

LUBLIN POLESYE

H. Okruszko, S. Zawadzki

Polish Academy of Sciences, PKiN, 00-901 Warsaw, Poland

GENERAL CHARACTERISTIC OF THE REGION

A large geographical region of the Polesye has its specific landscape features to west from the river Bug. It is clearly visible in the relief, morphology and geological structure, as well as in the water and plant conditions.

The area located west of the Bug is to some extent distinguished by certain features of landscape different than in the proper Polesye region. It can be seen, first of all, in a gradual disappearance of some typical features of the Polesie in its relief and hydrography, i.e., extend of wet areas and slight terrain lowering that favour formation of flood waters swamps. The southern part of the Polesie region is similar in this respect as the features typical for the Polesye region a slowly disappearing there. For the above reasons the region of the Lublin Polesye is distinguished in the west, and the Wołyń Polesye is distinguished in the south (Fig. 1). Both names stress both their affinity with the Polesye and transitory features of these regions [5].

Gradual disappearance of the features typical for the Polesye region when we move to the peripheries, make delineation of borders for this region difficult as they are more of zone character than linear. It has been conventionally agreed that the area called Lublin Polesye is about 350 000 ha. Bogs cover about 96 000 ha, i.e., 28% of the total area (Table 1). Peat areas cover about 40 000 ha, i.e., 42% of the total bog area, and 11.7% of the total area of the region.

On the basis of regional differentiation of features in this region, five different subregions have been distinguished (Fig. 2). Their characteristics is given on the basis of data collected by IMUZ [3].

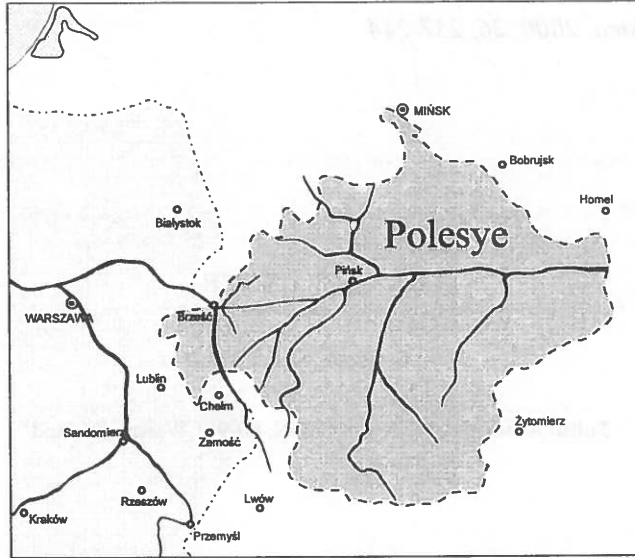


Fig. 1. Region of Polesye.

