Geotourism development in the protected area Llogara-Karaburun

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ABSTRACT
The protected area Llogara – Karaburun represents an area of great importance for different types of tourism such as balnear tourism, ecotourism, speleology, fishing, hunting, etc. The coastal landscape and special geosites of different forms such as karstic caves, canyons, small bays, small beaches, etc., are the main touristic attractions to domestic and foreign visitors. However, despite their values, the geodiversity of this area is still unknown to the admirers of these landforms, due to poor promotion, lack of information and infrastructure to reach them. Geoinformation of the protected area Llogara-Karaburun is a digital database of the geosites, which is being created to inform the visitors and stimulate geotourism development. The paper describes the geotouristic values of this area based on their valorization according to four criteria of Knapik.at.al.

Keywords: Geodiversity, geomonument, geotourism, valorisation, promotion.

INTRODUCTION

The protected area Llogara – Karaburun is situated between the mountain range Cikë-Lungara on the east and the Adriatic and Ionian seas on the west. Three protected areas are proclaimed within this area: National Park of Llogara (1.010 ha), Managed Nature Reserve of Rrëza e Kanalit-Karaburun (20.000 ha) and Marine Protected Area of Karaburun–Sazan 12.570,82 ha, where 9.8 ha belong to the marine area close to Karaburun peninsula and 2.7 ha to the marine area close to the Sazan island. Besides, this area has a great number of monuments of nature (third category of IUCN) such as geomonuments, hydromonuments, and biomonuments.

Due to its scenic beauty, diverse landscape including mountains, hills, and plains, small beaches, underwater caves, land and sea biodiversity, archaeological sites, etc., this area is increasingly being visited by native and foreign visitors. Most of them do come to this area to explore the unknown misteries of the peninsula and the island of Sazan, but they are not properly informed where to go and what values the geosites possess. Modest efforts are made by the local authority for the geotourism promotion of this area, such as the publication of map boards, leaflets or short videos in media. Some contribution is also given by the geographers, geologists, and biologists who have published papers or studies about geology, structural relief and biodiversity of certain areas of this zone. This research project undertaken in the scope of the natural heritage study and promotion intends the recognizing and popularizing the geosites of this protected area with complex geological, geomorphological, biological and archaeological values.

METHODOLOGY

The geotouristic potential of the geosites of this area is evidenced through their

valorization according to four criteria of Knapik.at.al. such as accessibility, state of preservation, scientific value and education values modified by Anna Solarska and Zdzisław Jary (Solarska & Jary, 2010). In order to determine the importance of individual geosite, each criteria has five features with values of points from 1-5 for the accessibility and state of preservation and from 2-10 for the scientific and education criteria (Tab. 1). The database of the geosites is organized in an inventory card which contains general and specific data of each geosite.

GEOLOGY AND RELIEF

The protected area Llogara-Karaburun belongs to the tectonic zone of Sazani (Akademia e Shkencave 1990a) and is made mainly by the carbonate rocks of cretak and flysch on the southwest edge of the peninsula. The relief is hilly-mountainous with the predominance of the mountain landform. This area is made of three important physical units: Llogara Pass, Mountain range Rrëza e Kanalit and Karaburun peninsula.

Llogara Pass represents an important geosite for its geological, geomorphologic and biological values. It is situated on the tectonic uplift line of two tectonic zones, that of Sazani on the southwest and that of Jonike on the northeast. From the lithological viewpoint it is situated on the tectonic contact of carbonates of mesozoi with the terrigenes of paleogjen-neogjen. Llogara Pass represents also the geobotanical borderline of the typical Mediterranean vegetation with that of the Central Europe, characterized by a mix forest. The southeastern slope of the Llogara Pass has barely any vegetation,

Tab. 1 Criteria of assessment for inventoried geomonuments (according to Knapik et al., 2009, modified)

