Acta Agrophysica, 2002, 68, 235-244

SOILS AND VEGETATION OF SMALL INTERFOREST BOGS OF SOBIBÓR FOREST INSPECTORATE (WOŁCZYNY FOREST DISTRICT)

D. Urban

Institute of Soil Science and Environment Management, University of Agriculture
Leszczyńskiego 7 str., 20-069 Lublin, Poland; e-mail: urbandan@consus.ar.lublin.pl

A b s t r a c t. Investigations of soils and vegetation were conducted on a few small interforest bogs of Sobibór Forest Inspectorate, situated in the eastern part of the Polesie Lubelskie. The largest area is occupied there by communities of high peatbogs of *Oxycocco-Sphagnetea* class, like: *Eriophoro-Sphagnetum* and *Ledo-Sphagnetum*, a smaller area is occupied by forest soils of *Vaccinio-Piceetea* class: *Vaccinio uliginosi-Pinetum* and *Molinio-Pinetum*. The soil cover consists mainly of peat soils of high peatbogs and peat-gley soils. A smaller area is occupied by peat soils of low peatbogs and peat-gleypodzol soils.

K e y w o r d s: Polesie Lubelskie region, peatbogs, plant associations, soil

INTRODUCTION

In many works published in the recent years, the importance of bogs (marshes) in natural environment has been stressed as natural retention reservoirs, sources of water for the surrounding area, having great influence upon climate. Their role in the circulation of alimentary elements and in filtering of pollution has been discussed. Bogs are also the habitat for many rare species of plants and animals [3,4,11,14,6].

The bogs situated in the eastern part of the Łęczyńsko-Włodawskie Lake District should also be counted among the valuable natural sites (Sobiborskie Forests). The relief of this area, numerous depressions, as well as ponds and lakes favoured the creation of hydrogenous sites called bogs [1,4,10,19]. The most valuable bog ecosystems in this part of the lake district have come under protection as natural reserves: "Żółwiowe Błota", "Jezioro Orchowe", "Magazyn", "Trzy Jeziora", "Jezioro Brudzieniec". Others, equally valuable from the environmental point

of view, have been planned as natural sanctuaries "Torfowisko Dubeczyńskie", "Duże Bagno" and ecological utilised land [21]. In recent years a number of studies have been published in which the features of vegetation of the bogs of Sobiborskie Forests were presented, and the problems of their protection were discussed; the main threats were also shown [5,7-9,17,21].

In the year 2000 investigations of the soil cover were started, and the investigations of vegetation of all interforest bogs of Sobibór Forest Inspectorate, which had been started earlier, were continued. These works are conducted to compare the habitat conditions of the most valuable peatbog associations. This paper presents the results of the investigations conducted on several small bogs of the Wołczyny Forest District.

STUDY AREA AND METHODS

The research was done on eight small interforest bogs of Wołczyny Forest District in Sobibór Forest Inspectorate. These are bogs situated in divisions 116h, 117h, 135d (area 3.36 ha); 117 g (area 0.62 ha); 136b, 117i, 118c, 137a (area 2.30 ha); 102d, 117b (area 3.12 ha); 135f (area 0.36 ha); 158i, 178f, g, 179a, 101b, 202a (area 34.50 ha); 180h (area 0.65 ha); 200a, 199b, 177i (area 26.23 ha).

The research was done in the vegetative season of the year 2000. Twenty nine phytosociological records were made according to the Braun-Blanquet method [2]. The nomenclature of the plant associations was adopted after Matuszkiewicz [12] and Fijałkowski [6], the terminology for vascular plants after Mirek *et al.* [13].

Thirty three soil samples were taken for analysis from eight soil pits. Chemical analyses of soil were conducted according to the methodology developed by Sapek and Sapek [15]. In the samples the total content of phosphorus (colorimetric method), calcium, potassium, sodium (flame photometer), magnesium, iron (AAS) was measured. Additionally, pH in H_2O and 1 M KCl, and the content of organic matter were analysed.

