

New Spanish legislation for the conservation and management of geodiversity and geoheritage: implications and lessons learned

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NEW LEGISLATION

Several national laws passed during year 2007 by the Spanish Parliament directly affect the conservation and management of geological heritage (geoheritage) and geological diversity (geodiversity). Law 5/2007 (National Parks Network) incorporates a list of geological units representative of the geodiversity and geoheritage to be protected by Spanish National Parks. This means that National Parks may now be established or enlarged to include and protect the most significant sites identified within these geological units. Law 42/2007 (Natural Heritage and Biodiversity) incorporates many articles on the conservation and management of geoheritage and geodiversity, and includes a list of the geological frameworks identified for Spain under UNESCO's Geosites Program (recently finished in September 2007), as well as an improved version of the list of geological units previously included in Law 5/2007. Also included in Law 42/2007 is the requirement of a national inventory of areas of special geological interest representative of each of these international frameworks (i.e., geosites) and geological units (i.e. geotopes). Law 45/2007 (Sustainable Development of Rural Environment) establishes that rural development plans must consider the conservation and sustainable use of archaeological and geological heritage as a scientific, cultural and tourist resource.

IMPLICATIONS

This is the first time in the history of Spain that geoconservation is explicitly considered in a legal norm. Traditionally, the conservation and management of geodiversity and geoheritage were only ambiguously considered in nature conservancy. In fact, the most frequent reason to consider these aspects has usually been the aesthetics of external morphologies: nice landscapes, gorgeous outdoors, etc. Indirectly, this helped protect much of the best geoheritage, at least the most spectacular sites, which were unintentionally protected under different legal conservation figures because of this traditional tendency. However, the new Spanish laws consider geoheritage for all its intrinsic and extrinsic values (scientific, educational, cultural, religious, recreational, etc.), and not just the mere aesthetics.

With these laws, particularly Law 42/2007, the strong relationship between biodiversity and geodiversity is finally acknowledged, as well as the consideration that geological heritage is also part of natural heritage. While this may seem obvious to Earth and natural scientists, most of our society still considers geological aspects as mere regional physical parameters, such as topography or meteorology, with no particular value as natural heritage. But geoheritage and geodiversity deserve conservation and sustainable management, and that is why these

laws are a major advance and at the same time a crucial challenge, because they will require important gradual changes in our society. These changes affect (1) professional geologists, who must update their knowledge in geoconservation, participate in the implementation of the laws, and contribute towards education and public outreach, (2) local, regional and national administration and public institutions, who must include geologists in their multidisciplinary teams to efficiently implement the laws, and (3) other professionals, and society in general, who must gradually assimilate geoconservation concepts.

Law 42/2007 clearly states its competence over fossils as part of geodiversity and geoheritage. This statement is crucial because, prior to this law, fossils in Spain were only regulated by Law 16/1985 (Historical Heritage), which affects human-related remains (historical and archaeological sites), but which does not clearly distinguish what is competence of archaeologists, anthropologists and palaeontologists. Due to the previous lack of regulations regarding fossil geoheritage, some of the Spanish regional governments (*Comunidades Autónomas*) went even further and erroneously extended the competence of this Law 16/1985 to all fossil remains, from the origin of life to present time. This has resulted in complex misunderstandings and conflicts of interest, mostly due to the misconception of considering object's value instead of object's origin in the definition of the type of heritage. We must always keep in mind that natural heritage results from natural processes, and cultural heritage results from cultural processes. Other important concepts frequently overlooked are (a) that heritage (whichever kind) only refers to valuable (e.g. rare, significant) elements and features, and (b) that their relative value must be assessed by a specialist. For example, a painting may or may not be considered cultural heritage, but it is always a cultural element resulting from human activity. Similarly, a fossil cast may or may not be considered natural heritage, but it is always a natural element resulting from a natural process (deposition, diagenesis, etc.). In both cases, the type of value (scientific, cultural, educational) and its significance may change depending on the assessment by the specialist (archaeologist in one case, palaeontologist in the other), but the nature of the object (cultural or natural) is unquestionable. With the new Law 42/2007, fossils are considered part of a region's geodiversity, and may be considered geoheritage deserving conservation depending on their value (scientific, cultural, educational, etc.), to be determined by a palaeontologist. Furthermore, according to the new law, other moveable geological elements (minerals, rocks, meteorites, etc.) are also part of geodiversity and may be considered natural heritage to be inventoried and protected. However, explicit reference to the regulation of commerce and exports of moveable geoheritage was not included in the law, despite a proposal at the Parliament in this direction made by the Geological Society of Spain.

