

Scotland's Geodiversity Charter

Update Summer 2016

Scotland's Geodiversity Charter highlights the importance of Scotland's geodiversity and calls for it to be safeguarded and managed appropriately for this and future generations. The Charter's 60 signatory organisations have committed to maintain and enhance Scotland's geodiversity and recognise the contribution it makes to many aspects of society. This is the third update published since the Charter was launched in June 2012.

Further information and case studies are available at <https://scottishgeodiversityforum.org/charter>

Angus Miller, Chair, Scottish Geodiversity Forum 0131 555 5488 chair@scottishgeodiversityforum.org

UK-wide Geoconservation Annual Gathering, Edinburgh - Friday 28 October 2016

Local geosites for people and conservation

Across the UK there are thousands of Local Geodiversity Sites (LGS), important places that conserve and celebrate local geodiversity. These are places that are often valued and well-used by people, where we can find out about the geological history of our area, and how this influences nature, land use, building style and the 'sense of place' that all local communities have.

Local sites across the UK are labelled in different ways, and progress towards networks of designated sites is patchy across the country. Some areas have hundreds of sites that are designated, monitored and celebrated by active geoconservation groups, but in other places awareness of the importance of local sites is non-existent.

The UK's Geoconservation Annual Gathering comes to Edinburgh this October, with a focus on local, practical geoconservation. This is a great opportunity to

- find out more about the value of local sites;
- explore case studies including Geodiversity Audits and how Local Authorities in Scotland are designating Local Geodiversity Sites;
- network with the people and organisations, including local voluntary groups, who are involved in identifying, monitoring and celebrating the value of local sites.

The meeting is organised by the Geological Society of London's Geoconservation Committee, the Scottish Geodiversity Forum and GeoConservationUK. We hope it will encourage more activity in Scotland and wider involvement of the geological community.

www.geolsoc.org.uk/Geoconservation-Annual-Gathering-2016

Geodiversity audit on a shoestring – just add local expert volunteers

Assessing Local Geodiversity Sites doesn't need to be time-consuming or expensive, as a recent audit in North Lanarkshire has demonstrated. Two retired volunteers, Paul Carter and Mike Browne, started meeting for monthly walks, and over the course of four years they catalogued 50 potential local sites, recording the geodiversity value and key features. They focused on existing Sites of Importance for Nature Conservation (SINCs): North Lanarkshire has over 350 of these already designated. Since these existing sites contain a good range of the geodiversity features of the area, this provided a convenient and quick way of auditing the geodiversity using volunteers. Sites with important local geodiversity will now be included in Local Plans, and a Geodiversity Action Plan has been included in the Biodiversity Action Plan for 2015–2020.

www.northlanarkshire.gov.uk/index.aspx?articleid=30026



New life for the former Dullatur Sand Quarry, Cumbernauld as a Local Geodiversity Site
© Mike Browne

Celebrating Hugh Miller

Hugh Miller (1802–1856) was a self-taught pioneering Scottish geologist, folklorist and social campaigner. He began working life as a jobbing stonemason, and went on to achieve great acclaim as a national newspaper editor, church reformer and best-selling author on geology. Hugh Miller's legacy has inspired recent projects involving a wide range of partners including The Friends of Hugh Miller and the Scottish Geodiversity Forum. These have helped to promote Scotland's geodiversity in new and innovative ways.

The Hugh Miller Writing Competition concluded in March 2016, and invited prose and poetry entries inspired by the geological and landscape writings of Miller. The competition was a resounding success, with many entries not only sharing in the spirit of Hugh Miller but also extending his legacy. Nine winners were selected – among them a few well-known names and including two under-16s – and prizes were awarded at a ceremony in Cromarty on 14 May 2016. The competition provided a unique way of engaging people with geodiversity, both on a local and national scale, and our winners certainly embraced the challenge of writing about our country's geological heritage in new and interesting ways. The winning entries are available to read online at: www.scottishgeology.com/hughmiller

"I used to fling myself down on the shore... and bethink me, as I passed my fingers along the larger grains, of the heaps of gems in Aladdin's cavern, or of Sinbad's valley of diamonds."

