

ATLAS OF ŁÓDŹ

Sheet XIII: Zoology – selected issues of environmental protection and degradation

J. K. Kurowski & E. Papińska with the co-operation of H. Andrzejewski

The **sozological map** presents the status of the natural environment and shows the causes and effects of both negative and positive changes influenced by various kinds of human activity. The map also presents the environmental protection methods. This sheet only presents selected issues, as some have been discussed in greater detail in the sheets dedicated to the natural environment (e.g. degradation of the atmosphere, surface and underground water, and the lithosphere). Instead, some new issues have been introduced that were not considered in the 'Technical guidelines K-3.6.' concerning the preparation of sozological maps. The section on protection of the natural environment and its resources presents all kinds of legal protections – those already in force and those projected. The environmental degradation section introduces a new category presenting the areas with high concentrations of transport emissions. These areas were selected based on the distribution pattern of annual fallout of lead and its compounds as converted into lead oxide (according to Wojewódzki Inspektorat Ochrony Środowiska - WIOS, the Environmental Protection Inspectorate in Łódź in 2000). Excellent information about environmental conditions in Łódź and its neighbourhood can be found in the environmental reports for Łódzkie Region (Województwo Łódzkie) published annually by WIOŚ. The reports contain updated data on emissions of pollutants into the atmosphere and water, water consumption, waste management, and more.

Forests play a special role in the natural environment, and in the area of Łódź they fulfil important biocenotic, climatic, social, and economic functions. They are the indispensable oxygen generator and areas with excellent leisure and recreational properties. Unfortunately, they are under incessant anthropopressure. The abiotic forest degradation factors (A) include overdrilled soils (especially within the range of the cone of depression), whose incidence was particularly severe between 1989 and 1996. At the time reported was an increased number of fires, especially in young pine stands. Overdrilled soils cause accelerated isolation of hygrophilous trees e.g. the alder and the spruce. Other negative effects in forest ecosystems are caused by the introduction of new species alien to the habitat and geography.

Biotic agents (B) that pose a threat to forests include mass infestations of insects (primary pests e.g. pine sawfly *Diprion pini*; gypsy moth *Lymantra dispar*; secondary pests e.g. the bark beetle *Ips typographus*) and parasitic fungi. They appear most frequently in forest complexes that have remained under the influence of industrial emissions for a long time. A serious and still growing threat to forest ecosystems are anthropogenic factors (C) directly linked to human, e.g. industrial activities. One effect of air pollution is the risk of recession of the silver fir *Abies alba* in the region of Łódź. Another common negative factor is litter, especially waste (wildcat dumps) and non-biodegradable packaging.

Presented below are the most important nature and landscape assets within the existing protected areas - landscape parks and nature reserves – and other natural sites proposed to be protected.



Photo 1. Łódź Heights Landscape Park (photo by H. Andrzejewski, 2000)

Łódź Heights Landscape Park

The Łódź Heights Landscape Park, established in 1996, is situated between Łódź, Stryków and Brzeziny and covers 10 747 hectares. Its buffer zone occupies a further 3020 ha (20% of which lies within the boundaries of Łódź). Its overarching purpose is to preserve the natural and cultural heritage of Little Fatherland (Mała Ojczyzna) and make it accessible to the public. It is basically for social reasons that the remainder of the natural environment in the upper sections of the Bzura, the Moszczenica, and the Mrozyca River valleys and the unique upland landscape of the border zone of the Łódź Heights should be preserved in the least changed condition, and so should the area's historical and cultural values. The park has important landscape, recreational, educational and research functions. The edge of the Łódź Heights for 40 years has been the exercise field of the Łódź school of geomorphology. This area is a natural museum of various postglacial landforms, where delevellings reach 100 metres within a distance of 3 km, while its highest hill (just beyond the boundary of Łódź near Dąbrowa) reaches 284 m a.s.l. The park is easily accessible from the city and it preserves a variety of ecosystems, including Struga Dobieszowska, a reserve of water and forest in which the landscape corresponds to the historical descriptions of rivers and streams carrying pure water from the hills of Stoki and Sikawa. Other preserved areas, such as Lagiewnicki forest with the landscape park's oldest 210-year old oak stands, the planned Torfowisko Żabieniec reserve, and other proposed nature and landscape complexes, ecolands, and recording stations are natural laboratories and venues of research and academic work. Also, the park provides opportunity to develop various forms of recreation and education. The highest vantage points help to see the natural land relief and the specific landscape.

