²	70	50	200	180	60	100	70	60	50	50	50	40	40	60	100	70	80	70	50
Cover in b %	-	-	20	-	-	10	5	5	-	-	-	-	-	-	-	10	30	20	10
Cover in c %	90	90	90	80	80	70	70	80	80	60	60	40	50	50	85	80	60	70	70
Cover in d %	70	100	100	60	90	90	70	80	90	70	80	80	40	80	100	70	30	40	50
No. of species in record	14	16	17	14	10	13	14	13	12	11	13	13	12	10	12	12	18	10	14
Ch. *Scheuchzerio-Caricetea nigrae*:																			
Carex lasiocarpa	5.5	4.4	4.4	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.
Sphagnum obtusum	.	.	3.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Scheuchzeria palustris	.	.	.	4.4	4.4	3.3	3.3	1.1	1.2	.	.	.	.	.	.	.	.	.	.
Carex limosa	.	1.1		2.2	1.1	.	1.1	4.4	4.4	+	+	+	1.2	.	.	+	.	.	1.1
Rhynchospora alba	.	.	.	.	.	.	.	+	+	4.4	4.4	4.4	3.3	3.3	.	.	.	.	1.1
Sphagnum fallax	2.2	3.3	.	3.3	4.4	4.4	3.3	4.4	4.4	2.2	3.3	3.3	2.2	4.4	5.5	3.3	3.3	3.3	4.4
Eriophorum angustifolium	+	1.1	.	+	1.1	2.2	+	1.1	.	1.1	1.1	+	1.1	1.1	4.4	4.4	4.4	4.4	3.3
Sphagnum cuspidatum	+	3.3	3.3	2.2	.	+	3.3	1.1	2.2	2.2	+	.	1.1	.	.	.	.	.	.
Calliergon stramineum	+	.	.	.	.	1.1	1.1	1.1	.	+	+	+	.	+	.	.	.	.	.
Menyanthes trifoliata	+	2.2	2.2	.	.	.	1.1	.	+	+	+	+	+	.	+	.	.	.	.
Drepanocladus fluitans	.	.	.	1.1	.	+	+	1.1	.	.	.	.	.	.	.	.	.	.	.
Comarum palustre	1.1	1.2	2.2	.	.	.	+	.	.	.	.		.	.	.	.	.	.	.
Agrostis canina	.	+	3.3	.	.	.	.	.	.		+	+	.	.	+	.	.	.	.
Carex canescens	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	+
Sporadic species: *Carex diandra* 1 (+), *Hydrocotyle vulgaris* (+); *Carex canescens* 17 (+), *Carex nigra* (+)																			

Ch. *Oxycocco-Sphagnetea*:																				
Erica tetralix	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.2	.	.
Oxycoccus palustris	1.1	1.1	+	2.2	3.3	4.4	2.2	1.1	3.3	+	1.1	2.2	2.2	2.2	2.2	2.2	3.2	2.2	3.3
Drosera rotundifolia	+	+	.	1.1	+	2.2	+	+	+	+	1.1	1.1	3.3	3.3	1.1	+	.	.	2.2
Sphagnum magellanicum	.	.	.	2.2	.	1.1	1.2	1.2	.	.	2.2	2.2	2.2	1.2	.	.	.	.	.
Aulacomnium palustre	.	+	2.2	.	+	.	.	.	1.1	1.1	+	+	+	1.2	2.3	1.1	1.2	.	.
Eriophorum vaginatum	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	+	+	1.2	+
Polytrichum strictum	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	1.1	1.2	.	1.1
Andromeda polifolia	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	2.2	+	.
Ledum palustre	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1.2	+
Sphagnum papilosum	.	.	+	.	.	.	.	.	1.1	.	.	.	.	.	+	.	.	.	.
Ch. Vaccinio-Piceetea:																				
Pinus sylvestris	.	.	1.1	.	.	1.1	1.1	+	.	.	.	.	.	.	.	+	1.2	.	.
Betula pubescens	.	.	+	+	.	+	+	+	.	.	.	.	.	.	.	.	+	2.1	1.1
Sphagnum palustre	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.2	3.3	2.2	1.2
Sporadic species: *Vaccinum myrtillus* 17(1.2), *Vaccinum uliginosum* (1.2)																				
Towarzyszące:																				
Carex rostrata	1.1	2.2	.	1.2	1.1	1.1	.	.	.	1.1	1.1	+	.	+	1.2	2.2	.	1.1	3.3
Lysimachia thyrsiflora	+	+	1.1	.	+	.	.	.	+	.	.	.	.	.	+	.	.	.	.
Peucedanum palustre	+	1.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Thelypteris palustris	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+		
Phragmites australis	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
Sphagnum denticulatum	.	.	1.1	.	1.1	.	.	.	2.2	.	.	.	.	.	.	.	.	.	.
Molinia caerulea	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	2.2	.	.	.
Sporadic species: *Galium palustre* 2(+); *Calamagrostis canescens* 3(+), *Betula pendula* 3(2.2); *Polytrichum commune* 15(+); *Calluna vulgaris* 17(+), *Alnus glutinosa* 18(+)																				

