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# Northumberland Rocks — 50 extraordinary rocky places that tell the story of the Northumberland landscape

Ian Jackson

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## Endorsements

The challenges of climate change and its impact on the environment and us are unprecedented. We will only overcome them if our approach is integrated and holistic. Science has to be joined up, and more, scientists and society have to understand each other. And that means that we scientists have to communicate a lot more effectively with society than we do.

This book about the rocks of one small part of our planet — the beautiful county of Northumberland in the UK — is trying to do exactly that. In the descriptions of 50 special places it reaches out beyond the science of geology, to other aspects of the landscape, to biology, and to our shared history and heritage. The plain words and clear, attractive images will engage readers of all backgrounds.

This book seeks to inspire you to be curious about the ground beneath your feet and explore the landscape for yourself. Turn the pages and then pull those boots on, you won't regret it!

### Ian Stewart

Professor Iain Stewart MBE is a geologist who has presented many BBC documentaries on the history and dynamics of the Earth. His passion is to improve the communication of science. He is currently Jordan-UK El Hassan bin Talal Research Chair in Sustainability.

I feel passionately that geology is the most romantic of sciences, as well as being of the most profound importance. The days I spent in the field in my early career were for me times of absolute wonder and great happiness. The opportunity to

visit beautiful, natural places, in the company of scientists who had the uncanny gift of knowing just why these beautiful places were exactly as they were, remains a great privilege.

I spent the first three years of my professional life in Northumberland, coming to know the county — Berwick to Alnwick, Morpeth to North Shields, Rothbury to Wallsend — as well as anywhere in England. So I have a particular fondness for Northumberland Rocks, which paints a fascinating picture of the evolution of this historic county across geological time. This invaluable book ranges, just as I did fifty years before, from the Scottish border, to the edge of the Roman Empire, to the centre of a great and ancient city, and it profits from a scientist's insight, uncomplicated language and delightful images, to reveal why this magnificent and remarkable landscape is as it is.

### **Simon Winchester**

Simon Winchester OBE is a British-American author and geologist. He was a journalist for The Guardian and now the New York Times. His internationally best selling books include The Map that Changed the World and The Professor and the Madman.

## **Foreword**

Compare a map of natural habitats with a geological map of the same area anywhere on our planet and you will immediately see how strong the link is between geology and wildlife. The rocks beneath our feet are a key factor in the distribution of habitats and species. Geodiversity underpins biodiversity, which explains why Northumberland Wildlife Trust, in common with Wildlife Trusts across Britain, includes conservation, protection and promotion of geology in its founding principles.

Our ambitions to conserve and enhance wildlife depend on a holistic understanding of our landscape — whether that is a Border Mire, a Cheviot mountain, the coast, or an inner-city park. Rocks shape our country and form our soils; they are the natural connector as we establish and extend nature networks. Throughout history rocks have influenced the way we humans have used the land. The impacts of our changing climate and the complex threats to our environment concern us all. If we better understand the diverse factors involved we will be better equipped to meet those challenges and fight for nature's recovery.

This book sets out to help us understand the bedrock of our landscape — literally. It not only celebrates the amazing geodiversity of our region, through photographs and simple descriptions of 50 special places, it makes the story of the Northumbrian landscape relevant and more accessible to everyone.

**Mike Pratt**, CEO Northumberland Wildlife Trust

## **Preface**

This book is a personal selection of 50 places across the old county of Northumberland. Places where rocks make a special statement about the region's landscape, history, culture and wildlife.

Some of these places are well known, other less so and the journey to discover them has taken me to hidden corners. The rock sites are an attempt to cover the geography of the historic county, but more to explore its third dimension, its geological past. This book aspires to make that story accessible; it is intended for everyone who is curious about their landscape.

What started out as desire to engage friends and non-geologist colleagues in the amazing stories our rocks tell, morphed into a celebration of 50 years of Northumberland Wildlife Trust, and now into this book. Author's royalties from its sale will go to the Trust.

I hope this book engages you.

**Ian Jackson** September 2021

Thank you very much for buying the book! The first print run of 2000 sold out and so we have reprinted and taken the opportunity to correct a few typos and make the layout a little clearer, otherwise the content is the same. The increase in price is entirely due to increased paper prices, apologies.

**Ian Jackson** September 2022

## **Sources and acknowledgements**

The descriptions of rocks and landscapes in this book are drawn from many sources, but principal amongst them are the maps, memoirs and reports of the field geologists of the British Geological Survey.

