

HUMAN ACTIVITY AND CONSERVATION IN THE GÖMÖR-TORNAI KARST, HUNGARY

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Summary

The caves of the Gömör-Tornai karst, in the Hungarian-Slovakian border territory, were declared as part of the World Cultural and Natural Heritage by the World Heritage Committee of UNESCO by its resolution of 06.12.1995. This resolution, however, concerns only the caves and does not automatically include the overlying karst planinas or the allogenic catchment despite the fact that without special protection of the whole karstic environment, the caves themselves cannot be properly defended from harmful effects. A morphological, hydrological and ecological study of the Gömör-Tornai karst has demonstrated the adverse consequences of human activity and raised the question: "Is it possible, and are we able to regulate the different economic activities"?

Introduction

The caves on the Gömör-Tornai karst rising on the Hungarian-Slovakian border territory were declared as part of the World Cultural and Natural Heritage by the World Heritage Committee of the UNESCO by its resolution of 06.12.1995. This resolution however concerns only the caves and does not expand automatically on the karst planinas hiding the caves although without the special protection of the whole karstic environment, the caves themselves cannot be defended from harmful effects. With the morphological, hydrological and ecological study of the Gömör-Tornai karst, the burdening consequences of human activity can be revealed. I searched the answer to that question, whether the protection given to the Gömör-Torna karst at present is enough to ensure the equilibrium and the survival of the karst on the long run. Is it possible, and are we able to regulate the different economic activities conducted on the karst, can the view points of the economy (agriculture, industry, transport, pipeline transportation, quarrying, cement and lime production) be brought to agreement with those of the karst planinas and caves, and where can the borderline between the different interests be drawn.

During my research I tried to give an answer to that question how the progress can be maintained on the karstic territories at the present level of regulation of nature protection. The long time protection of the natural values and caves considered as part of the World Heritage make the evaluation of the ecological hazard sources necessary on both side of the border. With my geomorphological, hydrological and ecological researches I would like to call attention on the sources of hazards on the protected territories of the Gömör-Tornai karst and its environment.

Dangers from transport routes

The main transport roads and rail as well as the oil and earth-gas pipelines cross the Gömör-Tornai karst situated between the Gömör and the Abauj-Torna basins. The main source of danger is the "Friendship oil-pipeline" which lies about 1-5 kms from the border. Starting from the Torna valley it continues upwards, turns at Szilice and runs near the Szilice ice-cave, descends to the bottom of the Borzova-polje and finally cuts the western edge of the Szilice-plateau and reaches the Sajó valley (Fig. 1). The fracture or leakage of the oil pipeline would endanger the whole subsurface waters of the karst plateau. If the pipeline would break between the Torna valley and Szilice, the oil would cause natural disaster at the Western part of the Alsó mount. The oil would appear in the main spring of the Torna valley, in the Sólyom spring. As the border in this area lies in the centre of this narrow plateau, the oil damage would reach Hungary as well and it cannot be abandoned that the oil would appear in the upper springs of the Ménes valley (Lizina springs). This could have consequences in the international law. If the break in the pipeline would occur North of Szilice the oil could be observed in the Sajó valley (Fehér s., Pisztráng s., Nagykő s., Vár s.). The waters of these springs are being collected by the Rožnava - Moldava n. Bodvou - Košice (Rozsnyó - Szepsi - Kassa) water-pipelines, thus the oil would endanger the water supply of these cities. If the break would occur South from Szilice, then it would appear in the Fekete-spring at Gombaszög, ruining the natural beauty of the Gombaszög cave and the Szilice ice-cave. If the break would happen near Ardo the infiltrating oil would spoil the drinking water of the Buzgó spring at Lekenye (Orvan, J. 1979.). However

