

III. ПРИРОДНИЧА ГЕОГРАФІЯ: ТЕОРІЯ ТА ПРАКТИКА

Tadeusz Ciupa, Roman Suligowski, Tadeusz Biernat

THE HYDROGRAPHIC TOURIST ATTRACTIONS IN THE PROTECTED AREAS OF THE ŚWIĘTOKRZYSKIE PROVINCE

Abstract. In the study there has been presented the analysis of the spatial differentiation of the hydrographic values comprised of different forms of nature preservation in the Świętokrzyskie Province. There have also been demonstrated the possibilities of their utilization for the development needs of tourism and recreation. A part of hydrographic objects is situated within the reach of legally protected areas, which in the Świętokrzyskie Province, occupy as far as 65% of its areas. Here are situated 1 national park (the Świętokrzyski National Park), 9 landscape parks, 70 nature reserves, 19 protected landscape areas, over 750 nature monuments, 9 nature-landscape complexes, 90 ecological croplands and 10 documentation stations. The conducted analysis indicates that on the protected areas of the Świętokrzyskie Province there are valuable and numerous hydrographic objects of running and standing waters, which can be, and already are, utilized in tourism and recreation.

Key words. hydrographic objects, protected areas, tourism and recreation, the Świętokrzyskie Province

Introduction. Man, since prehistoric times, showed great interest in water environment, because it satisfied many of his basic needs, including the sense of safety, alimentation and hygiene. In the course of time, the first factor started losing its importance, but there appeared another one, connected with the need to rest and the regeneration of psychophysical powers. Concurrently, water protection awareness was in the increase, although this is a renewable natural resource. Nonetheless, it is impossible to take effective care and protect water ecosystems, without taking into consideration their immediate neighbourhood. Therefore, the most effective protection and the possibility of utilization of pure and rich water resources is possible in legally protected areas (Jędrzejczyk 1995). They include a range of areas of outstanding natural values. In accordance with *Nature Protection Act* of 16th April 2004 there are recognized the following forms: national parks, nature reserves, landscape parks, protected landscape areas, NATURA 2000 areas, nature monuments, nature-landscape complexes, ecological croplands, documentation stations. At the same time, they appoint the character and degree of society engagement in natural environment protection. One of its elements are waters, including sources, watercourses, water reservoirs. They are point, linear and areal landmarks, whose protection and utilization demands a different approach. Hydrographic objects can be, and already are, utilized in tourism and recreation, and especially in ecotourism. An ecotourist derives satisfaction i.a. from the beauty of standing and running waters environments as well as the immediate contact with them. A popular form of ecotourism connected with water objects is the observation and photographing of water and wetland birds (ornithological field trips) in their

natural habitats or at nesting sites as well as getting to know the flora of the areas (botanical field trips) (Zaręba 2008). Furthermore, within the reach of river channels and valleys, after floods you can encounter and observe interesting effects of erosion and accumulation.

Surface waters occurring in the Świętokrzyskie Province were the subject of numerous scientific elaborations. In the recent years (2003-2005) there have been made detailed hydrographic and sozological mappings, which resulted in creating 52 sheets of Hydrographic Map and Sozological Map in the scale of 1:50 000, along with Commentaries (Mapa Hydrograficzna..., 2003-2005, Mapa Sozologiczna..., 2004-2005). On the first of them there were presented, against the geographical environment components, the condition as well as threats and water environment protection, while the other includes the information on forms and ways of protection and degradation of natural environment, including waters.

For the protected areas in the province, there were also created elaborations presenting the possibilities of utilization of hydrographic values for the purposes of tourism, recreation as well as the renewal and regeneration of psychophysical powers.

In the area of the Świętokrzyskie Province, where the protected terrains occupy 65% of its area, there are all forms of nature preservation. Within their range, there are different kinds of hydrographic objects. From the perspective of the presented review of literature it is indicated, that there is a scarcity of elaborations devoted to the utilization of water environment for tourism and recreation purposes.

The aim of the study is the analysis of the spatial differentiation of the hydrographic values and indicating the possibilities of its utilization for tourism and recreation development purposes in the areas of the Świętokrzyskie Province embraced by various forms of protection.

