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DEVELOPING URBAN GEOTOURISM IN BRNO (CZECH REPUBLIC)

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Abstract

In the last years, geotourism is conceptually developed in urban areas, although the use of geodiversity and related features in cities for tourist and educational purposes is much older. The term “urban geotourism” is defined as tourism based on the places within the city boundary (both in the form of built heritage and rock outcrops) that is related to geological concepts and features. As the first step for the development of urban geotourism it is necessary to identify and inventory the geotourist resources, which should take into account both natural (geological, geomorphological, hydrological or palaeontological, and ecological aspects related to geodiversity), and cultural aspects related to geodiversity (e.g. monuments, building stone, geo-toponyms, anthropogenic landforms). Based on the inventory, sites suitable for geotourist activities are chosen. These include 1) protected geosites and sites included in the national database of geological localities, 2) other natural sites (not included in the previous point), especially small outcrops or hydrological features, 3) geocultural sites and objects (e.g. anthropogenic landforms, archaeological sites with a strong link to geodiversity, buildings where the local material is used). The contribution presents examples of the possible use of the geotourist resources in Brno (Czech Republic).

Key words: geoheritage, cultural heritage, geoeducation, geocultural sites, geoarchaeological sites, anthropogenic landforms

Introduction

Geotourism is defined as a form of nature tourism that focuses on landscape and geology, but also on the biotic and cultural features that are linked to the abiotic nature (Dowling 2013). Originally, geotourism was focused mainly on the natural or rural areas, but in the last years, it is conceptually being developed also in urban areas, although the use of geology, geomorphology and related features (e.g. building stones or anthropogenic landforms) within urban areas for tourist and educational purposes is much older (Robinson 1982, Bennett et al. eds. 1996).

The term “urban geotourism” is relatively new (Del Lama 2015, Kubalíková et al. 2017, Pica et al. 2017) and can be defined as “tourism of visitable places anywhere in the city boundary (be they in the form of built heritage or of rock outcrops) that is related to geological concepts and features” (Del Lama 2015).

This contribution briefly presents the types of geotourist resources in urban areas and gives several examples of geotourist sites and activities in Brno (Czech Republic).

Methods

To develop urban geotourism it is necessary to identify and inventory the resources. According to the present holistic concept of geotourism (Dowling 2013), the inventory of geotourism resources should take into account: 1) natural features – geological, geomorphological, hydrological or palaeontological, and 2) cultural aspects related to geodiversity and geoheritage, e.g., building stone or toponyms linked to the geodiversity. Special attention should be paid to the anthropogenic landforms because they are very common in the urban areas, they possess a high geotourist potential and they are interesting from nature conservation point of view (Petersen 2002; Kubalíková et al. 2019). It is obvious that all these resources cannot be practically used for geotourism purposes; tourist use is generally made through the exploitation of particular sites of geotourist interest. Based on Kubalíková et al. (2020), these can be divided into several groups: 1) protected geosites and sites included in the national database of geological localities (Czech Geological Survey 2020), 2) other natural sites (not included in the previous point), especially small outcrops or hydrological features, 3) geocultural sites and objects (e.g. anthropogenic landforms, geoarchaeological sites, buildings where the local material is used). These sites can then represent a basis for the geotourist offer.

Study area

Brno is the second largest city in the Czech Republic (approx. 380 000 inhabitants). It lies on the contact of the two different geological units: Bohemian Massif and Carpathian Foredeep. The geology of the relatively small area of the city is quite complex and varied: Neoproterozoic Brno Massif

(metabasalts, diorites and granodiorites), Paleozoic cover (Devonian clastic sediments and limestones), Mesozoic limestones of Jurassic age and Cenozoic sediments (Neogene sands, gravels, calcareous clays, Quaternary loess, fluvial sediments and anthropogenic deposits) are represented here (Müller and Novák 2000). High lithological diversity is reflected in the morphological, soil and hydrological diversity (geomorphodiversity, pedodiversity, hydrodiversity) which has influenced the urban development and which has left an indelible imprint on the identity of the city, e.g. iconic decoration and building stone (Figure 1), landforms that contribute to the typical panorama or shape of the city.



Fig. 1: Red conglomerate from Červený kopec and white Crinoidea limestone from Stránská skála: the colour of two iconic materials for Brno's Medieval architecture match with colours of the city. Photo: Lucie Kubalíková

Examples of geotourist sites

In the first category (protected geosites and sites included in the national database of geological localities), the best examples of geotourist sites usually overlap with legally protected areas: Hády (National Natural Reserve, several Natural Reservations and Monuments), Stránská skála (National Natural Monument), Červený kopec (National Natural Monument). Significant landscape elements (the lowest category of general nature protection) can be included too, e.g. Petrov, Žlutý kopec, Sandpit in Černovice. The sites in the Database of the Czech Geological Survey (2020) possess geotourist potential as well, although, in many cases, there is a need for interpretation (e.g. Špilberk, Žabovřesky quarry). Some examples are presented in Figure 2.



