Research on the Present Situation and Prospect of Geopark Heritage Conservation Based on Computer Database Monitoring

Xiaowu Zhao1,*, Shizhu Li2, Song Li3, Bangzheng Liu4

1 Guizhou Xingyi National Geopark Administration, Guizhou, China, 562400
2 Qianxinan state industry investment corporation(group), Guizhou, China, 562400
3 Xing yi Municipal Water Bureau, Qianxinan Guizhou, China, 562400
4 Keichousaurus museum, Qianxinan Guizhou, China, 562400

*Corresponding author e-mail: zhaoxiaowu@xingyi.nga.org

Abstract. Geopark heritage is a representative geological asset, and organically integrates human and natural landscape, so it has rich scientific research, natural and ornamental value. Based on this, this paper first analyses the purpose and value of Geopark heritage resources protection, then takes Xingyi World Geopark as an example to study the status and problems of Geopark heritage resources protection, and finally gives the design purpose, principle and specific process of computer monitoring database of geopark heritage resources protection and conservation.

Keywords: Heritage Conservation, Computer Database Monitoring, Xingyi World Geopark

1. Introduction

With the iterative progress and maturity of info tech represented by computer tech, it has obtained extensive and in-depth research and popularization in many fields, especially the utilization of computer detection tech represented by database in the protection of Geopark heritage resources, which greatly promotes the development of relevant protection and conservation work [1]. As the geological natural heritage of the earth's long evolution, Geopark remains are representative geological assets with a certain scale and distribution range, and organically integrate human and natural landscape, so as to endow it with rich scientific research, natural and ornamental value. The types of heritage in geoparks are rich and diverse, and often involve a wide range, which brings great challenges to the protection of heritage resources in geoparks.

In addition, with the deepening of human activities, all kinds of production activities have a great impact on the heritage of Geopark. In order to protect the heritage resources of geopark, it is necessary to carry out effective investigation on its protection status. The investigation of heritage resources in geoparks involves the contents and links of the investigation area as shown in Figure 1 below. Through the investigation of geological heritage resources, it could lay a foundation for the effective conservation of geological heritage resources.
The investigation contents of relic resources in geoparks.

The establishment of Geopark can protect the heritage resources in the park to a certain extent, and promote the growth of tourism economy and regional tourism revenue. As a national geopark centered on the combination of marine reptile fossils and karst conic peak forest peak cluster landscape, Xingyi World Geopark is rich in natural landscape and human landscape of geological landforms, as well as high-quality geological heritage resources composed of stratigraphic section, structure, landform and water body [2]. Xingyi World Geopark has a high value in Geosciences, scientific research and tourism [3]. To carry out the research on the current situation of the protection of geological heritage resources based on computer database monitoring is conducive to the effective protection of the geological heritage of Xingyi World Geopark, as well as the effective implementation and development of the protection strategies and means.

In a word, based on the computer database monitoring, the research on the heritage resources protection status and conservation prospects of Xingyi World Geopark will help to realize the info sharing of the heritage landscape basic data, clarify the responsibilities, rights and interests of the relevant subjects in the process of protection and development of the park, so as to further improve the utilization degree and value of the park. In addition, the reasonable protection, rational utilization and scientific research of the geological heritage resources of Xingyi World Geopark are inseparable from the monitoring of computer database. Therefore, the research has important practical value.

2. The purpose and value of heritage resources protection in geoparks

2.1. Promote tourism development and regional growth

The heritage resources of geoparks have very high development and utilization value. The protection of heritage resources of geoparks not only helps to achieve the organic balance between the natural ecological environment and regional economic development, but also promotes the promotion and popularization of geological science research and geological knowledge, forming a virtuous development cycle. Taking Xingyi World Geopark as an example, the protection of the geological heritage resources has greatly promoted the publicity and image of the region, and achieved the maximum play and Realization of the comprehensive benefits of society, economy and environment.

2.2. Promote the optimization of regional ecological civilization

Geopark heritage resources not only have high natural resource value, but also contain rich humanistic value. Through the protection of Geopark heritage resources, it could effectively accelerate the construction of ecological civilization mechanism [4]. On the one hand, as an important carrier and platform to carry out cultural propaganda and promotion, Geopark heritage resources are the basis to ensure the spatial development and utilization of geological resources; on the other hand, while protecting Geopark heritage, it helps to show regional influence and significantly promote the development of regional economy, ecological civilization and humanistic quality.
2.3. Promote the function of Geopark heritage resources

The relic resources of geoparks often have strong functional characteristics, which are embodied in scientific research, education and tourism [5]. At the scientific research level, the heritage resources of geoparks have complex geological structures and rich resource types, so they are important places for geological research, providing space and resource guarantee for related scientific research activities. Secondly, at the level of tourism function, the development of Geopark heritage resources can significantly promote the development of regional tourism economy, and in turn promote the protection of Geopark heritage resources. In addition, at the level of science and education, Geopark relics often have more unique resources, so it is very suitable for the development and utilization of resources integrating science and education, culture and leisure, so as to maximize its function and value.

3. Present situation and problems of heritage resources protection in geoparks

3.1. Present situation of heritage resources protection in geoparks

The heritage resources of geoparks are of great value, which are mainly shown in the following figure 2. To this end, the relevant system of Geopark heritage resources protection, as well as the laws and regulations related to the protection of geological heritage are constantly improving and updating [6]. For example, with the introduction of relevant laws and regulations represented by the regulations on the protection and management of geological relics, the development and utilization of Geological Park heritage resources are well guaranteed, and the relevant protection system is constantly mature.