Study area. The Świętokrzyskie Province is one of 16 provinces in Poland. It is totally situated in Wisła basin and includes a larger part of Wisła intersection and its left affluent – Pilica. The area is discharged by numerous rivers of class II, III and upper classes. Nida, Kamienna, Pilica, Czarna Staszowska, Koprzywianka, Nidzica, Opatówka i Kanał Strumień belong to class II watercourses (Fig. 1). The catchments of the former two have the largest areas, respectively 3865,4 km² and 1892 km² (Podział...1983).

The Great-areal System of Protected Areas on the territory of the province includes currently: 1 national park (the Świętokrzyski National Park), 9 landscape parks, 70 nature reserves, 19 protected landscape areas, over 750 nature monuments, 9 nature-landscape complexes, 90 ecological croplands and 10 documentation stations (Bank of Regional Data). Important elements in each of the mentioned forms of protection are hydrographic objects.

Hydrographic objects in protected areas. *Świętokrzyski National Park* (SNP) was created in 1950. As the second in Poland after Białowiecki. Among the most important hydrographic objects there are streams discharging Łysogóry, as well as watercourses in Wilkowska and Czarna Woda valleys. On

the northern slopes of Łysogóry and Jeleniowskie Range within SNP there were identified 45 streams, and on the southern side only 11, mostly nameless. At the end of 1990s in the area of ŚPN there were documented 52 areal water objects (Biernat et al. 2000). These areas are characteristic for the places, whose groundwater and precipitation discharge is connected to a certain difficulty e.g. topography, impermeable subsoil, water support etc. A particular hydrographic value is here the source area of Czarna Woda called “Mokry Bór”, covering the areas of swamp reed forest and swamp forest. Moreover, there are worth noticing topogenic and fluviogenic wetlands with water-loving plants (*turzyca pospolita*, *sit rozpierzchły*, *knieć błotna*). The source in Holy Cross Mountains is St. Francis’s source located by the tourist route from Święta Katarzyna to Łysica. This is a underslope source outflowing quartzite sands. It is enclosed and fenced, and the water flows down a wooden trough. The water from this source is slightly acid (pH= 5.5 and below), and its chemical composition does not indicate particular healing properties. Nevertheless, among local people there is a view that the water cures eyesight disorders, and especially eases symptoms of conjunctivitis. Therefore a big interest of tourists in the source can be observed.

