

# Involving people in geodiversity









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The 'Earth heritage: World heritage' conference was held in September 2004 in Wareham, Dorset, adjacent to the Dorset and East Devon Coast World Heritage Site ('The Jurassic Coast'), inscribed in 2001. The conference was organised by the United Kingdom's Joint Nature Conservation Committee, the Dorset and East Devon World Heritage Team and English Nature. As well as two days of conference presentations and discussions about geoconservation from local to global perspectives, delegates visited the World Heritage Site on a series of field trips designed to look in detail at issues of

geoconservation and geotourism. The conference also had an artist in residence, Dominique Bivar Seguardo, who has used the geological forms of the Dorset and Devon coast as an inspiration for much of her ceramic work. The conference closed with a two-day workshop that explored how we involve people in geodiversity.



A delegate at the 'Earth heritage: World heritage' conference working with the artist in residence. (Photo: Stewart Campbell, Countryside Council for Wales.)



Lulworth Cove. (Photo: Richard Edmonds, Dorset County Council.)

**Participants at the workshop included the following, who are gratefully acknowledged for their contributions**

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## INTRODUCTION

Geodiversity is described as 'the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features. It includes their assemblages, relationships, properties, interpretations and systems' (Gray, 2004\*).

The importance of geodiversity, however, and its benefits to people are often overlooked. Not only does geodiversity offer practical benefits, for example the provision of resources and materials such as coal, iron ore and building stone, but it also shapes the landscape around us, influencing the habitats and species we see and creating scenery and geological attractions admired and visited by many people. Geodiversity has an educational value, allowing us to build up a picture of the evolution and history of the planet, and to interpret present and future processes by reconstructing and understanding the past. It also has a cultural role to play, from its inspiration on art, such as poetry, music and painting, to its significance in folklore, and in providing a sense of place and identity for local communities.

The 'Earth heritage: World heritage' conference included a two-day workshop that discussed how we involve people in geodiversity, and provided an opportunity for delegates to share experience and best practice through the presentation and discussion of case studies and examples.

Delegates attending the workshop comprised those involved in the management and promotion of geological sites, including representatives from World Heritage Sites and tourist attractions with a geological focus, those working to promote the importance of geodiversity through education and interpretation initiatives, those interested in raising the profile of geoconservation, and those looking at ways to identify and make use of the links between cultural and geological diversity.

The case studies and examples presented considered three simple questions: 'What works?', 'What doesn't work?' and 'What could we do better?'

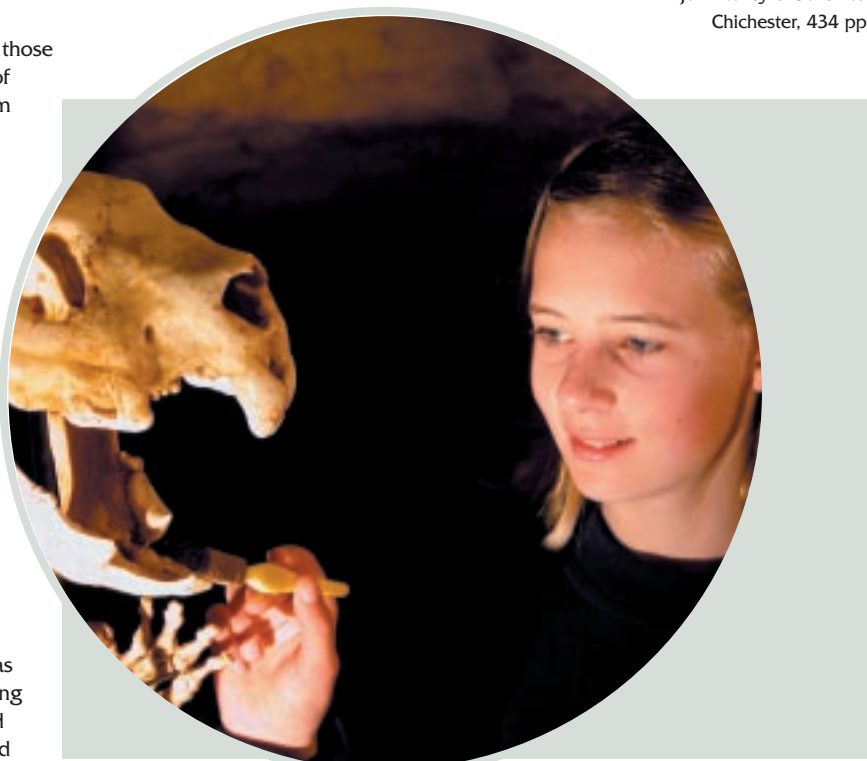
These questions were addressed under four themes: geotourism, education and interpretation, geoconservation, and cultural heritage. These themes explored topics such as the opportunities that geotourism offers to bring in visitors and the need for this to be achieved sustainably; the links between geodiversity and

cultural heritage through factors such as industrial heritage and landscape character; interpreting geodiversity for all and how the presentation of geodiversity affects the way it is perceived and valued; and mechanisms for engaging people and communities in geodiversity and geoconservation to ensure the long-term sustainability of geological resources.

The conclusions of the workshop are now presented and illustrated with a range of case studies. This document provides a guide to help those involved or potentially involved in "involving people in geodiversity".

The case studies and discussions can also be found on the Earth heritage: world heritage website, at <http://www.geoconservation.com/conference/followup/weekend.htm>. This resource is to be updated with further case studies and experiences, to provide an ever-increasing source of techniques and examples of best practise regarding involving people in geodiversity. If you have an example you'd like to contribute, or a comment you'd like to make, please contact [GeoConference@jncc.gov.uk](mailto:GeoConference@jncc.gov.uk)

\* Gray, Murray (2004) *Geodiversity: Valuing and Conserving Abiotic Nature*, John Wiley & Sons Ltd, Chichester, 434 pp.



A visitor with one of the spectacular fossil exhibits on display at Naracorte Caves. (Photo: Steven Bourne, Department for Environment and Heritage.)

# GEOTOURISM

Geodiversity has the potential to offer new opportunities for tourists, and may serve to widen visitors' understanding of the surrounding environment. Geological attractions range from areas with spectacular geological scenery such as the Giant's Causeway in Northern Ireland, to areas that run geology-related activities such as geological trails or fossil hunts. It is important that geotourism is sustainable, in terms of its impact on geodiversity, the surrounding environment and the local community. This ethos is central to the European Geopark Network (and now Global Geoparks) which has a strong focus on the contribution that geodiversity makes to sustainable economic growth, in particular through geotourism.

