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Protected areas of the Świętokrzyskie Voivodeship

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Abstract

The Świętokrzyskie Voivodeship is one of the smallest provinces in Poland, but it clearly stands out with a very well-preserved natural environment. Because of exceptional features of animate and inanimate nature, large parts of the province are covered by various forms of nature protection. There is 1 national park (NP), 72 nature reserves (NRs), 9 landscape parks, 21 protected landscape areas and 40 Natura 2000 sites within the administrative borders of the province. The most unique natural features are found in the Świętokrzyski National Park (ŚNP), but the largest surface of the province is covered by protected landscape areas. Świętokrzyskie Voivodeship is the first in Poland in terms of the share of protected areas (as much as 65.2%), strongly outdistancing other Voivodeships. Small natural objects are much more numerous than large protected areas. At present, the Świętokrzyskie Voivodeship has 705 natural monuments (NMs), 114 ecological sites (ESs), 20 documentation sites (DSs) and 17 nature and landscape complexes (NLCs). Moreover, new protected areas and sites may still be established within its borders.

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1. INTRODUCTION

This article is aimed at reviewing and assessing the present state of conservation within the Świętokrzyskie Voivodeship, with the application of data on the number, surface area and distribution of particular forms of conservation. The study focuses on various forms of conservation, from areas to individual protection; it does not discuss, however, species protection.

The 10 forms of nature conservation existing in Poland can be classified into the following groups:

- aerial protection, that is, large areas: national parks (NPs), nature reserves (NRs), landscape parks, landscape protection areas and Natura 2000 sites;
- individual protection, that is, small areas or objects: natural monuments (NMs), ecological sites (ESs), documentation sites (DSs) and nature and landscape complexes (NLCs);
- plants, animals and fungi species protection.

At present, this subdivision is rather of historical significance, because, for example, the average surface area of an NLC is four times larger than that of an NR. This is the result of the erroneous interpretation of the Law

[Polish Journal of Laws 2004, no. 92, pos. 880 with changes] by county councils, which established excessively large objects of individual protection [Olaczek et al., 1996, Walczak et al., 2001, Symonides, 2008, Wiśniewski and Gwiazdowicz, 2009].

2. THE TERRITORY OF THE ŚWIĘTOKRZYSKIE VOIVODESHIP

The Świętokrzyskie Voivodeship covers an area of 11,710 km². It comprises 14 counties (13 land counties and 1 city county) and 102 communes. The number of inhabitants is 1,225,000, with an average population density of 107 inhabitants per square kilometre (the average for Poland is 123 inhabitants per square kilometre). The voivodeship is situated in the central part of the Polish Uplands. Its borders are partly artificial and partly natural – in the second case, the borders are depicted by the Vistula River from the east and the Pilica, Nida and Czarna Włoszczowska rivers from the west [Sidło et al. 2000]. According to the physical-geographical subdivision of Poland [Kondracki 2011], the Świętokrzyskie Voivodeship belongs to

- megaregion: Central Europe beyond the Carpathians
- province: Polish Uplands
- subprovince: Małopolska (Lesser Poland) Upland
- macroregions: Kielce Upland, Nida Basin and Przedbórz Upland
- mesoregions: Iłża Foothills, Gielniów Ridge, Opoczyn Hills, Suchedniów Plateau, Sandomierz Upland, Świętokrzyskie (Holy Cross) Mountains, Łopuszno Hills, Przedbórz-Małopolska Range, Szydłowskie Foothills, Połaniec Basin, Pińczów Ridge, Solec Basin, Włoszczowa Basin, Jędrzejów Plateau, Nida Valley, Wodzisław Ridge, Proszowice Plateau, Vistula Lowland, Małopolska Vistula Gorge, Miechów Upland and Lelów Ridge.

The province is characterised by a complex geological structure, with five structural units being distinguished in the area:

- Palaeozoic of the Świętokrzyskie Mountains;
- Permian-Mesozoic Margin;
- Nida Basin;
- Carpathian Foredeep;
- Lublin Basin [Wróblewski, 2000].

As the only province in Poland, the Świętokrzyskie Voivodeship is characterised by the occurrence of exposures of rocks representing all geological systems of the Palaeozoic, Mesozoic and Cenozoic. Świętokrzyskie province is characterised by the presence of highly valuable landscape features, which results from the diverse local geomorphology and rich vegetation. Because of the diverse climatic conditions, both lowland and mountain species are found in flora and fauna. There is also a great diversity of hydrological conditions, which determines the presence of steppe plant communities and peatbogs. Many plants, fungi and animal species found here are rare and protected, and some represent endemic species and post-glacial relics.

Land protection areas in the Świętokrzyskie Voivodeship include

- 1 NP,
- 72 NRs,
- 9 landscape parks,
- 21 protected landscape areas,
- 40 Natura 2000 sites.

The list of legally protected natural objects in the Świętokrzyskie Voivodeship presently includes

- 705 NMs,
- 114 ESs,
- 20 DSs,
- 17 NLCs.

3. THE ŚWIĘTOKRZYSKI NATIONAL PARK

An NP is the most advanced form of nature conservation in Poland. It has a strictly determined minimal surface area (1,000 ha), its own administration (including a Park

Service), scientific board and management plan. Three conservation categories are applied within an NP (strict, active and landscape) and the protection regimes are the strictest ones (27 restrictions).

The Świętokrzyski National Park (ŚNP) was established in 1950, and its area was expanded in 1996 to 7,637 ha. The park has a buffer zone with a surface area of 20,786 ha. Land use in the ŚNP is dominated by forests (7,187.23 ha), which form, for example, the Jodłowa Primeval Forest. It lies within the Kielce County (Bodzentyn, Bieliny, Nowa Słupia, Górnio, Masłów and Łączna communes). The most important part of the ŚNP is the highest range of the Świętokrzyskie Mountains – Łysogóry. They comprise, from the north-west, the Łysica massif (Św. Katarzyna Hill) with Łysica (612 m a.s.l.) and Agata (608 m a.s.l.) and, from the south-east, the Łysiec massif (Łysa Góra) with Łysiec (595 m a.s.l.) and Św. Krzyż (580 m a.s.l.). The ŚNP also includes part of the Klonów Range with Psarska (Stawiana; 415 m a.s.l.), Miejska (Borzęcka; 426 m a.s.l.) and Bukowa (483 m a.s.l.) hills and parts of Wilkowska and Dębniańska valleys (with Czarna Woda river valley). The ŚNP also comprises two forest enclaves detached from the main forest complex. The first is Chełmowa Góra hill (351 m a.s.l.), being a part of the Pokrzywiańskie Range, and the second is the Serwis-Dąbrowa forest. One small non-forested enclave is also a part of the ŚNP – Zapusta escarpment [Cieśliński and Kowalkowski, 2000].