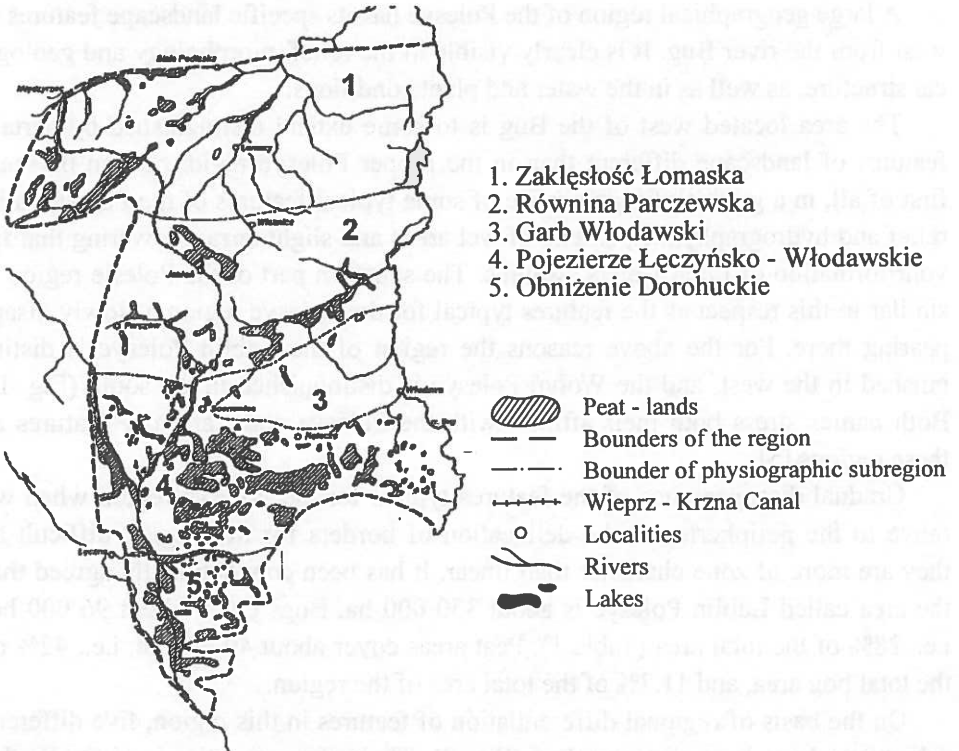


Fig. 2. Peat-lands of Lublin Polesye.

Table 1. Subregions of Lublin Polesye

Site	Area of subregion		Area of bogs	Degree of subregion bogging
	ha	%		
Zakłęśłość Łomarska	86 618	25.2	25 606	29.6
Równina Parczewska	94 802	27.6	27 450	28.9
Garb Włodawski	17 038	5.0	1 827	10.7
Pojezierze Łęczyńsko-Włodawskie	106 804	31.1	30 840	28.9
Obniżenie Dorohuckie	38 105	11.1	10 298	27.0
Total	343 367	100.0	96 021	28.0

CHARACTERISTICS OF SUBREGIONS

In the north part there is the Zakłęśłość Łomaska which is situated in the lowest location (160 m above the sea level) and is the flattest. It is a plain made of sandy deposits of water origin or denuded sandy and clayey moraine formations. In the plain there are numerous valleys with shallow ground waters. These wet areas are filled with peat formations with local peat complexes mainly in the valleys (Table 2). Total area of bogs constitutes 29.6% of the area of this subregion (Table 1), out of which peats constitute 25.8 % of this area (660-9 ha) and wet areas 74.0%.

To the south of Zakłęśłość Łomaska there is a plain called the Równina Parczewska of a similar character. It is a flat denuded post-glacial upland formed of sandy and glayey glacial deposits and water-glacial deposits. Its relief is further varied by the remains of washed off front moraines raised up to 15 m above the surrounding terrains. The south part of the Równina Parczewska is formed mainly of quaternary lake and river deposits.

Table 2. Types of boggy areas in the region of Lublin Polesye

Site	Type of bog						Total	
	peats		wet habitats		alluvial habitats		ha	%
	ha	%	ha	%	ha	%		
Zakłęśłość Łomarska	6 609	25.8	18 939	74.0	58	0.2	25 606	100
Równina Parczewska	5 031	18.3	22 290	81.2	129	0.5	27 450	100
Garb Włodawski	120	6.6	1 701	93.4	-	-	1 827	100
Pojezierze Łęczyńsko-Włodawskie	23 017	74.6	7 724	25.1	99	0.3	30 840	100
Obniżenie Dorohuckie	5 512	53.6	3 120	30.4	1 656	16.0	10 298	100
Total	40 289	42.0	53 790	56.0	1 942	2.0	96 021	100

Ground water level in the whole area of the Równina Parczewska is shallow which results in considerable bogging (28.9% of the subregion area). Peats cover 18.3% (5 031 ha) of the total area. Wet habitats are predominant (81.2 %).

Flat regions of the southern part of the Lublin Polesye are separated from its northern part by the upland part called Garb Włodawski which reaches the height of up to 200 m above the sea level. It is the effect of limestone deposits elevation in this area. Post-glacial deposits are denuded front moraines. There are far fewer valley-like land lowering and poorer net of rivers. Ground waters are deeper and bogs cover only 10.7% of the area. Peats are scarce and cover not more than 6.6% of the total boggy area.

Behind the Garb Włodawski to the south there is a flat area of the Łęczyńsko-Włodawskie Lake District with denivelations that do not exceed a few meters. Its character is influenced by shallow lying limestone bed. These hollows are filled with lakes and post-lake peats. It is the most peaty subregion as peats cover 28.9 % of its area.