Hugh Miller
My Schools and Schoolmasters
1854

You touched the cold enamel scales of *Osteolepis macrolepidotus*, cracked open from its sea-washed nodule. A story opened, a page in an ancient book, a folktale whispered from the rocks. You: part sennachie, part religious scientist. May be it is not only the Earth that holds deep time and folded complexities but also ourselves."

From "Learn to make a right use of your eyes" by Jane Verburg
First prize in prose, The Hugh Miller Writing Competition 2015–2016

A9 development offers scope for research and education



Existing exposure of folded metamorphic rocks at layby 58 on the A9
© Colin MacFadyen/SNH

An estimated £3 billion project on Scotland's longest trunk road, the A9, offers many opportunities to enhance existing rock exposures, create new ones, and set up viewpoints for landscape features. The Transport Scotland plan to upgrade the 113-mile stretch between Perth and Inverness to dual carriageway by 2025 will affect existing roadside Sites of Special Scientific Interest (SSSIs) as well as an un-notified and as yet unprotected Geological Conservation Review (GCR) site. Road cuts in the Highland Border area at the Pass of Birnam are likely to provide new sections. SNH geodiversity staff, the British Geological Survey and Tayside Geodiversity are working in partnership with the appointed engineering consultants to ensure that features in existing cuttings are maintained and improved (such as the fold structures shown here) and to secure the establishment of safe and accessible exposure within any new cuttings.

Colin MacFadyen, Scottish Natural Heritage

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Scientific justification for conserving Scotland's best mineral localities



Strontian Mines © Colin MacFadyen/SNH

Scotland has 645 different types of mineral representing 13 percent of the 5000 mineral species currently known throughout the world. Many of these occur in Scotland's network of mineralogical Geological Conservation Review sites, which are the best and most representative mineralogical sites in the country. The majority of these sites have statutory protection as Sites of Special Scientific Interest. Scottish Natural Heritage is facilitating the production of the scientific justification for Scotland's mineralogical sites. This will be published in late 2016 as a Special Volume of the Proceedings of the Geologists' Association. Former BGS geologist, Graham Smith, and National Museums Scotland mineralogist, Alec Livingstone, are finalising the volume, which will aid the conservation management of these nationally and, in many cases, internationally significant sites.

Colin MacFadyen, Scottish Natural Heritage

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Swamps, ice sheets and underground caverns – Clyde and Avon valleys' geology revealed



Katie Whitbread at work © BGS

As part of the Clyde and Avon Valley Landscape Partnership's Shaping Our Landscape project, Katie Whitbread, geologist from the British Geological Survey, has been out and about exploring the area's rocks and landforms. She said, "It was amazing to find so much evidence for the power of water on our doorstep – a real voyage of discovery."

The number of beautiful river gorges in the area is testimony to the erosion of powerful rivers over the past 15,000 years. These gorges were carved by the Clyde and its tributaries since the last glaciers retreated. The erosion of these valleys also revealed the sedimentary rocks they are carved into. These rocks tell the story of the rivers that crossed the area depositing sediment between 300 and 400 million years ago. The interplay between these forces of nature and the forces of mankind in shaping the landscape is fascinating. From stately Chatelherault Hunting Lodge built from local sandstone, to hidden underground caverns quarried into sandstone and creepy adits (mining tunnels) riven for coal deep into gorge walls for coal extraction, the area offers a wide diversity of geological features. The next stage will seek funding to enhance access to some of these geological features. Path improvements and new information will reveal the dramatic history of the ever changing landscape of the Clyde and Avon valleys for all to enjoy.

Kirsten Robb, Clyde and Avon Valley Landscape Partnership

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Arran Geofest – the power of working together

What happens if you pack a bunch of enthusiastic geologists off to an island for a weekend? Well, if the weather is good and local organisations are keen to get involved, perhaps something magical like the first Arran GeoFest! This was a collaboration between the Scottish Geodiversity Forum and a range of host organisations on Arran, and resulted in a programme of 12 events, most very well-attended, including guided walks, family activities and evening talks.