The case studies discussed included, from England, Yorkshire's Dinosaur Coast community projects, the future direction of the 'Dinosaur Isle' museum on the Isle of Wight, and successes of the recently inscribed Dorset and East Devon Coast World Heritage Site (the 'Jurassic Coast'). Innovative initiatives being employed by Naracoorte Caves National Park in Australia, and the aims of Messel Pit Fossil Site in Germany were also considered.

Some of these case studies are long-established (geo-) tourism sites, such as the 'Dinosaur Isle' museum, which has a history dating back to the 1850s. The museum has had success with visits, talks and fieldtrips for schools and specialist groups, and with public events in the holiday season. To encourage more local support and make better use of its resources, it is now looking at ways of diversifying its activities, and running partnership-based events by building links with other areas of natural history and archaeology. Other case studies, such as Messel Pit, have no current tourism infrastructure and are seeking guidance on how to encourage visitors and develop a marketing strategy. Inscribed as a World Heritage Site in 1995, Messel Pit is primarily an industrial site and has only recently started to consider the potential tourism opportunities its status could offer.

The case studies demonstrated that geotourism involves not only visitors in geodiversity, but also local people, groups and businesses. Local support for a site or resource has proved to be particularly important, since it is this support which provides the local services, from restaurants and hotels to shops and transport, necessary for success. Local businesses in turn benefit from the visitors that the site or resource attracts, and from geotourism initiatives that may extend the normal tourism season.

Marketing strategies and scoping studies have proved to be of great importance. They provide a means of recognising the geological values of a site and ways of utilising them, and for identifying potential customers and new or niche markets. Attractions, however, need to evolve and remain up-to-date to continue to generate interest, for example by being opportunistic and making use of topics popular in the media, or by getting involved in national themes and schemes. Successful geotourism sites are often those that have created an easily understood story or theme which distinguishes the site from others. The use of distinctive branding, logos and merchandise, which are unique to the site, can also help make it distinctive, and can be adopted by local businesses and organisations to help promote the site.



Visitors at Durdle Door, part of the Dorset and East Devon Coast World Heritage Site (the 'Jurassic Coast'). (Photo: Sally King, Dorset County Council.)

Equally, creating partnerships and making links is important. By forging links with similar sites, organisations can share experience and resources and widen the expertise available, rather than duplicating efforts. At Naracoorte Caves, links have been made with organisations involved in tourism activities with different interests. These links have been used to organise events combining very separate activities, such as wine and fossil tours, which have proved to be very popular.

The benefits of geotourism are primarily economic. Geotourism has the potential to boost the local economy and provide employment. In addition it can be used to educate visitors and raise awareness, of both the site and sustainable and environmental issues. Some schemes, particularly community projects for disadvantaged groups may have the added benefit of helping improve the self-esteem of those involved.

## Tourism at Naracoorte Caves

Steven Bourne, Department for Environment and Heritage, Naracoorte Caves National Park

European settlers have visited Naracoorte Caves since they were discovered in 1845. As a show cave system, there was little difference in how it was presented from many other show caves around Australia. Although small amounts of fossil material had been found, it was not until 1969, when a large fossil deposit was discovered, that presentation of fossils as a 'science and tourism' product was developed. Naracoorte Caves became a World Heritage Site in 1994, together with Riversleigh in Queensland, and is known as the 'Australian Fossil Mammal Sites (Riversleigh/Naracoorte) World Heritage Area'.

## What works?

- **Having a marketable story:** The concept of using science as a tourism product was quite new in 1969. Co-discoverer of the Fossil Chamber, Rod Wells and then Curator Ern Maddock managed to persuade authorities to invest in developing the fossil story for tourism. Prior to that, Naracoorte Caves was just one of a number of show cave systems providing cave tours within the region.



- **Innovation:** It is necessary to find a marketing edge or a development that provides something different. Naracoorte Caves has differentiated itself from other cave systems through the use of innovative technologies in interpretation. The first innovation involved a bat-breeding cave in the park. A camera operating under infra-red light was placed inside the bat cave, transmitting images to a purpose-built viewing facility. This product has been very successful, allowing the normally inaccessible fragile world of a bat maternity site to be viewed by visitors.
- **Making links and creating partnerships:** Naracoorte Caves has benefited from a working group established to investigate and promote the fossil and geological values of South Australia, which undertook a scoping study, a feasibility study and a business plan. The working group comprises representatives from several agencies, providing the best balance for tourism, conservation and research. A partnership with the South Australian Museum to stage roadshows at Naracoorte Caves and other sites has also been very successful, and a popular regional 'Palaeontology Week' has been developed.
- **Current products and gaps:** Naracoorte Caves has developed a wide range of products, and is continually seeking to develop new products and fill gaps in the market. Current tourism products include those specifically for young children to tours led by a palaeontologist for up to four adults.
- **Identification of markets and linking with them:** Very few people travel to a location to visit just one attraction, they generally plan a holiday to take in a variety of options. Linking with the marketing of other attractions has been successful for Naracoorte Caves, including working with the wine industry, backpacker travel providers and the education department.

## What doesn't work?

- **Poor interpretation:** Presentation of the fossils provides a special challenge, as it is a specialised field of interest outside most people's field of knowledge. Training is critical to keep guides abreast of current knowledge, as out of date or inaccurate information reduces credibility of the site.



Visitors in the bat observation centre at Naracoorte Caves.  
(Photo: Steven Bourne, Department for Environment and Heritage.)

- **Stale product:** Lack of innovation and poor planning contribute to an attraction becoming 'stale'. Naracoorte Caves experienced a significant visitor decline from 1976 to the mid 1990's, largely attributable to this. It had ceased to be exciting as there was little research that visitors could watch and little opportunity to interact with researchers.

## What could we do better?

- **Planning:** As with any development in any industry, success is dependant on good planning. A major development is unlikely to succeed unless a marketing strategy is implemented to bring people in. Marketing must also be accurate to avoid creating unrealistic expectations. Comprehensive planning across all levels and regular reviews avoids mistakes and maximises the chances of success.
- **Involve local communities:** Community involvement and support for a tourism venture can greatly influence its success. Establishing community ownership is critical.

## The Yorkshire Dinosaur Coast Community Projects

Jane Mee, Museums and Gallery Officer

The aim of the Yorkshire Dinosaur Coast Project is to provide opportunities for people to engage with their natural heritage, particularly geology. It has been developed on the classic Jurassic geology of the North Yorkshire coast in northern England.

