



## The progress and future of geoconservation at a global level

Jonathan G. Larwood<sup>a,\*</sup>, Tim Badman<sup>b</sup>, Patrick J. McKeever<sup>c</sup>

<sup>a</sup> *Natural England, Suite D, Unex House, Bourges Boulevard, Peterborough PE1 1NG, United Kingdom*

<sup>b</sup> *International Union for Conservation of Nature (IUCN), Rue Mauverney 28, 1196 Gland, Switzerland*

<sup>c</sup> *United Nations Educational, Scientific and Cultural Organisation (UNESCO), 1 Rue Miollis, F-75732 Paris Cedex 15, France*

### ARTICLE INFO

#### Article history:

Received 18 December 2012

Received in revised form 9 April 2013

Accepted 9 April 2013

Available online 10 May 2013

#### Keywords:

Geoconservation

Geodiversity

World Heritage Sites

Global Geoparks

### ABSTRACT

Geoconservation at local and national levels has achieved much but, although it is gaining recognition at a global level, significant challenges remain. This paper explores what has been achieved for global geoconservation setting out the key actions that have been taken since the establishment of the World Heritage Convention in 1972. The World Heritage Site network, and more recently established Global Geopark Network, provide a strong foundation for global geoconservation that is further supported by a number of international statements, resolutions and conventions that directly and indirectly raise the importance of geodiversity and the need for geoconservation. Over the last 40 years there has been a change of emphasis in the approach to protected area management. This has included the establishment of an integrated ecosystem approach, the strengthening of links across heritage interests (natural and cultural) and working more closely with local communities to achieve better conservation outcomes. The role of geodiversity and geoconservation in relation to this more connected approach is considered and, in concluding, a series of recommendations are made to maintain the momentum for global geoconservation. Particularly critical is the better and wider communication of the value of geodiversity and geoconservation for the delivery of global geoconservation.

© 2013 The Geologists' Association. Published by Elsevier Ltd. All rights reserved.

### 1. Introduction

At a global level the recognition of geodiversity through World Heritage Site inscription and the expansion of the Global Geopark Network are now raising the global profile and value of geodiversity and geoconservation (for example see [Boylan, 2008](#); [Dingwall et al., 2005](#); [Jones, 2008](#)). Geoconservation, however, at all geographical and political levels still struggles to secure even part of the recognition, support and value placed on conservation of global biodiversity and cultural heritage. Contributing to this lack of recognition, and geoconservation action, is the reality that geodiversity heritage is not viewed as threatened in the same way as biodiversity or cultural heritage.

This paper explores the route to today's global positioning of geoconservation in relation to the wider global conservation effort and the range of initiatives and approaches that are the current focus for global geoconservation. The philosophical and practical changes in protected area management and how this is reflected in geoconservation and the wider valuing of geodiversity are also considered. In concluding, some of the steps are set out that should be taken to help bring geoconservation and the relevance of

geodiversity more clearly into the mainstream of global conservation. Illustrative examples are widely drawn although the more immediate experience and background of authorship is reflected in a UK bias.

To set a context for the discussion it is important to understand the relationship between geodiversity and biodiversity, and geoconservation and nature conservation. Geodiversity is here defined as '*the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features, including their assemblages, relationships, properties, interpretations and systems*' ([Gray, 2004](#)). Biodiversity is defined by the Convention on Biological Diversity (CBD) as the '*variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems*'. Geodiversity is often portrayed as the abiotic equivalent of biodiversity. 'Ecosystem' and the 'ecosystem approach' are important to consider here. The CBD defines an ecosystem as '*a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit*'. Importantly this connects the biotic and abiotic as part of a functioning system. One does not work without the other and so both must be considered and they should be managed as a whole, thus linking geodiversity and biodiversity ([Gray et al., 2013](#)).

\* Corresponding author. Tel.: +44 300 060 0326.

E-mail address: [jonathan.larwood@naturalengland.org.uk](mailto:jonathan.larwood@naturalengland.org.uk) (J.G. Larwood).

Geoconservation is defined by Prosser (2013) (updated from Burek and Prosser (2008)) as 'action taken with the intent of conserving and enhancing geological, geomorphological and soil features, processes, sites and specimens, including associated promotional and awareness-raising activities, and the recording and rescue of data or specimens from features and sites threatened with loss or damage'. A critical point in relation to the present discussion is that the progress and success of geoconservation is influenced by the values we place on geodiversity. These can relate to its absolute value in terms of our geological record and conserving those sites and places which help us understand the history and evolution of the Earth. It is also important, however, to understand better and demonstrate the value of geodiversity in relation to the natural environment and biodiversity (the 'ecosystem approach') and the services provided by the natural environment ('ecosystem services') (Gray et al., 2013). This widens the relevance of geodiversity in an environmental, economic and cultural context which we argue is a key part to shifting the geoconservation effort towards a more widely accepted part of global nature conservation. Critically 'nature' includes both biotic and abiotic aspects of the natural environment and is therefore inclusive of geodiversity, a point that is emphasised by IUCN (2008b) in their guidelines on protected area management.

