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ANTHROPOGENIC EFFECTS ON ALSÓ-HEGY IN AGGTELEK NATIONAL PARK

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Abstract: Alsó-hegy is part of Aggteleki Nemzeti Park. It is roughly a nature landscape, but it has some anthropogenic effects too. The vineyard activity left eroded slopes with scattered forests behind. The pastures transformed the original forests to meadows. However, these territories are regenerating to forestlands with juniper grove. A non-native pine forest was planted on the plateau and the invasive acacia groves are frequent at the foot of Alsó-hegy. There are several ruins of lime kilns, where the bare limestone peeps into the surface. The pit of an abandoned marble mine shows the traces of human activity. A small hunter house is the only man made structure on the plateau. A demolished village and ruins of a fortress are also located here. There are also many built-up springs for drinking purposes. The speleological activity can also be recognized in Alsó-hegy. The narrow entrances of pits have been widened, to allow the descending of the researchers to the bottoms of the caves. The entrances of the big horizontal caves (Meteor, 404 Víznyelő) are closed with iron doors to prevent the illegal visits. However, these human activities influence the natural landscape only slightly. The main research point is to survey which type of anthropogenic effects has changed the landscape and how they have transformed it. Only the Hungarian part of Alsó-hegy is discussed in this report.

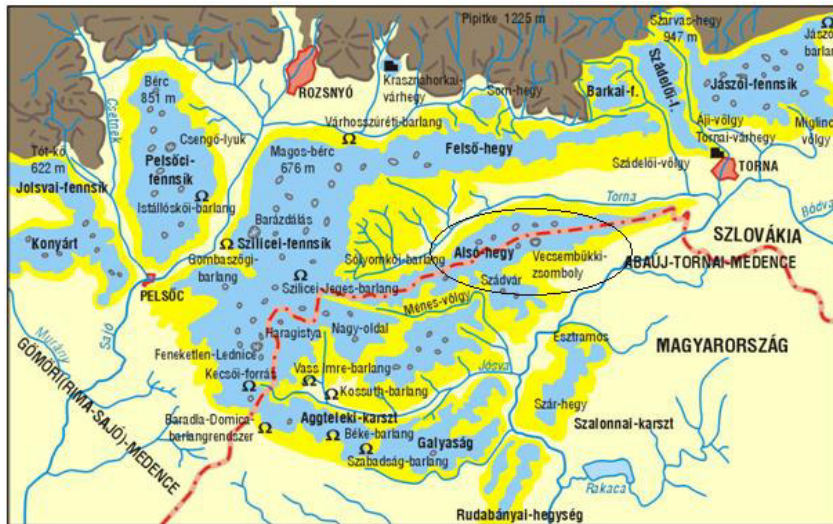
Keywords: Alsó-hegy, minor anthropogenic effects, natural landscape

INTRODUCTION

The Alsó-hegy belongs to the karstic region of Northern Hungary, which is a shallow see Wetterstein formation (Limestone) [1]. It is part of Northern Gömör-Tornai karst region (Figure 1.). The recent landscape formations are the results of more than 5 million years processes.

The borders of Alsó-hegy are the followings: south, Bódva river and Ménes creek; north, Torna creek; west, Szilice plateau. Its expansion is 50 km² with 400-500 m elevation [2]. This territory abounds vertical caves (spothole, zsomboly), most of them were born in Pliocene age [3]. However, several horizontally caves are also located here.

The flora and fauna of Alsó-hegy have a big diversity [4]. This area belongs to the deciduous forest biome. The climate of this area is temperately cool and humid. The average annual temperature is 8-8.8 °C, with 680mm precipitation (rain and snow). The typical tree species are the hornbeam and oak, but several other species are also present. The meadows among the woods have forest steppe characters [4]. The typical trees of southern slopes are oaks and junipers. The most part of the landscape is unsettled.



Figure(1) Map of Gömör-Tornai karst [2] The Alsó-hegy is circled. The red dash and dot line shows the border between Hungary and Slovakia.

