Annals of Warsaw University of Life Sciences – SGGW
Horticulture and Landscape Architecture No 42, 2021: 47–74
(Ann. Warsaw Univ. of Life Sci. – SGGW, Horticult. Landsc. Architect. 42, 2021)
DOI 10.22630/AHLA.2021.42.3

The idea of sustainable development in the Świdnik planning documents in context of the city natural system shaping principles

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Abstract: *The idea of sustainable development in the Świdnik planning documents in context of the city natural system shaping principles*. In accordance with the concept of sustainable development, contemporary trends in the development of urban environmental systems involve the following steps: indicating areas performing environmental functions, maintaining connections between them, connecting these areas with the regional ones and subsequently with national systems of ecological structures. Completing these steps is the only way to preserve the sustainability of ecological structures and their self-regulating capacities, which is pivotal for conditions in cities that tend to change dynamically. This article covers the important topic of the sustainable development of the city's natural system on the example of town Świdnik, SE Poland. In complexes of the space usage, using the Braun-Blanquet method from 1964, were made 248 floristic censuses. Studies have shown that the largest part of the study area is occupied by synanthropic of association habitats (ruderal and segetal). The greatest floristic and phytosociological diversity was observed in the industry and transport complex. In the multi-family large-panel complex, which can be described as a phytosociological poverty complex, the number of species is the lowest. Research has shown that the Świdnik area is poor in valuable and rare plant species, which is significantly influenced by the transformation of the natural environment in favour of technical elements. The most valuable phytocoenosis patches found in the areas are those from the *Molinio-Arrhenatheretea* and *Artemisietea vulgaris* classes which create colourful carpets, attractive from both the visual and environmental point of view as they constitute a useful base for pollinators. Subsequently, the results of research were compared with the currently applicable legal documents on them (local, voivodship, national). The research allows to indicate the conflicts in shaping the cultural landscape and allows to formulate suggestions for the future strategy of supporting the existing heterogeneous ecological system of the city.

Key words: spatial planning, urban habitats, urban green system, biodiversity

INTRODUCTION

The contemporary urban environment is considered a specific ecosystem, which, apart from its natural elements, also comprises the social and technical ones (Kaliszuk and Cieszewska 2000). In Polish conditions, the threats to natural elements are particularly associated with investment pressure (development of transport infrastructure and housing areas) and lack of sufficiently detailed planning documents.

There are numerous international documents emphasizing the importance of green areas which we may find

inspiring to change our way of thinking about the city's spatial structure, including its correct recognition and shaping the urban greenery system. They are: the European Landscape Convention of 2006, New Athens Charter – A New Vision for the 21st Century City of 2003 and the Leipzig Charter on Sustainable European Cities from 2007. According to all those documents while shaping urban areas economic, social and environmental priorities of sustainable development should be taken into consideration, and the starting point of any design is a good identification of resources – and their valorisation, and only on this basis should appropriate conclusions and planning decisions be made. This procedure will create conditions for increasing stability of the urban structure and its ability to self-regulate, which is very important for dynamically changing conditions in the city space. Unfortunately, when it comes to shaping the flora, it turns out that such regulations are absent from the planning documents, and if they do exist, they are rare exceptions.

The aim of the article is to check whether the applicable planning documents are based on current floristic data and whether the guidelines for building natural systems of cities are correctly formulated.

STRATEGIES FOR DEVELOPING CITY GREEN AREAS

The idea of sustainable development (Banach 2017, Wrana and Fitta-Spelina 2017) is associated not only with the improvement of people's living conditions, but above all with the protection of wealth of nature on Earth. It is a pro-ecological and pro-social activity that lets us increase the quality of the urban environment and meet the needs of the current and future generations of its users. Unfortunately, unrestrained urbanization, which is the result of rapid urban development on the one hand, and lack of effectiveness of spatial policy on the other, is not the foundation for the development of a sustainable or ecological city (Ahern 2007).

In Poland, the only planning document that can be used to comprehensively define a city's natural system is the study of conditions and directions of spatial development, according to the Environmental Protection Law of 2018 (Ustawa z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska). Very often, however, the guidelines for arranging greenery outlined in the study are not implemented in local spatial development plans, which results in taking over open areas for new investments. In recent years, the "cure" to the above problem have become the so-called green city strategies, implemented in line with the principles of sustainable development and preceded by in-depth analyses of the current condition and the potential of green areas the task of which is to meet the inhabitants' expectations. A sample document covering the program of spatial and aesthetic development of green and recreation areas for a given area which would allow for their proper management – from the stage of planning through design, equipment and care – is the Green Strategy for the City of Gdynia (Kowalewska 2011, 2012). The strategy precedes investment planning, which allows continuous monitoring and verification of adopted assumptions and avoiding ill-consid-

ered decisions. Another legal document adopted by the resolution of the City Council is the Strategy for the Development of Green Areas of the City of Bydgoszcz from 2011 (Bukowska 2011). This study is consistent with local and supra-local documents and legal acts. It serves to introduce spatial plan, harmonize the development of the city with the conditions of the natural, cultural and landscape environment, but above all to improve the quality of life in the city and increase its aesthetic values. It has a forward-looking nature, which will ultimately introduce a long-term, systematic way of managing green areas in the city. In the capital city an interesting strategic document in the field of environmental protection is the Warsaw Green Standards of 2016 (Borowski et al. 2016). According to the study, based on the experience of a wide group of specialists, the output of urban greenery shaping should be the abiotic factors, and it is only on their basis that the selection of appropriate plant material should be made, followed by decisions concerning its maintenance and care.

International experience shows that special attention is paid to ecology in the city, i.e. ensuring high quality of individual elements of the environment within the city limits (air, water, soil, greenery). In the United States among modern forms of greenery the most popular ones are green roofs, vertical gardens, rain gardens or flower meadows, in all of which nursery plants are selected in accordance with the habitat conditions, and vegetable gardens reactivating urban agriculture. In public areas, recycled materials are used to build elements of small architecture, while composters are placed in the area of home gardens. It is also recommended to use the kind of fertilizers that meet the requirements of organic production (Brooklyn Grange n.d., Greenroofs.com 2019, United Nations n.d.). In France (Gnich 2015), Lebanon or Canada (4Nature System n.d., Młynarski 2013) an innovative alternative for the typical urban greenery are the roofs of commercial real estate buildings, which according to the applicable laws have to be covered with plant material or solar panels. The policy of green roofs is the response of city leaders to the appropriation of green areas for buildings, being at the same time the fight against the urban heat island as well as the promotion of eco-construction principles. Currently the so-called ecological and spatial indicators are used in Europe and around the world in order to limit the negative impact of new investments on the natural environment and to ensure proper living conditions for inhabitants of urbanised areas. Examples of such indicators are: Biotop Area Factor (BAF, de. *Biotopflächenfaktors* – BFF) in Berlin, Green Space Factor (GF) in Malmö, Greenery Provision (GnP) in Singapore, Seattle Green Factor (SGF) in Seattle or Active Biological Area (ABA, pl. *teren biologicznie czynny* – TBC) in Poland (Giedych 2015).

MATERIAL AND METHODS

In order to recognise the current situation of shaping the natural systems of medium-sized towns in Polish conditions, the town of Świdnik within its current administrative boundaries was investigated. The research area is a "satelite town" for the capital of the

Lublin voivodship, referring to the idea of the industrial city of Tony Garnier. It is located in the immediate vicinity of the railway line, and its urban layout is based on the principle of functional zoning (Böhm 2006).

Świdnik is located in the south-eastern part of Poland (51°13' N and 22°41' E; 203 m a.s.l.). It covers an area of 20.75 km^2 and presently has 71,840 inhabitants. The climate in the city is moderate with a mean annual temperature of 7.4°C; July is the warmest month (18.7°C), and January the coldest (−3.0°C). The growing season lasts on average 212–216 days. The annual precipitation is 553 mm with the highest monthly noted in July (77 mm) and the lowest values recorded in January (30 mm) (Pietruszka et al. 2002, Kożuchowski 2003, Maćków 2005, Gmina miejska Świdnik 2019).