The Dinosaur Coast Project has used a range of approaches to involve people in geodiversity, including fossil hunts, hands-on activities, evening strolls and expert-led days – events catering for a range of interest levels held at popular locations to attract a broad audience. Fossil collecting guidelines have been produced and a fossil recording and registration scheme is being developed. The Dinosaur Coast Community Projects, however, provide the most opportunity for people to become involved with geodiversity.



Children enjoying an event at 'Palaeontology Week'. (Photo: Steven Bourne, Department for Environment and Heritage.)

The Dinosaur Coast Project has worked with over 30 community groups, targeting disadvantaged groups that do not have ready access to the countryside, including young people, children and people with disabilities. Our approach has been to work through existing organisations which cater for these audiences, such as after-school and holiday play-schemes, youth groups (11–14 years), pupil referral units, and disability groups. On average, projects run over a six-week period. Each group spends from 2 hours to a day a week on their project. Projects typically involve 20–25 participants, although usually no more than 10 for disability groups.

The Community Projects have the same overall approach. Objectives are agreed initially with group leaders, followed by discussions with participants and specialists to agree the theme of the project. A practical activity is carried out, and to mark the end of the project a celebratory event is held. Upon completion the project is evaluated, with everyone involved given the opportunity to contribute and comment.

### Achievements

The Dinosaur Coast Community Projects have:

- raised self-confidence and self-esteem among participating groups and individuals
- given some groups the confidence to continue their project alone
- raised awareness and understanding of our natural heritage and created a demand for more
- given people the opportunity to meet and work with specialists
- left a legacy of community artworks across the area.

### What works?

- Someone specifically to manage the Community Project.
- Sufficient funding.
- Partnership approach – working with existing community groups.
- Use of freelance geologists, artists, etc., to contribute to the project.
- Getting to know group members and leaders beforehand.
- Booking artists and specialists well in advance, giving them time to plan.
- Group visits and artist-led work (generates lots of enjoyment and enthusiasm).
- Distribution of groups through project area.
- Variety of groups in terms of age and ability.

### What doesn't work?

- Identifying community groups with which to work in sparsely populated rural areas was a problem. This was overcome to some extent by setting up groups in target areas (with the support of other organisations).
- The Dinosaur Coast Project was not particularly successful at engaging with youth groups. Some were not sufficiently inspired and we failed to identify appropriate pre-project activities for some more demanding youth groups.
- Although museums in the area hosted Dinosaur Coast activities and provided specimens for handling, their collections were not central to any of the Community Projects. This was a missed opportunity, reflecting the lack of a Curator of Natural Sciences on the Scarborough Museums team.

### What could we do better?

- Identify and use established good practice in working with youth groups.
- Work only with groups that meet regularly to maintain momentum.
- Treat each group as unique, do not follow a formula or routine.
- Include adult groups of varying ages, who may be less mobile and have less access to Dinosaur Coast.
- Ensure that group leaders understand and agree their responsibilities.
- Share good practice.



Fossil hunting on the Yorkshire coast.  
(Photo: Dinosaur Coast Project.)



## EDUCATION AND INTERPRETATION

The way geodiversity is presented is crucial to the way it is perceived and valued. Education and interpretation involve looking at how to raise this perception. Together they represent more than simply giving information, but rather a spectrum of activities which can be employed to communicate a message. High-quality interpretation and carefully targeted information to support education will encourage the understanding and support of geodiversity by present and, more importantly, future generations.

Examples discussed included initiatives by the Geologists' Association, the Devon Educational Register, interpretation in Scotland, the value of Scottish Geology Festival, and the aims of ES2k, a voluntary organisation which, through a magazine and website, promotes public awareness of Earth science education and life-long learning, and acts as a co-ordinating body and voice for the Earth sciences in Ireland.

Initiatives to address all areas of society are being employed. These may be through formal education within schools and other education establishments, which, in the UK, is assisted by bodies such as the Earth Science Teachers' Association (ESTA). ESTA aims to advance education by encouraging and supporting the teaching of Earth sciences at all levels. Or they may be through non-formal education, through organised groups outside the formal education system, such as clubs, societies and local geology groups, or informal education, which targets the general public, particularly local people, tourists and visitors, and staff working in the tourism industry.

There are numerous approaches to communicating geology and geodiversity to the public, including talks, visitor centres, festivals and events, guided or self-guided trails, interpretation boards, and various publications. Some organisations also have awards or grants available to support education initiatives. The Curry Fund of the Geologists' Association, for example, provides money for schemes designed to encourage innovation, and to help a wider audience to understand and enjoy geology. The Geologists' Association also runs Rockwatch, a young geologists' club that aims to encourage and develop members' interest in, and understanding of, geological sciences and good environmental practice.

The examples discussed identified the need for investment in a wide range of interpretative and educational materials, which must also be relevant to their audiences. Whereas interpretation boards and trails may be directed at the general public, talks and guided trips, especially for schools, should be relevant to the audience they address. This can be achieved by involving experts in geoscience and communication to ensure the interpretation is correct, and also that there is information and guidance regarding how to create appropriate and readable interpretative materials and activities for all groups.

The case studies demonstrated the need to find new and novel ways to interpret information and educate in order to appeal to a wide audience. There are ways of educating people that can be imaginative and enjoyable, and which can add value to a visit and make an experience more distinctive and memorable,



Visitors reading an interpretative panel in Dorset.  
(Photo: Richard Edmonds, Dorset County Council.)

particularly by using a resource to tell a story or by adding a personal or relevant touch. Encouraging people to see the landscape in a different way by understanding how it has changed and formed and the influence of geodiversity on the environment and human activity can widen the value and appreciation of geodiversity and strengthen awareness of the need to conserve and protect it. Education has the potential not just to inform, but to provoke, relate and reveal.

### **Scottish Geology Festival and 'Naming' Scotland's building stones**

Colin MacFadyen, Scottish Natural Heritage

'Rock On' Scottish Geology Festival, is the biennial celebration of geology, co-ordinated by Scottish Natural Heritage. It is a partnership involving those in Scotland who communicate geology to the public.