Nature Reserves

The reserve was established under the Lodz Assembly's resolution of 1930 and was Poland's first reserve established within the city limits. One of its objectives was to protect coniferous trees within the reserve, especially the northern habitat limit of the silver fir, where seventy years ago 781 spruces and 229 firs were recorded. Multiple factors, the most important of which was the catastrophic decline of the water table and increased pollution levels, caused the fir and the spruce to become nearly extinct. The main area under protection is a 9.8 ha fragment of forest with natural features, remnants of swampy alder forest, small sections of ash-alder marshy meadow, and patches of oak-hornbeam areas occupying the largest surface of the reserve. The most interesting plant in the reserve is the ivy – a species of the damp and warm sub-Atlantic climate. It covers a considerable part of the forest, climbs up several hundred trees to the

Photo 2. 'Polesie Konstantynowskie' (photo by J. K. Kurowski, 1993)



height of up to 20 metres, and flowers at the highest levels in late autumn, bearing fruit in winter. The reserve has important functions, mainly biocenotic, recreational, educational, and scientific. The research carried out by geobotanists from the University of Łódź (O l a c z e k , S o w a 1976 and others) has produced interesting results concerning the life of the forest in relation to the pressure of the city. This reserve is also a faunal refuge offering protection to numerous animal species, especially birds. The Polesie Konstantynowskie reserve is a symbol of the history of environmental protection in the Łódź region.



Photo 3. Lagiewnicki Forest - ground level view of the broadleaved forest (photo by H. Andrzejewski)

II. Lagiewnicki Forest Reserve

This reserve was established in 1996 and covers 69.85 ha within the 1200 ha forest of the same name. The existence of such a large forest complex within the municipal boundaries distinguishes Łódź from other Polish and European metropolitan centres, and it is wholly owned by the city and administered by the Municipal Forestry (Leśnictwo Miejskie). The Reserve's purpose is to protect the part of the forest boasting outstanding natural assets, with various phytocoenoses of broadleaved forest (also including silver fir), luminous and acid oak-woods, and riparian forest. The reserve is geomorphologically diversified, which provides favourable conditions for a variety of habitats with different trophic and damp levels. This is the habitat of valuable protected species (e.g. mezezon daphne mezezon, large yellow foxglove *digitalis grandiflora*, globe-flower *toilius europaeus*, birdsnest orchid *neottia nidus-avis*, lesser twayblade *listera ovata*) and some species with significant phylogeographic value, especially whorled Solomon's-seal, a second mountainous species after the silver fir. The Lagiewnicki Forest Reserve is a valuable site for ecological education.



Photo 4. 'Struga Dobieszowska' (photo: H. Andrzejewski, 1999)

III. Struga Dobieszowska

In 1990 a partial reserve was established to protect the natural and forest assets of the Moszczenica River's tributary Młynówka River valley, known as Struga Dobieszowska. It covers 37.65 ha and belongs to the Grotniki Forest Administration (Nadleśnictwo Grotniki). Struga Dobieszowska is the only one of the few reserves in the region of Łódź that protects a typical river-valley forest (ash-alder and alder marshy meadows), valley slopes (broadleaved forests), and mixed hygrophilous forests surrounding numerous natural spring hollows (the springs themselves are beyond the reserve on private property). The reserve protects a nearly 3 km long section of the river. The vegetation is well preserved; 10 plant assemblages have been recorded. Forest, herbaceous, and rush phytocoenoses have to a large extent retained their natural character. The distribution of various phytocoenoses within the area, depending on the geomorphological and ecological conditions, makes the reserve a highly valuable educational natural science model. The flora is rich with the overall 260 plant species recorded in the reserve. Trees and shrubs come in large numbers (48 species), while the most interesting faunal species include the tree frog and brook lamprey.

Projected nature and landscape reserves

Currently, ten nature and landscape reserves have been proposed to be established within the greater Łódź area (K u r o w s k i , A n d r z e j e w s k i 1999/2000, K u r o w s k i 1998).

1. Las Krogulec – Krogulec forest

The Reserve's purpose is to protect the diversified natural forest of Krogulec (on the western boundary of Zgierz) with its natural stands of *Abies alba* with a high replacement rate. This 200 ha forest has important biocenotic, recreational, and educational functions.



