



# AUSTRALIAN CAVERNO 145



Along the the crystal streamway - Bullita cave System, Gregory National park  
*Photo by John Brush*



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## What's Coming Up...

For an up-to-date what's happening, visit  
<http://rubens.its.unimelb.edu.au/~pgm/austcave/events.html>

### "Hidden Aspects" - June McLucas Art Exhibition 7 Aug to 20 Sep 1998

Burnie Museum & Art Gallery, Burnie, Tasmania.  
The exhibition includes paintings of caves from Mole Creek (Genghis Khan, Kubla Khan and Croesus Cave), plus Junee-Florentine (entrance to Growling Swallet), several caves from Yarrangobilly and Nullarbor and a small cave under Uluru (Ayers Rock).

\*\*\*\*\*

### NSW Speleological Council meeting October 25<sup>th</sup> 1998 Abercrombie Caves,

\*\*\*\*\*

### Down to Earth 6-8/march 1999

A weekend of workshops and seminars focused on speleology. Passing on of knowledge from those whom have it, to those who want it.

Topics include - Surveying and Mapping, Geology, Photography, Cave Fauna, Documentation, Conservation & Vertical caving techniques

The weekend will also see the launch of "Scrubby Creek" the Video.

Guest speakers will include prominent Australian cavers with presentations on recent trips Locally and abroad.

The cost will be minimal with a number of options available.

For further information and enquires contact:  
Secretary - Victorian Speleological Association Inc  
GPO Box 5425CC  
Melbourne, Victoria 3001

\*\*\*\*\*

### 13th Australasian Conference on Cave and Karst Management, ACKMA Conference- 18 Apr - 24 Apr 1999 Study Tour 25 Apr - 27 Apr 1999

Theme: The Water Below - The management of karst aquifers.

Place: Naracoorte Caves, South Australia, Australia.

Contact: Brian Clark,

Naracoorte Caves, P.O. Box 134, Naracoorte, SA 5271, Australia.

Tel: +61 (87) 62 24 22 (office).

Email: [naracaves@rbm.com.au](mailto:naracaves@rbm.com.au)

\*\*\*\*\*

### NSW Speleological Council meeting

1999, venue TBA.

Details: Chris Dunne, PO Box 193, Westgate, NSW 2048.  
Ph. 02-9560-3060

\*\*\*\*\*

### 22nd Biennial Conference of ASF, Yeppoon, Queensland

**January 1999** - See details at [cqss@cqnet.com.au](mailto:cqss@cqnet.com.au). Web site: [www.cqnet.com.au/~cqss](http://www.cqnet.com.au/~cqss) or in this issue of *Australian Caver*

\*\*\*\*\*

### 5th Karst Studies Seminar, Wellington, NSW. February 4-7<sup>th</sup> 2000

Details: Ernst Holland, 47 Nelson Street, Raglan, NSW 2795. Ph. 063-373-661  
(H), 063-325-888 (W) or [jenolan@ix.net.au](mailto:jenolan@ix.net.au)

\*\*\*\*\*

### International Congress of Speleology, Brasilia, Brazil July 2001

\*\*\*\*\*

### "Cavers Picnic: 31<sup>st</sup> of October

Part of the Sydney University Speleo Societies 50<sup>th</sup> birthday Celebrations at Bungonia caves  
Contact mathew Hole  
94168374





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All contributions are welcome

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- \$350.00 per full page back cover
- \$100.00 per full page fly sheet

Advertisements for events within the caving community will cost:

- \$70.00 per full page
  - \$35.00 per half page
- Smaller sizes are available on request. For upfront payments on a series of four advertisements, a 10% discount shall apply

*The views expressed in the Australian caver are not necessarily the views of the Editor, or of the Australian Speleological Federation Inc*

# Contents...

<u>What's coming up</u>	<u>1</u>
<u>Editorial</u>	<u>3</u>
<u>Letter to the Editor</u>	<u>4</u>
<u>ASF Cave Diving Group</u>	<u>4</u>
<u>Cave Queensland Update</u>	<u>5</u>
<u>ASF Membership &amp; Financial year</u>	<u>7</u>
<u>Do we need an ASF Code on Bolt Laddering</u>	<u>8</u>
<u>Karst Index Progress Report</u>	<u>10</u>
<u>Update on Bat Sites at Warrnambool</u>	<u>13</u>
<u>Bullita cave System</u>	<u>14</u>
<u>Analysis of a Caving Incident</u>	<u>16</u>
<u>Attack of the Killer Wombat</u>	<u>20</u>
<u>Safety Auditing Caving Ropes</u>	<u>21</u>



## Editorial

Wow, life is hectic for me at the moment, so hectic I haven't even got time to write an Editorial! I'm sure you'll all notice the drop in quality with this issue too – all due to time restraints. Can't be helped I'm afraid...

All I will say, is that I had the "privilege" of attending the ASF Executive meeting recently in Sydney (See "news in Brief"). I'll tell you what, members sure get value for money with the cost of running Executive meetings! On the Saturday, the meeting started at 9:00AM, and apart from a couple of (short) meal breaks, didn't finish until 11:30PM that night!

Sure enough, at the crack of dawn they were at it again, and were still going when Arthur Clarke & I had to leave to head back to Hobart on Sunday afternoon. Don't think that your ASF membership money is wasted on these events. Believe me, having attended one, you are really getting valuable value for money on the ASF's part.

I should mention that one of the outcomes of the Sydney ASF Executive meeting, is that the Editors load has just become vastly lighter. Angus Macoun has been nominated as the ASF's "Publishing Editor" – meaning that I just send the finished article across to him in Sydney on disk, and he is responsible for the publishing, printing and distribution of it. This is the first issue to use the mainland publishing process, so there may be a few hiccups in this issues production. The "publishing and distribution" aspect of being Editor certainly took a reasonable chunk of time, so I'm glad to be rid of it – plus there are the large cost savings of getting it all published on the mainland as opposed to Tasmania.

Meanwhile, keep sending those contributions in, and we may have couple of "Surprises" with the next issue – one of them I know I'll be happy about...

Dean Morgan  
Editor

## Stop Press!

*"The caving community recently heard the tragic news of the death of David Jackson of SUSS."*

*"David's friendliness, eagerness and cheerful nature won him countless friends from many caving clubs. He will be sorely missed."*

*"A full obituary will appear in the next 'Australian Caver'."*

## News in brief...

### ASF Executive Meeting, Sydney, May 1998

Every member of the Executive was present along with Alan Jevons, Dean Morgan, Chris Dunne & Chris Norton for parts of the meeting. Some of the more important matters discussed were:

**ORCA Leadership Standards:** Alan Jevons spoke on progress towards National Standards. ASF will seek funding to produce a training resources manual and will not wait until commercial providers do so.

**Intellectual Property:** a committee is to conduct an ASF intellectual property asset audit and form a register to protect our interests and strengthen ASF's contractual capacity

**Finance & audit:** we are required to keep all ASF funds under the control of the Executive

### Terms of Reference of Commissions

**& Committees:** to be reviewed and where necessary reworded following a direction from the ASF Council and to accord with auditing and incorporation requirements

**Foundation:** resolved to investigate registration of ASF as an Environmental Organisation to facilitate the proposed Foundation

**Membership Cards:** clubs will have the option whether or not to utilise the cards, which will show only a member's name, society, serial number and year of currency.

**Insurance:** Alan Jevons was authorised to make some minor amendments to the insurance policy to reflect Constitutional changes approved at the last ASF Council meeting

**Newsletter:** quality has improved markedly, costs to be kept within budget, will be printed in Sydney, advertising to be sought.

**Karst Index:** concern expressed over delays & backlog of data awaiting inclusion. To be supplied by end of July.

At its 50th Anniversary Dinner in May, SUSS announced that **Mammoth Cave, Jenolan**, now appears to be the deepest cave on the mainland of Australia. Divers have penetrated 72m below the lowest water level in the cave. The overall vertical extent remains to be confirmed. Diving is gradually reducing the distance separating Mammoth and Spider Caves. Huge logistical difficulties remain, but if a connection can be made the system (combined with the Jenolan show caves) will be one of the longest caves in Australia.

Steve Reilly has been appointed **Manager of Jenolan Caves**. Steve has been a keen speleo, having explored caves in Thailand and Malaysia and attended the International Congress in Beijing in 1993. A few years ago he spent 14 months developing a new tourist cave near Ipoh in Malaysia, and earlier appointments were at Yarrangobilly and Wombeyan Caves.

In 1997 a joint expedition of Canberra SS and the National Parks Division explored **Tham Salaeng Luang**, a cave in central Thailand, to 6.1km. In April 1998 Thai National Parks personnel continued exploration to a sump after surveying 12.1km. This makes Tham Salaeng Luang the second longest in Thailand, with some leads remaining. One spectacular straight section of the river passage is 300m long, 10m wide and 20m high.

Well-known Sydney caver Al Warild was honoured a few months ago with the **Spirit of Australia Award** (Silver Medallion) of the Australian Geographic Society. A recipient also of the ASF's Certificate of Merit, Al received the award "for achievement in cave exploration which includes leading the first Australian expedition to explore a newly discovered cave deeper than 1,000m, and nine solo trips through caves deeper than 1,000m including the (then) world's deepest, 1,535m Jean Bernard in France". Al is reported to have likened these to "tourist trips" because of their simplicity in comparison to larger expeditions (Al has also apparently given up solo caving after suffering a serious accident a few years ago).

