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THE MAGURA CAVE IN NORTH-WESTERN BULGARIA: EXPLORING VISITATION AND SPELEOTOURISM POTENTIAL

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ABSTRACT: *Speleotourism implies visiting caves and respecting geomorphological values. A visit to the caves must include certain rules of conduct and implementation of geoethical values to achieve sustainable speleotourism development. This paper investigates the tourist traffic of an authentic cave in northwestern Bulgaria, the Magura Cave, which is a speleological object with exceptional potential for the development of speleotourism. The explored cave includes unique examples of cave paintings and imposing historical values. The research methodology mainly included descriptive analysis of data obtained by the administrative staff of the Municipality of Belogradchik. The data of tourist visits are presented in tables and graphs. The research results indicate the current state and potential prospects for the development of speleotourism in the Magura Cave. Moreover, the paper presents measures for more effective development of speleotourism, which are of special importance for organizational and cave management structures.*

Keywords: *Speleotourism, Magura Cave, tourist traffic, forecast.*

INTRODUCTION

The search for new experiences has always been a trend among tourists (Vespestad et al., 2019; Rogerson, 2020; Pellešová, 2020). Visiting the natural environment and tourist affirmation of georesources is becoming increasingly important (Escorihuela and Dowling, 2015; Gordon, 2018; Rivero et al., 2019), especially in the field of speleotourism (Tičar et al., 2018; Tomić et al., 2019; Antić and Tomić 2019; Antić et al., 2019). Cave visitation includes exploration of inner caves and cave areas, studying a cave or its surroundings from geological, cultural, historical, archaeological, botanical and environmental educational viewpoints. Furthermore, enjoying recreational opportunities

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in cave areas surrounded by limestone terrain and water valleys have proven to be a favourable complementary aspect of speleotourism (Kim et al., 2008). In addition, speleological geoheritage sites can generate employment and new economic activities, especially in rural regions in need of new or additional sources of income (El Wartiti et al., 2009; Farsani et al., 2011).

This is very important for underdeveloped areas in Southeast Europe, which lack significant investment projects and effective economic development (Uvalić, 2001). Geotourism and speleotourism can play a major role in economic revitalization in this region, as these types of tourism place a focus on the rich natural resources stationed in the area. Attracting (geo)tourists encompasses complex groups of tasks, but also a crucial necessity that is an indicator of development and prosperity (Ríos-Reyes et al., 2018; Köroğlu and Kandemir, 2019; Štrba et al., 2020; Vukoičić et al., 2020). Although speleotourism is not sufficiently developed, it is necessary to explore all factors that can reveal ways to make the most of speleotourism potentials in order to achieve socio-economic, sustainable and geoethical values.

The study of tourist visits implies an important research endeavour, which has been the subject of many multidisciplinary explorations (Cahill et al., 2008; Wong and Zhao, 2016; Schliephack and Dickinson, 2017; Avgeli et al., 2019; Joo et al., 2019). The geoconservation aspect of caves and speleotourism must be a priority of management and organizational structures. For this reason, visits should be adjusted to the appropriate carrying capacity obtained by measuring the presence of carbon dioxide, air temperature and humidity, before, during and after tourist visits (Lobo, 2015).

However, in the case of speleotourism research, tourist visitation has not been sufficiently explored. In this paper, the research focus is placed on the tourist traffic of the speleological object in northwestern Bulgaria, the Magura Cave. The main goal of the research is to analyze the number of visitors in this cave, and to determine possible guidelines for further speleotourism development. The primary research questions relate to the current state and prospects of speleotourism development in Magura Cave:

1. To what extent has the current speleotourism been developed (current state of speleotourism)?
2. What measures should be taken in order to place this cave on a higher position of the regional tourist market (future perspectives of speleotourism)?

Also, the activities that should be implemented in the tourist offer of the cave were presented, so that the tourist would have a better experience and repeat the visit to this speleo-archaeological geosite.