The area of ŚNP stands out because of its characteristic geology and geomorphology, of which the outcrops of quartzite rocks forming boulder fields (Gołoborza) are the most peculiar. The most famous example of animate nature is Jodłowa Primeval Forest, an upland silver fir forest with an admixture of other coniferous trees.

The most valuable fragments of the ŚNP include five zones (areas) of strict protection (which comprise 38% of the surface area of the ŚNP):

- Łysica-Święty Krzyż (2,383.64 ha)
- Chełmowa Góra (13.36 ha)
- Czarny Las (26.45 ha)
- Mokry Bór (38.44 ha)
- Psarski Dół (451.15 ha).

More than two-thirds of the areas under strict and active protection in the Świętokrzyskie Voivodeship are covered by the ŚNP, whereas the remaining one-third (3,572 ha) fall to the remaining 72 NRs. It should be thus considered if just one NP in the province is enough, that is, should it be expanded or should a new park be established. At present, according to the existing Natural Environment Protection Law (Polish Journal of Laws 2004, no. 92, pos. 880 with changes), each NP is proclaimed by the regulation of the Council of Ministers. The most recently proclaimed NP (in 2001) was the Warta Mouth National Park, and the total number of NPs in Poland is now 23. Unfortunately, in the Świętokrzyskie Voivodeship, it is not possible to depict an area large enough (exceeding 1,000 ha) and valuable to become a new NP in the future. Moreover, earlier projects of expanding the ŚNP area onto the Jeleniowski Range and other neighbouring areas were

not justified enough. The main problem was high economic exploitation of these areas.

4. NATURE RESERVES

An NR differs from an NP, for example, in a much smaller surface area and lack of individual administration. The remaining features and rules of functioning are similar, for example, natural values, strict, active and landscape protection, management plan and 27 restrictions in force.

Within the boundaries of the Świętokrzyskie Voivodeship occur 72 NRs (Table 1). With regard to protection category, they are subdivided into those subject to strict and active (formerly partial) protection. With regard to the type of protection, they are subdivided into forest (25), steppe (9), peatland (2), water (1), halophyte (1), landscape (5), inanimate nature (23), flora (4) and fauna (2) reserves [Kurpios and Oleszczak, 2017].

In contrast to the restrictions for creating a new NP, there are workable perspectives of establishing further NRs in

Table 1. Nature reserves of the Świętokrzyskie Voivodeship [Gorzkiewicz, 2015]

No.	Nature reserve	Creation date	Surface area (ha)	Counties (communes)	Nature reserve type
1	2	3	4	5	7
1	Barania Góra	1994	82.09	Kielce (Strawczyn)	Forest
2	Barcza	1984	14.68	Kielce (Zagnańsk)	Inanimate nature
3	Białe Ługi	1959	408.4	Kielce (Daleszyce)	Peatland
4	Biesak-Białogon	1981	13.13	Kielce city (Kielce)	Inanimate nature
5	Bukowa Góra	1959	34.8	Włoszczowa (Kluczewsko)	Forest
6	Chelosiowa Jama	1997	25.83	Kielce (Piekoszów)	Inanimate nature
7	Ciechostowice	1953	7.46	Skarżysko-Kamienna (Bliżyn)	Forest
8	Cisów by the name of prof. Z. Czubiński	1970	40.58	Kielce (Daleszyce)	Forest
9	Dalejów	1978	87.58	Skarżysko-Kamienna (Bliżyn)	Forest
10	Dobrzyszowska Hill	1982	24.57	Kielce (Łopuszno)	Forest
11	Dziki Staw	1997	6.52	Staszów (Rytwiany)	Forest
12	Ewelinów	2006	14.89	Kielce (Łopuszno)	Landscape
13	Gaj	1959	6.03	Jędrzejów (Jędrzejów)	Flora
14	Górna Krasna	2004	413.02	Kielce (Mniów, Zagnańsk), Końskie (Stąporków)	Water
15	Grabowiec	1956	21.92	Pińczów (Pińczów)	Flora
16	Jeleniowska Hill	1997	15.56	Kielce (Nowa Słupia)	Inanimate nature
17	Kadzielnia	1962	2.4	Kielce city (Kielce)	Inanimate nature
18	Kamień Michniowski	1978	10.5	Kielce (Bodzentyn)	Forest
19	Karczówka	1953	26.55	Kielce city (Kielce)	Landscape
20	Kręgi Kamienne	1994	12.75	Kielce (Miedziana Góra)	Inanimate nature
21	Krzemionki Opatowskie	1995	378.81	Ostrowiec Świętokrzyski (Bodzechów)	Inanimate nature
22	Krzyżanowice	1954	18.0	Pińczów (Pińczów)	Steppe
23	Lisiny Bodzechowskie	1959	36.59	Ostrowiec Świętokrzyski (Bodzechów)	Forest
24	Lubcza	1959	6.5	Jędrzejów (Wodzisław)	Flora
25	Ługi	1981	88.07	Włoszczowa (Włoszczowa)	Fauna
26	Małe Gołoborze	1994	20.44	Kielce (Waśniów)	Forest
27	Miedzianka Hill	1958	25.0	Kielce (Chęciny)	Inanimate nature
28	Milechowy	1978	133.73	Kielce (Chęciny)	Forest
29	Moczydło	1995	16.21	Kielce (Piekoszów)	Inanimate nature
30	Modrzewie	1971	5.08	Ostrowiec Świętokrzyski (Bałtów)	Forest

