

RIVER LAKES IN THE LUBLIN REGION

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Summary. The lakes of the Lublin region are almost exclusively associated with the region of the Łęczna-Włodawa Lake District. There are 61 natural lakes with a collective surface area amounting to 2127 ha [Wilgat 1991]. However, 166 other lakes with small surface areas also occur in the valleys of the largest rivers in the Lublin region: the Vistula, the Bug, and the Wieprz (Fig. 1). These are river lake: Vistula river lakes (known as *wiślicka*), Bug river lakes (*bużyska*) and Wieprz river lakes (*wieprzyska*), located in old river beds or abandoned fragments of river channels.

Key words: rivers lakes, morphology and topography, Lublin region

INTRODUCTION

The largest rivers of the Lublin region (the Vistula, the Bug and the Wieprz) have changed their courses many times (Figs 2, 3, 4). Paleographic changes in the courses of these rivers have been documented in many studies [Harasimiuk and Szwajgier 1991, Pożaryski *et al.* 1994, Harsimiuk *et al.* 1995, Maruszczak 1997, Kociuba 2002, Szwajgier 2002] and historical changes are shown on maps (Fig. 2).

The size, shape and distribution of the old river beds make it possible to analyse the changes in the river courses and the flow rates [Klimaszewski 2002]. The deepest or specific old river bed lowerings are occupied by river lakes, also known as valley lakes. Both these and former river beds undergo dynamic changes. Their stability, distribution, and shape depend on the amount of water flowing through the valley during maximum flow periods (Photo 1). A generally accepted criterion used to define a water body as a lake is its surface area. In Poland, water bodies with a surface area of 1 ha or more are called lakes.

STUDY AREA, MATERIALS AND METHODS

A. Bochra was the first to attempt to document the river lakes in the Lublin region in his cartometric study as part of the Hydrography Department of the Earth Science Institute of the Marie Curie-Skłodowska University in 2002. The study complemented the inventory of all natural water bodies marked on the 1: 10000 Topographic Map of Poland, published in 1984. Bathymetric surveys of the river lakes (Fig. 3, Tab. 3) were

started by the Hydrography Department of the Marie Curie-Skłodowska University in 2001 [Pasoń 2004], and then continued in 2004-2005 as a part of the 2 P04F 027 26 research project called „The significant role of old river beds in the valley of the Middle Bug in maintaining biological, habitat and landscape diversity” [Wojciechowska 2006].

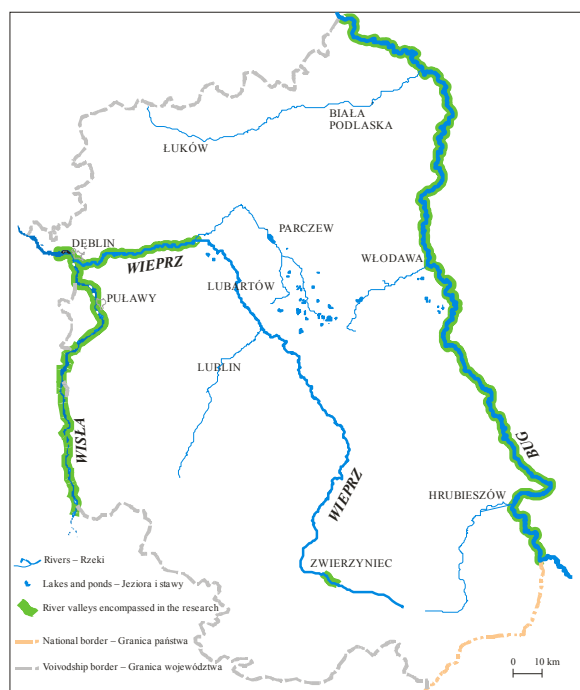


Fig. 1. Valleys included in the inventory of the river lakes
Rys. 1. Doliny objęte inwentaryzacją jezior rzecznych