Along with Greg Tunnock & Mark Wilson, Al Warild joined a **French expedition in New Guinea** to further explore Muruk Cave, the first 1,000m+ cave in the southern hemisphere. The team made a through trip from Muruk to Berenice cave, an 8km journey descending 1,128m.

An exhibition of drawings of caves by well-known caver **June MacLucas** was opened in Burnie on August 7 by David Wools-Cobb, a member of Northern Cavekeepers. ASF was represented by David Heap, President of Savage River Caving Club. The exhibition is open at Burnie Regional Art Gallery until September 20.

### Fourth Karst Studies Seminar

**Mole Creek, Tasmania, 10-13 February, 1998**

This was the fourth in a series of informal gathering of speleologists from around Australia and was organised by Henry and Rosie Shannon with assistance from Northern Cavekeepers and others. Previous seminars have been held at Buchan, Wombeyan and Naracoorte. Accommodation was in the comfort of the Mole Creek Guest House and about 25 people attended including some passing speleologists from Switzerland and Canada. All the paper sessions were held in the evening to maximise time for field trips to the Mole Creek karst, Baldocks, Croesus and Lynds Caves, a Grand Tour of Marakoopa Caves 1 & 2 and the entrances to Devils Earhole and Devils Pot. The weather was merciful, the food excellent, and the small company made for pleasant conversation.

Abstracts of papers presented may be obtained for a nominal charge from Rosie Shannon, 319 Brisbane Street, Launceston, Tas 7250.

*Carbonate rock karsts of Tasmania* (A. Clarke)

*High resolution trace element analysis of "banded straws" from Francombes Cave, Tasmania* (J. Desmarchelier, M. McCulloch & A. Goede)

*Speleothem sampling in caves: a scientific perspective* (J. Desmarchelier & J. Hellstrom)

*Changes in bryophyte communities on limestones in south-eastern Australia: implications for the management of karst systems* (A.J. Downing, P.M. Selkirk & R. J. Oldfield)

*Cave fauna management at Ida Bay* (S. Eberhard)

*Karst terrain management and the International Geographical Union* (D. Gillieson)

*Evaluating hillslope stability in tropical karst* (D. Gillieson)

*Sand speleothems at Loch Ard Gorge, Victoria* (K. Grimes)

*The Scott Creek karst - stream drainage diverted underground by a lava flow?* (K. Grimes)

*Caves may lead conservation* (E. Hamilton-Smith)

*Ribbon helictites: a guided tour* (J. Rowling)

*Buildup and removal of cave fills as a guide to event sequence at Mole Creek, Tasmania* (H. Shannon)

*Lithological aspects of syngenetic karst in pleistocene dunes in south-western Victoria* (S. White)

The Fifth Karst Studies Seminar will be held in Wellington, NSW in March 2000.

A virtual reality model of part of **Abercrombie Caves, NSW**, can be accessed through the Web site for Jenolan Caves Reserve Trust. The model was built by Charles Sturt University using Virtual Reality Modelling Language and recently featured at the first Virtual World Conference in Paris. Visitors experience a virtual walk through the caves via the Internet. The site can be found at <http://clio.mit.csu.edu.au>.

At the June General Meeting of the Sydney University Speleological Society, a motion was unanimously carried to make Keir Vaughan-Taylor an **Honorary Life Member** of the Society. In the 50 years of the Societies existence, only 4 life memberships have been awarded. They have been awarded to:

1. Henry Shannon,
2. Bruce Welch,
3. John Dunkley,
4. Keir Vaughan-Taylor

The prestigious award was declared in recognition of nearly 20 years of service, not only to SUSS, but the speleological community at large.



# Letters to the Editor

## Without Prejudice

While re-reading part of the latest edition of Australian Caver [#143], I perused the list of definitions attributed to Max Meth and others. The item mentioned a similar list of definitions published in the previous edition of the Australian Caver. One particular definition from the latest list stood out from the rest, notably "SPELEOLOGY - The art of spelling".

Now, spelling and grammar play an important part of a culture and, as newspapers, newsletters, journals, bulletins, periodicals or magazines reflect the public stature of a country, organisation, ethnic group or whatever - getting words, phrases, place names etc. correct becomes more important as reader's perception of those "groups" can be influenced by what they read about them in those august publications.

The Australian Caver is the public face of the ASF and as such should be seen as accurate, especially when it comes to spelling terms, phrases, regions and all things uniquely associated with karst.

Unfortunately, this is not always the case, especially when one Lucinda Coates [or the editors] is concerned. I trust that is her name - as it is spelt the same way on at least eight occasions in various locations over the two issues, so one then assumes it to be correct - which is the thrust of my argument.

The photographic caption accompanying the "Caving Definitions" in issue #142 refers to "gypsum stalagmite - Thampanna Cave Nullabor". Was there only one?

Now, when I learned my decoration definitions, the bits that came down from the ceiling were called stalactites, presumably because they had a "c" in them. Stalagmites were spelt with a "g" because they "grew" up from the ground.

a straw as, to the best of my knowledge, it is not hollow. As far as I am aware, it is an extrusion, and not even circular. Should there be a new definition formulated to cover such halite and gypsum features?

**All Letters to the Editor are welcome  
Please address them too:-  
Australian Caver  
"Letters to the Editor"  
17 Belhaven Ave, Taroom  
Tasmania. 7053  
Or email them to  
deanm@netspace.net.au**

The Nullarbor again lost its central "r" while Thampanna Cave suffered another variation. Thampanna's "m" was restored while the second "n" had been deleted. Surely, in this day and age of widespread computer use, I would have thought that authors and editors would by now have customised their respective spell checkers to correct such indiscretions.

The caption of the last photograph highlights another issue I wish to dwell on, referring to stalactites as "stals", a reference I find quite vulgar. It may be considered quite acceptable to utter such a term in private conversation or even a club meeting but when it comes to publishing, especially in the Australian Caver - such inclusions reflect on the quality of the entire organisation. In the example quoted, there is no excuse for the inclusion of "stals" instead of "stalactites" as there was sufficient space on the line to write the full term.

In closing, I hasten to assure Lucinda Coates, Dean Morgan and Sherry Mayo that I am not singling them out in isolation [I rely heavily on spell checkers], rather these two issues of Australian Caver provided what I consider glaring examples of an age-old problem.

Norman Poulter  
3/6/98

## The formation of a Cave Diving Group of the ASF

Cave divers within the ASF are widely spread within Australia, and while some areas are experiencing a boom in diving activities others are struggling due to difficulties with access, isolation or small numbers.

In January, the ASF Council approved the formation of an "ASF cave diving Group" to further cave diving through out the country, to bring divers closer together and to generally assist in cave diving matters.

Some of the issues facing divers through out the country have already been

made known to the Cave Diving Commission, but if we are really to help further cave diving within Australia then there are a few questions we need to ask of the membership to assist in planning the future initiatives of the Cave Diving Commission.

If you are a cave diver, were a cave diver, or want to be a diver then we ask that you please answer these questions and return the responses by Email to me, or by post to Peter if you do not have access to Email.

Please only answer the relevant questions, even partial responses will help.

1. Which club do you belong to?
2. What karst areas do you cave in?

Prospective Cave Divers:

1. Why do you want to cave dive?
2. Why haven't you?

Cave divers:

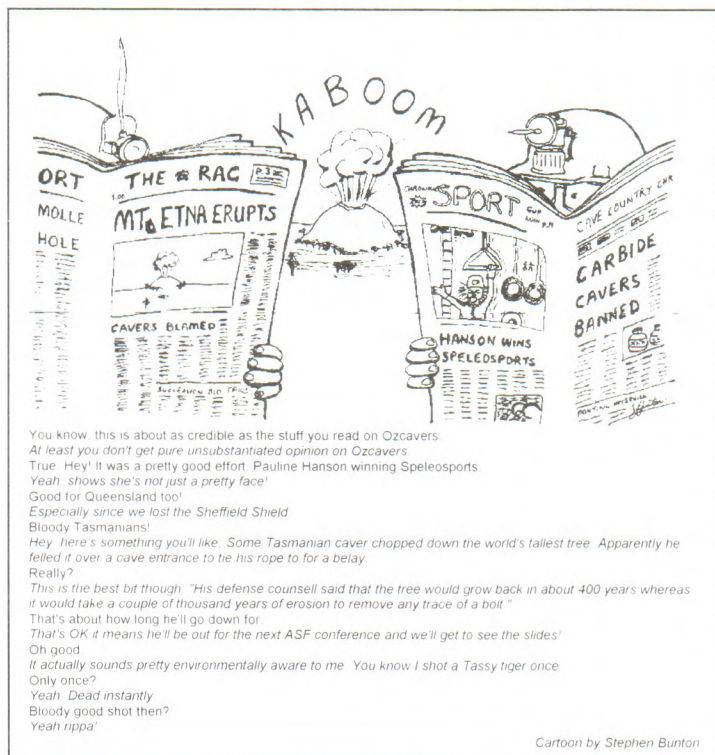
1. How often do you cave dive? or Why did you stop?
2. Who trained you?
3. When were you trained?
4. Do you have any issues with, access, training, safety, conservation, standards, finding buddies etc.
5. Do you feel that you could play a role within the ASF-CDG?
6. What do you feel the ASF-CDG should be doing?