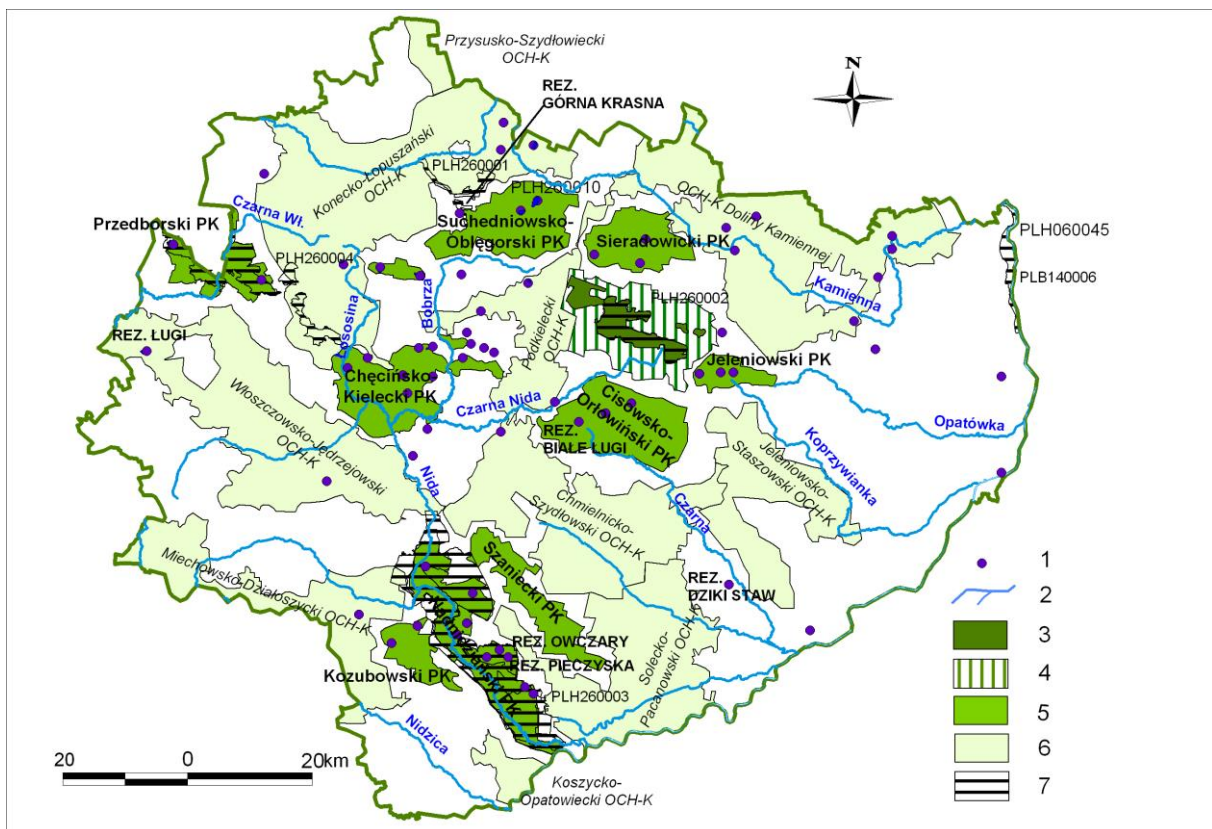


Fig. 1. Selected forms of nature protection in the Świętokrzyskie Province (1 – nature reserves, 2 – rivers, 3 – Świętokrzyski National Park (ŚNP), 4 – boundary of the protection zone of ŚNP, 5 – landscape parks (PK), 6 – Protected landscape areas (OCH-K) 7 – NATURA 2000 areas

In summer as well as in winter we can meet here people rinsing their eyes with the source water. The source name is not random, because St. Francis is the

eyesight patron. The chapel above the source is also devoted to him. There are numerous legends connected with this place (Garus 2000, Biernat et al. 2004)

Nature reserves. Hydrographic values are exposed only in a few natural reserves (Fig. 1). There is worth noting Owczary reserve (Maskalis catchment), situated in the source area of a watercourse charged by sulphur-chlorine waters. The object is the only station of halophilous flora and fauna in central Poland. In *Góra Krasna*, reserve of the biggest area – the most important and most precious at the same time element of landscape are occurring in Krasna valley (Czarna Maleniecka affluent) large areas of well-developed plant assemblages: water, rushes, moors and meadow plants. The terrain has fragmentarily been included in the project of areas forming the European Ecological Network Natura 2000. One of the protection purposes in *Dziki Staw* preserve is, in turn, an after peat lake, specifically situated in the forest, swamp karstic pit (Grobla in Czarna Staszowska catchment). In other reserves: *Białe Ługi*, *Pieczyska* and *Ługi* the most valuable elements are water-mud-swamp complexes with nesting sites and conditions favourable for rare and protected birds.

Landscape parks have been established in order to protect the most precious values of natural environment and landscape. In the area of the province there are 3 Landscape Park Complexes of: Holy Cross Mountains, Ponidzie and Nadpiliczny. The included parks also embrace river valleys. In the area of Holy Cross Mountains landscape parks there are situated river sources of: Opatówka, Koprzywianka, Czarna Staszowska, Łagowica, Lubrzanka and Bobrza. *Cisowsko-Orłowski Landscape Park* has been created i.a. To preserve water purity of Czarna Staszowska river, originating from the swamps and peat bogs of Białe Ługi nature reserve. The peat bog along with the buffer zone are situated in catchments of two rivers, which are left-bank affluents of middle Wisła, i.e.

Tab. 1.

