

The use of town trails in raising awareness of urban geodiversity

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Abstract: The majority of people now live and/or work in urban areas and are increasingly becoming divorced from their natural environment. One aspect of geoconservation is to raise public and student awareness of their urban geology so that they better appreciate its relation to the natural world and its resources.

Several town trails have been developed by the local RIGS (Regionally Important Geological/geomorphological Sites) groups in the vicinity of University of Chester, to heighten public awareness of their own local urban geodiversity. This is looked upon favourably by the Local Authority, which is keen to increase an appreciation of local distinctiveness.

This paper will look at the use of these trails (some bilingual, English and Welsh) and how they have raised awareness among both higher education students and the general public mostly in the tourist sector. NEWRIGS and Cheshire RIGS have set up a successful template for this and the use of work-based learning students in the initial research is explained. The inclusion of urban trail development within the Cheshire region (north west England) LGAP (Local Geodiversity Action Plan) is discussed. The use of the trails in the teaching of one module, The City and Nature, within the newly developed Urban Studies programme is also explored. Preliminary results show that leaflets are extremely effective in raising the profile of urban geology and its conservation within many sections of the urban community.

Résumé: Beaucoup de gens habitent maintenant ou travaillent dans les villes et sont séparés de l'environnement naturel. Geoconservation vise à élever la conscience de public et étudiant de géologie pour que les gens urbains puissent apprécier sa relation au monde naturel. Plusieurs pistes de géologie de ville ont été développées par les EQUIPEMENTS (les Sites de Géologique/geomorphologique Régionalement Importants) les groupes près de l'Université de Chester, augmenter la conscience publique du geodiversity urbain local. L'Autorité Locale veut augmenter la reconnaissance du secteur local. Ce papier examinera comment ces pistes ont élevé la conscience parmi les étudiants d'études supérieures et le grand public. LES EQUIPEMENTS DE NEWRIGS et Cheshire ont établi un gabarit réussi pour ceci et l'usage de travail-basé apprenant des étudiants dans la recherche initiale sont expliqués. L'inclusion de développement de piste urbain dans la région de Cheshire (Angleterre d'ouest du nord) LGAP (le Projet d'Action de Geodiversity Local) est discuté. L'usage des pistes dans l'enseignement d'un module, La Ville et La Nature, dans l'émission d'Etudes Urbaine récemment développée est exploré. Les résultats préliminaires montrent que les prospectus sont extrêmement efficaces dans élever le profil de géologie urbaine et sa conservation dans beaucoup de sections de la communauté urbaine.

Keywords: education & training, geology of cities, public awareness of science, urban geosciences

INTRODUCTION

You cannot expect people to support the conservation of something they do not understand. So raising public understanding of urban geology and geodiversity is of paramount importance if urban geoconservation is to be successful. Some of the first acts of conservation in Britain featured Scottish cities. The first was the City of Glasgow followed quickly by Edinburgh. Glasgow enclosed a set of fossil forest tree stumps in a greenhouse structure during the latter part of Queen Victoria's reign. This still stands today and was erected as a suitable environment for the Carboniferous trees in more ways than one as they would have been used to higher temperatures than those of today! The first conservation act was in 1871, by the Royal Society of Edinburgh with their "Boulder Committee" to identify large glacial erratics. Subsequently in 1880 Agassiz's rock in Edinburgh marking the location at which Ice Age events were identified outside a direct glacial environment, and in 1908 was protected by the both the Society and Edinburgh Town Council. These were all conservation measures fitting Victorian times, large and visible. 2 towns within England that have been particularly associated with geological attachments are Durham in the Northeast associated with coal and the first definition of geology and Dudley in the West Midlands near Birmingham. Indeed the latter had a trilobite on its town shield until recently.

However today one successful way to raise public awareness of conservation issues is by using people's leisure times to encourage them to participate in town walks. A simple and cheap way of raising public awareness is thus through the medium of trails. This paper explores the use of students both to produce trails and as an audience for them.

However first it is necessary to define what is meant by both the 2 new terms Geodiversity and LGAPs and a trail.