Analyses of source materials, i.e. archival, cartographic, iconographic and planning materials, showed lack of current data on green resources and a very modest recognition of the town's natural system. Following the

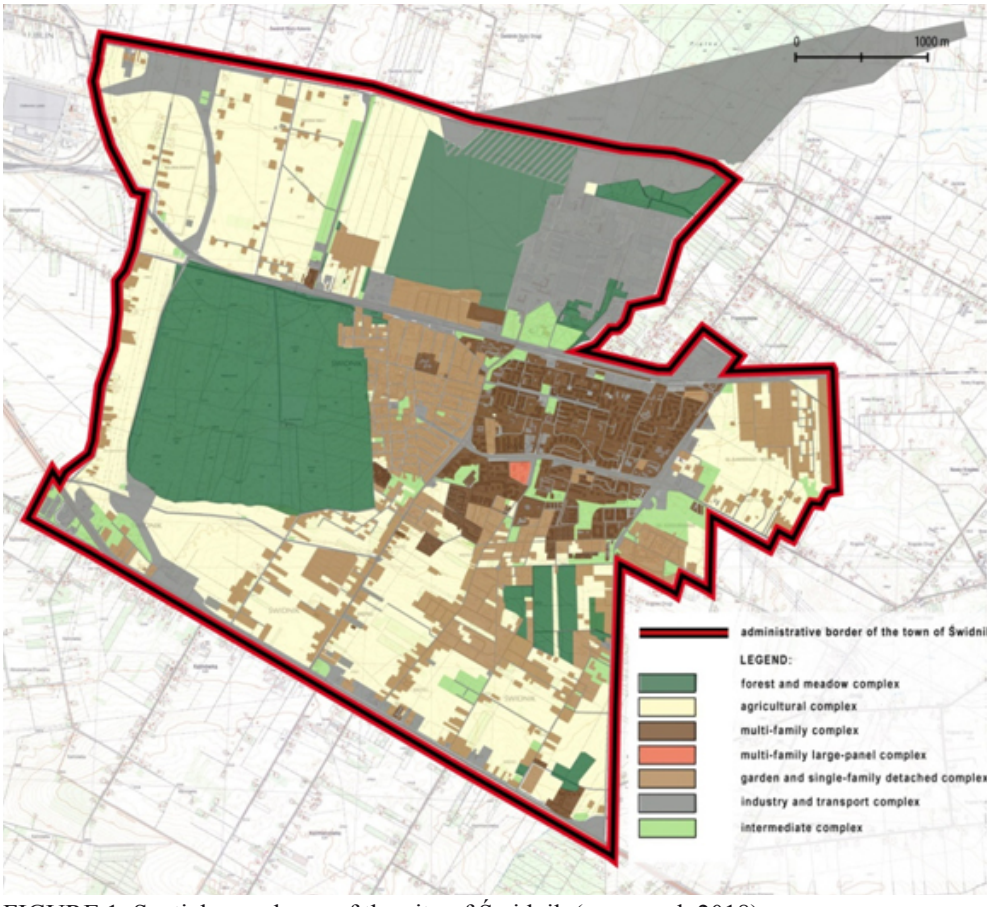


FIGURE 1. Spatial complexes of the city of Świdnik (own work 2018)

assumption that plant communities form spatial complexes the occurrence of which is determined by the type of housing and land use, after Jackowiak (1990) the city area was divided into seven complexes of the space usage (Fig. 1). Then, in individual types of complexes, using the Braun-Blanquet method (1964), 248 floristic censuses were made. The researches was carried out in 2015–2016, in the period from May to September. The types of phytocoenoses were defined according to the Matuszkiewicz's nomenclature (2008). The names of the species were provided by Mirek and colleagues (2002).

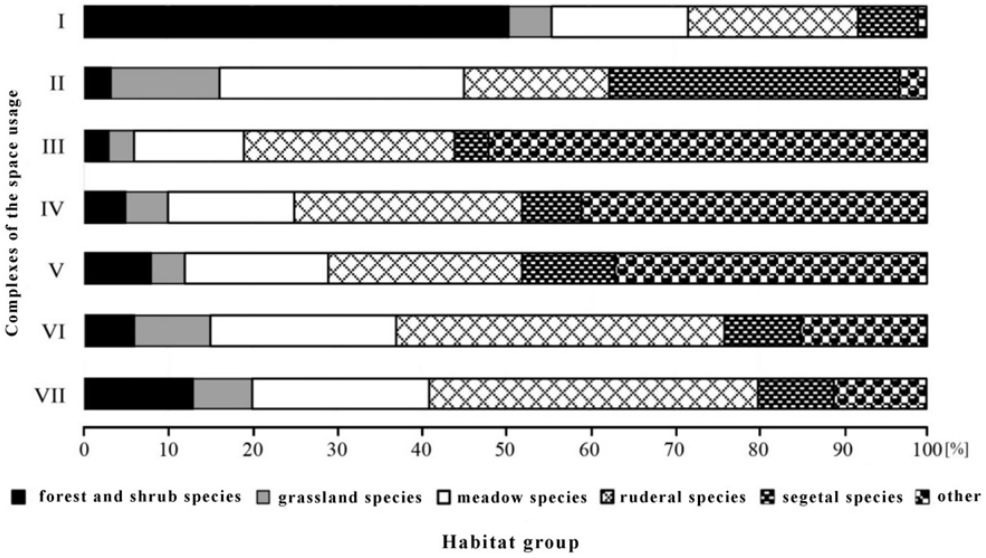
The results of the research carried out for Świdnik were compared with the currently applicable legal documents (local, voivodship, national and European Union). Then a number of local legal documents were analysed, namely: the Local land-use plans developed by Mącik and colleagues from 2003, 2005, 2011 and Gruszecka and colleagues 2014, 2015, subsequent editions of the study – Mącik and colleagues from 2005 and Gruszecka and colleagues from 2014, Lublin Voivodship Environmental Protection Plan for the years 2012–2015 with a perspective until 2019 (Kobiela et al. 2012), Environmental Protection Programme for the Municipality of Świdnik for the Years 2014–2017 with a perspective until 2021 (Dąbkowska and Majka-Smuszkiewicz 2013) and studies prepared by the Regional Directorate for Environmental Protection in Lublin (Męczyński et al. 2009) and the State Forests of the Świdnik Forest District (Kot 2018).

RESULTS AND DISCUSSION

Analysis of the plant cover showed that in general Świdnik lacks places of exceptional natural values, standing out for richness of their plant cover. What was distinguished were 34 plant communities, representing 9 phytosociological classes, 15 orders and 18 alliances (Appendix 1). Detailed studies have shown that by far the largest part of the study area is occupied by synanthropic (ruderal and segetal) habitats, very unstable and changeable in time, characterised by spatial variability (Fig. 2).

The phytocoenoses identified in the complexes are formed by a total of 350 plant species belonging to 63 botanical families, representing 219 genera (Appendix 2). The most valuable phytocoenosis patches found in the areas are those from the *Molinio-Arrhenatheretea* (Fig. 3) and *Artemisietea vulgaris* classes (Fig. 4) which create colourful carpets, attractive from both the visual and environmental point of view as they constitute a useful base for pollinators. The greatest floristic and phytosociological diversity was observed in the industry and transport complex (Fig. 5), which is a kind of ecological corridor. It should be considered valuable since it provides adequate natural connectivity and creates refuges for many groups of species, including beneficial taxa.