RESULTS

Soil cover

In the objects investigated the occurrence of peat soils of high and low petbogs, peat-gley soils, and peaty gley-podzols has been noted.

Bog soils of high peatbogs, originating from high mossed peat, occur in the largest bogs. In the cross-section of those soils the following profiles have developed:

POtwyms/R1-Otwyms/R2-Otwyms/R3-Otprtu or POtwyms/R1-Otprtu or POtwyms/R1-Otpr-Om-Dgg. From the data included in the Borowiec [1] study it can be inferred that the peat layer in the largest peatbogs investigated reaches the maximum thickness of 300-350 cm.

Peat soils of low peatbogs occupy a small area and they have developed in some of the small depressions. They are characterised by the profile structure: POtnisz/R3-Otnisz/R2-Otniszgg.

In some of the small bogs, as well as on the edges of larger peatbogs, bogged peat-gley soils have developed, and in them the peat thickness does not exceed 30 cm. Under the layer of high peat, there are black loamy formations with a relatively high content of plant remains. Poor clayey grey sand with rusty spots constitutes the bottom. The following profiles occur in the cross-section of those soils: POtwyms/R1-Otprtu-D-Dgg. On the edges of the bogs peaty gley-podzols have developed with a profile structure: Ofl-AeEes-Bh-Cgg.

The soil samples taken were characterised by a very acidic, acidic and slightly acidic pH; pH in KCl varied from 2.50 to 6.20. The highest pH was found in samples taken from the peat soil of low peatbogs, the lowest – in samples coming from the soils of high peatbogs (Table 1).

The content of phosphorus, potassium and sodium in the soils examined did not vary and reached from 0.01 to 0.20 % of P and K and from 0.02 to 0.04% of Na (Table 1). In the majority of the soil cross-sections analysed, a higher content of P and K was noted in the surface layers. No correlation between the amount of Na and the depth of sampling was found.

The content of calcium in the soils examined varied from 0.03 to 0.63%, magnesium – from 0.02 to 0.07% (Table 1). The largest amounts of Ca and Mg were found in samples collected from peat soil which had developed from low peat and peaty gley soil, the smallest amounts were in samples from peat soils of high peatbogs. Iron content, like in the case of other elements, was low, and it reached from 0.05 to 0.66 %. Surface layers of high peatbog and peat-gley soils were rich in iron. (Table 1).

Plant communities

In the objects discussed there are mainly communities of high peatbogs of *Oxycocco-Sphagnetea* class, more rarely bog- and moor-grass forests of *Vaccinio-Piceetea* class.