GEODIVERSITY

Geodiversity is a relatively new term first used in 1993 in Tasmania with its use mainly confined within Australia until the 21st century. However, by 2001 it was gaining a wider recognition in Europe and being used to complement biodiversity. Three slightly different definitions are in use today in the UK.

- Stanley M (2000) “*Geodiversity is the variety of geological environments, phenomena and processes that make those landscape rocks, minerals, fossils and soils which provide the framework for life on earth*”
- Prosser C (2002), “*Geological diversity or the variety of rocks, fossils, minerals and natural processes*”
- Gray M (2004) “The natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landform, processes and soil features). It includes their assemblages, relationships, properties, interpretations and systems”.

All stress the abiotic side of nature and imply both its complementarity with biodiversity and the fact that geodiversity underlies biodiversity (Burek, 2001)

TRAILS

A printed trail guide in this paper is defined as an A4 or A3 folded piece of paper. It can be printed in colour or black and white and can address different audiences. This differs slightly to the definition used by Keene (1995), which divides trails into several different categories such as booklets, videos and “Walkman” commentaries.

There has been an enormous growth of town geology trails recently from such organizations as the British Geological Survey through to local Geology societies and the RIGS movement (Devon RIGS and, Gwynedd & Môn RIGS, 2004, Hereford & Worcester Earth Heritage Trust 2004, Lothian & Borders RIGS Group, 2005, NEWRIGS, 2004). This publicity has to be a good thing as nowadays the majority of people live or work in urban areas and are increasingly becoming divorced from their natural environment. One problem arises though and that is that it is not always obvious who the audience is for these trails.

Town trails, National Nature Reserve trails and public building trails are therefore all being produced, often with support from the Geologists’ Association’s Curry Fund or other grant awarding bodies, (Macadam, 1997, Hose, 1999). However we must distinguish between firstly those trails aimed at the amateur geologist and secondly those which contain geodiversity information within guides for the general public.

Those guides for Wren’s Nest National Nature Reserve or the NEWRIGS group series of leaflets “Walking through the past” are located in urban environments in the case of Wren’s Nest in the center of a large housing estate just outside Dudley town centre.

The latter category would include Durham Cathedral guide and the two bilingual (Welsh/English) leaflets: the Llangollen town geological trail, and the Rhiwledyn Nature Reserve leaflet from the North Wales Wildlife Trust which mentions the setting for Carboniferous limestone coral reefs. The Wales RIGS group/Cymru RIGS has a tricolour trilobite as the emblem and this is clearly shown on the Llangollen geological town trail leaflet.

Trails aimed at geologists

Many trail guides have been produced over the years by many different organisations. The Geologists’ Association, an organisation catering for both amateur and professional geologists, has produced many local guides containing detailed, geological information but these are for the most part aimed at only the professional or amateur geologist or students and they do not fall within the definition of trail as defined above. They are booklets. The general public does not have easy access to the information within or to the guides themselves but that is not the targeted audience. Also many of the titles are misleading as for example the Geology around the university town of Liverpool includes the rural areas of North Wales (Somerville *et al.* 1986). Most leaflets as defined in this paper are not aimed at the professional geologist but at the educated amateur or curious tourist and occasionally students.

Trails aimed at the general public

Many organisations have produced trails reputedly aimed at the general public but often the language, terminology and expectations of knowledge are too high. Analysis has shown that many are written at too high a reading age for the general public (Hose, 2000).

