
Mass movements in Great Britain

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Acknowledgements

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1977, and the 'Mass Movements', GCR *Block* (site-selection category) was considered early on in the site-selection programme. In the site-assessment and GCR site-selection phase of the project, work was co-ordinated by the late Roger Cooper, with guidance from Bill Wimbledon (then Head of the GCR Unit).

Many specialists were involved in the assessment and selection of sites, and this vital work is gratefully acknowledged.

JNCC invited Roger to build on his site-selection work, and to undertake the preparation of a text for publication for JNCC in the late 1990s, and later invited Denys Brunsten to assist Roger during the writing stages of the book in an editorial capacity.

Following Roger's death, Denys kindly took on the job of bringing the book to a publication-ready state, a task which is not to be understated, considering the amount of material that had to be sifted, which Roger had accumulated to inform his writing work. At a late stage in the preparation of the volume for publication, Vincent May, with help from Rebecca Cook (who catalogued Roger's GCR papers) also became involved, helping to ensure that the illustrative material for the book was completed, and providing some editorial input.

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Access to the countryside

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Information on conservation matters, including site ownership, relating to Sites of Special Scientific Interest (SSSIs) or National Nature Reserves (NNRs) in particular counties or districts may be obtained from the relevant country conservation agency headquarters listed below:

Countryside Council for Wales, Maes-y-Ffynnon, Penrhosgarnedd, Bangor, Gwynedd LL57 2DW.

Natural England, Northminster House, Peterborough PE1 1UA.

Scottish Natural Heritage, Great Glen House, Leachkin Road Inverness IV3 8NW.

Foreword

Dr Roger Cooper 1949–2001

Born in Camberley, Surrey Roger read Geography at the University of Hull. After completing his PhD entitled '*Geomorphological Studies: the Hambleton Hills, North Yorkshire*' in 1979, he joined the Geography Group at the then Dorset Institute of Higher Education in Bournemouth. In 1981, he began the not inconsiderable task of preparing the Landslides (Mass Movements) 'Block' for the Geological Conservation Review (GCR). By the mid-1980s, strategic changes to the departmental and curriculum structure led to Roger enjoying a rare year's sabbatical at Birkbeck College studying Geographical Information Systems under David Ithind (later Director General of the Ordnance Survey). He then provided all GIS teaching in Bournemouth's new and highly regarded MSc in Coastal Zone Management. However, soon after he returned to Bournemouth, Roger's health deteriorated and he had a brain tumour removed in September 1988. He regarded this as merely an inconvenience as he embarked on his contribution to the GCR; over the next twelve years he explored, mapped, investigated and described mass-movement features throughout Great Britain. Roger visited many of the sites identified in his initial consultation with colleagues throughout the world, surveying and mapping some for the first time. Resulting from this work, he produced the original site list that became the Mass Movements GCR Block. He brought to the description and justification for selection of the sites his usual meticulous attention to detail. Neither institutional circumstances nor his health made his task easy. Very few of his colleagues even knew that he was working on it, and yet he persevered, sometimes with little encouragement (since, by the mid-1990s, it was not regarded as relevant to his teaching), apart from those close to him.

Roger had a sharp analytical mind and he used it, not least, to approach institutional decision-making in the same spirit of peer review expected in any scholarly work. This did not always make for easy relationships, but Roger's involvement at a grass-roots level in the developments that led to the rapid transformation from Dorset Institute to Bournemouth University should not be underestimated.

Roger was an enthusiast. He was insatiably curious and enthused colleagues and students alike with a sense of excitement at discovery and gaining understanding. For many years, he edited one of the main journals in cave studies, '*Studies in Speleology*'. He was deeply involved in the Pengelly Cave Trust and was a caver himself. He explored and described caves on the Isle of Portland that result from the gradual toppling seawards of the limestone. He researched and wrote. When he discovered that his grandfather had been caught up in the Boxer Rebellion in China, he set out to find out about the exact circumstances and published an account of it. When he found out that John Wesley had described a Yorkshire landslide, he went back to the records and worked out how well they helped to date the landslide event.