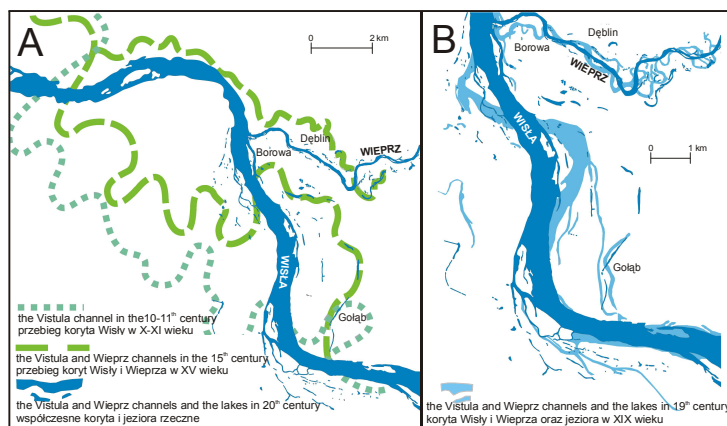


Fig. 2. A – Historical changes in the course of the channels of the Vistula and the lower Wieprz – 10th–15th century [Maruszczak 1997] and B – in the 19th and 20th century
Rys. 2. A – Zmiany przebiegu koryta Wisły i dolnego Wieprza w czasach historycznych X-XV w. [Maruszczak 1997] oraz B – w XIX i XX wieku



Phot. 1. Spring flood of the Bug River and river lake (Zbereże) (phot. M. Turczyński)
 Fot. 1. Powódź wiosenna rzeki Bug i jeziora rzeczno (Zbereże)

RESULTS AND DISCUSSION

Vistula river lakes (*wiśliska*)

Due to the amount of water flowing through the valley of the Middle Vistula, changes in the course of the channel result in large old river beds being formed. (Fig. 2).

There were 158 natural bodies in the 1970s and 1980s in the Vistula valley. Their collective surface area amounted to 291.5 ha. If the surface area criterion is applied (over 1 ha), 38 of them may be called lakes – *wiśliska*. The largest of them (Tab. 1) can be found near Steżyca – Lake Odnoga with a surface area of 76 ha, and situated near Piotrowice (60.9 ha). The collective surface area of all *wiśliska* was 252.4 ha.

Table 1. The largest river lakes in the Vistula valley in the Lublin region
 Tabela 1. Największe jeziora rzeczne Lubelszczyzny w dolinie Wisły

Item number Numer punktu	Proper name of the lake or the name of the nearest town Właściwa nazwa jeziora lub najbliższego miasta	Surface area Powierzchnia (ha)	Shoreline length Długość linii brzegowej (km)
1	Lake Odnoga (Steżyca)	76.0	26.7
2	Piotrowice Duże	60.9	9.6
3	Wiselka (Kepa Solecka-Kepa Gostecka)	22.7	11.0
4	Lake Błonie – Brzeście	10.9	2.3
5	Wilków-Szczekarków (r. Wrzelowianka)	8.7	4.0

Lake Odnoga in Steżyca and Lake Wiselka between Kamień and Kepa Gostecka are classical examples of hydrographic objects functioning in the mixed, limnic and fluvial system.

Between Kamień and Wilków, where the valley widens, some of the river lakes occupying narrow old river beds were linked by means of canals and hence the Wrzelowianka and Martwica flows were created. In the dry periods, the lakes function as separate bodies, whereas in periods of increased rainfall or high levels of underground water they form deep fragments of these flows.

Bug river lakes (*bużyska*)

The Lublin part of the Bug valley is 249 km long. Because it is situated near the border it has not undergone significant anthropogenic changes. Hence, the largest number of

natural water bodies has survived here (Fig. 3). In the Lublin region 183 objects of this type have been inventoried cartometrically [Michalczyk *et al.* 2002]. Their collective surface area amounts to 368 ha. 111 bodies with a surface area of 327 ha were qualified as *bużyska* or river lakes located in the Bug valley. Their genetic types [Chmiel *et al.* 2003] are related to the lake location in either the breaches or widenings of the valley. The geological structure and tectonics of the valley considerably condition the changes in the river channel and the process of forming of old river bed with lakes [Harasimiuk 1991, Harasimiuk and Sz wajgier 1991, Kowalczuk *et al.* 2002, Sz wajgier 2002, Chmiel *et al.* 2003, Sz wajgier and Turczyński 2005, Wojciechowska 2006]. Waters of *bużyska* are characterised by hydrochemical diversity [Dawidek and Ferencz 2005].