Criteria	Traits	Points
Accessibility	Site clearly visible, located directly on the touristic trail or nature's path	5
	Site clearly visible, located on the road or path	4
	Site barely visible, located more than 250 m away from the path or road	3
	Site difficult to access for tourist (ex. significantly overgrown or difficult to access)	2
	Site unavailable for tourists	1
State of preservation	Well preserved site with no visible signs of degradation	5
	Site in slight violation of its structure	4
	Partially destroyed	3
	Site heavily modified by human	2
	Site destroyed - loss character of geosites	1
Scientific worth	Very high: one site in the region, unique in a wider scale	10
	High: very important for regional studies	8
	Average: significant for regional research	6
	Low: common site with average values	4
	Very low: no particular distinctive features	2
Education	Very high: number of represented issues: 5 and more	10
	High: number of represented issues: 4	8
	Average: number of represented issues: 3	6
	Low: number of represented issues: 2	4
	Very low: number of represented issues: 1	2

unlike the northwestern one, due to the steepness and exposure of this slope. National Park of Llogara covers an area of 1040 ha protecting the biodiversity of the northwest side between the altitude of 470-2018m. This forest of the black pine is the habitat for many wild animals and birds such as wild pig, wild goat, deer, rabbits, pigeons, etc. Besides the rich biodiversity this park is significant for the beautiful landscapes with high peaks of the Mountain of Vetëtima on the east and stunning views of the Albanian riviera on the west.

Mountain range Rrëza e Kanalit is situated on the southwest of the mountain range Cikë–Lungara and stretches toward the northwest with a length of 24 km from Llogara pass to the Bay of Brisani. This monocline crest has very steep slopes due to its tectonic origin and carbonate formation. The mountain with maximum altitude of 1499 m (Maja e Shëndëllisë) creates morphological contrast with Bay of Vlora on the northeast and the coastline on the southwest. The tectonic fault from Bay of Brisani to the Bay of Dukat i Ri has differentiated the southeastern part of this horst (mountain landform of Rrëza e Kanalit) from the northwestern part where the hilly landform of Karaburun is created. Due to its morphological active evolution this mountain range is significant for the long, high and very steep slopes which stand vertical to the sea and the dense stone streams network which have formed small beaches (Grama, Llovizi). The northeastern slope from the peak of Gjoka (954 m) to the peak of Vali (1362m) and especially the southwestern slope from the peak of Kollovoçka (1228m) to the peak of Shëndëllisë (1499m) have the precipice shape in their major parts. Rrëza e Kanalit is significant for the karstic forms such as the caves (Dukë Gjoni, Daci), funnels, cliffs and the underground karstic forms such as karstic holes, wells, etc. The coastline is very high with cliffs, holes and caves which are created as a result of both tectonic and abrasion activity.

Karaburun peninsula with an area of 62 km^2 is the biggest one of the country, extending from the bay of Brisani to the Cape of Gjuhëza (16km long). Mezokanali trait separates the peninsula from Sazan island, the biggest one of the country. The lithology is represented by the carbonate rocks of cretak and molasic terrigenes of neogjen on the edge of the bay of Shën Jani. The hilly relief of Karaburun culminates in the central part at the peak of Çadërës 839m. The tectonic fault from bay of Dafina to the bay of Rogozha has differentiated the southeastern part of the peninsula from that of the northwest. Therefore the peninsula presents two different landforms. The plain landform of Ravena with the altitude 200-300m on the southeast, and the monoclinal crest on the northwest. The crest is significant for the structural asymetry of the slopes with completely different morphological features. The southwestern part of this crest is characterized of the vertical high slopes 600-800m, especially from the peak of Hilqes (732m) to the peak of Çadërës. It has the magnificant view of a gigand natural wall by the sea almost without any stone streams. Unlike this, the northeastern slope has a dense stone streams network reaching up to 3km long, which have created small beaches of Shën Vasil, Shën Jani, etc. Superficial and underground karstic forms are present in Karaburun such as funnels, holes, caves, etc. Karstic forms such as holes and small dolines are found especially on Ravena plain. Along the coast there are small tectonic - abrasive bays such as bay of Rogozhës, bay of Shën Janit, bay of Dafina, bay of Brisani - the biggest and most beautiful of the peninsula which stretches about 750-800 m deep inland (Kabo, 1990). The coastal caves are very attractive for their fantastic shapes that appear mostly underwater, small lakes, and legends, such as the cave of Haxhi Alisë on the northwest coast between Cape of Gjuhëzës and Cape of Galloveci.