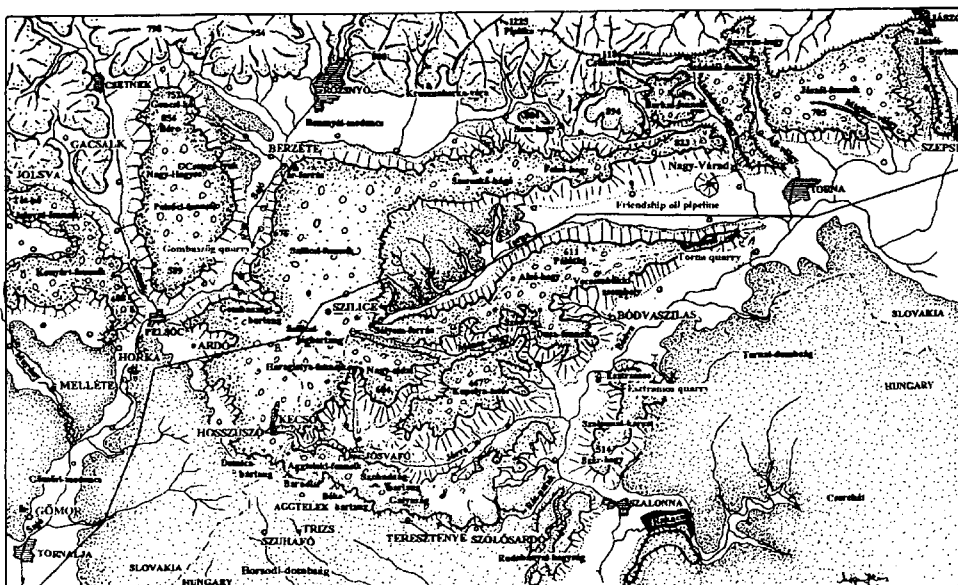


Fig. 1 The "Friendship Oilpipeline" on the plateaus of the Gömör-Tornai karst

the water of this spring is still not captured. The oil, not speaking about the above mentioned springs would reach the deep karst-water circulation zone and could endanger further territories.

It would be important to abolish the route of the so-called "Friendship-pipeline" which crosses the Szilice plateau, and this is the vital necessity of both countries. Without a very high cost a new trail can be founded through the Szoroskő pass or through a tunnel-system built under the plateau.

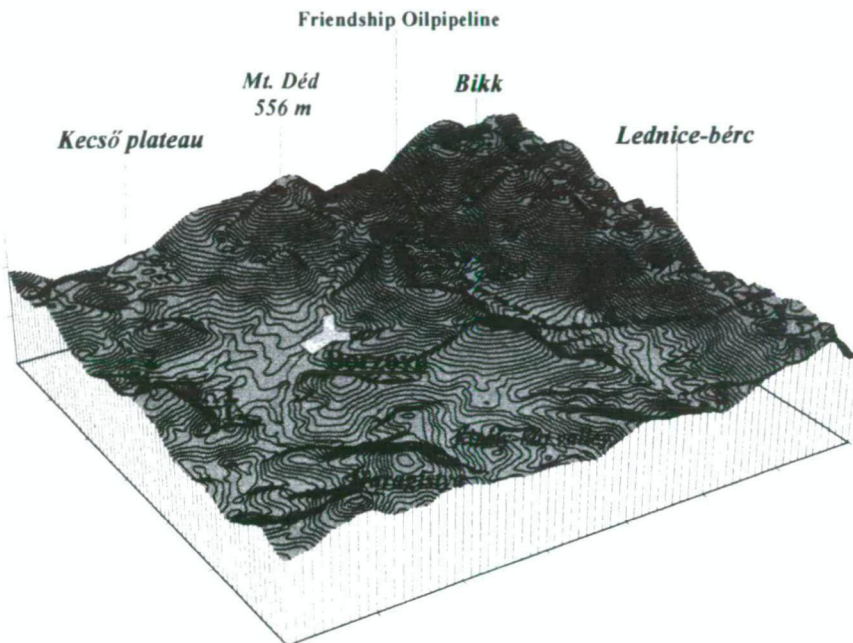


Fig. 2 The "Friendship Oilpipeline" in Borzova polje
(1. Milada cave, 2. Matilda cave, 3. Szilice ice cave, 4. Vörös-kő swallow hole, 5. Paskó-tó spring)

Dangers from quarrying

Another source of danger are the quarry's found on the territory of the Gömör-Tornai karst in the neighbourhood of the National Park and the Slovakian Karst Nature Reserve. Out of the three main quarries the Esztramos in Hungary has stopped to function so its caves escaped destruction. Serious natural damage is caused on the whole of the karst and to Hungary as well by the Torna quarry (Fig. 1), which destroys the Eastern edge of the Alsó-hegy. At the quarry close to the border there are explosions daily, disturbing natural life at the National Park of Aggtelek. The operation of the quarry at Torna should be limited. It should be examined whether international law allows a country to conduct an economic activity endangering nature through sound and dust effect close to the border of another country in such a sense that the neighbouring country can only share the disadvantages. With the process of privatisation quantity restrictions should be established so that the Alsó hegy does not fall victim to any personal or lobby interests.

