CAVES AUSTRALIA

The Journal of the Australian Speleological Federation

Chasing Bat Calls on the Nullarbor
The Big Hole, Northern Territory
Diving in Exit Cave, Tasmania

No. 196 • MARCH 2014

COMING EVENTS

This list covers events of interest to anyone seriously interested in caves and karst. The list is just that: if you want further information the contact details for each event are included in the list for you to contact directly. A more extensive list was published in the last ESpeleo. The relevant websites and details of other international and regional events may be listed on the UIS/IUS website http:///www.uis-speleo.org/ or on the ASF website http://www.caves.org. au. For international events, the Chair of International Commission (Nicholas White, nicholaswhite@netspace.net.au) may have extra information. This looks like a very busy 2014 and do not forget the ASF conference in Exmouth in mid 2015. I hope we have time to go caving!

2014

May & June

ASF Vertical Training Course *May 10* Personal rope skills – St Ives, Sydney; *May 17 & 18:* Vertical rescue 'theory' skills – St Ives, Sydney; *June 14 & 15:* Vertical rescue 'practical' Bungonia National Park. For details contact Joe Sydney ASF/NSW Training Officer (Highland Caving Group) jsydney@choice.com.au phoneW: 02 9577 3361 M: 0405 039 398. Registration closes Monday April 28th: there are limited places available.

May 4—7

Yarrangobilly Cave Guides Conference: more details soon.

May 9 —11

ACKMA AGM: Yarrangobilly more details soon.

June 11—14

Karst without Boundaries Trebinje (Bosnia & Herzegovina). Organised in the framework of the UNESCO-GEF project 'Protection and Sustainable Use of the Dinaric Karst Transboundary Aquifer System (DIKTAS)'. The conference will be preceded by a summer school course and a field seminar 'Characterization and Engineering of Karst Aquifers'. For further information see the conference website http://www.karstwithoutboundaries2014.org/en

June 16—20

22nd International Karstological School 'CLASSICAL KARST': Karst and microorganisms, Postojna, Slovenia. Registration is possible only online and will be open from 15 February until 30 April 2014. More information is available at <http://iks.zrc-sazu.si>

August 17—22

International Workshop on Ice Caves (IWIC): Idaho Falls, Idaho, USA. A series of workshops devoted entirely to ice cave research. For details see http://www.iwic-vi.org/index.html.

September 29—October 2

Climate Change — the Karst Record 7 (KR7) Melbourne. This international conference at the University of Melbourne will showcase the latest research from specialists investigating past climate records from speleothems and cave sediments. Pre and post field trips to karst regions of eastern Australia and northern New Zealand. Workshops on karst hydrology, spelothem petrography, geochronology and geochemistry. Details expected soon.

October 4

Selwyn Symposium, Melbourne. This is a one day symposium organised by the Geological Society of Australia (Victoria Division). It is currently planned that this will be on the geology of the Nullarbor with some emphasis on the karst geology. For further information contact Susan White <susanqwhite@netspace.net.au>.

October 13—16

5th International Symposium on Karst — SIKA Málaga Spain. For additional information and registration: http://cehiuma.uma.es/en/sika2014.asp

November 2—8

7th International Show Caves Association (ISCA) Congress: Jenolan. The theme of the Congress will be 'The Challenge of Sustainably Showing Caves on the 21st Century'. Details should be available soon.

2015

May

ACKMA Conference, Naracoorte, SA. Details available as soon as possible.

June 21 - 26

Ningaloo Underground — 30th ASF Conference: Exmouth, Western Australia. Escape the southern winter (or the northern hemisphere) to enjoy a packed conference program and explore range, reef and gorges with the benefit of local knowledge (always a plus).

30th ASF Conference
Exmouth, Western Australia
21—26 June 2015

Get underground and underwater with us in 2015

- Escape the southern winter (or the northern hemisphere) to enjoy a packed conference program and explore Range, Reef and Gorges with the benefit of local knowledge (always a plus).
- Explore range, reef and gorges
- Survive an encounter with *Draculoides brooksii*
- Snorkel over the reef straight off the beach
- Eyeball a blind gudgeon fish
- Cavort with a whale shark
- Hunt for new caves while camping on the top of the range
- Learn why Ningaloo Reef and Cape Range were declared a World Heritage Area
- Improve your SRT skills in the multi-pitch caves
- Camp on the top of the range for pre- and post-conference caving and have a real chance of finding a new cave

Contact Darren for more info: dbrooks@westnet.com.au

Save the dates and spread the word

Correction

RECENTLY I was in contact with Albert Goede of Southern Tasmanian Caveneers (STC) on a matter relating to the karst at Eugenana, when Albert brought to my attention an error I made regarding no megafauna being discovered in the southern parts of Tasmania in the article on Scotchtown Cave (Wylie 2013 p. 20).

There have been megafauna species found in numerous caves in the southern parts of the state; one of those caves, Titans Shelter (JF97), resulted in a broad range of species being unearthed, and what was discovered is well documented (Cosgrove *et al.* 2010) with references to earlier finds by Albert and fellow authors.

I thank Albert for bringing this to my attention so I could correct this for the records.

REFERENCES

Cosgrove, R., Field. J., Garvey, J., Brenner-Coltrain., Goede, A., Charles, B., Wroe, S., Pike-Tay, A., Grun, R., Aubert, M., Lees, W. and O'Connell, J. 2010. Overdone overkill — the archaeological perspective on Tasmanian megafaunal extinctions. *Journal of Archaeological Science,* 37(10): 2486-2503.

Wylie, John. 2013. Scotchtown Cave, North-west Tasmania. The discovery of Tasmania's first cave with an assemblage of megafauna. *Caves Australia* 195:20 – 25.

—John Wylie

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ASF

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Cover: Grant Pearce heading home to the entrance of downstream Olwolgin. Photo by Liz Rogers

ASF Executive

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Vice President:	Jim Crockett
Vice President:	Phil Maynard
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CAVES AUSTRALIA

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Notify us immediately of any address changes to ensure delivery of your *Caves Australia*.

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WANTED
ARTICLES FOR *CAVES AUSTRALIA!*

Whether caving, cave diving or generally just caving, *Caves Australia* readers are interested in YOUR story. It is only with YOUR contribution that we can produce a quality magazine for all to enjoy. For writing and style guidelines, contact the Editor or Production Manager for further information.

EDITORIAL

WELCOME to *Caves Australia* 196, the first of our four issues for 2014. The articles printed here will give food for thought to cavers.

Caving costs are examined in two articles: one looking at general costs and insurance; the other the merits of electronic distribution of this magazine. The mathematics presented for a digital issue seem convincing: please look through the article and discuss it with your caving buddies. If you have a viewpoint please contact one of the editorial team. Remember — this is your magazine and your money!

Locally, in Orange, NSW, the oft mooted proposal to build a Needles dam has resurfaced. This dam would flood almost all of Cliefden Caves and submerge Fossil Hill. In the 1970s much of OSS energy (and ASF energy as well) went into fighting a similar proposal; at that time pursued as a water supply for the (not realised) Bathurst-Orange Growth Centre. This time the grail is the employment of retrenched workers from a closing-down Electrolux, provision of water for mining (Newcrest is nearby) and agricultural use.

A struggle looms.

Dear Editor

In *Caves Australia* 194, September 2013, there is an article on why I received the Edie Smith Award in 2011.

The award was greatly appreciated and I am proud to have been a recipient.

Thank you to Bob Kershaw for following up on the citation and to all those that helped with the content.

However, when many people contribute information going back decades, small mistakes can occur. I would like, therefore, to correct one inaccuracy.

It states that "... being one of the first Australian cavers to attend the French Speleo Secours Francais cave rescue course".

It was Joe Sydney and some others who attended a Speleo Secours Francais course and not myself.

Again, the award was very much appreciated.

Best Regards
Mike Lake
October 2013

President's Report

THE SUMMER of 2014 is here and making its presence felt and thus making me dream (not at work though) of the stillness and coolness of countless subterranean passages awaiting discovery and willing to reveal wonders to my first penetrating torchlight.

I daresay we have all survived the longer than normal sequence of Public Holidays and indulgences and consequently found that last year's cave passages seem that little bit tighter to negotiate.

2013 provided ASF first with a tremendous challenge for the future with a commitment to host the 17th UIS Congress in 2017, second, a chance to take stock of our current standing in the near and far areas we influence and explore and last but not least, to remember the enduring foundations laid by our decreasing number of senior troglophiles.

It was good to meet all in attendance at the Council meeting held at Bankstown on the 4th of January where we met to report, discuss and plan some of the operational and functional components of ASF. From the chair I observe many aspects of the ASF that run smoothly in a professional and efficient manner and I see the continuing trend that the business and details discussed are accepted and actioned with minimal disagreement and issues voted on with maximal affirmative support. I conclude that all member clubs share the common goals of ASF and concur together for the most positive outcomes and directions to take.

This year will see changes in the planning and accomplishment of goals and directions that the ASF has committed to. You will hear a lot about what ASF will want to achieve in the next few years leading up to the middle of 2017.

The next three years will be a time in which some of us will emerge and reveal skills and talents we have underestimated and overlooked.

We will see and feel the energy levels of fellow cavers pulse as tasks are revealed and

begun. Those of us who have been committed to the running of local clubs and investigating familiar karst areas with familiar mates will rise to the challenge of becoming the centre of attention as we start to plan the ultimate showcase of what we do underground, Downunder. Extensive planning has begun and will continue to guarantee the success of a mighty congress in 2017.

For all of us the next few years will be the start of a journey in our own backyards that will unite us in a defined common purpose. We will be aware of the need to meet a range of targets and goals to produce both short and enduring products such as literature and field guides, programs and field trips plans.

The Congress will be held in Penrith in July2017 but the pre and post events and trips may well cover all the areas of Australia that can be responsibly accessed.

The goals we reach and the people we greet and meet will most certainly change our perspective of how prominent we are where we fit into the international community of cave explorers.

Realistically I must always remember that effort cannot be put into just one task, we still have all of our regular business and ongoing work to do. I know that a lot of work has already occurred to get us to meet next year in Western Australia for our next ASF Conference. There are also current environmental battles and cave management issues that that loom and demand our energy and detailed attention.

So, I promise that there will be an increasing output from the organising committee of information, requests for your support and insights into our evolving future. Watch this space and the upcoming billboards—your country needs you.

In Caving
Stan Flavel

Vale Lloyd Robinson
1927–2013

Bob Kershaw
ISS

AFTER a battle with cancer, Lloyd passed away quietly on the morning of 20 November 2013.

He recently visited WA with Dorothy to be a participant in the Australian Photographic convention in Bunbury and managed to catch up with a few mates in WA. He had returned to Wollongong three weeks before passing.

ISS had the privilege of his company at its recently held 50th Anniversary celebrations where he gave a spiel about 50 years of caving with ISS, of which he was a co-founder. The great talk was captured on video by members of the Wollongong Camera Club of which he was a long-time member.

Here is a bit of pre ISS history that Lloyd was involved with.

Speleology in Australia in the early 1950s had become quite popular, with a number of clubs operating. The local group decided to form an unofficial club called the Wollongong Speleological Society. They had no office bearers, fees or regular meetings. During 1955-56 two members (one being Lloyd) purchased a Land Rover and made an extensive inland trip through Queensland, Central Australia and South Australia. They spent considerable time at Camooweal Caves with the now defunct Mt Isa Speleological Society.

