

MUSEUM ACTIVITY PROMOTING GEOTOURISM AND GEOSITE PROTECTION

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Abstract. Museums are more than just repositories of cultural goods, their role in society is complex, combining cultural activity with education and entertainment. Classical ways of enhancing the value of a museum's heritage includes visiting permanent as well as temporary exhibitions, providing guides (either through recordings or by appointing guides), providing souvenirs and other artefacts (including specialist literature), organising educational programmes/workshop-type lessons; these ways of enhancing value must be sustainable and durable. Lately, related activities or variations of existing ones have also emerged, such as online workshops, online or hybrid conferences, virtual presentations of exhibitions and sometimes even museum repositories, interactive-fun applications involving key exhibits from permanent exhibitions, mobile programmes with moving collections or workshops accompanied by specialized staff. The National Geological Museum, in addition to the traditional functions of a museum, supports the promotion of geological science with all its branches. It is, in addition to the specialized higher education institutions and several other profile museums, an interactive way of information on the most important sites of geological interest in Romania and beyond; those who want to research a particular geological site, a particular formation, a group of fossils or minerals are provided with a rich and diverse material.

Keywords: museum, heritage, educational programme, sustainability.

Rezumat. Activitatea muzeală promovând geoturismul și protecția geositurilor. Muzeele reprezintă mai mult decât simple depozitare ale unor bunuri culturale, rolul acestora în societate este complex, îmbinând activitatea culturală cu educația și divertismentul. Dintre modurile de valorificare clasice ale patrimoniului unui muzeu pot fi enumerate: vizitarea expoziției permanente precum și a celor temporare, asigurarea de ghidaje (fie prin intermediul înregistrărilor, fie prin desemnarea unor ghizi), punerea la dispoziție de suveniruri și alte artefacte (inclusiv literatură de specialitate), organizarea de programe educaționale/lecții tip atelier; aceste modalități de valorificare trebuie să se realizeze în mod sustenabil și durabil. În ultima vreme, au apărut și activități conexe sau variațiuni ale celor existente, cum este cazul atelierelor desfășurate on-line, a conferințelor on-line sau hibrid, prezentarea virtuală a expozițiilor și uneori chiar a depozitelor muzeelor, aplicații interactiv-distractive cu implicarea unor exponate cheie din expozițiile permanente, programe mobile cu deplasarea unor colecții sau a unor ateliere însoțite de personal specializat. Muzeul Geologic Național, pe lângă funcțiile clasice ale unui muzeu vine în sprijinul promovării științei geologice cu toate ramurile sale. Este, pe lângă instituțiile de învățământ superior de specialitate și alte câteva muzee de profil, un mod interactiv de informare asupra celor mai importante locații de interes geologic la nivelul României și nu numai; cei care doresc să cerceteze un anumit sit geologic, o anumită formațiune, un grup de fosile sau minerale au la dispoziție un material bogat și divers.

Cuvinte cheie: muzeu, patrimoniu, programe educaționale, sustenabilitate.

INTRODUCTION

Geologically themed museums are an integral part of geotourism activity and an important source of information on the main geological attractions represented.

In some works (e.g. MARTÍNEZ-MARTÍN, 2003), geosites are characterized as “one of the most important resources in educational strategies for earth and environmental sciences”, which is easy to understand considering the attractiveness of this field and the complexity of the ways in which it can be approached from an educational point of view. Some geosites are specifically designed for educational purposes such as Falun Mine, Sweden (HELLQVIST, 2019) but there are also studies that analyse and demonstrate that the geological museum, in turn, can be assimilated with a geosite and is a potential stimulator of geotourism (both from a paleontological point of view HERRERA-FRANCO et al., 2021 but also mineralogical, TURNER-CARRIÓN, 2021). There are several methods to evaluate a geosite (e.g. CARRIÓN-MERO et al. 2021, MACOVEI et al., 2019), but, unfortunately, none is unanimously accepted/applicable, and these should be in accordance with the current legislation of the country, in order to legalize the site.

