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THE PROCESS OF CREATION AND THE VALUES OF THE WZGÓRZA STRZELIŃSKIE NATURAL-LANDSCAPE COMPLEX

Summary

This paper presents the process of creation of the Wzgórza Strzelińskie (Strzelin Hills) Natural-Landscape Complex. It describes the rationale, the idea and the process of consultations and work on the resolution to establish the Complex, from the concept, through consultations to the adoption of the resolution. The paper discusses elements of natural and cultural values of the Complex that were the reason behind making Wzgórza Strzelińskie a legally protected site. Recommendations are presented concerning nature protection as well as prohibitions in force in the Complex. The paper lists potential threats to the natural environment, landscape and cultural resources of the Wzgórza Strzelińskie Natural-Landscape Complex.

Key words: nature, landscape, monuments, nature conservation, Wzgórza Strzelińskie

INTRODUCTION

Natural-Landscape Complexes are among the forms of natural environment protection used to protect extremely valuable elements of the natural and cultural landscape and to preserve their natural, cultural and aesthetic values. Moreover, their purpose is to preserve the ecological balance of relatively undistributed natural systems, to protect the geological and paleontological heritage, to conserve biodiversity and to maintain ecological processes and ecosystem stability.

Despite man's pressure on the environment, the Wzgórza Strzelińskie (Strzelin Hills) Natural-Landscape Complex (N-LC) has managed to preserve its

valuable landscape and natural resources. The Krynka river valley has maintained fragments of valuable ecosystems typical of small rivers, including wet meadows and wildwoods. In the upper parts of Wzgórza Strzelińskie, seminatural forest communities including dry-ground forests, beech woods and oak woods have been preserved. The above area is an important collection of protected species of plants, animals and fungi. The diversified relief, relatively high woodiness and significant diversity of vegetation make the area's landscape interesting.

The goal of the Wzgórza Strzelińskie N-LC is to protect its outstanding natural and cultural landscape of diverse ecosystems inhabited by many valuable species of plants, animals and fungi, to protect environmentally valuable habitats, to protect the ecological corridor of Wzgórza Strzelińskie and to protect areas that are valuable from the point of tourism and recreation purposes.

LOCATION AND GEOLOGICAL STRUCTURE OF THE COMPLEX

The Wzgórza Strzelińskie Natural-Landscape Complex (N-LC) is located in the southeastern part of Lower Silesia (Fig. 1), in the town and municipality of Strzelin. Its surface area is 7,330 ha. According to Kondracki [1994], in terms of physico-geographical characteristics it lies in the macro-region of the Sudeten Foothills (332.1), mesoregion of Wzgórza Niemczańsko-Strzelińskie (332.14). The topographic features of the area in question are very diversified, including outcrops of igneous and metamorphic rocks forming vast hills. The older bedrock, with the exception of the area of Wzgórza Strzelińskie, is covered by Tertiary sediments in the form of bluish clay and clay and kaolin sand, and the surface layer is composed of Pleistocene glacial, sand-gravel deposits (most of the area) and drift clay and loess-like clay [Baraniecki et al. 1997].

In terms of geological structure, the granitoid massif of Wzgórza Strzelińskie is diversified. The Strzelin granitoids form outbreaks among the mica schists and gneisses (Fig. 4.). Granitoid dikes and granitoid trunks pierce the rocks of the metamorphic envelope, as a result of which the structure of the massif is not compact. The Strzelin granitoids were formed from magma which, during the Variscan tectonic movements in the Upper Carboniferous, broke in between the folded Proterozoic, Paleozoic and Devonian pieces. There can be found two varieties of granite in the northern part of the massif - the biotite and two-mica granite. The southern part is dominated by tonalite and diorite. In the granitoides there can be found pegmatite slots, aplitic and pegmatite veins and hydrothermal veins with interesting mineralization. The cover of the Strzelin granitoid massif is formed of two rock series: the older Proterozoic series and Old-Paleozoic series (Strzelin gneisses) and the younger Devonian series (layers of Jegłowa). The older series includes gneiss, amphibolite, mica schist, crystalline limestone and lime-silicate rock (skarn). The younger series includes

quartz schist, sericite schist and quartzite. Between the shoals of quartz schists and in the vertical slits of their joints there occur lenses and kaolin layers with mountain crystal. Wzgórza Strzelińskie are characterized by high variability of petrographic types of rocks and their mineral composition [Borkowska, 1956; Bereś, 1969; Morawski, 1973; Lorenc, 1994; Klementowski, 1991; Oberc-Dziedzic, Madej, 2002, Oberc-Dziedzic, 1999, 2007, Jawecki, 2011].