![Figure 2. Value elements of heritage resources in geoparks.](image)

3.2. Problems in the protection of heritage resources in geoparks

Although there are relatively complete protection requirements and constraints from the policy and planning level, there are still many problems and deficiencies in the development and utilization of Geopark heritage resources, which lead to different degrees of damage and harm to the geological heritage resources. Through the establishment of geoparks to promote the development of regional tourism, so as to stimulate the local economy, and achieved certain results. However, most of the geological heritage resources are located in areas with good natural environment. Through the construction of geoparks, while helping regional tourism economic growth, they are gradually exposed. For example, the uncoordinated development of Geopark heritage resources and the environment has destroyed the original appearance of geological heritage resources to a certain extent, or destroyed the geological heritage in the process of infrastructure construction.

In addition, the current domestic protection of geological heritage resources mainly focuses on the tourism development which is easy to produce economic benefits, but ignores the popular science and education of resources. Secondly, the idea of development and protection of Geopark heritage resources has not been effectively implemented, which leads to the lack of popular science propaganda and docking with relevant scientific research institutions, and fails to effectively highlight the characteristics of Geopark. The construction of geological survey network and legal system needs to be further improved and strengthened. Under this background, the establishment of computer-based
geological heritage resources database has become the focus of the protection and conservation of Geological Park heritage resources.

4. Design of computer monitoring database for protection and conservation of Geopark heritage resources

4.1. Design target and content of computer monitoring database

Taking Xingyi World Geopark as an example, the establishment of geological heritage database is of great value for the protection of the geological heritage in the park. On the one hand, the geological heritage database helps to improve the efficiency of geological heritage management, and promote the sharing and management of address resource data; on the other hand, the construction of the database also helps to further promote the display of geological heritage landscape and the popularization of knowledge system. Through the effective mining of independent and discrete data, we can find out the value association, so as to find out the law and trend of the change of resources and environment, and lay the data support for the scientific protection of Geopark heritage resources and heritage conservation.

In addition, according to the development of Geopark heritage protection, the database design data content mainly includes several aspects as shown in Figure 3 below. After the completion of the computer monitoring database, it can realize the centralized sharing of all data, so as to timely provide the relevant data of environmental monitoring, geological heritage protection and decision-making.

4.2. Design principle of computer monitoring database

As a relatively complex construction project, the construction of computer monitoring database should be based on the principles of advanced nature, standardization, expansibility and practicability, so as to ensure the objectivity and feasibility of database monitoring. First, in the advanced principle, besides the specific requirements of hardware and software environment, it should also ensure the advanced and expansibility of database operation. Secondly, at the normative level, a series of links and processes such as data classification, coding and data precision control should be standardized. In addition, in the aspect of scalability principle, the need of data update and system upgrade should be fully considered. Finally, in the practical principal level, to meet the actual development of the specific work of geopark and resource protection, to ensure the enforceability.

4.3. Operation process of computer monitoring database

The database is mainly used for environmental management, construction and planning of Geopark heritage resources to promote the sharing and exchange of basic info resources. In its operation process level, through the collection, supplement, collation and induction of the current data of geological heritage resources, the data standard of the database is constructed. Secondly, input the data resources to complete the construction of the whole database system structure. In addition, at the level of data processing, it should select and extract the data and digitize the related maps. At the level of
data recording, the display units are merged to realize the query, retrieval and trial of geological resources data, and complete the database construction.

5. Conclusion
In summary, the monitoring of Geopark heritage resources based on computer database is helpful to effectively sort out the characteristics, composition, evolution mechanism and law of regional geological heritage resources, so as to lay a prerequisite for the follow-up conservation of geological resources. This paper studies the protection value and purpose of Geopark resources by analyzing the purpose and value of Geopark heritage resources protection. Through the research on the present situation and problems of heritage resources protection in geoparks, this paper analyzes the necessity of heritage resources protection in geoparks. Through the analysis of the design of computer monitoring database for the protection and conservation of Geopark heritage resources, this paper studies the design purpose, principle and specific operation process.

References
[1] Li Cuilin. Research progress of geological heritage landscape protection and development at home and abroad [J]. Land and natural resources research, 2013 (5): 64-66.
[2] Wang Yanjie, Wu fadong, Zhang Jianping. Types of tourism resources and suggestions on protection and development of Yanqing National Geopark in Beijing [J]. Resource development and market, 2013 (1): 110-112.
[3] Wu Junling, Zhang Guoqing, Tian Mingzhong. Geological relic resources and their protection and utilization in Chifeng, Inner Mongolia. Resource development and market, 2019,25 (4): 345-348.
[4] Xingxian. Luo Pei, Wang Qin, et al. Design and implementation of geological relic database based on access [J]. Computer knowledge and tech, 2011(4):743-744.
[5] Ye Qiong, Liu Juncheng, Liu Wei. The utilization of ArcGIS tech in the decision analysis of returning farmland to forest in a county. A case study of Yudu County, Jiangxi Province. Resource development and market, 2009,25 (1): 14-16.
[6] Zeng Weigang, Qi Xiaohua. Preliminary study on the utilization of ArcGIS in the survey of geological heritage resources in Guangxi. Land and resources of South China, 2018 (7): 29-31.