Table 1. Chemical characteristics of the soils studied

Soil	No. of profile	Depth (cm)	pH in H_2O	pH in KCl	Organic substance (%)	Content in % P	K	Na	Ca	Mg	Fe
Peat of high peatbogs	I	0-20	3.96	2.52	98.10	0.04	0.01	0.03	0.11	0.02	0.66
		20-30	3.70	2.50	98.30	0.02	0.01	0.03	0.13	0.03	0.12
		30-40	3.80	2.39	88.40	0.05	0.02	0.03	0.15	0.03	0.16
Peat of high peatbogs	II	0-20	3.69	2.59	96.10	0.05	0.02	0.04	0.13	0.03	0.15
		20-30	3.60	2.53	98.00	0.02	0.01	0.03	0.09	0.02	0.04
		30-40	3.70	2.55	91.50	0.04	0.01	0.02	0.10	0.03	0.12
		50-60	3.54	2.54	98.20	0.04	0.01	0.04	0.19	0.03	0.16
Peat of high peatbogs	III	0-20	3.89	2.54	98.00	0.04	0.02	0.04	0.10	0.03	0.20
		20-30	3.55	2.50	97.90	0.02	0.02	0.03	0.12	0.03	0.12
		30-40	3.60	2.53	93.40	0.04	0.01	0.02	0.13	0.02	0.12
		50-60	3.55	2.50	90.10	0.04	0.01	0.02	0.15	0.02	0.16
Peat of high peatbogs	IV	0-10	3.38	2.66	90.20	0.20	0.03	0.04	0.12	0.02	0.16
		20-30	3.96	2.84	88.40	0.10	0.03	0.03	0.12	0.02	0.15
		30-50	5.07	2.52	75.30	0.10	0.04	0.03	0.05	0.02	0.05
		50-60	6.69	4.12	8.80	0.10	0.04	0.03	0.04	0.03	0.06
Peat of low peatbogs	VII	0-10	5.73	5.10	92.10	0.04	0.02	0.04	0.63	0.06	0.34
		10-20	5.90	5.25	93.10	0.04	0.01	0.03	0.71	0.05	0.35
		30-40	6.93	6.40	89.40	0.09	0.01	0.06	0.18	0.06	0.57
		50-60	6.90	6.20	84.90	0.03	0.03	0.06	0.18	0.07	0.55
Peat of low peatbogs	V	0-10	3.39	2.62	95.00	0.08	0.02	0.03	0.14	0.03	0.15
		10-20	4.82	2.65	19.80	0.02	0.01	0.02	0.08	0.02	0.15
		40-50	5.12	3.20	3.40	0.01	0.01	0.02	0.05	0.02	0.04
Peat – gley soils	VI	0-10	4.42	3.03	86.40	0.11	0.03	0.03	0.17	0.05	0.18
		15-30	4.11	2.93	69.10	0.10	0.03	0.02	0.04	0.03	0.16
		45-55	4.35	3.63	4.10	0.07	0.01	0.02	0.03	0.03	0.05
Peaty gley –podzol soils	VIII	0-10	4.45	3.23	83.10	0.06	0.01	0.02	0.39	0.05	0.15
		10-20	5.46	3.70	24.80	0.05	0.02	0.03	0.16	0.05	0.35
		20-40	6.83	5.45	5.60	0.03	0.02	0.03	0.19	0.05	0.40
		40-50	6.50	5.20	1.20	0.02	0.20	0.02	0.06	0.05	0.12

T a b l e 2. Floristic composition of associations from *Oxycocco-Sphagnetea* class (1 - *Eriophoro-Sphagnetum*, 2 - *Ledo-Sphagnetum*) and *Vaccinio-Piceetea* class (3 - *Vaccinio uliginosi-Pinetum*, 4 - *Molinio-Pinetum*)

No. of association	1																		2			3				4		
No. of phytosociological record	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
Cover of tree layer (in %)	.	.	.	.	50	50	30	70	50	30	60	60	60	70	50	40	50	60	50	.	50	.	80	50	.	.	50	60	.
Cover of shrubbery layer (in %)	+	20	30	70	30	20	30	30	20	10	30	30	30	20	20	20	30	30	20	70	30	40	+	30	20	50	40	30	40
Cover of herbaceous layer (in %)	10 0	90	10 0	70	70	90	90	70	30	50	40	40	60	20	90	80	90	100	90	80	90	80	10	40	90	10 0	90	90	90
Cover of moss layer (in %)	60	50	40	50	50	40	40	50	30	60	20	20	30	30	30	70	30	70	90	40	70	30	20	40	10	20	30	20	.
Trees and shrubs:																													
Betula pubescens a	.	.	.	.	2	2	2	7	2	2	2	3	3	3	2	3	4	2	+	.	1	.	.	1	.	.	4	2	.
Betula pubescens b	+	1	2	5	1	+	1	1	.	+	2	1	1	1	.	2	2	2	+	5	1	2	+	2	+	4	3	1	1
Betula pendula a	.	.	.	.	1	3	1	.	3	.	.	3	3	3	3	.	.	.	1	.	+	.	.	+	.	.	.	4	.
Betula pendula b	.	.	.	2	1	+	1	.	1	.	.	.	.	1	1	.	.	.	.	2	.	.	.	1	.	.	.	.	.
Pinus sylvestris a	.	.	.	.	2	+	.	1	.	.	4	.	.	1	.	1	1	4	3	.	4	.	8	4	.	.	1	.	.
Pinus sylvestris b	.	1	1	+	.	.	1	.	.	+	.	+	+	.	.	.	+	.	1	+	.	1	.	.	+	1	.	+	3
Pinus sylvestris c	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.
Frangula alnus b	.	.	.	+	1	+	+	2	1	+	1	2	2	1	1	.	1	1	+	+	2	1	+	+	2	+	2	3	.
Quercus robur a	.	.	.	.	.	+	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 2. Continued