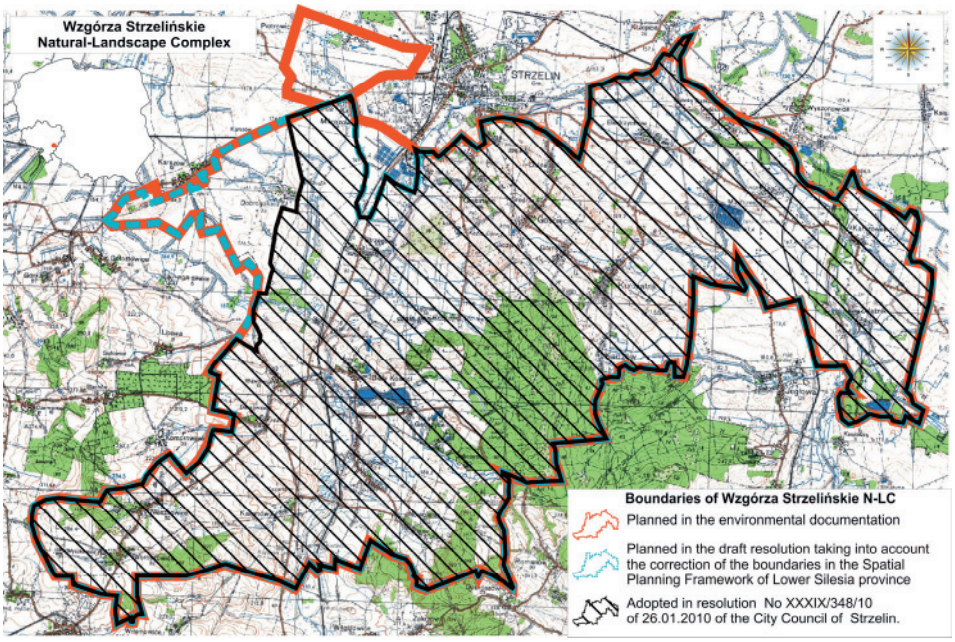

Figure 1. Location and boudaries
of the Wzgórza Strzelińskie Natural-Landscape Complex

SELECTED NATURAL, LANDSCAPE AND CULTURAL VALUES

Several dozens of plant associations and plant communities were identified in the area of the Wzgórza Strzelińskie N-LC (Fig 2.), including habitats listed in Annex I of Council Directive 92/43/EEC. The area also includes rare and protected species in Poland and listed in Annex II of Council Directive 92/43/EEC. A large number of tree specimens of monumental dimensions has also been reported [Jankowski et al., 1998; Dunajski, 1998a; Dunajski, 1998b; Nawara et al., 2006; Pender and Rybałtowska, 1991; PLH020074; PLH020098; Świerkosz et al., 2009].

