

## Perspectives for geotourism development in the Bela Crkva municipality (Serbia)

JOVANA BOŠKOV, STEFAN KOTRLA, NEMANJA TOMIĆ, MLAĐEN JOVANOVIĆ  
and IVAN RVOVIĆ

*Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad, Serbia, Trg Dositeja Obradovića 3  
(Corresponding author e-mail: boskovjovana@gmail.com)*

### ABSTRACT

The Bela Crkva municipality has a high concentration of geosites which are of great scientific, educational, aesthetic and touristic importance. These values are the result of a complex geological structure and geomorphological processes that took place in this area, during the Earth's history. The main goal of this paper is to present the possibility for geotourism development in the Bela Crkva municipality. One of the aims is also to investigate the attitudes of local people and tourists about geotourism development in the Bela Crkva municipality as well as their familiarity with the geopotential of this area. The paper proposes several important and easily accessible geosites which can provide an excellent basis for future geotourism development, however, research results indicate the need for better tourism infrastructure as well as better promotional activities in order to attract more visitors to the proposed geosites.

**Key words:** geosites, geoheritage, geotourism, Bela Crkva, Serbia

### INTRODUCTION

In recent years, there has been an increasing number of different forms of tourism on the global tourist market. One of these special forms of tourism is geotourism, that is primarily based on geoheritage and geosites.

According to a definition by Newsome and Dowling (2010) geotourism specifically focuses on geology, geomorphology and landscape. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geo-trails and view points, guided tours, geo-activities and patronage of geosite visitor centers. However, geotourism has been redefined by Hose who provided a comprehensive definition of geotourism: "The provision of interpretative and service facilities for

geosites and geomorphosites and their encompassing topography, together with their associated in-situ and ex-situ artefacts, to constituency-build for their conservation by generating appreciation, learning and research by and for current and future generations" (Hose, 2012).

As basic characteristics of geotourism, Mokhtari (2014) states: geotourism in its geomorphologic aspect has the geographical character and the geomorphologic processes and forms are a key element of knowledge; geotourism is not a subset of ecotourism and the use of specific evaluation methods and morphogenetic systems analysis in geomorphosite studies is necessary; it provides an opportunity for countries or regions to create their own identity; through geotourism, tourism development can be achieved, as well as conservation of geographical heritage, to benefit local communities and strengthen the tourism

infrastructure to achieve sustainable business.

Serbia is a country with very rich geodiversity. The fact that the Inventory of Serbian

geoheritage sites includes approximately 650 geological, paleontological, geomorphological, speleological and neotectonic sites (Đurović and Mijović, 2006) clearly confirms the previous statement. Some of these sites are located in the Bela Crkva municipality which has good potential for becoming a new geotourism destination in Serbia with several individual sites such as Banat Sands, Mali pesak, fossil meanders of Nera and Karaš rivers, Labudovo okno etc. These geosites are of great scientific, educational, aesthetical and touristic value, which are results of complex geological structure and geomorphological processes that took place in this area during the Earth's history.

The main goal of this paper is to present the geosites which are most suitable for geotourism development in the Bela Crkva municipality. These sites were selected due to being the most representative elements of geodiversity in these areas. However, the paper also explores the familiarity of the local community and tourists with the rich geopotential of this area as well as their attitudes towards the possibilities for geotourism development in the municipality.

## METHODOLOGY

### *Sample*

The sample included a total of 192 respondents whose place of residence was Serbia. More than half the respondents (62%) were local people while the rest were

tourists present in the area at the time being. Sample characteristics are further described in Table 1.

### *Instruments*

The questionnaire consisted of two parts. The first part involved questions related to socio-demographic profile of respondents (age, gender, occupation, education level, residence). The second part of the questionnaire consisted of different questions related to destination preferences, geosites in Bela Crkva, available information sources and potential problems related to tourism development in the Bela Crkva municipality.

### *Procedure*

The research was carried out in the Bela Crkva municipality between the 1<sup>st</sup> and 7<sup>th</sup> of July 2014. It was conducted in the field where each of the respondents filled out the questionnaire with the assistance of the authors. The respondents were informed of the general purpose of the study and that participation is voluntary and anonymous. Finally, a total of 192 people completed the survey.