Phot. 2. Avulsion lake fed by spring waters near Bytyń (phot. M. Turczyński)

Fot. 2. Jezioro awulsyjne zasilane wodami wiosennymi koło Bytnia

Table 2. The largest river lakes of the Bug valley within administrative borders of the Lublin voivodship
Tabela 2. Największe jeziora rzeczne doliny Bugu w granicach administracyjnych województwa lubelskiego

Item number Numer punktu	Proper name of the lake or the name of the nearest town Właściwa nazwa jeziora lub najbliższego miasta	Surface area Powierzchnia (ha)	Shoreline length Długość linii brzegowej (km)
1	Dołhobrody	15.95	5.81
2	Dubienka	13.93	5.73
3	Sławatycze PN	13.57	5.10
4	Sławatycze PN	12.03	5.30
5	Łęgi	8.68	3.14

Table 3. Morphometric data of the selected lakes according to field measurements of 2004-2005
[Dawidek and Turczyński 2006]

Tabela 3. Dane morfometryczne wybranych jezior według pomiarów terenowych w latach 2004-2005

Lake Jezioro	Water elevation (m asl.) Poziom wody (m n.p.m.)	Surface area Powierzchnia (ha)	Capacity Pojemność (thousand m ³)	Maximum Depth Max głębokość (m)	Average depth Średnia głębokość (m)	Shoreline length Długość linii brzegowej (km)
Orchówek	154.70	8.2	27.79	2.85	0.34	2.62
Wilgocha	168.40	6.2	30.12	8.50	0.49	5.77
Wola Uhruska	162.80	4.2	54.42	10.10	1.34	2.26
Uchańka	170.20	3.5	26.29	5.16	0.75	2.18
Jama Roma	159.85	2.7	8.16	3.69	0.30	1.48
Bawole Rogi	159.50	2.4	11.87	3.10	0.50	0.90
Hniszów	166.20	0.3	1.40	1.50	0.50	0.56

