

Managing geological specimen collecting: rock coring

This case study has been written to help explain how the guidance in TIN111 relates to rock coring. Rock coring is often used by researchers to extract small cylindrical samples from rock outcrops as part of palaeomagnetic or geochemical studies. This geological sampling method generally causes less lateral damage than hammering and is often out of sight to all but those closely examining an exposure. However, irresponsible coring can cause very unsightly scarring if care is not taken to core only from exposures out of direct view (Geologists' Association, 2011).

Understanding the geological resource

The nature of the site

Rock coring can occur at exposure, integrity or finite sites, depending on the sample material that is required for study.

Exposure sites contain features that are relatively extensive and / or are regularly exposed. Integrity sites are all geomorphological and damage to one part of the site may adversely affect the whole site. Finite sites contain features of interest that are limited in extent and therefore the removal of such material is likely to severely damage the resource.

The process of exposure

This depends on the location of the site.

The nature of the interest

Coring is usually undertaken for palaeomagnetic or geochemical research and it is the strata itself that is of interest. However, cores may be taken from rock known to contain important fossils and / or minerals and features of geomorphological interest may also be damaged.



A cluster of rock cores have been taken from cross bedded sandstone. No attempts have been made to refill the holes.
© David Evans

The nature of collecting

Coring is the mechanical extraction of core samples with the use of power tools and is undertaken by the scientific community for research.

It can damage finite features and is unsightly if undertaken carelessly or without restoring the core hole.

Managing geological specimen collecting: rock coring case study

Ownership

This has the potential to be complex, with potentially different landowners or site managers being involved in a site where coring occurs.

The nature of the access

Depending on access and ownership rights, many sites can be freely accessible to researchers at any time, with exposures of interest in open view.

The skills of collecting

A moderate to high level of skill is required when using power tools to extract cores and restore core holes.

Research and museum collections

Rock cores are sampled as an educational tool and for research, furthering scientific understanding of the geology and the environments in which the deposits were formed.

Management issues

Continuing scientific analysis of UK geology provided by coring is important to further our understanding, particularly regarding the environments in which the cored deposits were formed (often through palaeomagnetic studies). However, coring can permanently damage a geological feature of interest if taken from a finite or integrity resource. Also, coring can have serious visual impacts when the drill holes remain unsightly or are found within an area of landscape interest. The photographic quality of such sites can be effectively ruined. With this in mind, coring must be undertaken responsibly so that others can enjoy and learn from the exposures.

The Geologists' Association has established a Code of Conduct for Rock Coring (Geologists' Association, 2011). The code outlines good practice and asks for adherence to three main principles:

- **Take cores from the least exposed face(s).** Always avoid those most obviously visible when entering a quarry or approaching a natural exposure.

- **Take only the minimum number of cores necessary.** Avoid making closely spaced patterns which will attract undue attention. Avoid damage to structures and features important to geological interpretation.
- **Refill holes wherever possible.** Holes should be plugged or refilled with rock taken from fallen or loose blocks of the same material. Use a cement appropriate to the site and coloured to match the surrounding rocks.

Despite this widely accepted, good practice advice, examples of irresponsible coring have been observed throughout the UK.

The Carrock Fell area of the Lake District National Park has suffered significant damage in the past from rock coring used to sample the gabbro outcrops. The damage caused to the top of Carrock Fell poses additional concern as the site is a designated Scheduled Ancient Monument for its archaeological interest. Over 20 core holes were observed in exposures across the Fell during 2008 with no obvious attempt to fill them.

These incidents are not thought to occur frequently, but there are difficulties in preventing coring due to the extent of the site and its mostly unrestricted access. Regular patrolling by the Park rangers allows visual assessments to be made of the number of core holes and extent of damage caused by coring at targeted locations.

Further information

Geologists' Association. 2011. *A code of conduct for rock coring*. URL:

www.geologistsassociation.org.uk/download/S/GARockCoringGuide.pdf [Accessed March 2012].

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*

Managing geological specimen collecting: rock coring case study

- TIN113: *Managing geological specimen collecting: caves*
- TIN114: *Managing geological specimen collecting: Charmouth case study*
- TIN115: *Managing geological specimen collecting: Fowlmead Country Park case study*
- 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

Authors: Hannah Townley and Jonathan Larwood (Natural England). Case study information is based upon work by Jane Poole, Jenny Higgs and Kate Harris (Capita Symonds Ltd). We would like to thank all those who provided information for or comments on the case study examples. Editor Susie Smith.

Copyright

This note is published by Natural England under the Open Government Licence for public sector information. You are encouraged to use, and re-use, information subject to certain conditions. For details of the licence visit www.naturalengland.org.uk/copyright. If any information such as maps or data cannot be used commercially this will be made clear within the note.

© Natural England 2012

Table 1 Summary of the approach used to manage rock coring

| Management approach taken | Examples of Open-Managed collecting in England |
|--|---|
| Benefits of chosen management approaches | <ul style="list-style-type: none"> • Promotion of good practice through the code for rock coring aims to protect sites. |
| Drawbacks of chosen management approaches | <ul style="list-style-type: none"> • Assumes compliance with the coring codes by those undertaking coring; and • The area potentially exposed to coring is too large to feasibly and effectively control through wardening. |