



## ***Natural England update on the research at Water Icicle Close Cavern in Lathkill Dale (SSSI)***

This is an update on the current research being undertaken at Water Icicle Close Cavern (WICC) in the new passage extensions and an assessment of current access arrangements.

It is a legal duty under the Wildlife & Countryside Act 1981 (as amended) that Natural England ensures that these new and important scientific findings, located within a statutory site (Site of Special Scientific Interest or SSSI) are maintained, available for study and in good condition. This is the reason the current access arrangements were put in place by Orpheus Caving Club (OCC) after the initial discovery.

**The discovery of this new passage in the Water Icicle System should not be underestimated in its importance both nationally and possibly internationally. This information is intended to give you a greater understanding of the need to protect such an important environment.**

OCC have organised an effective leadership system which safeguards important features within this new section of the cave and this is working well to maintain and conserve these fragile features, whilst research is being carried out. The features are only in such pristine condition as a result of the immediate implementation of conservation measures by the explorers. The most recent visit by scientists was on 29 January 2011 and all parties were extremely impressed by its new features and how well they had been protected.

### **Importance of the discovered features**

Water Icicle Cave is a natural cave that lies more than 80 metres above the present day river system. Its presence, together with small high level caves on the flanks of Lathkill Dale, suggests that there was once an extensive network of high level phreatic caves of which little is known. The age of these caves is uncertain but the recent discovery suggests that the system in WICC drained over a million years ago and may even be pre-Quaternary (greater than 2.6 million years old). A substantial stream has brought in clastic (rock fragment) sediment deposits the source of which is unknown as there are no stream-sinks within several kilometres of the cave.

The original part of the cave was designated as a SSSI for the shape and development of the passages (passage morphology), its important stalactite/stalagmite/flowstone deposits (speleothems) and sediment deposits. The newly discovered section of cave remains within the designated SSSI boundary

The sediment deposits found in the new passages are not only fascinating but the fact that they are so unaffected by human activity gives us the opportunity to study their origins. Initial examination of clasts within the deposits suggests they contain rocks that are not normally found in the Peak District. Various samples of material were collected on 29 January 2011 and work is in progress to determine their origins and whether they were transported to the Peak District by water, air or ice.

A sample was also collected of the flowstone over the top of the sediment and this is being prepared for uranium-series dating to determine its age. The sediment beneath this cap is even older.

The new passages contain broken speleothem material which is suggestive of at least one tectonic (earthquake-like) event, so studying these samples may enable us to date such episodes. Again, samples have been removed and are being prepared for uranium-series dating.

The interrelationship of the flowstone & sediment deposits will help reveal the story of geological events not only in the cave itself but also in the wider context of cave development in Derbyshire.



In addition to the deposits described above an unusual clast was found to be embedded in the limestone which appeared to be of volcanic origin, possibly a basalt bomb. As the nearest known volcanic activity occurred at Calton Hill above Chelmorton, a distance of approximately five miles away from WICC, samples of this clast were also taken for microscopic analysis. The implications, should the analysis prove positive and bearing in mind that thirty metres of limestone have been deposited on top of it, are of considerable significance in the understanding of the area's geological past.

### **Current and future access arrangements**

The restriction and control of visitor numbers at the current time is essential to keep the features in good condition in line with SSSI legislation.

Natural England has agreed with members of Orpheus and Derbyshire Caving Association (DCA) that the access arrangements will be reviewed on a regular basis and an update provided on the progress and timescales for scientific study. Consideration will be given to the relaxation of current restrictions as long as they continue to provide protection of the sensitive scientific interest.

We appreciate that many people wish to see these new discoveries and that they will now understand the need for the current limited access.

Access can be arranged through the Orpheus Caving Club website at:

[www.orpheuscavingclub.org.uk/watericycle.html](http://www.orpheuscavingclub.org.uk/watericycle.html).

Any queries regarding the above information can be directed to:

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