

---

# Northumberland National Park Geodiversity Audit and Action Plan

D J D Lawrence BSc, S L B Arkley BSc, J D Everest MA, PhD, S M Clarke BSc, MSc, PhD, FGS, D Millward BSc, PhD, FGS, CGeol, E K Hyslop BSc, MSc, PhD, FGS, CGeol, G L Thompson BSc, MSc1, B Young BSc, FIMM, CEng2

## Contents

### [Title page and preliminaries](#)

Acknowledgements

### [Section 1 Understanding geodiversity](#)

Understanding geodiversity

What is geodiversity?

The scope of this Geodiversity Audit and Action Plan

National Parks

The aim of this Geodiversity Audit and Action Plan

Geodiversity and the planning system

Protecting geodiversity

### [Section 2 Roots of our geological heritage](#)

Roots of our geological heritage

Evolution of the rocks and landscape in the district

The influence of geodiversity in the landscape

[Silurian rocks](#)

[Carboniferous rocks](#)

[Igneous rocks](#)

[Metamorphic rocks](#)

[Quaternary deposits and landforms](#)

[Mineral veins and minerals](#)

[Geological structures](#)

[Fossils and palaeontology](#)

[Mines and quarries](#)

[Building stone and the built heritage](#)

### [Section 3 Exploring and celebrating geodiversity](#)

Exploring and celebrating geodiversity

Education and research

Archive and materials collections

Interpreting the geodiversity of Northumberland

National Park and the surrounding area

### [Section 4 Geodiversity Action Plan](#)

Action plan

Geodiversity sites in Northumberland

National Park and the surrounding area

### [Glossary](#)

### [Selected bibliography](#)

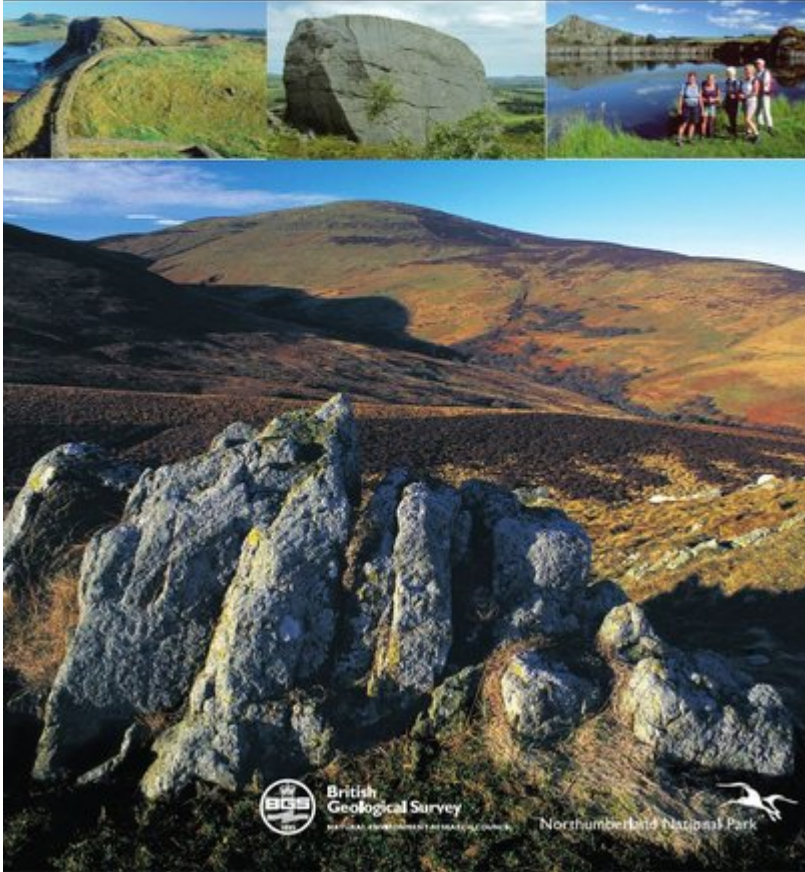
### [Figures](#)

## **Figures**

(Front cover) Cover images clockwise from top left: Hadrian's Wall above cliffs of Whin Sill, looking west towards Crag Lough © Graeme Peacock. The Drake Stone, a huge Fell Sandstone boulder near Harbottle BGS © NERC. Cawfields Quarry in the Whin Sill, now a recreation area © Graeme Peacock. Looking south-west from Long Crag towards the granite hills of Hedgehope and Cheviot © Graeme Peacock [www.graeme-peacock.com](http://www.graeme-peacock.com)

(Location map) Location map for the district described in this book.

# Northumberland National Park Geodiversity Audit and Action Plan



*(Front cover) Cover images clockwise from top left: Hadrian's Wall above cliffs of Whin Sill, looking west towards Crag Lough © Graeme Peacock. The Drake Stone, a huge Fell Sandstone boulder near Harbottle BGS © NERC. Cawfields Quarry in the Whin Sill, now a recreation area © Graeme Peacock. Looking south-west from Long Crag towards the granite hills of Hedgehope and Cheviot © Graeme Peacock [www.graeme-peacock.com](http://www.graeme-peacock.com).*

Location map for the district described in this book



The product includes mapping data licensed from Ordnance Survey © Crown copyright and/or database right 2007. Licence number 10001221. Reproduced from the 1946 Ordnance Survey map.

(Location map) Location map for the district described in this book.