List of the nature reserves of water which are subject to protection

No.	Name of nature reserve	Type of nature reserve	Year of creation (area in ha)	Location		Subject of protection
				Place	Catchment	
1	3	4	5	7	8	9
1.	Owczary	halophyte	1959 (0,61)	Owczary	Maskalis	saline source with neighbouring unique halophilic flora and fauna
2.	Białe Ługi	peat-bog	1959 (408,44)	Wymysłów	Belnianka, Czarna Staszowska	Mid-forest peat bog complex with interesting swamp vegetation complexes and rich avifauna
3.	Ługi	ornithological	1981 (90,23)	Jeżowice	Zwleczka	natural water-mud-swamp and forest complex with breeding grounds and living conditions

						of rare and protected birds
4.	Dziki Staw	floristic	1998 (6,52)	Grobla	Czarna Staszowska	preservation of over one-hundred-year-old larch stand and peat bog lake with protected species of plants and animals
5.	Pieczyska	peat-bog	1999 (40,84)	Bogucice	Nida	peat-forming complex, which is a refuge for rare and protected plants and animals
6.	Górna Krasna	ornithological	2003 (413,02)	Długojów, Krasna, Komorów	Krasna	preservation of a natural section of the Krasna river and a fragment of its valley with occurring there valuable plant assemblages and protected and rare animal species

Source: Suligowski et al. (2009)

Nida and Czarna Staszowska. In the buffer zone of the Park there two retention reservoirs: “Borków” on Belniana river and “Wojciechów” on Pierzchniana river. *Jeleniowski Landscape Park* embraces the river valleys of Dobruchny i Pokrzywianki (Świślina catchment). The area of *Sieradowicki Landscape Park*, between the valley of Kamienna river and Bodzentyńska Valley, belongs entirely to Kamienna river catchment and is discharged by sub-catchments of Kamionka, Żarnówka and Lubianka and a few nameless watercourses. In the area of the Park there are numerous permanent and seasonal sources. The most hydrographically interesting area in Holy Cross region is Chęcińsko-Kielecki Landscape Park (CH-KPK). There are a few regional hydrographic nodes functioning here. Several main watercourses here discharging the southern and western parts of Holy Cross Mountains (Czarna Nida, Bobrza, Łososina) and the north-west part of Niecka Nidziańska (Biała Nida). Within the reach of the CH-KPK exclave there is a so-called białogoński hydrographic node, which is formed by Bobrza and its two left-side affluents, i.e. Sufraganiec and Silnica. All the above-mentioned rivers originate from beyond the boundaries of the Park, and within its reach there are only their lower courses, which are at some sectors the natural boundaries of the Park (Ciupa, Suligowski 2010).

In the Landscape Park Complex of Ponidzie, the protected objects situated in Nadnidziański Landscape Park have particular natural values. There is an unusual variety of adjacent water-meadow ecosystems in Nida valley. *Przedborski Landscape Park*, which is a part of the Complex of Nadpiliczne Landscape Parks embraces the hydrographic network of Pilica river and its main affluent Czarna Włoszczowska.

Protected Landscape Areas are a supplement to the existing forms of area protection in the Świętokrzyskie Province. There were created 19 areas of this

kind, including 9 which are the buffer zones of landscape parks. From the hydrologic and hydrogeologic point of view, their most important function is the protection of underground and surface waters. The main function of *Konecko-Lopuszański Protected Landscape Area* and *Protected Landscape Area of Kamienna Valley*, embracing the north-west and northern parts of the Świętokrzyskie Province, is the protection of underground waters in GZWP 414, 415, 420 reservoirs as well as the waters flowing in Kamienna and Czarna Maleniecka catchments, and also their climate-creating and aerosanitary functions. The basic role of *Podkielecki Protected Landscape Area*, including the terrains situated mainly in the catchment of Lubrzanka river and partly Kamionka and Bobrza catchments, is the protection of underground waters in Kielce reservoir (GZWP 417) and in gałęzicko-bolechowicko-borkowski reservoir (GZWP 418). Equally important is the protection of river networks of Lubrzanka, Warkocz, Czarna Nida and Belnianki. The purpose for establishment of *Włoszczowsko-Jędrzejowski Protected Landscape Area* was i.a. the protection of the waters of Pilica and Nida catchments as well as of the main reservoir of underground waters Niecka Miechowska (GZWP 408 i 409). The area of *Chmielnicko-Szydłowski Protected Landscape Area* plays a connecting role between the Landscape Park Complex of Holy Cross Mountains and the Landscape Park Complex of Ponidzie, and its basic function is surface waters protection, mainly of Czarna Staszowska river along with Chańcza water reservoir. The ponds, frequently occurring here and the water reservoir make perfect biotops for many species of water-swamp birds.