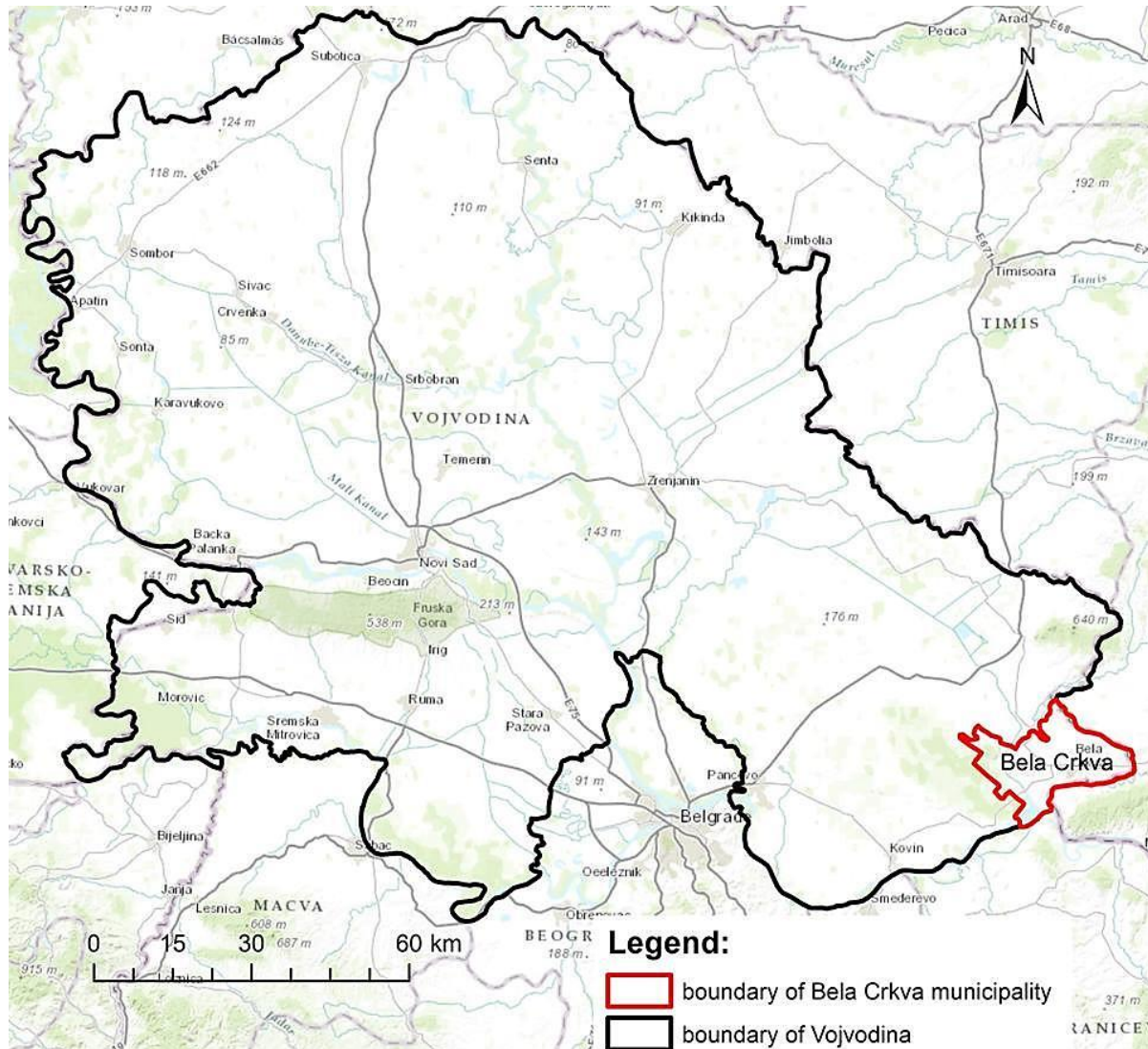
## STUDY AREA

Bela Crkva municipality (Fig. 1) is located in the northeastern part of Serbia, in the southeast of the Autonomous Province of Vojvodina and Banat district. It covers an area of 353 km<sup>2</sup> and territorially belongs to the South Banat district. On the north it borders with the municipalities of Kovin and Vršac, while on the east it borders with the Republic of Romania (Devrnja et al., 2015).

Despite its peripheral position, the

**Tab. 1** Socio-demographic characteristics of respondents

Gender		Age		Level of education		Place of residence	
	%		%		%		%
male	42	< 21	22	primary	19	locals	62
		21-35	35	secondary	57		
female	58	36-55	32	higher	14	tourists	38
		over 55	11	high	10		



**Fig. 1** Location of Bela Crkva municipality in the Autonomous Province of Vojvodina

Municipality is well connected with contiguous municipalities. The main form of transport and the most important communication of this area is road traffic. The road network of this Municipality consists of 26 km of highway, 21 km of regional and 39 km of local roads. The distance from Belgrade, the capital and most important city center is about 95 km. The distance of other centers is: Vršac (37 km), Kovin (47 km), Požarevac (50 km), Smederevo (60 km), Pančevo (80 km).

One of the oldest railway lines in Serbia, which is no longer functional, passes through the territory of the municipality. River traffic is practically undeveloped, as there is no regulated piers except from one improvised passenger pier on the Danube.

Also, there is a scaffolding on the Danube - between Stara Palanka and Ram. Over the border crossing Kaluđerovo, Bela Crkva is connected with border villages in Republic of Romania. The distance from Timisoara (Romania) is about 110 km (Boškov, 2014b).

### **SITES WHICH ARE SUITABLE FOR GEOTOURISM DEVELOPMENT**

Great variety of geodiversity is one of the main characteristics of the Bela Crkva municipality. The most representative elements of geodiversity are parts of the Banat Sands, loess profiles and former flows of Nera and Karaš rivers. Considering

that the territory of this Municipality consists of several different geological and geomorphological objects, as potential geosites we can distinguish several formations: Dumača loess plateau, loess profiles near Dupljaja village, Mali pesak, fossil meanders of the Nera river, fossil meanders of the Karaš river and the Ramsar site Labudovo okno (Fig. 2).

