ARIO CAVES PROJECT EXPEDITION TO TORCA DEL REGALLON (C4)

28th August – 17th September 2016

Expedition members: Mike Bottomley (leader), Steph Dwyer, Phil Baker, Dave Ottewell, Helen Blyth, David Rose, Paul Mackrill, Martin Hoff, Richard Cole, Callum Braithwaite, Richard Gregson, Sara Gregson, Paul Diffley, Sarah Payne, Tom Chapman, Martin Holroyd, Sarah Holman, Matt Selkirk, John Worden, Sharon McDonald, Duncan Simey, Miri Pihlaja, Adam Prior, Shane McKinley

Summary

With a slightly larger team than last year and just under 3 weeks in the field, the expedition was successful in the following:

- Finishing the bolt climb of the upstream waterfall (30 m) to gain the continuation of the upstream master cave. In total, over 300 m of cave was explored (~270 m surveyed) with excellent prospects for further exploration.

- Further progress at the downstream sump (*Special Agent Sea*), where an arch was passed at approximately 30 m depth and 80 m of line laid in a large, ascending tunnel. Unfortunately, a technical issue forced a return to base and this was the only dive achieved during the expedition. However, the passage is ongoing and we are confident of a connection with 2/7 on the next expedition. A total of 130 m of line has now been laid in the sump.

- A bolt climb started close to the downstream sump, where the presence of a phreatic tunnel in the roof and increase of the draught warranted further investigation. A ~15 m bolt climb and ~20 m traverse gained an alcove below some interesting holes in the passage above. These warrant further investigation and will be a simple bolt climb to gain during the next expedition, with the hope being a high-level sump bypass to 2/7.

- Revisiting a number of sites, such as 13/9, many of which were explored to snowplugs 20 – 30 years ago, but which warranted a second look given decreasing snow levels.

In summary, this was a very successful expedition, with significant advances made both upstream towards some of the highest feeders to the Verdelluenga-2/7-Culiembro system, and downstream towards 2/7.

Background

The Ario Caves Project is a continuation of 50 years of Oxford University Cave Club's exploration in the Massif Occidental of the Picos de Europa, and whose primary aim is to facilitate and further the exploration of caves associated with the Vega de Ario and the hydrology of Cueva Culiembro. The goal is ultimately of yielding a super deep system in excess of 1,800 m. This would be the deepest in Europe and one of the deeper caves of the world. The scientific justification for this super deep system comes from the culmination of many years of exploration, surveying, geological studies, shaft bashing, careful GPS documentation and dye tracing. This work has uncovered many systems which, in their own right, range in depth from several hundred metres to > 1,000 m (namely C3-C4, 2/7, Xitu and Culiembro). Connecting these up is now a very real possibility, with the Verdelluenga system heading upstream into 'blank space' and the downstream end separated from upstream 2/7 by what should be a short sump. Downstream 2/7 currently ends at an enormous boulder choke – *Choke Egbert* – beyond which the main streamway appears from survey data to drop rapidly in depth over a short

distance to the furthest explored point in Cueva Culiembro. The focus of the 2016 expedition was Torca del Regallon (C4), which was first explored in 1996 and 1997 and which drops into a major streamway – *Underground Overdrive*, believed to be the upstream continuation of the master cave found in 2/7 and which drains to Cueva Culiembro. The two major leads comprise the downstream sump (*Special Agent Sea*) suggested from surveys to be ~30 m from upstream 2/7, and a waterfall terminating upstream *Underground Overdrive*. Both of these leads were pushed during the 2015 expedition, with the waterfall climbed for 25 m and the sump dived for 50 m, both leads still ongoing.

Upstream waterfall climb

The climb at the upstream waterfall was completed by Tom Chapman and Martin Holroyd to gain the upstream continuation of the main streamway (*Underground Hyperdrive*). A high, narrow, jagged rift streamway led to a junction after approximately 20 m. Right at the main junction continued as a traverse in the streamway, past a large inlet on the right which issues the bulk of the water in the upstream passages, before arriving in a large and impressive chamber (*The Sanctuary*) with a 26 m high waterfall inlet and estimated 100 m aven entering in the corner. A subsequent trip by Mike Bottomley, Steph Dwyer and Duncan Simey passed a narrow rift on the left at the 20 m junction to gain a more spacious streamway which led after around 160 m of pleasant passage to a large waterfall chamber. This marks the current limit of this inlet, the end of which is about 350 m horizontally and 150 m vertically from the end of F64 – a ~450 m deep pothole explored by OUCC back in the 90s. The main inlet mentioned above needed enlarging to enter a narrow rift which became too-tight after around 30 – 40 m. However, the powerful draught and sound of roaring water ahead are encouraging and more work must be done here to try and find a way over the top. The new chamber (*The Sanctuary*) will be an excellent base for further explorations of the new upstream series.

