

## THE NATURA 2000 NETWORK VERSUS MINING ACTIVITY IN THE TERRITORY OF THE DUKLA COMMUNE<sup>1</sup>

Anna Kowalska, Wiktoria Sobczyk

Department of Environmental Engineering and Mineral Processing, AGH University of Science and Technology  
Mickiewicza Av. 30, 30-059 Kraków, anna\_cygan@op.pl, sobczyk@agh.edu.pl

**Summary.** The Natura 2000 network is a new form of the conservation of nature introduced in Poland from 2004. It was not created to hamper the development of regions but to preserve biodiversity. A mining activity can therefore be conducted unless it has an adverse influence on protected areas. The Dukla commune is located in a naturally beautiful mountain range of the Polish Low Beskids. Similar to other places in Poland, deposits also collide there with the Natura 2000 network. The article analyzes different refugia and deposits of raw materials within the Dukla commune. The mining activity was also presented in the said territories and in the vicinity of the Natura 2000 network.

**Key words:** Natura 2000, Dukla commune, mining

### INTRODUCTION

European ecological network Natura 2000 is independent of the existing in individual states forms of protection and encompasses all states of the European Union. Areas of outstanding natural beauty connected with each other by means of wildlife corridors create the functionally-consistent entirety. It enables to counteract adverse environmental changes better than in the case of individual, separated ecosystems. A major role in ecological consistency is played by areas located between areas protected by the network, therefore each and every activity, even the one that takes place outside protected areas must be evaluated for exerting the influence on the environment. The primary aim of the Natura 2000 network is the prevention of rapid dying out of plants and animals that are treated with priority as well as the protection of biological diversity within the

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EU with the use of regular monitoring of the protected natural habitats and species [Kowalska 2001, Krajczyńska 2009]. As part of Natura 2000 the protection of habitats and species is executed, which includes two types of areas:

- Special Protection Areas for birds (SPAs) designated under the Council Directive on the Conservation of Wild Birds;
- Special Areas of Conservation (SAC) designated under the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora [Pietrzyk-Sokulska 2009].

The created refugia cover only these places where the existing habitats and species are essential for the preservation of communities. Within the EU refugia are created by member states following uniform natural criteria, whereas economic and social factors are taken into account no sooner than at the level of network functioning and area management [Engel 2009]. As to how protect elements of refugium is up to a state as long as within the designated areas the types of habitats and population of species are properly maintained and protected. At present the Natura 2000 network is the world's largest consistent network and it includes nearly 26,000 protected areas within the whole EU [Pawlaczyk 2004]. The total surface area is 850,000 km<sup>2</sup>, which accounts for 18% of land in all member states. In Poland territories included in the Natura 2000 programme grew from 18% in 2008 to 21% in 2010 and now they encompass 141 protected habitats and 823 areas of birds protection [www.gdos.gov.pl]. In Poland refugia included in the Natura 2000 network are represented by two out of twelve biogeographical regions: alpine and continental.

#### THE NATURA 2000 NETWORK IN THE DUKLA COMMUNE

The Dukla commune lies in southeastern Poland in the Podkarpackie province and extends over an area of 253.14 km<sup>2</sup>. Geographically located within the macroregion of Western Carpathians, the southern part of the commune lies within Low Beskids and northern part within Jasło and Sanok Valleys (Doły Jasielsko-Sanockie). The Jasiołka river, which is a right-bank tributary of the Wisłoka river, flows through the area. Underground waters within the Jasiołka valley belong to the body of the Wisłoka river, which is among major bodies of underground waters in Poland. The Wisłoka valley was therefore classified as an area of high protection [Radwanek-Bąk 2009]. The degree of forestation, which is far more than the national average and accounts for 54% of the whole area of commune, should be emphasized. As many as 90% of the Dukla commune consists of areas under legal protection. In southeastern part there is a Jaśliska Landscape Park, in southwestern Magura National Park and Natural Park of Low Beskids in the centre. There are also a number of reserves, natural monuments and seven areas which are part of the Natura 2000 network, including six SPAs and one SAC. Areas of natural habitats conservation include:

Landslides in Lipowica (PLH180044). In the area there are one of the biggest groups of pseudokarst caves in Carpathians, where two species of bats were discovered: a lesser horseshoe bat and a greater mouse-eared bat listed in Annex 2 to the Council Directive 92/43/EEC. The biggest cave is the Słowiańska-Drwali cave with dripstones, which are rare in flysch caves, and diversified microclimate [Mleczek 2009].