Table 1. Nature reserves of the Świętokrzyskie Voivodeship [Gorzkiwicz, 2015]

No.	Nature reserve	Creation date	Surface area (ha)	Counties (communes)	Nature reserve type
31	Murawy Dobromierskie	1989	36.29	Włoszczowa (Kluczewsko)	Steppe
32	Oleszno	1970	31.43	Włoszczowa (Krasocin)	Forest
33	Owczary	1959	0.61	Busko-Zdrój (Busko-Zdrój)	Halophyte
34	Perzowa Góra	1995	33.08	Kielce (Strawczyn)	Landscape
35	Pieczyska	1999	40.84	Pińczów (Pińczów)	Peatland
36	Piekielko Szkuckie	1995	2.5	Końskie (Ruda Malenicka)	Inanimate nature
37	Piekło Rocks near Nieklań	1959	6.3	Końskie (Stąporków)	Inanimate nature
38	Pieprzowe Mountains	1979	18.01	Sandomierz (Dwikozy)	Steppe
39	Polana Polichno	1974	9.45	Pińczów (Pińczów)	Steppe
40	Przęślin	1960	0.72	Busko-Zdrój (Wiślica)	Steppe
41	Radomice	1953	23.09	Kielce (Morawica)	Forest
42	Raj Cave	1968	7.76	Kielce (Chęciny)	Inanimate nature
43	Rocks in Krynki	1997	25.46	Starachowice (Brody)	Inanimate nature
44	Rocks near Adamów	1995	8.98	Starachowice (Brody)	Inanimate nature
45	Rosochacz	1997	30.62	Starachowice (Brody)	Forest
46	Rzepka Hill	1981	9.09	Kielce (Chęciny)	Inanimate nature
47	Sieradowska Hill	1995	197.67	Kielce (Bodzentyn)	Forest
48	Skały Ravine	1994	3.18	Kielce (Waśniów)	Inanimate nature
49	Skorocice	1960	7.7	Busko-Zdrój (Wiślica)	Steppe
50	Skotniki Górne	1962	1.9	Busko-Zdrój (Wiślica)	Steppe
51	Skowronno	1960	1.93	Pińczów (Pińczów)	Flora
52	Słupiec	1995	8.18	Kielce (Daleszyce)	Forest
53	Sobków Hills	2005	37.18	Jędrzejów (Sobków)	Landscape
54	Sołtyków Gagates	1997	13.33	Końskie (Stąporków)	Inanimate nature
55	Sufraganiec	1961	16.71	Kielce (Miedziana Góra)	Landscape
56	Szczytniak	1994	6.03	Kielce (Waśniów)	Forest
57	Ślichowice by the name of J. Czarnocki	1952	0.55	Kielce city (Kielce)	Inanimate nature
58	Świnia Góra	1953	50.78	Skarżysko-Kamienna (Bliżyn)	Forest
59	Ulów	1995	22.17	Ostrowiec Świętokrzyski (Bałtów)	Forest
60	Vistula near Zawichost	2008	667.93	Sandomierz (Dwikozy, Zawichost)	Fauna
61	Wietrznia by the name of Z. Rubinowski	1999	17.95	Kielce city (Kielce)	Inanimate nature
62	Winiary Zagojskie	1960	4.81	Pińczów (Pińczów)	Steppe
63	Wolica	2000	2.78	Kielce (Chęciny)	Inanimate nature
64	Wroni Dół	1999	9.94	Pińczów (Michałów)	Forest
65	Wschodnie Mountains	1959	1.78	Busko-Zdroj (Wiślica)	Steppe
66	Wykus	1978	53.01	Kielce (Bodzentyn)	Forest
67	Zachelmie	2010	7.95	Kielce (Zagnańsk)	Inanimate nature
68	Zamczysko	1959	14.44	Kielce (Bieliny)	Forest
69	Zamczysko Turskie	1979	3.43	Staszów (Połaniec)	Forest
70	Zelejowa Hill	1954	67.0	Kielce (Chęciny)	Inanimate nature
71	Zielonka	1974	21.09	Sandomierz (Zawichost)	Forest
72	Żakowa Hill	1999	50.48	Kielce (Sitkówka-Nowiny)	Inanimate nature
73	Total	-	3571.82	-	-

the province. It should be emphasised, however, that the Regional Director for Nature Protection (RDNP) in Kielce uses his permissions very well, which is reflected in the establishment of the youngest NRs 'Vistula near Zawichost' (2008) and 'Zachemie' (2010). Slightly neglected is the eastern part of the voivodeship, covering the former Tarnobrzeg province (Sandomierz, Staszów and Opatów counties). Only five NRs occur in such vast area (a total of 2,511.59 km²); moreover, surprisingly, there are no nature reserves in the Opatów County (Table 1). For comparison, five NRs are located within the Kielce city limits (only 109.65 km²). Therefore, it seems appropriate for the RDNP in Kielce to establish several NRs in the eastern part of the voivodeship, because the area is characterised by much lower anthropopression compared to Kielce city.

5. LANDSCAPE PARKS

A landscape park only slightly resembles an NP. The similarities include individual administration, council board, protection schedule and large surface area. However, the differences are much more significant. The Park Service is low in number and is responsible for nature protection only to a small degree. In reality, the territory of a landscape park is controlled not by its director but, for example, by the local senior forester (State Forests) in forested areas. This results from the fact that normal economic activity, such as farming and forestry, is performed within the limits of a landscape park. In consequence, there is a lack of strict and active protection (only landscape protection is maintained), and only 14 restrictions are applied.

There are 9 landscape parks (126,775 ha) in the Świętokrzyskie Voivodeship; 8 of them are grouped in the Complex of Świętokrzyskie and Nida Region Landscape Parks. This includes five landscape parks of the Holy Cross Mountains (Suchedniów-Oblęgorek LP, Jeleniów LP, Sieradowice LP, Cisów-Orłówny LP and Chęciny-Kielce LP) and three landscape parks in the Nida Region (Nida Region LP, Szaniec LP and Kozubów LP) (Fig. 1).

