

ENVIRONMENTAL ASPECTS OF MINING AREA OCNA ȘUGATAG

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Abstract

The paper presents some results of research done on the salt mines area from Ocna Șugatag, an evolution of mining in the region correlated with environmental aspects.

The salt mines were abandoned in 1950, since then a lot of major changes happened in the area with negative impact over the environment. By abandoning the salt mines and destroying their infrastructure, some crumbling appeared and served as places to collect rainwater. The result was a number of 45 lakes. The paper presents a detailed analysis of the implied processes and a detailed description of these lakes and their surroundings with special particularities.

From an environmental protection point of view, the most serious problem that was identified is the stability of the old salt mines which still stands and soil fertility.

INTRODUCTION

Mining in the Maramures region saw a flowering and a major importance over time as one of the most important industrial activities in the county. However, the mining activity, with its various aspects, has produced a varied, mostly negative impact on the environment. Although mining activity ceased, the impact of mining are felt far and it seems that it will feel a long time to come.

Mining in Maramures is known because of the famous ore mines rich in precious metals (gold, silver, copper, etc.) and salt mining is forgotten although it was particularly flourishing in the early XIX century. Former salt mines from Costiui and Ocna Șugatag were transformed into bathing areas of local interest without knowing the history of this places, the origin of salted water or the risks to health and safety of people from these areas. The mines from Ocna Șugatag entered into oblivion, although their presence is felt, after more than 50 years since their closure, by a significant environmental impact.

BRIEF HISTORY OF THE OCNA ȘUGATAG MINING REGION

Located on the interfluves between the rivers Mara and Cosău at a distance of 19 km from Sighetu Marmăției city, near the border with Ukraine, we can say that Ocna Șugatag is located in the central area of Maramureș County (Figure 1). This

village is first attested in 1355, by a document referring to the existence in the area of a very large salt mining region and a road of salt passing near Giulești, a well known location nearby.



Fig. 1. Location of Ocna Șugatag in Maramureș county

Over time, this village earned several names being mentioned in 1360 by Radu Popa in an official document as "near Giulești, Sărata Valley, a tributary of the Mara river, <<Zalatina>> in the top six <<villas nostras Olachales>> from the Mara valley strengthened in 1360 by Dragoș son of Giulea from Giulești. Zalatina was the first officially mentioned name of the locality.

In another document from the year 1419, the locality is named Șugatag and in 1828 is called Akna Sugatagh (Ocna Șugatag), as we know, the actual name. The history of this village is continuously related with the mining activity, the main concern of the inhabitants.

In 1950, due to massive infiltration of different kind of water in the active mines, it was decided to abandon them in the same year. So, with some haste, the mines were closed and flooded. Gradually, because of salt dissolution by fresh water, the mines stability decreased, resulting in massive collapse. In the cavities formed in this way, water has accumulated, leading to the formation of 45 lakes of different sizes, shapes and salinity.

IMPACT OVER THE SOIL

In the Ocna Șugatag area, under the influence of specific climate, vegetation, geomorphology and petrography substrate, developed several soil types, as follows:

- In the lowest forms of meadow of the Mara valley and of the more important tributaries, on alluvial deposits under the influence of shallow groundwater,

often completely flooded, the soils are represented by weakly gleyed luvisols, mostly carbonated or saline.

- In the narrow side valleys, between the slopes, in the highest area, where water stream flow or creep through the skeletal material on which the soil cannot form, we meet the rock on the surface.
- In the area immediately adjacent to the valleys, that of the lower terraces, such as the Mara river terraces, or high terraces as those of Ocna the strongly pseudogleyed podzolic soils predominate. This type of soil is found also on the old salt mining site.
- In the higher regions, the genetic diversity of soil increases without the proper soil units to grow a lot, this diversification is expressed more on subtypes and varieties of soils. Here, over an acid parent material, generally represented by sandstones, clays, rolling piedmont and less zeolites yellowish acid brown soils are present. This type of soil contains a lot of skeletal material and is weakly varied by texture.

Soils encountered in this area generally have low fertility potential, due to reduced nutrient content and especially due to their faulty maintenance, including poor fertilizing and irrational exploitation.



Fig. 2. Soils destroyed by salt excess

In the former mining area, soil fertility is lower due to an excessive quantity of salt present in the soil, but the area has a tendency to become a swamp.