Solecko-Pacanowski Protected Landscape Area has been established for surface waters protection of Wschodnia river and natural values of Wisła valley. There are non forest assemblages prevalent here and the edges of numerous ponds as well as river valleys are included in the meadow-swamp biota, which are breeding habitats for birds. *Miechowsko-Działoszycki Protected Landscape Area* has been created in order to recover the purity of waters of all the rivers originating from here. Essential are also the retention and protection roles for the soil, which are played by the forests occurring in the watershed of Wisła and Nida. In *Koszycko-Opatowski Landscape Protection Area*, the natural values of river valleys, which play the role of ecological corridors, are under protection.

Natura 2000. On the basis of European Union directives for: natural habitats, wild flora and fauna, and wild birds protection (*Directive...1979, 1992*) in the area of the Świętokrzyskie Province there have been designated 8 areas of the Ecological Network of Europe NATURA 2000, including 6 special areas for habitats protection – SOO (Krasna Valley, Łysogóry, Nida Refuge, Przedbórz Refuge, Suchedniów Forests, Wisła gorge in Małopolska) and 2 areas of special bird protection – OSO (Nida Valley and Wisła Refuge of Małopolska).

In April 2009, the suggestions for new special habitat protection Natura 2000 areas were submitted for endorsement, developed by province expert panels. In the Świętokrzyskie Province the list includes a few dozens of suggested items, whereof a few refer to river valley areas (Wisła, Kamienna, Czarna Maleniecka, Bobrza, Czarna Nida, Warkocz, Biała Nida, Mierzawa).

The enlargement of the area of special habitat protection – Krasna Valley is also in perspective.

Nature monuments connected directly with water are sources in the province. Particularly interesting objects are: Nowy Staw source – fracture-karst, situated in Łagów community (Wszachówka catchment), forming a pond of a diameter of about 7 m; a slope source “Malinowy Stok” in Waśniów community (Pokrzywianka catchment); “Trzcianka” source – fissure-layer-slope, along with numerous leaks and effusions, outflowing a Cambrian quartzite rubble on the southern slope of Łysogóry, at the border of Holy Cross National Park (Słupianka catchment); fissure source “Burzący Stok” of the efficiency about 1,5 dm³/s. A supplement to the list are two sinkholes in a karst valley in Łagów community (Łagowica catchment) (Pomniki...2004).

Ecological croplands are often terrains connected with hydrographic objects and very frequently occur in the discussed province. They are the remains of unaffected ecosystems of general natural significance, which can be found in the surroundings of economically utilized, changed by man terrains. They have a particular significance for the preservation of unique resources and types of environment. They include:

- mid-forest swamps, peat bogs – permanent, seasonal or periodically flooded with water, with moss, regular swamp, cotton-grass, marsh cranberry and bulrush – occurring mainly in the catchment areas of Czarna Maleniecka, Czarna Włoszczowska Bobrza i Łososina (area of communities: Daleszyce, Raków, Wąchock, Bliżyn, Zagnańsk, Miedziana Góra, Mniów),
- mid-forest, mid-field, mid-meadow ponds as well as oxbow lakes, which are places for existence, breeding and development of many species of invertebrates, amphibians, reptiles, birds and small mammals - mainly in Nida Valley, Kamienna and Czarna Staszowska basins (areas of the following communities: Pińczów, Bodzentyn, Mniów, Starachowice, Strawczyn, Chmielnik);

A nature-landscape complex assigned for the purposes of the preservation of particularly valuable fragments of water landscape, to maintain its aesthetic worths, is Łagowica Valley. Surface waters as an element of environment are a particularly precious recreational value. Their utilization is mostly restricted in the area of SPN, what results from the statutory duties of the Park. Within the reach of the remaining legally protected areas, small upland rivers, flowing down the picturesque valleys of high landscape values, make conditions beneficial for hiking development and doing angling or kayaking. Within the analyzed protected areas there are a few dozens of small, anthropogenic water reservoirs, mainly for sport and recreation purposes, retention and breeding (ponds). Larger of them, in the summer season enable swimming, angling and water tourism. There are active regional kayaking trails (e.g. Pilica, Nida below Brzegi, Kamienna below Wąchock and selected sectors of Czarna Maleniecka). In order to increase water resources, there is planned in the near future the creation of a few dozens of new small retention water reservoirs, which can be