When organising 'Rock On' the goal is to make geology available to everyone. The organising partnership aims to further the knowledge of those already interested, but more importantly, the aspiration is to capture the interest of those who have little or no knowledge of the subject. Comprising 100 events organised and run by individuals, businesses, groups, societies and museums, 'Rock On' Scottish Geology Festivals are fun, informal and for all ages. Events include mine and quarry visits, geological rambles, guided walks, lectures and talks, gold and silver panning, rock 'surgeries', and building stones walks.



A Watson Stonecraft apprentice with a section of dolerite kerbing, the first 'named' stone, at the Scottish Parliament. (Photo: reproduced by permission of the British Geological Survey. © NERC. All rights reserved. IPR/66-20C.)

The now traditional 'Rock On' geo-orientated artwork competition for school children, run during the Festivals, is designed to stimulate curiosity about landscape. Artwork competitions are now run every year and are used to maintain an annual Scotland-wide geological event in the years between the Festivals.

A 'spin-off' of the last two geology Festivals has been the 'Naming' Stone Project. 'Naming' involves engraving building stones with details of their rock type, where they came from and how old they are. The purpose of 'naming' stones, most recently at the Scottish Parliament, is to raise awareness of the natural Scottish stone that is all around us in the built environment, which has a tale to tell of Scotland's long and eventful geological past. This re-establishes the links in the public mind between Scotland's natural and built heritage, a link that has largely been broken with the rise of imported stone and the increased use of manufactured building materials.

The success of Scottish Geology Festival is reflected by the number of participants and the number of event providers willing to remain involved in future years. The success of the competitions is gauged on the number of entries. However, the 'true' measure of success of the Festivals, the competitions and in particular the 'naming' of building stones, in raising public awareness of Earth science is impossible to determine.

For anyone involved in planning, organising and running large-scale interpretational and awareness efforts the following are important:

- In undertaking an event, such as a nationwide geology festival, partnership working is a key factor, to ensure as wide an experience as possible is brought to its organisation. The event should be project managed and where possible there should be professional assistance for event co-ordination and fund raising. Links with related subject areas should be forged to 'hook' people who would not normally be interested in geology. The quality of events provided should be ensured and event providers should be canvassed to determine how successful the event was. Feedback from participants on what they wish and expect and what they would like in the future should be sought, to help direct future events.
- Competitions for school pupils must tie in with the curriculum, and guidance on taking part should be provided for teachers. Good publicity is the key.

### **The educational access register of geological sites in Devon, south-west England**

Kevin Page, Chairman, Devon RIGS Group

South-west England, including the counties of Devon and Cornwall, with its rich and varied geological and geomorphological heritage offers excellent opportunities for geological interpretation and education. To develop a framework to help focus the work of various organisations, increase public awareness, identify opportunities for educational use and, where appropriate, target resources for site management, the 'Devon, Cornwall and Isles of Scilly Geological Interpretation Strategy' was commissioned. The final report included a detailed review of existing facilities, together with recommendations for future projects and suggested timetables.

Implementation of the recommendations of the report started in 1998, most significantly with the expansion of the County Geological Sites Educational Access Register. The initial aim of the register was to identify sites with a clear potential for educational use through the compilation and distribution of an educational access register. Included sites have safe, permitted access and exhibit features that can be readily linked to the teaching of geology, geography and science through the National Curriculum, or are particularly suitable for fieldwork and research purposes for higher education.

Each site is summarised in a report including a location map, a brief description highlighting the main features of interest, photographs, diagrams and educational exercises. The register includes over 80 sites. Initially the register was released through Devon County Council's educational intranet service, available to schools throughout the county, and subsequently on the County Council's website (<http://www.devon-cc.gov.uk/geology>). The register is also available as a CD-ROM. Dissemination through the website is most successful as it:

- enables free and open access to the great majority of educational institutions and schools in Britain and elsewhere in Europe through internet connections
- allows links to be made with other regional, national and international geological and educational websites
- can facilitate updating of site information including additions and deletions as necessitated (potentially including the incorporation of feedback from site users).

### **Benefits**

Site selection and conservation projects have identified a valuable educational Earth heritage resource in Devon. As well as encouraging the sustainable conservation of the full range of Earth heritage sites and features of scientific and educational importance, the register has helped develop this resource into a facility of primary importance for environmental education with the additional benefit of meeting some of the objectives of the Devon Biodiversity Action Plan.

### **Future development**

Plans to produce a new version of the educational register, including enhancing National Curriculum related information and guidance and developing virtual excursions for school-level groups are underway. The value of the existing register is clear, but the future is even more exciting!



Wheal Betsy County geological site at Mary Tavy – a site shortly to be added to the educational register. (Photo: Kevin Page.)



## GEOCONSERVATION

Involving people in geoconservation is essential in order to secure the long-term sustainability of the geodiversity resource. From legislation and planning, to the practicalities of conserving and managing a geodiversity resource, it is essential to engage a range of policy makers, practitioners and the local community in geoconservation to make it sustainable.

Case studies discussed included the value of the Cheshire Region Local Geodiversity Action Plan (LGAP) (north-west England), the influence of Supplementary Planning Guidance in planning in the UK, access issues at the Giant's Causeway (Northern Ireland), and the geosite initiative currently underway in Latvia. Of particular importance to this topic were management issues associated with the need to balance conservation objectives with visitor access, currently of relevance in the re-drafting of the Giant's Causeway management plan. Accessibility is important in terms of both a site's sustainable use and visitors' health and safety.

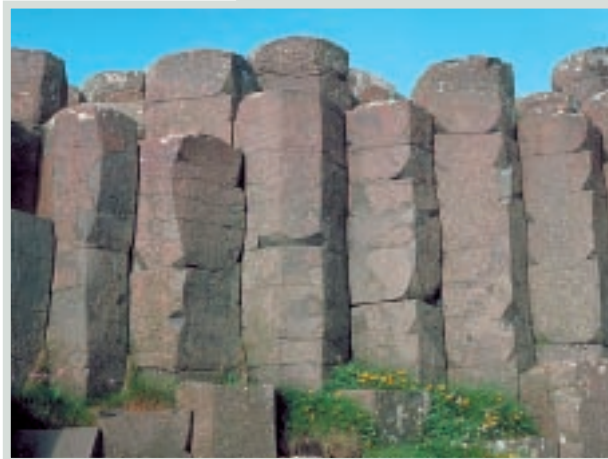
The issue of accessibility is also highly relevant to the Latvian geosite initiative, which has over 200 geological and geomorphological natural monuments. Some of the sites are experiencing accessibility difficulties because they have become overgrown, or are poorly managed, and there is also very little information for visitors, leading to a lack of public awareness. To resolve these matters, a representative selection of sites are to be made available to the public, and for these sites, the management and access issues are to be addressed. Collaboration with tourism agencies and qualified environmental interpreters is to be sought to raise awareness and ensure understandable, accessible information is available.