The Magura refugium (PLH180001) lies in the central part of Low Beskids, in upper part of the Wisłoka valley, mostly within the Magura National Park and the reserve of Kornuty. It encompasses seven communes, including the Dukla commune. The highest peak is Wątkowa 846 m above mean sea level. Distinctive features of the topographic profile include humps and long ridges running from north-west to south-east separated by numerous valleys. As many as 99% of refugia create one complex (mainly a forest complex) separated in the eastern part by the valley of the Wilsznia stream and in the western part by the valley of the Wisłoka river. Located in the transition zone between Eastern and Western Carpathians, the Magura refugium is a junction of wildlife corridor. Western and eastern Carpathian mountain species migrating in opposite directions along the ridge come across lowland species from Low Beskids, which makes this area unique [Oklajewicz 2004].

The Jaśliska refugium (PLH180014) is located in the territory of Jaśliska Landscape Park and it encompasses the upper basin of Jasiołka and seepage spring areas of Wisłoka in the eastern part of Low Beskids reaching Cergowa Mountain and villages Zawadka Rymanowska and Królik Polski in the north. Hills below 1000 m AMSL account for a mild topographic profile. The highest peak in the area is Kamień (863 m AMSL). Most of the land is covered with forests dominated by *Dentario glandulosae*-Fagetum. The rest of land comprises open areas, mainly former pastures and meadows. In the Jaśliska refugium there are many seepage spring areas, water effusions and extensive waterway network [Lipińska 2008].

The Jasiołka river (PLH180011). The area extends over the valley of meandering Jasiołka from the estuary of the Panna river to the region of Tarnowiec. It flows through several major places such as Dukla, where residential buildings are just by the river. Jasiołka flows in a wide and shallow valley, there are occasional small islands in the current, on the river bank there are wide gravel-bank and numerous gravel backwaters, which are the result of very dynamic transport processes. River banks are overgrown with various species of willow, in the upper reaches of river there are alder groves and in the lower reaches there are willow riparian forests (Fig. 1). In the river valley there are arable fields, meadows, water tanks created after the exhaustion of aggregate which are partly overgrown with plants typical of old river beds [Hus 2008].

Trzciana (PLH180018). An area within Low Beskids in an alpine region extending over an area of 2285 ha. It contains a hermitage of St. John of Dukla located on the Zaśpít hill and surrounding forests. The building is situated on the steep hillside in the middle of mixed forest, built from stone and with metal roofing. The refugium consists of a disused loft of a stone church, which became a shelter



Fig. 1. Jasiołka river in Trzciana covered by a program Natura 2000 (phot. A. Kowalska)

for a breeding colony of two species of bat listed in Annex 2 of the Natural Habitats Directive: greater mouse-eared bat (58 specimen) and lesser horseshoe bat (50 specimen) [Dzięciołowski 2008].

Łysa Góra (PLH180015). An area lies at the height of 288–692 m AMSL and encompasses the Łysa Góra hill massif (641 m AMSL). In an area close to the peak there are many springs and streams, which flow from them, plunge into a substratum and form deep ravines with steep banks and many landslides. 93% of the area is covered with forests, including coniferous forests 33%, deciduous forests 24% and mixed forests 36%. Fir and beech mature forests with considerable amount of yew trees are present on hillsides and sycamore maple in ravines. Meadows and pastures cover 2% of the area, grassland 1%, arable land 3% and plots of land 1%.