1. The Przedbórz Landscape Park (PLP) (9,165 ha in the Świętokrzyskie Voivodeship, 7,388 ha in the Łódzkie Voivodeship) was established in 1988. As the only landscape park, it does not belong to the Complex of Świętokrzyskie and Nida Region Landscape Parks, being part of the Complex of Landscape Parks of the Łódzkie Voivodeship. In the Świętokrzyskie Voivodeship, it encompasses parts of the following counties: Włoszczowa (Kluczewsko and Krasocin communes), Końskie (Słupia Konecka and Fałków communes) and Kielce (Łopuszno commune). The PLP is situated at the boundary between highlands and lowlands, within the Przedbórz Upland that is part of the Central Małopolska Upland in the Małopolska Upland province [Dyduch-Falniowska et al., 1999].
2. The Cisów-Orłówny Landscape Park (Ć-OLP) (20,693 ha) was established in 1988. It lies within the Kielce County (Bieliny, Daleszyce, Górnio, Łagów, Pierzchnica and Raków communes). It is located within the

Kielce Upland, which is the eastern fragment of the Świętokrzyskie Mountains. It is bounded by the Belnianka river valley from the north-west and north, by the Łagowica river valley from the east, by the Czarna Staszowska river valley from the south and by the Pierzchnianka river valley from the south-west. The area of the Ć-OLP is cut by the Orłowińskie, Cisowskie and Ociesęckie ranges and the Bardo Hills [Świercz, 2014].

3. The Jeleniów Landscape Park (JLP) (4,218 ha) was established in 1988. It lies within the following counties: Kielce (Nowa Słupia and Łagów communes), Ostrowiec Świętokrzyski (Waśniów commune) and Opatów (Baćkowice and Sadowie communes). The park is located within the Kielce Upland in the eastern part of the Świętokrzyskie Mountains. It encompasses the Jeleniów Range with the highest peaks Jeleniowska Hill (535 m a.s.l.) and Szczytniak (554 m a.s.l.) and slightly lower Witosławska, Wesołówka and Truskolaska hills. In the south, the JLP passes into the Kielce-Łagów valley; in the north, it covers the Słupia valley, fragments of the Pokrzywiańskie Range and the Dobruchna and Pokrzywianka gorge valleys [Dyduch-Falniowska et al., 1999].
4. The Sieradowice Landscape Park (SLP) (12,252 ha) was established in 1988. It lies within the following counties: Kielce (Bodzentyn commune), Skarżysko-Kamienna (Suchedniów commune) and Starachowice (Starachowice, Pawłów and Wąchock communes). It is located within the Kielce Upland, covering the Suchedniów Plateau and the northern part of the Świętokrzyskie Mountains. It lies between the Kamienna river valley to the north and the Bodzentyn valley to the south. It is bounded by the Świślina and Pokrzywianka river valleys from the east and by the Kamionka river valley from the west. The SLP encompasses a dense forest complex of the eastern part of the Świętokrzyska Primeval Forest known as the Siekierzyńskie Forests [Sidło et al., 2000].
5. The Suchedniów-Oblęgorek Landscape Park (S-OLP) (19,895 ha) was established in 1988. It lies within the following counties: Kielce (Miedziana Góra, Mniów, Strawczyn and Zagnańsk communes), Skarżysko-Kamienna (Skarżysko-Kamienna, Bliżyn and Suchedniów communes) and Końskie (Stąporków commune). The S-OLP lies within the boundaries of the Kielce Upland. It is composed of two different areas: western (Oblęgorskie Range in the Świętokrzyskie Mountains) and eastern (Suchedniów Plateau). The S-OLP is an important hydrographic node and the source area for the Krasna, Bobrza and Kamionka rivers [Sidło et al., 2000].
6. The Chęciny-Kielce Landscape Park (Ch-KLP) (19,781 ha) was established in 1996. It lies within the following counties: Kielce (Miedziana Góra, Mniów, Strawczyn and Zagnańsk communes), Skarżysko-Kamienna (Skarżysko-Kamienna, Bliżyn and Suchedniów communes) and Końskie (Stąporków commune). The

Ch-KLP is located within the Kielce Upland, particularly in the south-western part of the Świętokrzyskie Mountains, between Łośna (Wierna Rzeką) and Bobrza rivers. The topography of the Ch-KLP includes low hill ranges separated by wide valleys [Świercz, 2010].

7. The Nida Region Landscape Park (NRLP) (22.889 ha) was established in 1986. It lies in the following counties: Kielce (Chmielnik commune), Pińczów (Pińczów, Kije, Michałów and Złota communes), Busko-Zdrój (Busko-Zdrój, Wiślica and Nowy Korczyn communes), Jędrzejów (Imielno commune) and Kazimierza Wielka (Opatowiec commune). The NRLP is located in the central and eastern part of the Nida Basin. It covers the lower fragment of Nida valley, the Solec Basin and the north-western part of the Pińczów Ridge. The most typical topography of the park is the Nida Valley with numerous meanders and oxbow lakes, which is an important ecological corridor and a habitat for wetland birds [Sołtysik, 2002, Świercz, 2012].
8. The Szaniec Landscape Park (SzLP) (11.290 ha) was established in 1986. It lies within the following counties: Kielce (Chmielnik commune), Pińczów (Pińczów and Kije communes) and Busko-Zdrój (Busko-Zdrój, Solec-Zdrój and Stopnica communes). The SzLP is located in the eastern part of the Nida Basin and encompasses the central part of the Pińczów Ridge and the south-western fragment of the Połaniec Basin (Szaniec Plateau) [Sidło et al., 2000].
9. The Kozubów Landscape Park (KLP) (6.592 ha) was established in 1986. It lies within the following counties: Pińczów (Pińczów, Michałów, Działoszyce and Złota communes) and Kazimierza Wielka (Czarnocin commune). The KLP is located in the central part of the Nida Basin, with the eastern part of the Wodzisław Ridge. The area is characterised by a varied topography shaped by a Cretaceous basement covered with loess, vast forest areas and picturesque settlements scattered among forests and fields [Sidło et al., 2000].