STUDY AREA

Regionally, Magura Cave is located in the western part of the Balkan Mountains - a range which spans from the north-west to the central Bulgaria, the Thracian plain lying to the south-east of the range, and the plain in turn fringed by the Rhodope Mountain range at its western edge (Figure 1). The River Danube lies about 25 km to the north-east

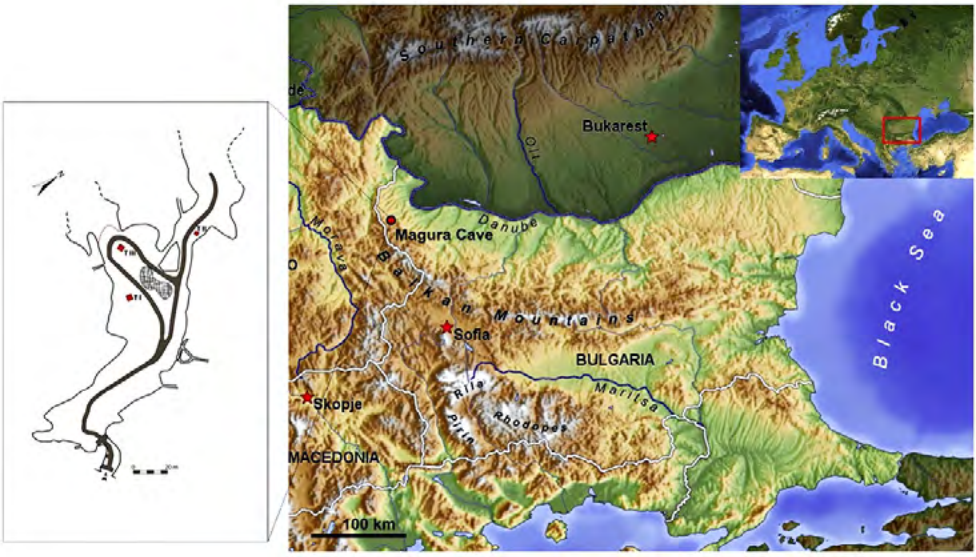

Figure 1. The plan and location of the Magura Cave
Source: (Ivanova et al., 2016)

of Magura, the Danube valley linking Central Europe and the Balkans with the Black sea coastal zone. Magura Cave is located on Rabisha Hill (461 m above sea level). It is 25 km north-west of the town of Belogradchik and 35 km south of the city of Vidin (Ivanova et al., 2016).

The proximity to the Serbian border enables this geosite to join the regional tourism development, and to enrich the geotourism and speleotourism offers of Bulgaria and Serbia (Carpathian-Balkan region).

The first information about the cave appeared in the 1920s and 1930s in the publications of Mikov (1927) and Filkov (1936/7). The first systematic archaeological explorations in the cave were undertaken in 1961 in the entrance ("Triumphant") hall, at around 20 m from the main entrance (Dzhambazov and Katincharov, 1961). The length of this hall is 120 m, width 58 m and the highest point on its ceiling is 28 m. Investigations have revealed settlements in the cave dating back to the Neolithic, Chalcolithic and Bronze Age periods (Ivanova et al., 2016).

Magura Cave is now open to the public (Figure 2), with a path descending and winding through the "Triumphant" hall, a side gallery of which has been converted into a commercial winery. In the construction process, a large quantity of sediment was removed, but some bones (mainly from Ursus spelaeus s. lato) were taken for the collection of the Vidin Museum. Among these, several human bones were also found, but are now known to be from the Bronze Age. The cave has become famous for its prehistoric drawings in the so-called "Painting Gallery", located in a side branch off the main gallery around 300 m into the cave, which are established to be from the Chalcolithic and Bronze Ages (fifth to third millenia BC). At its entrance there is an image of a galloping horse, very different to the Holocene drawings and the only drawing made with a mate-

A

B

C

Figure 2. Magura Cave; (A) Pedestrian track in the Cave (Source: www.ilovebulgaria.eu/en/magura-cave/); (B) Cave art (Source: www.easytouristguides.com/tour/tour-bulgaria-discover-north-western-bulgaria/); (C) Information Center of the Magura Cave (Source: www.ilovebulgaria.eu/en/magura-cave/)

rial other than guano; it is in poor condition, but is considered to be Palaeolithic/Mesolithic in style (Stoytchev, 1994; Ivanova et al., 2016).

METHODOLOGY

In the phase of defining the theoretical framework of the paper, a bibliographic-speculative method was used, while the processing and interpretation of the results was done using the descriptive method. The main methodological approach is based on the analysis of tourist traffic data of Magura Cave, in the period from January 2012 to December 2019. Descriptive analysis also included the use of tables and graphs, in order to more effectively identify the similarities and differences of the data between the observed periods. Access to the data was provided by the administrative staff of the Municipality of Belogradchik.