The British Geological Survey has introduced its Holiday Geology Guides, which are laminated. Those featuring London landmarks such as The Tower (1999) and Westminster (1997) are well illustrated but too large to stick in your pocket and perceived to be expensive. Burek & France (1998) indicated a price of 30p as being acceptable to most people at that time whereas four years later it had increased to £1.00, but NEWRIGS leaflets were sold at wholesale 50p and retail 75p (Tilson *et al.* 2002). The BGS and the Hereford & Worcester Earth Heritage Trust laminated trail publications are all priced at £1.95 which is a little over this (at time of going to press). While the above geological trails are aimed at the general public, there are another group that include geological information but are not primarily geological. These include historical, archaeological, architectural, literary and general town trails. Sometimes buildings within cities are featured. This information is often of a palaeontological nature as fossils are of interest to most people. One early, popular leaflet produced in Durham and written originally by the famous geologist Sir Kingsley Dunham, is entitled “walk around Durham Cathedral”. This has fossil material embodied within the text. Under number 15 entitled ‘The chapel of the Nine Altars’ the leaflet says, “The black shafts are of Fosterley marble (a

limestone containing fossil corals) from a village a few miles from Durham". This leaflet is not aimed at geologists at all but puts the message across as an interesting fact. People in general often find fossils interesting.

The NEWRIGS Llangollen town trail (Burek & France, 1997, 1998) also includes fossil descriptions within the bilingual text. Under location 4 it states "Stone wall opposite the Royal Hotel. Located behind the benches, this stonewall is of particular geological interest. It is made of local shales and limestone. Where the limestone muds within the blocks have weathered away you can see early fossil corals dating back some 330 million years". Pictures of the armory are also included as it is one of the only buildings in Llangollen made of limestone and the building's walls clearly show gigantic productids and even a trilobite pygidium! (NEWRIGS, 1997).

RIGS GROUPS

The RIGS movement was a government initiative in 1990 to encourage the voluntary sector to conserve sites of geodiversity interest, which did not reach the high national standards set for SSSIs. There are now many such RIGS groups across the country under the overall umbrella of UKRIGS.

Once a group has reached sufficient development it finds its self able to advertise the sites that are protected and to enter into the education arena. In the vicinity of Chester there are two such groups: Cheshire RIGS and NEWRIGS (North East Wales). Both these groups are at the stage of educational pursuits, the latter having produced trails for the general public since 1996.

NEWRIGS

NEWRIGS took the decision fairly early on in its evolution to produce trails to raise the geodiversity awareness in tourist towns across northeast Wales. The series is called "Walking through the past" and was initiated in 1996 (Burek & France 1997). Thus the first locations to be investigated were Llangollen, with its International Eisteddfod and Llandudno a popular tourist resort on the coast. When the Association of Welsh RIGS Groups (AWRG) annual conference was held in Llangollen in 1997, the trail was trailed and evaluated (Burek & France, 1998). The trail leaflets have been funded by a variety of organisations, who have been impressed by the quality bilingual nature and level of the leaflets (Hose 2000). When the National Eisteddfod came to Denbigh in 2001 it was decided to undertake a trail for this town. This was launched by the town Mayor and received extensive publicity. A successful template has now evolved following extensive and constant consultation. Most trails last for between an hour to 90 minutes. All leaflets are bilingual and so the extensive use of photographs and illustrations is necessary because of the written language space constraints. All walks are framed by a colourful stratigraphical column highlighting appropriate global and local events. This has been commented on favourably in reviews (Salmon, 2004). A short historical background to the town or city is given for context. In a paper by Burek & France (1998) the question of scale within these trails is addressed. Three scales are recognised - macro, meso and micro. Clearly urban geodiversity can be viewed at all three scales from the macro buildings and meso gravestones or curbstones, down to the micro grains or fossils making up the building stones. The trail itself covers a full A3 page with most stops illustrated and a map is given with each stop clearly numbered.

When the Local Agenda 21 conference came to Chester, the City Council asked for a geological trail guide to be developed for the delegates. In 2002 Holywell Town Council approached the NEWRIGS group to produce a trail for geotourism purposes. Thus the trails are often produced as a result of local demand. Wrexham, Ruthin and Flint have recently been produced. By 2006 trails for St. Asaph, the smallest cathedral town in North Wales, and Holywell, the spa town, will have been produced.

This template developed, adapted and evolved over a period of years. It is this variety of scale, lavishly illustrated interspersed with photographs which make these leaflets user friendly (Hose, 1998). Being bilingual they are being used as a language aid for students of Welsh (Legg, pers. comm.). This same template, developed by NEWRIGS, was later adapted by both Gwynedd & Môn RIGS and Cheshire RIGS.