There are several museums and collections with a geological profile in Romania, some of which are representative at a regional level (County Museum of Mineralogy “Victor Gorduza”, Baia Mare; Oltenia Museum - Natural Sciences Section, Craiova; Casa Binelui Museum of Aesthetic Iron Mineralogy Constantin Gruescu, Ocna de Fier; Natural Gas Museum, Medias; Gold Museum, Brad; Toda Mineral Museum, Criscior; etc.) and others are generated by the impressive collections of the great institutions of higher education (Museum of Paleontology and Stratigraphy, part of the Department of Geology of Babeș-Bolyai University, Cluj; Grigore Cobălcescu Didactic-Scientific Museum, part of the Department of Geology of Alexandru Ioan Cuza University, Iași; Collection of Mineralogy and Palaeontology - less accessible to the general public; Collection of the Department of Environmental Engineering and Geology, University of Petroșani). Of these, the only national museum exclusively in the geological domain is the National Geological Museum of Bucharest - a department of the National Institute for Research and Development in Geology, Geophysics, Geochemistry and Remote Sensing I.G.R. Bucharest. Its location, Șoseaua Kiseleff, no. 2, represents the first headquarters of the Institute (now only for the “Museography and Education” department). The research equipment hosted here is serving both the department and the guardian institution (X-ray

Diffractionmeter, Fourier Transform Infrared Absorption Spectrometer, Simultaneous Thermal Analyzer that can be coupled with the Absorption Spectrometer for the determination of exhaust gases, Diamantometer, Binocular Loupes, Low Background Gamma Spectrometer with HPGe detector, Low Background Gamma Spectrometer with NaI (TI) detector, Radon Measurement System, Universal Radiation Protection Monitor. The rest of the Institute's equipment is being located in the administrative building, next to the archive, library (MARINCEA & MUNTEANU, 2020).

The idea of a public collection was launched with the foundation of the Institute, as the operating regulations signed by His Majesty King Carol I of Romania stipulated that "collections of rocks and minerals from the country shall be assembled which, with the permission of the director, may be visited and consulted by the public" (Monitorul Oficial, 1906). The museum is not simply a collection of minerals, rocks and fossils, but was conceived and designed as an illustrated geology textbook, a textbook that has now disappeared from the school curriculum. The museum's mission is broad and covers various areas: "The National Museum of Geology is an institution of culture, science and education, whose main activities are the investigation, determination, classification and conservation of national geological reference material, and the storage, systematisation and conservation of documentation and bibliographical material relating to it. Apart from the role of systematic classification and compilation of reference collections for mineralogical, petrographic, paleontological and lithostratigraphic material, their recording and conservation, the museum also performs exhibition functions for visiting, dissemination and popularization of Earth Sciences within the National Museum Network (RMN), respectively promotion of educational, cultural, etc. actions for the general public and for primary and secondary schools" (MARINCEA & MUNTEANU, 2020).

The collections are structured according to the inventory registers by large, broad collections: Mineralogy, Petrography, Paleozoology, Paleobotany. The activities of the museum, as a part of the Geological Institute of Romania, focus mainly on research (research projects, studies, themes, field campaigns) regarding geological sites of all types that are then presented in public dissemination, information through guides and thematic lessons. It is worth mentioning the provision of information and access to samples for researchers (both national and international), and the provision of photographs and detailed descriptions on request.

The present work deals mainly with the functions of the National Geological Museum that touch upon the issue of geotourism, geoconservation *in situ* (geosites, geoparks, monuments of nature) and places these activities in the current Romanian and international context.

MATERIALS AND METHODS

For the present research, literature was studied; practical experience was gained through participation in research projects supported by practical fieldwork, conducting educational workshops, thematic guides and other educational activities in the National Geological Museum, as well as contact and communication with other educational departments of national museums and those of other countries.

In general, the educational programmes complement the needs of applicability and deepening of the school curriculum as well as presenting areas that are not currently accessible to students in the classroom. Natural heritage has been exploited in three main ways: use as visual teaching material (with particular reference to mobile heritage housed in the museum's permanent exhibition), conducting the lesson in the geological site (as in the case of the thematic field trip) or direct use of teaching material, similar to the heritage material but not fulfilling sufficient conditions for classification (in the form of work kits composed of geological samples).

RESULTS

One of the main components of a geological museum in general is scientific research, in whose absence no natural heritage asset can be truly valued. In the first definition given by ICOM (International Council of Museums) - 1946 research was not included, it was only mentioned in 1974 (LEHMANNOVÁ, 2020). The definition given by ICOM today places research at the forefront of the definition of a museum, which can also be extended to sites (some of which are part of museums as fixed heritage under management). The degree of protection given to each geosite varies widely, especially depending on the legislation and concepts of each country. In Romania, an area/site/monument that falls under legislated protection is strictly protected, the difference being made only on the basis of restricted or unrestricted access; other activities such as collecting samples are not allowed. There are sites that could be protected from their eventual disappearance (industrial excavation, construction, destruction or natural disasters), but still allow research or educational activities without obstacles (from very young ages to the education of future specialists). Such an example has been treated in MACOVEI et al. (2019), being in fact, on a smaller scale, the idea taken up by geoparks, that of having a protected area, but in a sustainable and durable way, allowing the development of those activities that are also included in these concepts.

