

Managing geological specimen collecting: Whittlesey Brick Pits and King's Dyke Nature Reserve case study

This case study has been written to help explain the guidance provided in TIN111. It illustrates the management of fossil collecting in active and disused quarries. Whittlesey Brick Pits are in North Cambridgeshire and comprise a cluster of active, disused and restored clay pits and sand and gravel quarries, including the King's Dyke Nature Reserve; a Local Wildlife and Local Geological Site. Zoned management is used to help manage collecting.

Background

The calcareous, fossiliferous layers within the Oxford Clay are found at the base of the brick pit and material dug from drainage ditches at this level is used to supply the fossil collecting area within the Nature Reserve.

Middle Jurassic marine molluscs, reptiles and fish are found within the Oxford Clay. Quaternary age marine, estuarine and fluvial fossils from the Ipswichian Interglacial, together with the remains of large mammals, are found within the overlying gravels.

Understanding the fossil resource

The nature of the site

The site can be considered an exposure site as specimens are revealed by active quarry extraction.

The process of exposure

The quarry operator supplies a stockpile of fossiliferous clay material from the active pits to be used for fossil hunting in the Nature Reserve.



Fossil collecting from stockpiled material at King's Dyke.
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The rate of exposure is therefore predictable. The collecting area is replenished if there is a planned group visit and during the

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summer, when visits are more frequent. New material is brought in every couple of weeks.

A secondary area has also been established to ensure new supplies can be made when access is more difficult particularly in the winter when the clay is wet.

The nature of the interest

Fossils that are commonly identified within the Oxford Clay stockpiles include ammonites, belemnites and bivalves, reptile teeth, scales and occasional bones. The most impressive and rarer finds from within the active pits include the large fish *Leedsichthys*, several species of ichthyosaur, as well as plesiosaurs.

In the Quaternary March Gravels and River Terrace Gravels, scientifically important marine, estuarine and fluvial fossils have been found, along with remains of mammals such as mammoth and rhinoceros.

The nature of collecting

King's Dyke is a popular site amongst regular collectors, local school and geological groups and the general public, notably due to the active engagement of the mineral operator and their advisors with local schools and the public. Internet and media coverage of fossil finds has further increased visitor numbers.

Ownership

Straightforward: the site is wholly owned by a commercial minerals operator. An independent consultancy manages the Nature Reserve on their behalf.

The nature of the access

The Nature Reserve is open to the general public all year round through the use of a permit scheme.

Access to the active quarries is highly restricted, by arrangement only and is subject to strict health and safety measures due to its proximity to operational areas. Collection of important finds is managed by allowing access at times when working has ceased, such as at weekends.

The skills of collecting

Generally, a low level of skill is required to find and extract fossils from the stockpiled material in the fossil hunting area. Amateur collectors are actively encouraged to take their more common finds off site.

The collection of important marine vertebrates and fish from the active brick pits and Quaternary age fossils from the active quarries requires greater skill to ensure that these rarer specimens are not damaged during extraction.

Research and museum collections

Significant finds are usually offered to local museums, mainly Peterborough Museum. The Nature Reserve manager has noted that other finds are often displayed on fossil collecting websites.

Management options and issues

Zoned Management is in operation at Whittlesey Brick Pits, which complements the varying collection pressures and threats that exist on the site.

At King's Dyke Nature Reserve, a relatively high collecting pressure exists due to the continued interest by local schools and the general public. However, the current threat to the fossil resource is generally considered low as a result of regular replenishment of the fossil hunting stockpile by the mineral operator. Once quarrying ceases, the fossil collecting resource would ultimately become finite and supply will be dependent on the nature of post quarrying after-use.

Access to the active quarries is limited for the general public. Fossils and mammal remains within the Oxford Clay, March Gravels and River Terrace Deposits are identified by quarry workers, who have been made aware of their importance. Palaeontological experts are informed and significant finds are usually offered to local museums. Therefore in comparison to the nature reserve, the collecting pressure here is low and whilst the current threat to the resource could be considered high due to the

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active nature of the site, the fossils that are identified would not be found without extraction.

There are significant health and safety risks associated with entering the active quarries and collecting directly from working faces, which need to be addressed as part of collecting management.

Selecting the management approach for the Nature Reserve

The restoration of the Nature Reserve was designed with the help of local schools and consultation was undertaken to ensure that it would provide relevant experiences and activities. Visiting school groups are largely supervised by an independent nature conservation advisor with a primary interest in landscape and ecology. A geological expert is only present on the site during the Peterborough Green Festival when local geological experts provide support.

Access to the Nature Reserve is available to the general public, but is controlled by a permitting scheme. This 'Open-Managed Collecting' approach allows applicants to access the Reserve at any time, but requires holders to observe the 'Nature Reserve Code of Conduct'. The Code does not specifically include good fossil collecting practice, but members are asked to respect the boundaries of the site and not to cross fences into the working areas of the quarry, on health and safety grounds.

It is not viable to constantly 'police' the site. The most effective way of managing collecting is through co-operation and understanding between the landowner and collectors through clear communication of acceptable behaviour.

In contrast, 'Controlled Collecting' management is used in the active quarries as access is highly restricted and by arrangement only. However, there has been at least one incident of theft of a significant find from the active quarries and trespassers have been known to make their way from the Nature Reserve into the active part of the site in order to collect fossils.

Monitoring and progress

The managers at the Nature Reserve record, through photographs, the most interesting finds before the specimens are taken off site, principally to local museums. The Nature Reserve also has a Facebook site, which allows regular sharing of information – this is mainly focused on wildlife sightings but provides the opportunity for people to share information about their fossil finds.

Steps are taken to manage unsolicited collecting (particularly Quaternary vertebrate fossils which can be more vulnerable) with the brick pits and overlying gravels made as secure as possible whilst still allowing open access to the Nature Reserve.

Further information

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*
- TIN113: *Managing geological specimen collecting: caves*
- 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*
- 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.

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Table 1 Summary of the management approaches taken at Whittlesey and King’s Dyke

Management approach taken	A combination of open-managed and controlled-collecting approaches
Benefits of chosen management approaches	<ul style="list-style-type: none"> • Fossil collecting is encouraged leading to wider appreciation of the science; • Zoned management allows for a balance between restricted access in areas of risk to the public and open access through the use of a permitting scheme within the nature reserve; and • Meets the environmental and public relations aims of the landowner.
Drawbacks of chosen management approaches	<ul style="list-style-type: none"> • Inability to monitor all visitors, potentially increasing the threat to persons and the rarer fossil resource; and • The Nature Reserve Code of Conduct could cover fossil collecting issues.
Current monitoring situation	<ul style="list-style-type: none"> • Significant finds are photographed by staff on site before they are released to local museums. The King’s Dyke Nature Reserve manager actively encourages feedback from visitors; what has been seen, and what has been collected, is of particular interest.