

The Natura 2000 network and thread from mining activities¹

Introduction

Natura 2000 areas are a new form of protection of plant and animal species as well as of natural habitats. The range of Natura 2000 areas covers the most important and the most representative taxa types for all European regions. The purpose of the entire inter-linked network is to facilitate Europe-wide preservation of species. The Member States of the European Union that have implemented this new type of nature protection in their legislations rely on the following legislative instruments:

- Directive of the European Parliament and of the Council 2009/147/EC of 30 November 2009 on the conservation of wild birds [*Directive 2010*]. The Directive currently in force has replaced the European Economic Community Directive 1979/409/EEC of 2 April 1979 on the conservation of wild birds [*Council Directive 1979*];
- European Economic Community Directive 1992/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [*Council Directive 1992*];
- European Commission Directive 1997/62/EC of 27 October 1997, adapting to technical and scientific progress Directive of the European Economic Community 1992/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [*Council Directive 1997*].

Poland's network includes the following types of Natura 2000 areas: habitat, bird, as well as bird and habitat (Table 1).

Table 1

Types of Natura 2000 areas in Poland [prepared by A. Kowalska on the basis of Pawlaczyk, Jermaczek 2004]

Area type	Area name	Area code	Object of protection
Habitat	Site of Community Importance (SCI)	PLH.....	Habitat types listed in Annex I of the Habitats Directive (1992, 1997) and

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			animal and plant species listed in Annex II of the Habitats Directive (1992, 1997)
	Special Area of Conservation (SAC)	PLH.....	
Bird	Special Protection Area (SPA)	PLB.....	Bird species listed in Annex I of Birds Directive 2009
Bird and habitat	Natura 2000 area	PLC.....	Habitat types listed in Annex I of the Habitats Directive (1992, 1997) and animal and plant species listed in Annex II of the Habitats Directive (1992, 1997); bird species listed in Annex I to Birds Directive 2009

1. Object of protection in Natura 2000 areas

The areas comprising the Natura 2000 network, both bird and habitat areas, have been indexed in terms of impact of aggregate mining on their objects of protection. Nature-related data, on the basis of which a given area has been qualified as part of the Natura 2000 network, is contained in the Standard Data Forms (SDF), which were used in further considerations focused on ecological aspects.

The objects of protection within the Natura 2000 network include habitat types or plant or animal species that require protection due to:

- range of their occurrence – areas where habitats, plants or animals can be found are limited to either one refuge or a few separate ones; presence in the refuge is crucial for given species on a supra-local, regional and national scale;
- representativeness – habitats or plant/animal species are typical of a given type of bio-geographic region of Europe due to their endemic occurrence;
- number of specimens – in the case of birds it means that in a given Natura 2000 area you can find at least 1% of the national population of a given species, and as for other animal species – the number of specimens of given species in a Natura 2000 area must be significant on the national scale;
- protection status comprising the types of natural habitats protected by the provisions of the Habitats Directive, species of fungi, plants and animals subject to species, strict, partial and active protection; species subject to zone protection of breeding sites, species listed in the Polish Red Data Book of Plants (ferns and flowering plants), animal species listed in the Polish Red Data Book of Animals (vertebrates and invertebrates), species subject to pro-

tection under international agreements and conventions, species listed on the IUCN Red List of Threatened Species [IUCN 2011].

2. Impact exerted by gravel and sand mining sites on the natural environment

Natura 2000 areas have been selected to assess the impact of the sand and gravel mining (Table 2) on their respective objects of protection for the following reasons:

- distance between a given Natura 2000 area and places of deposit mining – using the formulas from the decisions of the Regional Directorates of the Environment Protection regarding the environmental impact assessment; only such areas were selected that are located within 20 km from the designated places of sand and gravel deposits mining;
- range of impact – analyses had the objective of verifying whether mining of aggregate deposits is a site-specific, local, supralocal, regional or national impact;
- objects of protection of Natura 2000 areas listed in the SDFs – from the Standard Data Forms, only those plant and animal species, as well as habitat types were selected that are proper objects of protection, for conservation of which Natura 2000 areas were created.

Table 2

Types of impact from aggregate mining on the environment [Martyniak 2011]

Type of impact	Types of aggregates		
	sand, gravel	stones, boulders	aggregates from inland waters
direct impact			
loss of landscape assets	+	+	–
destruction of the natural habitats under protection	+	+	+
destruction of sites of fungi, plants and animal species under protection	+	+	–
destruction of sites of inanimate nature	–	+	–
increased mortality of animals as a result of mining	+	+	+
changes in hydrographic conditions significant from the ecological perspective (drainage, watering)	+	+	-
noise	+	+	+
destructive phenomena – erosion, abrasion, mud slides	+	+	+
intensive transport of excavated aggregates	+	+	+

phenomena not foreseen before mining	+	+	+
emergence of new invasive and alien species of plants and animals	+	+	+
indirect impact			
changes in hydrographic conditions significant from the ecological perspective (drainage, watering)	+	+	+
destructive phenomena – pollution with dust	+	+	–
phenomena not foreseen before mining – technical equipment connected with area contamination with fuel, grease, oil	+	+	+
contamination of water and ground with fuel, grease, oil	+	+	+

explanation: + impact, – no impact

The deposits of minerals are located in mountainous areas and river valleys, often in the areas of significant natural value. Extracting aggregates upsets the environmental balance of the place subject to mining and the areas linked to it in the ecological sense. Sand and gravel are extracted without applying measures that are highly destructive for the natural environment.

The mining pits are inhabited by native flora and fauna (Figs. 1, 2). New habitats may exceed biodiversity habitat that existed before the exploitation. The reservoirs created after mining are a good place to settle for waterfowl [Pietrzyk-Sokulska 2009].



Fig. 1. Secondary succession in the gravel mining in the Raba River Valley. Klaj locality (photo by: A. Kowalska)



Fig. 2. Birds in the gravel mining in the Jasiolka River Valley. Trzciana locality
(photo by: A. Kowalska)

Conclusions

The examples of the positive impact of the exploitation of minerals tend to look at the mining industry not only as an activity aimed at acquiring material goods, but also forming a new value [Kowalska, Sobczyk 2011; Sobczyk, Kowalska 2013]. Perceptions of restoration as an activity of the creation of new forms of environment gives the mining positive opinion. However, this does not remove the obligation to ensure that opencast mining not cause significant damage in areas of high conservation value, e.g. Natura 2000 areas.

Literature

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Abstract

The aim of the Natura 2000 network is to preserve biodiversity while allowing sustainable development of the regions. This paper describes the objects of protection in the Natura 2000 areas. Some characteristics have been provided of the types of impact exerted by gravel and sand mining sites on the natural environment. Also it has been presented the influence of the mining of sand and gravel on the objects of protection in the Natura 2000 network.

Key words: Natura 2000 network, mining activity, threats, environmental protection.