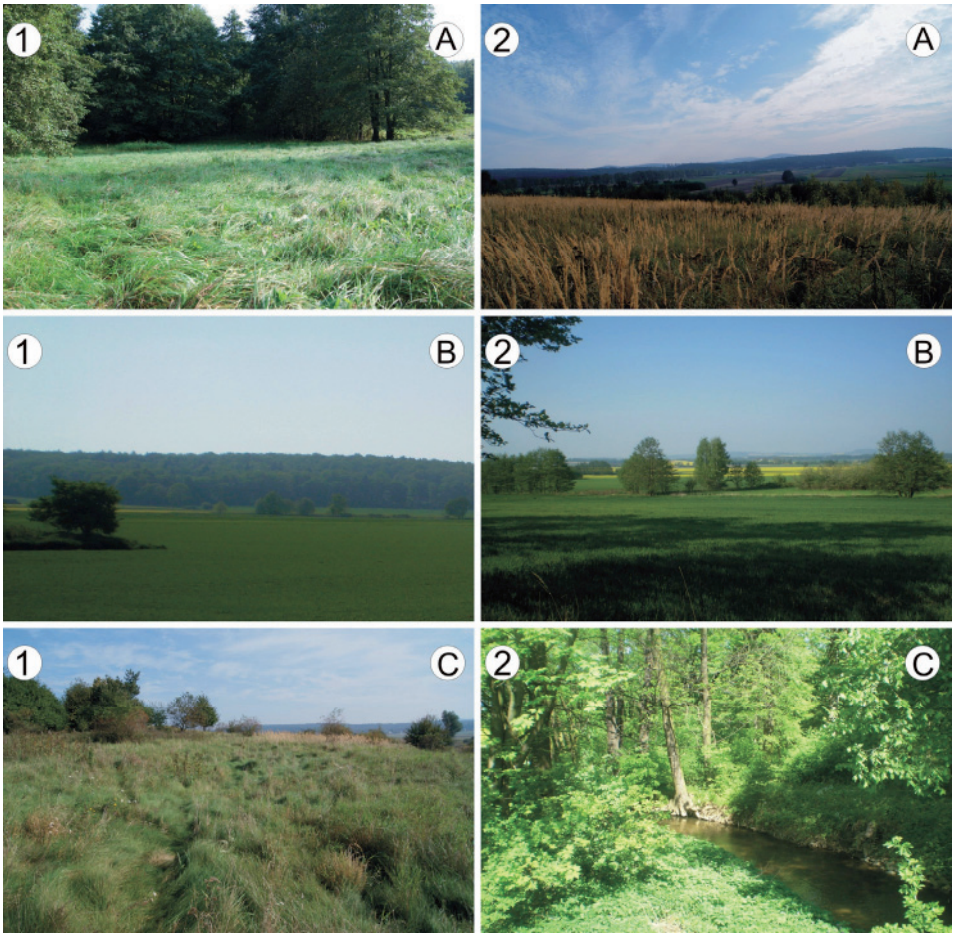

Figure 2. Selected natural and landscape features of the Wzgórza Strzelińskie N-L C: 1 – habitats (A – fresh meadow (autumn) B - acidic beech forests, C – sand grasslands (autumn), 2 – landscapes (A – panorama of the Wzgórza Strzelińskie, B – panorama of agricultural landscape, C – the Krynka river valley)

Diversified in terms of edaphic and moisture conditions, the habitats of dry-ground forest *Tilio-Carpinetum* (9170 - *Galio-Carpinetum, Tilio-Carpinetum*) in the Complex deserve special attention. Particularly rich floristically, dry-ground forest phytocenoses (sometimes with an admixture of beech) occupy the slopes of deep ravines and valleys. They are often abundant with flowering and fruiting ivy. In some places, the forest cover is diversified with fragments of fertile beech forest *Dentario enneaphyllidis-Fagetum* (9130 - *Dentario glandulosae-Fagenion, Galio odorati-Fagenion*) and acidic beech forest (Fig 2:

1B) *Luzulo nemorosae - Fagetum* (9110 - *Luzulo-Fagenion*), including old tree stand that is rare in this microregion. Riparian forests, submontane wetlands, alder-ash wetlands *Fraxino-Alnetum* (91E0 - *Salicetum albofragilis, Populetum albae, Alnenion glutinoso-incanae*, headwater alder carrs) and ash-elm wetlands *Ficario-Ulmetum* (91F0- *Ficario-Ulmetum*) occupy habitats associated with the hydrographic network or swampy depressions. Wzgórza Strzelińskie also feature acidic oak wood habitats *Luzulo Quercetum* (9190- *Betulo-Quercetum*) occupied by phytocenoses of piedmont oakwood forest with white woodrush and, very rarely, oak wood forest with can moor grass. There are also extensively used fresh meadows (Fig 2: 1A) (6510 - *Arrhenatherion elatioris*), thermophilic inland sand grasslands (*6120 - *Koelerion glaucae*) and molinia meadows of variable moisture content (6410 - *Molinion*) [Jankowski et al., 1998; Dunajski, 1998a; Dunajski, 1998b; Nawara et al., 2006; Pender, Rybałtowska, 1991; PLH020074; PLH020098; Świerkosz, 2009].

The following are among the rare and protected species of plants and fungi of the Complex (Fig 3.): common periwinkle (*Vinca minor L.*), English ivy (*Hedera helix L.*), wild garlic (*Allium ursinum L.*) European cranberrybush (*Viburnum opulus L.*), lily of the valley (*Convallaria majalis L.*) (Fig. 3: 2C), autumn crocus (*Colchicum autumnale*), stemless carline thistle (*Carlina acaulis L.*) (Fig. 3: 2B) mezereon (*Daphne mezereum L.*), martagon lily (*Lilium martagon L.*), European globeflower (*Trollius europaeus L.*), yellow water-lily (*Nuphar luteum*) (Fig. 3: 2A), common stinkhorn (*Phallus impudicus L.*), crested sparassis (*Sparassis crispa (Wulf.) Fr.*) [Jankowski et al., 1998; Dunajski, 1998a; Nawara et al., 2006; Pender, Rybałtowska, 1991; Świerkosz, 2009].

