Managing geological specimen collecting: caves

This note has been written to help explain the guidance provided in TIN111. It explains the recommended management for collecting geological specimens from caves. In England over 400 km of cave passages are designated within geological Sites of Special Scientific Interest (SSSIs). The scientific and recreational exploration of caves reveals new information about cave extent and the development of the caves. However cavers, both scientists and recreational users, can all inadvertently damage cave features.

Understanding the potential collecting resource

The nature of the site

Caves are considered integrity sites as they are sensitive systems, which can be affected directly and indirectly by a range of processes. The cave formations or sediments which contain fossils are classed as finite as they are often very limited in extent.

The specimens themselves are often extremely fragile, meaning that the removal or damage of such material is likely to destroy the resource. Many cave systems also contain mineral veins which are of interest to collectors.

The process of exposure

Specimens can be exposed through the natural erosion of passage walls and floors. Specimen resources can also be revealed upon discovery of cave systems and passages by cave explorers.

The nature of collecting

Cave specimens are collected for their aesthetic and scientific value.

Fragile stalactites and stalagmites can be easily damaged both inadvertently and through collecting. © Mick Murphy

Ownership

Complex: a large cave system may lie under several landholdings.

The nature of the access

Access to geological specimens in caves is generally extremely limited to most collectors due to the unapproachable and potentially dangerous nature of underground systems.

The skills of collecting

Most speleothems, because of their fragile nature, and the importance of context, are best left *in situ,* although fossil finds may be removed with high skill and care.

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Due to their underground location, a high level of skill is required to find, identify and extract any material.

Research and museum collections

Caves contain a valuable network of features, including evidence of ancient rivers and streams, fossils and secondary deposits, and ancient sands and gravels that can give important information about evolutionary history and past climate change. They are of interest to geologists and archaeologists.

Many of these features can be studied *in situ,* although fossil bones are often removed for study and placed in museums.

Management issues and options

Caves are highly vulnerable to collecting due to the finite, non-renewable nature of the resource. However, given the low amount of collecting interest and the poor access to most cave systems, the collecting pressure is generally low.

Management of speleothems, karst features and cave sediment

The British Caving Association has developed the Cave Conservation Code (BCA, 2007) which encourages cavers to minimise intentional or unwitting damage to cave formations and sediments and to wildlife by considering the following:

- Cave with caution and within your own ability.
- Keep party size appropriate to the particular cave you are visiting.
- Observe and keep to taped routes.
- Do not touch formations or other delicate items (these are easily broken or muddied, they must never be touched).
- Keep away from bats and other life.
- Never dig without proper consent (sand/mud banks are valuable sources of information about the cave and its surroundings, and might also contain archaeological remains).
- Never interfere with scientific equipment.
- Leave no litter or pollution.
- Take nothing out of a cave.
- Take photographs with care.

Monitoring and progress

Due mostly to health and safety considerations, cave SSSIs are not routinely monitored by Natural England staff. Natural England are working in partnership with a number of caving groups including the Derbyshire Caving Association and the Council for Northern Caving Clubs who voluntarily provide information on the condition of caves and their associated features (Webb and others 2009).

Working together condition monitoring forms have been developed, showing the important cave features. Gathering the cave condition data requires close working relationships between Natural England staff and cavers and enables joint decisions to be made about future cave management.

Summary

Essentially, the approach generally adopted for collecting in caves is ‘Controlled’, where there is a clearly identified value to the cave resource (cave decoration, sediments and associated fossil fauna) and where access can be managed and those interested in the resource influenced. Where access to caves is more difficult to control and manage, an ‘Open-Managed’ approach is adopted. However, due to the fragile and limited nature of the resource, any collecting from caves should be carefully considered and usually allowed only for scientific research purposes.

Published guidance on cave conservation provides a generic context for collecting in caves and best practice advice of how to go about it but, fundamentally, permission should be sought to collect as the geological resource is

- Finite;
- Irreplaceable; and
- easily damaged.

The adopted management approach reflects the practicalities of how such guidance can be applied locally, on a site-by-site basis.

Further information

British Caving Association (BCA). 2007. *Cave Conservation Code*. URL: **www.british-caving.org.uk/?page=136** [Accessed March 2012].

Webb, D., Townley, H., Hinde, A. & Poll, J. 2009. Out of sight – but not out of mind. *Earth Heritage:* 32, 8-9.

Natural England Technical Information Notes are available to download from the Natural England website: **www.naturalengland.org.uk**. In particular see:

- TIN111: *Managing geological specimen collecting*
- TIN112: *Managing geological specimen collecting: responsible collecting*
- TIN114: *Managing geological specimen collecting: Charmouth case study*
- TIN115: *Managing geological specimen collecting: Fowlmead Country Park case study*
- TIN116: *Managing geological specimen collecting: rock coring*
- TIN117: *Managing geological specimen collecting: Whittlesey Brick Pits and King's Dyke Nature Reserve case study*
- TIN118: *Managing geological specimen collecting: Wren's Nest case study*
- TIN119: *Managing geological specimen collecting: Writhlington case study*
- TIN127: *Managing geological specimen collecting:Caldbeck Fells case study*

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail **enquiries@naturalengland.org.uk**.

Authors and acknowledgements

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Table 1 Summary of the management approaches taken within caves

Management approach taken	Open-Managed or Controlled approach
Benefits of chosen management approaches	**Open-Managed Approach:** • Cave conservation guidance aims to protect specimens from removal or damage; • Cave condition monitoring allows the state of caves to be measured and monitored for change; • Valuable specimens remain *in situ* for scientific study of formations and fossils in context; and • Recreational cavers and cave scientists are able to enjoy the specimens *in situ*. **Controlled Approach:** • Scientific research is actively encouraged for furthering palaeontological understanding of nationally important fossils; • Valuable specimens are excavated and stored according to good collecting practice; • The general public are able to view specimens *in situ* and in display centres/museums, furthering geological education; and • Where access is controllable, the very few irresponsible cavers/collectors can be excluded.
Drawbacks of chosen management approaches	**Open-Managed Approach:** • Assumes compliance with good practice codes by cavers; and • Difficult to exclude the known minority of irresponsible cavers. **Controlled Approach:** • Reliance on the responsibility of cavers to adhere to specific management practices; and • Few scientists (due to the caving skill required) are able to view *in situ* cave specimens.