Landscape parks are established following a resolution of the regional assembly. At present, such protection measures occur in the central part, southern part and, partly, the western part of the Świętokrzyskie Voivodeship. Unfortunately, landscape parks are lacking in the eastern part of the province (Fig. 1). The picturesque and high diversity areas (e.g. along the Vistula River) give the possibility for establishing in this region at least one landscape park.

6. PROTECTED LANDSCAPE AREAS

Protected landscape areas (PLAs) are aimed at the conservation of landscapes with diverse ecosystems, appealing the needs related with tourism and recreation and fulfilling the role of ecological corridors. These areas do not have their own administration, board or management

plans but are subject to landscape conservation, with only five restrictions in force. Usually, they represent farmlands (rarely forests) and thus are protected to the lowest degree, but they have the largest surface area, contributing to more than two-thirds of protected surface area in Poland. At present, there are 21 PLAs in the Świętokrzyskie Voivodeship (Table 2), and this group dominates above all other conservation form in the surface area covered. In the recent years, a very reasonable approach of the Świętokrzyskie Voivodeship regional authorities was to establish PLAs in the buffer zones of all landscape parks and the NP. This enabled extending the surface of the protected areas and, additionally, intensified the conservation of existing parks, for which PLAs often act as ecological corridors.

Similar to landscape parks, PLAs are established following a resolution of the regional assembly (formerly the province governor and commune councils). It is worth emphasising that the most recent legal act (of 30 May 2017) was the resolution of the Świętokrzyskie regional assembly, which extended the surface of the Świętokrzyski PLA to encompass the area of the Nowa Słupia commune. So far, the buffer zone of the ŚNP was protected by the Świętokrzyski PLA established within the Bodzentyn (from 2007), Górnio (from 2008) and Bieliny (2008) communes. Owing to the most recent legal act, the ŚNP is now entirely surrounded by the Świętokrzyski PLA, which significantly contributes to its better conservation.

At present, the establishment of further PLAs in the Świętokrzyskie Voivodeship is possible mainly in its eastern part, particularly in the Sandomierz county. It is also clear in this case that this part of the Świętokrzyskie region is usually omitted when establishing various forms of environmental protection. This might result from objective reasons – the three easternmost counties of the Świętokrzyskie Voivodeship are mainly farmlands with very few forest enclaves.

7. NATURA 2000 SITES

The aim of establishing the Natura 2000 Network (N2000) is the preservation of endangered habitats and species of plants and animals on a European scale, as well as the protection of typical, still existing natural habitats, characteristic of nine biogeographical regions within the EU countries. There are two of these regions in Poland – continental (96% of the surface area) and alpine (4% surface area). The basis for creating the N2000 is the directive of the EEC council 79/409/EEC from 1979 on the conservation of wild birds and the directive of the EEC council 92/43/EEC from 1992 on the conservation of natural habitats, wild fauna and flora.

Natura 2000 sites are usually characterised by a large surface area and have their own management plans. They very often partly or completely coincide with areas of other forms of nature conservation, particularly NP and landscape park, and NRs. In these cases, maintenance over these areas is performed by the directors of relevant parks.

Table 2. Protected landscape areas in the Świętokrzyskie Voivodeship [Gorzkiwicz, 2015]

No.	Protected landscape area	Creation year	Surface area (ha)	Counties (communes)
1	2	3	4	5
1	Przysucha-Szydłowiec Forests PLA	1983	4.346	Końskie (Gowarczów)
2	Końskie-Łopuszno PLA	1995	98.287	Końskie (Końskie, Radoszyce, Stąporków, Słupia Konecka, Ruda Maleniecka, Smyków), Skarżysko-Kamienna (Bliżyn), Włoszczowa (Krasocin), Jędrzejów (Małogoszcz), Kielce (Piekoszów, Łopuszno, Strawczyn, Mniów)
3	Kamienna Valley PLA	1995	72.634	Ostrowiec Świętokrzyski (Bałtów, Bodzechów, Kunów, Waśniów), Starachowice (Mirzec, Pawłów, Brody, Wąchock), Skarżysko-Kamienna (Skarżysko-Kościelne, Suchedniów)
4	Kielce PLA	1995	26.583	Kielce (Piekoszów, Zagnańsk, Morawica, Miedziana Góra, Daleszyce, Górno, Łączna, Masłów), Skarżysko-Kamienna (Suchedniów)
5	Kielce city PLA	2006	3.856	Kielce city (Kielce)
6	Włoszczowa-Jędrzejów PLA	1995	70.389	Jędrzejów (Jędrzejów, Małogoszcz, Oksa, Imielno, Nagłowice, Sobków), Włoszczowa (Włoszczowa, Krasocin), Pińczów (Kije)
7	Chmielnik-Szydłów PLA	1995	60.733	Kielce (Chmielnik, Łagów, Pierzchnica, Raków, Morawica), Busko-Zdrój (Busko-Zdrój, Gnojno, Stopnica, Tuczępy), Pińczów (Kije), Staszów (Szydłów)
8	Solec-Pacanów PLA	1995	47.347	Busko-Zdrój (Busko-Zdrój, Stopnica, Tuczępy, Solec-Zdrój, Pacanów, Nowy Korczyn, Wiślica), Staszów (Oleśnica)
9	Miechów-Działoszyn PLA	1995	41.152	Pińczów (Działoszyce, Michałów), Jędrzejów (Słupia Jędrzejowska, Imielno, Sędziszów, Wodzisław)
10	Koszyce-Opatowiec PLA	1995	6.197	Kazimierza Wielka (Opatowiec)
11	Jeleniów-Staszów PLA	1996	31.524	Staszów (Rytwiany, Bogoria, Staszów, Osiek), Opatów (Baćkowice, Iwaniska), Sandomierz (Klimontów, Łoniów)
12	Suchedniów-Oblęgorek PLA	2001	25.681	Skarżysko-Kamienna (Suchedniów, Skarżysko-Kamienna, Bliżyn), Kielce (Łączna, Miedziana Góra, Strawczyn, Zagnańsk, Mniów), Końskie (Stąporków)
13	Sieradowice PLA	2001	16.236	Skarżysko-Kamienna (Suchedniów), Starachowice (Wąchock, Pawłów, Starachowice), Kielce (Bodzentyn)
14	Cisów-Orłowiny PLA	2001	25.267	Kielce (Bieliny, Daleszyce, Górno, Łagów, Pierzchnica, Raków)
15	Jeleniów PLA	2001	10.591	Kielce (Łagów, Nowa Słupia), Ostrowiec Świętokrzyski (Waśniów), Opatów (Baćkowice, Sadowie)
16	Chęciny-Kielce PLA	2001	8.290	Kielce city (Kielce), Kielce (Chęciny, Morawica, Piekoszów, Łopuszno, Sitkówka-Nowiny), Jędrzejów (Małogoszcz, Sobków)
17	Kozubów PLA	2001	6.036	Pińczów (Pińczów, Działoszyce, Michałów, Złota), Kazimierza Wielka (Czarnocin)
18	Szaniec PLA	2001	12.859	Busko-Zdrój (Busko-Zdrój, Solec-Zdrój, Stopnica), Pińczów (Kije), Kielce (Chmielnik)
19	Nida Region PLA	2001	26.011	Busko-Zdrój (Nowy Korczyn, Busko-Zdrój, Wiślica), Pińczów (Michałów, Pińczów, Kije, Złota), Jędrzejów (Imielno), Kazimierza Wielka (Opatowiec), Kielce (Chmielnik)
20	Przedbórz PLA	2002	13.044	Włoszczowa (Krasocin, Kluczewsko), Końskie (Fałków, Słupia), Kielce (Łopuszno)
21	Świętokrzyski PLA	2007	16.481	Kielce (Bieliny, Bodzentyn, Nowa Słupia, Łagów), Starachowice (Pawłów), Ostrowiec Świętokrzyski (Waśniów)
22	Total	-	623.544	-