## 2. Global co-operation

Geoconservation has its origins at a local level where specific sites and places have been valued for their geodiversity and actions taken to both protect and promote geodiversity (Burek and Prosser, 2008). Early and specific examples include the protection of the German show cave Baumannshöhle in 1668 (Grube, 1994) and the Giant's Causeway in Northern Ireland, UK, illustrated and valued since the late 17th century (Doughty, 2008). Early examples of national approaches that have encompassed geoconservation include the late 19th century development of the US National Park, Monument and Reservations System (Thomas and Warren, 2008) and the development of nature conservation legislation in the UK from the late 1940s (Prosser, 2008). Co-ordinated global geoconservation, however, has taken longer to establish and is discussed below and summarised in Table 1.

The first coherent step towards a global approach to geoconservation was the United Nations, Educational, Cultural and Scientific Organisation (UNESCO) World Heritage Convention. Established in 1972, with 189 of the 191 UN member states as signatories (as of March 2012), it is one of the most widely recognised and accepted international conservation treaties. It is cross-cutting in approach and ambition and provides a basis for the protection of both cultural and natural sites considered to be of outstanding universal value (OUV). OUV is defined as 'cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations'. Importantly, geodiversity was enshrined in the original articles of the convention – Article 2 specifically referencing natural heritage as including 'geological and physio-graphical formations'. Boylan (2008) discusses the establishment of geodiversity as part of the World Heritage Convention. The first sites to be inscribed in 1978, at least in part for their geological value, were the Galapagos Islands (Ecuador), the Nahanni National Park (NW Territories, Canada) and the Yellowstone National Park (USA). There are now (as of January 2013) 82 World Heritage Sites which are inscribed for the geological values – though often with other values too.

Beyond the World Heritage Convention, however, it is not until the late 1980s that a more co-ordinated approach to international geoconservation emerges in Europe. Erikstad (2008, 2013) discusses the growth of European geoconservation and its current

status is summarised by Wimbleton and Smith-Meyer (2012). In the late 1980s the European Working Group on Earth Science Conservation which later became ProGEO (The European Association for the Conservation of the Geological Heritage) was established. In 1991 the first international geoheritage symposium in Digne, France, agreed the Digne Declaration which sets out the shared value placed on geological heritage and the importance of its protection – '...the Earth retains its 'memories' of the past, inscribed both in its depths and on its surface...the slightest damage could lead to irreversible losses for the future. In undertaking any form of development we should respect the singularity of this heritage.' (Martini and Pagès, 1994). In 1993, the UK Malvern International Conference on Geological and Landscape Conservation, in its closing resolution, recognised that there was a need for an international earth science convention and that the 'justification for, potential scope of, and objectives of, such a convention should be examined in depth' (O'Halloran et al., 1994).

Reflecting this shared valuing and, in particular, the desire to strengthen both international recognition and local valuing of geodiversity the European Geoparks Network was established in 2000 (Zouros and Martini, 2003). The development of the network's relationship with UNESCO (Jones, 2008) led, in 2004, to the establishment of the Global UNESCO Network of Geoparks, known as the Global Geoparks Network (GGN).

2004 also marked three further important steps in global geoconservation and co-operation. Firstly, the conference 'Earth Heritage-World Heritage' was convened (JNCC, <http://www.geoconservation.com/ehwh/index.htm>) on the Dorset and East Devon Coast World Heritage Site (the Jurassic Coast) to explore the relationship and potential of geodiversity in the context of World Heritage and the involvement of people with geodiversity (Larwood and Durham, 2005). Secondly, the Council of Europe (2004a) adopted Recommendation Rec(2004)3 on conservation of the geological heritage and areas of special geological interest. This emphasised the importance of member states identifying areas of special geological interest, developing strategies and guidelines for the protection and management of these areas, reinforcing and developing legal protective instruments, the provision of information and educational programmes to promote geoconservation and the strengthening of international co-operation. It states that geological heritage is a '...natural heritage of scientific, cultural, aesthetic, landscape, economic and intrinsic values...' and that geoconservation has an important role in maintaining European landscape character. Thirdly, this recommendation explicitly linked geological heritage to the Council of Europe's European Landscape Convention (ELC) (2004b) stating that 'geological and geomorphological features form the structural framework for all landscapes, and are essential characteristics of landscapes that need to be considered when applying the Landscape Convention.' The ELC defines landscape as "An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". Adopted in 2000, and brought into force in 2004, the ELC emphasises the importance of adopting policies dedicated to the protection, management and planning (or creation) of landscapes. Across Europe there is widespread adoption of the Convention and, by association, recognition of the role of geodiversity in European landscapes. This has been translated to a national level. For example, the recognition of the importance of geodiversity in the delivery of England's ELC action plan (Natural England, 2010), its National Character Area programme (see <http://www.naturalengland.org.uk/publications/nca/default.aspx>) and other initiatives such as the Heritage Lottery Fund's Landscape Partnerships (see [www.hlf.org.uk](http://www.hlf.org.uk) and Bennellick, 2013).

2007 was proclaimed 'International Year of Planet Earth' (a 2007–2009 triennium) by the United Nations General Assembly and initiated jointly by the International Union of Geological

Download English Version:

<https://daneshyari.com/en/article/4735042>

Download Persian Version:

<https://daneshyari.com/article/4735042>

[Daneshyari.com](https://daneshyari.com)