These examples demonstrate that geoconservation involves everybody, but particularly those with an interest in conservation, including locals, visitors, and volunteers, and those who might have a say in the future development of sites, such as owners, planners, local councils and politicians.

Popular approaches include initiatives such as geology audits and LGAPs, schemes established to help manage and maintain sites, and legislation and protection measures. More informally, the provision of accessible and clearly understood information plays an important role in educating people. All these approaches can be used to protect and conserve sites, and to enable the general public, and the decision makers, to make informed decisions about the future of a resource or site.

These approaches demonstrate that geoconservation requires effective communication, at every level, to ensure all those with an interest are informed. Information needs to be explicit, accessible, credible, easily disseminated, and interesting and relevant to its audience.

The potential benefits of these approaches comprise the inclusion and consideration of geodiversity in future policies and strategies, including legislation, management plans and conservation objectives, all of which need to consider geoconservation as well as biological conservation. By ensuring geoconservation is firmly on the future agenda, our geodiversity will be protected, maintained and managed sustainably.



Basaltic columns at the Giant's Causeway World Heritage Site.  
(Photo: Environment and Heritage Service, Northern Ireland.)

### **Supplementary Planning Documents (SPDs) on geodiversity: a new tool for UK geoconservation?**

Murray Gray, Queen Mary, University of London

Supplementary Planning Documents (SPDs) are intended to give additional guidance on particular topics, providing practical guidance on how principles and policies should be implemented.

#### **What works?**

In the UK, the planning system is a frontline tool for preventing development that could damage nature conservation interests. This is usually done by local planning authorities adopting policies, indicating that they will not allow development that would have an adverse impact on designated sites. Examples of the success of the system in recent years include the prevention of potentially damaging developments at the important coastal sections at Birling Gap and Black Rock on the Sussex coast, both of which are Sites of Special Scientific Interest (SSSIs). In general the planning system has worked well to protect important sites for geoconservation over the last 50 years.

#### **What doesn't work?**

Geodiversity has a very low profile within UK local planning authorities. High-profile cases like Birling Gap and Black Rock are uncommon and most planners have a low appreciation of geodiversity issues affecting everyday planning decisions, such as managing soils on development sites, remoulding of topography to create golf courses or fishing lakes, or restoration of gravel pits and rivers. There is a need for more guidance and training for developers and planners on geodiversity issues.

#### **What could we do better?**

One approach to this problem is for local planning authorities to adopt a Supplementary Planning Document (SPD) on geodiversity. Such documents could be aimed at developers to encourage consideration of geodiversity issues at an early stage in the planning process. They could be used by planning officers at all stages in the planning process from informal inquiries to formal applications. In short they could raise the profile of geodiversity within all local planning authorities.



Birling Gap, Sussex. (Photo: English Nature.)

Several authorities are now adopting SPDs on biodiversity following adoption of Local Biodiversity Action Plans (LBAPs). We could follow the excellent work on Local Geodiversity Action Plans (LGAPs) by encouraging local authorities to develop and adopt SPD on geodiversity. Alternatively, we could encourage the production of integrated SPD on natural diversity.

To illustrate this, SPD on biodiversity in Norfolk ([www.norfolkbiodiversity.org](http://www.norfolkbiodiversity.org)) contains a generalised case study of the development and restoration of a quarry. Attention is given to how the site can be worked and restored to protect and enhance the biodiversity interests of the site, but an integrated SPD could give parallel guidance on protecting and enhancing the geodiversity interests during working and restoration.

A model SPD on geodiversity could be developed to make the task as easy as possible for local planning authorities. They could then adapt the model SPD to suit local circumstances. This would be a very practical way in which geodiversity could be given greater prominence within the planning system.

### Local Geodiversity Action Plans (LGAPs) and the community – the Cheshire Region LGAP

Dr Cynthia Burek and Dr Jacqueline Potter,  
University College Chester

Action Plans are a common mechanism for achieving aims in the business world and were adopted by the biodiversity community in the UK in 1994 as Biodiversity Action Plans (BAPs). They ensure a focus on actions that matter, enable every issue to be addressed without duplicating effort, allow achievements and progress to be closely followed and provide a framework and methodology which is transferable to other areas. Local Geodiversity Action Plans (LGAPs) are becoming popular as a means of encouraging local communities to become involved in their geodiversity heritage and conservation.

The aim of the Cheshire Region LGAP (CrLGAP) is 'To contribute to the maintenance and improvement of the well-being of the Cheshire region ... to safeguard the geology, geomorphology, soils and landscapes of the area'.

#### What works?

- Partnership – important for the successful establishment of an LGAP.



Dee Cliffs, Cheshire, a geological SSSI included in the Cheshire Region LGAP. (Photo: Mick Murphy, English Nature.)

- The delivery of stated objectives through targets within an agreed time period – the LGAP is publicly seen to be moving forward towards the overall aim.
- The holistic nature of an LGAP – includes (not excludes) interested parties.

An analysis of published LGAPs brings out some common features.

- Lead partners: the majority of LGAPs include a lead partner and other main partners often at the same level of responsibility.
- Funding source: in developing an LGAP, funding is required, particularly in the initial stages.
- Project officers: a project officer is usually appointed, to lead the geodiversity audit or manage the development of the LGAP and maintain momentum.
- Regular meetings: regular discussion should measure progress and demonstrate that the LGAP is moving forward and meeting targets and objectives.
- Publicity: LGAPs need to be published and widely distributed and disseminated. This publicity will help drive the future development of the LGAP and ensure feedback from a wider audience.
- Wide consultation: most LGAPs had over 20 consultees.
- Objectives: the number of objectives ranged from 4 to 10. Some are generic, such as 'Partnership and involvement', others are specific, such as 'Interpretation at Breedon Hill and Cloud Hill Quarries'. The latter more easily have a timed element built in.
- Geodiversity audit: a geodiversity audit of resources is an important first step.

#### What doesn't work?

- No clear boundary.
- No clear and shared aim.
- No geodiversity audit of sites, information, personnel or skills.
- A narrow focus.
- No ownership of the LGAP between the partners.
- No timed targets.
- No embodiment in strategic documents.
- No mechanism to make the process sustainable.
- A fundamental difference in perception of the content of the LGAP between partners.
- Generic objectives, which become difficult to monitor with no time framework.

