COMPONENTS OF THE RECREATIONAL-TOURISTIC AND EDUCATION POTENTIAL OF THE AREA OF THE ARCHAEOLOGICAL OPEN-AIR MUSEUM NIŽNÁ MYŠĽA IN SLOVAKIA

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Abstract
The paper is focused to the area of Nižná Myšľa in eastern Slovakia with a more detailed focus on the Archeological Open-air Museum located in the Várhegyi locality. The paper deals with the components of the recreational-touristic as well as educational potential of the area. It presents the territory of Nižná Myšľa in terms of its specific geological structure, geological sites, unique fossils and water features in the landscape. It suggests possible ways of incorporating geotourism, and its subsequent possible implementation in the area as a tool of education. The aim of the present paper is to describe an archaeological site of European importance and to demonstrate its recreational, touristic and educational aspects in order to develop and utilize the potential it possesses.

Key words: geotourism, tool for learning, geology, Várhegyi site, reasons for a possible visit

Introduction
The aim of the present paper is to describe the recreational and tourist elements and educational aspects in the form of possible application of geotourism in the territory of Nižná Myšľa. With a more detailed focus on the Archaeological Open-air Museum, which is located in the locality of Várhegy, in the municipality of Nižná Myšľa. This area is an archaeological site of European importance, which has great potential and attracts many tourists annually. Among other things, systematic research has been carried out by the Institute of Archaeology of the Slovak Academy of Sciences in Nitra together with experts from the East Slovak Museum in Košice. This testifies to the importance and opportunities that this site offers to tourists and locals alike. The essence of the work is not only to describe the above-mentioned elements, but also to define the basic characteristics of the area, hydrological elements and geological structure and thus to provide a comprehensive overview of the prerequisites for the effective development of tourism in this area.

Theoretical framework
Main characteristics of the territory
The territory of the village of Nižná Myšľa is located in the south-eastern part of the Slovak Republic, approximately 15 kilometres from Košice (Fig.1), it belongs to the Košice Self-Governing Region, Košice - surroundings district. The cadastral territory of the municipality lies on the border of the Košice Basin and the foothills of the Slanské Hills. The village is located at the confluence of the Hornád, Torysa and Olšava rivers. Nižná Myšľa was mentioned for the first time in writing in 1270 in preserved sources, in a transcription from 1369 (Fialek, 2016; Turčan et al., 2009; Olexa, 2003).

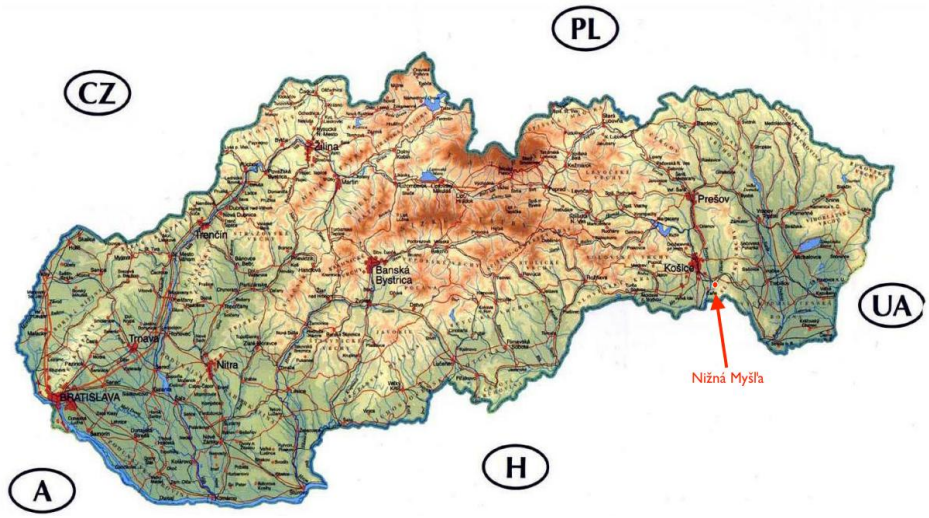

Fig. 1: Map of localization of the area of Nižná Myšľa (author: own processing)

Hydrological features of the territory

The territory of Nižná Myšľa has many sources of surface and ground water. In the village of Nižná Myšľa there are several naturally springing springs. The Koscelek spring still serves as a source of drinking water for the municipality of Nižná Myšľa. The Hornád River, which is an important watercourse, flows through the center of Nižná Myšľa. On the left is a tributary of the rivers Torysa and Olšava. The left side of the Hornád River is characterized by the fact that there is a protective dam built there. The right side is the floodplain of the river The underground flows of the Hornád River originate in sediments from the Tertiary and Quaternary periods. The sources of the water flows are confined in layers of clay and impermeable rocks, some of which have a specific artesian form (Fialek, 2016; Olexa, 2003).