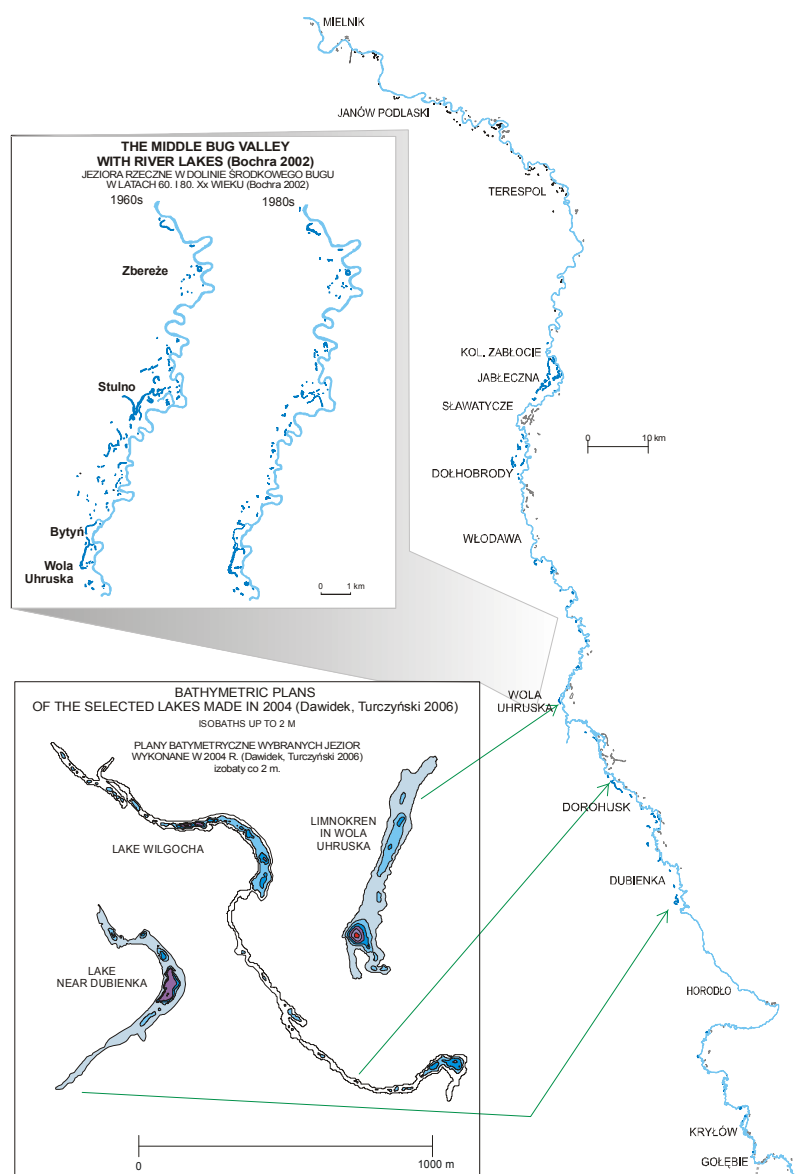


Fig. 3. River lakes in the Bug valley [Bochra 2002, Dawidek and Turczyński 2006]

Rys. 3. Jeziora rzeczne w dolinie Bugu

Wieprz river lakes (*wieprzyska*)

Lakes currently occur mainly in the lower reaches of the river in the Wieprz valley (Fig. 1). They are most often located on the left side of the river. Their surface area amounts to 33.81 ha, and the largest of them, situated near Blizocin, has a surface area of 3.36 ha (Tab. 4).



Phot. 3. The oxbow „Jama Roma” near Zbereże – valley of the middle Bug River (phot. M. Turczyński)
 Fot. 3. Jezioro zakolowe „Jama Roma” w pobliżu Zbereża – dolina środkowego Bugu

Table 4. The largest river lakes in the Lower Wieprz valley (Baranów–Dęblin)
 according to the 1:10000 Topographic Map of Poland [Bochra 2002]
 Tabela 4. Największe jeziora rzeczne w dolinie dolnego Wieprza (Baranów–Dęblin)
 wg Mapy topograficznej Polski 1:10000

Item number Numer punktu	Proper name of the lake or the name of the nearest town Właściwa nazwa jeziora lub najbliższego miasta	Surface area Powierzchnia (ha)	Shoreline length Długość linii brzegowej (km)
1	Blizocin SE (on the left side of the river)	3.36	1.34
2	Stefanka (SE Strzyżowice)	3.02	2.58
3	Blizocin SE (on the left side of the river)	2.72	2.17
4	Pogonów (NW)	2.31	1.04
5	Sobieszyn (S)	2.30	1.06

It should also be emphasized that there are also four small lakes in the upper reaches of the lake between Bondyrz a Guciów. They are from 40 to 200 m long. Three of them are located on the left side of the river at an elevation of about 242 m above sea level.

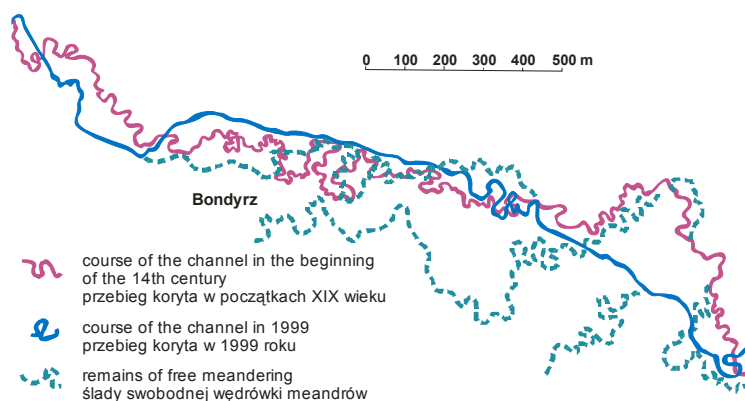


Fig. 4. Changes in the course of the channel of the upper Wieprz near Bondyrz [Kociuba 2002]
 Rys. 4. Zmiany przebiegu koryta górnego Wieprza pod Bondyrzem