Due to the accumulation of salt on these soils grow and develop only salinity-loving plants such as *Cochlearia officinalis* or *Juncus gerardi*. These plants are accompanied by large *Eleocharis palustris* plant associations, plant characteristic to wetlands. All these plants have a low nutrient content and are avoided by grazing livestock. Also, this area is highly degraded due to frequent changes in the

subsurface. As a result, land in the area is unsuitable in terms of agriculture, with the appearance of an abandoned field (Figure 2).

IMPACT ON THE POPULATION

Village settlement and the existence of underground reserves of natural resources, lead to the conclusion that the area of the village of Ocna Şugatag was populated since ancient times. This is confirmed by archaeological findings which indicate human presence in this area since the Stone Age.

In the Maramures county official Almanac from 1901 is mentioned that the number of the residents of Ocna Şugatag numbered 1748 and in 1920 already had 1858 inhabitants, the largest number of people that the locality ever had. This is due to the fact that during that period to work the salt mines reached its peak, the mines were modern, with facilities and advanced equipment and the locality took advantage from exploitation, its development is supported and somehow forced by the salt mines.

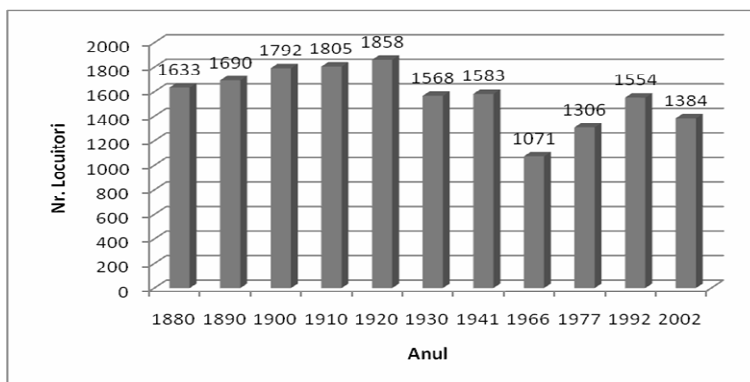


Fig. 3. The evolution of the population between 1880 – 2002

From the analysis of population development between 1880 and 2002 (Figure 3) we can observe a strong correlation of the evolution with the history of the region.

Thus, in 1919 the number of inhabitants decreased to 1696 due to losses of First World War and the early demise of Habsburg Empire under whose direct management the Ocna Şugatag mines were at.

By 1930, the population increase is insignificant, being only 12 inhabitants/year.

Between 1941-1966, was happens a dramatic decrease in population due to several causes, including the loss of life in the Second World War, low birth index due to poverty post Second World War and the official end on 1950 of the salt extraction activity. In that time, some people migrated to other mining centers such as Praid, Dej or remain closer in the Baia Mare mining basin, respectively in mining cities

like Baia Mare, Baia Sprie, Cavnic, or to other towns close which offered good jobs in the field of mining.

Today, Ocna Şugatag includes 4 villages with a total of 4,500 inhabitants, respectively Ocna Şugatag with 1600 inhabitants, Sat Şugatag with 1200 inhabitants, Breb with 1300 inhabitants and Hoteni with only 400 people. The population consists mostly of Hungarian and Romanian, but living together in harmony with gypsies, Russians, Ukrainians, Germans, etc. The socio-economic situation from the past 20 years, in Ocna Sugatag developed tourism and agro-tourism. As a result, the number of inhabitants is increasing; the number of residences inhabited temporarily, also, but the quality of the provided services is in retreat. Rising demands for healthy food, bio-food, areas for recreation and season sports areas are still far from the goals proposed by the Local Council.

CONCLUSIONS

1. The salt mining from Ocna Şugatag had a major impact on the environmental factors in the region. After closing the mines major changes took place in the area concluded in great collapses of the old mines. Land use has changed. Soils near the former mines were used in the past for grazing domestic animals. Now, by changing the surface, this function cannot be met. Soils were turned into swamps, vegetation, consisting predominantly of salt water-loving plants doesn't offer a favorite food for animals.
2. As regards population, it is well known that man has a great capacity to adapt, transforming nature in his favor. When the mines closed, has been a massive migration of people specialized in mining, this migration had a major impact on the area. Today, the population is increasing due to massive development of spa tourism, salty waters of area providing treatment for a wide range of diseases and transformed a former mining area into a tourist area.
3. Determining risk areas and take measures for their delimitation are required. Former mines, flooded today are not totally collapsed, these events are inevitable in the future. Through advanced engineering processes such breakdowns are unavoidable, but can be controlled. Priority actions are the delimitation of these areas and protection of population against possible accidents.
4. Further maintaining the village character requires a punctual evaluation of bio-productive capacity of the area and a long-term strategy aimed at the welfare of the whole community.

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