Geological structure of the territory

Geomorphologically, the Košice Basin can be considered as a depressed formation. The present relief of the terrain is a grouping of geomorphological activities that took place at the end of the Tertiary, in the Upper Pliocene and Quaternary periods, the beginning of the Quaternary (Olexa, 2003).

Geologically, the bedrock of the area consists of marine sediments, volcanic tuffs and magmas dating back to the Tertiary period. The bedrock is also made up of gravel deposits of watercourses and sandy-loess wind-blown layers from the Quaternary period. Beneath the above layers is bedrock that was formed during the so-called Alpine wrinkle. This took place roughly 135 to 65 million years ago. The terraces and floodplains of the watercourses and the alluvial cones on the left side of the tributaries of the Olšava River can be found on the fractures of the area of the village of Nižná Myšľa. The outer surface of the terraces is partly covered by several metres of massive cover of eolithic sediments and loess. At the beginning of the Quaternary period in the area of Nižná Myšľa, erosion activity took place, which, together with tectonics, caused the division of the Olšava and Torysa rivers. The troughs of the watercourses carried the eroded rocks into the Hornád valley, where they were deposited. The most famous geological areas of the Nižná Myšľa include the areas of Skalka, Várhegy and Moľva (Olexa, 2003).

The sedimentary rocks in the area of Várhegy near Nižná Mysľa are light yellow to yellow in colour, have a porous structure, calcareous character with straight fissures. They are overlain by clay. Several millennia of erosion have resulted in changes in the landscape relief (Olexa, 2003).

Geological site Skalka

The main rocky unit Skalka is located above the river Olšava. It is a remnant of a lava flow originating from a volcano from the Tertiary called Bradlo. This area was once a quarry for andesite, nowadays we can observe a specific structure of the lava flow. In parts of the original

lava flow in the Skalka area, the magmatic rock - andesite - is now breaking up into narrow plates, which are nicknamed by the local community as “kľapčaky” (Olexa, 2003).

Geological site Várhegy

Beneath the applied spray in the Várhegy area, layers of volcanic ash are localised, which is grey in colour. There are also layers of sedimentary rocks, namely claystones and sandstones, where we can find body parts of dead marine animals. In the last stages of the Tertiary period, when the earth's crust began to rise under the influence of volcanic activity and the sea began to retreat, water bodies, lakes and marshes began to form. Fresh and brackish water ecosystems were created in lakes, marshes and estuaries that flowed into the sea. The brackish-water ecosystems created favourable conditions for specific types of snails and shellfish. Their mighty shells are intact to this day and persist in unique fossils. Several metres of volcanic ash deposits solidified after cooling to form tuff rock. During the Quaternary period, the tuff mixed with primary fluvial sediments, claystones and sandstones to form a pyroclastic sediment, tuffite, over time (Olexa, 2003).

In addition to the above-mentioned elements in the form of geological sites and geological aspects that may be of recreational, touristic and educational interest, the main attraction is the Archaeological Open-air Museum in Nižná Mysľa, specifically in the Várhegyi locality, offering a significant archaeological site, unique fossils and various events for the general public and tourists, characterised in the following text. The Archaeological Open-air Museum may represent a suitable location for the development of a sustainable form of tourism, such as geotourism.