The Świdnik area is poor in valuable and rare plant species, which is significantly influenced by the transformation of the natural environment in favour of technical elements (roads – impermeable surfaces, areas of decorative greenery foreign / invasive vegetation). During the field tests no species were found to



The spatial complexes of the city: I – forest and meadow complex, II – agricultural complex, III – multi-family complex, IV – multi-family large-panel complex, V – garden and single-family detached complex, VI – industry and transport complex, VII – intermediate complex

FIGURE 2. Percentage share of species from individual habitat groups (own work 2018)

FIGURE 3. The *Molinio-Arrhenatheretea* class. *Lolio-Polygonetum arenastri* patch in the industry and transport complex (photo by N. Kot 2016)

FIGURE 4. The *Artemisietea vulgaris* class. *Echio-Melilotetum* patch on a sandy-gravel inter track space (photo by N. Kot 2016)

be subject to strict or partial legal protection. Only in the industry and transport complex, rare foreign elements were found, i.e. *Amaranthus albus*, *Asperugo procumbens* and *Anagallis arvensis* while in the area of the city invasive species were often found, considered one of the major threats to the biodiversity of the region and the country, i.e. *Acer negundo*, *Amaranthus retroflexus*, *Aster*

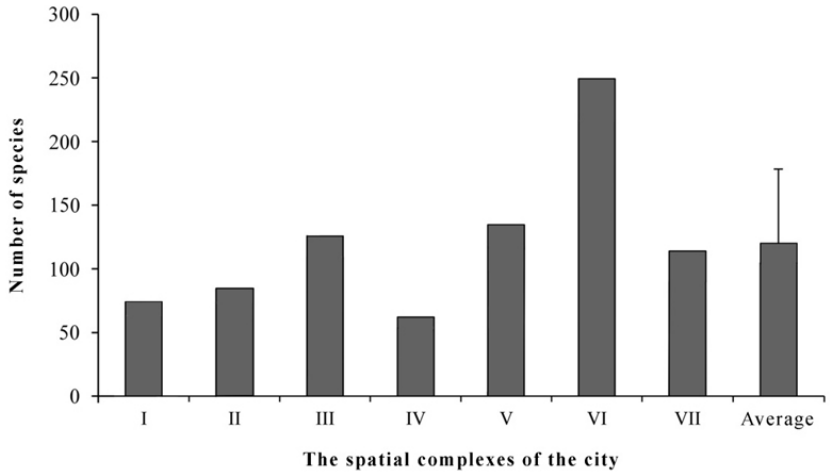


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FIGURE 5. Quantitative share of species in the spatial complexes of Świdnik (own work 2018)

×*salignus*, *Bunias orientalis*, *Conyza canadensis*, *Echinocystis lobata*, *Eragrostis minor*, *Erigeron annuus*, *Galinsoga ciliata*, *G. parviflora*, *Helianthus tuberosus*, *Impatiens parviflora*, *Juglans regia*, *Juncus tenuis*, *Oxalis fontana*, *Padus serotina*, *Parthenocissus inserta*, *Quercus rubra*, *Rhus typhina*, *Robinia pseudocacia*, *Rosa rugosa*, *Rumex confertus*, *Setaria pumila*, *S. virid*, *Solidago gigantea.*

In the administrative borders of the city there are only two ecological patches, i.e. the Rejkowizna Forest and the Bażantarnia (in the south-eastern and western parts) which play an important role as supplying areas, and as such should be covered by a special form of protection, while a section of the Szpitalny Forest, situated within the area of the airport is merely an ecological island (Fig. 6). The Bażantarnia Forest is a private forest, which from the north and south is adjacent to the areas intended for single-family housing with the approval of some service buildings, and from the east and west with scarce single-family housing. In this case it is difficult to consider its inclusion in the ecological system of protected areas, as the authors of the study propose (Mącik et al. 2005a). The reason is that the network of corridors between the residential buildings is too narrow. On the other hand, the chances of buying it by the town authorities are low. However, authors of the study (2014a) propose transformation of the Bażantarnia into a city park and connecting it with neighbouring open and forest areas, which in their opinion, will allow for maintaining the right level of microclimatic conditions and limiting the division of forest area for development.

Within the town's administrative boundaries, there are no natural ecological corridors on which biodiversity depends. The dry valley area with a latitudinal course (a relic of a historic green wedge, and today only a lowering of the area) is primarily hull communities, slightly covered with trees and shrubs. This structure, while biologically active for the water cycle, does not have an ecological and climatic function, due to the lack of adequate stacking of plants and too many ecological barriers.

Authors of subsequent editions of the study from 2005 and 2014 claim that shaping the functional and spatial structure, as well as protecting the most valuable natural assets is in line with the requirements of protecting and shaping the natural environment. The authors proves that Świdnik has the high percentage of biologically active areas. However, research proves that the city's natural value is low. Of course, the percentage of undeveloped area in relation to the built-up area is undeniably important, however it is not only the height of the percentage that is important here, but above all it is the quality of biologically active areas,

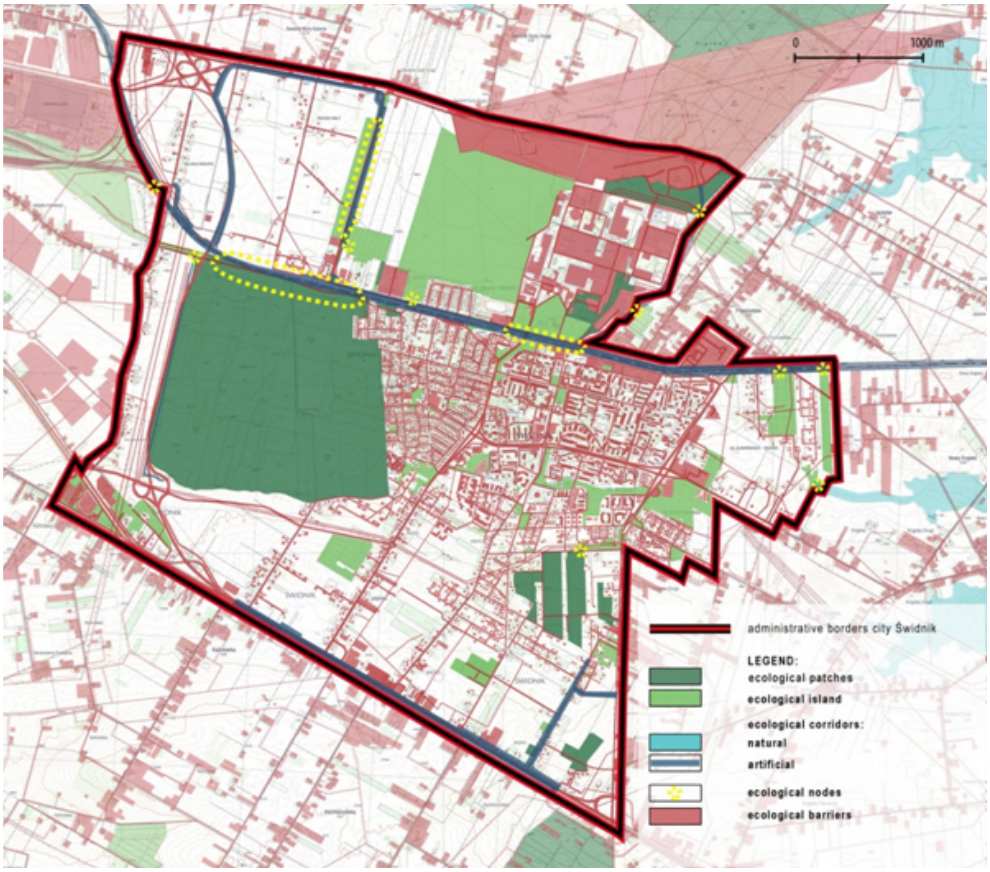

FIGURE 6. Analysis of the environmental structures of Świdnik (own work 2018)

with two key factors: species selection and vegetation spatial forms. Authors of the study (2014a) indicated that there are six strictly protected species in the Świdnik area (*Aruncus dioicus*, *Daphne mezereum*, *Digitalis grandiflora*, *Epipactis helleborine*, *Gladiolus imbricatus*, *Phallus impudicus*), six species under partial protection (*Asarum europaeum*, *Convallaria majalis*, *Galium odoratum*, *Primula veris*, *Viburnum opulus*) and five species considered rare (*Echinops sphaerocephalus*, *Inula helenium*, *Melittis melissophyllum*, *Sambucus racemosa*, *Senecio nemorensis*). Dąbkowska and Majka-Smuszkiewicz (2013) reported that within the Świdnik commune borders there are xerothermic habitat plants, i.e.: *Dianthus carthusianorum*, *Senecio nemorensis*, *Thymus pulegioides*, and meadow habitat plants, i.e.: *Menyanthes trifoliata*, *Parnassia palustris* – both groups of which the authors incorrectly attributed to the habitat type of low sedge swampy meadow communities. On the other hand, Kot (2018) indicated that there are two protected species, i.e. *Aruncus sylvestris* and *Daphne mezereum*, in the Rejkowizna Forest, and Męczyński et al. (2009) indicated presence of *Centaurium erythraea* at the territory of the airport. These discrepancies and mistaken names in current planning documents prove that they are based on outdated floristic data (they are copies of previous editions) and are not implemented by interdisciplinary teams.