There are 40 Natura 2000 sites in the Świętokrzyskie Voivodeship (Table 3). Only two of them were formed based on the EU Birds Directive, that is, as areas of Special Protection Areas. Most of the N2000 sites (38) were

established based on the EU Habitats Directive as Special Areas of Conservation.

Natura 2000 sites in Poland are the only protected areas established by the EU Council following an application

Table 3. Natura 2000 sites in the Świętokrzyskie Voivodeship [Gorzkiwicz, 2015]

No.	Natura 2000 site	Creation date	Surface area (ha)	Counties (communes)
1	2	3	4	5
1	Dolina Nidy PLH260001	2004	19.956	Busko-Zdrój (Busko-Zdrój, Nowy Korczyn, Wiślica), Kielce (Chęciny), Jędrzejów (Imielno), Pińczów (Kije, Michałów), Kazimierza Wielka (Opatowiec), Pińczów (Pińczów, Sobków, Złota)
2	Małopolski Przełom Wisły PLH140006	2004	6.973	Opatów (Ożarów, Tarłów)
3	Dolina Białej Nidy PLH260013	2011	5.117	Kielce (Chęciny), Jędrzejów (Nagłowice, Oksa, Sobków, Małogoszcz, Jędrzejów), Włoszczowa (Moskorzew, Radków, Włoszczowa)
4	Dolina Bobrzy PLH260014	2011	613	Kielce city (Kielce), Kielce (Miedziana Góra, Piekosów, Strawczyn)
5	Dolina Czarnej PLH260015	2011	5.781	Skarżysko-Kamienna (Bliżyn), Końskie (Radoszyce, Końskie, Stąporków, Fałków, Ruda Maleniecka, Smyków)
6	Dolina Czarnej Nidy PLH260016	2011	1.192	Kielce (Chęciny, Daleszyce, Morawica)
7	Dolina Górnej Mierzawy PLH260017	2011	912	Jędrzejów (Sędziszów)
8	Dolina Górnej Pilicy PLH260018	2011	11.183	Włoszczowa (Włoszczowa, Kluczewsko, Krasocin, Moskorzew, Secemin), Jędrzejów (Słupia Jędrzejowska)
9	Dolina Kamiennej PLH260019	2011	2.587	Ostrowiec Świętokrzyski (Ostrowiec Świętokrzyski, Bałtów, Bodzechów, Ćmielów), Opatów (Tarłów)
10	Dolina Krasnej PLH260001	2008	2.384	Skarżysko-Kamienna (Bliżyn), Końskie (Końskie, Stąporków), Kielce (Mniów, Zagnańsk)
11	Dolina Mierzawy PLH260020	2011	1.320	Pińczów (Michałów), Jędrzejów (Wodzisław)
12	Dolina Warkocza PLH260021	2011	338	Kielce (Daleszyce, Górnio)
13	Góry Pieprzowe PLH260022	2011	77	Sandomierz (Sandomierz, Dwikozy)
14	Kras Staszowski PLH260023	2011	1.744	Staszów (Staszów, Osiek, Rytwiary)
15	Krzemionki Opatowskie PLH260024	2011	691	Ostrowiec Świętokrzyski (Bałtów, Bodzechów, Ćmielów)
16	Lasy Cisowsko-Orłowińskie PLH260040	2011	10.407	Kielce (Raków, Pierzchnica, Bieliny, Daleszyce, Górnio, Łągów)
17	Lasy Skarżyskie PLH260011	2011	2.384	Skarżysko-Kamienna (Skarżysko-Kamienna, Skarżysko-Kościelne, Bliżyn)
18	Lasy Suchedniowskie PLH260010	2009	19.121	Skarżysko-Kamienna (Skarżysko-Kamienna, Bliżyn, Łączna, Suchedniów), Kielce (Strawczyn, Miedziana Góra, Mniów, Zagnańsk), Końskie (Stąporków)

Continued **Table 3.** Natura 2000 sites in the Świętokrzyskie Voivodeship [Gorzkiwicz, 2015]