Special protection area for birds and habitats:

Low Beskids area (PLB180002) encompasses 21 communes of the Małopolskie and Podkarpackie province. It occupies the area of nearly 152.000 ha and spans over 100 kilometers from the valley of Oślawa and Oślawica in the east to the valley of Kamienica and Sądecka valley in the west. An average height is 553 m AMSL. In Low Beskids there are seepage spring areas of Wisłoka, Jasiołki, Biała and Ropa. A storage reservoir was built on the Ropa river, influencing to a large extent the environment of the river valley. Flora in Low Beskids is transitional between Eastern and Western Beskids and it forms desert grasslands and colline zones. Forests are characterized by a high degree of natural state. The refugium is abundant with 40 species of birds listed in Annex 1 of the Directive on birds, including 18 species of birds which are classified as endangered species by the Polish Red Data Book of Animals [Pietrzyk-Sokulska 2009]. Low Beskids are noted for the Poland's largest and one of the Europe's highest population of a lesser spotted eagle and an ural owl.

## MINING ACTIVITY WITHIN THE DUKLA COMMUNE

In the territory of the Dukla commune there are 21 natural aggregate deposits, road stones, crude oil and natural gas resources. Seven deposits are currently being exploited, in five the exploitation has already come to an end (Fig. 2).



Points of natural resources exploitation:

- The Natura 2000 network,
- natural aggregate deposits
- ▲ road stones
- natural gas deposits

Fig. 2. Currently exploited deposits in Dukla commune [Kowalska 2011]

Nearly half of the deposits are natural aggregates in the Jasiołka river valley, which are exploited using open-pit mining due to shallow position (Fig. 3). When it comes to reserves, they are classified as medium and small deposits.

Road stones are extracted from a large deposit Lipowica II-1 (Fig. 4). According to estimations presented in the geological documentation, the reserves amount to about 18 350 k Mg, which accounts for 53% of the total Lipowica II recoverable reserves. A licence for mining aggregate from the Lipowica quarry was granted to the year 2034 [Pszonka 2009].

A petroleum and natural gas mine was opened in 1853 and it was the first mine of this kind worldwide. It operates to date. It is estimated that industrial reserves amount to 1237 k Mg, which accounts for 30% of initial geological reserves. The Ropianka deposit was removed from recoverable reserves in 1990 (chart 1).



Fig. 3. Gravel pit in Trzciana covered by a program Natura 2000 (phot. A. Kowalska)



Fig. 4. Quarry in Lipowica covered by a program Natura 2000 (phot. A. Kowalska)

Table 1. Deposits located in the municipality of Dukla [Kowalska 2010, [http://geoportal... MIDAS](http://geoportal...)]

Deposit	Type of mineral	Approx. area/ha	Way of exploitation	direction of the reclamation	Time of exploitation
Bobrka – Rogi	P, NG	250.60	borehole mining	-	from 1853
Drymak – p. A	NA	13.03	opencast, longwall	agricultural	-
Drymak – p. B	NA	15	opencast, longwall	agricultural – water	from 2004
Drymak – p. C	NA	37.97	opencast, longwall	agricultural	-
Dukla	NA	94.50	opencast, longwall	water	from 1975
Dukla 1	NA	1.92	opencast, longwall	agricultural – forest	-
Dukla 1	NA	1.92	opencast, longwall	water	-
Iwla	RS	32.90	longwall	-	-
Jasiołka – Panna	NA	2.32	opencast, longwall	agricultural – water	1998–1992
Lipowica	RS	3.70	longwall	-	to 1979
Lipowica II	RS	23.25	conical, opencast,	forest	from 1981
Lipowica II-1	RS	28.28	opencast, longwall	forest	from 1982
Ropianka	NA	99999.99	no data	-	to 1990
Równe	NA	0.53	opencast, longwall	agricultural	-
Trzciana	NA	9.20	opencast, longwall	water	1993–2002
Trzciana II-p. A	NA	28.02	opencast, longwall	agricultural	-
Trzciana II-p. B	NA	12.69	opencast, longwall	agricultural	from 2004
Trzciana II-p. C	NA	13.53	opencast, longwall	mixed	-
Trzciana II-p. D	NA	11.68	opencast, longwall	agricultural	from 2004
Trzciana II-p. E	NA	11.86	opencast, longwall	agricultural – water	-
Tylawa	RS	1.27	opencast, longwall	water	1994–1999