Cheshire RIGS

Cheshire RIGS was slightly later in developing its town trails. So far three have been produced for Frodsham, Nantwich and Malpas. Macclesfield and Northwich will be next. This development was encouraged by the County Council following, firstly, research on the effect of age on environmental dissemination (Cookson, 2004) and secondly, the rural development initiative which promoted local small market town tourism. AS Cheshire RIGS is based in the Grosvenor Museum in Chester it has a continual stream of visitors interested in natural history. In fact the front cover of the Chester trail features the front of the museum, as that is where the trail starts.

Every year Cheshire RIGS takes part in the annual Chester Science Festival and members of the group offer free guided walks to the general public around the walls of Chester. Over the past two years over 100 interested individuals have been exposed to urban geology and many now have been 'indoctrinated' to look at curbstones and roofs to see what they are made of.

WHAT IS AN LGAP?

An LGAP is a Local Geodiversity Action Plan similar in product and process to a Biodiversity Action Plan (BAP). The action planning process is a commonly used tool in business. At present BAPs are driven by legislation following the signing and subsequent ratification of the Biological Conservation Treaty in Rio de Janeiro in 1992. The first BAP

was set up in 1996 in Britain as a result but the first LGAP was not published until Sept 2003. There is no legislation driving LGAPs and they are pushed and developed from local interest and partnerships.

One of the most successful and the longest running is the Cheshire region LGAP published in September 2003 and reissued in August 2004. At the time of writing (October 2005) there are 12 LGAPs, which have been developed and launched, including one company GAP. There are a further 14 undergoing development including the first in Wales, Anglesey, and the first in Scotland, West Lothian.

Cheshire region Local Geodiversity Action Plan

The Cheshire region LGAP (covering the old vice county of Cheshire thus including Wirral, Warrington and Halton) is a successful partnership of about 30 organisations dedicated to maintaining and safeguarding the geodiversity of the Cheshire region. This partnership is led by Cheshire RIGS, University of Chester, Cheshire County Council, Cheshire Landscape Trust, rECORd and Chester City Council. Many other Local Authorities are very active and supportive from Wirral in the west to Macclesfield in the east.

The Cheshire region Local Geodiversity Action Plan (CrLGAP) was developed and then published during 2003 following initial research into the use and transferability of the BAP process to geology (Burek & Potter, 2002, 2004). 8 objectives were developed to support the overarching aim "To contribute to the maintenance and improvement of the well-being of the Cheshire region by producing a Cheshire region LGAP (Local Geodiversity Action Plan) to safeguard the geology, geomorphology, soils and landscapes of the area". Eight objectives were developed to support this, followed by targets and actions to take the whole process forward. Two Objectives, Numbers 4 and 6, encouraged trail use and development for different audiences. Therefore both urban and rural geodiversity trail leaflet production was incorporated into specific actions to support raising public awareness. This action was undertaken and is actively advanced by the local Cheshire RIGS group (Fig. 1). The trail leaflets have been enthusiastically received by the local population and more are planned for other towns and villages in Cheshire.

Table 1. The 8 original objectives of the CrLGAP

1.	To audit the local Geodiversity resource by Dec 2004
	a. Site audit
	b. Existing geodiversity information
2.	To audit the skills and resources available from existing and potential partners and other targeted organisations by Dec 2004
3.	To have Geodiversity included in policy of all Cheshire region local authorities and targeted organisations by Dec 2004
4.	To raise awareness of the following identified audiences by Dec 2004
	a. Professional bodies
	b. Conservation practitioners/site managers/landowners
	c. Education sector
	d. General Public
5.	To increase community and business participation in the conservation of identified Geodiversity sites by Dec 2004
6.	To produce 3 information dissemination tools throughout 2003 and 2004 to share best practice e.g. newsletter, web site, guided walks
7.	To create effective feedback, reporting and monitoring mechanisms by Dec 2004 for LGAP partners
8.	Create the infrastructure and mechanisms to enable the Cheshire LGAP process to continue after the initial year of operation by Dec 2004

The use of established events to highlight urban geodiversity is also undertaken as part of the CrLGAP. Guided walks prove very popular and are being evaluated by a research student to determine their effectiveness in education. Two events reaching different audiences are regularly used, the Chester Science Festival and Step into Cheshire.