By 1956, there were three groups operating in the Illawarra District and making fairly frequent visits to non-tourist caves. Late in 1956, the three groups held a combined meeting and joined forces in the one club called the Wollongong Speleological and Expeditionary Society. Three office bearers were elected (one from each group), a constitution was drawn up, membership fees fixed, regular monthly meetings programmed and caving trips planned.

Some of the more notable achievements of WS & ES included a cable ladder descent of the Big Hole, many exploratory trips around Bendethera and Wyanbene, and an expedition to the Nullarbor and Western Australia.

The WA trip resulted in the exploration and development for tourism of the now well-known Augusta Jewel Cave.

BOB KERSHAW

Lloyd in a cave in the north Bullita Cave system July 2012

An application was made to become affiliated with the ASF but no member was in a position to attend the ASF Committee Meeting to present a case and the Society had to rely on a proxy. The application failed: the ASF meeting objected to the 'Expeditionary' in the name of the society.

After the failure to gain affiliation with the ASF, the WS&ES started to peter out. Some of the active leaders, including the president, left the district. This caused the remaining members to lose interest and trips and meetings became infrequent, until towards the end of 1960, the closure clause in the constitution became effective and a final meeting was held to wind up the affairs of the club.

On looking back, very little in the way of science or exploration was achieved locally. One such discovery at Bungonia by three members of WS&ES rates a mention: the Bottle Cave. This cave has an entrance that could easily be mistaken for a wombat burrow situated in a flat grassy plain with no doline. Six feet inside, there is a 55 ft pitch which on descending gives one the impression of descending a large bottle. Further in, there is a 25 ft pitch with a good digging prospect. Unfortunately, the cave has been lost ever since. One major difference to today's club is that WS&ES was always in the limelight. With a member working at a local newspaper, the club was never short of publicity.

After the final meeting of WS&ES, the keener members of the defunct society made periodic trips to Bendethera; some became members of the Sydney Speleological Society and attended their meetings and trips.

As time went on, these trips became more frequent until Jim Goold convened a meeting on 13 February 1963 to set the Illawarra Speleological Society under way.

The basic idea of re-forming a caving club in Wollongong arose from an incident in Bendethera when Lloyd Robinson and Jim Goold attempted to drive a Land Rover in from the east.

The vehicle unfortunately took a short cut down the mountain and came to rest on its side.

The rescue exercise was carried out under difficult conditions, but with so much enthusiasm, it was decided that a caving club in Wollongong might be viable.

And that is the commencement of the last 50 years of ISS with Lloyd actively involved since 1963.

Lloyd's contribution to speleology in Australia and to the ASF is exceptional.

Lloyd was the ASF safety officer from 1966 to 1976, an ASF vice-president from mid 1977 to end 1978 and the ASF president for 7 years from January 1986 until the January Committee Meeting in 1993.

Lloyd received a Certificate of Merit in December 1982 for the exploration and documentation of the caves of Western Australia, for contributions to cave management and tourism, and for contributions to cave safety. He received a Fellow of the Federation in 1995 '… in recognition of outstanding service to the Federation and to Australian caving and speleology.'

Lloyd was actively involved with Federation over many years. He gave distinguished service as president, his seven years being the longest continuous term of any previous incumbent.

During this time he presided over a major restructure to improve the executive and increase the responsiveness of the Federation.

Apart from his term as president, Lloyd has served on various ASF commissions and committees to which he contributed both hard work and wisdom. He continued to support the ongoing work of the Federation.

He was the convenor of the Awards Commission until late 2012 and always attended the biennial conferences and ASF Council meetings.

Lloyd and Dorothy were made life members of ISS in the mid1990s.

I had the privilege of caving with him, as did many other Australian cavers, and learning from him for many years but especially so for two weeks during his last expedition to Bullita in July 2012. Lloyd, not knowing that it would be his last time caving, enjoyed himself immensely at 85 years young.

His first time caving was around 1939 at Bungonia when he was 12 years old.

May you have many wondrous adventures wherever you are, Lloyd, as we celebrate a great Australian explorer's life.

You have created a void in Australian speleology and you will be sadly missed by members of ISS and speleos Australia-wide,

(More of Lloyd's exciting life of exploration, not just caving, can be read in the article by Peter Ackroyd and himself and is found on the bottom of the http://www.illawarra-speleological-society.org/projects2 page as a pdf document.)

FURTHER READING

Ackroyd, P. and Robinson, L., 1990. This is your life - Lloyd Robinson. *Nargun* Vol **22** No 10 : 97-101

ISS History: http://www.illawarra-speleological-society.org/isshistory

ASF Honour Roll of Award Recipients

Insurance and other ASF expenses

Tony Culberg OAM BCom DipEd FIPA

I RECENTLY assisted the new auditor of ASF by providing some background information about the organisation. For ethical reasons I cannot be the auditor, as I am also a director of the ASF Karst Conservation Fund.

My local caving club (Southern Tasmanian Caverneers) has been extremely concerned in recent years at the cost to an individual for membership of ASF. I do not know the detailed demographics of the ASF membership, but a good number of the active members are younger, and may be students, or still at the lower income stage of life and faced with all those household formation costs. The management of ASF is generally run by older cavers who are financially well established. Some may not recall what it was like when they were really active cavers, 30 or more years ago. The whole student scene has changed – part-time jobs are scarcer, semesters have put a lot of pressure on students. And it is not only students – anyone in the early part of their career is under extreme pressure to perform, which was not there when I was active.

I identified two areas where the direct charge to the ordinary member can be reduced. The first is easy – allow the option of receiving Caves Australia electronically. The direct cost of printing and posting each issue is about $5.00. I recognise that reducing the print run may lead to a higher unit cost for those who choose to receive a hard copy, but the overall savings to ASF will be significant.

I know that the State Library of Tasmania now prefers to receive journals electronically. I also recognise that for some members, if they insist on printing a hard copy, the effective cost may be the same, as it does cost serious money to print colour on a home printer.

The second area is more controversial. This concerns the levy on members for insurance. By way of background, NSW is the second most litigious jurisdiction in the world—only California is ahead of NSW. Insurance is of great comfort to NSW cavers, though of little use to cavers in other states. My professional association has no difficulty in charging its NSW members a surcharge for the additional costs of insuring an accountant in NSW.

Some years ago, 2002 I think, the ASF executive decided that the insurance levy on each member should be the actual charge to ASF + 15%, then spread over the membership from time to time. The Insurance Guidelines available on the ASF website state:

'The total contribution payable towards Public Liability Insurance will be calculated as the quoted premiums plus 15% "buffer allowance", less any accumulated but unused earlier buffer allowances. The contribution payable per member will then be determined as this total divided by the estimated number of individual members, however defined, less those exempted …'

The 15% surcharge is specifically de-

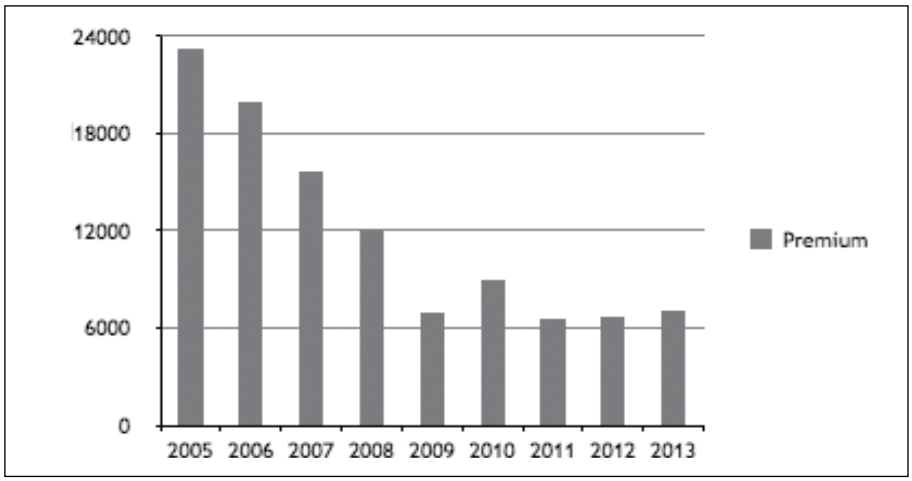


Figure 1. Annual ASF insurance premiums since 2004-05 financial year

scribed as being to allow for the evening out of the annual charge over a couple of years. If the premium rose abruptly, the buffer would be used to reduce the impact on members. Immediately after the 9/11 terrorist attack in the USA insurance premiums rose significantly. The resolution stated that the 15% buffer was to be adjusted each year, so that it was never more than 15% of last year's actual premium.

In fact, for the ASF financial year ended 31 August 2013, the amount levied on members was about $13,000 and the actual premium paid less than $5000. Given that there are about 660 members most of the time that means each member paid $20.00 for insurance, rather than $8.72 or so (5000 x 1.15/660) that the Insurance Guidelines would prescribe. That is an overcharge of $11.28/member/year.

Analysis of the Treasurer's handouts at annual council meetings (2005-2012) provided the information portrayed in Figure 1.

My suspicion is that the habit of overcharging has been there for seven or eight years, possibly more. If it is eight years, then that is about $90 that each member has paid, essentially for nothing.

It seems clear that the Executive of ASF has either not been watching how the insurance charges have been tracking, or has deliberately decided to take the extra money each year, ignoring the Guidelines.

I have not worked out why ASF needs a balance of $250,000 in its various bank accounts and then asks members to dig deeply into their own pockets to fund things like the defence of Timor Caves. As far as I can detect, there was no direct financial assistance provided by ASF in the purchase of the land including Scrubby Creek Cave at Buchan in Victoria. The funding of this was left to individuals, some of whom dipped into their retirement funds to secure the purchase and thus preserve the cave for all future cavers.

I suggest that ASF should not levy for insurance for the next few years, until the balance in the buffer account is brought back to 15% of the most recent actual premium. That would, roughly, allow a reduction of $20.00 per year for five years. There may be some injustice in this as some ex-members paid far too much for insurance in past years, and some future members will be subsidised by those people, but that is a feature of all clubs and societies, both at the micro and macro level.

These two proposals combined would reduce the cost of ASF membership by more than $30.00 per year.

Electronic *Caves Australia*

Alan Jackson
Caves Australia *Production Manager*

THE Publications Commission is proposing to introduce the option of electronic subscription to *Caves Australia* magazine.

This has been driven by an increase in demand for the option and is supported by a significant cost saving to the Federation if it were to go ahead. The idea was raised in an article published in *CA*179 (Jackson 2009) which provided some rough cost estimates and possible ways of administering the system. The author, disappointingly, received minimal feedback (positive or negative) following this article (three people emailed and half a dozen STC members discussed it, but only when it was raised as a topic of discussion by the author). It is clear that those who would oppose this proposal are either very few in number or not capable of voicing their opinion; either way this has been taken as a lack of opposition to the plan so we have resolved to move to the next stage — a more detailed cost analysis.

For issue number 190 (September 2012) the mailing list provided the following number of distribution classes:

Individual members	618
Member clubs	30
International exchanges and others	38

Of the 618 individual members, 536 have an email address registered on the membership database. This is in excess of 86%. This suggests that somewhere between 70-90% of members are likely to be able to subscribe electronically and perhaps it's not too much of a stretch to suggest that at least 50% would WANT to subscribe electronically. At STC, less than 5% of the membership still opt to receive hard copy *Speleo Spiel,* and all of those members are either Life Members or 'Friends of STC' (a quasi-life member arrangement) where hard copy subscription costs are paid for by the club, not the individual. Hard copy exchanges with international clubs and libraries may also reduce. STC has electronic exchanges with a number of clubs—and the Tasmanian State Library only wants publications in digital format.