In addition to the current research work, bachelor/master/doctoral theses have been drawn up using the patrimonial, logistic and informational background of the institution. The research staff also supported the training of students participating in the International Earth Science Olympiad - IESO (through the provision of the informational background, sample exemplification and even field activities).

Educational activities in the National Geological Museum started in 2004 as a product of a partnership with "My School", a private educational establishment of excellence. The tested programme (conducted by Dan Grigore)

was mainly based on the evolution of the living world (Fig. 1). The lessons took the form of projections, accompanied by explanations and interactive discussions, each analysing a group of animals (fish, reptiles, birds, dinosaurs, etc.), explaining why it is called a certain way, how it appeared, how it changed and, in some cases, how it disappeared. The programme took place across two school years, in several sessions/lessons scheduled per year, ending in 2006 with a trip - tour to several geological sites (on the Dâmbovicioara route) and other programmes also started to be implemented (www.comunicatedepresa.ro/).



Figure 1. Examples of posters used to promote the National Geological Museum's educational programmes (IGR-MNG, 2014-2015).

The programme has been continued (figure 1 shows an example of the promotion of the programme in 2014), but in a dynamic form, changing its shape, adapting to the school curriculum, changing various names. It is still carried out today under the title "Terra is alive!" (Coordinators: Dan Grigore and Monica Macovei) (IGR-MNG, 2022-2023). The initiator of the programme was Dan Grigore, and it has been presented at the National Conference of Museum Pedagogy "Achievements and perspectives in the field of museum pedagogy in museums with specific natural sciences in Romania" - 4th edition, Târgu-Mureș, 2014 in the form of an oral presentation in a paper that summarized the period 2004-2014: "Ten years of educational activities in the National Museum of Geology".

The educational programmes of the National Geological

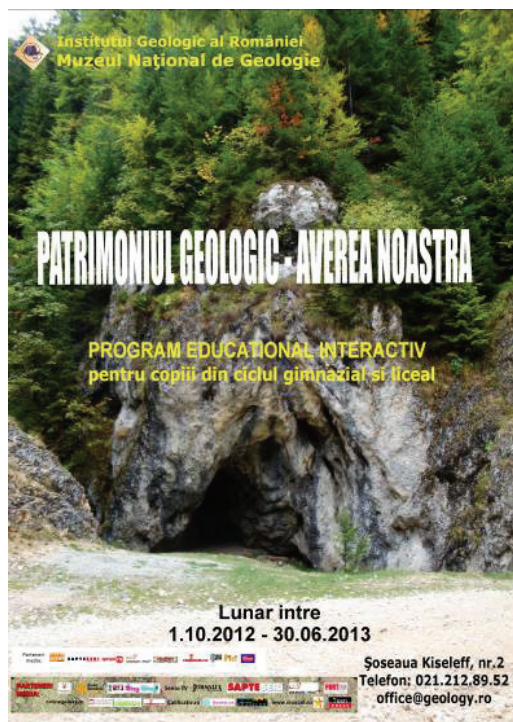


Figure 2. a. Poster promoting the educational camp and b. a moment captured during the practical activity.

Museum were grouped into three categories: 1. in support of the geography school curriculum (“Earth - living planet”, “Earth - as a living being”, “Earth - planet control”, “Earth dynamics”, “Terra is alive!”); 2. addressing the requirements of the “School in a different way” programme or, at the request of teachers, on a specific topic (Earth for Young Children, The Geologist's Storybook, Geological Heritage - Our Heritage, Geology in Five Steps, The Ice Age); 3. Leisure time recreation, generally holiday programmes (“Age of Dinosaurs”, “Earth for Kids”, “Fossil Hunt”, “Geology in Five Steps”, “Geophiles”, “Prehistoric Man”). This dynamic of programmes is still maintained, with the three categories receiving an annual update of the offer, either by rerunning a previous programme (in its existing form or with modifications on request) or by creating new programmes/lessons (Fig. 2a; b).