Archaeological Open-air Museum Nižná Myšľa

Archaeological Open-air Museum in Nižná Mysľa is one of the sites of European importance, which meets the basic principles on which geotourism is based. It has a rich geological history, contributes to the development of the economy in the area of Nižná Myšľa and creates jobs for the local population. Thanks to the extensive archaeological findings, the area attracts many tourists every year, who, in addition to the expert detailed interpretation and knowledge gained, will take away unforgettable experiences. It is located on the Várhegyi hill, from where we can enjoy the view of the Slanské Hills and the surrounding valleys. This place is nicknamed "Slovak Mycenae". Archaeological Open-air Museum has an information centre, which is a background for visitors, with the possibility of refreshments for tourists in the form of vending machines. Archaeological Open-air Museum in Nižná Mysľa has volunteer workers who carry out guided tours throughout the area. The Archaeological Open-air Museum consists of three parts, there are two settlements and a burial site which is 200 metres away from the settlements. Approximately 7,500 archaeological finds have been found throughout the area. Among the attractions in the area we find a unique replica of a sacrificial trench with human bone remains, replicas of dwellings from prehistoric times, a section from the defensive part with an entrance and a kitchen stove. The area is not only suitable for archaeology and history enthusiasts, for the general public and tourists, for summer camps, workshops, cultural events, but also a place for walks. Every year Archaeological Open-air Museum organises many events aimed at children. The most famous activity is the Journey to Prehistory. It is a train trip from Košice on the children's railway to Archaeological Open-air Museum. The programme offers a tour of the village and the church, entrance to the museum and various animations for children. Archaeological Open-air Museum in the archaeological site of Várhegyi has a unique atmosphere that will win over almost all visitors. The contact with history through the preserved monuments or through imagination has almost real dimensions. Education is one of the principles on which geotourism is based. This is one of the reasons why many experts, archaeologists, people who have helped with excavations, and visitors alike are always keen to return to this place again and again, where they have the opportunity to experience the link between ancient times and the present. Many objects have also been discovered in the area, such as various tools, jewellery and ceramics, through which visitors can see not only the history but also the archaeological value and significance of the site (Olexa, 2003;Nižná Myšľa, 2020; Košice Region, 2013-2021).

Fossils in the Archaeological Open-air Museum

On the territory of the Archaeological Open-air Museum we can observe sphagnum, which is characterized by a light yellow to yellow colour. Their texture is porous, calcareous and contains vertical fissures. There are also accumulated layers of volcanic ash in the area, which is grey in colour. Among other things, it is interesting not only for visitors, but also for experts, to observe another geological feature, the unique fossils. These are clay and sandy sediments originating from the sea, in which we can see shells, shells and traces of marine animals. The western side of the Várhegy hill slope is one of the best known sites, where you can find bivalves and gastropods. In the northern part of the slope we can observe a cut through the sandy beach, where layers of fossilized shells are visible. On the southern part of the slope there are parts of clay with fossils. Throughout the Archaeological Open-air Museum area it is possible to find fossils on the ground, mostly gastropods from the sea. Bivalves were a numerous and abundant family of animals during the Tertiary period. They are among the most widespread finds. Many of the gastropod finds originate mainly from clay-type sediments. Granulolabium-type gastropods are characterized by a tower-like narrow form, and their exterior is covered with a spiral pattern. In the uppermost part of the spiral of the shell, in the case of a few gastropods, raised parts are formed, and some are also characterised by the formation of short spines (Olexa, 2003; Paleo Web, 2018; Biskupič, 2012)

Discussion and conclusion

Geotourism should follow from a number of principles that have been outlined in the chapters above. The area of Nižná Myšľa has been classified as a site of European importance thanks to its rich geological structure, which can be observed in several places or in the form of preserved fossils, and its varied history, which has earned it the nickname 'Slovak Mycenae'. Also, by involving local communities, which can contribute to sustainability, the area has great potential for the development of geotourism. In the thesis, the principles of geotourism in the territory of Nižná Myšľa, in the Archaeological Open-air Museum Nižná Myšľa, have been proposed and highlighted. At the same time, the present paper pointed out the potential and possibility of development of recreational, touristic and educational components. The territory of Nižná Myšľa specifically also the Várhegy site, where the Archaeological Open-air Museum is situated, represents a valuable area with potential for the development of geotourism and educational activities, as well as recreational components. The Archaeological Open-air Museum, together with its important geological sites and fossils, offers visitors a unique opportunity to learn not only about the historical and cultural significance of the area, but also about the natural and geological aspects that have shaped it. It is geotourism, which is becoming more and more popular in the world, that can be applied in the Archaeological Open-air Museum Nižná Myšľa and thus contribute to sustainability, the protection of the geological heritage, benefit the local population and, last but not least, educate and interpret information to the general public, as this site of great scientific importance has much to offer.

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Souhrn

Cílem tohoto příspěvku je představit archeologickou lokalitu evropského významu a poukázat na její potenciál v oblasti rekreace, geoturismu, cestovního ruchu a vzdělávání s cílem podpořit její rozvoj a využití. Vzhledem k výše uvedeným významným skutečnostem této oblasti bude tento příspěvek dále rozpracován. Toto území, jehož primárním zájmem může být vzdělávání, bude spolu se svými unikátními geologickými vlastnostmi součástí výzkumu v rámci projektu 09I03-03-V05-00015 ESG TUKE, kdy právě vzorky hornin a zkamenělin pocházející z tohoto území budou využity při tvorbě 3D modelů vzorků jako prostředku vzdělávání.

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