Even IUS is moving to provide for electronic journal exchange and STC has been supplying *Speleo Spiel* to the IUS librarian digitally since 2011.

We have now conducted a more detailed cost analysis of 'going electronic', which is presented below. Three participation scenarios have been costed:

Table 1

Hypothetical *CA* (24 monochrome pages)		*100% hard copy*	*50% hard copy*	*25% hard copy*	*10% hard copy*	*Digital printing 25%*	*Digital printing 10%*
Individual members	618	618	309	154.5	61.8	154.5	61.8
Clubs and exchanges	68	68	68	68	68	68	68
Combined print run	686	686	377	222.5	129.8	222.5	129.8
Likely final print run	700	700	400	230	140	230	140
Layout		$500.00	$500.00	$500.00	$500.00	$500.00	$500.00
Printing		$1,646.70	$1,221.00	$988.90	$869.00	$541.20	$379.50
Flysheet		$80.30	$55.00	$35.20	$35.20	$35.20	$35.20
Mailhouse		$195.80	$125.40	$86.90	$66.00	$86.90	$66.00
Postage (30 international, remainder domestic)		$749.00	$440.00	$264.50	$168.00	$264.50	$168.00
Total cost		$3,171.80	$2,341.40	$1,875.50	$1,638.20	$1,427.80	$1,148.70

Table 1. Theorised price components for varying ratios of hard copy to electronic copy production. The last two columns titled 'digital printing' are based on a digital (laser) printer, as opposed to the traditional offset printing currently used and assumed in the previous four columns.

Table 2

	100%	*50:50*	*25:75*	*10:90*
Electronic subscription	N/A	$2.00	$2.00	$2.00
Hard copy subscription	$ 5.00	$6.00	$7.00	$12.00

Table 2. Proposed fee structure for Caves Australia subscription for various ratios of electronic versus hardcopy subscription.

- 50:50 ratio of electronic to hard copy subscription, plus hard copy exchanges.
- 75:25 ratio of electronic to hard copy subscription, plus hard copy exchanges.
- 90:10 ratio of electronic to hard copy subscription, plus hard copy exchanges.

Table 1 contains the figures for the component costs for the current situation (hard copy only) and the three reduced hard copy scenarios — based on a hypothetical average issue of 24 pages, all black and white.

Table 2 contains the breakdown of cost contribution from members (electronic subscribers and hard copy subscribers) I have calculated based on the costs from Table 1. Essentially, all members need to contribute to layout costs and also to all other costs associated with printing and mailing of the ~68 'clubs and exchanges' component. After much fiddling and mucking around with numbers I have attempted to keep it simple and charge a flat rate of $2 (per issue) as the base contribution costs that ALL members would pay and have then varied the 'hard copy subscriber' fee to cover the extras. The current budget is based on $5 per issue per member (i.e. $20 annually).

The figures in Table 2 allow a significant margin to ensure sufficient funds are raised to cover the actual costs (which may float above or below the estimate). After the first year, once more precise subscription ratios are known, it is likely that subscription rates can be reduced to tie in much more closely with actual costs and then adjusted annually as required. Advertising revenue has also been ignored in these estimates. Any advertising will therefore decrease component costs.

An important issue which has not been considered in this cost analysis is that of colour. The Publications Commission has been receiving considerable pressure from members and ASF hierarchy alike to increase the amount of colour in the magazine. Printing entire issues in colour is prohibitively expensive but due to the good condition of the recent and current ASF budget we have been regularly including a four-page colour spread. This has added ~$400 per issue to printing costs – $100 per page. A full issue in colour would add ~$2,400. The cost breakdowns in Tables 1 and 2 do not consider colour at all. Of course, electronic copies could, and would, be presented in full colour with no additional cost.

Do you have an opinion on this matter, either for or against? Please forward any criticism or suggestions, regardless of how banal, to Alan Jackson: alan.jackson@lmrs.com.au (make sure you include *'Caves Australia'* clearly in your email subject so it is more likely to negotiate Alan's ruthless spam filters successfully). Are you part of the theorised ~25% who don't have email? Then send a letter, in your best handwriting, to Alan at 45 Gormanston Road, Moonah, Tasmania 7009.

Warning: 'no response' will be deemed as support for this proposal – it will be 'opt out', not 'opt in'.

It is our intention to have some form of electronic *Caves Australia* distribution up and running by the end of 2014. It is my personal intention to retire as Publications Manager at the end of 2014 if some tangible progress isn't made regarding this issue by that time — I will have deemed the brick wall the victor and my head the loser by that point.

REFERENCE

Jackson, A. 2009 *'Caves Australia,* Are we ready to move into the 21st century?' *Caves Australia,* **179:** 8-9

Chasing Bat Calls on the Nullarbor

Clare Buswell
FUSSI

INTRODUCTION

Insectivorous bat occurrence data from the Nullarbor bioregion are scant and largely based on capture records or observations in caves. Currently eight species have been recorded (Table 1) (McKenzie and Robinson 1987; Kemper *et al.* in prep). Many of these records were collected from the treed section of the Nullarbor Plain around Balladonia, Cocklebiddy, Madura and Eucla. An additional three species (asterisked in Table 1) are known from the fringes of the Nullarbor Plain proper (Kemper *et al.* in prep).

Of these 11 species, only *Taphozous hilli* and *Chalinolobus morio* are known as natural cave dwellers. There is only one old record of *T. hilli* from the Nullarbor, taken from a cave near Ooldea (Jones 1925). The whereabouts of this specimen is unknown but the description is unequivocally a *Taphozous,* and there is no obvious reason to doubt its provenance. *T. hilli* occurs across middle Australia but the nearest record to Oldea is over 400 km to the north east.

C. morio is also a widespread species across southern Australia (Churchill 2008) and apart from caves on the Nullarbor Plain, Eyre Peninsula and Kangaroo Island in SA, it naturally roosts and breeds in tree hollows. Some caves on the Nullarbor are well known maternity caves with some colony sizes in the order of 5000 individuals (Hall 1971).

Mummified remains of *Nictophilus geoffroyi* have been recorded from near Oasis Lakes in Mullamullang Cave and there are records of dead individuals of *Chalinolobus gouldii* over 1 km into Mullamullang Cave. *Nyctophilus* species remains have been found in the doline of Warbla Cave. None of these species is thought to be regularly using the dark zone of Nullarbor caves as natural roosts or breeding, and along with *Scotorepens balstoni, Mormopterus* species and *Vespadelus* species, usually roost in tree hollows. The aridity and treelessness of the Nullarbor Plain probably form a biogeographic barrier for east-west movement of tree-roosting bat species, but the lack of survey effort is certainly responsible for our incomplete understanding of the extent of occurrence of some species.

The use of bat detectors to remotely record and identify the echolocation calls from bats in flight has greatly enhanced bat survey efficiency and this has prompted us to take the opportunity during Nullarbor cave expeditions to record bat calls from cave entrances and nearby habitats, thus adding to the existing knowledge of bat occurrence.

Family	Scientific name	Common name
Emballonuridae	*Taphozous hilli*	Hill's sheath-tailed bat
Molossidae	*Austronomus australis*	White-striped free-tailed bat
	Mormopterus sp3	Inland free-tailed bat
	*Mormopterus planiceps**	Southern free-tailed bat (east)
Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat
	Chalinolobus morio	Chocolate wattled bat
	Nyctophilus geoffroyi	Lesser long-eared bat
	Nyctophilus major	Central greater long-eared bat
	*Scotorepens balstoni**	Western broad-nosed bat
	Vespadelus regulus	Southern forest bat
	*Vespadelus baverstocki**	Inland forest bat

Table 1: Identified bat species on the Nullarbor Plain, by Family, Scientific and Common Names.

METHOD AND RESULTS

The project took place over two years in September 2011 and 2012, and the area covered was divided into two sections that corresponded to two different ecosystems. Although they are both in arid areas, Area 1 consisted of the woodland habitat south of the Dingo Fence and Area 2 the truly treeless region around Old Homestead Cave. Essentially the area ranged from Eucla to 40 km south of the railway line and as far west as Mullamullang Cave on the Western Australian side of the Plain. We had designated 13 sites, eight in area 1 and five in area 2. We used four Anabat bat detectors and were expecting to record approximately 13 hours of data per night x 13 nights for each detector for the first year with similar recording time for the second year of the project. Our recording plan was to put out two detectors on the edge of dolines, a third around 500 m from the doline and the fourth detector was to be used on a transect near cave entrances. Recording would start at dusk and end at 8 am each morning.

FIELDWORK 2011

The Nullarbor in September of 2011 showed a landscape of abundance. Grasses were thick and tall, dolines were full of wildlife: owls, kestrels, swallows, budgerigars, feral cats, rabbits and foxes. Cave floors were wet; some showed evidence of such recent water flows that all indications that cavers had ever visited were gone. Indeed, the rainfall on the Nullarbor in 2011 was double its normal level, with Mundrabilla Station receiving 400 mm of rain up until mid-September.[1]

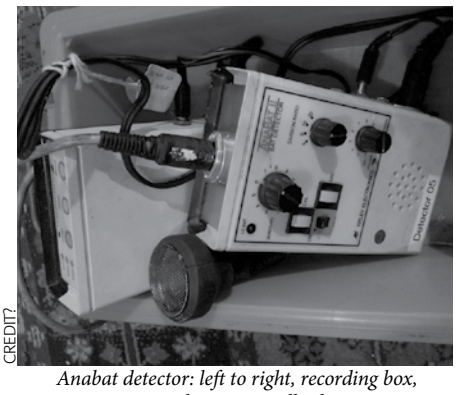
The first site in Area 1, Weebubbie Cave, has a known bat maternity site. We arrived at Weebubbie on Sunday 18 September

1 Mundrabilla Station owner pers. comm. See also Bureau of Meterology: Eucla weather station, number 11003, commenced operations in 1876. Mundrabilla weather station, number 011008, opened in 1901.

http://www.bom.gov.au/climate/current/statements/scs38.pdf and http://www.bom.gov.au/jsp/ncc/cdio/cvg/av.

around dusk, to a warm (28ºC at 7 pm) evening. We put out two detectors and then set up camp. After about an hour of this blissful calm all hell broke loose with a storm that threatened to blow most of our camp back to Eucla. The temperature dropped 5ºC in an hour. We retrieved both bat detectors and bunkered down for the night. The storm reportedly tore roofs from houses at Kalgoorlie. The upshot of this was that no data were recorded for the hour the detectors were out.

The next site was in Area 2, at Old Homestead Cave. We recorded data here for five nights. The detectors were put out around 6 pm and retrieved around 8 am the following morning. The nights were cold, 8ºC; days warm to hot. The wind sprang up most evenings, starting around 6 pm and tailing off around 8-8.30 pm; this dropped temperatures considerably. The position of the recorders remained the same during this period, with detectors facing into both the southern and northern dolines. Each morning we had a computer and voltmeter session. We would download the data, check battery levels and make sure that all equipment was in working order. We recorded no bat calls at this site. Other wildlife was in abundance, however: nesting pairs of kestrels, owls, swallows, ravens and a feral cat with kittens, all living in the two Old Homestead dolines.



CREDIT?