**Dumača loess plateau** is located in the western part of Bela Crkva municipality, in the area that adjoins the southern parts of Vršac municipality. The plateau has a southeastern position and represents the highest and most imposing form of the entire South Banat loess plateau. It was probably formed during the last two glacials, by pleistocene accumulation of loess dust and aeolian sands. However, for a more detailed paleontographic reconstruction it is necessary to conduct multidisciplinary research. The altitude of the plateau is 251 meters and it is presented by Zagajica hills. Dumača loess plateau is shaped as a very elongated isosceles triangle whose length is 14,5 km. The widest part is of the northeast from Grebenac, where the largest relief dynamics was identified. In this area the width of the loess belt is up to 7 km (Lukić, 2010). With its dry valleys and loess profiles, this geomorphological formation is very attractive from the standpoint of science. Also, this site has a relatively high level of quality required for activation in the sphere of geotourism. Dumača loess plateau has a high level of scientific and aesthetic values, while the main obstacle for its inclusion in tourist flows is a low level of tourist infrastructure (Boškov, 2014b).

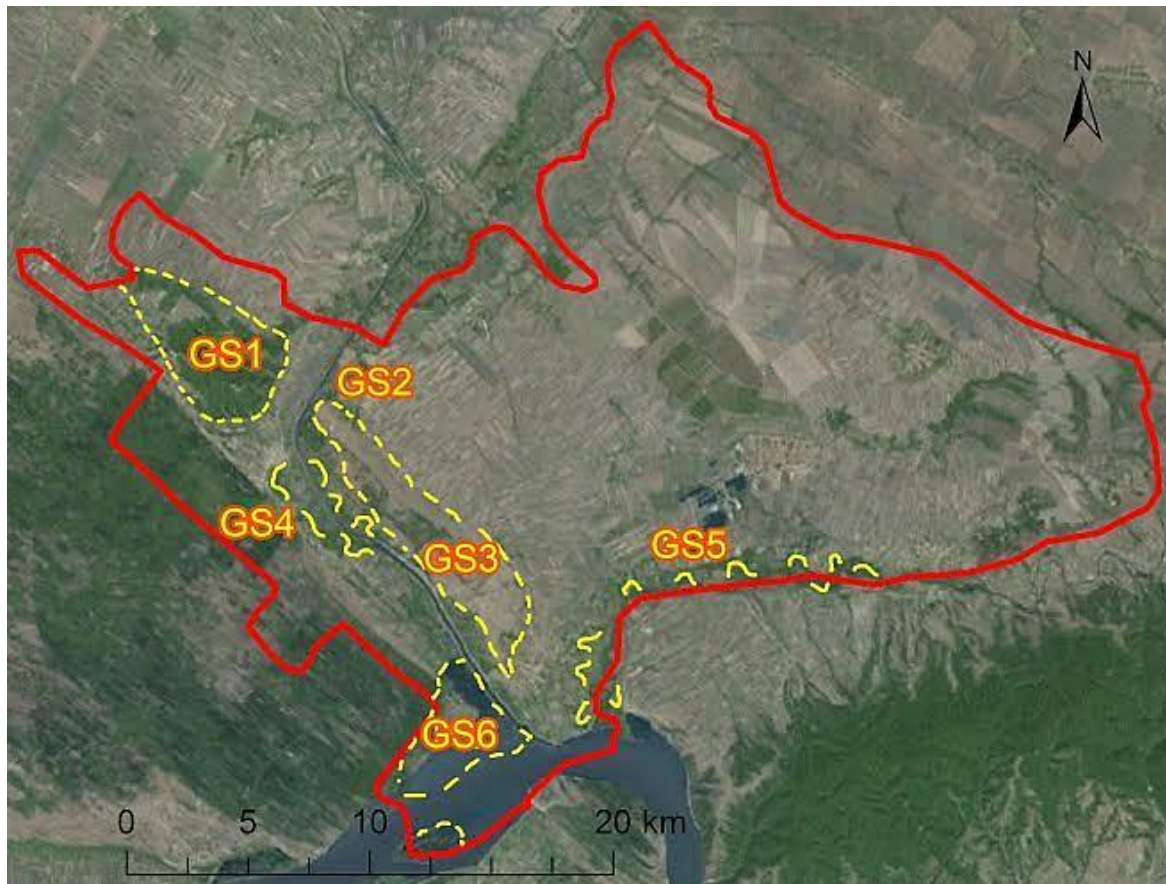
**Loess profiles near Dupljaja village.** Numerous studies conducted by a large number of scientists led to the conclusion that the accumulation of loess in Vojvodina represents one of the most complete archive of paleoclimatic and paleoecological changes, which occurred during the Pleistocene in the area of Eurasia. Great rate of loess dust accumulation and almost undisturbed shift of loess and paleosol

sequences that are present in this area, represent natural rarities in global terms (Jovanović and Zvizdić, 2009; Jovanović, 2012). Despite of their big importance, these loess profiles are not yet adequately researched. Loess profiles near Dupljaja village are about 14 km far from Bela Crkva, located on the left and right sides of the road Bela Crkva - Kovin. Their height ranges from 3 to 15 meters. They are partially covered by vegetation. The geotourism potential of this geological site is still completely untapped, which imposes the need for adequate protection, organization and presentation to the general public and opens up the possibility of economic progress of the local community through geotourism development (Boškov, 2014b).