Explanations: *C. las.* – *Caricetum lasiocarpae, C. lim.* – *Caricetum limosae, Rh. alb.* – *Rhynchosporetum albae, E. a.-Sph.* – *Eriophoro angustifolii-Sphagnetum recurvii,* B – "Bonin", Cz – „Czertyń", K – „Kołowo", Ka – "Kazimierz", S – "Ścienne", Z – "Zielonczyn", ŻB – "Żółwia Błoć"

tion to the greatest extent (Tab. 1, relevés 11-15). Sometimes *Drosera rotundifolia* also occurs more abundantly.

Phytocoenoses of *Eriophoro angustifolii-Sphagnetum recurvii* are also frequently observed in the studied peat-bogs (Tab. 1, relevés 16-20). The association forms in places characterized by a high level of water. Apart from the dominant *Eriophorum angustifolium* and *Sphagnum fallax,* also *Oxycoccus palustris* occurs frequently and numerously. *Carex rostrata* is quite abundant in some patches of this community (Tab. 1, relevés 17, 20).

Mycocoenological characteristic of plant communities

Apart from the patch located within the secondary locality (plot no. 3), patches of ***Caricetum lasiocarpae*** community are characterized by a very poor species composition of fungi (Tab. 2, plots 1-3). A total of 22 species of fungi were found within the three plots and species connected with peat-mosses were obviously dominant. *Tephrocybe palustris*, *Galerina paludosa* and *Hypholoma elongatipes* were reported most frequently and numerously. Only within the plot no. 3, often during a high seasonal partial drying of the patch, mycorrhizal species, e.g. *Laccaria proxima*, *Cortinarius sphagnogenus*, *Lactarius helvus* and fungi occurring on plant remains, e.g. *Marasmius androsaceus* and *Mycena epipterygia*, were found.

A total of 19 species were reported within patches of ***Caricetum limosae*** (Tab. 2, plots 4-9). Fungi connected with peat-mosses, e.g. *Tephrocybe palustris*, *Galerina paludosa, Hypholoma elongatipes, H. udum* and *Omphalina gerardiana* occurred most frequently and numerously. Species growing on plant remains, e.g. *Marasmius androsaceus* and *Collybia cirrhata* and mycorrhizal species, e.g. *Laccaria proxima*, *Cortinarius sphagnogenus* and *Russula emetica* were found considerably on rare occasions. They were present mainly in the plot no. 7 within the 'Bonin' peat-bog, which turned out to be the richest regarding its mycological composition. *Monilinia oxycocci* on rotten fruit of *Oxycoccus palustris* and *Anthracoidea limosa* parasitizing on sedges (e.g. *Carex limosa*) were found exclusively within the patches of *Caricetum limosae*. These species occur only in few localities in Poland (Kochman and Majewski 1973; Sałata and Bednarczyk 1977; Bujakiewicz 1981).