In 2011, an educational programme called “Geological Heritage - Our Heritage” was launched (GRIGORE et al., 2022) in which the participating students learned basic information about fossils and minerals, as well as the meaning of the terms: geological heritage, paleontological site, reserve, national park, geopark, geotope, natural monument. The workshop-lessons were adapted to the level of the students and were supported by lesson sheets, handouts, posters, rock, fossil and mineral kits, binocular magnifying glass, microscope. In the summer of 2012, a pilot application has been carried out under the aegis of the “School in a different way” programme, organized by Dr. Dan Grigore (IGR-MGN), School 307 in Bucharest - through Prof. Emilia Cârstocea and a few adult volunteers. The application field trip (Camp Zărnești - School Geotourism in Tara Bârsei) was disseminated during the Annual National Seminar on Museum Education by presenting the camp programme, the way it was carried out, as well as the materials produced on this occasion (“Book of Objectives” - a booklet presenting the programme by days and objectives; “Zărnești Camp Report - April 2012” - brochure with the camp's progress; “Zărnești Camp 2012” - PowerPoint presentation; “Zărnești Geological Collection” - rocks and fossils from the region; album with more than 500 digital photos). The project continued in the following years and, although it is no longer part of the educational offer, there are requests from potential beneficiaries (Fig. 3).



Figure 3. Pictures from the thematic lessons: on the left use of worksheets and handouts, on the right guided tour of the lesson theme.

In 2014, the component lessons of the educational programmes - “From the Geological Mysteries of Romania”, “Dinosaurs of Romania”, “Romania - the Land of Fossils”, “Mineral Treasures”, “Geothermal Resources of Romania”, belonging to the group of programmes designed specifically for the activities of the “Different School” week mainly included introductory notions on natural heritage values (IGR-MGN, 2014-2015).

At present, there are three categories of the proposed programmes (IGR-MNG, 2022-2023); as regards geological heritage, there is a lesson developed within the offer based on the school curriculum, “Terra is alive!” (Fig. 4): “Geotourism - Geoparks - Geosites” and there have even been mini-guided tours, specifically on the topics of certain lessons in the programme, in the rooms housing the natural heritage, as a way of exploiting it - as an illustrative pedagogical tool.



Figure 4. Poster promoting the ongoing educational programme “Terra is alive!” (IGR-MNG, 2022-2023).

Educational activities on the subject of geological sites and protected monuments are also carried out in other museums, such as the “Victor Gorduza” County Museum of Mineralogy (which, in addition to specialized lectures adapted to the age of the audience, also develops field activities in geological sites) (<http://www.muzeuminbm.ro>).

In addition to educational activities, museums also organize various scientific events (sometimes accompanied by practical applications or field activities) aimed at debating the situation of natural heritage. For example: the County Museum of Mineralogy “Victor Gorduza”, Baia Mare, which, this year, reached the sixth edition of the National Scientific Symposium

“Natural Heritage” and the National Geological Museum - Bucharest, hosted within the “Geology Week” communications on geological heritage.

Temporary themed exhibitions, with the museum as sole organiser or in collaboration with other museums of the same profile, are an attractive way of presenting geological sites or possible geotouristic itineraries, while also increasing the visibility of the museum. However, interdisciplinary exhibitions and travelling exhibitions (at national or even international level) are also particularly beneficial for the popularization of the field, as they are aimed at a much more diverse public.

The involvement of a museum in the protection and promotion of a geological site can also be achieved directly, as is the case of the County Museum of Mineralogy “Victor Gorduza”, which has 3 sites in its custody: the Ilba Rock Rosette, the Limpedea Columns and the Chiuzaia Fossil Reserve (all classified as IUCN category III protected natural areas, monuments of nature) (www.muzeuminbm.ro).

With the development of technology and the facilitation of access to data, the presence in the virtual environment (visibility, appreciation) of activities, collections, events and the presentation of sites is becoming increasingly important. With the adaptation to the new requirements, the training of the staff (including volunteers) continues but also improves through permanent training and participation in documentation activities or even research in the field or collections and the quantification of information not only scientifically but also practically, both for heritage and to be able to provide examples to children in educational activities (guides or programmes). The personal training of the staff who carry out the programmes is important in the way they interact with children, transmit information and “translate” scientific terms for any age level - adaptation matters and children's curiosity becomes even greater when they understand the phenomena.

CONCLUSIONS

Summarizing the activity of museums related to geotourism and the knowledge and promotion of geological sites, we can list: research activity and its dissemination, educational activity addressed to various age groups, hosting of thematic scientific events or theme days (such as “World Geologists Day”, “World Heritage Day”, organizing exhibitions or participating in various exhibitions, and last but not least the informational role, the most comprehensive component. Information can be provided through the proper management of sites in the custody or under research, the presentation of the natural heritage under its own management in relation to the sites of provenance (both by displaying permanent or temporary exhibitions and by providing specific guides), the production of information material with various degrees of accessibility (from simple brochures for the general public to complex specialist works), production directly or in collaboration with other companies of souvenirs (postcards, plastic representations, replicas, etc.).

Museums with a geological focus or even those with only a collection of minerals/rocks/fossils are an integral part of geotourism and have a role in raising awareness of the importance of the field and its sustainable use.

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