VALORISATION OF THE GEOSITES AND TOURISTIC FREQUENTATION

Based on the bibliographical research and field data collection 24 geosites with geological, geomorphological and archaeological interest were identified. For each of them, an inventory of basic data including location, main features and processes is created. Data from different sources were organised in an inventory card which holds information allowing the evaluation of the geosites from the scientific, aesthetic, cultural and accessibility point of view. The four criteria assessment of Knapik.at.al allows making a statement of every object significance for their geotouristic and educational functions (Solarska & Zdzisław 2010), which will add scientific information to the database and will suggest to visitors itineraries based on their expectations.

The results of valorization proved the existence of a significant geotouristic potential of geosites of Llogara-Karaburun area. Five of the 24 evaluated sites resulted with the highest potential for geotourism, including: National Park of Llogara, Sazan island, Shën Vasil beach, Cave of Haxhi Alisë, Cave of Dukë Gjonit (Tab. 2).

Llogara National Park has average to high scientific value. It is clearly visible, located directly on the touristic trail, easily accessible with many touristic attractions and touristic facilities such as restaurants, hotels, camping areas, etc. This park is frequented all year long by both native and foreign visitors who prefer the fresh air, the breathtaking panorama of the coast from above, the characteristic food and the diverse habitats and species of the park.

All five geosites are well preserved with no visible signs of degradation, especially the caves and the island of Sazan, which are naturally protected. However, the most frequented activities such as diving and spear gun fishing are associated with damages of habitats or rare species. Also, sporadic cases of procesenaria is evidenced on the pine forest of the National Park of Llogara.

Concerning the accessibility, only the National Park of Llogara is easily accessible. Sazan island, the cave of Haxhi Alisë, Cave of Dukë Gjonit and Shën Vasil beach are difficult to access by visitors. They are reachable only by motor boats or yachts in the period June-August, whose cost is relatively high, especially for the native tourists.

All five geosites have high education values from the geology, geomorphology, biodiversity and archaeology point of view, although people are poorly aware or informed of their values. Visitors can hardly find any information board with maps except at Shën Vasil and Llogara. They visit these sites mainly for their aesthetic values, quietness and sport activities such as diving, fishing, exploring, etc.

Other geosites of this area also have geotouristic potential due to their scientific and aesthetic values such as the southwestern slope of the mountain range Rrëza e Kanalit, bay of Brisani, Cape of

Tab. 2 Valorisation of geosites of LLogara-Karaburun

Nr.	Geosite	Criteria				
		Accessibi-lity	State of preservation	Scientific values	Education	Summarised value
1	Llogara National Park	5	5	8	8	26
2	Sazan island	2	5	6	8	21
3	Cave of Haxhi Alisë	2	5	6	6	19
4	Shën Vasil beach	3	5	4	6	18
5	Cave of Dukë Gjonit	2	5	4	6	17

Gjuhëza, Gryka e Xhenemit (Sazan Island), underground caves, etc., but these sites are difficult to be accessed by visitors, for they are located far away and in difficult terrain.

The number of the visitors is increasing continuously in this area, but geotourism development should consider providing basic facilities to the visitors, which in most of the geosites are missing except National Park of Llogara and Shën Vasil beach.

GEOINFORMATION OF THE GEOSITES OF LLOGARA - KARABURUN AREA

Geoinformation of geosites of Llogara-Karaburun created with the help of ArcGIS10, is a digital database about each geosite, where general and specific data about geographical position, geology, geomorphology, biodiversity, state of preservation, management, etc., are provided. Following the approach proposed by Giardino and Mortara (2004) to each geosite a card containing pictures and descriptions divided into sections is created. The general data of the site is presented in the first section; pictures and text in the second, cultural values, curiosities and legends in the third section and state of preservation and risks in the last one. The card needs to be completed with further information about geology and geomorphologic evolution, stratigraphic sections, 3 D views, etc. The database completion is an ongoing process, for in many cases there is no updated data or the information is completely missing. This gap needs to be filled through continuous monitoring of the geosites from the experts in the field of geology, geomorphology, biology, speleology, archaeology, etc. In order to make available, the results of the project to the public are combined GIS