Angus Lunn, geologist, ecologist and author of several books about the natural history of Northumbria, supported the venture throughout. He kindly coordinated the words on the wildlife and reviewed the text.

The Northumbrian geology excursion guides produced by Colin Scrutton were my sources for coastal sections. Google and Wikipedia were used extensively to locate historical and other information.

Any errors in the descriptions in this book are mine.

Thank you to my wife Gill, and to walking friends, for allowing me to hijack our hikes. The photographs were taken with my iPhone. I'm hoping the beauty of the Northumberland landscape will overcome my photographic shortcomings.

I would like to thank Northumberland Wildlife Trust who generously supported publication of this book.

## **Northumberland rocks — introduction**

Northumberland\* is blessed with outstanding rocks and landscape — they are the equal of the best in Britain. As a county we probably owe more to our rocks than anywhere else. Without the Whin Sill's crags and cliffs, and the centuries of mining and quarrying of coal, lead, limestone and sandstone, our heritage would be entirely different.

We may live on a very small part of the Earth's crust, but it is one that has a long and eventful history, some of it shrouded in mystery. The county we know as Northumberland has travelled across the globe and lain at the bottom of oceans. The ground beneath us has been buried to red-hot depths, broken apart by earthquakes, injected with molten magma and frozen under ice sheets, emerging only 15,000 years ago as the landscape we know today.

Some will argue, not unreasonably, that several sites in this book are hardly "rocks". True, but collectively the 50 places tell a story of the full 425 million years of the history of the Northumberland landscape, one that sets in context the brief narrative of humankind.

The sites are divided into five themes, but the division is often arbitrary and several could fit into more than one theme.

\* Northumberland in this book is the historic county, so it includes the city of Newcastle upon Tyne and North Tyneside too.

## **Endnote**

The aim of this book is to encourage you to look at your landscape through different eyes. To glimpse beneath the surface and reflect on its evolution and the ancient origins of its terrains and its habitats — our biodiversity depends on geodiversity. Equally important, I hope that the book also shows how changing climates and environments throughout geological time have shaped this precious landscape..... and are still changing it.

I hope it inspires you to look afresh at places you may know well, but also to explore less well-known places. Places where earthquakes have bent solid rock, where you can climb across the remnants of 400 million year-old Volcanoes, search for fossils and agates, or walk over a Border Mire that started when the last glacier left 15,000 years ago. Or simply wonder at the ingenuity of our ancestors who built enduring cairns, walls, roads and castles, and mined the stones that have created our shared heritage.

## **The author**

Ian Jackson is a Chartered Geologist and Fellow of the Geological Society, who worked for the British Geological Survey for 38 years and retired from the position of Operations Director in 2011. He spent 18 years surveying the geology of parts of Northumberland and the north of England. Later he was responsible for national and international programmes that delivered the first UK, European and global digital geological map data coverage and made it web accessible. He is the author of a number of maps and books. He is currently a trustee of the Northumberland Wildlife Trust and the Kielder Water Forest Park Development Trust and lives in the National Park, near Bardon Mill.

## **Some web links and books**

[Northumberland rocks and landscape: a field guide](#)

[BGS GeoIndex](#)

[BGS Geology Viewer](#)

BGS Earthwise: [Geology of northern England](#)

[Northumberland National Park Geodiversity Audit](#)

[Northumberland Coast AONB Diversity Audit](#)

[North Pennines AONB Geodiversity Action Plan](#)

[Rock Cycle](#): The Geological Society

[Northumberland Wildlife Trust Rock Festival](#)

[Videos of 15 Rock Walks in Northumberland](#)

Northumberland. With Alston Moor. (The New Naturalist No. 95) Angus Lunn

[Explore the Geology and Landscape of the Northumberland Coast Area of Outstanding Natural Beauty](#), Clive Crossley, Brian Young and Tom Cadwallender

[Northumberland Hills and Valleys](#), Stan Beckensall

## **Northumberland Wildlife Trust**

Northumberland Wildlife Trust is a charity dedicated to saving wildlife and wild places and helping people to get closer to nature.

The Trust manages over 60 nature reserves and helps to create wildlife-rich landscapes and seas by working in partnership with other organisations, landowners and communities. Its role is especially vital in solving the twin crises of biodiversity loss and climate change.