**Mali pesak** lies westward from Bela Crkva. This morphological entity was separated from the Banat Sands by the valley of the Karaš river. It starts close to the Danube near Banatska Palanka and continues to the northwest directly along the left bank of the Karaš river. It ends at the bend where the Karaš river turns from northeast to southeast. The length of Mali pesak is 10 km, and its width is 1 km (Bukurov, 1954). Its main characteristics are dunes and inter-dune depressions. Mali pesak is currently in the protection process (within the Landscape of exceptional features "Karaš-Nera"). This site offers a good basis for development of different forms of tourism. Above all, it is peculiarly suitable for geotourism development, which could promote the preservation of geodiversity, as well as an understanding of certain geological and geomorphological forms, phenomena and processes of this area.

**Fossil meanders of the Karaš river** are located on the left side of the Danube-Tisa-Danube canal and are spatially connected to Mali pesak. Before the hydrosistem Danube-Tisa-Danube was constructed, the river Karaš was characterized by great number of meanders, especially in its downstream flow (Milovanov, 1972).





**Fig. 2** Location of proposed geosites in Bela Crkva municipality: municipality (GS<sub>1</sub>, Dumača loess plateau, GS<sub>2</sub>, Loess profiles near Dupljaja village, GS<sub>3</sub>, Mali pesak, GS<sub>4</sub>, Fossil meanders of the Karaš river, GS<sub>5</sub>, Fossil meanders of the Nera river, GS<sub>6</sub>, Ramsar site Labudovo okno) (Source: GoogleEarth; Boškov, 2014b)

These meanders were created thanks to the small falls of the riverbed. Today, covered by lush vegetation, these fossil meanders represent very attractive geosites. They feature a high level of scientific and aesthetic values, and the protection process is currently in progress (within the Landscape of exceptional features "Karaš-Nera"). The biggest barrier to geotourism development at this site is primarily the lack of visitor centers, information boards, viewpoints, ie. tourism infrastructure is almost completely undeveloped (Boškov, 2014a).

**Fossil meanders of the Nera river.** Unregulated riverbed of the Nera river, with small falls, causes in its lowland part an intensive sediment deposition, elevation of the riverbed and groundwater, as well as surface water, especially in the sector Vračev Gaj - Kusić. This situation is the cause of frequent meanders in this sector of the Nera river (Bogdanović and Marković,

2005). Previously mentioned Landscape of exceptional features "Karaš-Nera", within the spatial entity "Nera" includes a part of the river's flow through Serbia, together with its fossil meanders, as well as the mouth into the Danube. From the geotourism aspect, fossil meanders of Nera river are of great value, however their inclusion in tourism requires the implementation of tourism infrastructure and environmental regulation (Boškov, 2014b).

**Labudovo okno.** This Ramsar site encompasses the coastlines of Danube and Nera rivers, the river islands of Žilava, Čibuklija and Zavojska, the flooded meanders of the Karaš river and the mouth of the Nera river. In this sector, the Danube decelerates and has a higher water level, that causes flooding of many river islets, lower coastal parts and lagoons along the southern areas of the Banat Sands. Coastal freshwater wetlands allow presence of

various aquatic communities, as well as those typical for this type of wetlands. Labudovo okno has been declared as a Ramsar site in 2006. It covers an area of 3,733 ha (www.ramsar.org). The Ramsar status of this area partly contributed to the establishment of tourism infrastructure. At the site there is an information board, viewpoint, and in the vicinity there are several significant anthropogenic values, ie. remains of the Smederevo and Ram fortresses, Roman castrum etc.