No.	Natura 2000 site	Creation date	Surface area (ha)	Counties (communes)
19	Łysogóry PLH260002	2008	8.082	Kielce (Bieliny, Bodzentyn, Górnio, Nowa Słupia, Masłów), Skarżysko-Kamienna (Łączna), Starachowice (Pawłów), Ostrowiec Świętokrzyski (Waśniów)
20	Ostoja Barcza PLH260025	2011	1.524	Skarżysko-Kamienna (Łączna), Kielce (Masłów, Zagnańsk)
21	Ostoja Brzeźnicka PLH260026	2011	812	Końskie (Końskie, Gowarczów)
22	Ostoja Gaj PLH260027	2011	467	Jędrzejów (Jędrzejów)
23	Ostoja Jeleniowska PLH260028	2011	3.589	Kielce (Bieliny, Łagów, Nowa Słupia), Opatów (Baćkowice, Sadowie), Ostrowiec Świętokrzyski (Waśniów)
24	Ostoja Kozubowska PLH260029	2011	4.257	Kazimierza Wielka (Czarnocin), Pińczów (Działoszyce, Michałów, Pińczów, Złota), Busko-Zdrój (Wiślica)
25	Ostoja Nidziańska PLH260003	2008	26.516	Busko-Zdrój (Busko-Zdrój, Nowy Korczyn, Wiślica), Jędrzejów (Imielno), Pińczów (Pińczów, Michałów, Kije, Złota), Kazimierza Wielka (Opatowiec)
26	Ostoja Pomorzany PLH260030	2011	906	Końskie (Końskie, Ruda Maleniecka)
27	Ostoja Przedborska PLH260004	2008	11.605	Włoszczowa (Kluczewsko, Krasocin), Kielce (Łopuszno), Końskie (Słupia Konecka)
28	Ostoja Sieradowicka PLH260031	2011	7.847	Kielce (Bodzentyn, Suchedniów), Starachowice (Starachowice, Pawłów, Wąchock)
29	Ostoja Sobkowsko-Korytnicka PLH260032	2011	2.204	Kielce (Chęciny, Morawica), Jędrzejów (Imielno, Sobków)
30	Ostoja Stawiany PLH260033	2011	1.195	Pińczów (Pińczów, Kije), Kielce (Chmielnik)
31	Ostoja Szaniecko-Solecka PLH260034	2011	8.073	Busko-Zdrój (Busko-Zdrój, Nowy Korczyn, Pacanów, Solec-Zdrój, Stopnica, Wiślica, Gnojno), Kielce (Chmielnik)
32	Ostoja Wierzejska PLH260035	2011	225	Kielce (Masłów), Kielce city (Kielce)
33	Ostoja Żyznów PLH260036	2011	4.480	Sandomierz (Klimontów, Łoniów), Opatów (Opatów, Iwaniska, Lipnik), Staszów (Staszów, Osiek, Bogoria)
34	Przełom Lubrzanki PLH260037	2011	273	Kielce (Górnio, Masłów)
35	Przełom Wisły w Małopolsce PLH060045	2009	15.116	Sandomierz (Zawichost), Opatów (Ożarów, Tarłów)
36	Tarnobrzaska Dolina Wisły PLH180049	2011	4.060	Staszów (Połaniec, Osiek), Sandomierz (Sandomierz, Koprzywnica, Dwikozy, Łoniów, Samborzec)
37	Uroczyska Lasów Starachowickich PLH260038	2011	2.349	Starachowice (Brody, Wąchock, Mirzec)
38	Uroczysko Pięty PLH260012	2011	753	Skarżysko-Kamienna (Bliżyn), Końskie (Stąporków)
39	Wzgórza Chęcińsko-Kielce PLH260041	2011	8.617	Kielce city (Kielce), Kielce (Chęciny, Łopuszno, Piekoszków, Sitkówka-Nowiny), Włoszczowa (Krasocin), Jędrzejów (Małogoszcz, Sobków)
40	Wzgórza Kunowskie PLH260039	2011	1.869	Kielce (Bodzentyn), Starachowice (Brody, Pawłów), Ostrowiec Świętokrzyski (Bodzechów, Kunów, Waśniów)
41	Total	-	205.130	-

Table 4. Number of individuals forms of natural object conservation in the counties of the Świętokrzyskie Voivodeship [Gorzkiwicz, 2015]

County	Surface area (km ²)	Natural monuments	Ecological site	Documentation site	Nature and landscape complex
1	2	3	4	5	6
Busko-Zdrój	968.00	22	6	3	–
Jędrzejów	1256.96	89	6	–	–
Kazimierza Wielka	422.18	13	1	–	–
Kielce city	109.65	54	1	2	1
Kielce	2246.07	108	19	3	5
Końskie	1139.72	26	28	–	–
Opatów	910.90	87	2	1	–
Ostrowiec Świętokrzyski	616.78	28	–	–	1
Pińczów	612.85	37	6	2	–
Sandomierz	675.89	68	3	–	1
Skarżysko-Kamienna	395.43	45	7	1	–
Starachowice	523.41	36	7	3	–
Staszów	924.80	53	–	–	3
Włoszczowa	907.86	36	24	–	–
Total	11710.50	705	114	20	17

of the Polish Government. So far, projects establishing new N2000 sites prepared by the General Director of Environmental Protection were accepted by the EU Council, because our country dominates with natural values above most of Western European countries. This particularly applies to the Świętokrzyski region – one of the most valuable provinces in Poland in terms of conservation of the natural environment.

8. INDIVIDUAL CONSERVATION

Individual forms of conservation include single objects or small areas for which 11 restrictions are in force. They do not have a management plan or individual administration. The most common and well known are natural monuments (NM), conserving valuable specimens of animate and inanimate nature (e.g. trees, rocks, caves). ES protect the remains of natural ecosystems (e.g. individual trees on field margins), playing important local and regional functions. DSs preserve objects of inanimate nature (e.g. abandoned quarries) important for research and education. NLCs protect enclaves with high esthetical-picturesque values (e.g. alleyways, escarpments, river islands) and combine natural protection with the maintenance of cultural values. Individual objects and small areas distinctly contribute in number over forms of land protection; therefore, they cannot be listed in detail in this brief report; only their occurrence on particular counties is listed (Table 4). Similarly to that in the case of protected areas, several

objects (or practically small areas) occur in two counties – in these cases, Table 4 lists them twice.