The current system Świdnik green areas is shaped as green patches. In the 1950s, a wedge system was introduced in the town (Fig. 7) but the area depletion of the ecological corridor – the dry valley – points out to the lack of a comprehensive, long-term approach of planners to shaping the town's greenery. The authors of both editions of the study (Mącik et al. 2005a, Gruszecka et al. 2014a) included

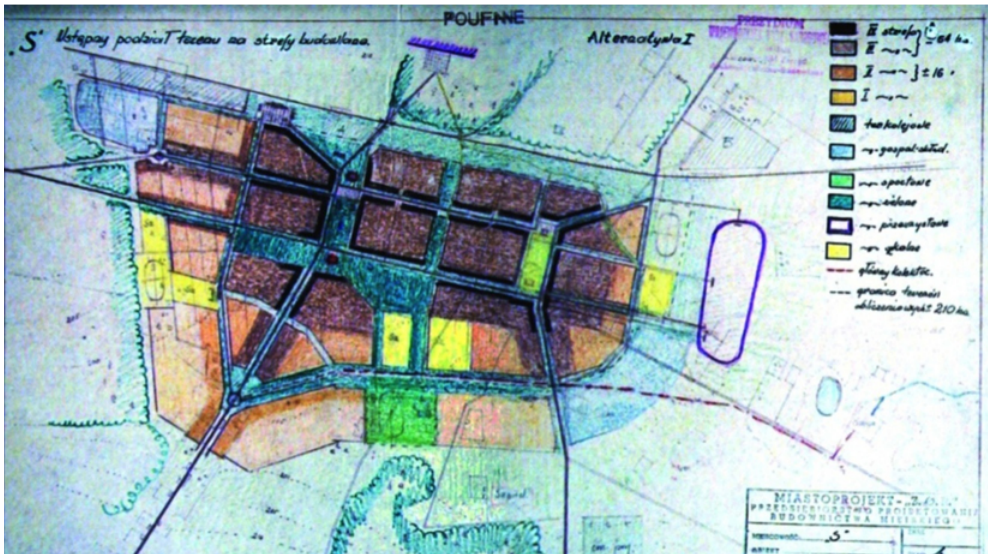

FIGURE 7. The plan of Świdnik with the planned greenery connecting three forest patches (Roman 1953)

the following forest determinants of the Świdnik natural system: the Rejkowizna Forest, the Szpitalny Park Area and the Bażantarnia, as well as the dry valley – thus determining the natural system of the city of Świdnik as a patch- and wedge-shaped system. According to the authors, the dry valley performs ecological, aesthetic and landscape functions in the city, and its inclusion in the Świdnik Ecological System of Protected Areas, which is a planning form of protecting the most valuable components of the natural environment, connects the Rejkowizna Forest with the valley of the Stawek river (located east of the town border), thus affecting maintenance of direct links with external areas. Additionally Gruszecka et al. (2014a) pointed out that in 2011 arable land in the city ceased to be protected, yet this decision stemmed from the need to allocate them for non-agricultural purposes allowing for the spatial development of the city.

The investments implemented in the area in the last decade i.e. the construction of Lublin Airport, housing estates, national roads as well as municipal and access roads to the airport, have reduced the area of Świdnik forests and croplands, thus weakening the spatial links between the town's green and suburban areas. The decision on the location of the airport in the area of Świdnik emphasised the "aviation nature" of the town, however it has proved that the airport degraded the town's most valuable asset – the forest areas, interrupting connectivity between specific forest patches and thus impoverishing their biodiversity. Clearing 142 ha of the forest area, including 21.9 ha located in the administrative borders of the town, undeniably proves improper management of urban areas, lack of effectiveness of local environmental law and ecological education of the community. It should also be noted that compensatory measures (in the form of afforestation) mainly covered the areas along the middle Bug river (restoration of alluvial forests – 50 ha) and the municipalities of Lublin (51.5 ha), Wólka (40.5 ha), Świdnik – 2 ha land from a former municipal waste dump. According to the opinions of Dąbkowska and Majka-Smuszkiewicz (2013) and Kobiela with colleagues (2012), there were no areas in the immediate vicinity of the airport, hence the compensatory measures mainly covered the area of the Lublin voivodship away from Świdnik. This proves, though, that the compensatory measures were actually intended for the residents of Lublin and the entire Lublin Province, and not for the residents of Świdnik itself.

The area of Świdnik is not covered by the overall local spatial development plan (Mącik et al. 2003, 2005b, 2011, Gruszecka et al. 2014b, 2015), by that its arrangements only to a small extent regulate the way of shaping the town natural landscape. In the analysed planning documents, the term sustainable development is used very often, which should be synonymous with the fact that all decisions regarding spatial planning should strive for rational management of natural resources. The results of the research prove that the area of open spaces (croplands) is rapidly decreasing for the sake of multi-family and single--family housing. This is due to the fact that the authors of the documents seem to primarily plan the development of residential, production and service func-

tions (with a special economic zone and consideration of the existing Regional Industrial Park) as well as tourism. However, there is no respect for the natural environment, and thus ensuring the appropriate life quality for the current and future city residents.

CONCLUSIONS

Contemporary trends in shaping and developing urban natural systems, in line with sustainable ones, should consist in identifying areas fulfilling environmental functions, maintaining connectivity between them and next linking them with regional and then national systems of ecological structures. Only such treatments will allow for maintaining stability of ecological structures and their ability to self-regulate, which is very important for usually dynamically changing conditions in cities and towns.

The conducted research confirmed that on one hand, the binding planning documents are based on outdated floristic data, on the other hand, that they lack correctly formulated recommendations for shaping plant cover as well as guidelines for building natural structures. Hence, only detailed floristic research can be the basis for building a program of shaping a professionally planned urban green system, a green strategy which would be compatible with the town's habitat, biocenotic and cultural conditions. The strategy should combine valuable and biologically active areas, protect the values and functions of ecosystems, maintain biodiversity at the correct level, and provide many benefits to people, but also to flora and fauna occurring in the studied area.

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APPENDIX 1

Systematic list of plant communities and alliances

Class: *Bidentea tripartiti* R. Tx., Lohm. et Prsg 1950

Order: *Bidentalia tripartiti* Br.-Bl. et R. Tx. 1943

Alliance: *Bidention tripartiti* Nordh. 1940

1. *Polygono-Bidentetum* (Koch 1926) Lohm. 1950

Class: *Molinio-Arrhenatheretea* R. Tx. 1937

Order: *Arrhenatheretalia* Pawł. 1928

Alliance: *Arrhenatherion elatioris* (Br.-Bl. 1925) Koch 1926

2. *Arrhenatheretum elatioris* Br.-Bl. ex Scherr. 1925

Order: *Plantaginetalia majoris* R. Tx. (1943) 1950

Alliance: *Polygonion avivularis* Br.-Bl. 1931 ex Aich. 1933

3. *Lolio-Polygonetum arenastri* Br.-Bl. 1930 em. Lohm. 1975
4. *Juncetum tenuis* (Diem., Siss. et Westh. 1940) Schwick. 1944 em. R. Tx. 1950

Class: *Agropyretea intermedio-repentis* (Oberd. et al. 1967) Muller et Gors 1969

Order: *Agropyretalia intermedio-repentis* (Oberd. et al. 1967) Muller et Gors 1969