No. of association										1										2			3			4			
No. of phytosociological record	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
Cover of tree layer (in %)	.	.	.	.	50	50	30	70	50	30	60	60	60	70	50	40	50	60	50	.	50	.	80	50	.	.	50	60	.
Cover of shrubbery layer (in %)	+	20	30	70	30	20	30	30	20	10	30	30	30	20	20	20	30	30	20	70	30	40	+	30	20	50	40	30	40
Cover of herbaceous layer (in %)	10 0	90	10 0	70	70	90	90	70	30	50	40	40	60	20	90	80	90	100	90	80	90	80	10	40	90	10 0	90	90	90
Cover of moss layer (in %)	60	50	40	50	50	40	40	50	30	60	20	20	30	30	30	70	30	70	90	40	70	30	20	40	10	20	30	20	.
Oxycocco-Sphagnetea:																													
Eriophorum vaginatum	10	8	9	7	6	9	9	6	3	4	3	3	5	1	9	7	8	6	4	4	+	.	.	+	.	.	.	.	.
Sphagnum cuspidatum	6	5	4	5	5	4	2	2	3	2	+	+	1	+	1	1	1	4	+	3	+	.	.	.	.	.	.	.	.
Andromeda polifolia	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	.	.	.	.	.	.	.	.
Oxycoccus palustris	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	1	6	.	+	.	.	.	.	.	.
Polytrichum strictum	.	.	.	.	.	.	2	1	+	1	1	1	2	1	1	2	1	+	+	+	+	+	.	1	.	.	.	.	.
Sphagnum magellanicum	.	.	.	.	.	.	.	1	.	1	+	+	.	.	.	.	.	+	3	1	1	.	.	+	.	.	.	.	.
Aulacomium palustre	.	.	.	.	.	.	.	1	.	+	+	+	.	1	1	1	1	+	+	+	+	.	.	.	.	.	.	.	.
Vaccinium uliginosum	.	.	.	.	.	.	.	.	.	.	.	+	+	.	+	.	+	1	1	2	2	5	1	1	+	.	.	+	.
Ledum palustre	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	4	8	4	2	1	+	2	.	+	.	.	.
Sphagnum nemoreum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	5	1	3	3	2	.	1	2	2	2	.
Sphagnum palustre	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	1	.	.	2	+	1	2	1	.
Vaccinio-Piceetea:																													
Molinia caerulea	.	.	.	.	+	+	.	1	+	1	1	+	.	.	.	.	+	.	.	.	.	1	.	.	9	8	9	9	9
Vaccinium mytrillus	.	.	.	.	+	.	.	+	.	.	.	.	+	.	.	.	.	+	+	.	+	1	+	2	.	.	+	.	.
Trientalis europaea	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.
Polytrichum commune	.	.	.	.	.	.	2	.	.	.	.	.	2	.	1	.	.	+	.	.	+	2	+	.	.	.	.	+	.
Pleurozium schreberi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	+	1	.	.	.	.	.
Accompanying:																													
Lysimachia vulgaris	+	+	+	.	+	.	.	.	.	.	.	+	+	.	.	+	+	.	.	.	.	.	.	.	.	+	.	.	.
Lysimachia thyrsiflora	+	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.
Juncus effusus	+	1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Calamagrostis canescens	.	1	.	.	.	.	.	+	1	+	.	+	+	.	+	+	.	.	.	.	.	2	.	.	.	.	.	.	.
Thelypteris palustris	.	.	.	.	+	+	+	+	.	.	.	.	+	+	.	.	.	+	.	.	.	.	+	+	.	+	.	+	.