Regarding the presence of fungi, ***Rhynchosporetum albae*** is one of the poorest among studied plant communities. Only 7 species of macromycetes (Table 2, plots 10-14) were found and they belonged solely to bryophyllous fungi, e.g. *Tephrocybe palustris, Galerina paludosa*, *G. sphagnorum, Hypholoma elongatipes* and *Omphalina gerardina.*

A total of 26 species of macromycetes were described within the patches of ***Eriophoro angustifolii-Sphagnetum recurvii*** (Tab. 2, plots 15-19). A qualitative contribution of fungi observed in studied patches is unequal. The highest number of species (22) was found in the plot no.18 within the 'Kołowo' peat-bog, whereas in the other plots the number was considerably lower. Species growing among *Sphagnum* spp., e.g. *Tephrocybe palustris, Galerina paludosa*, *G. sphagnorum* and *Hypholoma elongatipes* were a dominant group within all patches. The significant contribution of mycorrhizal fungi and saprotrophic fungi growing on peat and plant remains was clearly seen only within the plot 18. From the group of saprotrophic species growing on peat, *Clavaria vermicularis* and *Entoloma sericatum* occurred most frequently.

Table 2

Macromycetes in the associations of *Scheuchzerio-Caricetea nigrae* (Nordh. 1937) R. Tx. 1937 class in some peat-bogs of Pomerania (NW Poland)

Successive number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Peat-bog community	C. las.			C. lim.						Rh. alb.					E. a.-Sph.				
Peat-bog	Z	Ka	Ka	Ś	Ka	Z	B	Ka	B	Ka	Cz	ŻB	Z	B	Ka	ŻB	Ś	B	K
Number of plot	1	2	3	4	5	6	8	9	7	11	13	14	12	10	15	17	19	16	18
Plot size m^2	70	50	100	180	60	100	60	50	70	50	40	60	40	50	100	80	50	70	70
Number of observations	14	10	10	15	10	14	14	10	14	10	15	14	14	14	10	14	16	14	16
Total number of species	7	5	20	6	7	7	8	8	18	5	6	6	6	7	7	6	7	8	22
Mycorrhizal fungi																			
Laccaria proxima (Boud.) Pat.	.	.	5^{r-a}	.	.	.	.	1^{r}	3^{r-n}	.	.	.	.	.	.	.	.	1^{r}	4^{r-n}
Cortinarius sphagnogenus (Mos.) Nes.	.	.	3^{r-n}	.	.	.	.	.	2^{r}	.	.	.	.	.	.	.	.	.	2^{r}
Lactarius glyciosmus (Fr.: Fr.) Fr.	.	.	2^{r-n}	.	.	.	.	.	1^{r}	.	.	.	.	.		.		.	2^{r}
L. helvus Fr.	.	.	3^{r}	.	.	.	.	.	2^{r}	.	.	.	.	.	.	.		.	.
Thelephora terrestris Ehr. ex Willd.: Fr.	.	.	.	.	.	.	.	.	.		.	.	.	.	3^{n} *	.	.	1^{r} *	.
Paxillus involutus (Batsch: Fr.) Fr.	.	.	2^{r-n}	.	.	.	.	.	1^{r}	.	.	.	.	.	.	.	.	.	.
Russula emetica Fr.	.	.	1^{r}	.	.	.	.	.	2^{r}	.	.	.	.	.	.	.		.	.
Suillus variegatus (Schwartz: Fr.) Kuntze	.	.	1^{r}	.	.	.	.	.	1^{r}	.	.	.	.	.	.	.	.	.	.
Cortinarius ?fasciatus Fr. ss. Arnold non Bres. (=*C. fulvescens* Fr. ss. Favre, Mos., Moën.-Loc.)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1^{n}
V *Leccinum holopus* (Rostk.) Watl.	.	.	1^{r}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Saprotrophic fungi																			
a) on peat																			
I *Hygrocybe coccineocrenata* (P. D. Ort.) Mos.	.	.	1^{r}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2^{r-n}
Clavaria vermicularis Sw.: Fr.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5^{n-a}
Entoloma sericatum (Britz.) Sacc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3^{r}
b) among mosses																			
I *Tephrocybe palustris* (Peck) Donk	10^{a}	10^{r-a}	7^{r-a}	10^{n-a}	8^{r-n}	10^{r-a}	12^{n-a}	7^{n-a}	5^{r-n}	5^{n}	7^{r-n}	10^{n-a}	12^{n-a}	12^{r-n}	8^{r-n}	9^{n-a}	12^{n-a}	10^{n-a}	11^{r-a}
I *Galerina paludosa* (Fr.) Kühn.	9^{n}	8^{r-n}	6^{r-n}	9^{r-n}	8^{r-n}	11^{r-a}	10^{r-a}	7^{r-n}	7^{r-n}	6^{r-n}	7^{n}	9^{n-a}	10^{n}	9^{n-a}	5^{r-n}	9^{r}	6^{r-n}	8^{r-n}	10^{r-n}

Tab. 2 cont.

