Geological archives

In this section the various archival sources available to those who might wish to study, conserve or interpret geodiversity are considered under the headings 'Documentary Archives' and 'Materials Collections'.

Documentary archives

The literature sources listed here comprise the most comprehensive and authoritative reviews and summaries of the geodiversity. References to the huge literature of more specific and detailed individual accounts and interpretations will be found in the references cited in these.

Of prime importance in considering the geology of any part of Great Britain is the huge volume of descriptive and interpretative information, both published and unpublished, available from the British Geological Survey (BGS). The principal sources of BGS information relevant to the AONB are considered below, before commenting on other major data sources.

The British Geological Survey

The British Geological Survey (BGS) has an incomparable archive of information and materials collections relating to the North Pennines, dating back to the earliest years of geological mapping and research in this area in the final quarter of the 19th Century. The North Pennines has been a focus for studies by BGS (and its predecessors) over the succeeding years.

Information sources held by BGS include original field maps (field slips), published maps, memoirs, reports, open-file reports, borehole records, mine plans, fossils, rock samples, thin sections, hydrogeological, geochemical, geophysical and geotechnical data and photographs.

The following BGS publications provide information on the surface geology of the AONB:

Geological maps

The following BGS geological maps cover, or include, parts of the AONB. The can be viewed on the BGS Maps Portal

1:63 360 scale

Sheet 32, Barnard Castle, Solid and drift*, 1969; Solid with drift, 1969

1:50 000 scale

Sheet 18, Brampton, Solid geology, 1976; Solid and drift, 1980

Sheet 19, Hexham, Solid geology, 1975

Sheet 20, Newcastle upon Tyne, Solid and drift, 1992; Solid with drift, 1989

Sheet 24, Penrith, Solid and drift, 1974; Solid with drift, 1974

Sheet 25, Alston, Solid and drift, 1973

Sheet 26, Wolsingham, Solid and drift, 1977; Solid with drift, 1977

Sheet 31, Brough under Stainmore, Solid and drift, 1974; Solid with drift, 1974

Sheet 40, Kirkby Stephen, Solid and drift, 19

*Geological maps are produced in a variety of styles, appropriate to the area concerned.

'Solid' maps show only the solid (bedrock) geology in colour. Drift deposits may be omitted or shown only as uncoloured areas indicated by pecked lines; small drift areas may not be indicated.

'Solid and drift' maps show both the solid and the drift geology, merged to represent the surface geology. Geological lines and symbols for the surface outcrops of both solid and drift deposits are shown, but details of solid deposits that are overlain by drift are normally abridged.

'Solid with drift' maps also show the solid and drift geology; but the drift deposits are uncoloured or only have coloured outlines. The buried geological boundaries of the solid deposits occurring beneath the drift are shown in full.

1:10 000 and 1:10 560 scale

Details of the original geological surveys at these scales are listed on editions of the 1:50 000 or 1:63 360 scale geological sheets. Copies of the fair-drawn copies of earlier geological surveys may be consulted at BGS libraries at Edinburgh and Keyworth and at the BGS London Information Office in the Natural History Museum, South Kensington, London. Copies of these maps may be purchased directly from the British Geological Survey as black and white dyeline, Xerox or photographic copies.

BGS books and reports

Full details of the various BGS books, memoirs and reports relevant to the North Pennines are listed in the reference section. They can be viewed on the BGS Publication viewer and also the BGS text viewer

The following British Geological Survey Memoirs describe the geology of the North Pennines:

Brampton (Trotter and Hollingworth, 1932)

Newcastle upon Tyne (Mills and Holliday, 1998)

Penrith (Arthurton and Wadge, 1981)

Brough under Stainmore (Burgess and Holliday, 1979) Barnard Castle (Mills and Hull, 1976)

Geology of the Northern Pennine Orefield Vol. 1 Tyne to Stainmore (Second edition) (Dunham, 1990)

Geology of the Northern Pennine Orefield Vol. 2 Stainmore to Craven (Dunham and Wilson, 1985)

Details of more specialised geological information, including small scale maps, applied geological maps, geophysical maps, hydrogeological maps, groundwater vulnerability maps, and maps of geochemical data, available from the British Geological Survey, can be accessed on the BGS Web Home Page at https://www.bgs.ac.uk/

Soil Survey

Specialised information on soil character, properties and classification for the AONB may be obtained from publications of the Soil Survey of England and Wales, now the Soil Survey and Land Research Centre, www.silsoe.cranfield.ac.uk/nsri

Conserved and protected geological sites and features

Information on geological Sites of Scientific Interest (SSSIs) within the AONB is held by Natural England. Details may be obtained from Natural England. https://www.gov.uk/government/organisations/natural-england

Information on RIGS sites within the Cumbrian part of the AONB is held by Cumbria RIGS. Information on Local Geodiversity Sites is held by the county Wildlife Trusts though at the time of writing such sites are being reviewed.

Information on other geologically significant sites across North East England is held at the Great North Museum (formerly the Hancock Museum), Newcastle upon Tyne.

Information on Durham County geological sites is held by Durham County Council.

Mine plans

Centuries of metal mining in the AONB have produced a substantial legacy of mine plans and related records. These documents, which contain huge amounts of often unique geological information, are an important element in the area's geological heritage, and thus its geodiversity.

At present there is no central repository of metal mining information in the UK. Large and important collections of such records are known to be cared for by a number of organisations, though many original, and thus unique, mine plans and associated documents are known to be in private hands. These are often difficult or impossible to trace or access. Plans are unknown for many mines, even where they are believed to have been maintained during the life of the mine. Many plans are known to have been lost or destroyed.

The County Record Offices of Cumbria, Durham and Northumberland have the most significant collections of mining information relating to the AONB. Other bodies holding mine records are the North of England Institute of Mining and Mechanical Engineers, based in Newcastle, the Edinburgh office of the British Geological Survey and the Burton on Trent office of The Coal Authority.

Non-coal mining plans at BGS.

Materials collections

Significant collections of geological specimens from the AONB are mostly held by museums. Within northern England important collections of specimens derived from the AONB are held by the Great North Museum (formerly known as the Hancock Museum), (Newcastle upon Tyne); Sunderland Museum and Art Gallery; Tullie House Museum, (Carlisle); Killhope Lead Mining Museum, (Upper Weardale) and the Weardale Museum, (Ireshopeburn, Weardale). Beyond the region, extremely important collections are held by Great Britain's three national museums: the Natural History Museum (London): the National Museum of Wales (Cardiff) and the Royal Scottish Museum (Edinburgh). Significant collections of North Pennine specimens are also to be found in the Hunterian Museum (University of Glasgow); Manchester University Museum; Oxford University Museum and the Sedgwick Museum (University of Cambridge). In addition, important collections of North Pennine specimens are held by BGS and by the Department of Earth Sciences, University of Durham. There are also a few significant private collections of geological materials, mainly minerals, from the AONB, though these may be difficult to trace and access.

Full references