Photo 5. Projected nature and landscape reserve of 'Dolina Czarnawki' in Smardzew

2. Dolina Czarnawki – Czarnawka River Valley - in Smardzew

This deeply dug valley of a small river with five ponds and interesting geomorphological features (steep slopes, gullies, ravines) deserve to be protected. Plant assemblages that have been found by the river include streamside ash-alder riparian forest, and slope broadleaved forest with interesting arboreal flora (collections of old trees: oaks, hornbeams, sycamores, beeches, limes, etc.). It is a landscape worth preserving in its unchanged condition as a valuable refuge for the fauna and flora typical of water, marsh, and forest biotopes, and also as a site of high recreational value.

3. Las Chelmy – Chelmy Forest

A forest complex between Zgierz and Łódź in the Wrząca River valley, a left-bank-tributary of the River Sokołówka. The most important protected parts comprise the river itself, with numerous meanders, old channels, and the spring area, and various plant assemblages, mainly forest occupying an

area of 70 ha. This most important ecological corridor on the northern outskirts of Łódź, which also functions as a leisure centre (the Nowa Gdynia tourist centre is situated here), ought to preserve its natural features.

4. Lagiewniczanka

This projected reserve covers a part of the valley of the upper course of the Lagiewniczanka River (a right-bank tributary of the River Bzura) and a part of the old forest south of the river in Lagiewnicki forest. It is about 210 ha in area and rich in geomorphological landforms; it boasts gullies and small denudation hollows from periglacial times, i.e. after the melting of the ice sheet. The relative altitude difference reaches 25 metres within the distance of 350 m. Up to 180-years-old tree stands have a structure that is typical of natural forest and reach the height of 28 metres. The Reserve's natural assets comprise riparian alder forests with typical hygrophilous flora, various assemblages of continental broadleaved forest and acid oakwood with natural fir stands, and a peat bog complex being a floral and faunal refuge. Within the area of the projected reserve 150 species of vascular plants have been recorded. The animal world is relatively rich, too – the roe deer and the wild boar have established their sanctuaries in the area.

5. Panorama Dobra-Nowiny

The eastern approach to Lagiewnicki forest, including the 243 m hill near Dobra-Nowiny and the region of the upper Kielmiczanka River, is one of the most beautiful landscapes in the western part of the Łódź Heights Landscape Park. The hill offers an extensive panoramic view of a variety of sights: the eastern part of Skotniki, the chequerboard fields in the Kielmiczanka River valley, the traditional development of the Dobra village harmonised with the landscape. The Klek Park, located nearby, is a valuable treasure which, despite many years of neglect and proprietary changes, still retains several features well-worth preserving. These include numerous monumental trees and visible traces of the original habitat. The outstanding landscape qualities of the Dobra-Nowiny district should be protected from urban development pressure and preserved for recreational and tourist purposes. .

6. Parów Kalonka - Kalonka Gully

In the past it was suggested that the gully near Kalonka should be protected by means of a geological reserve. Since the research carried out by Prof. Dylík's team, this landscape has undergone anthropogenic deformations so serious (burial of some parts of the gully, roads construction, urbanisation, and property fencing) that it was impossible to establish a geological reserve. Later it was proposed to protect under the 'nature and landscape' reserve status the last and least transformed part of the gully (in its lower section), as evidence of the historical landscape of the longest - 3.5 km - and most beautiful gully on the edge of the Łódź Heights. The local government could be instrumental in this by substantially reducing the urban sprawl in this area.

7. Byszewy nad Moszczenica – Byszewy on the Moszczenica River

The valuable natural, landscape, and historical assets concentrated in the Moszczenica River valley near Byszewy should be protected. The proposed protection is the nature and landscape reserve which should cover a part of the marshy alder forest in the streamside zone of the River Moszczenica, the valley with riparian alder forest, and the park and manor in Byszewy. Byszewy near Łódź was visited by Jarosław Iwaszkiewicz on several occasions, and he then described this beautiful landscape in his books. A museum named after him should be opened in Byszewy and the manor park should be listed as the national cultural and historic heritage.

8. Dolina górnego Neru - the upper Ner River valley

Protection should be extended to the 200 ha section of the river valley below Rzgów. Abundant springs and water seepages are of significant landscape value, as is the mosaic of semi-natural riparian and alder forests, rush and meadow assemblages. This area features such valuable avifauna species as the penduline tit, common snipe, wood pigeon, and the mallard.



Photo 7. Projected nature and landscape reserve - the fir forest at Kaszew (photo by H. Andrzejewski)

9. Las jodlowy Kraszew - fir forest in Kraszew

Protection should be extended to the 80 ha section of the forest near Wiśniowa Góra (Borough of Andrespol) with particularly interesting natural fir stands (at the northern limit of its geographic habitat), and especially to the scarce watershed peatbog complex with original and endangered flora.