Individual forms of conservation are established by commune councils. This is not a correct solution, because, in effect, the number of protected objects varies significantly amongst particular communes and counties (Table 4). Their establishment is the effect of the activity of local authorities, with the natural values of a given area playing a minor role. For example, Kielce city, although having a four times smaller surface area compared to the surface area of Kazimierza Wielka county, has four times more natural monuments than the latter county (Table 4), and yet it is hard to imagine that the urbanised and densely populated capital of the Świętokrzyskie Voivodeship has more such objects than the farmlands around Kazimierza Wielka. The same refers to Kielce County, which has 2 times more natural monuments than Kielce city but on a 20 times larger area (Table 4).

An interesting case occurs with the Końskie County, which has more ESs than NMs (Table 4). Establishment of ESs is an excellent initiative of commune councils, although again it is difficult to understand why there are more small areas compared to NMs, for example, trees.

9. CONCLUSION

The presented data indicate that up to 65.2% of the surface area of Świętokrzyskie Voivodeship is covered by some form of natural protection, which is the best result in the country. By comparison, protected areas in other

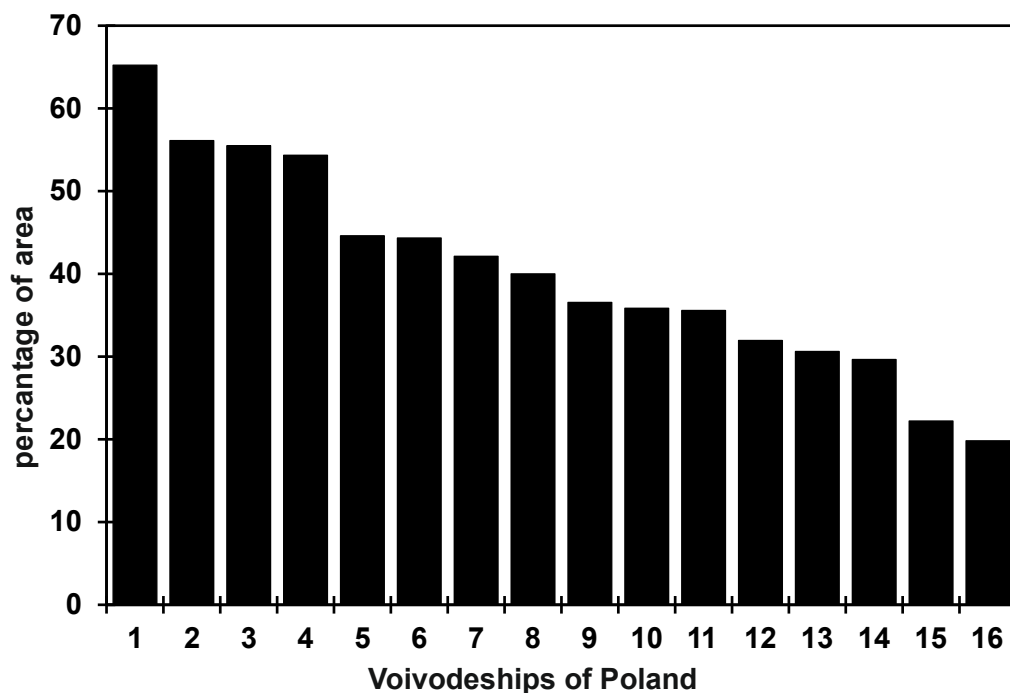


Figure 1. Percentage of protected areas in the Voivodeships of Poland: (1) Świętokrzyskie Voivodeship, (2) Warmian-Masurian Voivodeship, (3) Podkarpackie Voivodeship, (4) Lesser Poland Voivodeship, (5) West Pomeranian Voivodeship, (6) Lubusz Voivodeship, (7) Podlaskie Voivodeship, (8) Pomeranian Voivodeship, (9) Masovian Voivodeship, (10) Greater Poland Voivodeship, (11) Kuyavian-Pomeranian Voivodeship, (12) Lower Silesian Voivodeship, (13) Lublin Voivodeship, (14) Opole Voivodeship, (15) Silesian Voivodeship, (16) Łódź Voivodeship

provinces are listed as follows: Warmia-Masuria (56.1%), Podkarpackie (55.5%), Lesser Poland (54.3%), West Pomeranian (44.6%), Lubusz (44.3%), Podlasie (42.1%), Pomeranian (40.0%), Masovian (36.5%), Greater Poland (35.8%), Kuyavian-Pomeranian (35.6%), Lower Silesia (31.9%), Lublin (30.6%), Opole (29.6%), Silesian (22.2%) and Łódź (19.8%) [Fig. 1; Burdziej and Kunz, 2013] (Fig. 1). Unfortunately, this is often omitted and undervalued, although such state of conservation indicates a good condition of the environment, which is attractive for tourists who are aware of the significance of environmental protection, and those who seek quietness, peace and recreation areas in beautiful natural surroundings.

Świętokrzyskie Voivodeship is small, but because of its significant population rate and the resulting human pressure, only one NP, covering 0.65% of its area, has been established here. The area of the province covered by NRs is even smaller (only 0.31%). Landscape parks (10.83%), PLAs (53.25%) and Natura 2000 sites (17.52%) occupy a much larger area of the province. Some of these areas partly overlap, so, in total, they would account for as much as 82.56% of Świętokrzyskie province. The total surface of all protected areas could, therefore, exceed the surface of the whole province.

10. SUMMARY

Considering all 16 Polish Voivodeships, Świętokrzyskie has the largest share of areas under protection (65.2%). There is 1 NP, 72 NRs, 9 landscape parks, 21 PLAs and 40 Natura 2000 sites. There is a considerable share of protected objects, including 705 monuments of nature, 114 ESs, 20 DSs and 17 NLCs. Effective nature conservation in Świętokrzyskie province has been achieved through good cooperation amongst local administration authorities, which established new protected areas and objects. The main contributors in this process are the Regional Directorate for Environmental Protection in Kielce and the regional council of Świętokrzyskie province, whilst municipal councils show very variable levels of activity in this respect.

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