Alliance: *Convolvulo-Agropyrion repentis* Gors 1966

5. Community with *Bromus inermis*

Class: *Stellarietea mediae* R. Tx., Lohm. et Prsg 1950

Order: *Centauretalia cyani* R. Tx. 1950

Alliance: *Aperion spicae-venti* R. Tx. et J. Tx. 1960

Suballiance: *Aphanenion arvensis* R. Tx. et J. Tx. 1960

6. *Vicietum tetraspermae* (Krusem. et Vlieg. 1939) Kornaś 1950
7. *Papaveretum argemones* (Libb. 1932) Krusem. et Vlieg. 1939
8. Community with *Papaver rhoeum*

Order: *Polygono-Chenopodietalia* (R. Tx. et Lohm. 1950) J. Tx. 1961

Alliance: *Panico-Setarion* Siss. 1946

9. *Echinochloo-Setarietum* Krusem. et Vlieg. (1939)1940
10. *Digitarietum ischaemi* R. Tx. et Prsg (1942) 1950

Alliance: *Polygono-Chenopodion* Siss. 1946

11. *Galinsogo-Setarietum* (R. Tx. et Beck. 1942) R. Tx. 1950

Order: *Sisymbrietalia* J. Tx. 1961

Alliance: *Sisymbrion officinalis* R. Tx., Lohm, Prsg 1950

12. *Sisymbrietum sophiae* Kreh. 1935
13. *Sisimbrietum loeselli* Gutte 1969
14. *Corispermo-Brometum tectorum* Krusem., Siss. et Westh. 1946
15. *Artiplicetum tataricae* Ubriszy 1949
16. *Bunietum orientalis* Fijałk. 1978
17. *Chenopodietum stricti* Oberd.1957

Class: *Artemisietea vulgaris* Lohm., Prsg et R. Tx. in R. Tx. 1950

Order: *Onopordetalia acanthi* Br.-Bl. et R. Tx. 1943 em. Görs 1966

Alliance: *Dauco-Melilotenion* Görs 1966

18. *Artemisio-Tanacetum vulgaris* Br.-Bl. 1931 corr. 1949
19. *Berteroëtum incanae* Siss. et Tideman in Siss. 1950
20. *Echio-Melilotetum* R. Tx. 1947

Order: *Artemisietalia vulgaris* Lohm. in R. Tx. 1947

Alliance: *Arction lappae* R. Tx. 1937 em. 1950

21. *Arctio-Artemisietum vulgaris* Oberd. ex Seybold et Müller 1972
22. *Helianthemum tuberosi* (Moor 1958) Lohm. ap. Oberd. 1957

Order: *Glechometalia hederaceae* R. Tx. in R. Tx. et Brun-Hool 1975

Alliance: *Aegopodion podagrariae* R. Tx. 1967

23. *Anthrisetum sylvestris* Hadać 1978
24. *Urtico-Aegopodietum podagrariae* (R. Tx. 1936 n. n.) em. Dierschke 1974

Alliance: *Alliarion* Oberd. (1957) 1962

25. *Torilidetum japonicae* Lohm. in Oberd. et al. 1967 ex Görs et Müll. 1969
26. *Reynoutrietum japonicae* (Morr. 1958, Görs 1975 et al.) Święs. 1994

Order: *Convolvuletalia sepium* R. Tx. 1950

Alliance: *Senecion fluviatilis* R. Tx. (1947) 1950 em. R. Tx. 1967

27. *Rudbeckio-Solidaginetum* R. Tx. et Raabe 1950

Class: *Trifolio-Geranietea sanguinei* Th. Müller 1962

Order: *Origanetalia* Th. Müller 1962

Alliance: *Trifolion medii* Th. Müller 1961

28. Community with *Trifolium medium*

Class: *Epilobietea angustifolii* R. Tx. et Prsg 1950

Order: *Atropetalia* Vlieg. 1937

Alliance: *Epilobion angustifolii* (Rübel 1933) Soó 1933

29. *Calamagrostietum epigeji* Juraszek 1928

Alliance: *Sambuco-Salicion* R. Tx. et Neum. 1950

30. *Rubetum idaei* Pfeiff. 1936 em. Oberd. 1937
31. *Sambucetum nigrae* Oberd. 1973

Class: *Rhamno-Prunetea* Rivas Goday et Garb. 1961

Order: *Prunetalia spinosae* R. Tx. 1952

Alliance: *Pruno-Rubion fruticosi* R. Tx. 1952 corr. Doing 1962

32. *Rubo fruticosi-Prunetum spinosae* Web. 1974 n.inv. Wittig 1976

Class: *Querco-Fagetea* Br.-Bl. et Vlieger 1937

Order: *Fagetalia silvaticae* Pawł. 1928

Alliance: *Carpinion betuli* Oberd. 1953

33. *Tilio-Carpinetum* Traczyk 1962

APPENDIX 2

Alphabetical list and ecological characteristic of plants in the studied spatial complexes of the city of Świdnik (own work 2018)

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Acer campestre	*Asteraceae*	10	x					x	x
Acer negundo !	*Asteraceae*	8	x		x	x	x	x	x
Acer platanoides	*Sapindaceae*	10	x		x	x	x	x	x
Acer pseudoplatanus	*Sapindaceae*	10	x		x			x	x
Achillea millefolium	*Asteraceae*	3			x	x	x	x	x
Aegopodium podagraria	*Apiaceae*	9	x				x	x	x
Aesculus hippocastanum	*Hippocastanaceae*	13			x	x	x	x	x
Agrimonia eupatoria	*Rosaceae*	5	x	x				x	
Agrostis capillaris	*Poaceae*	4			x		x	x	
Agrostis gigantea	*Poaceae*	3						x	
Alliaria petiolata	*Brassicaceae*	10	x					x	x
Allium oleraceum	*Alliaceae*	4						x	
Alnus glutinosa	*Betulaceae*	9	x					x	x
Alopecurus geniculatus	*Poaceae*	3			x			x	
Alopecurus pratensis	*Poaceae*	3		x				x	
Amaranthus albus	*Amaranthaceae*	12						x	
Amaranthus retroflexus !	*Amaranthaceae*	10		x	x	x		x	
Anagallis arvensis	*Primulaceae*	11			x		x	x	
Anchusa arvensis	*Boraginaceae*	11					x	x	
Anchusa officinalis	*Boraginaceae*	12					x	x	
Anemone nemorosa	*Ranunculaceae*	10	x						
Anthemis arvensis	*Asteraceae*	11						x	
Anthriscus sylvestris	*Apiaceae*	10		x				x	x
Anthyllis vulneraria	*Fabaceae*	4						x	x
Apera spica-venti	*Poaceae*	11		x	x			x	
Arctium lappa	*Asteraceae*	12	x		x	x	x	x	x

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Arctium tomentosum	*Asteraceae*	12		x				x	
Arenaria serpyllifolia	*Caryophyllaceae*	4						x	
Armoracia rusticana	*Brassicaceae*	12		x				x	
Arrhenatherum elatius	*Poaceae*	3				x	x	x	x
Artemisia absinthium	*Asteraceae*	12			x		x	x	
Artemisia campestris	*Asteraceae*	4	x		x			x	
Artemisia vulgaris	*Asteraceae*	10			x		x	x	x
Asperugo procumbens	*Boraginaceae*	12						x	
Aster ×salignus !	*Asteraceae*	8						x	x
Astragalus glycyphyllos	*Fabaceae*	5	x						
Atriplex patula	*Chenopodiaceae*	12				x		x	
Atriplex prostrata	*Chenopodiaceae*	1						x	
Atriplex tatarica	*Chenopodiaceae*	13						x	
Avena fatua	*Poaceae*	11		x				x	
Ballota nigra	*Lamiaceae*	12	x					x	x
Bellis perennis	*Asteraceae*	3		x	x		x	x	
Berberis vulgaris	*Berberidaceae*	4	x		x			x	
Berteroa incana	*Brassicaceae*	12			x	x	x	x	x
Betula pendula	*Betulaceae*	7	x			x	x	x	x
Bidens tripartita	*Asteraceae*	1		x				x	
Brachypodium sylvaticum	*Poaceae*	10	x						
Brassica napus	*Brassicaceae*	13					x	x	x
Briza media	*Poaceae*	3	x	x				x	
Bromus hordeaceus	*Poaceae*	12						x	
Bromus inermis	*Poaceae*	4		x	x	x	x	x	x
Bromus japonicus	*Poaceae*	13			x			x	
Bromus tectorum	*Poaceae*	12					x	x	x
Bunias orientalis !	*Brassicaceae*	12		x				x	