Phot. 4. Small river lake situated over „Jama Roma” lake (phot. M. Turczyński)
Fot. 4. Małe jezioro rzeczne położone ponad jeziorem „Jama Roma”



Phot. 5. South part of limnokren in Wola Uhruska (phot. M. Turczyński)
Fot. 5. Południowa część limnokrenu w Woli Uhruskiej



Phot. 6. River lake situated in the upper valley of River Wieprz near Bondyż (phot. M. Turczyński)
Fot. 6. Jezioro rzeczne w dolinie górnego Wieprza (okolice Bondyża)

CONCLUSIONS

1. All 166 river lakes of the Lublin region documented in the topographic maps published 1984 had a collective surface area of 613.3 ha. As many as 111 of them were situated in the Bug valley, 38 – in the Vistula valley, and 17 – in the Lower Wieprz valley.

2. The largest lakes in terms of surface area are located in the Vistula and Bug valleys (Tab. 5). Due to having a smaller water flow, the Wieprz is less capable of carving the bottom of the valley, and thus the surface area of the lakes left in the old river beds is not larger than 4 ha with the standard level of river water in the valley. The deepest lake (10.1 m) with a documented bathymetry is a limnokren located in Wola Uhruska. Currently, the best explored river lakes are situated in the middle part of the Bug valley.

3. River lakes are very precious objects, taking into consideration the scarcity of surface water in the Lublin region. Their collective surface area amounts to 22% of the area occupied by lakes in this region. They add variety to the river valley landscape and have significant natural values. [Bernat *et al.* 2001, Chmiel *et al.* 2004, Jezierska-Madziar 2005, Wojciechowska 2005, 2006].

Table 5. The largest river lakes in the Lublin region
Tabela 5. Największe jeziora rzeczne Lubelszczyzny

Item number Numer punktu	Proper name of the lake or the name of the nearest town Właściwa nazwa jeziora lub najbliższego miasta	River valley Dolina rzeki	Surface area Powierzchnia (ha)	Shoreline length Długość linii brzegowej (km)
1	Jezioro Odnoga (Stężycza)	Vistula	76.00	26.70
2	Piotrowice Duże	Vistula	60.90	9.60
3	Wisielka (Kępa Solecka-Kępa Gostecka)	Vistula	22.70	11.00
4	Dolhobrody	Bug	15.95	5.81
5	Dubienka	Bug	13.93	5.73
6	Sławatycze	Bug	13.57	5.10
7	Sławatycze	Bug	12.03	5.30
8	Jezioro Błonie – Brzeście	Vistula	10.90	2.30
9	Orchówek	Bug	10.42	2.72
10	Wilków-Szczekarków (Wrzelowianka)	Vistula	8.70	4.00

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JEZIORA RZECZNE LUBELSZCZYZNY

Streszczenie. Jeziora Lubelszczyzny kojarzone są niemal wyłącznie z obszarem Pojezierza Łęczyńsko-Włodawskiego. Znajduje się tutaj 61 naturalnych jezior o łącznej powierzchni 2127 ha [Wilgat 1991]. Jeziora o niewielkich powierzchniach, ale w znacznie większej ilości – 166, występują także w dolinach największych rzek Lubelszczyzny: Wisły, Bugu, Wieprza. Są to jeziora rzeczne: wiśliska, bużyska i wieprzyska, zajmujące zagłębienia starorzeczy, czyli porzucone fragmenty koryt rzecznych. Łącznie zajmują one powierzchnię 613 ha. Ich łączna powierzchnia stanowi 22% obszaru zajętego w tym regionie przez jeziora. Obecnie najlepiej rozpoznane jeziora rzeczne znajdują się w środkowej części doliny Bugu. Przy wyjątkowym ubóstwie wód powierzchniowych Lubelszczyzny jeziora rzeczne są cennymi obiektami. Urozmaicają one krajobraz dolin rzecznych oraz stanowią miejsca o znacznych walorach przyrodniczych.

Słowa kluczowe: jezioro rzeczne (wiśliska, bużyska, wieprzyska), morfometria, topografia, Lubelszczyzna