It all demonstrated the variety of Arran's geology, the level of local interest and the potential for Arran to be a Geopark. Discussions over the weekend have started the ball rolling, and we hope that with involvement of organisations such as the Arran Trust and the Lochranza Centre, further events can be arranged and the Isle of Arran can work towards achieving UNESCO Geopark status.



Exploding jelly volcanoes at the Arran Geofest
© Kate Saunders, University of Edinburgh

Scotland's Geoparks celebrate UNESCO Global Geopark status



United Nations
Educational, Scientific and
Cultural Organization



• UNESCO
• Global
• Geoparks

In November 2015, UNESCO (the United Nations Organisation for Education, Science and Culture) announced the creation of UNESCO Global Geoparks. This is the first new UNESCO designation of its kind to be established in over 40 years and puts Global Geoparks alongside UNESCO's World Heritage Sites. Previously operating with the informal support of UNESCO, the status of Global Geoparks is now formally recognised under the new programme.

Scotland has two Global Geoparks – Northwest Highlands and Shetland. Lochaber Geopark has applied to join the global network and hopes to be confirmed as a UNESCO Global Geopark in 2017. Chair of UK Global Geoparks Forum, Melanie Border says *"This incredible recognition reflects the dedication and commitment of all of the UNESCO Global Geopark communities in the UK and around the world. It is about geology, but it's not just about the rocks but about how we use that geology to make a difference to life locally, economically and socially. We are feeling very proud of this formal UNESCO recognition and looking forward to making the most of the opportunities it presents."*

Lochaber Geopark is on the up!



Darwin's Rest Visitor Centre and Café at Roy Bridge
© Lochaber Geopark

There have been many new developments in Lochaber Geopark over recent months. Look out for the new walker's geology map and guide for Ben Nevis and Glen Nevis, written by Noel Williams as our contribution to the Nevis Landscape Partnership. Our application is in to rejoin the European and Global Geopark Networks and become Scotland's third UNESCO Global Geopark.

Darwin's Rest Visitor Centre and Café at Roy Bridge, at the entrance to Glen Roy and the Parallel Roads 'Ice-Age Landscape', is open for the season. Walks and talks there are included in the summer programme. Our main Visitor Centre, at 55a High Street, Fort William, has been refurbished with new exhibits and attractions including a huge 3D geological model of Ben Nevis and the surrounding area.

We are installing an interpretation panel by the new Sustrans cycle route above Kentallen, with a great view over Loch Linnhe and beside outcrops of 'Kentallenite' rock. This has been built in co-operation with the Kentallen and Duror Community Council, who have done most of the hard work, with Lochaber Geopark designing the panel.

Jim Blair, Chairman, Lochaber Geopark

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Northwest Highlands Geopark



One of the new Geopods
© Northwest Highlands Geopark

The Geopark had a very busy 2015 season, organised by a strong team of staff and volunteers and supported by the local communities within the Geopark. The team organised a wide range of guided walks, longer tours, a Geolinks festival and the inaugural Lochinver Climbing festival, and a programme of school workshops and public talks for Earth Science Week. The Geopark now has a new visitor centre – the Rock Stop – on the shore of Loch Glencoul, which contains a café, craft shop and Earth Science exhibition.

Innovative new interpretation facilities are being installed across the Geopark, with Geopod booths giving information and landscape interpretation, and the development of 'Pebble Routes': driving routes designed to entice visitors off the main road and into the smaller communities.

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Tour guides flock to Sharing Good Practice event on geology and tourism



Tourists at Rogie Falls near Contin
© Angus Miller

A Sharing Good Practice event in November 2015, organised by Scottish Natural Heritage and the Scottish Geodiversity Forum, created a buzz about the potential for Scotland's landscape to build on its reputation as a world-class visitor attraction. The event was well attended, especially by tourist guides who work face-to-face with Scotland's visitors. Many of these guides are members of the Scottish Tourist Guides Association, and in studying for their Blue Badge qualification received some introductory training in Scotland's geology. Their experience with visitors, though, has left them hungry for more information, and the event was a great opportunity to increase their knowledge, network with organisations such as the Geoparks, and become inspired by the potential to include more about the underpinnings of the landscape in their tours.