Chester Science Festival

The use of guided walks using the town trails have also been undertaken as part of the Chester Science Festival. These are regularly run during the time around science week, with two or three walks offered. Take up is variable but over the last two years at least 100 people have been exposed to the geodiversity of the urban area of Chester. Again this is the use of a town trail to raise awareness of urban geodiversity. The walks are evaluated and feedback is very positive. Numbers of participants range from one to one walks up to groups of over 30. Anything above this number becomes a hazard as the walls of Chester are narrow in places and the police could reasonably regard this as obstruction.

Step into Cheshire

The new Step into Cheshire initiative also features walks around towns and villages trying to encourage people into the countryside and the smaller towns and villages. Here the Frodsham leaflet has proved very successful and the event is to be repeated (Bowring pers. Comm.).

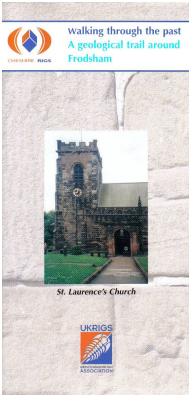


Figure 1. Frodsham urban geology trail guide produced by students and Cheshire RIGS

COOPERATION WITH HIGHER EDUCATION – INVOLVING STUDENTS IN PRODUCTION

Very early on in both North East Wales and Cheshire it was realized that a voluntary RIGS group is made up of busy people with little time to devote to research. Thus it was decided to cooperate with the local university in its Work Related Studies programme and in its research areas.

Annually second year students at the University of Chester undertake work based learning and employers take these students on for 6 weeks. For the last five years NEWRIGS has acted as an employer to one or more student(s) so that they can experience working with a voluntary body, undertaking a piece of research with a very obvious product and one which can enhance the student skills base such as photography, map production and writing for the general public. It is normal that these students are not geologists although some may be geography based. This seems to be a win-win scenario as work is undertaken by a student, which would not normally be done, and a student gains new skills under supervision. While few students have time to complete the final product, much of the initial research has been finished. Some final products are shown in Figures 1, 2 and 3.

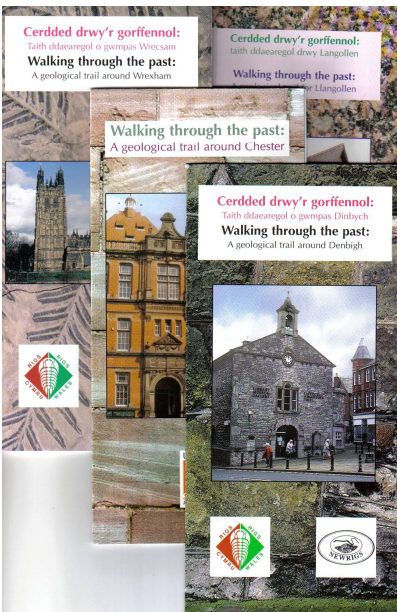


Figure 2. NEWRIGS 'Walking through the past' geology town trails mentioned in the text

As the template is already set, expectations are visible and objectives clear. Thus most students enjoy the challenge of learning these new skills and writing for a specific audience. Feedback via their final assignment presentation has been very positive. The observational skills developed by these students stay with them and like a virus spreading, they infect others with their knowledge and enthusiasm.