Feel free to answer the questions as briefly or as fully as you desire, if there is a group of you who share similar concerns, then a combined response would be appropriate. What we need is the information, we are not attempting to impose further bureaucracy upon divers but to protect them from it, please help us do it, let us know who you are.

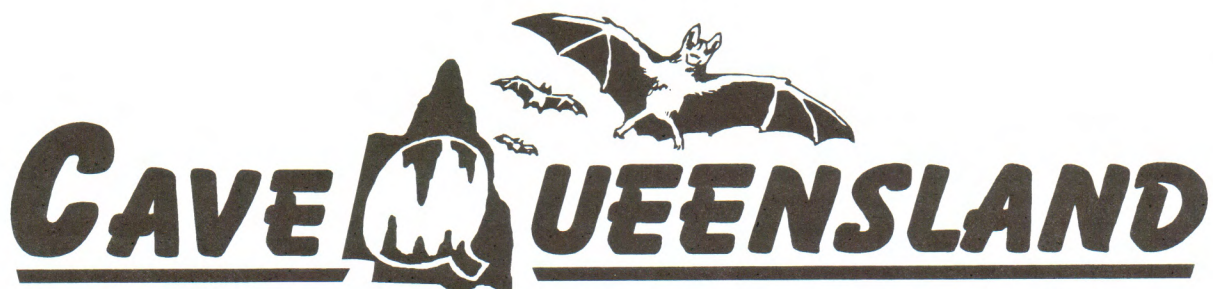
Please reply by Email to Tim Payne at  
tpayne@erols.com or tim.payne@dsto.defence.gov.au  
or by post:

Attention Peter Kraehenbuehl, Cave Diving Co-Convenor, PO Box 273 Belair 5052.

Responses must be in by October 30 1998.







**22nd Biennial Conference Australian Speleological Federation 1999**  
**Taking Caving into the next Century with Fun, Unity and Fellowship**

**UPDATE BRIEFING - August 1998**

The ASF 22<sup>nd</sup> Biennial Conference is a national caving event where cavers from Australia and overseas can meet and learn more about the sporting and scientific caving achievements from the past, present and the future. We believe that this is what motivates cavers; the excitement of discovering new caves; the satisfaction of seeing beautiful mineral formations; walking through caverns carved out by underground rivers; seeing the preservation of caves, and associated flora and fauna. This atmosphere will be depicted throughout the conference and captured in the photographic and video displays.

Central Queensland is such a great holiday destination, and encourages families to combine this Conference with an extended holiday visiting other areas of interest and take advantage of the pre and post caving trips.

**What's on offer.....**

- All events (except caving trips) on site
- Accommodation and Meals on site
- Workshops and Paper Presentations
- Working/Static Displays
- Photography and Video Displays
- SRT Competition
- Photographic Competition
- Historic Photo Display
- Council Meeting
- Speleosports
- Refreshments
- Cave Man's Dinner - Awards

**Camp Accommodation and Meals**

Accommodation (for 100) at the National Fitness Camp is available in bunk style dormitories of 10 beds. There was to be a full refurbishment by January 1999, but alas, there will only be two completed to accommodate 4 people and 6 people respectively. But do not despair! They will be all airconditioned in time for the Conference. Remember, we need to know how many, who are attending the Conference, wish to take advantage of the full package offer, no later than 31 October 1998.

**Alternative Accommodation**

For those not interested in staying at the Camp, the following guide will assist with booking accommodation close the Conference facility. **NOTE - the Capricorn Coast is a popular tourist resort over the school holidays, so bookings NEED to be done as soon as possible, or you may miss out!**

Poinciana Caravan Park Scenic Highway 0749 391601 0749 391333 Fax	0749 336193  Roslyn Bay Inn Resort Memorial Drive Roslyn Bay 0749336333	Sunlover Lodge (2 bedroom holiday units) 3 Camelia Street Kinka Beach 0749 396727 0749 396358 Fax
L'Amor Holiday Apartments Scenic Highway 0749 336255 0749 336661 Fax	Seaspray Water Front Holiday Units 45 Wattle Grove Coee Bay 0749 391421	Kinka Kippa Units (Budget Priced s/c) 1004 Scenic Highway Kinka Beach 0749 387373
Golden Sands Holiday Units Scenic Highway		

**Photographic Competition**

Everyone from the beginner to a seasoned professional can display their photographs and will judged on their technical, artistic, and aesthetic qualities. We aim to encourage both new and experienced cave photographers to submit their work covering all aspects of caving. There is **no** entry fee and there will be prizes awarded. It is **NOT** necessary to attend Cave Queensland Conference, just forward your slides/prints. Entries will be accepted up to (date) but early registration is preferred. Categories are open and include: colour, slides, black & white, old and new, serious or humorous.

**Workshops and Displays**

There will be a full program of workshops and paper presentations, on speleological topics from around Australia in and around the main hall and foyer, throughout the week.

Excellent displays will offer maximum impact for entries in the Photographic Competition; Historic Photo Display; trade stands and demonstrations. Videos will be on view at regular times throughout the day.

**Reminder** - anyone with photos of people, places, event, flora, fauna and any others of historical interest who wish to share their treasures with their fellow cavers, please forward copies with relevant information on each as soon as possible. Please do not send originals if you want your photos returned.



## Meetings

There will be two (Monday and Friday) ASF Council meetings and the Conference is used as a formal meeting venue for the ASF AGM.

## SRT Competition/Speleo Sports

During the conference there will be SRT Competitions for both beginners and experts, with prizes for the winners. The course will feature..... You will have to come and see.

Speleosports this year have some exciting and interesting twists, so come along and have some fun!

## Call for Papers - again!

Expressions of Interest in presenting a paper or workshop on any topic of speleological interest. Submissions to be forwarded to:

Cave Queensland Conference  
PO Box 538  
ROCKHAMPTON 4700  
**ASAP PLEASE!**

## Pre/Post Caving-Field Trips

Bat Cleft Tours - remember this is limited to 15 persons per trip and you need to express your interest, as bookings are limited.

The CQSS campsite at the base of Mt Etna is available for local caving trips, pre and post, which includes toilet, shower; water; fire place and lighting facility.

Other caving includes Fanning River; Broken River and Chillagoe areas.

Information Summary for Broken River - John Kersey

Location: Approximately 80 kms south west of Greenvale. Greenvale is on the Charters Towers -- Mt Garnet Road.

Area Description: Dryish inland open forest country, fairly hilly to rugged terrain. One major permanent water courses in the area of approximately 50 kms by 20 kms. (main limestone outcrop area). There are several smaller semi-permanent watercourses; most likely these will be running in January. There are approximately 500 odd, recorded limestone outcrops (see Mick Godwin's Broken River maps). Of these, a significant number are quite large (up to 10 sq kms) with heights up to 70 mtrs. Most are Tower Karst of extremely rough nature, very similar to Chillagoe. Approximately 130 caves only, have been tagged in the entire area and many of the outcrops have never been looked at.

Access: Townsville is the nearest major city with Charters Towers being the next closest. Greenvale has a Store, Hotel, Police Station and Service Station. The distance from Townsville to Broken River is 330 kms via Harvey Range Road, (100 km of dirt) or 400 kms via Charters Towers. (Bitumen all the way to Greenvale) from Greenvale there is a reasonable dirt road to near the Big Rush Gold Mine (approx 60 km), the remaining 20 km and tracks, throughout the area, are rough requiring high clearance vehicles.

Facilities: As mentioned, Greenvale is the nearest supply point but it is at best 1 - 2 hours drive. It is best to regard the area as remote, and parties must be entirely self-contained including drinking water, (washing water is usually available). **NOTE** - At this time of year, (January), it would be considered a necessity to carry an extra week's supply of food and water as it is fairly likely that you could be flooded in.

Caving: The caves are principally in rugged Tower Karst. There are many vertical shaft entrances, (to 20 mts) and some of the systems are quite large and complex (up to 5 kms of passage). It is requested that any new caves found, be tagged and a minimum grade 2 sketch be recorded.

The properties - Landowner S: The area is on 3 grazing properties. Access is granted under very strict terms. Besides normal bush courtesies, gates, campfires, campsites, cattle watering etc, no shooting is permitted and no dogs are permitted.

## Families

Families with young children are welcome. However, a creche will be only provided if there is sufficient demand, so please pre-book this to avoid disappointment. Children under the age of six should not be taken into lectures.

## Small Print

All information is subject to change, if there are circumstances beyond our control.

There is a **NO SMOKING** policy in the lecture and exhibition areas.

## Refreshments

We have arranged tea, coffee, fresh fruit and cordial be provided at all times. Supper is also available at a cost of \$1.00 per person. A "late bar" will be open each night after 5.00pm for those wishing to relax and enjoy the cool evenings and converse, reminisce over the day's events or catch up with old friends. We look forward to seeing you and your family at the ASF 22<sup>nd</sup> Biennial Conference.

Contact can be made by phone: 07 49 342870; 07 49 342607  
or e-mail: cqss@cqnet.com.au

**Debbie Roberts**  
Secretary CQSS



# ASF's Membership & Financial Year

## - a personal view

by Chris Dunne

### HERE COMES THAT WHEEL AGAIN

In the last issue of *Australian Caver*, Garry Smith raised the issue of the two ASF administrative years being out of sync with each other, and suggested that ASF adopt the common Taxation Year for both.