Anabat detector: left to right, recording box, microphone, controller box

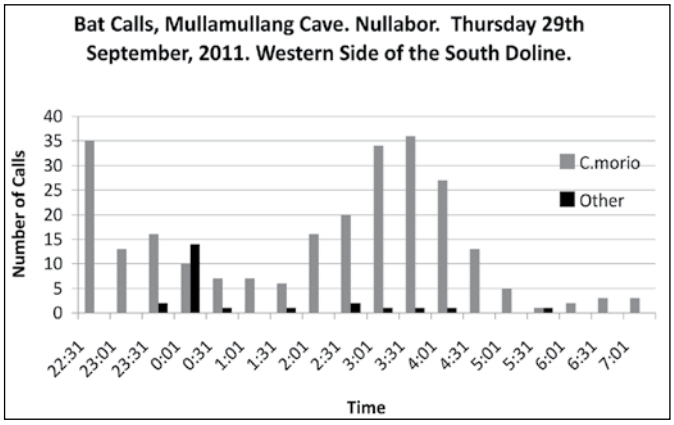
Webbs Cave was the next site. This cave is a known bat maternity site and is in the woodland of Area 1. We recorded here from the evenings of 26- 28 September.

We put out three detectors, one high up on the doline edge, one at 100 m from the south-western side of the doline and the third 900 m due west from the cave. We recorded three calls of *C. morio* at the edge of the doline on the night of the 26th, and nothing 100 m back from the cave or 900 m from the cave. Then on the evenings of the 27th and 28th 10 calls were recorded 900 metres from the cave. These latter calls consisted of nine *C. morio* calls and one *C. gouldii* call. No calls were recorded at the doline on the 27th or 28th. The nights here were warmer, around 12ºC, than those at Old Homestead, and the wind was not an issue.

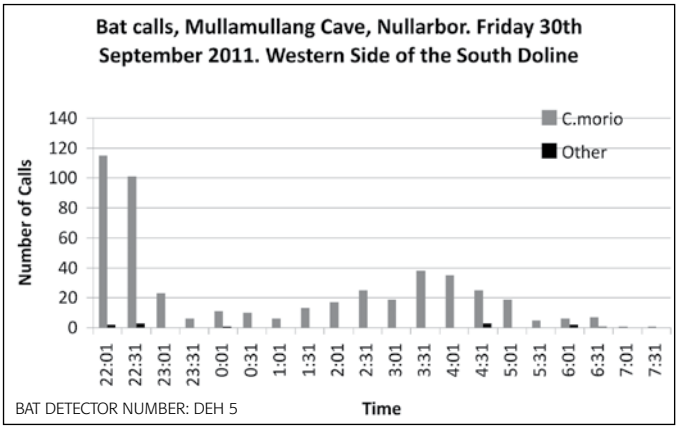
We then moved to site 3 in Area 1, the Mullamullang doline, arriving late in the evening of 29 September, and placed one detector facing into the southern doline. The night of our arrival was cold, getting down to 6ºC at 6 am, with a sharp wind from the south.

Despite this, we recorded more than 278 calls. For the next two nights we recorded over three sites.

Two of these were at the doline itself, with two detectors facing into both the northern and southern dolines. A third detector was placed at the usual campsite about 400 m from the doline. The calls recorded below came from both the northern and southern dolines with nothing recorded at the old campsite for any of the nights we collected the data. Calls are summarised at half-hourly intervals.

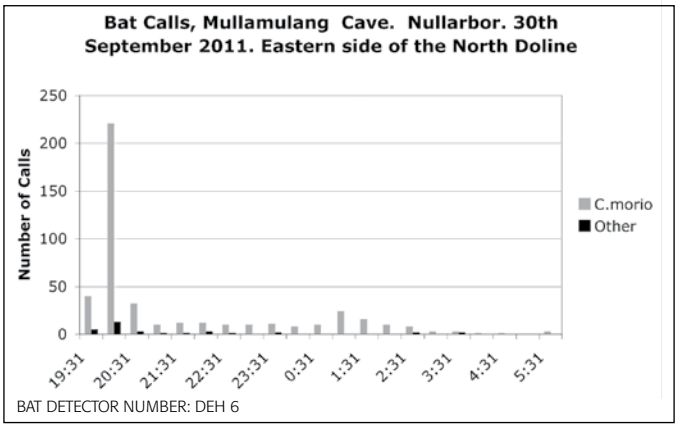


The above graph shows considerable activity for the Thursday evening, despite the cold and wind throughout the night. There were 278 calls from *Chalinolobus morio* and 24 calls from *C. gouldii.*

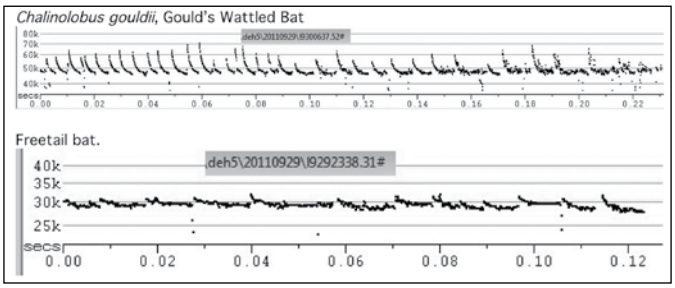


There was a total of 495 calls from *Chalinolobus morio,* four calls that were not identified at 44-45 kHz, and eight calls from *Mormopterus/ C. gouldii.*

The data for the *northern* doline of Mullamullang, which is the doline that opens up into the major cave, showed a total of 510 calls: 478 calls from *C. morio,* 14 calls from *Vespadelus* and 18 calls from *C. gouldii* on the one night that we recorded from this doline. On the graph the latter two species are shown as "Other".

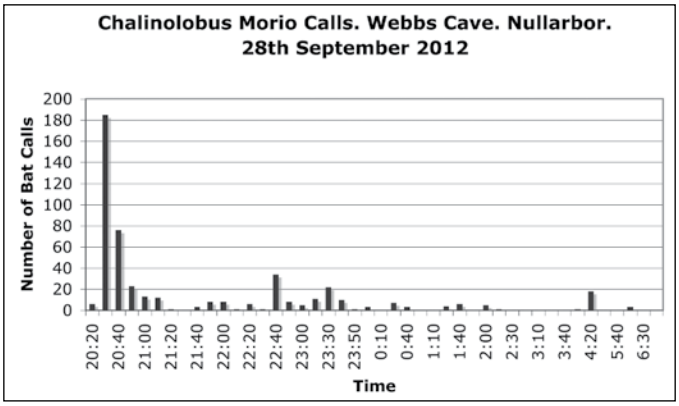


As the graph shows, most of the activity occurs around 8 pm, with 221 calls being recorded, and a second peak at 1 am, with 24 calls recorded. All three graphs show this pattern of two activity peaks during the course of a night, as bats tend to go out to feed a couple of times a night. Below are samples of the calls recorded in 2011.

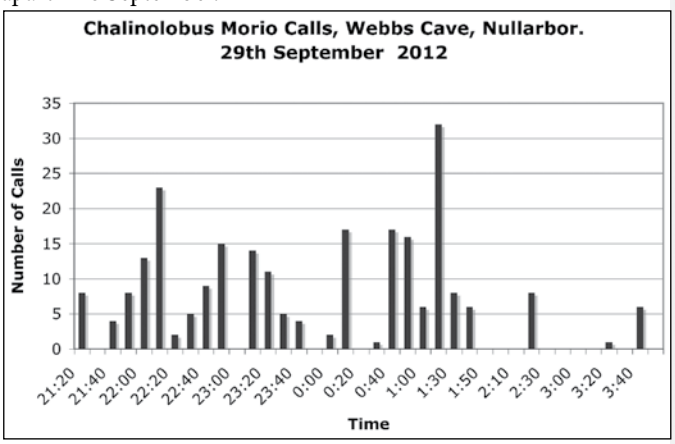


FIELDWORK 2012

To obtain some sort of consistency in sample selections we tried to be at the same cave sites on the same day as on the previous year, although our trip was not as long or as extensive. Sampling took place in both areas, but with only two sites, that of Webbs Cave in Area 1 and Old Homestead in Area 2. We particularly wanted to resample Webbs Cave due to the lack of data collected in the area in 2011, so it formed a high priority on this trip. Once again no calls were recorded at Old Homestead Cave over the three nights of recordings.



At the doline sites of Webbs Cave, over the two nights of sampling, a total of 726 calls, all from *C. morio,* were recorded. We placed the detector on the western side of the doline in the same place as the previous year and on the same night exactly one year apart—28 September.



On the evening of 29 September we recorded a similar number of calls, with a noticeable second feeding spike (32 calls detected) at 1.30 am. The data collected here are more consistent with its known role as a maternity site.

CONCLUSIONS

The Nullarbor in September of 2011 was lush. All the dolines we entered or looked at contained abundant wildlife.

Baiting for wild dogs had occurred as far north as the railway line and the Calicivirus was also doing damage to the plagues of rabbits that could be seen along the way.

The landscape itself consisted of tall grasses, as well as the usual bluebush and saltbush.

The abundance of vegetation was consistent from the highway to the railway line. The tall dry grasses posed a real fire hazard and indeed it set our car alight on the way to Mullamullang Cave. DOLA was attempting burnoffs north of Mundrabilla station along the road to Forrest in an attempt to control fires started by lightning strikes.

As a result smoke was sometimes smelt underground and seen above it. Fire hazards, storms and breakdowns made travel difficult, contributing significantly to our ability to reach sample sites and collect the data expected. In contrast, the Nullarbor in 2012 was back to the more normal dry seasonal landscape.

TERRY REARDON

Chalinolobus gouldii

TERRY REARDON

Chalinolobus morio

Of the bat calls identified over the course of both the 2011 and 2012 fieldwork, the majority were from previously recorded species, *C. morio* and *C. gouldii.* Bats were observed in Weebubbie, Abrakurrie, Witches, Mullamullang and Webbs caves. They were not observed in Old Homestead Cave. The absence of bats in Old Homestead Cave would seem to confirm the theory that the truly treeless section of the Nullarbor forms a barrier to the movement of bat species northwards from the treed areas of the plain. Bats were not observed in Thampana or Purple Gorringe caves on the days we visited.

Bat detection work on the Nullarbor, despite the travel difficulties, is rewarding and we have collected a reasonable data set, adding to the existing knowledge base. To be consistent, of course, and to undertake longitudinal studies, requires far more input than four bat detectors.

Mist netting would add to the accuracy of the data we collected as it enables identification of species by sight. Placing radio frequency transmitters on bats, as has occurred at Naracoorte Caves National Park, would allow us to track flight paths and find out just where bats are going at night.

As for the thousands of caves on the Nullarbor, we have little to no data on bat visitation to or habitation within.

There is a need, given the lack of long term data and the decline in bat populations generally, to try to establish consistent bat population data, at the very least for the known bat maternity sites of, for example, Weebubbie and Webbs caves. Such research would certainly build the existing data set.

The next time you are out on the Nullarbor Plain over the spring months, take a bat detector with you and help build on what we think we know. Just note, however, that you must have a permit to collect and catch any specimens.

All the bat call data we collected are held by the South Australian Museum.

ACKNOWLEDGMENTS:

I would like to thank my fellow trip members, Heiko Maurer, Thomas Varga, Michael Meynell-James and Richard Boyle for their help in putting out bat detectors, downloading data and dealing with the associated issues.

I would also like to thank Dr Ken Sanderson, Adjunct Lecturer, Biology Department, Flinders University, for identifying the bat call data. Our thanks go to both the South Australian Museum and the Department of Environment and Heritage for supplying bat detectors.

Thanks must go to Terry Reardon from the South Australian Museum for his enthusiasm, time and technical support for this project.

We also thank the ASF's Cave and Karst Research Commission for a grant to help cover some of the costs of the project.

Finally, I would like to thank the owners of both Mundrabilla and Mullamullang stations for granting access to their land, without which this research would not have been possible.