The Hungarian part of Alsó-hegy is the part of Aggteleki National Park (ANP, Aggteleki Nemzeti Park)[5, 6]. ANP has become the members of UNESCO World Heritage network in 1995 [7]. Therefore it is a highly protected area, with overwhelmingly natural characters. On the other hand, several anthropogenic effects can be recognized, in spite of the highly protected status of this area.

This area is excellent from point of view of education of the environmental engineer students. They can realize the long term effects of human activities. They can transform their theoretical knowledge to real situation using project work system [8].

OBSERVED ANTHROPOGENIC EFFECTS

The anthropogenic effects on the surface soil and rocks

The main significant anthropogenic effect is the eroded southern slopes of Alsó-hegy above the Bódva valley. Recently this area is a bushy terrain with dints (devil plowing, ördögszántás) (Figure 2.). This karren field is the consequence of intensive viticulture before the phylloxera epidemic. The grape rows caused intensive erosion of soil. After the phylloxera epidemic the erosion has become more intensive on the abandoned terrain (Figure. 2).

There are some small quarries on Alsó-hegy (e.g. Márványbánya). The mining activities were made mechanically in small scales. They cannot be recognized from bigger distance, their presences do not disturb the original landscape. On the other hand, one up-to date rock mine exists in the Slovakian part of the Alsó-hegy, using explosion for production of stones. This mine causes serious wound in the landscape, similar to the Extramos Mountain in the opposite side of Bódva valley.

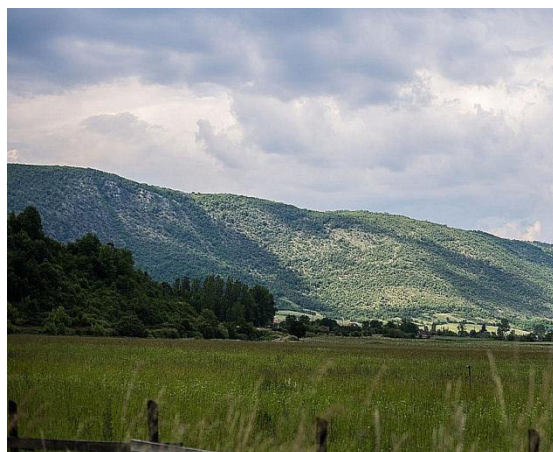


Figure (2) The eroded southern slope of the Alsó-hegy
The eroded surface is consequence of previous viticulture activity.

Anthropogenic effects on vegetation

The viticulture activity on the southern slopes changed the forest to vineyards. After stopping the grape cultivation after the phylloxera epidemic, it has become bushy terrain with some trees, as it was mentioned previously.

There are some meadows in the plateau, (e.g. Szabó-pallag). The forests were cleaned, and the area was used for hay production for animal feeding. Later this activity stopped, and the forest has been started gaining back its territory. Recently there are several juniper groves in these meadows (Figure 3.).

There are also invasive species in Alsó-hegy caused by human interventions. A moderate size pine forest was planted in the plateau (Szabó-pallag). Big territories acacia forests are at the foot of the slopes of Alsó-hegy, mostly in the vicinities of the villages. The reasons were probably the fast wood production for firing purposes of the local inhabitants.

Active loggings functions are also present by forestry enterprises. The Alsó-hegy is a highly protected area; therefore the logging activity is limited. Clear cut or plantations of invasive species are not allowed recently.



Figure (3) Characteristic part of Szabó-pallag meadow.

A five meter wide line clearance was cut along to Hungarian-Slovakian border. There are also row of landmark stones along the clearance.

Appearances of wolves and lynxes are reported showing that, this area is close to natural conditions.

The rough roads, tourist paths and their signals do not disturb significantly the natural habitat.

Anthropogenic effects on water management

All major and permanent springs have been debouched. The smaller ones have only short stainless tubes on their walls, and basins under the tubes, for the drinking purposes on site (Figure 4.).