It is one of 46 Wildlife Trusts, a grassroots movement working across the UK to make life better — for wildlife, for people and for future generations. Their aim is to inspire people to value nature through visitor centres, events, education programmes, volunteering and campaigns.

In 2021 the Trust celebrated its 50th Anniversary. One of many special events was a Rock Festival, telling the story of Northumberland's geological heritage and its connections to wildlife.

## **Back cover**

Discover the amazing story that Northumberland's rocks and landscape tell through images and expert understanding of 50 extraordinary places.

Full colour photographs and easy to follow descriptions ensure this story is accessible to everyone.

Northumberland's rocks have had a long and eventful 425 million year history. It is because of these wonderful rocks that we are blessed with outstanding scenery and landscapes.

This book opens a window into the Northumberland beneath your feet and reveals the origins of its landscape and its habitats. The book encourages you to look at your landscape with fresh eyes and will inspire you to explore some, or maybe even all, of these 50 places.

Places where you can climb over remnants of old Volcanoes, experience the incredible power of ancient earthquakes, wander across a foreshore that was once a sub-tropical swamp, witness the awesome force of the last Ice Age, or simply wonder at the ingenuity of our ancestors who used these rocks in so many ways to create our shared heritage.

You will never look at your landscape in the same way again.

Index, map and section facing pages

## **Photographs**

(Front cover) Saltpan Rocks.

(Rear cover)

(Photo 00-1) Folded limestone on the foreshore at Saltpan Rocks.

(Photo 00-2) Fossil ripple marks.

(Photo 00-3) Ceiling at Crindledykes limekiln.

(Photo 00-4) Looking east at the Whin Sill of Peel Crag from Steel Rigg.

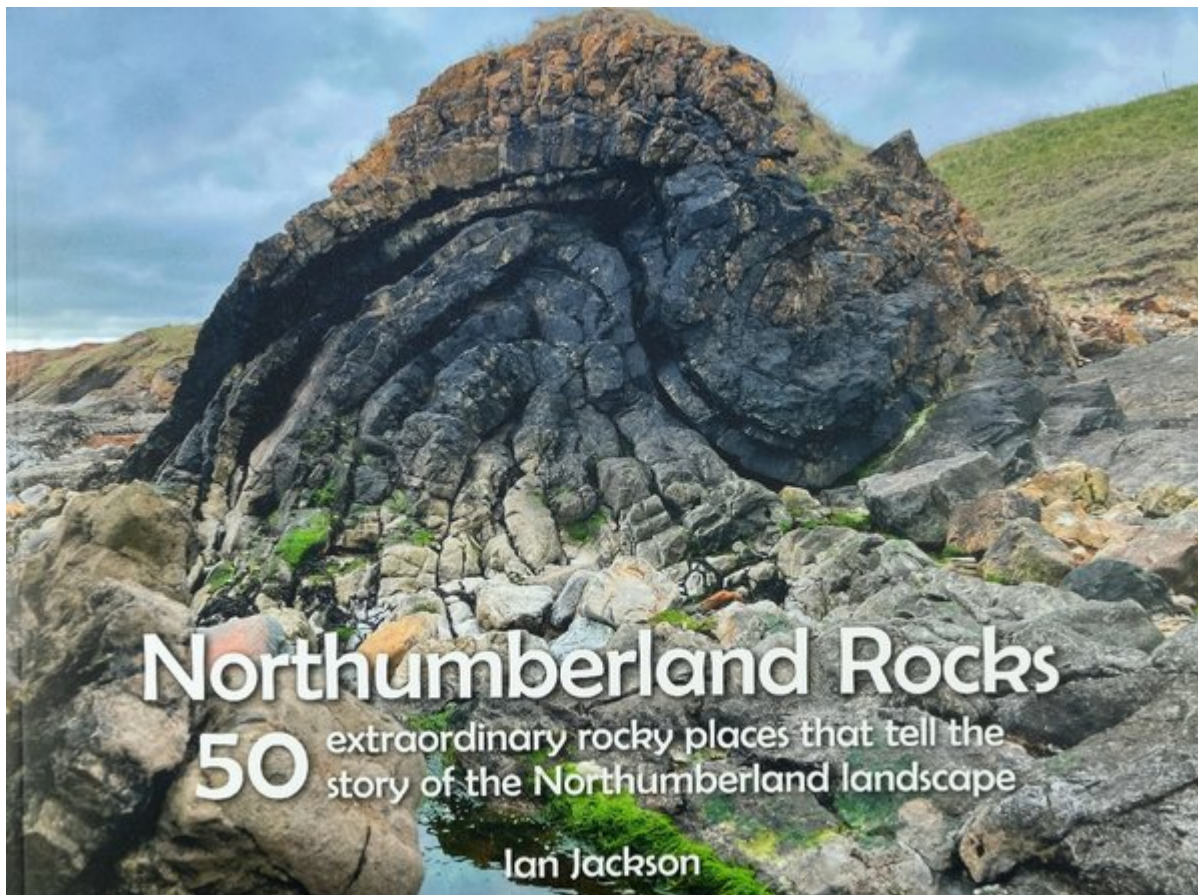
(Photo 00-5) Foreshore at Howick Bay.