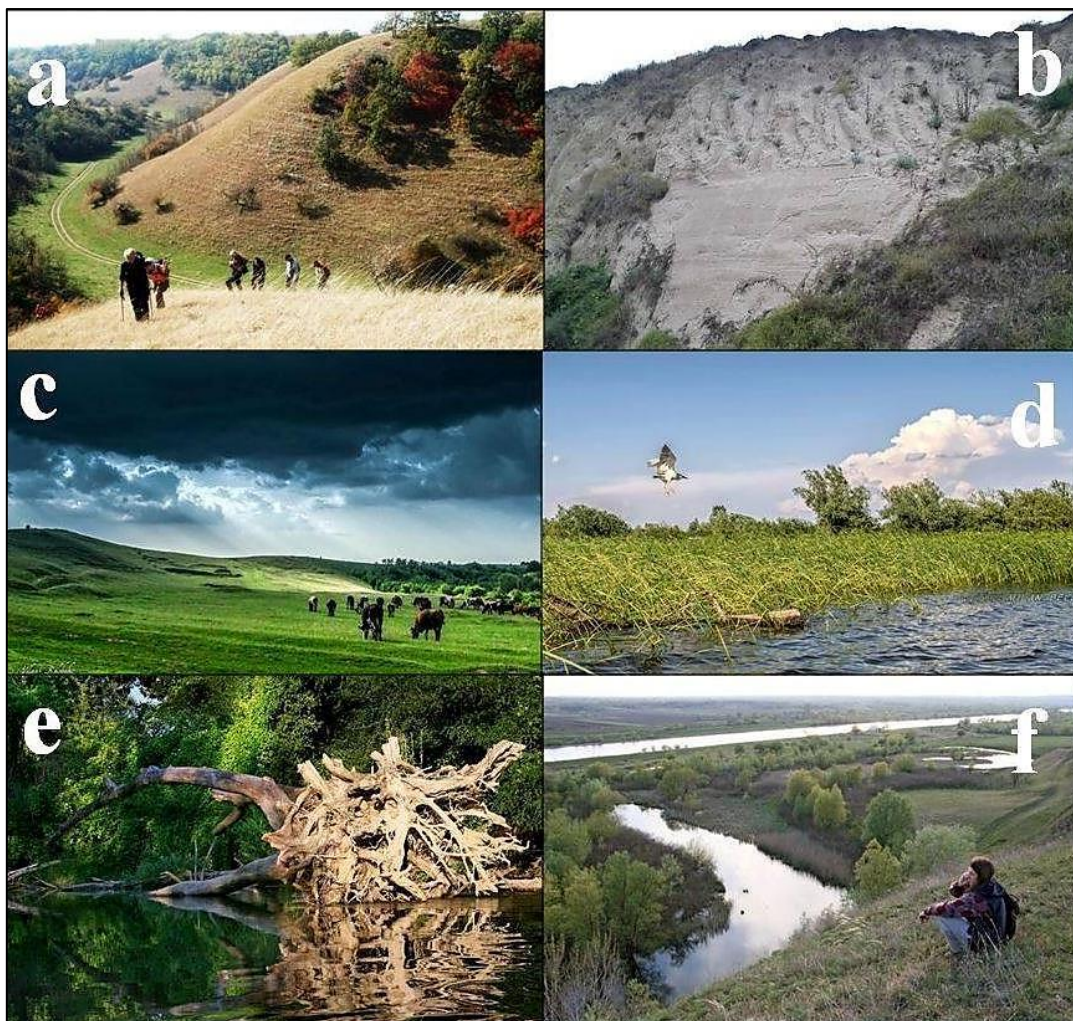
## RESULTS AND DISCUSSION

The aim of this paper was also to investigate the attitudes of local people and tourists about geotourism development in Bela Crkva municipality as well as their

familiarity with the geopotential of this area. This was done through a survey which included 192 respondents. The sample includes locals and tourists who resided in Bela Crkva during the survey period. Answers to the specific questions related to tourism and familiarity with the natural resources of the Municipality are explained in more detail below.

### *What kind of destination do you prefer?*

This question has been designed in such a way that four types of destinations (city centers, villages, spas and nature) were offered. The respondents' interest in each of these destinations was measured on a five-point Likert scale, 1 meaning that there was no interest in visiting a certain destination and 5 indicating a very large interest in visiting a destination.



**Fig. 3** a –Dumača loess plateau, b – Loess profiles near Dupljaja village, c – Mali pesak, d – Labudovo okno, e – Nera river, f – Karaš river (photo by: Milan Belobabić)



The results show that natural destinations are highly rated (Fig. 4). This is very evident from the fact that 150 respondents (78% of the sample) rated the degree of interest in natural destinations with the highest grade. From the viewpoint of geotourism, which is mainly based on natural values (geosites), this stands out as very positive.

*Which of the following sites you are familiar with?*

Some of the sites where it is possible to develop geotourism are listed in this question. Respondents were answering with *yes* or *no*, depending on whether they have heard for these localities or not. By analysing the responses to this question it can be concluded that some of the proposed sites are largely known, while some are still unknown to the general public.

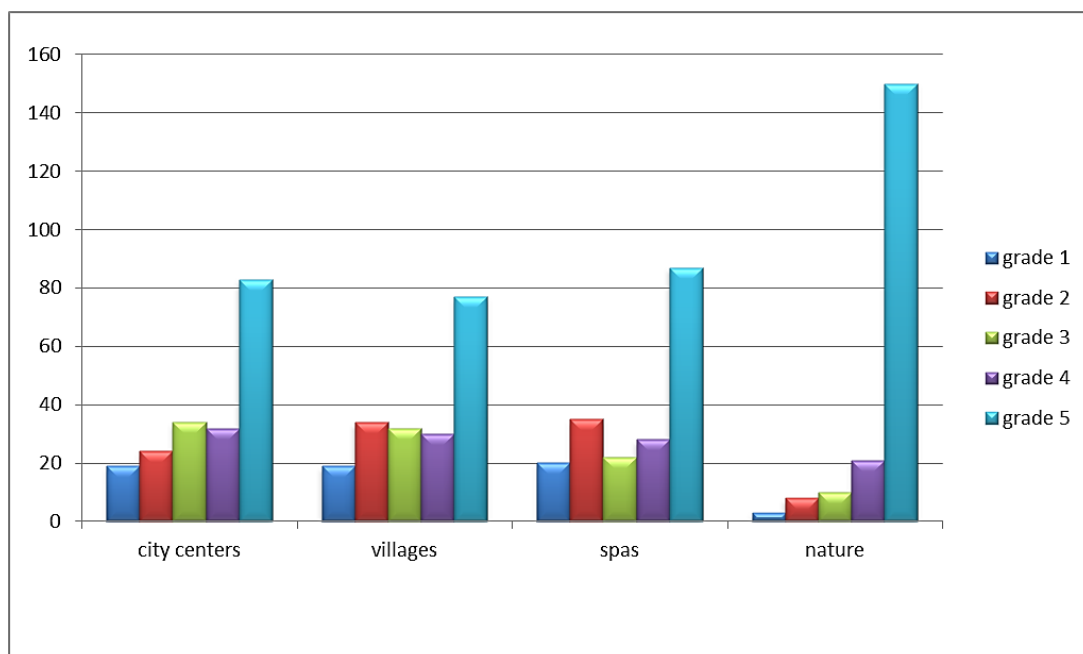
The most famous sites are rivers Nera and Karaš with their fossil meanders. The majority (96%) of the respondents had heard about the Nera river fossil meanders. On the other hand, 94% answered that they had heard about the fossil meanders of the Karaš river. The site Labudovo okno is also