### CURRENT SITUATION

Whilst Garry raises some valid points about the legacy of ASF's system of collecting fees, the ASF membership list, and the distribution of *Australian Caver*, there are a number of points which need to be clarified:

by common practice, ASF's Financial Year is the calendar year, January-December.

technically, all fees are due and payable from the 1st January each year; the amount of fees due is set out in the by-laws.

you have 12 months to pay, ie. you are expected to pay during the current calendar year.

payment is due by 30th June or you incur a late fee (and lose entitlement to any pre-July discount).

voting entitlements (ie. your club's number of Councillors) for the following Council meeting are calculated based on the number of paid up members a club has on 1st December each year.

if you haven't paid by the end of December you are not a member for that year.

those members currently financial on ASF's mailing list are the only ones entitled to receive *Australian Caver*.

### FINANCIAL YEAR, WHICH FINANCIAL YEAR?

This is an ambiguous term. ASF actually has three different years: Membership (January-December), Budget (February-January) and Book-keeping (September-August). The origin of these 'years' are matters of ASF's history. You will note that there is no year defined for July-June.

The Membership Year is established by long practice and probably goes back to the founding of the Federation in 1956. ASF's early meetings, and probably all of them with the exception of Wellington and Quorn in 1996-97, were in January each year so it's only natural that the fees for the year would be set then. Much later came the practice of setting fees a year in advance, but these were still for the calendar year.

ASF's Budget Year is much more vague, and relates to the approval of the Budget at the annual Council meeting, usually in early or late January. ASF Budgets are nominally for the calendar year, but in practice are from meeting to meeting.

Different Treasurers throughout ASF's history have used different Book-keeping Years, and in recent times this has been September-August. This was to give the Treasurer time to have the books audited and then circulate a Treasurer's Report in advance of the January Council meeting. It reflects the fact that the Treasurer is required to submit a report to each Council meeting and that the Federation must shortly thereafter submit this to Corporate Affairs in the ACT.

### SO WHERE DID 30TH JUNE COME FROM?

About ten years ago, the idea of a discount if fees were paid by some deadline was introduced to give clubs an incentive to pay in a timely fashion. That deadline was the 30th June and it was only formalised in 1991 in the *By-Law on Membership & Fees* adopted along with ASF's current Constitution. Even then, neither the by-law nor the ASF Constitution explicitly defined the ASF Membership Year - nowhere is the period covered by fees actually defined.

Nevertheless, by custom the ASF Membership Year is the calendar year of January-December, and the by-law only states that fees are to be paid by 30th June each year, not on that date. The existence of that deadline and the practice of most clubs to hold off paying till that time has prompted Garry to suggest that the Federation formally adopt a common year of July-June for all purposes.

### DISCUSSION

Many of the problems Garry has identified, or hinted at, do indeed need to be addressed. However, many of these are already covered under the existing system. Rather than change it, we simply need to spell out more clearly what the present system requires of people and clubs. The following discussion will give members some idea of how ASF operates in this area and explain some of the perceived problems.

Firstly, bear in mind that similar problems exist within all of ASF's member clubs. Different clubs have different Financial Years (their membership and book-keeping years are probably one and the same) - some have January-December, some July-June and others April-March. Irrespective of their own Financial Years, most clubs have members joining at any time through the year. University clubs are a bit different in that they have a huge intake in about March or April.

Clubs are also continually trying to keep on top of their own membership lists, and ASF itself relies on clubs forwarding updates to these lists. So keeping ASF's mailing list up to date is not necessarily related to the start or end of membership years, whether for ASF or for clubs. It's more a function of volunteers and motivation.

Nor does one's entitlement to *Australian Caver* relate to when a given club's membership year starts or when ASF's membership year starts or ends. In theory, one should be entitled to four quarterly issues for their yearly fee to ASF. But which four? And what of new members who join mid-year. What are they entitled to? Do they pay a full year's fee to ASF? If they pay a full year's fee, shouldn't they get the back issues for the half-year before they joined?

In proposing a formally fixed ASF year, Garry is seeking to have clear answers to these kinds of questions. However, by long practice ASF already has a formal membership year, which is the

calendar year. And fees are due and, in theory, cover a member for that period.

### FEES IN ADVANCE, FEES IN ARREARS, OR NEITHER?

The idea that people are either six months ahead or behind in their fees is not relevant. The fees are set for the calendar year and are due to be paid by 30th June. The only questions are these: Has 'Old Bill' who paid last calendar year renewed yet? And, has 'Jane New' who is joining this calendar year for the first time paid yet? Irrespective, the ASF Insurance covers them if they're on recognised club trips. It might not cover them when they haven't been paid for by the nominated times. If 'Peter Midyear' joins in October, then the club should pay for him as soon as practicable.

Saying that fees are due by 30th June doesn't change the fact that people are still members for the current year. People who 'leave' a club in September don't usually seek a refund, and people who join in March don't have to pay extra for that three months till June, nor do they usually seek a discount for the three months before they joined. The fact is, many ASF memberships are just renewals and most people are unconcerned about what period or benefit they are getting for this year's fee or last year's or next year's.

If the Membership Year was July-June, then what of all those people who do join a club, say a Uni club, in March but don't join ASF till July? Where would they stand as regards contributing to Insurance or subscribing to *Australian Caver*? Whilst the *Membership & Fees By-Law* is worded to allow for discounts from fees (up to the full amount), you must be classified as a member from some starting point, and that point has been 1st January for renewals or the date you first paid for a person who has joined for the first time.

### ENTITLEMENT TO AUSTRALIAN CAVER

The situation with *Australian Caver* is just one of those benefits referred to. I've been a member of ASF for more than 20 years and I wouldn't know whether this year's or last year's fee is what pays for the *Australian Caver* I got in the mail just a few weeks ago.

In practice, when someone joins for the first time, they just get entitlement to four *Australian Caver* issues - provided the standard number of issues is published! However, just what the different Treasurers, Editors and Mailing List Managers have done for the last umpteen years is anyone's guess. No one got refunds for the missing four or five issues from a couple of years back, did they. Maybe the *Australian Caver* we're reading now is the issue I paid for with my 1996 fees?!

### FEES, MAILING LISTS, THE NEWSLETTER AND WHEELS

Firstly, we're talking about volunteers. And different individuals volunteer different contributions to your ASF - and they all have other commitments as well. In managing ASF's membership list and newsletter



there are four discreet tasks: Treasurer, Editor, Newsletter Manager, Mailing List Manager. For forty years, ASF's mailing list has been handled variously by people wearing each of these hats. Twenty years ago these tasks were divided between just two people, more recently between three people and now again between two people - the current Treasurer and Editor. Every incumbent does things differently to their predecessor and some have no idea what their predecessor did and have to reinvent the wheel all over again.

It is only in recent years that the Treasurer has sent a 'reminder' for clubs to pay fees. For most of ASF's 42 year history, it was expected that Councillors returning from ASF's January meeting would advise their club of what fees were due. Clubs would be expected to pay of their own volition. The down-side to this system was that clubs were slow to pay fees and slack about mailing lists.

New members never got onto ASF's list in a timely fashion and old members continued to get the newsletter, after they'd ceased paying, until a new list was sent by their club months or even years later! The practice of sending a 'fees notice' was an attempt to remedy this. The April-May timing for this 'reminder' was as a consequence of the deadline mentioned above, and the 30th June deadline itself is just a handy spoke in this wheel.

# Do We Need an ASF Code on Bolt Laddering?

## Sydney University Speleological Society

### Introduction

At the ASF Council Meeting on 24-25 January 1998, the Council placed a one-year moratorium on bolt laddering, pending the writing of a discussion paper on the issue. This article is the edited text of a submission made by SUSS made to Arthur Clarke for consideration when formulating the discussion paper, followed by SUSS's response to the questions posed in the discussion paper.

### What is bolt laddering?

The term "bolt laddering" refers to an aid climbing technique where ascent of a climb is done exclusively, or virtually exclusively, using anchors drilled into the rock. However, bolt laddering is NOT:

The placement of selective bolts for descent of a pitch

The placement of a small number of bolts at a difficult and unprotected section of a climb which has otherwise been climbed using techniques which leave little or no permanent impact on the cave - eg freeclimbing, scaling poles, climbing chocks.

There are several different types of bolts. However, it is accepted that all bolting involves leaving some permanent fixture in, or mark on the rock. Holes for bolts may be hand-drilled, or drilled using portable power drills. SUSS also notes that due mostly to its tedious, technical and time consuming nature (even when power drills are used), the technique of bolt laddering is rarely employed in Australian caves.

### The role of codes

ASF codes and guidelines are intended to regulate or guide behaviour of ASF members (and, it is to be hoped, other cavers) wherever they may be. SUSS rejects the occasionally propounded view that an ASF code should be an "ideal" document setting forth a pattern of behaviour that cavers should aspire to. Rather, they should be practical and be broad enough to recognise the wide variety of situations in which they are likely to be implemented.