The subregion of the Obniżenie Dorohuckie is situated the farthest to the south. It is a bay entering the Lublin Upland. It is also an undulating and hilly plain formed of marl lime covered with relatively shallow layer of post-glacial formations. Karstic phenomena in the form of numerous hollows filled with peat are very pronounced in its landscape. Peats cover 53.6% (5 512 ha) of the boggy area that covers 27.0% of the total subregion. Clearly marked accumulation of alluvial formations in the river valleys is characteristic of this region. It is expressed by a high contribution of alluvial habitats (16%) in the total area of bogs.

BOGGY AREAS

Contribution of bog in the Lublin Polesye is 28% of the total area and it is lower than in the main part of the Polesye region. It can be related as mentioned before to the peripheral location of this region in the background of the enormous basin of the Polesye swamps.

When the bogs of the north and south part of the region are compared (Fig. 2) a clear differentiation can be observed. In the north wet habitats that occupy from 74.0 to 93.4% of the total area of swamps are dominant. Peats in this part of the Lublin Polesye occupy 6.6 to 25.8% of the bog area. It is related to the morphology of ground lowering that are most often shallow, of the valley type and with changing level of ground waters which causes periodical swamping but not generating peats. Whereas, in the south part with numerous deep karstic lowering of land, peats are predominant (53.6 to 74.6% of boggy area). They develop in the habitats

of stable, high ground water level, often in the form of lakes that are subjected to overgrowing processes. Wet areas in this part of the region can be found in marginal zone of peat complexes or in shallow land lowering that periodically dry out.

In the wet habitats peaty formations can be found (10-20% of organic matter) generated under the influence of endohumus accumulation that saturates surface mineral formations. In the place of intense bogging, layers of peat are deposited on the bog surface (ectohumus). Their thickness is not more than 30 cm. Bogs with the thickness of peat layer of more than 30 cm become peatlands.

Peat areas (Table 2) occupy 42% of the total boggy area or 11.7% of the total area of the Polesye region.

Their generic differentiation is presented in Table 3. Predominance of low peats (82.8% of the total peat area) with relatively high contribution of transitional peats (16.3 %) can be observed. High peats occupy not more than 0.9 % of the total peat area.

Table 3. Generic differentiation of the peats of Lublin Polesye

Subregion	Low		Transition		High		Total	
	ha	%	ha	%	ha	%	ha	%
Zakłęśłość Łomarska	6 566	99.3	19	0.3	24	0.4	6 609	100
Równina Parczewska	5 031	100.0	-	-	-	-	5 031	100
Garb Włodawski	120	100.0	-	-	-	-	120	100
Pojeziorze Łęczyńsko-Włodawskie	16 457	71.5	6 215	27.0	345	1.5	23 017	100
Obniżenie Dorohuckie	5 192	94.2	320	5.8	-	-	5 512	100
Total	33 366	82.8	6 554	16.2	369	0.9	40 289	100

In the area of low peats analysed for the peat deposits cumulated there (Table 4) high-sedge peats (46.8%) with high contribution of moss peats (27%) are predominant. Peat areas genetically related to reed-sedge peat and alder peat accumulation is less frequent (11.6 and 14.2%, respectively). Differentiation in the peat type is characteristic for the deposits in these subregions. In the landscape of the subregion in which there are karstic phenomena (the Łęczyńsko-Włodawski Lake District and Obniżenie Dorohuckie) a high contribution of moss-sedge peats (37.8 and 39.7%) with the minimum contribution of alder peats (3.2 and 5.1%) can be observed. As shown by Okruszko *et al.* [4], moss-sedge peats originated from the processes of lake overgrowing that were very frequent in the karstic landscape. This process, in the case of the regions mentioned above, was in the form of a floating cover of sedge-moss plant slowly taking up the lake surface area. Whereas

Table 4. Contribution of genetic kinds of peat in the low of peatlands area in Lublin Polesye

Site	Moss-sedge		High-sedge		Reed-sedge		Alder	
	ha	%	ha	%	ha	%	ha	%
Zakłęstość Łomarska	151	2.3	2 674	40.7	1 391	21.2	2 350	35.8
Równina Parczewska	805	16.0	2 354	46.8	252	5.0	1 620	32.3
Garb Włodawski	-	-	-	-	120	100.0	-	-
Pojezierze Łęczyńsko- Włodawskie	6 215	37.8	6 516	51.7	1 220	7.4	506	3.1
Obniżenie Dorohuckie	2 062	39.7	1 995	38.4	871	16.8	264	5.1
Total	9 233	27.6	13.539	46.6	3.854	11.6	4 740	14.2

in the lowland depressions of the Zakłęstość Łomaska and the Równina Parczewska high contribution of alder peats in the peat deposits (35.8 and 32.2%) mainly in the see-page waters, in shallow valley lowering and at the banks of deeper lowering can be observed. It is characteristic of these regions.