RESULTS AND DISCUSSION

The first observed period implies the year of 2012 (Table 1). In this period, the largest number of visitors to the Magura cave visited the cave at the very beginning of the summer season (4,517 visitors in April) and in August (5,348 visitors). With the exception of July (4,275 visitors), there were less than 4,000 visits in all other months. September can also be seen as an exception, because the cave was visited by 3,990 visitors at that time. In any case, this is a rather small number for an attractive tourist destination, such as Magura Cave. It should be noted that in all observed years, winter periods include the lowest number of visits. Also, there are significantly more domestic tourists than foreign tourists. This fact is most adequately reflected in the total number of domestic and foreign tourists. During 2012, the Magura Cave was visited by 27,340 domestic tourists and 2,492 foreign tourists. This large and significant difference did not change until 2019, which is a negative element in the speleotourism development of Magura Cave. That is why it is necessary to elaborate much more on marketing strategies and propaganda goals.

The following year (Table 2), 1,323 fewer tourists visited the cave. Therefore, the work of the management structure in 2012 can be considered a failure, because not only the growth of tourist traffic was lacking, but the decline exceeded 1,000 visitors, which is not a positive outcome. The most advanced months for tourist traffic in Magura Cave are the same this year as in 2012. In April, the cave was visited by 4,947 visitors, and in August as many as 5,190. The trend that brings a large number of tourists at the beginning of the summer season continues, but also in August when a large number of people take vacations, due to ideal temperature conditions. Also, the big difference between domestic and foreign tourists continues. The total number of foreign tourists needs to be much higher and achieving this should be the main goal of the Magura Cave management team.

Table 1. Visitors in the Magura Cave in 2012

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2012	Domestic	172	206
	Foreign	34	
February 2012.	Domestic	30	31
	Foreign	1	
March 2012	Domestic	410	490
	Foreign	80	
April 2012.	Domestic	4,300	4,517
	Foreign	217	
May 2012.	Domestic	2,914	3,272
	Foreign	358	
June 2012	Domestic	3,646	3,972
	Foreign	326	
July 2012	Domestic	3,888	4,275
	Foreign	387	
August 2012	Domestic	4,747	5,348
	Foreign	601	
September 2012	Domestic	3,778	3,990
	Foreign	212	
October 2012	Domestic	2,114	2,304
	Foreign	190	
November 2012	Domestic	1,098	1,178
	Foreign	80	
December 2012	Domestic	243	249
	Foreign	6	
Total 2012	Domestic	27,340	29,832
	Foreign	2,492	

Table 2. Visitors in the Magura Cave in 2013

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2013	Domestic	98	111
	Foreign	13	
February 2013	Domestic	190	258
	Foreign	68	
March 2013	Domestic	738	840
	Foreign	102	
April 2013	Domestic	4,616	4,947
	Foreign	331	

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
May 2013	Domestic	2,081	2,308
	Foreign	227	
June 2013	Domestic	2,952	3,451
	Foreign	499	
July 2013	Domestic	3,263	3,723
	Foreign	460	
August 2013	Domestic	4,600	5,190
	Foreign	590	
September 2013	Domestic	3,391	3,724
	Foreign	333	
October 2013	Domestic	1,998	2,276
	Foreign	278	
November 2013	Domestic	1,229	1,357
	Foreign	128	
December 2013	Domestic	302	324
	Foreign	22	
Total 2013	Domestic	25,458	28,509
	Foreign	3,051	

In 2014, there was a significant decline in tourist traffic (Table 3). As many as 7,140 fewer tourists visited the cave compared to 2012 and 5,817 fewer tourists visited the cave compared to 2013. This example clearly shows the negative effect of all direct and indirect tourist factors that influence the speleotourism of Magura Cave. Although the decline is much higher compared to the decline from the previous year, in August 2014, the cave was visited by 4,813 tourists. This can be taken as a positive result compared to all other months in this year. Certainly, in 2014, the speleotouristic significance of the cave further decreased.

In the next year, the tourist traffic of Magura Cave is improving (Table 4). In 2015, the cave was visited by more tourists compared to the previous two years, but not compared to 2012. This growth of tourist traffic is a positive sign, which gives hope for the future development of speleotourism, but not the certainty that there will be unconditional business success. A lot of effort and significant business ventures need to be undertaken in order for the cave to be visited by a significantly larger number of tourists. Table 4 clearly indicates that August and September are the months in which the largest number of tourists visited the cave. In September, the cave was visited by as many as 6,848 tourists, which is the largest number of visitors since the beginning of the observed period.