Calamagrostis epigejos	*Poaceae*	6	x					x	x
Calamagrostis canescens	*Poaceae*	9	x					x	
Caltha palustris	*Ranunculaceae*	3		x					
Calystegia sepium	*Convolvulaceae*	8	x			x		x	x
Campanula patula	*Campanulaceae*	3	x					x	
Campanula rapunculoides	*Campanulaceae*	5	x	x				x	
Campanula trachelium	*Campanulaceae*	10	x					x	
Capsella bursa-pastoris	*Brassicaceae*	12	x	x	x	x	x	x	x
Caragana arborescens	*Fabaceae*	13			x			x	
Cardamine pratensis	*Brassicaceae*	2	x			x			
Cardaminopsis arenosa	*Brassicaceae*	3	x					x	
Cardaria draba	*Brassicaceae*	12				x		x	
Carduus crispus	*Asteraceae*	12			x			x	
Carex hirta	*Cyperaceae*	12	x	x	x	x		x	
Carex praecox	*Cyperaceae*	4						x	
Carex spicata	*Cyperaceae*	6	x						
Carpinus betulus	*Corylaceae*	10	x					x	
Centaurea cyanus	*Asteraceae*	11		x			x	x	
Centaurea jaceae	*Asteraceae*	3			x		x	x	
Centaurea pannonica	*Asteraceae*	3			x	x		x	x
Centaurea scabiosa	*Asteraceae*	4							x
Centaurea stoebe	*Asteraceae*	4						x	
Cerastium arvense	*Caryophyllaceae*	4		x					x
Cerastium holosteoides	*Caryophyllaceae*	3						x	x
Chamaenerion angustifolia	*Onagraceae*	6	x		x		x	x	
Chamomilla recutita	*Asteraceae*	11			x			x	
Chamomilla suaveolens	*Asteraceae*	12			x				x
Chelidonium majus	*Papaveraceae*	10	x		x		x	x	
Chenopodium album	*Chenopodiaceae*	11		x	x	x	x	x	x
Chenopodium glaucum	*Chenopodiaceae*	12					x	x	

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Chenopodium strictum	*Chenopodiaceae*	12		x	x		x	x	
Cichorium intybus	*Asteraceae*	12		x	x		x	x	
Cirsium arvense	*Asteraceae*	12		x			x	x	
Cirsium vulgare	*Asteraceae*	12					x	x	
Consolida regalis	*Ranunculaceae*	11		x				x	
Convallaria majalis	*Liliaceae*	7	x						
Convolvulus arvensis	*Convolvulaceae*	12			x	x	x	x	x
Conyza canadensis !	*Asteraceae*	12		x	x		x	x	
Cornus mas	*Cornaceae*	13					x	x	
Cornus sanguinea	*Cornaceae*	5	x					x	
Coronilla varia	*Fabaceae*	4	x						
Corylus avellana	*Corylaceae*	10	x					x	x
Cosmos bipinnatus	*Asteraceae*	13					x		
Cotoneaster divaricatus	*Rosaceae*	13			x			x	
Cotoneaster integerrimus	*Rosaceae*	5						x	x
Crataegus laevigata	*Rosaceae*	5	x		x				x
Crataegus monogyna	*Rosaceae*	5			x			x	
Crepis biennis	*Asteraceae*	3						x	
Crepis tectorum	*Asteraceae*	3			x		x	x	
Cruciata glabra	*Rubiaceae*	10	x	x			x	x	
Dactylis glomerata	*Poaceae*	3			x		x	x	x
Daucus carota	*Apiaceae*	3		x			x	x	
Deschampsia caespitosa	*Poaceae*	3		x					
Descurainia sophia	*Brassicaceae*	12		x	x	x	x	x	
Digitaria ischaeum	*Poaceae*	11						x	
Diplotaxis muralis	*Brassicaceae*	12					x	x	
Dryopteris filix-mas	*Aspidiaceae*	12	x				x		
Echinochloa crus-galli	*Poaceae*	11					x	x	

Echium vulgare	*Boraginaceae*	10			x	x	x	x	
Echinocystis lobata !	*Cucurbitaceae*	8		x				x	
Elaeagnus angustifolia	*Elaeagnaceae*	13			x				x
Elymus repens	*Poaceae*	12		x	x		x	x	x
Epilobum montanum	*Onagraceae*	10	x		x			x	
Epilobum parviflorum	*Onagraceae*	2		x				x	
Equisetum arvense	*Equisetaceae*	11		x			x	x	x
Equisetum sylvaticum	*Equisetaceae*	10	x						
Eragrostis minor !	*Poaceae*	10						x	
Erigeron acris	*Asteraceae*	4			x			x	
Erigeron annuus !	*Asteraceae*	10		x	x		x	x	x
Erodium cicutarium	*Geraniaceae*	4		x				x	
Erysimum cheiranthoides	*Brassicaceae*	12					x	x	x
Erysimum hieraciifolium	*Brassicaceae*	13						x	
Euonymus europaea	*Celastraceae*	10	x						
Eupatorium cannabinum	*Asteraceae*	3	x						
Euphorbia cyparissias	*Euphorbiaceae*	4						x	
Euphorbia esula	*Euphorbiaceae*	4						x	
Euphrasia rostkoviana	*Orobanchaceae*	3		x				x	
Fagus sylvatica	*Fagaceae*	10	x						
Fallopia convolvulus	*Polygonaceae*	11					x	x	
Fallopia dumetorum	*Polygonaceae*	8					x	x	
Festuca pratensis	*Poaceae*	3	x	x			x	x	
Festuca rubra	*Poaceae*	3	x			x		x	x
Fraxinus excelsior	*Oleaceae*	9			x	x	x	x	x
Fumaria vaillantii	*Papaveraceae*	11		x				x	
Galeopsis angustifolia	*Lamiaceae*	11						x	
Galeopsis ladanum	*Lamiaceae*	11						x	
Galeopsis tetrahit	*Lamiaceae*	6	x	x				x	
Galinsoga ciliata !	*Asteraceae*	11		x	x	x	x	x	x

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Galinsoga parviflora !	*Asteraceae*	10		x	x	x	x	x	x
Galium aparine	*Rubiaceae*	10		x	x			x	x
Galium mollugo	*Rubiaceae*	3			x	x	x	x	
Galium odoratum	*Rubiaceae*	10			x				x
Galium verum	*Rubiaceae*	4			x			x	
Geranium palustre	*Geraniaceae*	3		x					
Geranium pratense	*Geraniaceae*	3						x	
Geranium pusillum	*Geraniaceae*	11			x	x	x	x	
Geranium robertianum	*Geraniaceae*	10	x				x	x	x
Geum urbanum	*Rosaceae*	10	x		x			x	x
Geum rivale	*Rosaceae*	3	x					x	
Gypsophila fastigiata	*Caryophyllaceae*	4						x	
Gypsophilla muralis	*Caryophyllaceae*	4		x					
Helianthus tuberosus !	*Asteraceae*	12						x	
Heracleum sibiricum	*Apiaceae*	3		x				x	
Heracleum sphondylium	*Apiaceae*	4	x	x				x	x
Hieracium bauhinii	*Asteraceae*	3						x	
Hieracium pilosella	*Asteraceae*	4			x		x	x	
Hordeum murinum	*Poaceae*	12						x	
Humulus lupulus	*Cannabaceae*	8	x	x					
Hypericum perforatum	*Clusiaceae*	4			x		x	x	x
Hypochoeris radicata	*Clusiaceae*	4	x					x	x
Impatiens parviflora !	*Balsaminaceae*	4			x		x	x	
Inula britannica	*Asteraceae*	3						x	
Juglans regia !	*Juglandaceae*	13							x
Juncus bufonius	*Juncaceae*	1						x	
Juncus tenuis !	*Juncaceae*	12						x	