#### What could we do better?

- LGAPs need to sit within a national framework delivering national objectives based on the overall national aim of protecting UK geodiversity for the future. While each LGAP will have different local objectives based on the local distinctiveness of an area, they will all implicitly be contributing towards delivery of the National GAP aim.
- Raise awareness of the importance of geodiversity among the population in general and landowners, legislators and planners in particular so that LGAPs become embedded in policy and process.
- Introduce legislation to strengthen LGAPs.
- Ensure sustainability through education.



## CULTURAL HERITAGE

Geodiversity links strongly to the cultural identity of places through factors such as industrial heritage, landscape character, and the use and influence of geodiversity in and on our lives, from building stones to all mediums of art, such as folklore, literature and poetry, and painting, photography and sculpture. A better understanding of the links between cultural identity and geodiversity can improve our understanding of geodiversity and can help people appreciate the relevance of geodiversity in their everyday lives. These links can be used to make local communities aware of their local resources and to encourage them to participate in promoting and conserving them.

Case studies discussed included community engagement in England in the West Midlands and on the Isle of Portland in Dorset, the influence of the High Coast World Heritage Site in Sweden on art, protection and conservation measures employed in National Parks in Argentina, the potential development of geo-cultural trails in Greece, and hands-on experiments used to involve people in practical aspects of geology. The 'Earth heritage: World heritage' conference also had a resident artist.

The examples demonstrated that geodiversity plays a fundamental role in characterising an area and that the links between culture, industry, arts and geology should be exploited wherever possible. Approaches include personal interpretations and experiences, local events, forging links between sculpture and stone-working traditions, the creation of town trails to look at urban geology, and the use of cultural sites to create geological trails, an approach currently being investigated through the 'geo-trail' project in Greece. The 'geo-trail' project aims to use archaeological sites and historically important regions to identify how natural values relate to cultural values.

The case studies served to highlight the benefits of making use of cultural resources, and of identifying the role of geodiversity in cultural heritage, in promoting geodiversity. By recognising the links, the importance, relevance, and inspiration of geology may be demonstrated. This can lead to a greater awareness, understanding and appreciation of the environment, history and social development of an area and of the interactions between



Sculpture in Tout Quarry, Portland. (Photo: Portland Sculpture and Quarry Trust.)

these factors. The integration of geodiversity with other subjects also leads to a greater awareness of geology, since more people are likely to visit areas and sites that don't have a solely geological, and therefore specialist, focus.

By thinking laterally, collaborating, and making and exploiting links with cultural heritage, the barriers between the disciplines can be eroded, and a more complete story, and often a more localised, or personal, story, can be told. A wide range of projects and techniques, however, need to be employed, to address the widest potential audience, and these projects and techniques also need to be targeted correctly, to ensure they are relevant to the audience they are directed at.

These examples demonstrate that linking geodiversity with cultural heritage involves everybody, from artists and poets to local people acknowledging and appreciating the role of geodiversity in their heritage. By ensuring the local community feels involved, through information in local media sources, and creating opportunities for them to get involved in decision-making, and through projects and talks run and designed specifically for them, a sense of ownership may be felt by the local community, who may become proud of their local geodiversity. This can be especially important in areas of deprivation, where such a resource can provide locals with a feeling of local distinctiveness and sense of worth.

**Wren's Nest National Nature Reserve, Dudley**  
Graham Worton, Keeper of Geology, Dudley Museum and Art Gallery

Wren's Nest Hill was declared a National Nature Reserve for its geology and palaeontology in 1956 and encompasses some 40 hectares of quarries, mines, woodland and open space. It is one of the most famous geological sites in the UK because of its beautifully preserved middle Silurian marine invertebrate fossils. The site, however, is not out in the open countryside, but surrounded by housing estates and only a few hundred metres to the north of the busy town-centre of Dudley. It is an 'island of green' in an otherwise urban landscape. The management and sustainability of this exceptional geological heritage is inextricably linked with the welfare of the communities that surround the hill.



Research carried out into local public perceptions of geodiversity has indicated that the geological heritage and importance of the area is generally unknown. Wren's Nest may be known by name, but its national and international significance are not. Wren's Nest is viewed in a very distant and impersonal way and its heritage is believed to be irrelevant or too complicated to understand. Its geodiversity is considered useful or functional, or even dangerous, but not interesting. The site is also viewed as inconvenient and inaccessible.

In contrast, local public perceptions of cultural heritage, in particular the nearby Dudley Castle and Zoo and the Black Country Living Museum, are quite different. These sites are considered to be attractive features of the local area, with convenient and easy access and good facilities. Family associations with mining and iron making, and the teaching of local history in schools, makes the sites more appealing, relevant and interesting. There is a sense of pride and ownership in these resources.

This research indicates that when local people or the wider general public are aware of the importance of a site or a feature they value it and want to take ownership and pride in it. Formal educational curricula and cultural heritage publicity and promotion have dominated the public view for a long time in this part of the UK and these have had a significant impact on perceptions and protection and use of 'historic' sites. A key asset in the protection, promotion and management of the geodiversity is to make cultural links to the geological heritage and raise the profile through established channels as well as new initiatives.

### What works?

We have adopted a check list and good practice approach for engaging local people:

- speak plain familiar language and tell wondrous and memorable stories using the site and its resources
- provide easy access to information



Wren's Nest, located in the heart of the West Midlands. (Photo: English Nature.)



Artwork created by children at the Dudley Museum and Art Gallery. (Photo: English Nature.)

- involve all media and learning styles (newspapers, local circulars, the web, radio and TV, photographic records, open facilitated meetings and workshops)
- provide consistent points of contact
- ensure that there are roles for local people in the design and delivery of projects
- provide the widest possible selection of projects possible to allow people to explore for themselves
- generate an inclusive exciting vision, with clearly defined worthwhile and achievable benefits for cultural and natural heritage for all people.

### What doesn't work?

Some of the work done over the last ten years has identified particular mistakes made when attempting to work in partnership with the communities at Wren's Nest, including:

- discussing ideas with the community that did not have a trained facilitator or trusted liaison officer were often unsuccessful
- a lack of sensitivity in presenting project ideas and initiatives meant that they appeared exclusively aimed at visitors and outsiders
- involvement in projects that had very tight deadlines for funding and delivery
- projects that didn't involve local people and skills suffered resistance from the local community.