Table 3. Visitors in the Magura Cave in 2014

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2014	Domestic	169	183
	Foreign	14	
February 2014	Domestic	203	231
	Foreign	28	
March 2014	Domestic	928	1,073
	Foreign	145	
April 2014	Domestic	1,929	2,365
	Foreign	436	
May 2014	Domestic	1,981	2,418
	Foreign	437	
June 2014	Domestic	2,953	3,333
	Foreign	380	
July 2014	Domestic	3,157	3,619
	Foreign	462	
August 2014	Domestic	4,089	4,813
	Foreign	724	
September 2014	Domestic	2,205	2,483
	Foreign	278	
October 2014	Domestic	1,221	1,362
	Foreign	141	
November 2014	Domestic	541	663
	Foreign	122	
December 2014	Domestic	141	149
	Foreign	8	
Total 2014	Domestic	19,517	22,692
	Foreign	3,175	

After 2015, the number of visits to Magura Cave rises to over 30,000 visits. This is a positive outcome that has partial business results, as the cave management offer has been modernized since this year. A souvenir shop and a restaurant have been opened and the access to the geosite has been additionally arranged. All these parameters represent minimal effort, which show certain results. However, progress is still low and the potential of the cave is not reaching its maximum. Moreover, the number of foreign tourists decreased significantly compared to the previous year. August and September are still the periods in which the largest number of visits prevails, while the winter months are in constant stagnation of tourist traffic.

The rising trend of tourist traffic partially continues in 2017. The total number of tourists is lower than the previous year by 227 visitors. April, August and September are

again the months with the highest number of foreign and domestic visits, while only in January, February and December, the cave is visited by less than 1,000 tourists.

Table 4. Visitors in the Magura Cave in 2015

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2015	Domestic	124	130
	Foreign	6	
February 2015	Domestic	159	241
	Foreign	82	
March 2015	Domestic	718	821
	Foreign	103	
April 2015	Domestic	1,836	1,972
	Foreign	136	
May 2015	Domestic	3,157	3,519
	Foreign	362	
June 2015	Domestic	3,017	3,452
	Foreign	435	
July 2015	Domestic	2,807	3,337
	Foreign	530	
August 2015	Domestic	5,213	5,991
	Foreign	778	
September 2015	Domestic	4,024	6,848
	Foreign	2,824	
October 2015	Domestic	1,584	1,688
	Foreign	104	
November 2015	Domestic	948	1,055
	Foreign	107	
December 2015	Domestic	308	335
	Foreign	27	
Total 2015	Domestic	23,895	29,389
	Foreign	5,494	

Table 5. Visitors in the Magura Cave in 2016

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2016	Domestic	120	131
	Foreign	11	
February 2016	Domestic	304	351
	Foreign	47	

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
March 2016	Domestic	1,014	1,089
	Foreign	75	
April 2016	Domestic	3,227	3,429
	Foreign	202	
May 2016	Domestic	3,914	4,229
	Foreign	315	
June 2016	Domestic	3,139	3,447
	Foreign	308	
July 2016	Domestic	3,826	4,464
	Foreign	638	
August 2016	Domestic	5,245	5,888
	Foreign	643	
September 2016	Domestic	5,139	5,518
	Foreign	379	
October 2016	Domestic	2,118	2,335
	Foreign	217	
November 2016	Domestic	530	616
	Foreign	86	
December 2016	Domestic	327	378
	Foreign	51	
Total 2016	Domestic	28,903	31,875
	Foreign	2,972	

Marketing team needs to improve the strategies and business approaches, due to the constant decrease of foreign tourist visitations.

Table 6. Visitors in the Magura Cave in 2017

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2017	Domestic	41	62
	Foreign	21	
February 2017	Domestic	171	181
	Foreign	10	
March 2017	Domestic	1,305	1,472
	Foreign	167	
April 2017	Domestic	3,603	4,225
	Foreign	622	
May 2017	Domestic	2,939	3,196
	Foreign	257	

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
June 2017	Domestic	3,224	3,739
	Foreign	515	
July 2017	Domestic	3,251	3,807
	Foreign	556	
August 2017	Domestic	5,180	5,953
	Foreign	773	
September 2017	Domestic	4,781	5,388
	Foreign	607	
October 2017	Domestic	1,850	2,063
	Foreign	213	
November 2017	Domestic	929	1,055
	Foreign	126	
December 2017	Domestic	459	507
	Foreign	48	
Total 2017	Domestic	27,733	31,648
	Foreign	3,915	