If codes set out an ideal model of behaviour, it is less likely they will be followed. Cavers will consider the code as an ideal, and not applicable to all situations. Therefore, if they seek not to follow the code, they can justify not doing so by arguing that "this is an inappropriate situation to apply the code". A code will be more likely to influence caver behaviour, and hence achieve its objective, if it is sensible and realistic. It is for this reason that SUSS argued for amendments to the draft Code of

Conservation and Ethics permitting blasting and camping in caves in certain clearly specified circumstances, rather than banning them outright (amendments which were accepted by the Council). These amendments recognise the speleological advances that can be made using these techniques in appropriate circumstances.

### Is there a need for a code on bolt laddering?

SUSS wishes to say at the outset that it rejects the idea of a specific code or guidelines on bolt laddering.

It is inappropriate for ASF to produce a plethora of codes dealing with various methods of traversing caves unless a particular method is so markedly different it demands separate treatment (for example, cave diving). Instead, ASF should ensure its prime codes (such as the Code of Conservation and Ethics and Safety Guidelines) are phrased sufficiently widely to cover all techniques likely to be used.

### There are three prime reasons for this:

Many karst managers attach permit conditions requiring compliance with the ASF Code of Conservation and Ethics and Safety Guidelines. It is more appropriate for these documents to contain reasonably comprehensive coverage of caving techniques. If individual codes are written for different techniques (eg codes on digging, blasting, camping, bolting, bolt laddering, scaling pole use etc) it will be difficult to keep people both inside and outside ASF informed of all these codes and any amendments from time to time. It will also require cave managers to specify each code if they want to ensure compliance - if a code is inadvertently omitted a caver would be justified in believing the manager was not concerned about the technique the subject matter of the omitted code.

Techniques evolve over time. It is more appropriate for ASF to lay down broad principles that will be able to apply to new techniques, or new versions of old techniques. We note that proposed changes to the Cave Diving Guidelines are in line with this philosophy - by specifying performance functions rather than prescribing specific techniques, the guidelines are less likely to become out of touch. This is particularly important due to the time consuming process needed to amend ASF codes, which often extends for well over a year.

It is not appropriate for ASF codes to deal in too much depth with technical matters. Many caving

techniques involve procedures with complex interactions of factors with safety implications - for instance, single rope techniques. However, ASF does not lay down prescriptive codes for the tensile strength of ladders, the material that should be used for anchors and so forth. Similarly, it is inappropriate for ASF to attempt to prescribe in a code the safety considerations that should be taken into account in bolt laddering, as such matters are far too complex to be dealt with in a code. For this reason, we have specifically refrained from commenting on technical issues relating to bolt laddering, and believe ASF should do the same.

Bolt laddering is not a sufficiently markedly different technique to require a separate code. Although used by a small group only of ASF members, this is no reason to justify a separate code. As is illustrated below, the issues raised by bolt laddering are similar in nature to those raised by other more common forms of exploration. Accordingly, ASF should not adopt a new code on bolt laddering, but instead consider how best to accommodate bolt laddering in its existing codes.

### Bolt laddering as an exploratory technique

In our view, exploration is a legitimate part of speleology. It contributes greatly to the knowledge of a cave system. The more that is known about the extent and nature of a cave system, the better equipped we are to protect the karst and manage it appropriately. Accordingly, it can be appropriate to cause some impact on a cave in the course of carrying out exploration.

(We note in passing that some opponents of bolt laddering are horrified at the idea of permanently "marking" caves by physically drilling holes. These complaints are unrealistic and demonstrate a short-sighted, 'knee-jerk' reaction. The objective impact of a carefully placed, disguised bolt ladder is in most instances far less than that made by the repeated traffic of standard routes through caves. We also note that the ASF Minimal Impact Caving Code specifically contemplates the use of permanent bolts in caving.)

SUSS sees that bolt laddering should be used as an exploratory, rather than recreational, technique. This is because bolt laddering by its very nature involves altering a cave. As such, the installation of bolts for bolt laddering (but not the climbing of existing bolt ladders) should only be undertaken for the purposes of exploration.



In this light, we believe that it should be treated in a similar manner to other exploratory techniques with a potential to impact permanently upon a cave (such as digging and blasting). We believe bolt laddering is a legitimate and appropriate technique and the ASF moratorium on this technique should not be continued.

A "balancing" approach to exploration impact

Several provisions of the ASF Code of Conservation and Ethics and Minimal Impact Caving Code have provisions relevant to exploratory techniques. These provisions appear to suggest a general approach of evaluating both the gain from the exploration and the impact of the exploration. We suggest that it is appropriate in the case of exploratory techniques to undertake such a balancing exercise. However, in line with the above comments on the need for codes to be realistic, we also believe it is appropriate to consider the practicality of the various techniques available.

Bolt laddering is a technique that demonstrates well how such a balancing exercise might work. For example:

Bolt laddering in proximity to decoration would generally be considered to have more visual impact than bolt laddering on a rock wall.

The use of scaling poles is a possible alternative to bolt laddering, albeit more heavyweight. In remote areas, or inaccessible parts of caves, bolt laddering may be a more appropriate technique. Bolt laddering would also be more appropriate for very high climbs (commencing the bolt ladder from the top of a scaling pole).

Bolt laddering is often used to climb avens in caves. Avens frequently connect to upper level passageways. If it is likely that a climbing lead will connect to a known section of cave, it may be appropriate to attempt to make the connection from higher up as abseiling generally requires less permanent impact.

There are different levels of assessment that can be conducted depending on the circumstances. In the case of a one-off expedition to a remote area, it is unrealistic to expect cavers to exhaust all other exploration prospects in an area before bolt laddering.

The equipment used for bolt laddering can also be chosen with a view to minimising impact. A hand drill, hammer/driver set or battery drill will have less impact than a petrol drill due to the lack of exhaust fumes.

Once a climb has been bolt laddered, it can be rigged with a cordelette. If considered desirable to minimise visual impact, non-removable bolts can be shorn off; or in the case of removable bolts/casings the holes can be stopped up with mud to approximate rock colour.

It is important that the gain from the bolt ladder is fully realised. A map should be drawn of any passage found and disseminated through channels such as the society's newsletter.

However, it is inappropriate to state all these matters explicitly with regard to bolt laddering. It is far more appropriate to attempt to formulate

principles which cavers can apply to each situation they are likely to encounter.

### Recommendation

SUSS recommends that the following two clauses ("the proposed MICC amendments") be inserted in the Minimal Impact Caving Code in the section on New Cave or Extension Explorations:

*When selecting the technique to be used to explore a new cave or section of cave, the party should consider and determine:*

a) Whether the likelihood of discovering new information about the cave, including new passageway, is sufficient to justify the impact of the exploration;

b) What is the practicable and safe technique, or combination of techniques with the least impact that could be used to carry out the exploration;

c) Whether there is an alternative route that could be taken to minimise the impact of the exploration;

d) Whether any steps can and should be taken to minimise the impact of future visitors to the newly explored section, including trackmarking and the fixing of permanent rigging;

e) Whether the permission of the landowner, management authority and/or society committee should be sought before conducting the exploration; and

f) Whether any steps can and should be taken to remove or conceal any traces of the exploration.

*The approach taken to exploration, and the techniques employed, should balance the various factors above with particular emphasis being given to attempting to minimise the impact caused to the cave.*

*Any new information about the cave should be disseminated through appropriate channels, such as the exploring society's newsletter and to the landowner and/or management authority. This step is designed to prevent repeated impact from unnecessary trips and to ensure that the maximum benefit is gained from the exploration.*

If these changes are made, we consider clauses 4, 5 and 6 of this section of the MICC are redundant and should be removed.

It is obvious that these recommended changes go far beyond bolt laddering and relate to cave exploration in general. The discussion above about the rationale behind codes and guidelines should demonstrate why this is so. It would be simply inappropriate and impractical for ASF to write an exhaustive code on bolt laddering. We believe the recommended changes are a far more appropriate way of dealing with the issue.

### Summary

SUSS believes bolt laddering is a legitimate exploration technique and the ASF moratorium should not be extended.

SUSS does not believe it is appropriate to introduce a code dealing specifically with bolt laddering.

SUSS believes that bolt laddering is best dealt with by way of the proposed MICC amendments, which deal generally with the question of choice of exploration techniques.

Answers to questions posed by Arthur Clarke

In the discussion paper on bolt laddering, Arthur Clarke poses a number of questions. SUSS's answers (the reasons for which are mostly contained in the foregoing article) are as follows:

1. *Is bolt laddering of avens or cave walls an acceptable method of cave exploration?*

Yes, subject to the Code of Conservation and Ethics and MICC, including the completion of a satisfactory assessment as set out in the proposed MICC amendments.

2. *Is it always going to be a technically feasible and safe practice?*

The practice itself is generally technically feasible and safe. As for any cave exploration method, whether it is technically feasible and/or safe in any particular circumstance depends on the circumstances. It is inappropriate for ASF to attempt to codify the situations in which it will be technically feasible/safe.

3. *Does ASF need to have a policy or some guidelines related to bolt laddering?*

4. *Do ASF members believe the present ASF Code of Ethics and MICC are adequate to deal with this issue of bolt laddering under the relevant sections on bolting?*

No specific policy is needed. Bolt laddering is adequately governed by existing ASF codes, provided the proposed MICC amendments are made.

5. *How much damage are we willing to inflict on the cave environment (and accept) in the pursuit of our cave exploration or other speleological activities?*

We respectfully submit that this question is rhetorical and incapable of a direct answer. Any speleological activity should be subject to a consistent approach of balancing the impact of the activity, the gains to be made from the activity and the practicality of various alternative methods of conducting the activity, as expressed in the proposed MICC amendments.