### What could we do better?

Resolution of these failings has been, and should be, a relatively simple matter in the future, as communication with the local community improves. Particular possible actions include:

- carry out earlier liaison and involvement in design stages
- take more time to discuss the cultural interests and resolve 'impacts' concerns with the community
- think laterally about geodiversity links and exploit them
- deliver what we say we will in the time-frame we promise
- follow up our successes and publicise them well.



## The Portland Sculpture and Quarry Trust

Paul Crabtree and Hannah Sofaer

The Isle of Portland is home to the Jurassic Portland Stone, one of the best-known building stones in the world. Quarried since Roman times, Portland has a legacy of disused and working quarries which, for a number of years, have been the focus of the Portland Sculpture and Quarry Trust.

The work of the Portland Sculpture and Quarry Trust successfully connects with the cultural heritage of Portland's stone-working traditions, through interpretation and education initiatives, developing new approaches to conservation and geotourism. The Trust has been working in a disused and historic quarry environment for over 21-years, where it has set up a creative and educational resource, based on the philosophy of actively engaging people in learning about stone in its place of origin.

In looking to the future our plans focus on the establishment of a 'Learningstone Centre' (at the old Drill Hall) and regeneration plans for Independent Quarry, which lie at the centre of the network of disused quarries we are involved with. The plans make a valuable contribution to the story of Portland Stone and focus on:

- a 'walk descending through geological time' – a trail representing a journey through 140 million years of Earth history
- a large amphitheatre/performance space, for multi-purpose use such as film projection, music, theatre and lectures
- study and skills training facilities for stone carving and sculpture with an outdoor exhibition area
- key access points to the quarry providing different routes of interpretation with a newly built entrance at the back of the Drill Hall overlooking the whole quarry
- a natural regeneration area with creative new landforms to encourage maximum colonisation by indigenous limestone flora and fauna
- a high vantage point with spiral pathway to overlook the quarry that will enable people to see 'land narratives' of past and present life-forms.

### What works?

We have successfully used a cross-disciplinary model of learning exchanges to create new structures and connections that bring wide access and engagement with the quarry environment. This has resulted in the exchange of creative ideas between different areas of expertise, engaging with the landscape and all aspects of stone. The model identified a need for sustainable educational initiatives, as a catalyst for new approaches to learning. We found that there was a great deal of shared interest in collaborative projects that brought a new understanding of the Earth, the evolution of the life it supports, and the use of its natural resources. Artists were necessary to this relationship, having the flexibility to develop ideas across the disciplines, and making work in the context of the quarry environment. An audio-visual archive, that captures quarrymen's memories of the landscape, and stories of stone, gives a first-hand experience of Portland and its people. It also passes on real values and meanings, which, in the context of our project, need to be understood.



A sculptor at work, Tout Quarry, Portland. (Photo: Portland Sculpture and Quarry Trust.)

### What doesn't work?

- One-off projects that are not sustainable and unaware of local and regional planning priorities.
- People running with a project where the idea has been well thought out, discussed and developed by another group. Friction is often created by not involving the people that originated the idea. This can lead to poor results and a dilution of the original idea.
- Losing sight of the vision for a project because of outside influences.
- Expending energy in trying to convince decision-makers who are not supportive.
- Having good materials and ideas, but needing more staff time and resources to effectively deliver.

### What could we do better?

- Maximise the promotion and marketing opportunities for the project.
- Develop new educational opportunities that preserve the cultural heritage and access new ways of interpreting and conserving the geology and the ecology.



An example of the sculptures found on Portland. (Photo: Richard Edmonds, Dorset County Council.)

# SUMMARY AND CONCLUSIONS

The case studies and discussions demonstrated that much innovation is being used to interest and involve people in geodiversity. The audience includes everybody, from the general public, children, families, schools and local communities, to land owners, hotel managers, local councillors and politicians.

In particular, it was identified that to make geodiversity appealing it needs to be interesting, relevant and accessible, and this requires a good story, good funding, good staff and enthusiasm. The resulting discussions suggested that local support for, and recognition of the value of, the resource is very important. To remain successful, projects need to remain up-to-date, and to promote themselves in novel ways. A specialist knowledge is essential, but an ability to impart that knowledge in an understandable way is equally necessary. It was also recognised that a number of different approaches are required, not just for different sites, but for different audiences.

It is not only an increase in awareness of the perceived benefits of geology that may gain from involving people in geodiversity. The involvement in projects by some groups can also help in raising self-confidence and self-esteem among participating groups and individuals.

The main conclusions, under the headings 'What works?', 'What doesn't work?', and 'What could we do better?' are listed below.

## What works?

- Have a good story to tell – it must inspire people. In telling the story innovation and diversity of approach will keep the audience engaged.
- Use simple and familiar language that is appropriate to the audience and always provide easy access to information.
- Involve specialists, not only geologists but people who are experienced in presenting information and understand the needs of your audience.
- Create partnerships and involve the local community. Take time to understand how the local community perceives geodiversity and what the local community wants. Use established and trusted networks to engage in discussion with communities.
- Create partnerships with existing organisations and networks. This will help better engage with other groups within the community and beyond. For example, working with experienced tourism providers will help with marketing, or working with a range of community group specialists will help engage with community groups from different backgrounds and with different experiences.
- Connect geodiversity with the cultural heritage of an area. By making links with an area's cultural, historical or industrial heritage people will become interested in how geodiversity has shaped their past, is relevant now and important in the future.
- Use geodiversity to inspire art and encourage people to see their surrounding environment in different ways.

## What doesn't work?

- Keeping the same approach year after year will eventually lead to a lack of interest – it is important to vary how you present geodiversity so that people remain interested and engaged.

- Not involving local people and skills can lead to strong resistance to a project.
- Lack of preparation and tight timescales for delivery are often felt to exclude people. Such projects are often seen as isolated and lead to little long-term engagement of others.
- Over-reliance on enthusiastic individuals which, when they are not there, threatens the delivery of the project and ultimately is not sustainable.

## What could we do better?

- Comprehensive and realistic planning. Ensure planning is carried out at an early stage, deliver what you say you will, and follow-up when a project is completed.
- Be realistic. Don't underestimate the amount of time and resources required.
- Publicise successes.
- Community ownership and involvement. Take time to liaise with local communities and understand and address their concerns.
- Think laterally. Make geodiversity relevant to people. Inspire people with geodiversity.
- Seek feedback. Find out whether people like what you are doing, or whether it should be done differently, or even whether something else altogether should be done.
- Share best practice. Make links to better share best practice of what works, what doesn't and how we can do it better.