Table 7. Visitors in the Magura Cave in 2018

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2018	Domestic	224	239
	Foreign	15	
February 2018	Domestic	341	396
	Foreign	55	
March 2018	Domestic	659	853
	Foreign	194	
April 2018	Domestic	3,047	3,896
	Foreign	849	
May 2018	Domestic	4,273	5,189
	Foreign	916	
June 2018	Domestic	3,610	4,320
	Foreign	710	
July 2018	Domestic	4,419	5,233
	Foreign	814	
August 2018	Domestic	6,006	6,975
	Foreign	969	
September 2018	Domestic	4,935	5,489
	Foreign	554	

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
October 2018	Domestic	2,110	2,451
	Foreign	341	
November 2018	Domestic	1,278	1,402
	Foreign	124	
December 2018	Domestic	384	433
	Foreign	49	
Total 2018	Domestic	31,286	36,876
	Foreign	5,590	

In 2018, the cave was visited by the largest number of tourists (36,876). This growth does not refer to a significant increase in tourist traffic. The cave was visited by 5,228 more tourists compared to the previous year, but given the level of attractiveness, especially speleo-archaeological complementarities of the geosite, the number of visits should exceed 50,000 visits in order for the work of management and organizational structures of Magura Cave to be considered a significant success. All significant european show caves include more then 50,000 visits per year and the Magure cave should be included in that group (Cigna and Burri, 2000; Cigna, 2016; Cigna, 2019).

Although the difference between the number of foreign and domestic tourists is large, in 2018 there was a modest growth of foreign tourists visitation, which can be taken into account when developing strategic plans for speleotourism development. The summer months are continuously dominated by the number of tourist visits. August is the month when by far the largest number of tourists visit the cave. Thus, it is necessary to organize a certain event program in that month, which can attract even more potential tourists.

The last observed year includes similar number of visits as previous years (Table 8). However, the number of foreign tourists has decreased, which further confirms the lack of a quality marketing program, that can more effectively influence the attraction of foreign tourists. The month of August is still the only period when the number of visits exceeds 6,000, so it can be concluded that there is an evident business opportunity to use this for the promotion of speleotourism program. The last two observed years include data on tourist traffic that exceeds 36,000 visits, which is a success, but not to the extent that is sufficient for significant speleotouristic development.

Table 8. Visitors in the Magura Cave in 2019

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
January 2019	Domestic	119	184
	Foreign	65	
February 2019	Domestic	244	278
	Foreign	34	

Month/Year	Domestic/Foreign tourists	Amount of visitors	Total
March 2019	Domestic	1,595	1,977
	Foreign	382	
April 2019	Domestic	4,102	4,627
	Foreign	525	
May 2019	Domestic	4,561	5,085
	Foreign	524	
June 2019	Domestic	4,043	4,614
	Foreign	571	
July 2019	Domestic	3,542	4,300
	Foreign	758	
August 2019	Domestic	5,130	6,046
	Foreign	916	
September 2019	Domestic	4,367	5,012
	Foreign	645	
October 2019	Domestic	2,309	2,696
	Foreign	387	
November 2019	Domestic	1,009	1,118
	Foreign	109	
December 2019	Domestic	479	519
	Foreign	40	
Total 2019	Domestic	31,500	36,456
	Foreign	4,956	

As shown in Figure 3. the highest total number of visits in Magura Cave occured in 2018, while the lowest number of visits occured in 2014. The highest number of foreign visits to the Magure Cave occured also in 2018, while the lowest number occured in 2012. Moreover, the highest number of domestic visits occured in 2019 and the lowest number in 2014. Therefore, the general conclusion from the main data is that 2018 and 2019 were the years with the most success, while the year 2014 represents the most ineffective period for the visitation numbers. The minimal efforts of arranging the speleotouristic area gave Magura cave a certain type of development that cannot be considered completely satisfactory, because the focus has not been established on the foreign market, ie attracting foreign tourists. The sustainability of the geosite relies exclusively on domestic tourists. This is one of the factors that needs to be revised by making an adequate balance between domestic and foreign tourist visits, without large differences in the visitation numbers. This is a difficult task, but certainly feasible and necessary. Also, creating an event program in the month of August, when the largest number of tourists visit the cave would provide an opportunity to attract many potential tourists. The marketing program must be improved, the cave website should be modernized and complementary sites should be promoted more efficiently.