The area of the Complex is inhabited by rare and protected animals (Fig. 3). The following are among the rare and protected invertebrates: ground beetle (*Carabus coriaceus*), large earth bumblebee (*Bombus terrestris L.*), early bumblebee (*Bombus pratorum*), green snaketail (*Ophiogomphus cecilia*), Scarce Large Blue (*Maculinea teleius*), Large Copper (*Lycaena dispar*), Dusky Large Blue (*Maculinea nausithous*), hermit beetle (*Osmoderma eremita*) [Jankowski et al., 1998; Nawara et al., 2006].

The area is distinguished by bat fauna, including the greater mouse-eared bat (*Myotis myotis*), Daubenton's bat (*Myotis daubentonii*), serotine bat (*Eptesicus serotinus*), brown long-eared bat (*Plecotus auritus*), common noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*) and western barbastelle (*Barbastella barbastellus*) (Fig. 3: 1C). Among other mammals of the Complex are otter (*Lutra lutra*), forest dormouse (*Dryomys nitedula*), edible dormouse (*Glis glis*), common shrew (*Sorex araneus*) and pygmy shrew (*Sorex minutus*), least weasel (*Mustela nivalis*) and stoat (*Mustela erminea*). The following rare and protected fish species should be mentioned: stone loach (*Orthrias barbatulus*), weatherfish (*Misgurnus fossilis*) and common minnow (*Phoxinus phoxinus*). Among interesting amphibian species are: fire-bellied toad

(*Bombina bombina*), great crested newt (*Triturus cristatus*), smooth newt (*Triturus vulgaris*) and alpine newt (*Triturus alpestris*), common spadefoot (*Pelobetes fuscus*), water frog (*Rana esculenta*) (Fig 3: 1A), common toad (*Bufo bufo*) and European tree frog (*Hyla arborea*). Among reptiles, the most numerous species are: sand lizard (*Lacerta agilis*) (Fig. 3: 1B), common lizard (*Lacerta vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix natrix*) [Jankowski et al., 1998; Nawara et al., 2006; PLH020074; PLH020098].