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Roe Plains, WA
Olwolgin Cave Revisited (Part 2)

Paul Hosie
CEGWA

IN PART 1 (Hosie 2013), I relayed the excitement of the initial discovery and exploration of 2,700 m of virgin cave diving passages in Olwolgin Cave between October 2011 and Easter 2012.

In this article I will bring the story up to date (November 2013) and reveal the details of discovery for what is now one of Australia's longest underwater cave systems.

ANZAC PARADE

Spurred on by the tantalizing discovery of Grand Central by Chris Edwards and Grant Pearce during the Easter 2012 trip, Alan Polini and I organised another Raid trip for four days later that month. Only an act of God would keep us away from the Nullarbor at this stage and even then, He'd have to make a pretty good effort.

Driving through the night of 24th April, we arrived on site on Wednesday morning, the 25th (Anzac Day). We immediately wheelbarrowed everything out to the cave: scooters, cylinders, compressors, generator, food and fuel.

After a set-up dive to stage cylinders and scooters in the cave on the Wednesday afternoon, the cave was set for some serious diving commencing early the next morning.

The aim of the first push dive was to explore Grand Central, specifically to the south-west, in line with the main passage development trends seen so far in the cave.

Alan recalls this memorable dive: 'Upon arriving at Grand Central and after looking around its impressive size, we continued with our plan of checking extensions to the south-west. This is where we left Grand Central and entered a massive section of cave tunnel.

'It was a good thing that we each carried a compass; we needed them, as the sheer size of the Anzac Parade tunnel made the high-powered lighting systems we had virtually useless. Don't get me wrong; it was great to be laying line in what is and could quite possibly be the largest unexplored passage I will ever experience, but a shame that we could barely see the walls. Just like floating through space, we unloaded the line off the reel screaming and hooting at each other.'

More than 600 m of impressive diving passages were explored and surveyed over the next three dives in this area.

On our second last dive of the Anzac Day Raid, Alan and I redirected our attention to the end of the A Tunnel to close out

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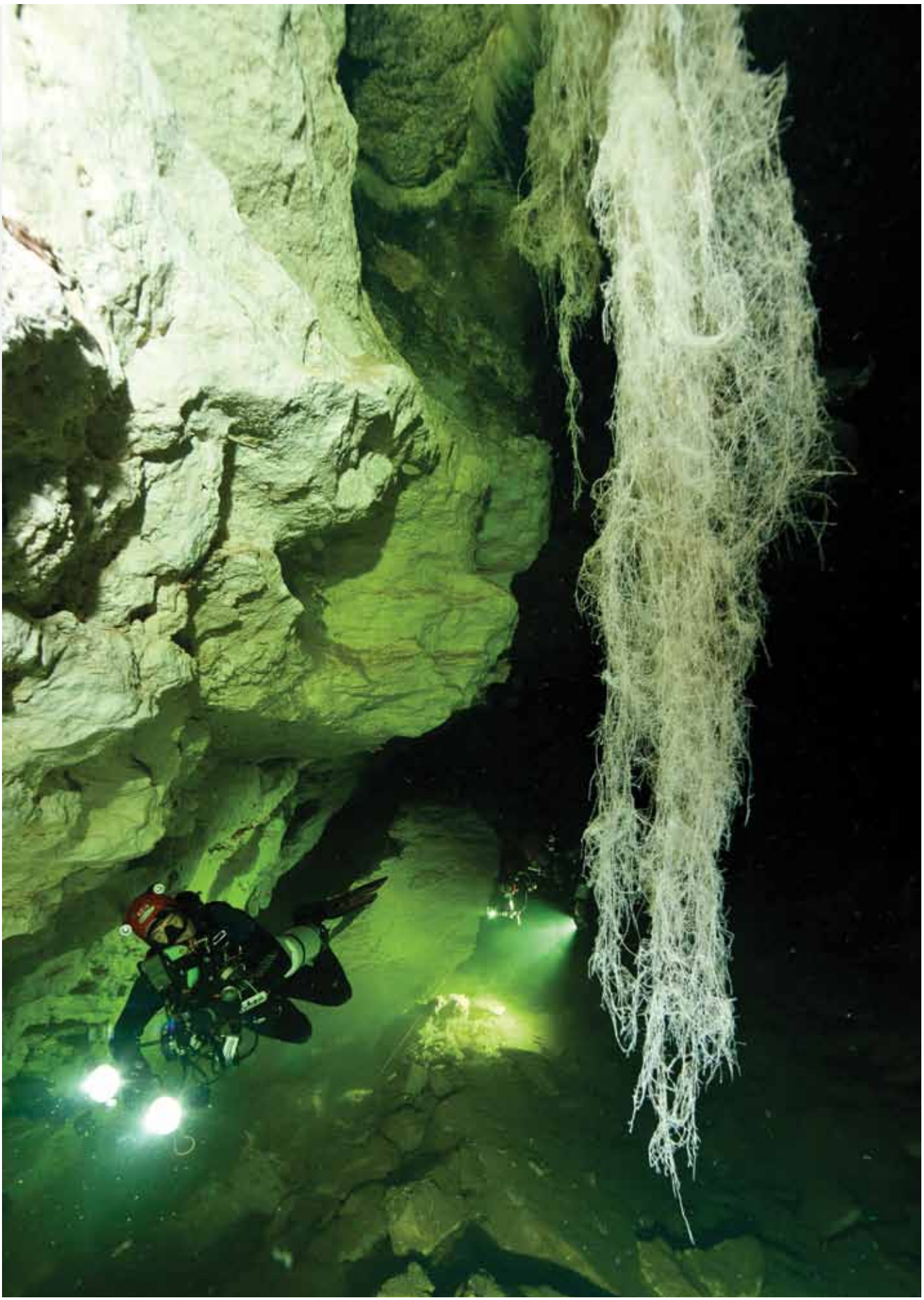
Paul Hosie (left) and Richard Harris in upstream Olwolgin

Roe Plains, WA: Olwolgin Cave Revisited (Part 2)



LIZROGERSPHOTOGRAPHY.COM

Ken Smith, followed by Chris Edwards, swimming around the hanging roots early in the main tunnel of downstream Olwolgin

some leads there. Although the leads we looked at were largely fruitless, on our way back we both made separate, significant discoveries on the sidewalls of Ags Dreamtime. Alan explored and surveyed 250 m of stunning virgin passage on the eastern side — Gentlemans Lead — while I discovered a roof hole on the western side with a large, wide, 200 m long tunnel that proved to be a short cut to Grand Central.

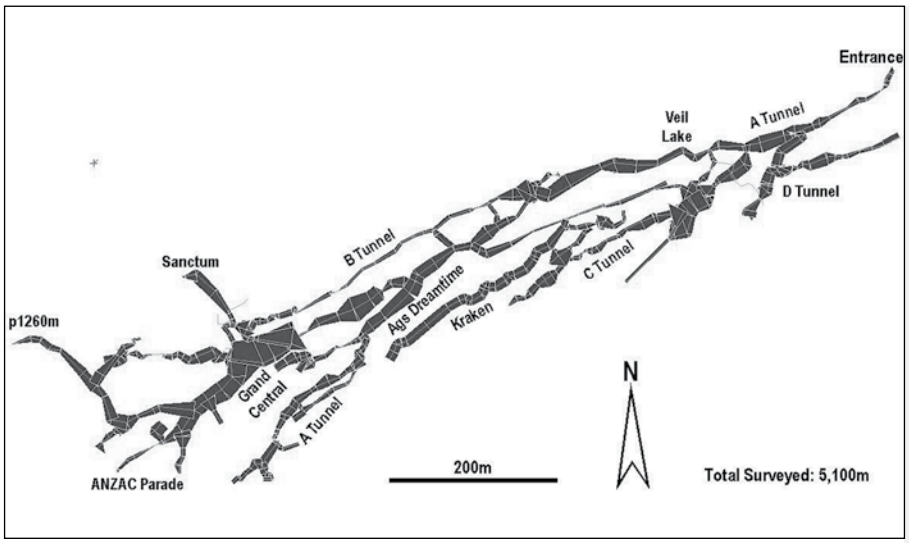
More importantly, the short cut was big enough to facilitate a direct transit from the staging area through to Anzac Parade with scooters and backmounted rebreathers. In three days of highly focused exploration diving, Alan and I spent 16 hours each underwater. This enabled us to add 1,800 m to the surveyed length of the cave and extend the maximum penetration distance to over 1,250 m—exhilarating, but exhausting indeed.

Further efforts by two different team visits later in 2012 (including Alan & me) failed to find a continuation of the cave to the south-west but added a further 700 m of passages, most notably The Kraken, a 300 m long side passage from the Gentlemans Lead which connects through to the end of the A Tunnel and features some of the most extraordinary bacterial 'webs' seen in the cave. The Kraken was discovered and named by Alan Polini and Rod O'Brien (SUSS) who both have large tattoos of a kraken on their bodies. At this point, the name of the cave where all the new cave diving discoveries had been made was revealed as Olwolgin Downstream during a presentation at the CDAA AGM in Mount Gambier, at which point the surveyed length stood at 5,100 m. The total cave diving passage length of Olwolgin Cave was then at 7,800 m. (See map 1)

We were starting to think that we had exhausted the main exploration of the cave and hopes were low that we would find a continuation to the south-west. All the big tunnels at that end of the cave terminated in small, low, flat, silty areas — generally uninviting areas for cave divers. Our next major trip was planned for Easter 2013.

BREAKTHROUGH

Once more, Alan and I were back, but with a continuation of the cave now highly doubtful, we turned our attention to surveying the remaining line in the cave, pushing small leads and bushwalking the surrounding area for new caves to dive. The surveying helped to fix some errors in the survey and a few small leads added 500 m to the map. The bushwalking revealed a couple of new karst features but no new caves to dive. As Alan went back to work after four days of diving, brothers



Map 1 — Olwolgin Cave as at August 2012

Ryan and Michael Kaczkowski joined me in his place and began familiarising themselves with the cave system: Upstream and then Downstream Olwolgin.

During the course of surveying some small and silty tunnels near the end of the cave, I noted some fascinating patterns of speleogenesis that were repeated in areas of the cave separated by many hundreds of metres. These patterns helped me to reappraise my understanding of the cave's structure and development, giving me new hope of finding a continuation to the south-west. With the possibility of the continuation firmly in mind, I set off on a dive to the end of the cave. Before I left, Ryan asked, 'So, are you going to look at some new holes or areas to try to find an extension?'

'No, I'm going to look at old areas, but with a new attitude.'

The first two hours of this dive were spent exploring and surveying 200 m of small new passages near the end of Anzac Parade which matched the expected profile but were not the hoped for extension. The breakthrough came when a low, flat, silty room (it was, in fact, the very first place Alan and I looked at when we were exploring 12 months before) was revisited and traversed straight through for 50 m before it opened up into a large conduit heading directly to the south-west — the continuation had been found. A further 100 m on, my thirds gas limit was reached and the line was tied off on a boulder pile in the middle of a large intersecting passage with no end in sight either to the left or right. This was an absolutely perfect way to wrap up the dive and survey out.

Ryan and I spent the next two dives exploring and surveying over 500 m of passages in this new area named the Easter Extension after a similarly named section of Mullamullang Cave. Ryan spotted a skull and full skeleton of a dingo amongst the rocks at the intersection tie-off (Dingo Junction), no doubt washed in from the surface feature we were now in the vicinity of.