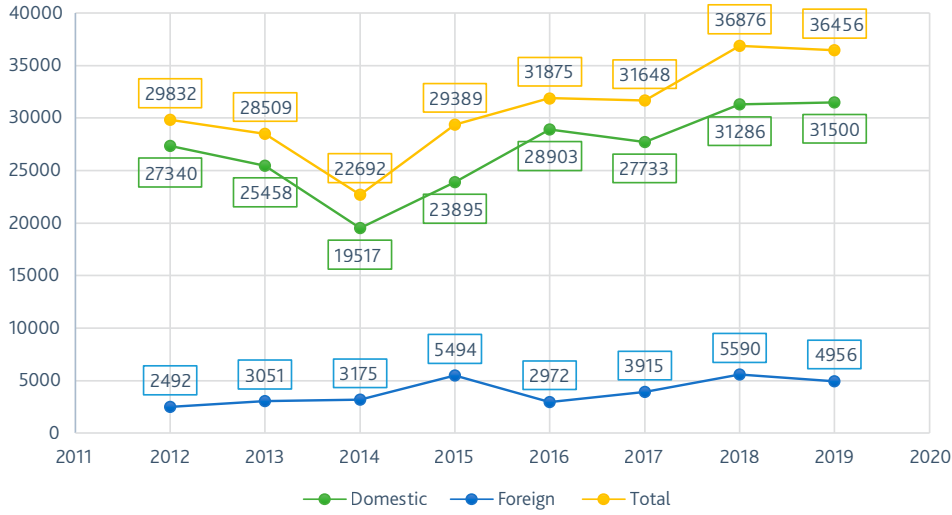

Figure 3. Domestic, foreign and total number of visitors (2012–2019)

Moreover, turning tourist potentials into sustainable and economically viable tourist values should be the primary goal of the cave management structures. With the implementation of the following business plans, the cave management can improve the speleotourism development of the Magura Cave:

- Modernization of the Cave Website (implement photo and video galleries, creating virtual tours and enabling online ticket purchase);
- Creating quality marketing strategies and improving social media promotion;
- Organizing quality event program to attract more tourists;
- Set conditions for intersectoral connection of all organizations that can influence the growth of speleotourism;
- Organizing conferences, congresses and other types of business travel, and offer a visit to the cave as a complementary activity;
- Attracting potential investors;
- Using the proximity of the border with Serbia and Romania, and attract Serbian and Romanian tourists.
- Share experience with other cave management structures in the region.

These measures should enable faster and more efficient development of speleotourism, which could be an indicator of local economic growth. Prerequisites for the implementation of these measures should be a well-organized management structure that could adequately present ideas to potential investors and local authorities. After the successful presentation, the realization of the project follows, where it is necessary to hire experts from various scientific fields, researchers, educators and volunteers. It is necessary to involve all stakeholders, as well as the local community in decision-making processes. With this approach, it is possible to achieve a much higher quality speleotourism product and thus modernize and improve speleotourism in this area.

Considering that karst areas are particularly fragile (van Beynen, 2011), appropriate karst management should be applied. Due to the negative impacts that tourists can have on caves, intentional or unintentional, the management must act in a meaningful and organized manner for the preservation of the cave's geomorphological values. Furthermore, all existing tourist resort developments should be encouraged to reduce the environmental impact of their operation and to upgrade the quality of accommodation and visitor services offered (Hamilton-Smith, 1998). In the case of Magura Cave, the management needs to continue developing speleotourism according to sustainable concepts and geoethical values. Given the relatively low number of visits, it is not necessary to take urgent measures to protect the cave and limit visitations. However, it is necessary to spread awareness and educate visitors about the rules of conduct inside the cave, as well as to invest in adequate security systems that will protect this geosite.

CONCLUSION

The analysis of the tourist traffic of Magura Cave in northwestern Bulgaria provided an insight into the current state and possible perspectives of the future speleotourism development. The theoretical framework of the paper indicates the importance of speleological geoheritage, as a crucial resource not only for speleotourism, but for geotourism as well. Therefore, it is necessary to carefully consider the ways of karst management and tourism development, taking into account sustainable and geoethical values.

The data on the tourist traffic of the Magura Cave indicate an underdeveloped speleotourism geosite which has exceptional potentials for development. It can be said that this cave belongs to the level of recognition in the tourist market, but it does not have a competitive identity. The data of tourist visits clearly show that the tourism of Magura cave is strictly seasonal, which is expected, taking into account the natural environment of the site itself. Management needs to work on creative ideas on how to extend the tourist season. The results of the research present measures for the sustainable development of speleotourism and the attraction of foreign tourists, which are extremely important for the management of the cave. Also, it is very important that travel agencies and other interest groups place greater focus on the receptive tourism model, thus promote and enhance the development of speleotourism in this area.

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CONFLICTS OF INTEREST

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