largely known, while the loess profiles near Dupljaja village are still quite unknown to the public. The majority (87%) of the respondents answered that this site is unknown to them (Fig. 5).

*What is your information source?*

When they were asked how they have heard about the mentioned sites, respondents answered that their main source of information are friends and colleagues (66%). By observing the structure of answers, it can be seen that the tourism organization is the least present information source (Fig. 6).

The tourism organization has an extremely low level of participation in informing the public about these sites (2%), which stands out as negative fact. Distribution of promotional materials is one of the activities in each tourism organization. It is noticeable that promotional material has a low level of participation in informing the public about these sites, thus it can be concluded that tourist organizations in Serbia show lack of interest in the promotion of geotourism, as well as tourism in general.



**Fig. 4** Interest of the respondents in certain types of tourist destinations

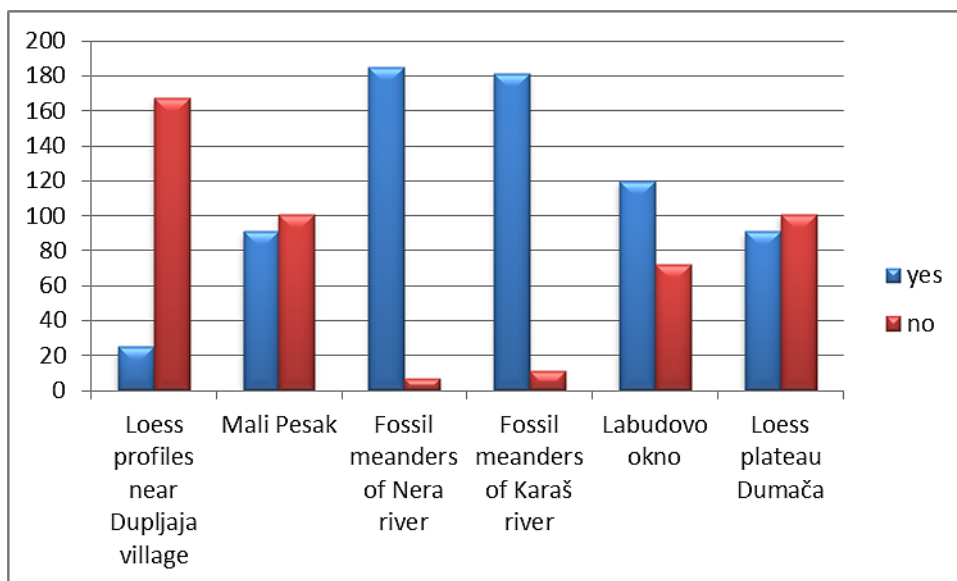


Fig. 5 Familiarity with potential geosites

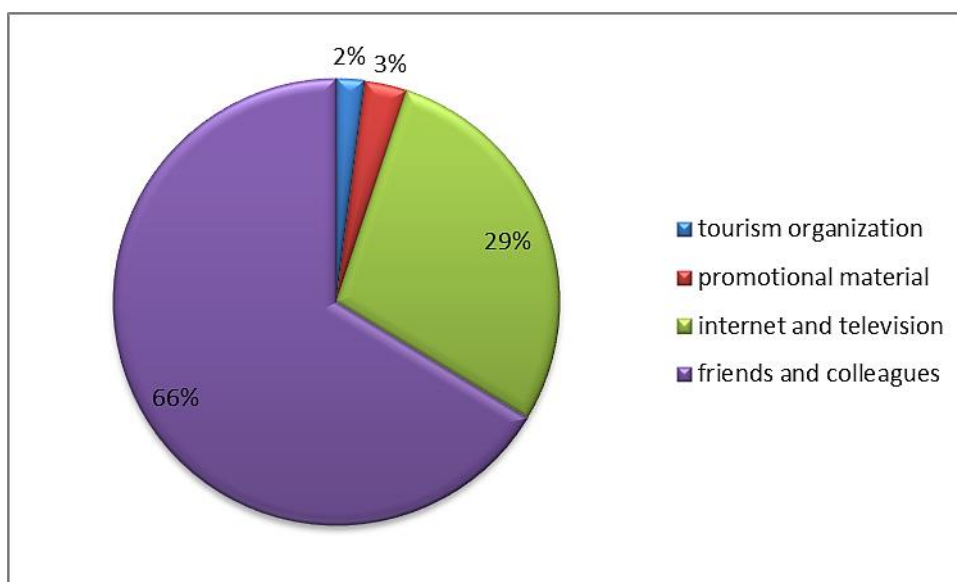


Fig. 6. Information sources about potential geosites

*Have you ever visited any of the listed sites? Would you like to visit some of them in the future?*