Sporadic species: Betula pubescens c 24/+; *Carex nigra* 2/+; *Frangula alnus* c 8/+; *Lythrum salicaria* 2/+; *Peucedanum palustre* 1/+, 16/+; *Populus tremula* b 2/+; *Quercus robur* b 24/+; *Quercus robur* c 11/+; *Salix cinerea* b 2/+, 16/+; *Vaccinium vitis-idaea* 22/+.

A small area of those bogs (mainly edges) is occupied by communities of temporary peatbogs of *Scheuchzerio-Caricetea fuscae* class (*Caricetum lasiocarpae* association), rush communities of *Phragmitetea* class (*Phragmitetum australis* and *Caricetum gracilis* associations), scrubby ones of *Alnetea glutinosae* class (*Salicetum pentandro-cinereae* association).

The largest area of the objects examined is occupied by *Eriophoro-Sphagnetum recurvi* and *Ledo-Sphagnetum magellanici* associations. The least transformed patches of those associations occur on bog-peat soils of high peatbogs whose thickness of the organic layer reaches from tens to 350 cm.

The first of the associations mentioned is characterised by a large share of *Eriophorum vaginatum* (60-100% of cover) and mosses: *Sphagnum cuspidatum, S. magellanicum* and *Polytrichum strictum* (Table 2). Other species like: *Oxycoccus palustris*, *Ledum palustre*, *Andromeda polifolia*, *Vaccinium uliginosum* constitute a small admixture (Table 2, phytosociological record 3, 12-18). In many patches, both in the layer of trees and shrubs, birches – *Betula pubescens* and *B. pendula* - have a large share (Table, phyt. rec. 5-18).

Highly degraded patches of *Eriophoro-Sphagnetum* association occur in small and shallow bogs (an organic layer with 10-30 cm of thickness). Clumps of cotton grass are usually dry and covered with lichens. Peat mosses are not present, or their share is small (Table 2, phyt. rec. 11, 12, 14).

Ledum palustre (covers up to 80%), and also peat mosses *Sphagnum magellanicum, S. cuspidatum, S. nemoreum, S. palustre* dominate in the herbaceous plant layer of the *Ledo-Sphagnetum magellanici* association. *Vaccinium myrtillus* as well as *Oxycoccus palustris* and *Eriophorum vaginatum* usually constitute the admixture (Table, phyt. rec. 19-21). Stunted pine *Pinus sylvestris* and birches *Betula pubescens* and *B. pendula* constitute the tree layer.

The area-share of forest communities of the *Vaccinio-Piceetea* class is small in the bogs discussed. Two associations were distinguished among them: *Vaccinio uliginosi-Pinetum* i *Molinio-Pinetum*. The first of the associations mentioned is usually related to thick peat soils, less often does it occur on shallow peaty gley-podzols. The tree layer there consists of *Pinus sylvestris* with an admixture of birches *Betula pubescens, B. pendula. Frangula alnus* is the most common of the shrubbery there. Brushwood *Ledum palustre* and sometimes *Vaccinium uliginosum* and *Oxycoccus palustris* constitute up to 50% of the cover. *Andromeda polifolia, Vaccinium myrtillus* and *V. vitis-idaea* constitute a small admixture. Peatmosses: *Sphagnum nemoreum*, *Polytrichum strictum*, *Pleurozium schreberi*, *Dicranum undulatum* occur in the moss layer (Table 2, phytosociological record

22-24). The *Molinio-Pinetum* association, in turn, develops in shallow depressions on gley-podzol soils with a changing level of ground waters. *Betula pubescens* i *B. pendula* oraz *Pinus sylvestris* constitute the tree layer in this association. As regards shrubbery, *Frangula alnus* achieves the highest degree of density. In herbaceous plant layer, *Molinia caerulea* covers an excuisitely large area (up to 90% of cover). The share of other species is small (Table 2, phyt. rec. 25-29).

CONCLUSIONS

1. In the objects investigated, the occurrence of peat soils of high and low peatbogs, peat-gley soils, and peaty gley-podzols was discovered.