The bigger springs are connected to the drinking water pipelines of the local villages. For example, the Kastélykerti forrás is the source of the drinking water supply of Tornanádaska. Therefore, the vicinities of these springs are fenced area to keep clean the water of the springs.

Recently, small flood water reservoir has been constructed in front of the Bódvaszilas

Buildings in Alsó-hegy

Only one house is built in the plateau of Alsó-hegy. It is a small hunter lodge. Of course, there are several wooden high-stands for hunting purposes in the whole area.

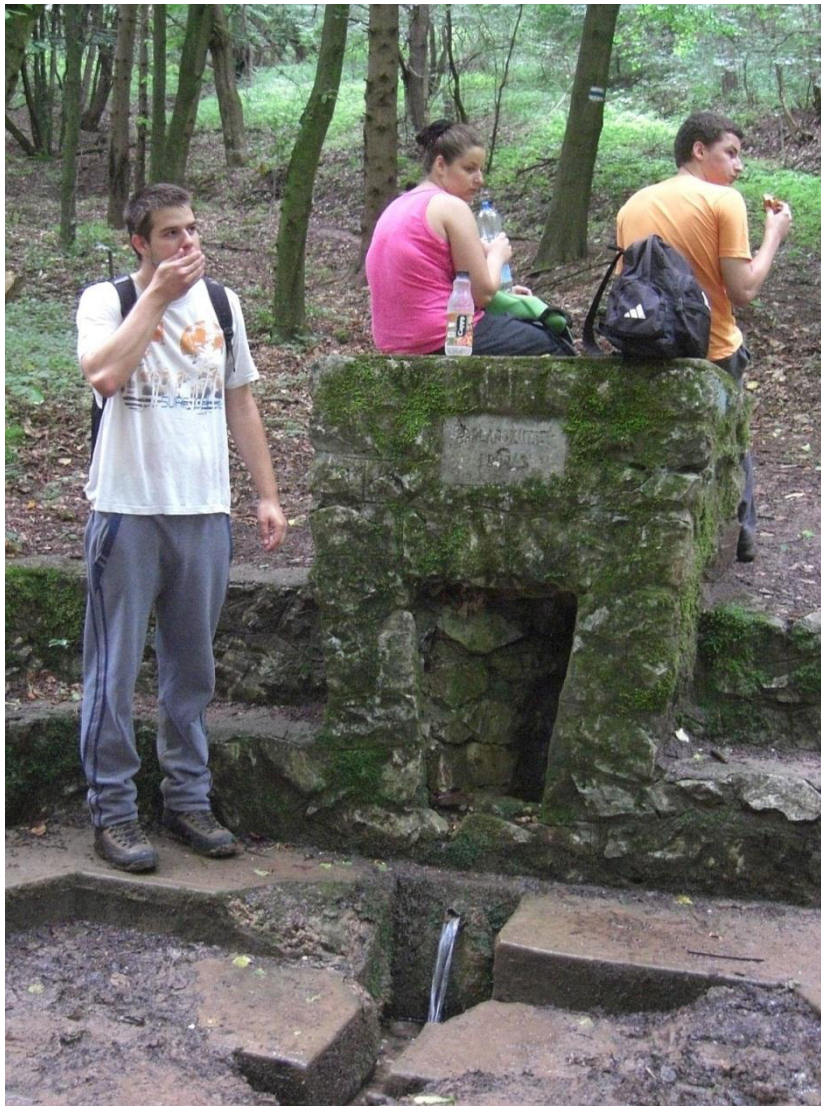


Figure (4) The debouched Barlangkutató forrás spring

The ruin of Szádvár fortress is also part of Alsó-hegy micro region. The fortress were established in 13.th century and finally demolished at the end of 17th century [9]. Recently the “Friends of Szádvár” civil organization protects the ruins and partly rebuilds the walls (Figure 5.).



Figure (5) The ruins of Szádvár fortress

The member of Friends of Szádvár civil organization protect the ruins and partly rebuild the fortress.