(Photo 00-6) Snowy scene, Peel Crag in the centre.

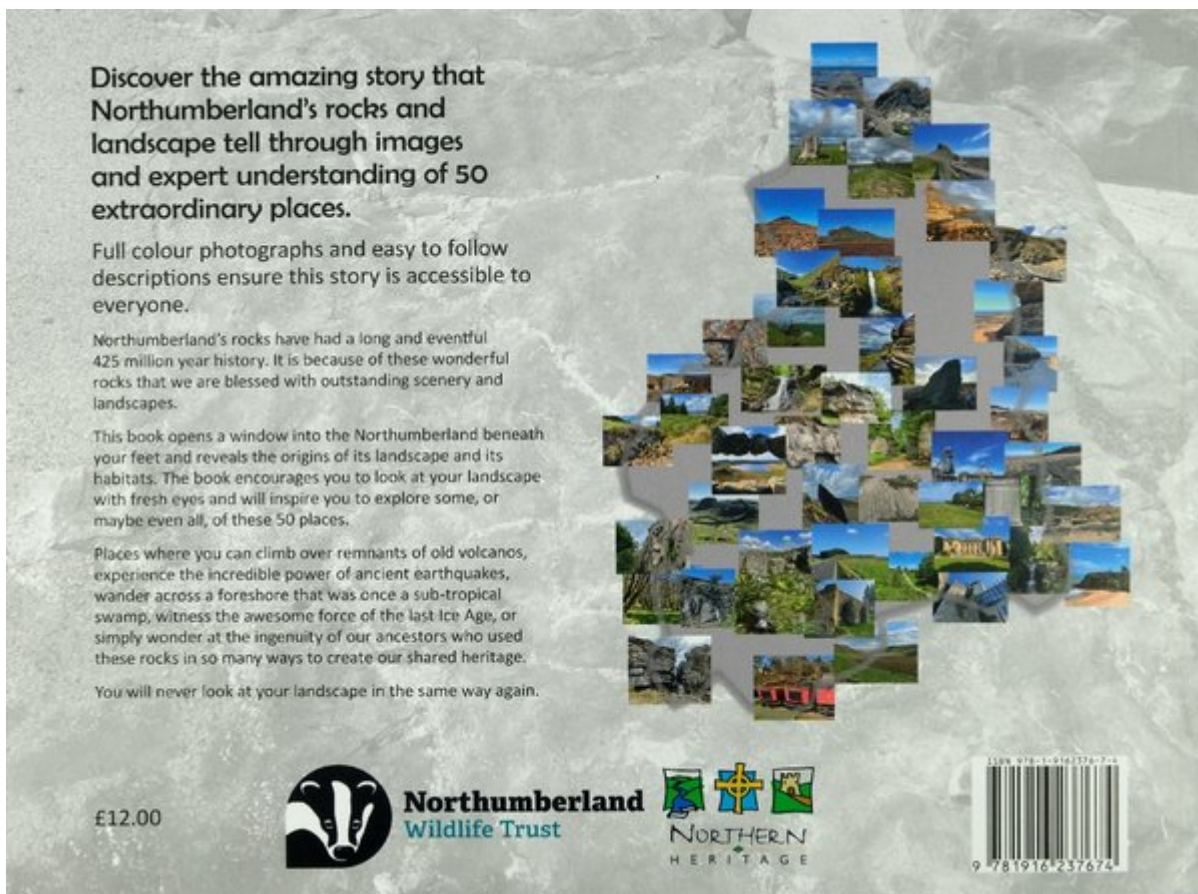
(Photo 00-7) Alwin valley.