2. Communities of high peatbogs of *Oxycocco-Sphagnetea* class have mainly developed there, less often forest communities of *Vaccinio-Piceetea* class. A small area is occupied by communities of temporary peatbogs of *Scheuchzerio-Caricetea fuscae* class, of rushes of *Phragmitetea* class, and of scrubs of *Alnetea glutinosae* class.

3. On thick bog soils of high peatbogs there are associations: *Eriophoro-Sphagnetum* a variant with a small share of trees and shrubbery, *Ledo-Sphagnetum* and *Vaccinio uliginosi-Pinetum* as a final stage of the succession of high peatbogs of the continental type.

4. Patches of *Eriophoro-Sphagnetum* association, in which *Betula pubescens*, *B. pendula* have a large share, are related to shallow peat soils and bogged peat-gley soils.

5. In shallow depressions on gley-podzol soils with a relatively thick peaty layer, an association *Molinio-Pinetum* and sometimes *Vaccinio uliginosi-Pinetum* have developed.

6. Degraded patches of *Eriophoro-Sphagnetum* association usually occur in small depressions with an impermeable layer of loam which prevents the water from soaking into the whole depression. The organic layer (high peat) reaches 10-30 cm of thickness here.

REFERENCES

1. **Borowiec J.:** The Peatbogs of the Lublin Region (in Polish). PWN, Warszawa, 1990, 1-348.
2. **Braun-Blanquet J.:** Pflanzensoziologie. 2 Aufl., Wien, 1951.
3. **Chmiel S., Urban D.:** The invironment condition of the valuable communities of the transitional moor and highmoor of the part of the Lublin Region lowland (in Polish). In: Problems of active protection of the fresh water and the peat boggy ecoststems in the polish national parks (Eds S. Radwan,R. Kornijów). Wyd. UMCS, Lublin, 89-93, 1999.