Juniperus communis	*Cupressaceae*	7	x					x	x
Juniperus sabina	*Cupressaceae*	13			x				x
Kochia laniflora	*Chenopodiaceae*	13						x	
Kochia scoparia	*Chenopodiaceae*	10					x	x	
Lactuca serriola	*Asteraceae*	12					x		x
Lamium album	*Lamiaceae*	12		x		x		x	
Lamium amplexicaule	*Lamiaceae*	11			x		x	x	
Lamium purpureum	*Lamiaceae*	12		x				x	
Lapsana communis	*Asteraceae*	10	x	x				x	x
Larix decidua	*Pinaceae*	13						x	
Lathyrus pratensis	*Fabaceae*	3	x						
Lathyrus tuberosus	*Fabaceae*	11						x	x
Leontodon autumnalis	*Asteraceae*	3			x	x	x		
Lepidium campestre	*Brassicaceae*	12						x	
Lepidium densiflorum	*Brassicaceae*	12						x	
Lepidium ruderale	*Brassicaceae*	12		x	x	x	x	x	x
Lepidium virginicum	*Brassicaceae*	13			x			x	
Leucanthemum vulgare	*Asteraceae*	2		x	x	x		x	
Ligustrum vulgare	*Oleaceae*	11					x		x
Linaria vulgaris	*Scrophulariaceae*	13				x	x	x	
Lolium perenne	*Poaceae*	3		x	x	x	x	x	x
Lonicera xylosteum	*Brassicaceae*	10	x					x	
Lotus corniculatus	*Fabaceae*	3			x	x		x	
Lunaria annua	*Brassicaceae*	13					x		
Lupinus polyphyllus	*Fabaceae*	13	x					x	x
Luzula pilosa	*Juncaceae*	7	x						
Lychnis flos-cuculi	*Caryophyllaceae*	3		x					
Lysimachia nummularia	*Primulaceae*	2	x					x	
Lysimachia vulgaris	*Primulaceae*	3							x
Lythrum salicaria	*Lythraceae*	3	x						

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Malus domestica	*Rosaceae*	13					x	x	x
Malus sylvestris	*Rosaceae*	11					x	x	
Malva alcea	*Malvaceae*	12			x	x			
Malva neglecta	*Malvaceae*	12			x		x	x	
Malva sylvestris	*Malvaceae*	12		x				x	
Matricaria maritima ssp. *inodora*	*Asteraceae*	11		x	x		x	x	
Medicago falcata	*Fabaceae*	4			x		x	x	
Medicago lupulina	*Fabaceae*	12		x	x	x	x	x	
Medicago sativa	*Fabaceae*	3			x		x	x	x
Melandrium album	*Caryophyllaceae*	12						x	x
Melica nutans	*Poaceae*	10	x						
Melilotus alba	*Fabaceae*	12			x	x		x	
Melilotus officinalis	*Fabaceae*	12			x			x	
Moehringia trinervia	*Caryophyllaceae*	10	x						x
Mycelis muralis	*Asteraceae*	7	x						
Myosotis arvensis	*Boraginaceae*	11		x			x	x	
Myosotis palustris	*Boraginaceae*	2			x				x
Myosoton aquaticum	*Caryophyllaceae*	9							x
Nepeta cataria	*Lamiaceae*	12					x		
Odontites serotina	*Scrophulariaceae*	3						x	
Oenothera biennis	*Onagraceae*	12						x	
Oenothera rubricaulis	*Onagraceae*	12					x	x	
Oxalis acetosella	*Oxalidaceae*	10	x						
Oxalis fontana !	*Oxalidaceae*	11			x		x	x	x
Padus serotina !	*Rosaceae*	7			x		x	x	x
Papaver argemone	*Papaveraceae*	11						x	x

Papaver rhoeas	*Papaveraceae*	11						x	x
Papaver somniferum	*Papaveraceae*	13					x		
Parthenocissus inserta !	*Vitaceae*	13			x			x	
Pastinaca sativa	*Apiaceae*	3		x			x		x
Phalaris arundinacea	*Poaceae*	2						x	
Philadelphus coronarius	*Hydrangeaceae*	13			x		x		
Phragmites australis	*Poaceae*	2						x	
Physocarpus opulifolius	*Rosaceae*	13			x		x		
Picea abies	*Pinaceae*	7				x		x	
Picea pungens	*Pinaceae*	13				x	x	x	
Pimpinella saxifraga	*Apiaceae*	12					x	x	
Plantago lanceolata	*Plantaginaceae*	3			x	x		x	x
Plantago major	*Plantaginaceae*	3			x	x	x		
Plantago media	*Plantaginaceae*	3			x	x	x	x	
Poa angustifolia	*Poaceae*	4					x	x	
Poa annua	*Poaceae*	3			x		x	x	x
Poa compressa	*Poaceae*	4			x		x	x	
Poa pratensis	*Poaceae*	3		x			x	x	
Polygonum aviculare	*Polygonaceae*	12			x	x	x	x	x
Polygonum hydropiper	*Polygonaceae*	1		x				x	
Polygonum persicaria	*Polygonaceae*	11						x	x
Populus alba	*Salicaceae*	8	x					x	x
Populus ×canadensis	*Salicaceae*	13	x		x		x	x	
Populus tremula	*Salicaceae*	7	x	x	x	x	x	x	x
Potentilla anserina	*Rosaceae*	3			x		x	x	x
Potentilla argentea	*Rosaceae*	4			x	x	x	x	x
Potentilla fruticosa	*Rosaceae*	13					x		
Potentilla reptans	*Rosaceae*	12			x	x	x	x	x

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Prunella vulgaris	*Lamiaceae*	3			x		x	x	x
Prunus cerasifera	*Rosaceae*	13			x			x	
Pyrus communis	*Rosaceae*	5	x		x	x	x		x
Pteridium aquilinum	*Hypolepidaceae*	7	x						
Quercus robur	*Fagaceae*	10	x					x	x
Quercus rubra !	*Fagaceae*	7						x	x
Ranunculus acris	*Ranunculaceae*	3	x	x	x	x	x	x	x
Ranunculus bulbosus	*Ranunculaceae*	4						x	
Ranunculus repens	*Ranunculaceae*	3	x	x					
Raphanus raphanistrum	*Brassicaceae*	11					x	x	
Reynoutria japonica	*Polygonaceae*	13				x		x	
Reseda lutea	*Resedaceae*	12						x	
Rhus typhina !	*Anacardiaceae*	13			x				
Robinia pseudoacacia !	*Fabaceae*	11			x		x		x
Rorippa sylvestris	*Brassicaceae*	12			x		x	x	x
Rosa canina	*Rosaceae*	5	x				x	x	
Rosa multiflora	*Rosaceae*	13				x	x		
Rosa rubiginosa	*Rosaceae*	5			x				
Rosa rugosa !	*Rosaceae*	13			x			x	x
Rubus caesius	*Rosaceae*	10	x				x	x	
Rubus idaeus	*Rosaceae*	6	x	x			x		
Rubus plicatus	*Rosaceae*	7	x				x	x	
Rumex acetosa	*Polygonaceae*	2		x	x	x	x	x	x
Rumex acetosella	*Polygonaceae*	4					x	x	
Rumex confertus !	*Polygonaceae*	12					x	x	x