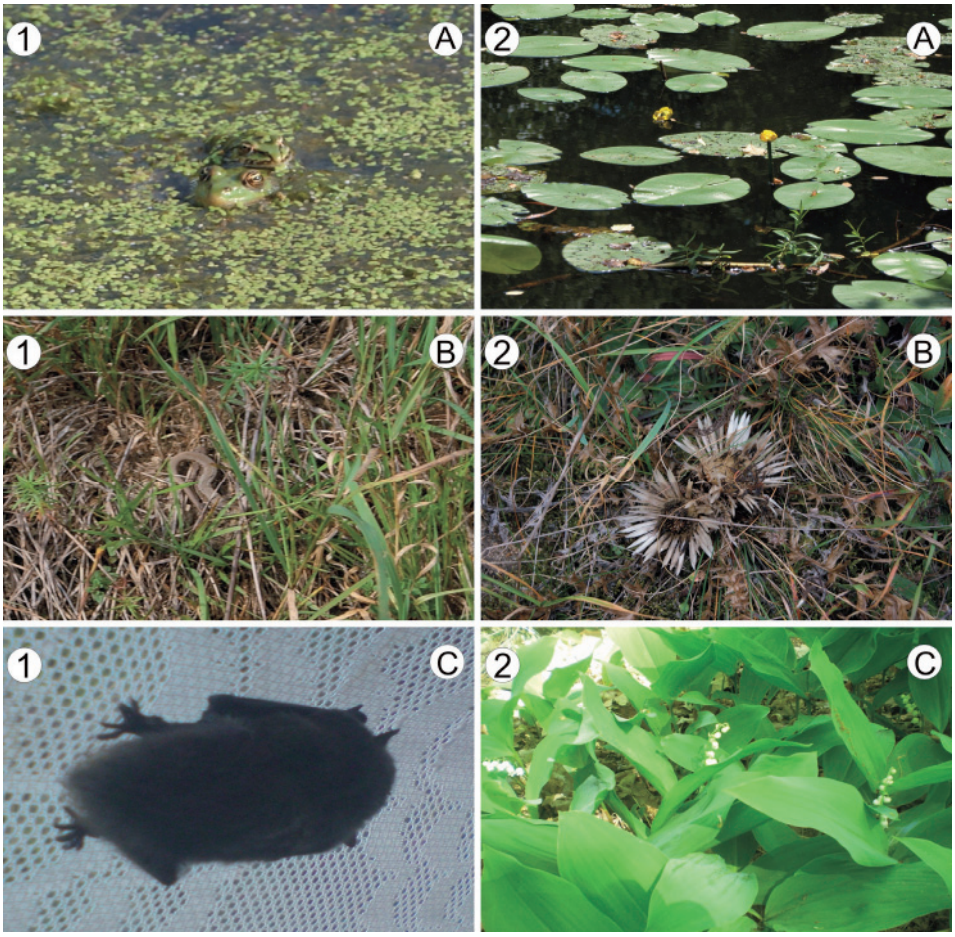

Figure 3. Selected natural and landscape features of the Wzgórza Strzelińskie N-L C: 1 – protected animal species (A – water frog, B - sand lizard, C - western barbastelle), 2 – protected plant species (A – yellow water lily, B – stemless carline thistle, C – lily of the valley)

Among the main ornithological features of interest of the N-L C is a rich group of forest birds, as well as of birds of meadows and of forest edge bushes. The following can be found: honey buzzard (*Pernis apivorus*), black woodpecker (*Dryocopus martius*) and middle spotted woodpecker (*Dendrocopos medius*), collared flycatcher (*Ficedula albicollis*), black stork (*Ciconia nigra*) and white stork (*C.ciconia*), red-backed shrike (*Lanius collurio*), barred warbler (*Sylvia nisoria*), common kestrel (*Falco tinnunculus*), red kite (*Milvus milvus*), common raven (*Corvus corax*), marsh harrier (*Circus aeruginosus*), corn crake (*Crex crex*), common quail (*Coturnix coturnix*), goldcrest (*Regulus regulus*), hawfinch (*Coccothraustes coccothraustes*) and common crane (*Grus grus*) [Jankowski et al., 1998; Nawara et al., 2006; PLH020074; Świerkosz, 2009].

The landscape of the Wzgórza Strzelińskie Natural-Landscape Complex (Fig. 2, Fig. 4) is mostly a cultural landscape shaped by human activity. Despite the pressure of agriculture and natural resource mining, the Complex has retained its considerable landscape and natural values. The Krynka river valley has preserved fragments of valuable ecosystems typical of small rivers, including wet meadows and fragments of wildwoods. In the upper parts of Wzgórza Strzelińskie there are preserved seminatural forest communities of dry-ground forests, beech forests and oakwood forests. The area is an important collection of protected species of plants, animals and fungi. Despite the dominance of agricultural land (including arable land), the mosaic of grassland habitats of diversified floristic composition and use, as well as field wildwoods, field borders, field roads, drainage ditches and small watercourses make the agricultural landscape much more diversified. An additional element increasing the aesthetic values of the area are monumental trees, including mainly oak (*Quercus robur L.*). With its varied relief, relatively high woodiness and diversified vegetation, the area offers an interesting landscape [Jankowski et al., 1998; Nawara et al., 2006].

The cultural values of the Complex include historic buildings and structures, both secular and sacred, as well as archaeological sites (Fig. 4.)

One of the oldest places of worship is the parish church of St. Mary's in Biały Kościół first mentioned in 1264. Originally, it was a single-nave Romanesque building made of granite blocks. As a result of rebuilding in the 15th century and expansion in the 19th century, it lost its original style, and in 1945 was demolished. The renovated church features parts of side walls, gables and lower part of the tower. The St. John the Baptist parish branch church in Biedrzychów was first mentioned in 1335. The present building dates from the 15th century and was rebuilt in the 16th century. It was built of quarried stone and brick, with a tower at the west façade. The St. John Cantius parish branch church in Nieszkowice dates back to the same period (Fig. 4: 1C). Originally Gothic, the present building dates from the 2nd half of the 15th century and is brick, single-aisle with a triangular chancel. Baroque architecture is represented

by the St. Joseph the Husband of the Blessed Virgin Mary church in Dankowice and the Our Lady of the Scapular Church in Żeleźnik. The temple in Żeleźnik was mentioned in 1377. The present church dates back to the 18th century. The Neo-Gothic St. Martin Church in Nowolesie was erected in 1867 in the place of a former temple. It is a brick church with a double sloping roof with a tower covered with a pointed cupola and a hall temple with semicircular presbytery [Jasnowska, 1998].