LESSONS LEARNED

The Geological Society of Spain participated in the elaboration of these new Spanish laws by directly informing Parliament representatives. We have found out that the level of knowledge and perception about these issues amongst these representatives is similar to that of the overall society, i.e. rather low. However, a major help was provided by Parliamentary representatives with Earth science background, who were able to understand and transmit our proposals to other representatives at the corresponding Parliamentary Commission on Environment.

Another important lesson learned was the need to support and participate in formal and informal science education in schools as well as through science centres and museums, in order to educate society regarding these issues. Any public outreach activity dealing with geoh heritage tends to get good attendance and participation, particularly if logistics and interpretive techniques are appropriate. At the same time, the most visited natural areas, whether protected or not, are usually those with the higher geodiversity and more spectacular geoh heritage. In all cases, biodiversity is fully conditioned by local and regional geological evolution, and the different relieves and substrates resulting from it. However, despite the

abundant opportunities for education provided by geodiversity and geoh heritage in both natural and urban areas, educational programmes as well as public outreach management plans and facilities tend to forget and overlook these features.

Quantitative parameters are now available to measure and compare geodiversity, and to assess geoh heritage value (Carcavilla et al., 2007). These parameters can and should be used in land management by local authorities, as well as in the identification and management of natural protected areas. Future implementation of these methodologies will require a period of adaptation and trial and error in order to calibrate their efficiency, but this can only happen if they are used and tested.

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Inventory, selection and divulgation of Geosites in Montalegre (Portugal)

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Despite the studies that have been developed within the geoconservation, there is still the need to continue to awaken consciences to enhance effective results.

The inventory, assessment and consequent preservation and dissemination (if appropriate) of geological heritage, justified by the set of values constantly threatened by natural and man-made factors, should be a priority in nature conservation strategies.

In the inventory of geosite, beyond the scientific value, the educational value should be seen particularly since it provides training for awaken and more sensitive citizens to issues of main importance in Nature Conservation, in a holistic approach, where the Geoconservation can be integrated along with aspects of Bioconservation. It is also relevant to increase touristy interests in economically less developed regions, but showing a strong potential in the framework of Natural Resources.

There is a growing practice of so-called Ecotourism, in search of some of the least altered landscapes for the occupation and human activities leading to the adventure and contact with nature.

Montalegre lies in the northwestern province of Trás-os-Montes, in northern of Portugal. A little over 25 % of Peneda – Gerês National Park is part of Montalegre (which contributes with more area for the Park, 21.174 ha).

The land of Barroso, which integrates Montalegre and Boticas, is a large geographical unit, rather homogeneous, with unique characteristics in the human aspects, economic and cul-

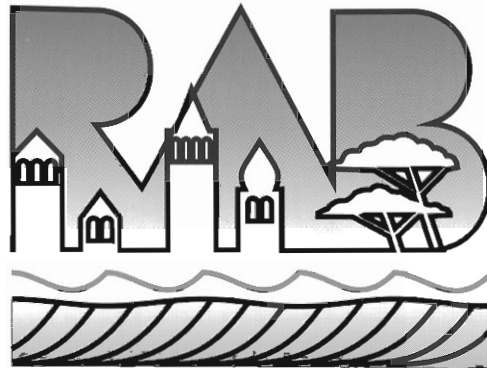
tural. Because of its long isolation, it can be seen old customs, which as centuries and has disappeared elsewhere.

The recent history of Montalegre is equal to many regions of the interior, marked by a strong emigration, economic depletion and abandonment of traditional economic activities. This area is part of the Iberian Massif, which is one of structural units of the Iberian Peninsula and a segment of the Varisc Chain of Europe. It includes Proterozoic rocks and Paleozoic igneous rocks, which are the oldest in Portugal. We found, an enormous number of geological and geomorphological features, that must be retained and disseminated by the value that they represent.

Our aim is to identify a set of geosites in Montalegre, which we want to disclose in order to enhance the Geological Heritage of the region.

Thus, the strategies to adopt in the dissemination and promotion of such geosites, to achieve the defined goals, should include a diverse audience, from the local community, which will highlight the geology of the area, to a public informed and aware of different destinations, outside the usual tourist itineraries of Montalegre. After inventory, evaluation and selection of geosites, it will be presented with a list of them to promote and prepared a proposal for dissemination of educational and recreational activities, through various methods.

This work could contribute to increase the tourism in the region, with the consequent economic development and scientific literacy of the population and visitors.



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