Rumex crispus	*Polygonaceae*	12		x				x	x
Salix alba	*Salicaceae*	8	x		x			x	
Salix caprea	*Salicaceae*	6	x				x	x	
Salix purpurea	*Salicaceae*	8	x						x
Salix triandra	*Salicaceae*	8	x						
Sambucus nigra	*Caprifoliaceae*	10	x		x		x	x	x
Saponaria officinalis	*Caryophyllaceae*	12	x					x	
Scrophularia nodosa	*Scrophulariaceae*	10	x	x				x	
Sedum acre	*Crassulaceae*	4					x	x	
Sedum maximum	*Crassulaceae*	4						x	
Sempervivum tectorum	*Crassulaceae*	13						x	
Senecio vulgaris	*Asteraceae*	11			x		x	x	
Setaria pumila !	*Poaceae*	11		x			x	x	
Setaria viridis !	*Poaceae*	11		x				x	
Silene vulgaris	*Caryophyllaceae*	12		x				x	x
Sisymbrium altissimum	*Brassicaceae*	12						x	
Sisymbrium loeselii	*Brassicaceae*	12						x	
Sisymbrium officinale	*Brassicaceae*	12		x				x	
Solanum dulcamara	*Solanaceae*	9	x					x	
Solidago gigantea !	*Asteraceae*	12			x			x	x
Solidago canadensis	*Asteraceae*	12			x		x		x
Sonchus arvensis	*Asteraceae*	12		x	x	x		x	x
Sonchus asper	*Asteraceae*	11		x			x	x	
Sonchus oleraceus	*Asteraceae*	11		x	x	x			
Sorbaria sorbifolia	*Rosaceae*	13			x				x
Sorbus aucuparia	*Rosaceae*	7	x		x	x			x
Spiraea douglasii	*Rosaceae*	13					x		
Spiraea media	*Rosaceae*	13			x				x

Latin name of the species	Family	Ecological groups	Categories of land use complexes						
			I	II	III	IV	V	VI	VII
Spiraea salicifolia	*Rosaceae*	13			x				
Stachys palustris	*Lamiaceae*	3		x				x	
Stachys sylvatica	*Lamiaceae*	4					x	x	
Stellaria graminea	*Caryophyllaceae*	3					x	x	x
Stellaria holostea	*Caryophyllaceae*	10						x	x
Stellaria media	*Caryophyllaceae*	11		x	x	x	x	x	x
Symphoricarpos albus	*Caprifoliaceae*	13			x	x	x	x	
Tamarix tetrandra	*Tamaricaceae*	13				x			
Tanacetum vulgare	*Asteraceae*	12	x		x		x	x	x
Taraxacum officinale	*Asteraceae*	3		x	x	x	x	x	x
Taxus baccata	*Taxaceae*	13			x	x			
Thlaspi arvense	*Brassicaceae*	11		x				x	
Thuja occidentalis	*Cupressaceae*	13			x		x		x
Thymus serpyllum	*Lamiaceae*	4			x			x	x
Tilia cordata	*Tiliaceae*	10	x		x	x		x	x
Tragopogon orientalis	*Asteraceae*	4			x	x	x		
Tragopogon pratensis	*Asteraceae*	3					x	x	x
Trientalis europaea	*Primulaceae*	7	x						
Trifolium arvense	*Fabaceae*	4		x	x			x	x
Trifolium dubium	*Fabaceae*	3		x	x				x
Trifolium medium	*Fabaceae*	5			x		x	x	
Trifolium pratense	*Fabaceae*	3		x	x	x		x	x
Trifolium repens	*Fabaceae*	12			x	x	x	x	x
Triticum aestivum	*Poaceae*	13		x				x	
Tussilago farfara	*Asteraceae*	12			x	x	x	x	
Ulmus laevis	*Ulmaceae*	9		x					x

Urtica dioica	*Urticaceae*	10	x	x	x	x	x	x	x
Urtica urens	*Urticaceae*	12							x
Verbascum nigrum	*Scrophulariaceae*	4					x	x	
Verbascum phlomoides	*Scrophulariaceae*	4						x	
Veronica arvensis	*Scrophulariaceae*	11					x	x	
Veronica chamaedrys	*Scrophulariaceae*	3		x	x	x	x	x	
Veronica officinalis	*Scrophulariaceae*	7	x						x
Veronica persica	*Scrophulariaceae*	11			x				
Veronica polita	*Scrophulariaceae*	11					x	x	x
Vicia cracca	*Fabaceae*	3		x	x			x	
Vicia hirsuta	*Fabaceae*	11		x				x	
Vicia sepium	*Fabaceae*	10		x				x	x
Vicia tetrasperma	*Fabaceae*	11					x		x
Viola arvensis	*Violaceae*	11		x			x	x	
Viola canina	*Violaceae*	6	x				x	x	x
Viola hirta	*Violaceae*	4	x		x	x			
Viola mirabilis	*Violaceae*	10	x						
Viola riviniana	*Violaceae*		x					x	
Viola reichenbachiana	*Violaceae*	10	x					x	x
Vinca minor	*Apocynaceae*	13	x				x		

Symbols from of columns and abbreviations in the table: latin name of the species (a); family (b); ecological groups (c): G1 – water and spring vegetation, G2 – reed and sedge communities, G3 – meadows, G4 – psammophilous and xerothermic grasslands, G5 – thermophilous forest edge communities and thickets, G6 – acidophilous heathlands and herbaceous communities developing in the forest gaps and clearings, G7 – poor pine stands and acidophilous oak forests, G8 – alluvial willow forests and thickets, as well as neighbouring, fertile tall-herb communities, G9 – boggy and riparian alder forests and thickets, G10 – thermophilous oak forests, mesophilous deciduous forests and nitrophilous shrub communities, G11 – segetal communities, G12 – ruderal communities, G13 – species of undetermined phytosociological status; complexes of utilisation of space: I – forest-and-meadow complex (d), II – agricultural complex (e), III – multi-family complex (f), IV – multi-family large-panel complex (g), V – garden and single-family detached complex (h), VI – industrial-transportation complex (i), VII – mixed complex (j); ! – invasive species.

Streszczenie: *Idea zrównoważonego rozwoju w dokumentach planistycznych Świdnika w kontekście zasad kształtowania systemu przyrodniczego miasta*. Współczesne tendencje kształtowania i rozwoju systemów przyrodniczych miast w myśl zrównoważonego rozwoju związane są ze wskazaniem obszarów pełniących funkcje środowiskotwórcze, zachowaniem łączności między nimi, a następnie powiązaniem ich z regionalnymi, a w dalszej kolejności krajowymi systemami struktur ekologicznych. Tylko takie zabiegi pozwolą na zachowanie stabilności struktur ekologicznych oraz ich zdolności do samoregulacji – co jest bardzo istotne dla zazwyczaj dynamicznie zmieniających się warunków w miastach. Artykuł porusza ważny temat zrównoważonego rozwoju systemu przyrodniczego miasta na przykładzie miasta Świdnik, południowo-wschodnia Polska. W kompleksach użytkowania przestrzeni, wykorzystując metodę Braun-Blanqueta z 1964 roku, wykonano 248 spisów florystycznych. Badania wykazały, że największą powierzchnię terenu zajmują zbiorowiska siedlisk synantropijnych (ruderalnych i segetalnych). Największe zróżnicowanie florystyczne i fitosocjologiczne odnotowano w kompleksie przemysłowo-transportowym. Najmniej gatunków pojawia się zaś w kompleksie wielorodzinnym z wielkiej płyty, który stanowi swoistą strefę ubóstwa gatunkowego. Badania wykazały, że obszar Świdnika jest ubogi w cenne i rzadkie gatunki roślin, na co istotny wpływ ma przekształcenie środowiska przyrodniczego na korzyść elementów technicznych. Za najcenniejsze uznano płaty fitocenoz z klasy *Molinio-Arrhenatheretea* i *Artemisietea vulgaris*, które tworzą barwne kobierce atrakcyjne wizualnie, ale również przyrodniczo – stanowią bazę pożytkową dla zapylaczy. W dalszej kolejności wyniki badań porównano z aktualnie obowiązującymi dokumentami prawa (lokalnego, wojewódzkiego, krajowego). Dyskusja pozwoliła na wskazanie konfliktów w kształtowaniu krajobrazu kulturowego oraz kilku sugestii dotyczących przyszłej strategii wspierania istniejącego heterogenicznego systemu ekologicznego miasto.

Słowa kluczowe: planowanie przestrzenne, siedliska miejskie, system zieleni miejskiej, różnorodność biologiczna

MS received: 21.08.2020

MS accepted: 17.05.2021

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