Fig. 2: Significant landscape elements can represent an important geotourist resource: Žlutý kopec (Devonian conglomerates), Petrov (metabasalt outcrops). Photo: Lucie Kubalíková

The second group (other natural sites) covers a wide spectrum of sites. They can be small outcrops that have a good location, but lower scientific value, or the water elements such as springs or catchments (including the accompanying landforms such as meanders or gravel terraces). As the soils are considered an important part of geodiversity, the soil profiles should be included as well. A specific sub-group is represented by temporary exposures uncovered when digging the base for large buildings or when building underground constructions. These can serve as an important resource of scientific information and if documented well, it can become a basis for geotourist and geoeducational activities even if the profile itself does not exist anymore. Some examples are presented in Figure 3.



Fig. 3: Studánka spring represents a hydrological feature just in the city centre. Temporary exposures near Švédské šance (in 2009) discovered Crinoidea limestone overlaid by Neogene sediments. Photo: Lucie Kubalíková, Karel Kirchner.

The third group is represented by geocultural sites and objects. These can be old quarries with a strong link to the built heritage or with an important socio-economic issue. As an example, the so-called emergency colonies can be presented: during the 1920s, several old disused quarries or sandpits or claypits were inhabited by workers who built emergency houses there (e.g. Písečnick, Černovičky – old sandpits, Stone colony at Červený kopec – disused conglomerate quarry). Built heritage (monuments, buildings, statues) can be also included into geocultural objects, e.g. Obelisque in Denisovy Sady Park (Figure 4), which is rather perceived as a cultural monument, is built of coral “marble” that was quarried on Šumbera near Hány (Mrázek 1993). The fossils of corals and other Devonian fauna can be observed here. Proper anthropogenic landforms (e.g. road cuttings, ramparts or heaps) can be included into the group of geocultural sites and objects too. For example, on Holedná Hill, the fieldwork and LiDAR data analysis enabled to discover several elongated structures. They were interpreted as anthropogenic and radiocarbon dating confirmed the Bronze Age. The objects are considered to be a remains of Bronze Age fortification or a group of sacral objects and thanks to the close relationship between the geomorphology and archaeology, the site can be used for geotourist purposes as well.



Fig. 4: Obelisque at Denisovy sady Park with fossils. Photo: Lucie Kubalíková

Examples of geotourist activities

The existence of the sites of geotourist interest automatically doesn't imply that they are going to be used for geotourist and geoeducational activities. Ideally, urban geotourism development needs to be driven by a multidisciplinary team that closely cooperates with local stakeholders. In this case, stakeholders are represented by Tourist Information Centre, Municipal Office of Brno and Agency for Nature Conservation.

Together with TIC, a geopath through city centre was proposed (Figure 5). It connects two significant sites of geotourist interest and icons of the city: Petrov and Špilberk. The stops include natural

outcrops, buildings with local material and viewpoints. In an accompanying leaflet, visitors can find information about geological and geomorphological phenomena related to the cultural and historical issues of the city. The geopath is designed to cover several types of geotourist resources (both natural and cultural issues, both geosites, other sites and geocultural sites and objects).

Other activity is represented by guided walks for the public (planned two times per year). Based on the demand from professional tourist guides, a certified commented walk was arranged (Figure 5), with the aim of enriching the information about traditional objects of tourist interest (e.g. Petrov Cathedral, Obelisque, Parnas Fountain). Generally, this is one of the goals of the project “Geodiversity within urban areas” – providing additional information about geodiversity of the well-known places (e.g. cultural monuments) or point on the sites or features in the city which are important from the geodiversity point of view, but which are not known to the public (e.g. outcrops of metabasalts - the oldest rocks in Brno – in fact, the oldest feature in Brno).



Fig. 5: The leaflet accompanying Geopath through Brno City Centre; guided walk for professional tourist guides had an aim to enrich information about traditional tourist sites.

Conclusion

Urban geotourism has many advantages both for society and geodiversity. It is not seasonal, it doesn't require special equipment, it is accessible for a high number of people (both visitors and locals), it diversifies the offer of tourism in cities with surprising elements and it offers an alternative to the traditional tourist sites. The conceptual development of urban geotourism which is focused on identifying geotourist resources and creating specific geoeducational and geotourist products can significantly contribute to a better understanding of geodiversity's functions in urban areas and thus may help the acceptance of conservation measures and sustainable management proposals applied to different sites.

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Souhrn

Příspěvek stručně přibližuje problematiku městského geoturismu a zaměřuje se na identifikaci zdrojů pro geoturismus. Na základě klasifikace geoturistických lokalit jsou uvedeny dílčí příklady z Brna, doplněné o geoturistické a geovzdělávací aktivity. V závěru jsou shrnuty výhody městského geoturismu a nastíněn jeho význam pro ochranu neživé přírody a udržitelný management cenných lokalit.

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