Legend: NA – natura aggregates, RS – road stones, P – petroleum, NG – natura gas

All deposits at present exploited are in areas Nature 2000 (Fig. 2). Identifying and the evaluation of possible hazards and their effects are important so that in the future it is possible to eliminate them or to limit. In individual stages the mining activity in the different degree is having an influence negatively on an environment. In the phase of the preparation for the use occupying the area is a great load, felling forests and removing the mining waste, in the phase of the use exhaust emission, noise, decrease in value landscape. After the completed rehabilitation they can appear and diffuse strange invading species of plants and animals.

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MINERAL MINING IN THE DUKLA COMMUNE IN AREAS PARTICIPATING  
IN THE NATURA 2000 PROGRAMME

All developed and undeveloped mineral deposits are present within the Natura 2000 network. The deposits are situated partially or in their entirety in the territory of the refugium. An investment activity around or close to the Natura 2000 network is considerably hindered. The entrepreneur is obliged to obtain a decision about environmental conditions, which is issued after an Environmental Impact Assessment is conducted in which the entrepreneur has to prove that a planned investment will not have an adverse effect on the refugium. A report should contain, among other things, the description of investment, description of environment and alternative solutions, including an option which is not going to be implemented as part of investment. Should a suspicion of possible negative environmental effect arise, the investor will not be granted a permit for the investment. An exception applies to enterprises of overriding importance to public interest or of human health and public safety interest. In such cases an environmental compensation is necessary, which is the financial responsibility of the investor.

#### CONCLUSIONS

The southern part of the Dukla commune is almost completely covered with the Natura 2000 network. In this part of commune there is also the majority of mineral deposits, all of which are present within protected areas both SPA and SAC. This situation does not form the basis for issuing a ban on conducting a mining activity but only for motivating entrepreneurs to protect the environment better. Mining, especially open-pit mining, affects the environment to a great extent. The size and range of anthropogenic changes made as a result of mining depends on duration and many interrelated natural, planning, economic and educational factors. After the mining process has come to an end and pre-planned land rehabilitation carried out, the land can be enriched to include new morphological forms that are harmonious with it and can become a tourist attraction. Open casts created as a consequence of mineral mining can serve the function of storage reservoirs in the case of flood, and newly formed small ponds can be suitable for new species of plants and animals. In the Dukla region a cooperation between miners and naturalists is significant in order to protect the nature and satisfy needs of local people in the name of sustainable development.



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SIEĆ NATURA 2000 A DZIAŁALNOŚĆ WYDOBYWCZA  
NA OBSZARZE GMINY DUKŁA

**Streszczenie.** Sieć Natura 2000 jest nową formą ochrony przyrody. Jej zadaniem nie jest ograniczanie rozwoju regionów, ale zachowanie bioróżnorodności. Dlatego działalność górnicza może być prowadzona, ale jedynie wtedy, gdy nie będzie negatywnie oddziaływała na obszary chronione. Gmina Dukła leży w bogatym przyrodniczo Beskidzie Niskim. Tak jak w całej Polsce, również tu złoża kolidują z siecią Natura 2000. W artykule poddano analizie poszczególne ostoje oraz złoża surowców na terenie gminy Dukła. Przedstawiono również działalność wydobywczą na terenach i w pobliżu sieci Natura 2000.

**Słowa kluczowe:** Natura 2000, gmina Dukła, górnictwo