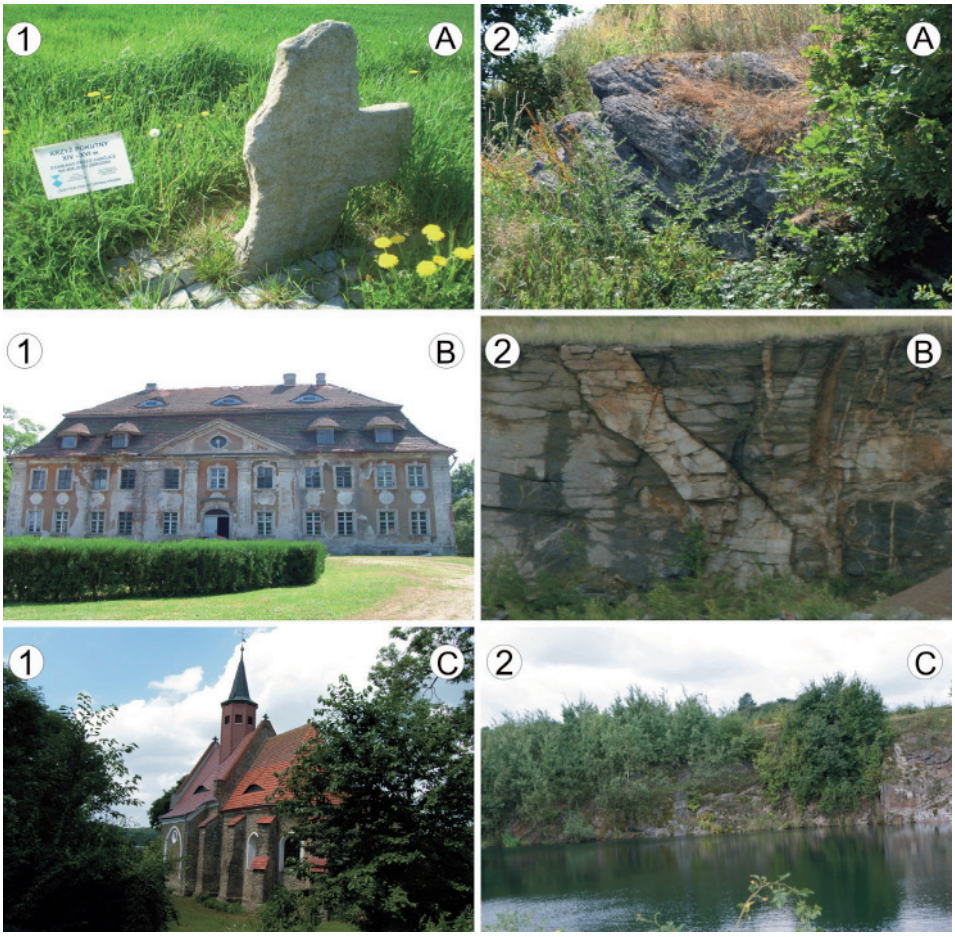

Figure 4. Selected natural and landscape features of the Wzgórza Strzelińskie N-L C: 1 – cultural features (A - penitential cross, B - St. John Cantius parish branch church in Nieszkowice, C - mansion complex in Żeleźnik), 2 – geological features (A - gneiss outcrops, B - vein of fine-grained biotite-muscovite granite cutting through tonalite (Strzegów –Gęsiniec bed), C - closed granite working in Gościęcice)

Secular historical buildings include farmhouses and mansion complexes.

In terms of layout, the villages in the area of the Complex are mainly ribbon villages and clustered villages, less often oval-shaped villages such as Biedrzychów, Kuropatnik, Głęboka or Żeleźnik. Buildings in the villages of the N-L C are primarily made of stone or brick and date from the late 19th and early 20th century. Dwelling houses have one or two storeys, habitable attics, double-sloping tiled roofs and rectangular framed windows. The dwelling half-timbered house in Nowolesie and the half-timbered barn in Karszówek are examples of a different form of structure. Low stone walls separating individual farms are a characteristic element of rural development. Households have a quadrilateral layout with a courtyard in the middle and the dwelling house, barn and cow shed arranged around it. Another type of household is a household in which the dwelling house is connected to the livestock building and the barn stands alone. The layout and development of the Gęsiniec village is especially interesting. As a result of lotting of two granges, more than 100 households were created with two-storied houses of cut stone, where the dwelling house, cow shed and barn are connected forming the shape of the letter L. Such development has been preserved to this day, with modern buildings added later [Jasnowska, 1998].

