Cave divers face Aliens in Olwolgin Cave!

ASF cave divers led by Paul Hosie dive, explore and map yet another classic West Australian cave. In this article Paul shares with us his experiences of visiting stunning submerged passages, an alien world filled with troglobitic fauna, bizarre bacterial colonies and amazing hanging tree roots.

Olwolgin Cave — Roe Plains, Nullarbor WA By Paul Hosie (WASG)

Olwolgin Cave is one of the recently discovered diveable caves on the Roe Plains south of Madura. The water table is only 10m below the surface, the horizontal passage development is very extensive and has been likened to that of the Yucatan Peninsula in Mexico where the world's longest underwater cave systems are to be found.

Olwolgin Cave is very special as it has features that make it a unique Australian diving experience – the hanging root 'formations', bacterial colonies and extensive troglobitic fauna communities; all distributed over 2km of intersecting network passages with a stunning variety of passage shape, sizes and forms. The last visit to the cave in Jan 05 closed out several leads, added another 100m to the survey and collected more troglobitic fauna from a noxious 'air' chamber called Babylon Lake, deep within the cave system.

Exploration

The double doline of 6N1951-2 was spotted from the air by Max Hall [sic] of CEGSA during 2001. Dry cavers from ISS, CEGSA and WASG visited the cave that year and the first ASF cave divers visited in



January 2002. Realising the cave was a significant discovery, it was named Olwolgin after a bluff on the nearby escarpment. Cave diver Andrew Nelson and the author explored and mapped over 1.3km of passages on a long weekend trip from Perth in February 2002. Heavy rainfall in the area during winter 2002 prevented further work at that time, but subsequent visits in 2003 and 2004 by ASF cave divers have extended a number of leads and established several lengthy underwater circuits within the cave. As at February 2005, the cave has over 2.0km of surveyed underwater passages.

During the ASF visit led by Paul Boler (NHVSS) in 2004, several important discoveries were made including the fauna of Babylon Lake and at least six excellent leads. These leads were followed up and the remaining passages surveyed during a one week visit to the cave in July 2004 by cave diver Alan Polini (WASG) and the author. Many new passages were explored and surveyed during this trip, video footage taken and fauna was collected for analysis by the WA Museum.

During this time the line in the cave was prepared for subsequent divers and signs were placed in the cave to help protect the amazing hanging roots (some hang up to 3m below the surface). What has been done is effectively underwater track marking with the signs requesting divers stay directly above the line whilst traversing past the hanging roots. The line has been placed such that divers exhaust air does not disrupt the hanging roots. Although there is no doubt the signs are ugly and distract from the cave's natural beauty, they are considered a necessary evil to assist in minimising impact to the hanging roots which are very fragile and if inadvertently destroyed, may take decades to re-grow to their current dimensions. More signs still need to be placed to complete this task.

The most recent visit to the cave in January 2005 closed out several leads and completed taking video footage as well as still photography, by cave diving underwater photographer Peter Rogers (CEGSA). There are still some leads in the cave that need to be pushed and surveyed as well as a couple hundred metres of unsurveyed passages. Cross connections made within the cave enable some very lengthy circuit dives to be made, the longest of which is approximately a 900m round trip with only the first 30m being repeated during the entire dive. Even doing this will only allow a diver to see less than half of the cave !

Mapping

The cave has been mapped using line knotted at 3m intervals and compass bearings within 3 degrees. The accuracy of the survey was established as within 5% by Ken Smith (CEGSA) in 2004. This was done using the 'Pinger' magnetic loop direction finding equipment and averaged GPS readings for eight different points within the cave. The use of the Pingers has been applied extensively for mapping Australia's current longest underwater cave system – Tank Cave near Mount Gambier in South Australia. More work remains to be done but mapping is largely completed with an estimated 40 dive-hours spent in the cave so far gathering the data that has been used to construct the current map.

Foul Air

It was realised that the atmosphere in Babylon Lake was not breathable on the first visit there. The air was taste tested and the metallic taste indicates that there are very high levels of carbon dioxide (CO_2). There may also be a high level of hydrogen sulphide (H_2S) and a low concentration of Oxygen (O_2). The results of, or intentions to conduct atmosphere monitoring at 'air' chambers in Olwolgin Cave and others on the Roe Plains will be very interesting and should be communicated through whatever means possible to other cave divers visiting the area.