Fossil collecting at Writhlington, north Somerset. (Photo: English Nature.)



## THE HIGH COAST IN SWEDEN

### A personal presentation about art in the World Heritage Site

Margareta Petré

Margareta Petré was commissioned to create twelve paintings, one for each month of the year, for an art calendar, 'The Art of the World Heritage Coast' – the High Coast in Sweden. The original paintings were exhibited at Länsmuseum i Västernorrland in Härnösand in early 2004. Margareta gave a personal presentation about the influence of the High Coast. Her presentation served to demonstrate how intrinsically linked geotourism, education and interpretation, geoconservation, and cultural heritage are in their approaches to involving people in geodiversity, as demonstrated by the overall conclusions drawn from the workshop.

The High Coast became a UNESCO World Heritage Site in 2000 because of its unique geology. Its uplifting land is rising at the greatest rate in the world. Its World Heritage status means the area is strongly conserved and protected, and has also given it an appeal to tourists in Sweden. The experience of visiting the High Coast, and the recognition of its meaning and value, is also an education, as Margareta describes it: 'When you stand on the top of a mountain looking forward towards another mountain you are NOW level with its visible old coastline, and would once have been in the water! It is fantastic that you so visibly can experience the giddy perspectives of time and all the time you know the land is constantly and slowly rising out of the sea'. More particularly, Margareta describes how the High Coast has been an inspiration to her and other artists.

'For generations The High Coast has attracted, fascinated and inspired artists of all kinds. Many of us also originate from here. One of our great Swedish composers was born here – Wilhelm Pettersson-Berger (1867–1942). A national romantic, he was also an author, cultural philosopher and a famous music critic. Feared by many, he was called 'Pettersson-Angryman'. Helmer Osslund



Part of the artwork Margareta produced for 'The art of the World Heritage Coast' calendar – July. (Photo: Anders Eliasson.)



Margareta Petré next to one of her canvases. (Photo: Anders Eliasson.)

(1866–1938) was the first great painter from the north of Sweden. His whole power and love were devoted to painting and nature, especially in the High Coast. There is often no foothold in any foreground in his paintings. You almost exist in the air, and experience with him the depth and the wide open space far away towards the horizon. For a painting of a sunset from a mountain he was awarded first prize at the World Exhibition in Chicago.

A nature in movement – dramatic, dynamic, full of contrasts, constantly changing with specific conditions of light – arises here. Powerful direct sunlight, drifts of light, and fogs of light make the mountains weightless. In this nature, which almost forces a creative response, I have had the benefit of partly growing up. I have been formed by it, and identify myself with it.

For my own part I have worked with mixed forms, above all with music, and often in special localities, such as in a hall on a mountain. However, painting with colour has been the most important. Colour itself as a subject! – beyond the abstract. This was the task with my 12 paintings for an almanac for the High Coast World Heritage Site – a challenge in more than one way.

Back to nature! Up in the mountains! Like Helmer Osslund, I love walking in the mountains and like him I most of all lift from the ground, and paint with a bird's perspective, from mountain towards mountain. The space, the light, the air itself, shall in some way be in the painting. I paint with my hands as if I was playing – sculpturing with immaterial mass. Even my landscapes are painted that way.

People in this area have also for generations become accustomed to us artists. We are not looked upon as so different. Besides, these people are themselves distinguished by their own imaginations and an ability to survive that the untamable nature of the area demands. All of us are essentially characters coloured by the specific nature of The High Coast.'



Sculpture in Tout Quarry, Portland. (Photo: Portland Sculpture and Quarry Trust.)

### Useful links and websites

Countryside Council for Wales:  
<http://www.ccw.gov.uk/>

The Devon Educational Register:  
<http://www.devon.gov.uk/geology>

Dinosaur Coast, Yorkshire:  
<http://www.dinocoast.org.uk/>

Dinosaur Isle Museum, Isle of Wight:  
<http://www.dinosaurisle.com/>

Dudley Museum and Art Gallery:  
<http://www.dudley.gov.uk/leisure-and-culture/museums--galleries/dudley-museum--art-gallery>

Lyme Regis fossil festival, Dorset. (Photo: Chris Pamplin, Dorset County Council.)



Earth Science Teachers' Association:  
<http://www.esta-uk.org/>

English Nature:  
<http://www.english-nature.org.uk/>

Environment and Heritage Service, Northern Ireland:  
<http://www.ehsni.gov.uk/>

ES2k:  
<http://www.habitas.org.uk/es2k/>

European Geoparks Network:  
<http://www.europeangeoparks.org/>

GeoConservation Commission:  
<http://www.geoconservation.com>

The Geologists' Association:  
<http://www.geologist.demon.co.uk/>

The High Coast World Heritage Site, Sweden:  
<http://www.highcoast.net/>

Joint Nature Conservation Committee:  
<http://www.jncc.gov.uk/>

Jurassic Coast World Heritage Site:  
<http://www.jurassiccoast.com>

Local Geodiversity Action Plans:  
<http://www.english-nature.org.uk/special/geological/lgap/default.htm>

Messel Pit Fossil Site:  
<http://whc.unesco.org/en/list/720>

Naracoorte Caves National Parks:  
<http://www.environment.sa.gov.au/parks/naracoorte/>

Norfolk Biodiversity Website:  
<http://www.norfolkbiodiversity.org/>

Margareta Petré:  
<http://www.margaretapetre.com/>

Portland Sculpture and Quarry Trust:  
<http://www.learningstone.net/>

Rockwatch:  
<http://www.rockwatch.org.uk/>

Scottish Geology Festival:  
<http://www.scottishgeology.com/>

Scottish Natural Heritage:  
<http://www.snh.org.uk/>

UKRIGS:  
<http://www.ukrigs.org.uk>







#### Supporting organisations



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The Giant's Causeway World Heritage Site.  
(Photo: Jonathan Larwood, English Nature.)

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Aberdeen city centre, built from local granite.  
(Photo: Colin MacFadyen, Scottish Natural Heritage.)

Ammonite/world by J S Publications

Back cover:  
Children fossil collecting at Charmouth Beach, Dorset.  
(Photo: Richard Edmonds, Dorset County Council.)

View of the The High Coast from Ringkallen mountain.  
(Photo: Margareta Petré.)