Mansions from various periods have been preserved in many localities of the Complex. The oldest one is in the village of Głęboka (built in 1521) but it has not preserved the architectural features from that period, because the later structure from 1785 was rebuilt in 1840. Today it is a brick building on a rectangular plan with front terraces and a hip roof. The mansion in Nieszkowice (Fig. 4: 1B) dates back to the second half of the 16th century. Rebuilt in the 18th century, it was founded on a V-shaped plan with an open courtyard to the west and is surrounded by a moat and earthen dikes. It is a building made of stone and brick, two-storied with attic. Żeleźnik features a Baroque mansion from the beginning of the 18th century, which in the early 20th century was rebuilt in Neobaroque and Art Nouveau style. It is a brick building founded on a rectangular plan, two-storied with garrets and a habitable attic. The mansion is covered with a mansard roof with dormers. The rooms inside the mansion are arranged in two bays. Door joinery dating back to the 18th century has been partially preserved in the mansion. Manor complexes from the 19th and early 20th century have been preserved in Skoroszowice, Karszówek and Szczodrowice. They are brick buildings, usually rectangular in shape, one- or two-storied with habitable attics, with gable or hip roofs covered with tiles. In Wąwolnica there is a mansion from the same period, two-storied with a habitable attic and a terrace facing the garden. The mansions in the area of the Complex are accompanied by outbuildings, including: granaries from the end of the 18th century (Kazanów, Żeleźnik, Muchowiec) and from the 19th century (Dankowice, Głęboka, Nowolesie) [Jasnowska, 1998, Gubańska, 2005].

The architectural features of interest in the Complex also include examples of industrial architecture. There are two lime kilns preserved in Gębczyce dating from 1858, in the shape of truncated cones, built of stone. In Kaznów and Karszówek there are mills from the end of the 19th century, while in Gościęcice one can find smithies from the 19th century. The Complex also includes archaeological sites (mainly settlements) representing, among others, the Funnelbeaker culture, the Linear Pottery culture, the Lusatian culture, the Przeworsk culture and the Lengyel culture [Jasnowska, 1998].

Among the most serious threats to the natural, cultural and landscape environment of the Complex are intensive forest management - excessive thinning, keeping low rotation age, cutting of underbrush, removal of dead and dying wood, drainage of wet forest parts, projects including the regulation of watercourses, natural succession following cessation of use of meadow and pastureland phytocoenoses, drainage of wetlands and sedge meadows, plowing of meadows, possibility of resuming of mineral deposit mining (quarries), surface water pollution from municipal wastewater, wild landfills, uncontrolled tourism, conversion of agricultural land into building and recreation plots, creation of large farmlands resulting in the liquidation of baulks and mid-field wooded areas, intensive use of chemicals in agriculture and the gathering of protected and rare species of plants and fungi, deteriorating condition of monuments of material culture, in particular secular culture, progressive deterioration of the historic layout of towns and types of development.

ESTABLISHMENT OF THE WZGÓRZA STRZELIŃSKIE NATURAL-LANDSCAPE COMPLEX

The idea to provide legal protection of Wzgórza Strzelińskie resulted, in the years 1991-1998, in the preparation of a sizeable nature dossier whose aim was to create the Wzgórza Strzelińskie Protected Landscape Area (PLA). Following the suspension by the Regional Nature Conservationist of the process of establishing the Wzgórza Strzelińskie PLA, the Councillors of Strzelin - Civic Forum Strzelin 2000 started work on the drafting of a resolution of the City Council to establish the Wzgórza Strzelińskie PLA. A draft of the resolution was submitted to the City Council in early July 2009. However, it was not adopted because during the time of waiting for the legal opinion of the mayor, regulations changed and as of 1 August 2009 the City Council lost the right to create Protected Landscape Areas. The above made it necessary to change the form of legal protection into Nature and Landscape Complex. The relevant draft resolution was submitted to the Strzelin City Council and after consultations with the regional director of environmental protection and after a favorable legal opinion of the mayor had been obtained, it became a subject of discussions of the Committee on Municipal Services Management, Agriculture

and Environmental Protection. Then, the Committee sought the opinion of the National Forests, which was also positive, as well as of meetings of rural communities located in the area of the proposed Complex. Although the originators and promoters of the resolution were not invited to the meetings to explain the rationale and the idea behind the establishment of the Complex, the project was accepted by most interested parties. The two localities which were against the project at the rural meetings were excluded from the boundaries of the Complex. The draft resolution was protested against by the mining lobby, which resulted in amending the parts of the draft resolution concerning the rules of exploitation of natural resources. Finally, on 26 January 2010, the City Council of Strzelin passed a resolution to create the Wzgórza Strzelińskie Natural-Landscape Complex which came into force fourteen days following publication in the Official Journal of Lower Silesia, which took place on 5 March 2010 [Minutes XXXIX/10, Minutes of KGK, RiOŚ].