(Photo 00-8) 50 sites in 5 themes

(Photo 00-9) Northumberland's geology and location of sites.



Front cover. Saltpan Rocks.



Rear cover.



*(Photo 00-1) Folded limestone on the foreshore at Saltpan Rocks.*



*(Photo 00-2) Fossil ripple marks.*



*(Photo 00-3) Ceiling at Crindledykes limekiln.*



*(Photo 00-4) Looking east at the Whin Sill of Peel Crag from Steel Rigg.*



*(Photo 00-5) Foreshore at Howick Bay.*



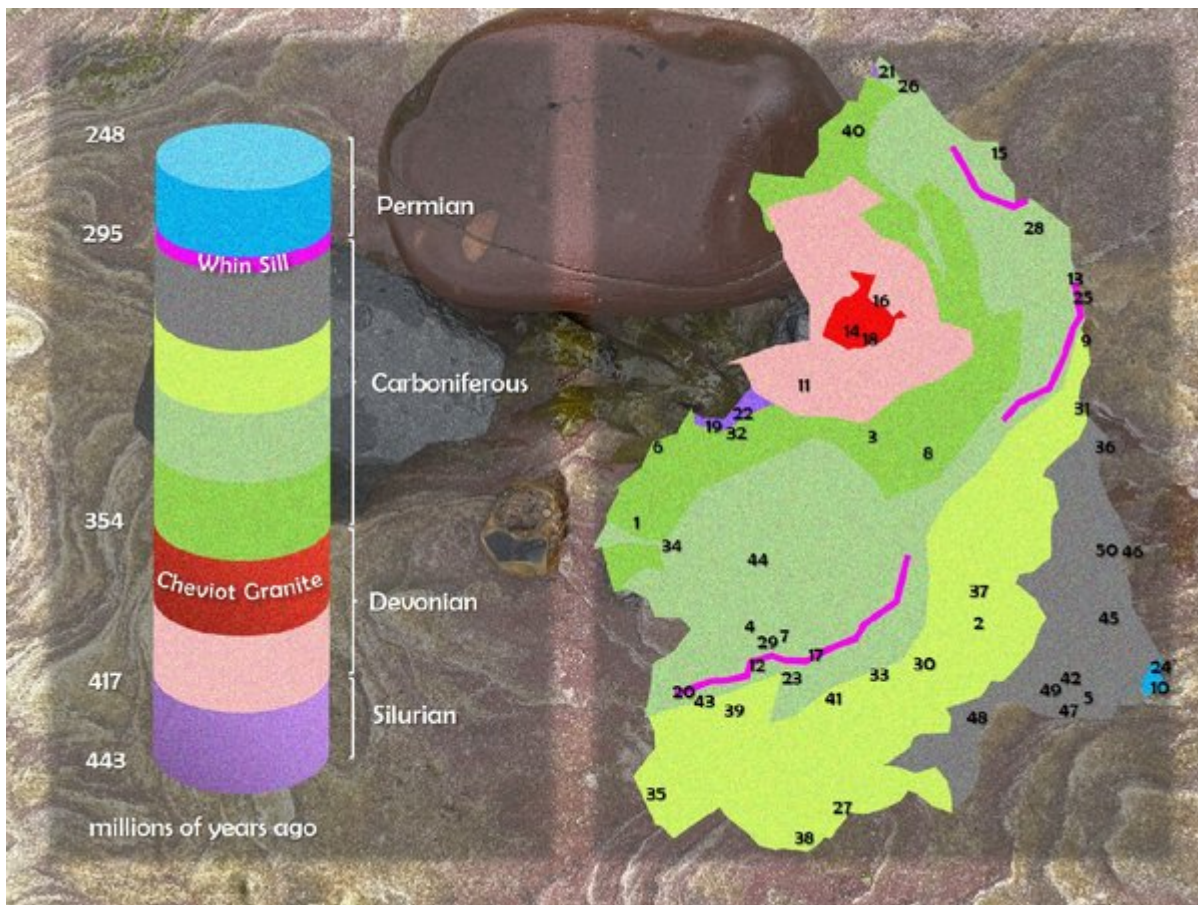
*(Photo 00-6) Snowy scene, Peel Crag in the centre.*



*(Photo 00-7) Alwin valley.*



(Photo 00-8) 50 sites in 5 themes



(Photo 00-9) Northumberland's geology and location of sites.