6. *Should bolting projects require prior approval from a full club meeting or the Executive/Committee members of that club?*

Refer to the proposed MICC amendments. We note that in some cases (eg expeditions) it would not be practicable to obtain this approval. Individual societies may, of course, choose to require approval to be sought.

7. *Should bolt laddering be permitted in all caves, some caves or only those caves that are not found in Cave Reserves or National Parks?*



It is inappropriate for ASF to prescribe classes of caves in which bolt laddering should be permitted on the basis of the management scheme of the cave. Such a prescription clearly completely disregards the conservation values of specific caves by imposing an arbitrary conditions based on governmental decisions as to land management, not the physical properties of the caves themselves.

A prescription along these lines also ignores the fact that in National Parks and Caves Reserves, management authorities have the right to impose access conditions that may be used to regulate bolt laddering. It is for karst managers, not ASF, to determine what standards should apply to bolt laddering in the particular caves under their control. ASF can make a general code; karst managers may choose to impose conditions that differ from that code. If karst managers prescribe access conditions that prevent bolt laddering, ASF

members must comply with those conditions (cf Code of Conservation and Ethics).

8. *Should prior permission be obtained from the relevant karst management authority or land owner?*

This is a matter for the relevant management authority or land manager to determine. See comments on question 7.

9. *Should the results of surveys from bolt ladder climbs and upper level explorations in caves be published prior to the commencement of another bolt ladder project?*

Results of surveys from bolt ladder climbs and upper level extension explorations should generally be published, unless there are good reasons to the

contrary (such as the wishes of the karst manager). There is no purpose, however, in requiring publication before commencement of another bolt ladder project.

10. *Under what circumstances should bolt laddering be accepted?*

The seven suggestions made in the discussion paper are all too simplistic and ignore the many complex factors that should be involved in determining the acceptability of bolt laddering. Bolt laddering should be considered to be acceptable subject to the Code of Conservation and Ethics and MICC, including the completion of a satisfactory assessment as set out in the proposed MICC amendments.

# Karst Index Progress Report Aug 1998

**Peter Matthews, Convenor**

ASF Documentation Commission - 7 August 1998

Dear Australian cavers,

I'm very happy to say that within just a few weeks now, I will be releasing the Alpha version of the Karst Index national cave database system to a nearby club (VSA) for the initial testing. Followed very soon after that, the Beta version to a site in each State for testing under wider conditions, before its general release to all clubs.

The testing will be with real cave data, therefore it is being phased in in a controlled manner so that any required program changes will be manageable, and there will be minimum risk of anyone having to re-enter their data. As you may realise, a practical national cave/karst database system with the updating responsibility distributed around the clubs of Australia is a large and complex system. Far more so than a stand-alone personal or local club cave database, and that is why the testing is being phased in slowly.

While the initial testing with the Alpha version is going on, I will be arranging the details for the Beta testing with selected sites, and fixing up any shortcomings found in the Alpha version and its installation package.

The biggest job occupying my time since the last report has been setting out the definitions and on-line Help screens for the many data fields. Experience with the previous Karst Index showed that unless each field is clearly defined in detail, everyone has their own idea of what data should go in them. There was such an amazing range of data in the original KI fields that the whole thing had to be done again - what you see in the current KI book was the much more successful second attempt after a comprehensive data-entry manual was produced.

However the definitions are such a big job that even now there are sure to be improvements and

clarifications which can still be made. Some of these will of course come out in the Alpha and Beta testing phases, but if you can see the need for changes or clarifications anywhere, please do contact me with your recommendations. The definitions are definitely still a bit rough around the edges, but are now good enough for us to proceed.

You can see the current state of the field definitions on the web via the field list at (click on the field numbers to see the definitions): <http://rubens.its.unimelb.edu.au/~pgm/uisc/exchange/atenlist.html#CA> And if you are into database structures, a diagram showing how the cave fields are being used in the Australian Karst Index can be seen on the web via: <http://rubens.its.unimelb.edu.au/~pgm/uisc/exchange/tables.html>

As you may know, ASF is participating in an international cave / karst data definition / exchange project as a pilot installation, so the above web pages are oriented towards international use. However the details I have shown are in fact the design I am using for the ASF system.

As well as containing data about caves and karst features, the "Karst Index database system will also be able to store linked data about cave areas, maps, references, people, organisations, photographs, specimens, data history, data quality, and so on. For example, the data about a cave will link to data about maps of the cave and to relevant references, and vice versa. The initial Beta release will contain updateable data for caves and karst features, people, and organisations, and read-only data for the maps, references and cave areas appearing in the current Karst Index book. The read-only entities will be updateable by the time of general release. And of course all this data will be able to be used to automatically produce the

updated text for publications like the Karst Index book.

- Reiterating the basic plan for the Karst Index:
- after the testing phase, distribution of the software and original data to the state-appointed clubs who will be responsible for updating each cave area, and read-only copies to other clubs.
- the updaters and other interested clubs bring the data up to date, with each contributing club receiving proper attribution for their data. Hopefully clubs have been keeping their Cave Summary forms up to date in the meantime as recommended.
- periodic uploading of data, excluding exact locations, to the national database, and to any state-level database if it exists.
- when a state is ready, assist them to publish an updated volume of the Karst Index for just their state. (The Karst Index in future will consist of a set of state volumes, each updated whenever the respective state is ready to do so. The ASF Documentation Commission has rolling loan funds available if necessary to assist states with the up-front publication costs.) other forms of publication may also emerge when appropriate. The data will also be available to assist local publications of course, however the published Karst Index is expected to continue as summary-level data only, and thus not compete with local publications which normally contain much more detail, maps etc, for each cave and cave area.



- work with clubs who have existing cave databases and who want to be able to exchange data with the Karst Index system.

Further detail about arrangements can be found on the web in the draft version of the Data Use Agreement at:  
<http://rubens.its.unimelb.edu.au/~pgm/asf/duadraft.html>

I expect to be presenting a paper and demonstrating the system at the next ASF Conference.

I am very grateful for your patience over the years while this system has been produced, and know very well the nuisance it has been for each state waiting for the database to become available. Like many projects it has turned out far more time-consuming than anyone ever imagined, but at least now it is close to fruition, and, with everybody's cooperation, I am sure it will serve Australian speleology well.

*\* For those new to ASF, the Karst Index is the national cave and karst database operated by ASF. Previously it was a central database on a mainframe and contained about 6,600 caves, 2400 cave map bibliographies, and 900*

*references. It was used to generate the data text for the book, "Australian Karst Index 1985". The current project is to enable it to be run on PCs, and to be updated locally by a specific club per cave area. Read-only copies will be generally available to speleologists. These locally updated areas will be uploaded to the consolidated state and national level databases at regular intervals to enable state and national-level analyses, and to assist data safety and distribution. However exact cave location data will always stay only with the local club (except where a club has asked ASF to hold a safety copy of their data in the separate, unaccessed archive system).*

## “Down To Earth” A Speleological Convention

“Down to Earth” is a speleological convention and workshop to be held on the Labour Day long weekend, 6th-8th March 1999, in Buchan, Victoria.

This will be a weekend focussing on speleology. The goal will be the passing on of knowledge from those who have it, to those who want it. The emphasis will be on the practical application of new skills, knowledge and techniques.

Guest speakers will include prominent Australian cavers with presentations on recent trips in Australia and abroad. The organising committee is keeping the cost of “Down to Earth” to a minimum and there will be a number of accommodation options available.

Also on this weekend, you will be able to enjoy the world premier of the Scrubby Creek caving video. Directed by well known Australian caver, Daryl Carr, and lovingly photographed by an experienced video cameraman, this story reveals the highs and lows of real cave exploration in a classic Australian cave, as it actually happened.

### Some of the topics

History  
 Geology  
 Mapping  
 Surveying  
 Cave fauna  
 Photography  
 Conservation  
 Documentation  
 Caving electronics  
 Vertical techniques

For further information and enquiries contact:

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The Victorian Speleological Association is a proud sponsor of *Australian Caver* through payment for this advertising space.