The resolution specified that the goal of nature protection was to preserve, ensure sustainable use and restoration of resources, natural formations and of elements of nature. In particular, conservation objectives have been set including the preservation of a mosaic of environments, maintaining the existing high diversity of the physical environment and microrelief, river routes, slopes and hills, maintaining the geological and paleontological heritage, preservation and enrichment of the existing plant associations and complexes, preservation of landscape diversity. Active implementation of nature conservation was recommended to take the form of activities in the area of forest management, agricultural management, water management, spatial planning, nature and landscape protection and protection of geological heritage [Resolution No. XXXIX/348/10].

The following prohibitions have been introduced in the Complex [Resolution No. XXXIX/348/10]:

1. prohibition of intentional killing of wild animals, destruction of burrows, animal bedding and spawning grounds and spawned eggs, with the exception of amateur fishing and implementation of activities associated with rational farm, forest, fishery and hunting management;
2. prohibition of gathering, destruction and damaging of plants and fungi in the areas of ecological sites, created in order to protect stations, habitats or refuges of protected plants and fungi;
3. prohibition of damaging and polluting the soil;
4. prohibition of commercial exploitation of rocks (including peat) and fossils (including fossil remains of plants and animals) as well as minerals and amber - the prohibition does not apply to activities in mining areas of less than 25 hectares, if the environmental impact assessment (EIA) conducted showed no adverse effects of the activity on the nature and landscape of the Complex, and if mining is conducted in accordance with the requirements of rational use of the

deposit, of environmental and nature protection and it does not apply to deposits already extracted at time of entry into force of the resolution on which mining is allowed until exhaustion of mineral deposit resources available for extraction within the meaning of Geological and Mining Law specified in the license to extract mineral deposits or in the geological documentation used as a basis for the issuance of the license to extract minerals obtained before the entry into force of the resolution; additionally, an obligation was introduced to determine the size of output in the environmental decision;

5. prohibition of earthworks permanently disfiguring the relief of the terrain, with the exception of works related to flood protection, or the construction, reconstruction, maintenance, renovation or repair of water facilities - the ban does not apply to areas for which local zoning plans provide for land development, which will require the implementation of work permanently deforming the terrain, the implementation of projects involving the performance of earthmoving permanently disfiguring the terrain for which a location decision was issued with respect to a public utility project, and areas located within the settlements, colonies and hamlets within the meaning of the act on official names of localities and physiographic objects;

6. prohibition of changing the existing water conditions if the changes do not serve the purposes of nature protection or of rational agricultural, forest, water or fishery management - the ban does not apply to sites on which the above activities are allowed pursuant to permits issued before the entry into force of the resolution;

7. prohibition of liquidation, filling up and conversion of water reservoirs, old river beds and aquatic and muddy lands;

8. prohibition of discharging manure, except for the purposes of agricultural land fertilization.

CONCLUSIONS

1. The Wzgórza Strzelińskie Natural-Landscape Complex offers valuable landscape, natural and cultural features which, despite the pressure of agriculture and natural resource extraction, have retained their unique character.

2. Among the most valuable features of the Complex are the Krynka river valley which has preserved fragments of valuable ecosystems typical of small rivers, including wet meadows and natural woodland fragments; and a part of Wzgórza Strzelińskie where seminatural forest communities of dry-ground forest, beech forest and oak forests have been preserved.

3. The area is an important collection of rare and protected species of plants, animals and fungi, some of which occur in the Polish Red Book of Plants and are listed in annexes I and II of the Council Directive on the conservation of natural habitats and of wild fauna and flora.

4. Mosaics of grassland habitats of diversified floristic composition and use, mid-field wooded areas, field borders, field roads, drainage ditches and small watercourses offer diversity to the agricultural landscape.

5. The following are the most serious threats to the nature and landscape of the Complex: intensive forest management, drainage of wetland fragments of forests, meadows and sedges, natural succession following cessation of using meadow and pastureland phytocenoses, plowing of fields, resuming of exploitation of mineral resources (quarries), surface water pollution from municipal wastewater, wild landfills, uncontrolled tourism, conversion of agricultural land into building and recreation plots, the creation of large farm fields resulting in the liquidation of baulks and mid-field wooded areas, deteriorating condition of monuments of material culture, especially secular, and progressive deterioration of the historic layout of towns and types of development.

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