The listed sites were Dumača loess plateau, loess profiles near Dupljaja village, Mali pesak, fossil meanders of the Nera river, fossil meanders of the Karaš river and the Ramsar site Labudovo okno. Answers to these questions are almost completely positive. Of the 192 respondents, 191 of them (99,5%) answered that they have visited some of these sites. Likewise, 190 of them (99%) answered that they would like to visit these sites in the future. From the aspect of geotourism development, such a

structure of answers can be noted as very positive.

*What are the biggest problems for tourism development at natural sites in the Bela Crkva municipality?*

In this question five statements relating to problems and barriers of tourism development in the Bela Crkva municipality were offered. Respondents could evaluate their agreement with each of these statements ranging from 1 to 5, with 5 indicating complete agreement with the statement

The biggest problem for tourism develop-



ment at natural destinations in this area is the low quality of marketing and promotion. A little more than half (56%) of the respondents have evaluated this statement with the highest grade, 18% believe that this problem is largely present, 11% consider that the problem is present on an intermediate level, 8% consider it is faintly present, and only 7% believe that the current promotion and marketing activities do not need improvement. Also, low quality and organization of travel arrangements were identified as a major problem with 49% of respondents completely agreeing with this statement, while 9% estimate that this problem does not exist, 8% of respondents evaluated this statement with grade 2, 17% evaluated it with grade 3, and also 17% of respondents evaluated this statement with grade 4. Only 39% of respondents agree with the statement that the sites are poorly equipped for tourism, 26% of respondents evaluated this statement with grade 4, 15% evaluated it with grade 3, 9% evaluated it with grade 2, and 11% of respondents evaluated this statement with grade 1. The statement that tourism infrastructure is undeveloped was evaluated as following: 1 (15%), 2 (16%), 3 (19%), 4 (17%), while the highest grade (5) was given by 33% of the respondents. Based on the answers of respondents, accessibility of the sites is the smallest problem. About a

quarter (27%) of respondents agree with the statement that accessibility is poor, while 24% believe that this problem does not exist. Other reviews for this statement have approximately the same value, 16% of respondents evaluated it with grade 2, 15% evaluated it with grade 3, and 18% evaluated this statement with grade 1 (Fig. 7).

## CONCLUSION

The Bela Crkva municipality has a high concentration of geosites which are of great scientific, educational, aesthetic and touristic importance, and some of them are protected (loess plateau Dumača is part of Special Nature Reserve "Deliblato Sands", Labudovo okno is protected as a Ramsar site, and the protection process of the Landscape of exceptional features "Karaš-Nera" is currently in progress). Therefore, there is real potential for geotourism development in this area. In support of this argument is also the fact that 99% of the respondents answered that they would like to visit the proposed geosites in the future. Furthermore, Bela Crkva is located at the border area with the Republic of Romania, which is also an advantage. So, this area possesses good natural conditions, as well as interest for geotourism development.

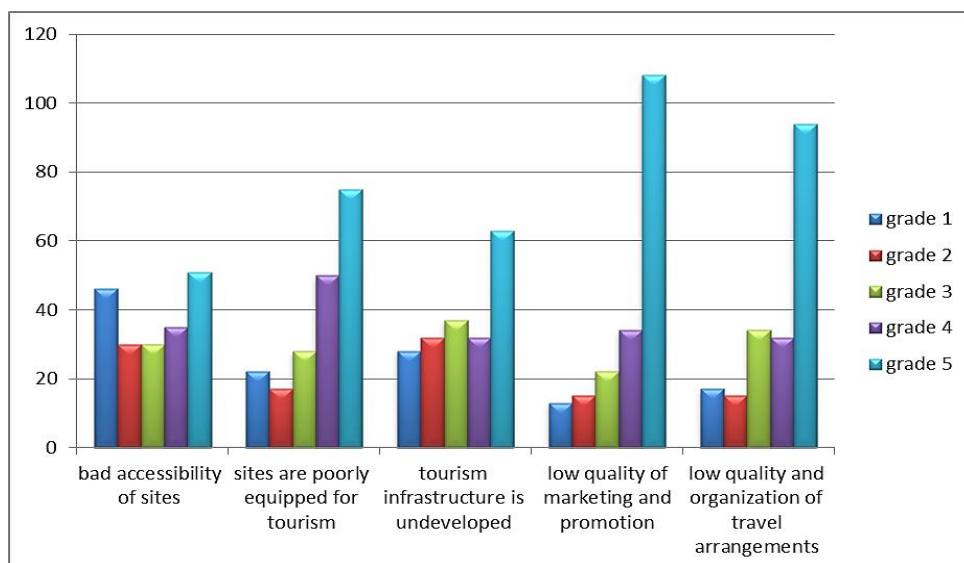


Fig. 7 Problems of tourism development at natural sites in the Bela Crkva municipality

High concentration of geoh heritage sites provides a good prerequisite for geotourism development, but these sites may also be used as additional attractions to other forms of tourism.