utilized for recreational purposes: in the buffer zone of Holy Cross National Park – 8 (Fig. 3), in landscape parks – also 8, and in their buffer zones (protected landscape areas) another several objects. The planned reservoirs are also to be located in the areas within the European Ecological Network NATURA 2000. They are Bełk and Chroberz reservoirs (PLH260003 – Nida Refuge), Wiślica, Sochacka, Pińczów and the oxbow lake of Nida (PLB260001 – Nida Valley) and Szałas (PLH260010 – Suchedniów Forests). A few of the designed small retention reservoirs are within the borders of other, potential areas of the above-mentioned ecological network. Planning the changes in river valleys, e.g. building a reservoir, we should remember that potentially the environment can be affected by the reservoirs located on or along transit rivers, therefore situated much above the protected areas.

Bibliography:

1. Biernat, T. and Ciupa, T. 2008. Znaczenie turystyczne obiektów hydrograficznych w Świętokrzyskim Parku Narodowym i otuliny. In: *Wody w obszarach chronionych*. Partyka, J. and Pociask-Karteczka, J. (eds.). Wyd. IGiGP UJ, Kraków, p. 83-90.
2. Biernat, T., Ciupa, T. and Kupczyk, E. 2000. Środowisko wodne Świętokrzyskiego Parku Narodowego i jego ochrona. *Prace IG AŚ w Kielcach*, nr 5, p.110.
3. Biernat, T., Ciupa, T. and Suligowski, R. 2004. Możliwości wykorzystania wód powierzchniowych i pokrywy śnieżnej w centralnej części Gór Świętokrzyskich do regeneracji sił psychofizycznych człowieka. *Medycyna Sportowa*, vol. 20, suppl. 1, p.13-17.
4. Ciupa, T. 2009. Wpływ zagospodarowania terenu na odpływ i transport fluwialny w małych zlewniach na przykładzie Sufragańca i Silnicy (Kielce). Wyd. UJK, Kielce, p. 251.
5. Dyrektywa Rady 79/409/EWG, 1979. w sprawie ochrony dziko żyjących ptaków, z dnia 2 kwietnia 1979 r.
6. Dyrektywa Rady 92/43/EWG, 1992. w sprawie ochrony siedlisk naturalnych, dzikiej flory i fauny, z dnia 21 maja 1992 r.
7. Garus, R. 2000. Przewodnik dla turystów pieszych i zmotoryzowanych - Kielce - Sandomierz. – Góry Świętokrzyskie. Agencja JP, Kielce.
8. Kupczyk E., Biernat T., Ciupa T., Kasprzyk A. and Suligowski R. 1994. Zasoby wodne dorzecza Nidy. Wyd. WSP, Kielce.
9. Kupczyk, E., Biernat, T., Ciupa, T. and Suligowski, R. 2000. Wody powierzchniowe i podziemne. In: *Monografia Świętokrzyskiego Parku Narodowego*. Cieśliński, S., Kowalkowski, A. (eds.). Wyd. ŚPN, Bodzentyn-Kraków.
10. Łajczak, A. 2001. Źródła mineralne Niecki Nidziańskiej. *Czasop. Geogr.*, LXXII, 2.
11. Mapa Hydrograficzna w skali 1:50 000, 2003-2005, arkusze z województwa świętokrzyskiego. GUGiK, Warszawa.
12. Mapa Sozologiczna w skali 1:50 000, 2004-2005, arkusze z województwa świętokrzyskiego. GUGiK, Warszawa.
13. Pomniki przyrody Świętokrzyskich i Nadnidziańskich Parków Krajobrazowych, 2004, Zarząd Świętokrzyskich i Nadnidziańskich Parków Krajobrazowych, Kielce.
14. Sołtysik, R. 2002. Geneza mokradel Gór Świętokrzyskich i Niecki Nidziańskiej. *Prace IG AŚ w Kielcach*, nr 9, Kielce, p.124.
15. Suligowski, R., Kupczyk, E., Kasprzyk, A., and Koślacz, R. 2009. Woda w środowisku przyrodniczym i jej zagospodarowanie w województwie świętokrzyskim. *IG UJK w Kielcach*, p. 131.
16. Żurek, S. (ed.) 2001. Rezerwat torfowiskowy Białe Ługi. Wyd. Domini, Bydgoszcz, p. 268.