Ecolands

In the Łódź region there exist the sites that satisfy the definition of individual nature protection forms, such as ecolands. Among the proposed ecolands the following five are of the highest value:



Photo 8. Proposed ecoland - 'Lagiewniczanka and Bzura River valley' (photo H. Andrzejewski 1997)



Photo 6. Projected nature and landscape reserve 'Las Chelmy' (photo by H. Andrzejewski, 1999)

1. Lagiewniczanka and the Bzura River Valley

The wetlands in the neighbourhood of Marianka nature reserve, west of Lagiewniki forest, is a large and preservation-worthy complex of natural swampy meadows and peatbogs with rich flora, and willow assemblages in the Lagiewniczanka River valley at the mouth to the River Bzura. This is a valuable faunal sanctuary, particularly for birds – open space species.

2. Opadówka Meadows

The mid-forest meadows within Lagiewniki forest in the Leśniczanka stream valley (north of the reserve) on which a rare fern, the adderstongue, and broadleaved marsh orchid fully deserve legal protection. Within this small space there is a valuable mosaic of meadow and rush phytocoenoses. It is also a valuable habitat of amphibians.

3. Imielnik Bog

In the region of Imielnik Stary there is a one hectare high peat bog, partly overgrown. It is particularly interesting for its hygrophilous and peat bog flora, and a complex of diverse plant communities, with areas of marsh alder, original willow-thickets, and bulrushes.



Photo 9. Proposed ecoland - 'Nowosolna Ponds'

4. Nowosolna Ponds

A 30 ha complex of five ponds and swamps in the depression that constitutes the primary source area of the River Miazga in the original watershed type of landscape. It has outstanding biocenotic significance, primarily as a habitat of important species of plants and animals, particularly birds (grey heron, mute swan, lapwing and mallard).

5. Dobrzyńska River Valley near Łaskowice

A one kilometre long and diversified section of the Dobrzyńska River valley in its lower course (south of Łaskowice) along with a nameless tributary (area – approximately 5 ha) is the local faunal and floral sanctuary. The diversified landscape is accompanied by a variety of plant communities, e.g. streamside riparian alder and ash forests with fringe thickets, herbaceous plants, meadows, water meadows, and pine forest.

Proposed recording stations

The most precious geological sites of outstanding landscape value include:

1. The 284m-high hill near Dąbrowa

In the Borough of Nowosolna, just outside the border with Łódź, there is the highest summit of the Łódź Heights. It is also the most important hydrological node in the region. At the foot of the hill, at various distances, there spring up: the River Bzura and its tributaries, the River Miazga (tributary of the River Pilica) and the River Ner (tributary of the River Warta). The district, known as the "Radars", is characterized by substantial surface water infiltration and active erosion of the slopes, especially close to the summit. The underlying deposits are made up of accumulated glaciotectonic terminal moraine with its surface dominated by loose gravel, sands, and clays. The landscape seen from here provides a sufficient argument to protect 'the highest sub-Łódź mountain'. The hill was proposed for landscape protection as early as 40 years ago.

2. The Janów Denudation Monadnock

Within the landscape park, this is the only instance of conically-shaped geomorphological landform that documents the geological past of the region of Łódź. From the summit (252 m a.s.l.) a wide panorama opens out to the middle part of the landscape park, i.e. the river-basin of the upper Moszczenica River, a picturesque landscape without chimneys, and with a forest on the horizon line. Hill Janów



Photo 10. Proposed recording station - 'Teolin gravel pit' (photo by J. K. Kurowski, 1994)

boasts an outstanding sightseeing and tourist value.

3. Teolin Gravel Pit

The open pit formed following the extraction of gravel near Moskwa is one of the few sites of this type within the border zone of the Łódź Heights. Owing to the well-preserved soil profiles visible on the sides of the pit it is possible to trace the terminal moraine's structure at this location. The alternating layers of clay, gravel, and sand, clearly visible in the pit walls, demonstrate the geological structure. The gravel pit walls provide a breeding place for a colony of sand martins.

Manorial and city parks with elements of natural flora

The most precious parks where fragments of the natural environment have survived include Lagiewniki (number 1 on the map), Klek (2), Dobieszków (3), Byszewy (4), Julianów (5), Piłsudski Park in Zdrowie (6), Poniatowski (7), Źródliśka (8).



Photo 11. Manorial park in Klek (photo by J. K. Kurowski 1994)