A large room full of thick, brown silt and incredibly dense drapes of bacterial matting was briefly surveyed and checked for a surface connecting hole before being left from further disturbance. Signs have since been placed in this area asking that only divers on closed circuit rebreathers enter it as, in the author's experience, this room is unequalled in the bacterial deposits it contains and is an amazing but fragile spectacle worthy of preservation.

Ryan provided the following impressions of the cave after a week of diving. "I found the cave impressively large, considering the crappy little entrance hole. Especially remarkable are the large rooms toward the back of the cave (Grand Central and Anzac Parade) where the dark cave walls and distortive water seem to swallow up light from even the brightest torches. It's amazing to dive through a number of large tunnels which are all connected through excellent sidemount passages. The new section, once again, was impressive to arrive at after traversing through a much smaller cave tunnel and then popping up to a large junction with yet another tunnel seeming to boom off left and right with small, low rooms branching off its sides. While diving Olwolgin Cave you get to experience very different characteristics compared to other Nullarbor sites and the varying size and length of the passages can't help but make you wonder what's happening under your feet right throughout the Roe Plains."

The Easter 2013 trip added another 1,700 m of surveyed passages to the cave making a total of 6,300 m for Downstream Olwolgin and 9,200 m for the total system. The maximum diving penetrations were now at about 1,300 m (see map 2).

THE ADVENTURE CONTINUES

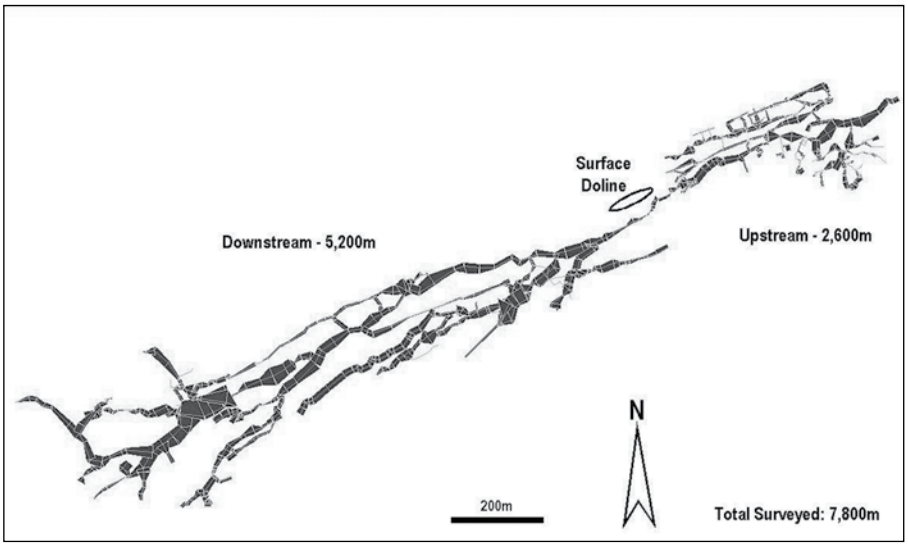
Discussions were had with an experienced group of cave divers from the CDAA in late 2012 regarding access to and protection of the cave for suitably experienced and qualified CDAA members.

It was agreed that the line in a number of areas would need to be cleared up or removed, more signs placed, and that clear junction marking (with tags) similar to the system used in Tank Cave would be needed. We also needed to ensure there were line arrows every 50 m or so throughout the cave. In July 2013, a lot of this work was done by Ken Smith and Neville Skinner in both Upstream and Downstream Olwolgin. Grant Pearce and I used sidemount rebreathers to continue exploring the Easter Extension area and added another 300 m of small, maze-like passages there, but we found no major continuation. When we left, there were only two leads identified by Grant and I that had any promise of finding a way through and they were strictly sidemount access as well as deep in the cave). Run times of 3-4 hours on these dives were normal.

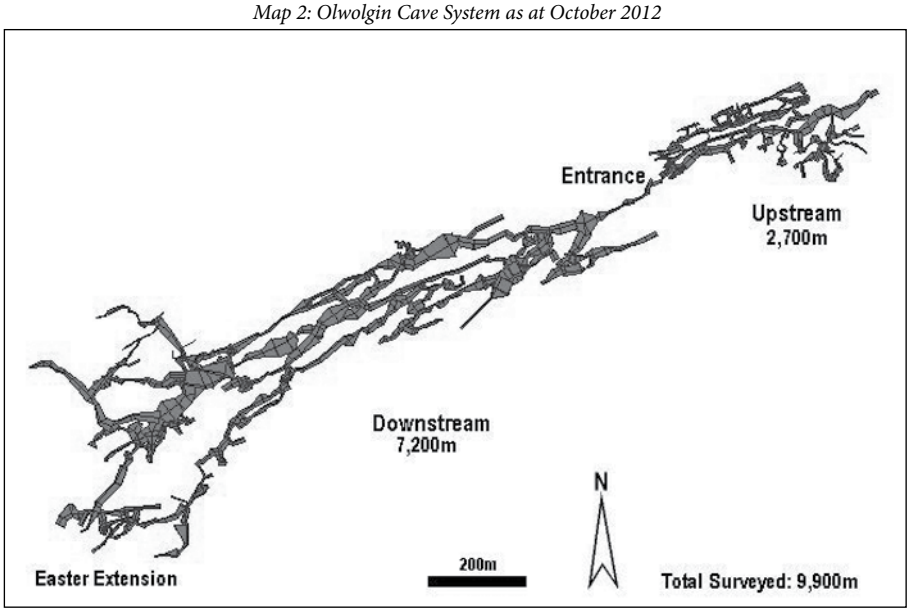
With the rest of us committed to work and family, Ryan and Michael Kaczkowski, together with Sam Vermey, took up the challenge in the first week of November 2013. Grant and I received very excited phone calls from Ryan as he was passing back through Eucla on his way home from the trip: 'Great Success!' Ryan describes their experiences. "Sam loved the cave and we spent the first few days getting him familiarized with the passages. I was very eager to get out the back though, of course. Once we got out the back we quickly got onto Grant's reel. We passed through two close-tight restrictions then it pops out into nice big passage which runs NE and SW. Great! Ran about 110 m in a straight line and surveyed it out."

Ryan continues. "Next dive we looked for leads. Sam reeled out into a couple of offshoot passages (which we surveyed). I saw a hole dropping off to the south-west on my way out which I had missed and the next dive had a look and, yes, it just took off. It is a really beautiful section of the cave, like a maze or forest of limestone. Plenty of leads so just headed SW and it kept going. After I reeled through a lower silty section I started following larger passage … I am sure it keeps going but I had no time to push it. Must return with scooters. Long swim. Ha!"

Congratulations were in order; together, Ryan and Sam explored and surveyed 300 m of passages in the new 'Stone Forest' section, extending the maximum penetration distance to approximately 1,500 m and best of all, still going. We are hopeful that this new section will enable continuation into the main conduit to the south-west beyond the collapse doline and cave that is clearly obstructing the main passage near Dingo Junction. Pinger data obtained in July 2013 showed this area to be only 50 m short of the surface doline and cave from where the dingo skeleton was most likely washed in.



Map 2: Olwolgin Cave System as at October 2012



Map 3: Olwolgin Cave System as at November 2013

IN SUMMARY

During two short but intensive years of exploration, Downstream Olwolgin has revealed over 7,000 m of new cave diving passages and provided all those involved with some amazing and unforgettable experiences.

Exploration of the whole cave system over the past ten years has involved a lot of work as well, with over 900 survey stations and 33 pinger points recorded. We have also placed numerous underwater conservation signs, reflectors, dozens of junction markers and countless line arrows. Olwolgin Cave currently has 9,900 m of surveyed passages, placing it among Australia's longest underwater cave systems such as Panniken Plains, Tank and Cocklebiddy Caves — deserving company for such a spectacular cave (see map 3).

The author would like to thank all those who have helped and contributed to the exploration of this magnificent cave system to date.

The beautiful underwater photos taken by Richard Harris, Liz Rogers and Chris Holman have helped convey the stunning beauty and fragility of the Roe Plains Caves — thanks, guys.

And, of course, for the use of the pingers which enabled us to correct our survey data, we are entirely indebted to the inimitable Ken Smith whose fart joke and accompanying peals of laughter will echo across the Roe Plains forever!

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Unusual Caves of Australia – 1

The 'Big Hole', Tablelands Highway, Northern Territory

Norman Poulter OAM
NC, SRGWA

NORMAN POULTER

I was lying flat on my stomach, trying to get a close-up 'action' photograph of a goanna attempting to gnaw something edible from the tail of a not-too-recently road-killed kangaroo on the Northern Territory's Tablelands Highway.

This is a north-south highway that connects the Barkly Highway to the Carpentaria Highway, beginning at the Barkly Homestead and finishing at the Cape Crawford Roadhouse.

Even though it was only mid-morning, the day was already blazingly hot, and it's really uncomfortable lying on sunbaked rocks and tar, protected only by shorts and a thin T-shirt.

The goanna was only taking periodic notice of my intrusion when I suddenly became aware that I had an audience, in the form of a resident station hand, curious at what I was doing, but then intent on warning me about the danger of getting too close to razor-sharp claws.

The ensuing conversation led from one subject to another, and then he mentioned that I might be interested in looking at 'The Big Hole' that was 'Just up the road a piece'.

A big hole? 'Yes—that would provide some interest,' said I. He gave me rough directions and then continued driving on his way into the shimmering heat haze.

I suddenly became quite satisfied with my goanna pictures and set off to find the 'Big Hole'. Cooler subterranean adventure beckoned.

Just as a lot of city slickers navigate by pubs and hotels, some country people navigate by the aid of the local currency—200 litre oil drums. They are everywhere, silent sentinels denoting that something else is out there, some far removed from the comfort of main roads, sealed or unsealed.

NORMAN POULTER

The 'Big Hole', however, is special—it has three. For those coming from the south, near a left-hand curve sign, and just off the roadway, stands a blackened oil drum with the bold letters 'b-i-g h-o-l-e' roughly painted above each other and partially hidden by spear-grass.

Several metres away to the north, closer to vegetation, stands another blackened oil drum, seemingly trying to hide from everything in general. Across the road stands a creamy BP avgas drum, with a couple of small rocks on top; the purpose of those is lost to the imagination.

The 'Big Hole' is located approximately 100 m to the west of the narrow highway, serviced by not one, but two generous circular car parks.

The hole itself is surrounded by an elaborate but strong four-strand barbed-wire fence, the mummified and sun-bleached body of a flying fox entwined on one of the strands on the southern side.

'Where did it come from and for what purpose?' I wondered. 'There's not much edible for a flying fox around these parts.'

I gingerly penetrated the taut wires

The 'Big Hole', Tablelands Highway, Northern Territory

and approached the lip of the hole with my trusty GPS, the location showing 53K 0574086 x 7994933.

The hole seems to have formed in some sort of ironstone or laterite material and, judging by the shape of an erosion runnel leading in from a north-westerly direction, accepts an awful lot of water during the wet season.

Care needs to be exercised around the edge of the hole as, being a very pebbly material, the rock is extremely friable. The hole is slightly elliptical with the lip being a smaller circumference than the hole itself.

I estimated the floor to be some 10 m below the surface. Contrasting to the vast Nullarbor-like treeless acreages I had travelled through that morning, with more to come the following day, the 'Big Hole' is located in a forested section of the Tablelands flood plain.