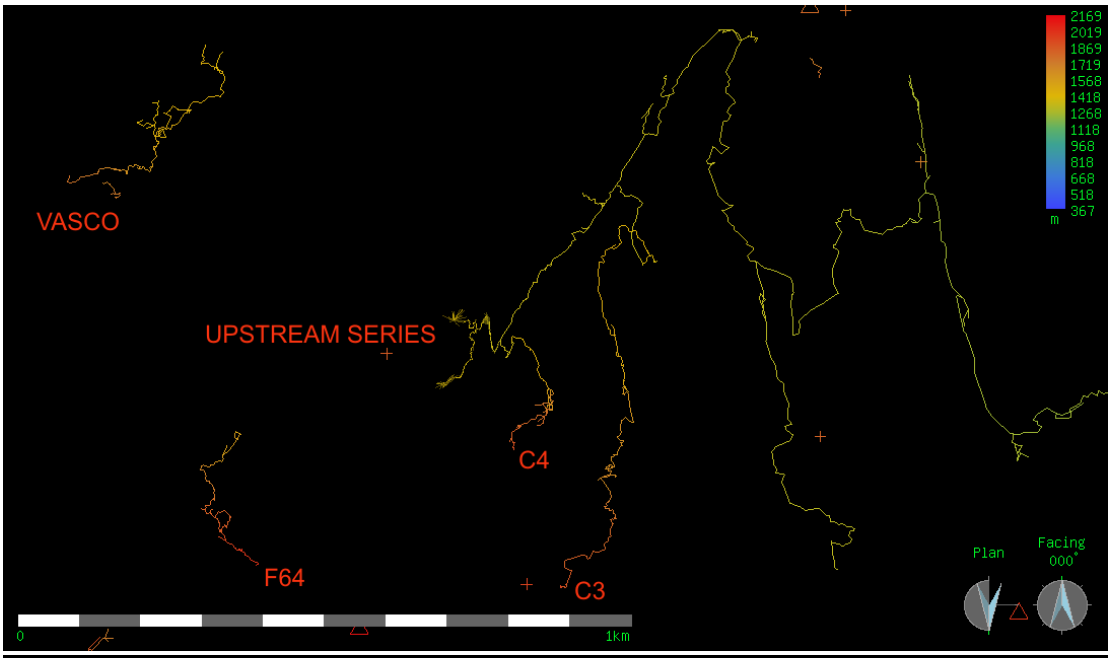

Plate 1 –*Survey of the new upstream extensions – Underground Hyperdrive – joined on to the main OUCC survey of the Verdelluenga – 2/7 system (drawn and compiled by D Simey).*

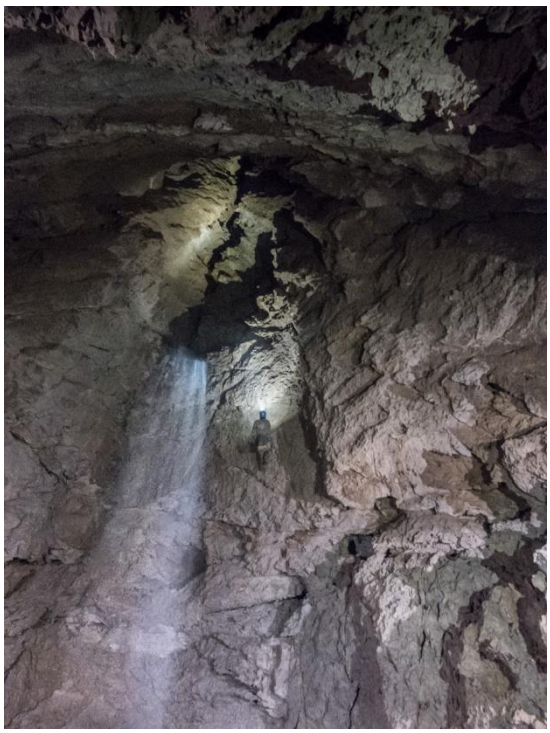
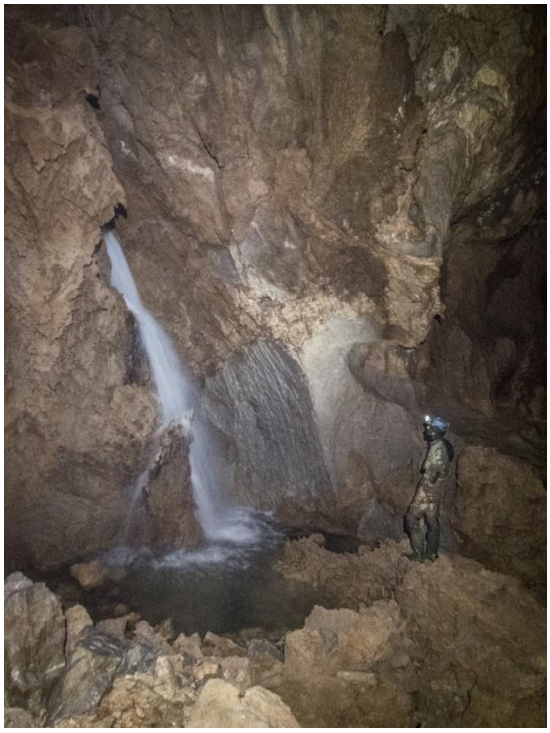

Plate 2 – *upstream waterfall climb (left) and current limit of inlet heading towards F64 (Photos: Duncan Simey)*

Diving Special Agent Sea & climbing in Underground Overdrive

A further 80 m of line was laid in the downstream sump by Paul Mackrill before a technical issue forced a return to base. The dive involved passing under an arch at ~ 30 m depth to gain a large ascending passage floored with thick sand and silt deposits. The depth at the limit of exploration was 16 m with the way on wide open. As well as the dive, a climb was started to investigate a phreatic roof tube roughly 150 m before the sump, which is still ongoing, with the current limit less than 10 m below some interesting holes and indentations in the wall above. The interest in this area of the main streamway centres on an increase of the draught and possible high-level sump bypass to 2/7.


Plate 3 – *Paul Mackrill preparing to dive (left) and disappearing into Special Agent Sea (Photos: Paul Diffley)*