Roger was principled, caring, precise in all his work and full of sharp wit. But these were nothing without his friendship, his intellectual and physical energy, and his belief in the future: *and* his ability to share those qualities. This volume is an appropriate memorial for a man who was above all a scholar with integrity and a sense of conviction about the place of scholarship in the world.

V.J. May February 2007

Preface

There is such a diversity of rocks, minerals, fossils and landforms packed into the piece of the Earth's crust we call 'Britain' that it is difficult to be unimpressed by the long, complex history of geological change to which they are testimony. But if we are to improve our understanding of the nature of the geological forces that have shaped our islands, further unravel their history in 'deep time' and learn more of the history of life on Earth, we must ensure that the most scientifically important Earth science sites, which offer us evidence, are conserved for future generations to study, research and enjoy. Moreover, as an educational field resource and as training grounds for new generations of geologists on which to hone their skills, it is essential that such sites continue to remain available for study. The first step in achieving this goal is to identify the key sites, which was a primary aim of the Geological Conservation Review.

The GCR, launched in 1977, is a world-first in the systematic selection and documentation of a country's best Earth science sites. No other country has attempted such a comprehensive and systematic review of its Earth science sites on

anything near the same scale. After over two decades of site evaluation, consultation with the scientific community, and site documentation, we now have an inventory of over 3000 GCR sites, selected for 100 categories covering the entire range of the geological and geomorphological features of Britain.

The minimum criterion for GCR site selection was that sites should offer the finest and/or the most representative feature for illustrating a particular aspect of geology or geomorphology. The resulting GCR sites are thus, at the very least, of national scientific importance and many of these include features regarded as either 'classic' (i.e. a 'textbook example'), internationally important or simply 'unique'. Some are, in addition, visually spectacular. Others, though less spectacular, are of considerable importance in demonstrating a particular aspect of geology or geomorphology.

The present volume is the 33rd to be published in the GCR series of books, which will be completed in over 40 volumes. It represents the results of the GCR assessment and selection programme of British Mass Movement sites conducted in the early 1980s, in describing the ultimately selected sites. These localities will be conserved for their contribution to our understanding of mass-movement processes and their manifestations. This volume summarizes the considerable research that has been undertaken on the localities. The book will be invaluable as an essential reference book to those engaged in the study of these sites and will provide a stimulus for further investigation. It will also be helpful to teachers and lecturers and for those people who, in one way or another, have a vested interest in the GCR sites: owners, occupiers, planners and, those concerned with the practicalities of site conservation. The conservation value of the sites is mostly based on a specialist understanding of the Earth science features present and is, therefore, of a technical nature. The account of each site ends, however, with a brief summary of the geomorphological interest, framed in less technical language, in order to help the non-specialist. The first chapter of the volume, used in conjunction with the glossary (contained within Chapter 1), is also aimed at a less specialist audience.

This volume deals with the state of knowledge of the sites available at the time of writing, which for the material written by the late Roger Cooper was between 1996–2000, and it must be seen in this context, although some editorial work was kindly undertaken by the editors to introduce references to more-recent publications about the sites.

However, mass-movements studies, like any other science, are ever-developing, with new discoveries being made, and existing models being subject to continual testing and modification as new data comes to light. Increased or hitherto unrecognized significance may be seen in new sites. Indeed, more recent research into Highland mass movements, separate from the original GCR writing work undertaken by Roger, has provided important new information about Scottish sites, which has been translated into up-to-date text for Chapter 2, and reports in Chapters 4 and 6, by David Jarman and Colin Ballantyne. Therefore, it is possible that further sites worthy of conservation will be identified in future years for the study of mass movements in Britain, as research continues. However, it must be stressed that the GCR is intended to be a *minimalist* scheme, with the selection for the GCR of only the best, most representative, example of a geological feature, rather than the selection of a series of sites showing closely analogous features.

Nevertheless, there is still much to learn about the GCR sites documented here, many of which are as important today — in increasing our knowledge and understanding of mass-movement processes — as they were when they were first selected.

This account will clearly demonstrate the value of British sites to mass-movement studies and the importance of the sites within the wider context of Britain's outstanding scientific and natural heritage.

N.V. Ellis, GCR Publications Manager January 2007

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