V *Hypholoma elongatipes* Peck	5^{r-n}	4^{r-n}	4^{r-n}	5^{r-n}	7^{r-n}	6^{r-n}	6^{r-n}	4^{r-n}	5^{r-n}	3^{r-n}	4^{n-a}	6^{r-n}	5^{n}	6^{n}	4^{n}	5^{n}	6^{r-n}	3^{r-n}	9^{n-a}
I *Galerina sphagnorum* (Pers.: Fr.) Kühn.	6^{n}	3^{r-n}	1^{r}	5^{r-n}	4^{r-n}	7^{n-a}	6^{a}	3^{r-n}	2^{r}	2^{r}	3^{r}	5^{n}	7^{n}	7^{n-a}	3^{r-n}	6^{n}	4^{n}	5^{n}	4^{r}
R *Hypholoma udum* (Pers.: Fr.)Kühn.	4^{r-n}	3^{r-n}	2^{r-n}	3^{r-n}	4^{r}	3^{r}	3^{r}	3^{r}	3^{r}	.	4^{r-n}	5^{r}	1^{r}	2^{r}	.	4^{r-n}	2^{r}	3^{r-n}	4^{r}
V *Omphalina gerardiana* (Peck) Sing.	2^{r}	.	.	5^{n}	6^{r-n}	2^{r}	4^{r-n}	3^{r}	4^{r}	1^{r}	6^{n}	4^{r}	.	5^{r-n}	.	.	3^{r-n}	.	7^{r-n}
Galerina tibiicystis (Atk.) Kühn.	3^{n}	.	.	.	.	4^{r-n}	4^{n}	.	.	.	.	.	2^{n}	5^{n}	.	3^{r}	.	4^{r-n}	.
Rickenella fibula (Bull.: Fr.) Raith.	.	.	2^{r}	.	.	.	.	.	.	.	.	.	.	.	1^{r}	.	.	.	.
Galerina calyptrata P. D. Ort.	.	.	1^{r}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1^{r}
Ascocoryne turficola (Boud.) Korf	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3^{n-a}	.	.
c) on litter																			
Marasmius androsaceus (L.: Fr.) Fr.	.	.	3^{n}	.	1^{r}	.	.	1^{r}	4^{r}	.	.	.	.	.	.	.	.	.	5^{r-n}
Mycena galopus (Pers.: Fr.) Kumm.	.	.	1^{r}	.	.	.	.	.	1^{r}	.	.	.	.	.	1^{r}	.	.	.	3^{r-n}
M. epipterygia (Scop.: Fr.) Kumm.	.	.	2^{n}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3^{n-a}
M. leucogala (Cooke) Sacc.	.	.	2^{n}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1^{n}
Collybia cirrhata (Pers.) Quél.	.	.	.	.	.	.	.	.	2^{r}	.	.	.	.	.	.	.	.	.	1^{r}
R *Mycena adonis* (Bull.: Fr.) S. F. Gray	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2^{n}
Marasmius epiphyllus (Pers.: Fr.) Fr.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1^{r}
Mycena sanguinolenta (Alb. et Schw.: Fr.) Kumm.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1^{r}
Parasitic fungi																			
Anthracoidea limosa (H. Syd.) Kukkonen	.	.	.	.	.	.	$.5^{a}$	.	4^{r-n}	.	.	.	.	.	.	.	.	.	.
Monilinia oxycocci (Woronin) Honey	.	.	.	.	.	.	.	.	2^{r-n}	.	.	.	.	.	.	.	.	.	.

Explanations: degree of abundance (acc. to J a h n *et al.* 1967): a - abundant, n - numerous, r - rare; the red data book categories (acc. to W o j e w o d a and Ł a w r y n o w i c z 1992): V – vulnerable, R – rare; I – indeterminate; * - on stem of *Eriophorum* sp.; number of plot agree to number of relevés in Table 1; other explanations see Table 1.