# Update on Bat Sites at Warrnambool

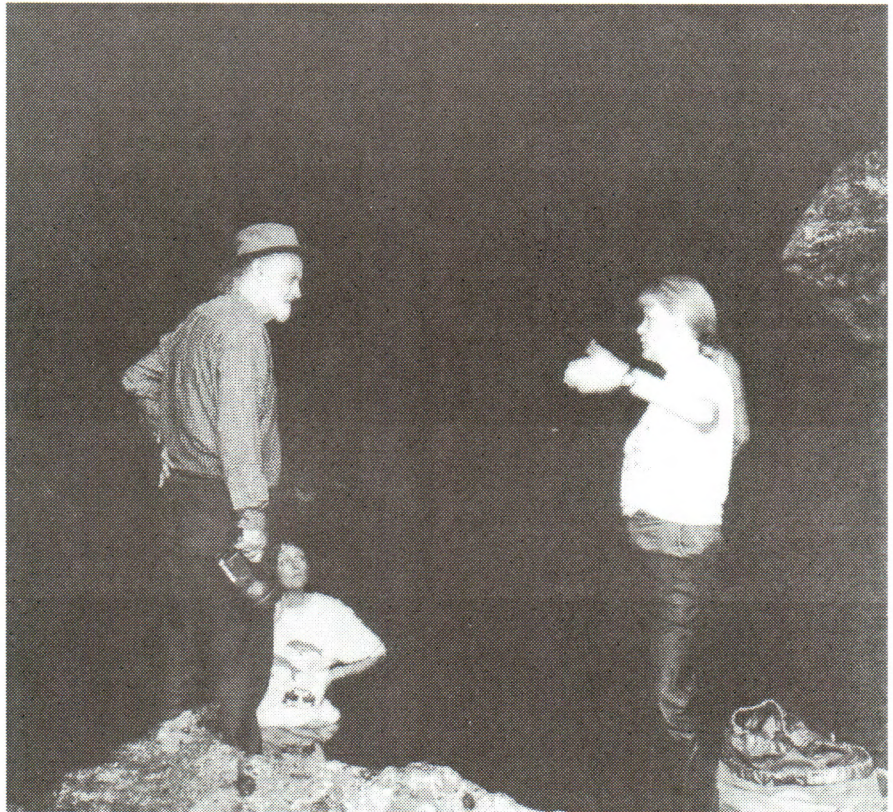
Peter Ackroyd

(Reprinted, with permission, from *Nargun* Vol 31 No 2.)

A trip to check two bat sites at Warrnambool in Western Victoria, Australia, was conducted on 10<sup>th</sup> January by members of the Victorian Speleological Association, officers from the Department of Natural Resources and Environment and a biologist from Deakin University (Ackroyd, 1998). The aim was to check the status of two significant maternity sites for *Miniopterus schreibersii* at Warrnambool. Some recent changes were noted and remedial action proposed. In 1991 Peter Ackroyd and Elery Hamilton-Smith of VSA found that bats were present in the *Thunder Point Solution Holes* (W-8) (Ackroyd, 1991). This site was known to have been a maternity site for *M. schreibersii* in the past (Dwyer, 1969). During the visit on 10<sup>th</sup> January 1998 however, the party found a hole had been eroded in one side of the small limestone dome used by the bats and that there were no bats present.

It has always been feared that the rapidly changing sea cliffs in this part of the Victorian coastline would eventually make the site uninhabitable, although it was a surprise that it had happened so soon. Given the altered circumstances, and given the importance of the Warrnambool maternity site as a link between the combined Western Victorian and Naracoorte (SA) populations, and the East Gippsland population (Dwyer, 1969; Cardinal, 1997), the VSA members, the department officers, Lindy Lumsden of the Arthur Rylah Research Institute and local wildlife officer, Peter Goldstraw, and Joanne Smissen of Deakin University decided it would be best if the Department could effect a concrete and steel mesh repair of the eroded hole. This would be a temporary measure to see if the usefulness of the site for bats could be extended while other options for preserving the bats' maternity site were examined.

The loss of the *Thunder Point Solution Holes* maternity site means that the nearby *Starlight Cave* (W-5) assumes a greater importance. *Starlight Cave* has always been a major roosting site for *M. schreibersii* but it is a difficult site for very young bats. The cave has several roof holes (hence its name) and a large sea entrance. Winds rush through the cave passages and out the roof holes making the cave less than ideal as a maternity site. When first recognised as a maternity site by the late John Edge in the 1960s (Hamilton-Smith, pers. comm.), it was noted that juveniles were largely confined to a relatively small dome off to one side of



Elery Hamilton-Smith (left). Joanne Smissen and Lindy Lumsden discuss bats at *Thunder Point Solution Holes* (3W-8).

Photo: P J Ackroyd. Jan 1998

the main passage through the cave. There appeared to be a high mortality rate at this site. *Starlight Cave* is located on private land.

lactating females, a permanent cover over the roof hole will be considered.

## References

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## 23<sup>rd</sup> ASF Conference – 2001

The 23<sup>rd</sup> ASF Conference will be happening in 2001.

If you are interested in helping out with the organisation of the conference, then please contact:-

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# Bullita Cave System, Gregory National Park, Northern Territory

For the last 8 years Canberra and Top End Speleological Societies have been exploring several network maze caves in Gregory National Park. Written by members of CSS this article summarises progress so far in the most extensive of these systems.

In the west of the Northern Territory, half way between Katherine and Kununurra the Gregory Karst is one of the most distinctive in Australia and is mentioned in notes accompanying the relevant geological sheet (Sweet 1973). Caves were probably known to stockmen during a pastoral period which lasted a century until the late 1980s, and were certainly known to the traditional owners, the Ngarinman people. One or two speleologists had been in the area previously but there is no mention of it in the *Australian Karst Index*. The

first speleological investigations were conducted by two British speleologists (Storm & Smith 1991) and there have been two subsequent preliminary descriptions of the karst and caves (Dunkley 1993; Bannink et al. 1995). CSS and TESS have each organised expeditions at least once a year since 1991, and various members of NUCC, ISS, VSA, CEGSA, SRGWA, Hills SG and Mole Creek CC have taken part in these.

In 1993 the CSS trip led by John Brush located the entrance to a new cave and surveyed more than 11km (Brush 1994). Annual trips have gradually extended the surveyed length successively to 19, 29, 42 and 57km to its present length of nearly 65km, and exploration continues. Some of this (about 8km) was

achieved by connection to other caves previously known to TESS and CSS. The passage length does *not* include open grikes which could not be characterised as a cave. All this is contained within a surface area of perhaps 3 sq.km, and passage densities reach as high as 45km per sq.km. To minimise impact, no exploration has been undertaken without surveying, and it is likely that some parts of the cave will never be visited again.

The cave is a complex network maze of passages forming an angular grid developed primarily along parallel and sub-parallel joints. Passages vary considerably but the vast majority are walking size. Decoration is sparse, the most common being cave coral. However there are stalagmites and a few

stalactites, crystal streamways and some calcified floor deposits over lengths of at least 20 metres. Sometimes emerging from small cracks and fissures, fig tree roots are often encountered in the cave. Peter Bannink (TESS) has conducted an initial survey of the interesting and diverse fauna in this high energy environment (Bannink 1996).

Passage shapes relate closely to the lithology. In much of the cave the typical cross-section is triangular, higher than wide and tapering upwards, but in deeper parts there are wide and generally lower flat-roofed chambers. More than 99% of the cave is roofed over but there are often daylight holes varying from a few millimetres up to a metre or more in size, inaccessible because of overhanging walls and difficult to reach or identify on the surface because of the rugged terrain. Most of the cave is in the dark zone although the glimmer of daylight is often visible some distance away. Closer to the contact with an overlying non-cavernous dolomite caprock, passages



A little ray of sunshine falls into the life of Keith Claymore (photo: John Brush)



David Carmichael at the BAA64 entrance. Note typical surface karst development and also, in the background, fig trees (photo: John Brush).





extent and significance of the resource has yet to be evaluated. The Parks and Wildlife Commission of NT is presently drafting a management plan and CSS/TESS have made a lengthy joint submission about the management of what is certainly one of Australia's most significant karst and cave resources.

Following concerns expressed by the managing authority, a year or three ago CSS placed a notice on the Internet through OzCavers requesting that there be no publicity about the cave. Subsequent discussion at the ASF Conference, in *The Australian* newspaper and in this article has been undertaken with the consent of the Parks and Wildlife Commission. The caves are sensitive and vulnerable. We ask that speleologists respect our wishes and those of the managing authority, and avoid publicising or speculating about the caves while there is no management plan in place. This means avoiding publicity or speculation about the caves, especially outside the speleological community, and not reprinting from or quoting this article.

#### References

are smaller and completely in the dark zone.

Some ASF members attending the Quorn conference in 1997 were fortunate enough to see Don Glasco's coloured maps of the system. Orderly recording and processing of the data has been a major task, with more than 5,000 survey stations and 500 loops to be adjusted, and this would not have been possible without the fortuitous and dedicated involvement of Don, an American caver living in Canberra from 1994 to 1997. Don transferred all data to the COMPASS cave survey program and integrated it with the powerful ARC/INFO software to produce A3 and A0 sets of maps relating cave passages to surface features.

Management authorities have tentatively named the system after the local property and we refer to it as the Bullita Cave System in recognition of the fact that there are many numbered entrances. BAA34 is presently the lowest numbered of the approximately 24 tagged entrances. Quite a number of distinctive features within the cave have been named but these have no formal status.

There are other cave systems in the area up to 24km long, and the total surveyed length exceeds 100km. The very length and complexity of the caves counsels a need for caution about publicity, and even after 8 years work the full

Bannink, P et al. (1995): *Multi-level Maze Cave Development in the Northern Territory*. Proc. 20<sup>th</sup> Biennial Conference Austr. Speleol. Fed., Hamilton pp. 49-54.

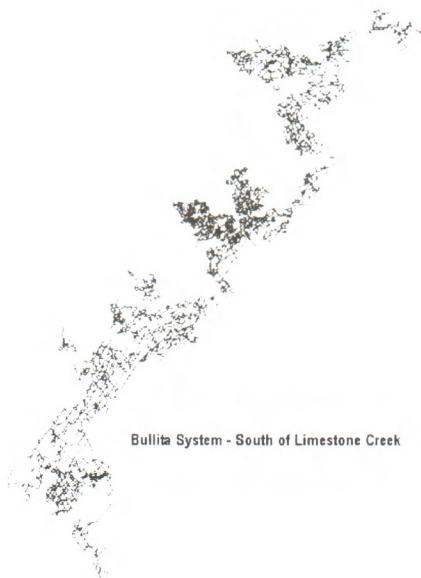
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Don Glasco and Neil Anderson on top of a relatively smooth section of surface karst near the BAA68 entrance. Note the fig trees, which extend roots into the cave passages (photo: Chris Bradley).