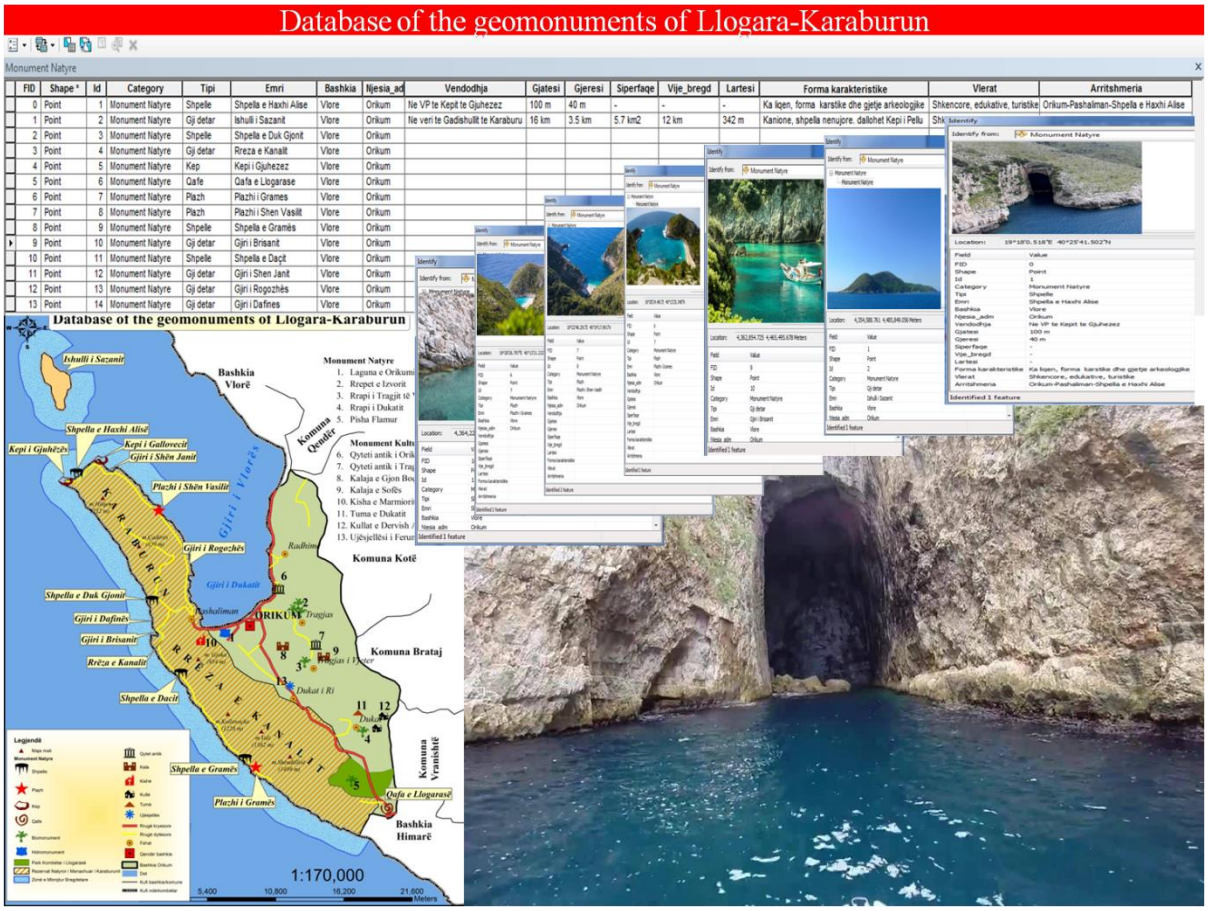

Fig. 1 Database of the geomonuments of Llogara- Karaburun

applications with Internet technology, allowing the publication of cartographical data integrated with other information, including images and descriptive cards (Ghiraldi et al., 2009).

The creation and publication of the website www.geositesofkaraburun.com should be the next step where itineraries of geotours are proposed to the general public together with maps and other information.

DISCUSSION AND CONCLUSIONS

Based on the valorization of the geosites, the area Llogara-Karaburun has a high potential for geotourism development. The results of the geosite valorisation realized by this study can be considered as initial steps for the public awareness raise about the geosites importance. Geotours need to provide geological, geomorphological and biological knowledge to the visitors to raise their understanding of the area. Valorisation of the geosites of Llogara-Karburun is the first step toward geoheritage cataloging. Much more is needed to be done for the information update, monitoring the state of the art of the geosites, completion of the database with more geological and geomorphological aspects of the geosites, etc.

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