A ghost village, Derenk is located at the edge of Alsó-hegy micro region [10]. 400-500 Polish minority groups lived here. However, Miklós Horthy, the governor of Hungary displaced the local inhabitants, because he established a bear hunting park nearby. Today, only the school building and a small chapel (Figure 6.) remained intact (rebuilt), but the other buildings are ruins.



Figure (6) Chapel of Derenk in a ghost village

Traces of cave research in Alsó-hegy.

The Alsó-hegy is very rich in caves, mostly in vertical caves. Several of them had not a visible entrance originally. Their entrances were covered by debris or they had very narrow fissure in the surface. In these cases the entrance of the caves were widened with carving. No any hole could be recognized in the surface of the Tektonik cave. The cave could only be recognized by the heavy white frost depositions among the rocks in a cold winter day. The entrance has been widened to a medium-sized man (Figure 7.).

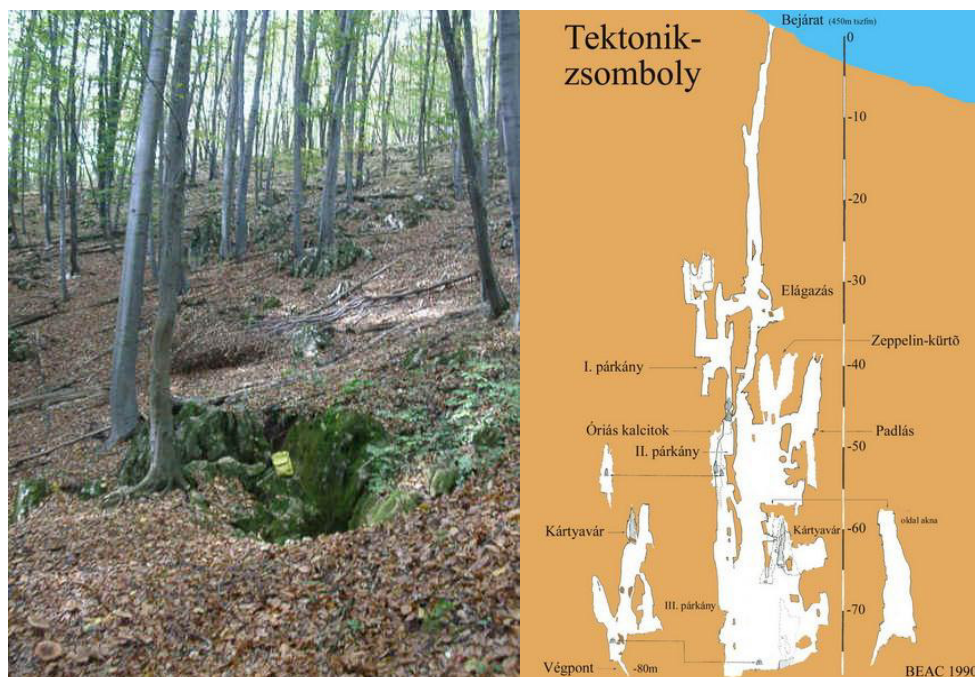


Figure (7) The narrow entrance of Tektonik zsomboly and the map of it [3].

Several times, the cave researchers were pooled-up with rope by man forces from the bottom of first pit. The towing paths can be recognized in some dolines (e.g. Vecsembükki zsomboly).

The entrances of the bigger horizontal caves are locked by strong gates to reserve these caves in their original forms and for safety reasons.

Some tools have been built into the caves (e. g. belays, winch stands, ladders) to make the descending and ascending in these caves easier, but these tools can not be seen from the surface.

CONCLUSIONS

The highly protected Alsó-hegy is close to the natural status. The agriculturally cultivated areas have been partly recovered (Szabó pallag, southern slopes of Alsó-hegy). The invasive vegetation expansions are limited. The ruins of area (Derenk, Szádvár) fit well to the landscape. The debouched springs do not disturb their natural water management conditions in their surroundings. The speleological activities do not disturb the landscape significantly. The Alsó-hegy is appropriate to show its natural habitat and the moderate effects of anthropogenic activities.

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