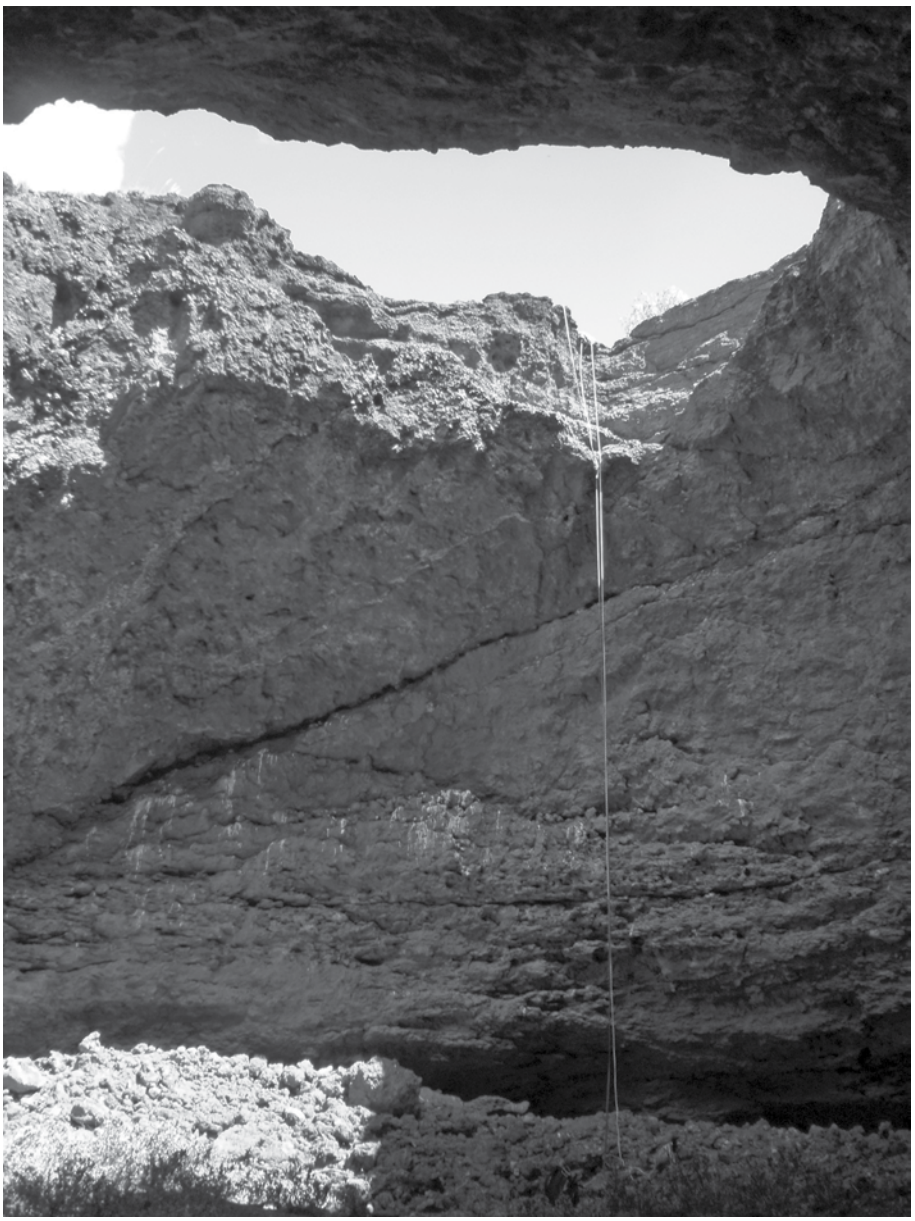
Throwing caution to the wind (in a very cautious way), I rigged my abseil gear and, after setting my rope protectors and lowering my daypack containing water, survey gear, cameras, and most importantly, my PLB, I slowly descended into the abyss, which turned out to be, strangely enough, 10 m deep. The first thing I noticed was not much prospect of continuation and there wasn't much protection from the noon-day sun either, even in the shade—it was very, very hot down there.

I wasn't game enough to measure the temperature; it was already 40ºC or more on the surface. Talk about mad dogs and Englishmen. What was I doing down here?

There are signs of continuation, if one is prepared to dig—extensively.

Floodwaters would seep away in easterly and westerly directions, as indicated by voids between the floor and wall of the cave.

Rock debris adorns the central part of the floor and southerly side of the cave wall. There was a small amount of Other People's Rubbish [OPR] down there, made up of a tyre, e-waste and drink containers, none of which I tried removing; I was already carrying enough OPR as it was.



NORMAN POULTER

There were mud bird nests adorning the steeper overhang of the easterly side of the hole's walls, presumably belonging to swallows.

I carried out a very basic survey of the elliptical 19 x 21 m hole. After taking several pictures and not wanting to stay in the oven-like cauldron any longer, I struggled back to the equally oven-like surface, retrieved my daypack, de-rigged and sought some shade for the rest of the day.

At least the shade gave me some respite from the sun while I drew up the sketch map and wrote up my travel diary.

Laterite Karst

Susan White.
VSA

SOME of the processes involved in the formation of the 'Big Hole', Tablelands Highway NT, are explained here. They are not particularly rare in tropical Australia.

Karst landforms are characteristic of soluble carbonate rocks (limestone and dolomite) but karst-like features also occur on other rocks.

Pseudokarst is the term given to features that resemble karst, but have not formed specifically by enhanced solution. These features occur in less soluble rocks than limestones where solution is the dominant process.

Removal of material by processes such as piping or mechanical erosion results in pseudokarst. Even with this difference clarified, there is little agreement on how to divide the non-limestone features and the processes that form them.

Details on this rather arcane discussion on the relative merits of true karst, parakarst, and pseudokarst can be found in Grimes (1997) and Grimes and Spate (2008) to which this article is deeply indebted. Grimes and Spate also has a number of illustrations and other examples from northern Australia.

Laterite karst is a special type of silicate karst (formed in silica rich rocks such as sediments or granite) that in turn is a type of parakarst (solution of non-carbonate rocks).

However, the chemical and physical processes involved in the formation of laterites, and deep weathering profiles in general, are quite complex (Butt & Zeegers, 1992). The hole described in Norm's paper is one form in a broad range of karst-like features found in laterites and known as Laterite Karst.

Laterites are a type of deep weathering profile. Deep weathering involves the intensive chemical weathering of the minerals in a rock over a long period of time (Butt and Zeegers 1992).

The minerals are converted to new forms which may be soluble, and can be removed in solution (analogous to karst); or may be softer, such as clay minerals, or crumbly, such as residual sand grains, and can be washed out of the rock by flowing water; a process called piping. Both processes produce cavities and other karst-like forms.

GRIMES & SPATE 2008

A red soil buries a laterite 'epikarst' with soil-filled grikes separating clints or small pinnacles. Beneath is amottled zone in which the mottles are elongated bands following joints and small solution tubelets. A building site excavation, NT, about 9m deep .

Localised precipitation of the dissolved material forms hard bands known as duricrusts. These are responsible for many of the mesas seen in inland Australia, and provide a solid roof that caves can form beneath.

However, there is a lot of variation between and within profiles and in their depth, which can exceed 100 m but is more usually 20-30 m.

Secondary (karstic) porosity is most common in the mottled zone and within the duricrust, but again there is much variation. Strictly speaking, the solutional process and resulting features would be classed as 'silicate karst' (or parakarst) and the mechanical erosion (e.g. piping) classed as a form of pseudokarst.

But both processes tend to occur together and the general term 'laterite karst' is therefore useful. Laterite karst can be compared to the syngenetic karsts (in soft porous calcarenites); both have simultaneous solution and cementation and show the influence of caprocks (duricrusts) on cave development.

The resulting landforms vary from broad-scale (shallow dolines, or 'pans' up to 2 km across) through a variety of meso-scale features such as caves, solution pipes and pinnacles to smaller-scale tubelets, vughs and breccias.

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Exit Cave, Tasmania

D'Entrecasteaux River Sumps exploration 2013

Janine McKinnon
STC

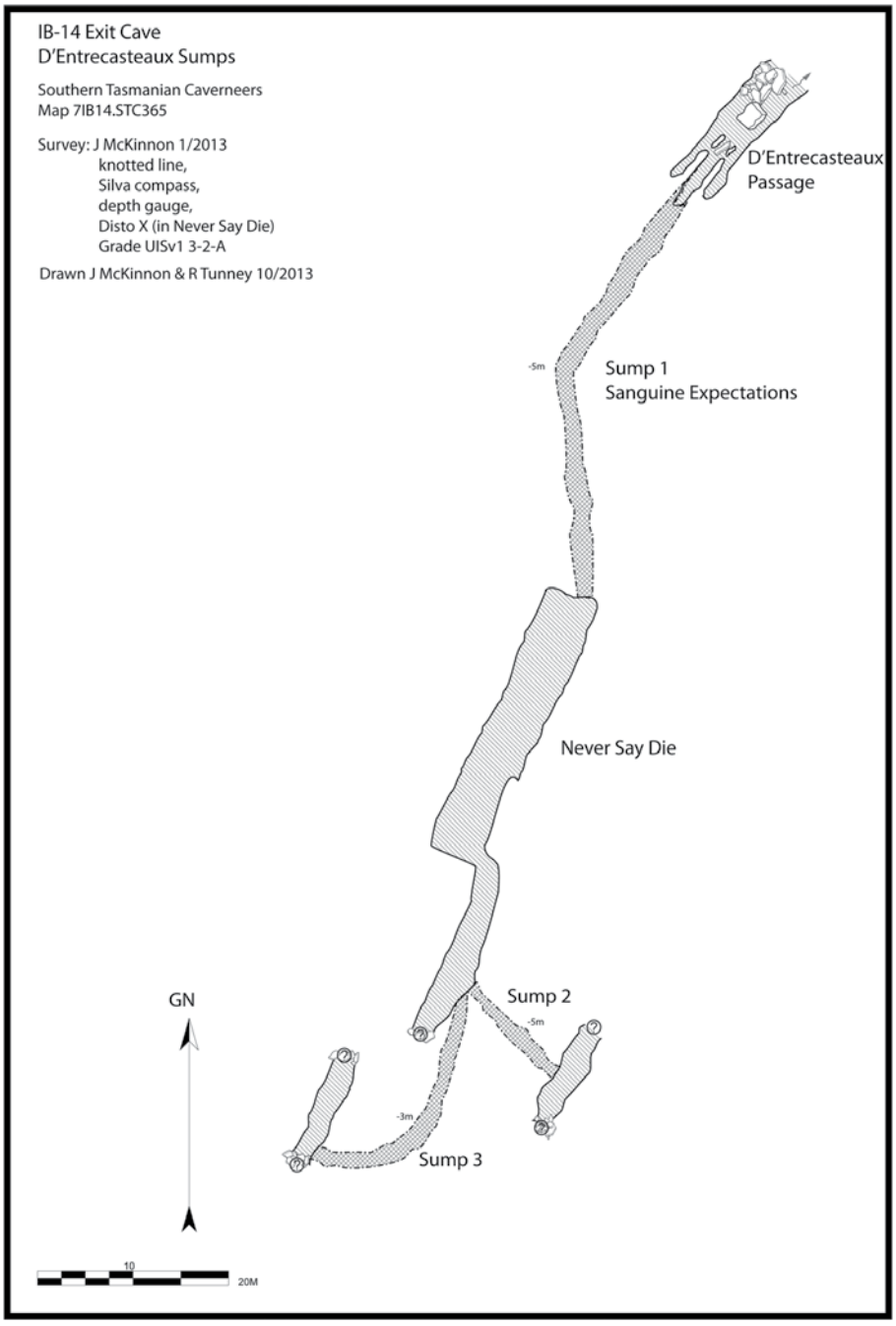
BACKGROUND

Exit Cave is a large, multi-entrance system in Southern Tasmania. It is arguably the longest cave system in Australia. (Cue the arguments regarding Bullita in the NT.)