The enthusiastic response to this event has encouraged the Forum to embark on a project to improve the information available about Scotland's key geological sites. This summer we will apply for funding for the 'Best Places to see Scotland's Geology' project, to develop information online and in print about a range of sites across Scotland, and organise a series of events to celebrate Scotland's amazing geology.

Scottish Natural Heritage's Site Condition Monitoring and Remedies programmes

Since 1998 Scottish Natural Heritage (SNH) has monitored the condition of geological and geomorphological features in Scotland's Sites of Special Scientific Interest (SSSIs). These 'notified features' are underpinned by the Geological Conservation Review (GCR) which identifies and records sites with geology or geomorphology of national or international importance. Currently there are 649 notified Earth Science features in Scotland's SSSIs. SNH's Site Condition Monitoring programme shows that, as of February 2016, 98% of Earth Science features in Scotland are in favourable condition or recovering to favourable condition due to management intervention. Data on the condition of all notified features in Scotland are now available through the Scotland's environment website:

www.environment.scotland.gov.uk/get-interactive/data/protected-nature-sites



In the last 6 years, SNH has applied 'remedies' – management interventions – at over 20 geological sites. The most commonly required action is tree or scrub clearance, but there has also been graffiti removed from rock faces, measures to prevent dumping and dumped material removed (including 6 vegetation-covered vehicles at one site), and habitat management to reduce dune erosion. Implementation of remedies is ongoing and will continue in tandem with the Site Condition Monitoring programme, now in its third seven-year cycle.

Rachel Wignall, Scottish Natural Heritage

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Quaternary sediment section at Dalroy and Clava Landforms SSSI (Clava GCR site) before and after vegetation clearance

© SNH



Quarry restoration and geoconservation can co-exist – Trearne Quarry SSSI

Trearne Quarry SSSI in North Ayrshire is nationally important for its Lower Carboniferous limestone geology. It records dramatic palaeo-environmental change and yields an astonishing variety of marine fossils. The faunal list includes jellyfish which are rarely preserved in the fossil record. A patch of palaeokarst, formed after the last glaciation and unique in Scotland's Central Belt, is another feature that merits conservation within the site. Now that the quarrying of the site has entered its final phase, plans are well underway for the restoration of the void. This will involve the restoration of a soil profile across the quarry floor to enhance the ecology of the site. Given the international scientific significance of the site and its educational value, efforts will be made to maximise the rock exposure left for research and educational purposes. Quarried rock that is being retained on site will represent an additional educational resource with opportunities for fossil collecting.

Colin MacFadyen, Scottish Natural Heritage

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Quarry face in Trearne
© Lorne Gill/SNH



What next for Scotland's Geodiversity Charter?

As the Charter comes to the end of its first five-year period, this is a good time to review progress and plan for the future. Informal feedback from partners suggests that the Charter remains valid and worthwhile, and should be taken forward. We will update the Charter and develop new case studies with the aim of publishing a refreshed document in 2017.

The existing format is appropriate for many stakeholders, but we will also develop a more user-friendly summary that celebrates and highlights the contribution that geodiversity makes to society. A conference in autumn 2017 will celebrate what has been achieved since 2012, and inspire further activity.

The Scottish Geodiversity Forum aims to promote Scotland's geodiversity, and seeks to widen the profile of geodiversity and influence national and local policies. It is the Scottish national forum for geoconservation groups, geoparks and other related organisations, and interested individuals. The Forum promotes the role and value of geodiversity in education, community involvement and health, the development of tourism and the wider economy.

The Forum is open to all organisations and individuals who are interested in promoting Scotland's geodiversity and the sharing of experience and good practice.


**Scottish
GEODIVERSITY
Forum**

<https://scottishgeodiversityforum.org>

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Thanks to the British Geological Survey for assistance in publishing this update.