4. **Dembek W.:** The selected aspects of peat-bogg of differentiation in the young- and old-glacial landscape of Eastern Poland (in Polish). Wyd. IMUZ, Falenty, 1-175, 2000.
5. **Fijałkowski D., Wawer M., Pietras T.:** Flora of the Planned Reservation Sobibór near Włodawa (in Polish). Annales Univ. Mariae Curie-Skłodowska. Lublin, C, 48, 81-90,1990.
6. **Fijałkowski D.:** Plant communities in the Lublin Region (in Polish). Wyd. Univ. Mariae Curie-Skłodowska. Lublin, 1-303, 1991.
7. **Fijałkowski D., Wawer M., Pietras T.:** Plant cover of the Planned Reservation Żłobek near Włodawa (in Polish). Annales Univ. Mariae Curie-Skłodowska. Lublin, C, 45, 149-167, 1991.
8. **Fijałkowski D., Wawer M., Pietras T.:** Flora of the Planned Reservation Brudno in the Łęczna-Włodawa Lakeland (in Polish). Annales Univ. Mariae Curie-Skłodowska. Lublin, C, 48, 93-103, 1993.
9. **Fijałkowski D., Wawer M., Pietras T.:** Vegetation of Żółwiowe Błota Reservation near the Town of Włodawa (in Polish). Annales Univ. Mariae Curie-Skłodowska. Lublin, C, 49, 151-170, 1994.
10. **Harasimiuk M., Michalczyk Z., Turczyński M.:** The Łęczyńsko-Włodawskie Lakes. An Environmental Monography (in Polish). Univ. Mariae Curie-Skłodowska, Państw. Insp. Ochr. Środow. Lublin, 1-176, 1998.
11. **Kruk M.:** The significance of peatbogs in the circulation of mineral elements in the landscape (in Polish). Wiadomości Ekologiczne, 37, 2, 79-96, 1991.
12. **Matuszkiewicz W.:** A Guide to Documenting Polish Plant Communities (in Polish). PWN, Warszawa, 1-537, 2001.
13. **Mirek Z., Piękoś-Mirkowa H., Zając A., Zając M.:** Vascular plants of Poland. A checklist Pol. Bot. Stud. (in Polish), Guidebook ser. 15, Inst. Bot. im. W. Szafera PAN, Kraków, 1-103, 1995.
14. **Piaścik H., Gotkiewicz J., Lemkowska B., Morze A.:** The distribution and characterisation of peatbogs and gyttja sites in Ełckie Lake District (in Polish). Acta Acad, Agricult. Tech. Olst., Agricultura, 65, 70-77, 1998.
15. **Sapek A., Sapek B.:** The methods of the chemical analysis of organic soils (in Polish). Wyd. IMUZ, 116-131, 1997.
16. **Urban D., Chmiel S.:** The problem of the protection of lacustrine-peatbog associations: the example of Świerszczów and Dubeczno sites (The Łęczyńsko-Włodawskie Lake District) (in Polish). Materials from the 44th Convention of the Polish Geographic Society Man and Environment. Toruń 24-27 August 1995, 216-219, 1995.
17. **Urban D.:** Natural values and conservation problems of the Jezioro Orchowe Reserve (Łęczna-Włodawa Ladeland) (in Polish). Inżynieria ekologiczna, 5, 150-157, 2001.
18. **Wawer M., Urban D.:** Characterisation of the flora cover (in Polish). In: Water Land Ecksystems of the Sobibór Park and Their Protection (Eds W. Wojciechowska). Wyd. KUL, Lublin, 101-117, 1999.
19. **Wilgat T.:** The geological structure, the relief and the waters of the Lublin Polesie (in Polish). In: The Lublin Polesie Wyd. Univ. Mariae Curie-Skłodowska. Lublin, 9-30, 1963.
20. **Wojciechowska W. (Eds):** In: Water Land Ecksystems of the Sobibór Park and Their Protection (in Polish). Wyd. KUL, Lublin, 1-135, 1999.
21. **Wójciak J., Urban D., Wójciak H.:** Natural qualities and the problems of the protection of small intraforest bogs of Sobibór Forest Insoectorate (in Polish). In: Renaturalisation of natural sites ecological and economic aspects (Eds Z. Michalczyk). Wyd. UMCS, Lublin, 89-97, 2000.

GLEBY I ROŚLINNOŚĆ MAŁYCH ŚRÓDLEŚNYCH BAGIEN NADLEŚNICTWA SOBIBÓR (LEŚNICTWO WOŁCZYNY)

D. Urban

Instytut Gleboznawstwa i Kształtowania Środowiska Przyrodniczego, Akademia Rolnicza
ul. Leszczyńskiego 7, 20-069 Lublin, Polska; e-mail: urbandan@consus.ar.lublin.pl

S t r e s z c z e n i e. Badania przeprowadzono na kilku małych śródleśnych bagnach Nadleśnictwa Sobibór (leśnictwo Wołczyny). Badania te dotyczyły szaty roślinnej oraz pokrywy glebowej. W celu scharakteryzowania roślinności tych bagien wykonano 29 zdjęć fitosocjologicznych. Największą powierzchnię na omawianych obiektach zajmują zbiorowiska torfowisk wysokich z klasy *Oxycocco-Sphagnetea* jak: *Eriophoro-Sphagnetum* oraz *Ledo-Sphagnetum*, mniejszą leśne z klasy *Vaccinio-Piceetea* – *Vaccinio uliginosi-Pinetum* oraz *Molinio-Pinetum*. Pokrywę glebową tworzą głównie gleby torfowe torfowisk wysokich oraz torfowo-glejowe. Mniejszą powierzchnię zajmują gleby torfowe torfowisk niskich oraz gleby glejobielicowe torfiaste. Na badanych obiektach wykonano 8 odkrywek glebowych. W pobranych próbkach glebowych oznaczono: pH w H_2O i 1 M KCl oraz zawartość materii organicznej i P, K, Na, Ca, Mg, Fe.

S ł o w a k l u c z o w e: Polesie Lubelskie, torfowiska, zbiorowiska roślinne, gleby