The cave has been known for many decades, and multiple expeditions and day trips have been undertaken to explore and survey it, mainly in the 1960s and 1970s. Despite all this attention no comprehensive map yet exists. That topic alone would warrant a book. Currently STC is undertaking a multi-year survey and map exercise, coordinated by Tony Veness.

The D'Entrecasteaux River rises in the Southern Ranges near Pindars Peak. It has a large catchment area and takes large volumes of water when the (frequent) rains are falling in the area. An anabranch sinks and resurges twice, before sinking a third time into the lower southern slopes of Marble Hill. The river reappears in D'Entrecasteaux Passage in Exit Cave.

Despite heavy visitation to the cave over the years, there has only been one attempt to connect the third D'Entrecasteaux River sink with the resurgence of the river inside the cave, several hundred metres in a straight line from where it sinks. The dive was attempted by Bruce Stewart, from the inside of Exit, and he reported an impassable restriction at the entrance to the underwater passage (Bridge 1995).



EXPLORATION

I decided it was about time to try to make the connection, and hopefully add the survey to the current mapping project of the cave. An 'impassable' restriction to a back-mounted diver is not necessarily so to a small, side-mounted diver. Dive tanks carried on the side of the body offer a lower profile, and thus divers can fit through smaller openings.

Armed with the (two sentence, second hand) dive report of the previous attempt (Bridge 1995), and the sketch map from that report, I started my first dive in the sump pool on 22 February 2013 with optimism. This proved to be premature, as the restriction at the entrance to the passage out of the sump pool, as reported, was not where the map showed it to be.

Two hours of searching the pool, in less than half a metre visibility, and with a few false starts grovelling (underwater) between tight boulders that had looked promising, and I admitted defeat for the day. I was a little deflated, and confused too.

JONATHAN ESLING

D'Entrecasteaux Passage, Exit Cave

I had waited until late in the summer to start this project, aiming to avoid flood conditions in a river that takes high flow. It seems I had waited too long. In late February, in a drought year, the flow had stopped. Thus I had no flow to show me the entrance to the underwater passage, and the water was very tannic, so visibility was much less than the usually stupendous 1-3 m in Tasmanian sumps.

I returned a week later, and spent another hour in fruitless searching, mostly by feel, in the atrocious visibility.

I had covered all the walls, side passages, cracks between boulders and looked thoroughly again where it was shown as starting on my sketch map. Ric finally pointed to a spot in the middle of the pool where he thought he saw a leaf move slightly. This was my last hope, and, with little enthusiasm, I dropped down to have a look. And there it was.

The restriction was easy to fit through in side-mount diving gear and being a fairly small person. The passage was large enough to be easy to move through and I swam about 70 m before surfacing in a large chamber ('Never Say Die' - NSD). I tied off my exploration line, had a short look around, and headed back out.

On the third trip I explored NSD and found another sump (Sump II) part way along the dry passage. This proved to be small, tight, zero visibility, about 15 m long, and emerged into another passage with air space. I explored this for an hour but much of it was low crawling in thick, gooey mud and water (in my drysuit). Most of this passage is usually sumped.

I only had underwater survey gear with me (knotted line, compass, depth gauge) and decided not to survey this 'dry' passage with that equipment. The fact that it would be a horrible job in my drysuit might have had something to do with that! I was dressed for 6°C water temperature and I was overheating badly in the 'dry' passages, where the temperature was closer to 14°C. The water was also much warmer than usual, at 12°C. You can be too heavily dressed in Tasmanian caves.

I started surveying out from the start of Sump II. I had a Disto X (borrowed from Alan Jackson, under threat of death if I damaged it) for the dry passage survey in NSD, so that part of the cave was surveyed to a higher standard than the underwater bits.

The first sump (called Sanguine Expectations) was also surveyed on this trip.

A few weeks earlier I had discovered that the D'Entrecasteaux Third Sink (IB232), normally sumped, was open due to the dry conditions. So, while I had being playing around from the inside, Alan Jackson and a visiting pommy caver, Chris, had surveyed this to its terminal rockpile. Some of this surveying was done while swimming.

On the fourth and final trip for this year, I planned to look for the main route out of NSD, and hopefully find a way around the rockpile at the end of the passage Alan had surveyed. This would complete the connection from the resurgence through to the main cave.

After a few false leads, I did find a way out of NSD, a third sump, and surfaced in a long (about 50 m) passage. This was looking good, until I found yet another rockpile at the end. In fact, both ends were blocked by rockpile.

More searching failed to find a way around this rockpile so I started the survey out and back to NSD.

CONCLUSION

At the beginning of this exercise, the sump pool inside D'Entrecasteaux Passage was 250 m from the sink (IB232). After the diving, and survey from the sink by Alan and Chris, the gap is now 50 m.

I had a good search at both rockpiles for a way around, with no success; I will return in the 2014 season for another try. This river takes large volumes of water, and I am hoping to find a humanly navigable passage.

CREDITS

Exit Cave is an hour's fast walk from the cars, with a climb and descent of about 200 m. Dive gear is bulky and heavy. The first three trips could not have happened without the help of many Sherpas. Ric Tunney and I did the fourth trip on our own (and left gear in the cave we removed a week later).

The entire exercise was done under the aegis of the Exit mapping project, which has received support from ASF and the Tasmanian Government.

FURTHER READING

More detailed reports have been published in the Southern Tasmanian Cavern-eers journal, *Speleo Spiel:* No 395.

The map was first published in Speleo Spiel No. 398

REFERENCE

Bridge, Russell 1995 Surveying in Exit Cave – Australia's longest? *J. Syd. Speleol. Soc.,* **39**(2): 21-31.

REVIEW

Living Lights

The glowworms of Australia and New Zealand

By Cathie Plowman with David Merritt

John Brush
CSS

TASMANIAN caver Cathie Plowman teamed up with Queensland-based glowworm researcher David Merritt to put together (and self-publish) this attractive little book aimed at the general reader.

The essence of the book is admirably captured in its introduction: 'This book is a celebration of glowworms. It has been published for people who are curious about them, perhaps after admiring them in a cave or rainforest'.

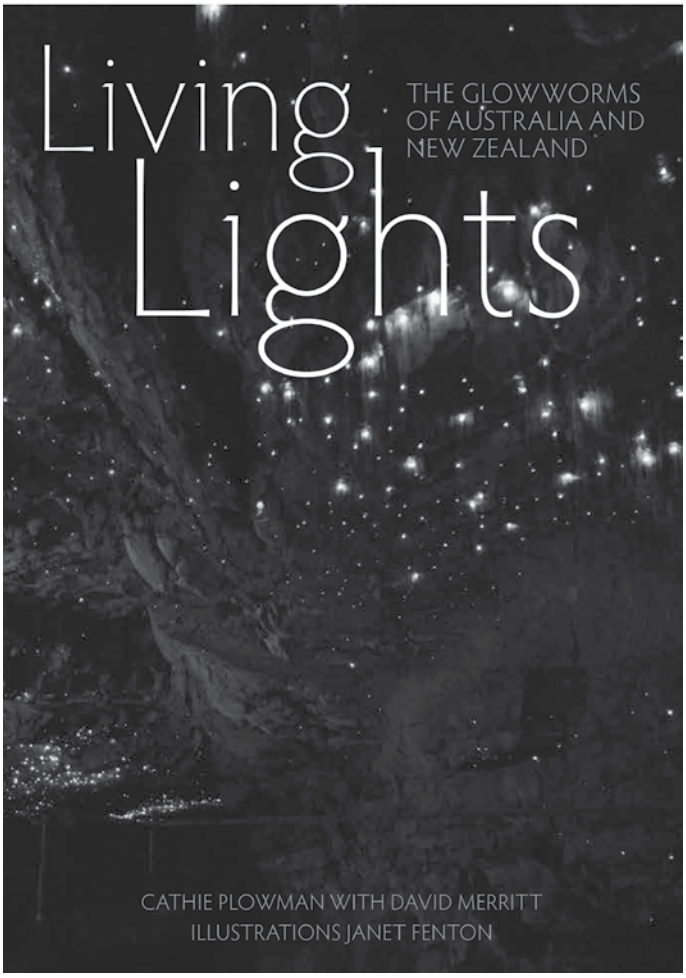
Over its 44 pages, the B5-format book reveals much about the largely hidden life of glowworms. It weaves together information about their life cycle, biochemistry and taxonomy with how they catch their prey, when they vary their light intensity, the perils of interfering with their environment and differences between glowworm species in Australia and New Zealand together with information on where to find them in both countries.

It even explains why glowworms are different to bioluminescent insects in other parts of the world, why 'glowworms' and not 'glow-worms' and the difference between mucus (the slimy or sticky substance on glowworm threads) and mucous (the glands that produce mucus).

A couple of pages are devoted to the work of Dr Aola Richards, a former glowworm researcher in New Zealand and Australia and, incidentally, a co-founder of Helictite.

The book also has vignettes on several people who currently work with glowworms, including a university researcher (David Merritt), a Tasmanian cave operator, a Queensland National Park Ranger, a New Zealand cave operator and an environmental scientist employed by New Zealand's largest show cave operation.

It is interesting to read about such a variety of people who effectively owe their living to the bioluminescent but otherwise insignificant slimy 'grub' and it is incredible to think that the grub largely sustains the economy of a whole town in New Zealand.



The text is generally very readable but I found the brief explanation of the light-producing chemical reaction a little difficult to understand.

The full-colour book contains many photos and is lavishly illustrated by Janet Fenton. Glowworms are difficult beasties to photograph and it is even more challenging to capture a good image of a glowworm light display. However, the book includes some nice photos from a number of New Zealand caves, including from Mangawhitikau Cave, which has, arguably, the finest glowworm displays that are available to the public.

This book will have wide appeal and while it is largely aimed at the general public, it would be a worthy addition to the library of any caver.

At just $15 (RRP), it is very good value. Sales outlets for the book are still being developed, but it is already available from Astrolabe Books in Hobart (online at: www.astrolabebooks.com.au), from the Minnamurra Rainforest Centre (Budderoo National Park, NSW) and at Waitomo, Marakoopa and Gunns Plains Caves. If need be, it can also be purchased directly from Cathie and it is available via the ASF website Publication Sales page.

JF-382 Dissidence Yields Again

Alan Jackson
STC

I'M HAPPY to report that my recent article in *CA*195 is out of date already. In January 2014 a mob of Southern Tasmanian Caverneers and some miscellaneous mainlanders targeted JF-392 Warhol, a cave found and first pushed in the 1980s (that draught had to go somewhere).

It has been long suspected this cave had more to offer and a traverse above a pitch on the original route yielded an alternative pitch series which has ultimately connected into JF-382 Dissidence at the far upstream point pushed in May 2013. From all accounts it was a particularly unpleasant section of cave but virgin cave is virgin cave and connections are always fun.

LAURE GAUTHIEZ-PUTALLAZ

Mark Euston at the entrance to Warhol

Vital Statistics: Warhol used to be 130 m deep and 168 m long. From the tag to the connection point, it is now 216 m deep and 514 m long. The combined system is now 3970 m long (let's call it 4 km) but no deeper than it already was (Warhol entrance is ~19 m lower than Dissidence's).

Good work by Andreas, Mark, Laure, Dickon, Nat and sundry.

Read all about it in the next (special 400th) edition of *Speleo Spiel.*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