However, in order to attract more tourists to these geosites in the future, construction of tourism infrastructure and adequate promotion and improvement of professional staff in the field of tourism are necessary.

## REFERENCES

- Belij, S.** (2007) Geodiversity and Geoheritage - modern trend of geomorphology development in the world and by us. Proceedings of the Faculty of Geography, at the University of Belgrade, vol 57, 65-70. (in Serbian)
- Bogdanović, Ž.** and **Marković, S.** (2005) Waters of Banat. Department of Geography, Tourism and Hotel Management, University of Novi Sad, 130p. (in Serbian)
- Boškov, J.** (2014a) Tourist presentation of the geoh heritage in Bela Crkva municipality. Department of Geography, Tourism and Hotel Management, University of Novi Sad. (in Serbian)
- Boškov, J.** (2014b) Geoheritage of Bela Crkva municipality. Citizens Association Aurora, Bela Crkva, 91 p. (in Serbian)
- Bukurov, B.** (1954) Geomorphological opportunities of Banat Danube region. Proceedings of the Geographic Institute Jovan Cvijić, Belgrade, vol. 8, 55-88. (in Serbian)
- Devrnja, D., Boškov, J., Kotrla, S., Rvović, I. and Belobabić, M.** (2015) Bela Crkva municipality as a future destination of adventure tourism in Serbia. Proceedings of the V International Conference of Ecotourism, National ecotourism association, Sremska Mitrovica. (in Serbian)
- Dowling, R.K.** (2010) Geotourism's Global Growth. *Geoheritage*, vol. 3, number 1, pp 1-11.
- Đurović P. and Mijović D.** (2006) Geoheritage of Serbia-Representative of its total geodiversity. Proceedings of the Faculty of Geography, at the University of Belgrade, 54, 5-18. (in Serbian)
- Erikstad, L.** (2013) Geoheritage and geodiversity management – the questions for tomorrow. Proceedings of the Geologists' Association 124, 713–719.
- Gray, M.** (2008) Geodiversity: A new paradigm for valuing and conserving geoh heritage. In: *Geoheritage*, Geoscience Canada, vol. 35, pp. 51-59.
- Hose T. A.** (2012) 3G's for modern geotourism. *Geoheritage*, 4, 7-24.
- Hrnjak, I.** (2011) Tourist presentation of the geoh heritage of Deliblato Sands. Department of Geography, Tourism and Hotel Management, University of Novi Sad. (in Serbian)
- Jovanović, M. and Zvizdić, O.** (2009) Geoheritage of loess profiles in Vojvodina. Society of young researchers „Branislav Bukurov“, Novi Sad, 104 p. (in Serbian)
- Jovanović, M.** (2012) Middle Pleistocene loess-paleosol sequences of Vojvodina. PhD. thesis. Department of Geography, Tourism and Hotel Management, University of Novi Sad, 323 p. (in Serbian)
- Lješević, M.** (2002/2003) Geodiversity as condition and statement of the environment. Proceedings of the Faculty of Geography, at the University of Belgrade, vol. 50, 17-32. (in Serbian)
- Lukić, T.** (2010) Palaeoclimatic and palaeoecological characteristics of loess profile Zagajička hills. Master thesis. Department of Geography, Tourism and Hotel Management, University of Novi Sad. 53 p. (in Serbian)
- Marković, S. B.** (2000) Quaternary paleogeography in Vojvodina. PhD. thesis. Institute of geography, Novi Sad. 194 p. (in Serbian)
- Marković, S., Ivanišević, P., Jovanović, M., Molnar, B., Galić, Z., Gaudenyi, T., Savić, S. and Bojanić, D.** (2004) Paleopedological and paleoecological characteristics of holocen aeolian sands of the Deliblato Sands. Proceedings, Special Nature Reserve "Deliblato Sands", 7, 279-287. (in Serbian)
- Milovanov, D.** (1972) Hydrosistem Danube-Tisa-Danube. Water management Company DTD, Novi Sad, 697 p. (in Serbian)
- Mokhtari, D.** (2014) Axioms of geomorphology and Geotourism status. *Geography and Environmental Planning Journal*, Vol. 53, 1, pp 25-28.
- Newsome, D. and Dowling, R.** (2006) The scope and nature of geotourism. *Geotourism-sustainability, impacts and managements*, Oxford, Butterworth-Heinemann.
- Newsome, D. and Dowling, R. K.** (2010) *Geotourism: the tourism of geology and landscape*. Goodfellow Publishers, Oxford.
- Sharples, C.** (2002) *Concepts and Principles of Geoconservation*. Parks & Wildlife Service, Tasmania.
- Provincial Institute for Nature Conservation** (2011) The Landscape of exceptional features "Karaš-Nera", The proposal for protection as a protected area of II category, Novi Sad.
- Ramsar**, available at: <http://www.ramsar.org/wetland/serbia> (05.12.2014)