Dangers from urban development

During the Middle Ages on the plateaus of the Gömör-Tornai karst many small villages were formed, but among these only two survived on the Szilice plateau, Szilice and Borzova (Fig. 1., Fig. 2.). There is no solution to the transportation of the refuse and rubbish in the villages situated on the karst plateaus. The rubbish is heaped up in the dolines close to the swallow holes. The water flowing down the swallow holes continuously spoils the water of the Kecső and Fekete springs. Though there is no industrial activity in the two villages, but the remains of chemicals accumulating in the agriculture and in the households, together with solid waste and outlet water spoil the karst waters after reaching the karst, and endanger the caves which are part of the World Heritage - among them the Szilice ice cave and the well known Gombaszög cave as well. The storage, cleaning and transportation of the wastewater of the two villages with competence are among the primarily important tasks.

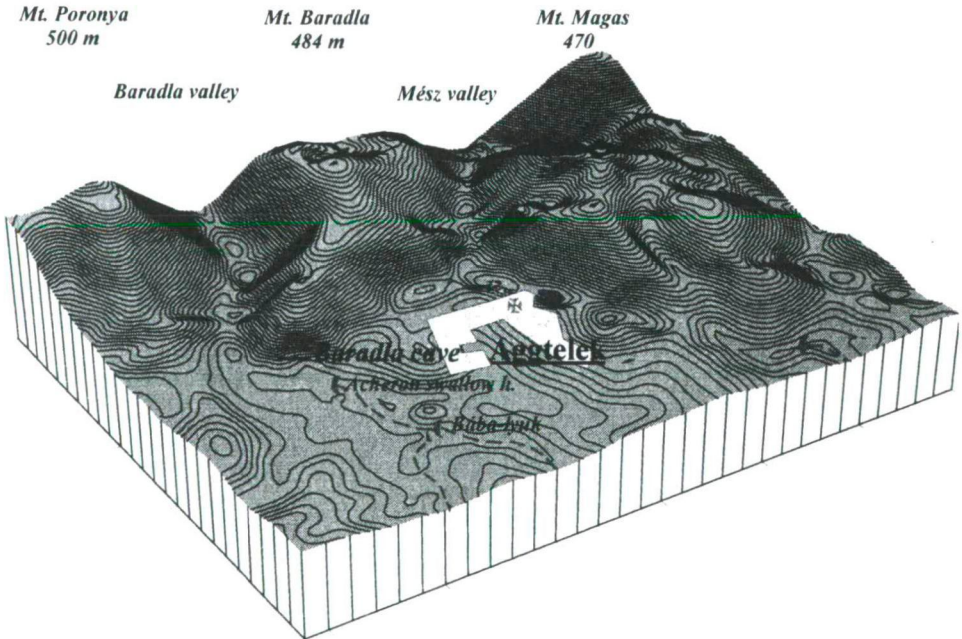


Fig. 3 The entrance and the surrounding topography of the Aggtelek cave and relationship to swallow hole location

Dangers from tourism

The great number of tourist visiting the caves cause an ever growing environmental burden. It is a difficult task to give a solution to the growing demand of water and drainage problems at the entrance of the Domica and Baradla caves, where a big

number of swallow holes open and conduct the waters into the cave system. A major ecological hazard is caused by the buildings established for the reception of tourist groups in the village of Aggtelek and its environment lying on the side of the swallow holes of the cave system. In the past years an average of 150-200 000 visitors arrived at the Aggtelek cave. The tourists move in a somewhat narrow circle around the entrances of the cave system, as the establishments for accepting visitors were constructed here, such as the hotel, the motel, the camping site, restaurants, snack bars, shops – together producing a concentration of natural damage. The collection and transportation of solid waste materials produced by the above mentioned establishments at the entrance of the Aggtelek cave has been solved already, but the conducting and cleaning of outlet water still awaits a solution. The surface water system heading towards the Aggtelek cave entrance and the swallow holes opening on the edge of the Aggtelek plateau (Fig. 3) make the special treatment and storage of wastewater necessary. The ultimate solution would be the transportation of communal waters to the outside of the Baradla-Domica water shed.

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