Peat with high-sedge cover can be found in all the subregions; it occupies in them a similar percentage of the total area (38.3 to 51.7%). It appears in valleys with permanently high level of ground waters. Areas of peat with reed-sedge cover is very varied in individual subregions. It is predominant in deep valleys of the Garb Włodawski and very frequent in the Obniżenie Dorohuckie. Its presence points to obstructions in water flows in the valleys and formation of long-term deluges. They are also related to shallow overgrown lakes (the Zakłęstość Łomaska).

Transition peat areas can be found in the Łęczyńsko-Włodawskie Lake District, where they occupy 27% of the total peat area. They are formed there of mine-trophic plant complexes on the floating covers of overgrowing lakes [4]. They are also numerous in watersheds, including those of Bug and Wieprz rivers. A synthetic characteristics of the peat areas in the subregions of the Lublin Polesye can be as follows [2]. Peat deposits in the plains of Zakłęstość Łomaska and Równina Parczewska, shallow valleys and lowlands are most often 1-2 thick. They are made of high-sedge and alder peats, mostly silted. In the area of Garb Włodawski peat areas are rare. They are mainly peats formed on lakes and made of reed-sedge peats with the ash content of 12-25%.

In the Łęczyńsko-Włodawskie Lake District and Obniżenie Dorohuckie, karstic peats, peats formed on lakes with frequent moss-sedge and high-sedge peats with low ash content (10% on the average) are predominant. Their thickness is 1-2 m. They cover deposits of detritus and calcium gyttja with the thickness of 6-9 m. In the river valleys of these subregions there are high-sedge peats with varied thickness (up to 3 m).

CURRENT STATUS OF THE BOGGY AREAS IN THE LUBLIN POLESIE

The Lublin Polesye was meliorated when the melioration system called the Wieprz-Krzna canal was built. Melioration work was carried out in the period 1954-1961. It aimed at supplying water from the Wieprz to the peat areas of the Lublin Polesye used as grassland. Water was supplied by the Canal (140 km long) and stored in the raised lakes and artificial water reservoirs.

Melioration work considerably changed the bog characteristics of this region. From the analysis of the conditions of soils in the region of the Wieprz-Krzna Canal (Tab.5) the currently predominant soils in this region are the soils transformed by the moorshing process (moorshes and moorsh-like). Only about 7.5% of the soils (boggy and gleyey soils) remained in the boggy state (accumulation phase). Whereas 53.3% of the areas of hydrogenic soils is in the decession phase appearing in the organogenic soils. They are moorsh and moorshy soils.

Table 5. Typographic differentiation of the soils in the hydrogenic habitats of the Canal Wieprz-Krzna region

No.	Type of soil	Area	
		ha	%
1	Peat-bog	7 685	6.7
2	Peat-moorsh and weakly moorshified	10 131	8.8
3	Peat-moorsh medium moorshified	26 782	23.2
4	Mineral-moorsh and moorshy soils	24 569	21.3
5	Mud peat soils	1 281	1.1
6	Gleyey soils	931	0.8
7	Alluvial soils	1 747	1.5
8	Black soils	42 269	36.6
		115 395	100

Dewatering of agriculturally used areas significantly influenced plant communities of the areas that were not included in the melioration programmes. It considerably decreased the number or caused disappearance of many plant species. Moreover, eutrophication of local waters caused by the mineralization of organic soil mass and an inflow of water from the Wieprz river with different mineral composition, changed the chemistry of waters, especially in the lakes which led to degradation of their ecosystems.

Despite the changes caused by melioration and agricultural exploitation of the areas connected with the system of Wieprz-Krzna Canal, the Lublin Polesye still represents a lot of valuable natural features of boggy areas [1]. Attempts to protect these areas and restore them where possible have been started. Protected areas were

established on 28% of the total area of the region. These areas are either national parks (Polesye National Park) or nature reserves (16), landscape parks (8) and regions with protected landscape (4). Projects for the extension of protected areas and renaturalisation of some chosen regions to regain their natural peculiarities are under preparation now. The projects assume close co-operation with Belarus and Ukraine to generate an internationally protected region of Polesye.

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