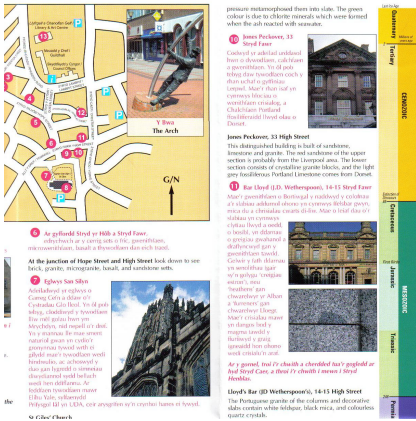
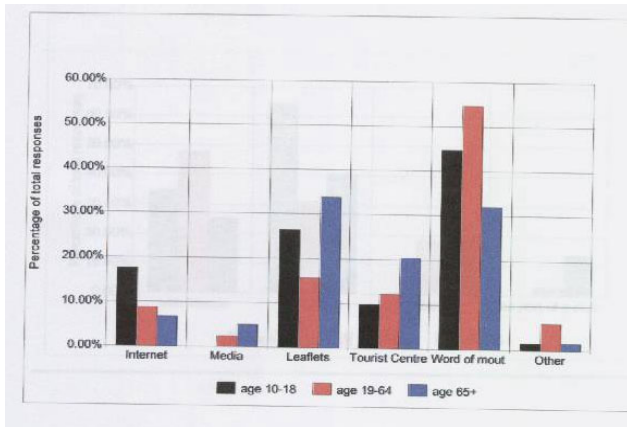


Figure 3. Wrexham town trail with map and geological column.

The second area of cooperation is in dissertation topics. In 2003 a dissertation was undertaken on whether age affects attitudes to conservation and environment. This was achieved by questioning over 450 people of different ages. One question asked people how they received information about events, locations and other conservation activities. The effectiveness of leaflets in raising public awareness (Cookson, 2004) is clearly demonstrated in Table 2. These results were eventually presented to the Cheshire County Council Planning department.

Table 2. A breakdown by category of how all ages seek information for leisure trips (Cookson, 2004)



INVOLVING STUDENTS IN LEARNING

With the development of a new undergraduate programme in Urban Studies at the University of Chester it was decided to take the opportunity to include a Level 1 module called ‘The City and Nature’ in this programme to reflect the wider interest in the relationship between urbanization and the environment, that is the context for this paper. (Hough, 2004) The module introduces students to variety of issues including the impact of urbanization on natural processes, urban development and flood hazard and the link between urbanization and environmental sustainability. Students also consider the way in which environmental thinking is informing the planning and management of cities and the way in which the environment is increasingly included as part of strategies of economic regeneration and community renewal (Hallsmith, 2003). It is this context that students are introduced to the idea of urban geodiversity. They followed the Chester trail designed by NEWRIGS as part of exploring how the urban environment reflects the underlying geological environment, and how geodiversity can form an element in strategies of place promotion and economic development. This approach had already been undertaken to a certain extent in the first year course ‘Introduction to physical geography and geology’ to encourage the fresher students to familiarise themselves with the local area, not necessarily familiar to them. They did the walk independently however.

With the ‘Cities and Nature’ module the first year students were accompanied on the trail around the walls of Chester. They were then asked to carry out a small market research exercise called ‘Urban landscape geoconservation’ to see how 10 people each valued their local urban geodiversity and open urban spaces. The sample was small and the results are not yet fully analysed but the potential of using students on this course for further research is evident. It also raises awareness of the topic by the very nature of asking the question for both student and resident/visitor.

Preliminary results show that most people

- Get their information from the media or leaflets
- Would like to find out more about urban open spaces
- Thought that conservation of urban open spaces was important

- Felt that how the urban environment looked was important
- Were undecided about seeing more rock art or bare natural rock outcrops in an urban area

Interestingly only 30% had heard of geodiversity and only 20% of geoconservation. However 100% believed we should conserve our urban environment. The same 100% agreed that our geological heritage in urban environments should be conserved. This preliminary research shows that few people understand the importance of geoconservation in an urban environment. Further research into this topic will follow.

CONCLUSIONS

If trails can be produced inexpensively as A4 or A3 folded sheets, people will buy them. Booklets and books are more expensive, bulky to carry and are less likely to spread the urban geoconservation message across the great divide. Non-geologists are less likely to buy these on the spur of the moment on a town walk. Easy access to both material and information is the key to success and using students within their educational experience is a win-win scenario.

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