Saprotrophic fungi developing on plant remains were represented by e.g. *Marasmius androsaceus* and *Mycena galopus* whereas *Laccaria proxima* and *Thelephora terrestris* were the most frequently found species of mycorrhizal fungi. The occurrence of fungi rare in Poland – *Mycena adonis* and *Ascocoryne turificola* – within patches of this community is worth highlighting (Lisiewska 1987; Stasińska and Sotek 2004).

Regarding floristic and mycological aspects, the communities studied belong to poor number of taxa. Yet, they are characterized by a quite specific species composition of plants and macrofungi. It is in the agreement with observations on other peat-bog communities made by e.g. Nespiak (1959); Lisiewska (1978, 1991-1992); Bujakiewicz (1981, 1986); Friedrich (1985 (1986), 1994); Flisińska (1987 (1988)); Łuszczyński (2000).

As far, from all communities studied during this research, mycocoenological observations were previously conducted only within patches of *Caricetum limosae* in the Łęczna-Włodawa Lakeland (Flisińska 1987 (1988)). Regarding their species composition and abundance, macromycetes of analyzed patches display high similarity to fungi growing within patches of this community in the Łęczna-Włodawa Lakeland. Foremost, fungi species connected with *Sphagnum* spp. are common.

Based on the results of present research, the groups of fungi species linked to one particular association were not conspicuous. However, and this fact is worth mentioning, saprotrophic species growing among *Sphagnum* spp. dominated both qualitatively and quantitatively in all studied communities. It may be presumed that they form synusia characteristic of peat-bog communities.

CONCLUSIONS

Studied communities were poor from mycological point of view. A total of 33 species of macrofungi were reported. They included species interesting due to their biology and limited number of localities in Europe (Krieglsteiner 1991, 1993; Hansen and Knudsen 2000), e.g. *Ascocoryne turficola, Monilinia oxycocci* and *Mycena adonis*, as well as species endangered in Poland and included in the red list of macrofungi (Wojewoda and Ławrynowicz 1992), e.g. *Galerina paludosa, G. sphagnorum, Hygrocybe coccineocrenata, Hypholoma elongatipes, Leccinum holopus, Omphalina gerardiana* and *Tephrocybe palustris*.

The highest number of species (26) was found in the community of *Eriophoro angustifolii-Sphagnetum recurvii*, the lowest number (7) – within *Rhynchosporetum albae*.

The group of fungi species, which formed synusia characteristic of peat-bog communities, was distinguished clearly. It included taxa connected with *Sphagnum* spp. Contribution of saprotrophic fungi developing on peat and plant remains as well as mycorrhizal fungi was determined to be low.

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Grzyby makroskopowe w zbiorowiskach roślinnych klasy *Scheuchzerio-Caricetea nigrae* na Pomorzu (NW Polska)

Streszczenie

Niniejsza praca przedstawia wyniki badań mikosocjologicznych prowadzonych w latach 1999-2002 w zespołach roślinnych klasy *Scheuchzerio-Caricetea nigrae: Caricetum lasiocarpae, Caricetum limosae, Rhynchosporetum albae* i *Eriophoro angustifolii-Sphagnetum recurvii* na wybranych torfowiskach Pomorza.

Badane zbiorowiska są ubogie pod względem mikologicznym. Odnotowano łącznie 33 gatunki grzybów makroskopowych. Najbogatszym w grzyby zespołem jest *Eriophoro angustifolii-Sphagnetum recurvii* (26 gatunków), a najuboższym *Rhynchosporetum albae* (7 gatunków).

Wyraźnie wyróżnia się grupa gatunków grzybów (m.in.: *Galerina paludosa, G. sphagnorum, Hypholoma elongatipes, H. udum, Omphalina gerardiana* i *Tephrocybe palustris*), tworząca synuzje charakterystyczne dla zbiorowisk mszarnych. Są to taksony związane ze *Sphagnum* spp. Udział grzybów saprotroficznych rozwijających się na torfie i szczątkach roślinnych oraz grzybów mikoryzowych jest niewielki.