Divers attempting to remove their facemask or breathe the atmosphere in Babylon Lake will probably experience excruciating pain followed by less desirable effects! Exposure to high concentrations of H2S can cause death from breathing and poisoning by absorption through the skin. It is strongly recommended that divers do not remain on the surface of Babylon Lake for any longer than necessary and that facemasks and regulators are never removed whilst there.

Fauna

Amphipods were sighted in the entrance lake and collected for the WA Museum under special permit during the first visits to the cave. It was only in 2004 that the fauna population of Babylon Lake was noted. Specimens of cockroaches, centipedes and amphipods have been collected for identification by the WA Museum. It is suspected that there may be species new to science in Olwolgin Cave but it will take time for the experts to do the identification work needed to show this. What was believed to be a millipede was collected on the last trip but early indications are that it is in fact a member of an unusual family of centipedes - very fine (body diameter 2mm), long (approx 70mm) and pure white. Nearby Burnabbie Cave has proven to be a richer fauna site than Olwolgin with a new genus of Gnaphosid (Naff-O-sid) spider being collected by Sara Zylinski (WASG) in 2004 (see update at end of this article for latest diving discoveries in Burnabbie Cave).



Olwolgin Cave entrance.



Paul Hosie and Alan Polini after a big dive in Olwolgin!





Diving Recommendations

It will take several very long dives to safely visit all parts of the cave within the thirds limitation imposed on all cave divers. All diving in the cave has to be done using side-mounted tanks as the restrictions between the entrance and the Main Conduit are too low to enable diving with back mounted tank configurations. Recommended cylinder sizes are 7ltrs for the near reaches of the cave (ie Sculpted Parallels, Alien World) and 10-12ltrs for comfortably visiting the furthest reaches (ie Pillar Room, Nest of Avens, The Basement & Catacombs).

The maximum depth is -13.5m which tends to be low flat silty rooms and tunnels. The average depth is -7m as this is where the horizontal dissolution is occurring although there are a number of different levels of dissolution identified from -3m down to -12m. Severe haloclines within the cave do cause visual distortions and blurred vision which makes taking photographs and video footage



quite challenging! One often sees a yellow or green discolouration in the water throughout the cave. Worthwhile features within the cave to set as dive

The Hanging Gardens / Babylon Lake (main line

The Pillar Room (two jump reels from line end) The Basement (one jump reel, access from 4-Ways) Catacombs (two jump reels plus a 90m exploration reel to look down the side passages, access from 4-Wavs)

Nest of Avens (one 90m reel to right from Big Junction)

Alien World (one jump reel from Main Conduit) Sculpted Parallels (250m of line from Tag1 to 4-Wavs)

More Information – Maps and Video

More information, including trip reports, full development maps and photos are available at www.trimixdivers.com and will be available through the ASF-CDG section of the ASF website at www.caves.org.au when this is fully established. The cave has been fully video'd by cave divers Paul Boler, Alan Polini and the author. Copies of the edited footage on DVD can be purchased through the trimixdivers website.

Olwolgin is a fantastic cave to dive because it is so extensive and complicated. It is possible that the cave is much more extensive than what is currently known and the effort over the next year or two will be to complete the underwater track marking, push and survey the leads as well as conducting gas analysis of the noxious air chambers. Anyone wishing to join in and assist with this effort is invited to contact the author via the trimixdivers website.

Burnabbie Cave Update

Following several push dives conducted in January 2005, Burnabbie Cave has up to 2.5km of passages (2.2km surveyed) which makes Burnabbie the third longest underwater cave on the Nullarbor and the fourth longest in Australia. The furthest penetration distance in the cave was extended by 170m and continues in the same direction following a trending faultline. The maximum penetration distance in Burnabbie Cave is currently 940m and this will be extended again using sidemounts and staged cylinders OR sidemounted closed circuit rebreathers during 2005. Stay tuned!