# Analysis of a Caving Incident

Jeff Butt

*(This is a modified version of an article published in the Speleo-Spiel #309, Jul-Aug '98)*

There is no such thing as a good cave to have an accident in. Flick Mint's Hole (FMH), (JF371), located in the Junee-Florentine area of Tasmania is amongst the worst of caves to have a serious accident in. I was very conscious of this fact, having visited this cave twice over the last month. **Little did I know that on that trip I was going to get a much better idea of this concept.**

Rolan Eberhard has written: "Flick Hints Hole is a challenging cave, providing sporting trips of respectable difficulty. It has six pitches, including the splendid 55 metre third shaft. The cave is one of variety with some entertaining sections of passage. Cavers who find The Cramps demoralising will experience utter despair in Hammerlock, particularly if full cave packs are carried." This is an accurate description; but I found the Cramps and Hammerlock to be nothing overly difficult, they are just places where you can't expect to move fast. However, getting a badly injured person these long and awkward body size constrictions (see passage cross-sections "A" and "C" in the following survey from Australian Caver No. 115, 1987) would be verging on a logistic impossibility

I happen to wear the hat of Search and Rescue Liaison Officer for the Southern Tasmanian Caverneers and have been involved in many Search and Rescue Incidents (as rescuer) and Exercises over the last decade. For this trip, one of the local Police Search and Rescue Officers, Damian Bidgood was coming along, as well as two of my other regular caving buddies, Dave Rasch and Hugh Fitzgerald. **Our party was a well equipped and experienced caving team;** the fact there were **four of us** made this perhaps one of the safest trips I have been on; the vast majority of my caving trips having been conducted with a party of two.

Little did we know that as we were walking to the cave we were setting the tone for the day . . . we were discussing the merits of taking a more substantial first aid kit on trips, and leaving it at the entrance, or in the vehicle. I mentioned that **for dependent groups** (e.g. school groups or novices) **I carry a significant first aid kit underground** with me and that **I also have an emergency kit (sleeping mat, sleeping bag, stove and hot drinks) stashed in the car.** When caving with peers, I **always carry a small Emergency Kit (but not the 'full works') underground** and hope that my peers carry likewise (but despite occasional badgering, I know that they often don't as they know I've got one!!). The grey box on this page is an extract I would like to reprint from "Caving Safety 1-Course Manual", by Butt and Morgan (1996) to **remind everyone of the ideal world (for caving in Tasmania).**

Anyway, back to the trip. We rigged the entrance pitch and started in at about noon. The next few

## 2.5 Personal Emergency Gear

It would be an ideal world if we all took our First Aid kits underground with us, but in reality not that many people do. I think that this is mainly due to pack size restrictions and the amount of space available after fitting all of the other gear in. Just make sure that at least one party member has a First Aid kit, and the training to use it! Also a more substantial first aid kit can be left in the car (if close by) or at the cave entrance, but on longer trips it should travel underground with you!

Here are a few other personal items that every caver should take underground with them as personal equipment:

First Aid Kit, (at least one per party),

Spare clothing (jumper, balaclava in case you get cold),

Food (to keep you going) and water (if a dry cave),

Space Blanket/Survival bag (to keep you warm. The advantage of a survival bag over a space blanket is that you can put a person inside a survival bag, and with a space blanket you can only wrap it around the person. Get a Survival bag if you can.)

Candles (to provide heat under a survival bag),

Spare globes for your light (for obvious reasons),

At least 2 spare light sources (for obvious reasons),

Matches or a lighter (to light the candles),

Electrical tape (for repairs to lights, to seal up tears in your trogsuit, as an emergency bandage, or for track marking),

Swiss army knife (light repairs, minor surgery, etc.),

Emergency high energy food such as Chocolate or Glucose tablets,

A watch (to keep track of the time!),

A spare plastic bag or two (in case you need to poo),

Some note paper (preferably waterproof) and a pencil,

A whistle (for emergency use), and

Chemical heating pads (a small crystal or jelly filled heating pad that when exposed to air produces a small amount of heat for many hours, some types are even reusable. Place them inside against your skin beneath your clothing for maximum effect. An invaluable emergency heat source, carry one or more).

Most of the small items can fit inside a small waterproof container (e.g. a one litre wide mouthed nalgene bottle) and will weigh about 0.5 kg. The first aid kit, spare light(s), your spare clothing, food and drink should also be waterproofed (at least double bagged). Don't go underground without this equipment!

As mentioned in Chapter 1, there are also a few emergency items (really group gear, rather than personal gear) that should be on hand back at the car. Make sure people know where the car keys are hidden though! These items are:

Full First Aid Kit,

Sleeping bag, mat and ground-sheet (It may be needed in the cave in an emergency),

Fuel stove, fuel and drinks (e.g. soup, milo) (for rewarming people),

Plenty of warm, dry clothes,

Emergency callout information, and

Money/phonecard for a phone

pitches were already rigged (from a previous trip) and predictably everything was going very smoothly. Damian and I travelled as a pair at the front, rigging pitches beyond my last trip's turnaround point. Dave and Hugh were doing some surveying as they descended behind us to avoid 'cavers waiting'. At about 150 m below the surface I had rigged the 15 m pitch into 'Decadence'. The rigging consisted of three anchors, two equally loaded small jugs about 1.5 m above a rebelay using a projecting block at floor level. All three anchors were given the twice over; the lower block was given two solid kicks and I judged all was safe. For those who know me in a caving sense, I am very cautious, especially with anchor selection and verge on being pedantic with the rigging. The rigging was well adjusted and the rebelay was a tight one (i.e. no loop of rope, as there was a small ledge to lean against to cross it).

After joking to Damian that he should 'go first to test the anchors', he descended the pitch safely. I commenced my descent, about 1 m below the rebelay one emerges through the ceiling of the large chamber 'Decadence'. From this point one is totally free hanging, like a spider dropping from the middle of the ceiling. As I passed through the floor/ceiling I did examine the lower anchor from below and remained happy with it.

I was about 8 to 10 m down admiring the view, when I simultaneously felt and heard a big crunch on my helmet and thighs. (This was about 3 p.m.). It goes without saying that if you hear a noise above resist the natural tendency to LOOK UP. If at all possible shelter, or make yourself a small as possible object (i.e. hide under your helmet, this is about the only thing you can do when free-hanging in space!)



Everything went black as well as the impact turned off my headlamp (I think a rock glanced it as the bracket was slightly bent). The sound of falling rocks and the blackness made Damian somewhat concerned below (he initially didn't know what had happened, had I fallen, or was I unconscious on the rope). He was somewhat relieved when from above I yelled that "I've had a 'direct hit'", as it meant that at least I could still yell and that I wasn't in a crumpled heap at the base of the pitch.



The anchor that failed was about 25 cm by 30 cm, by 30-50 cm deep, and in total would have weighed some tens of kilograms. I am not sure how much of it let go and headed my way, but Damian did find two fresh football sized rocks. A football sized piece of rock would weigh in the vicinity of 5-10 kg. Falling 8-10 m would take about 1.2-1.4 seconds and give it a velocity of something like 45-50 km/hr. That's quite a bit of energy (as my helmet and thigh found out!)

I have thought about the selection and subsequent failure of this anchor at length and believe that it's failure wasn't foreseeable. I have been vertical caving in Tasmania for 15 years and have spent well in excess of 3000 hours underground and this was **the first time I've have ever had an anchor fail**. [I know of only one other similar occurrence, when a block used for a deviation in Big Tree Pot detached and slid down the rope to hit an ascending caver.] Even with good practices, eventually the statistics catch up with you and in my opinion it was just one of those bad luck things. I think it is **important to note that having sound back-up anchor practises assisted in preventing this bad-luck becoming a disaster**.

At least two pieces of rock struck me in five places; to the left rear of centre on my helmet, on my left hand (controlling the autostop feature of my Petzl Stop descender), on the top of both thighs (particularly the right one) and also on the inside of the lower right leg. It is possible that since I was hanging free from a rope that some of the impact was absorbed by moving me around, though I don't recall spinning or bouncing.

Despite being dazed and in the dark, it was obvious to me that lower anchor must have let go and that the **backup anchors had served their purpose** as I was still hanging in space. Considering the profile of a person abseiling free, I am somewhat amazed (fortunate!), that none of the rock fragments actually hit and cut through the rope! Also, as I was using a **Petzl Stop** (I had just replaced the top pulley, so it was a 'Stop' not a 'Go'), **my descender stopped me when my left hand was hit and instinctively recoiled**. My rope controlling hand (the right one), as far as I know did not let go of the rope, despite the incident. I did not lose consciousness. If I'd been using some other form of descender, or went unconscious it is likely that I would have done the last part of the pitch in an uncontrolled manner. Conversely, if I'd lost consciousness, I'd have been stuck on the rope. I think Stop descenders are the best option for serious vertical caving. **All vertical cavers should be able to rescue someone from mid-rope. This skill is something that is probably not practised enough!**

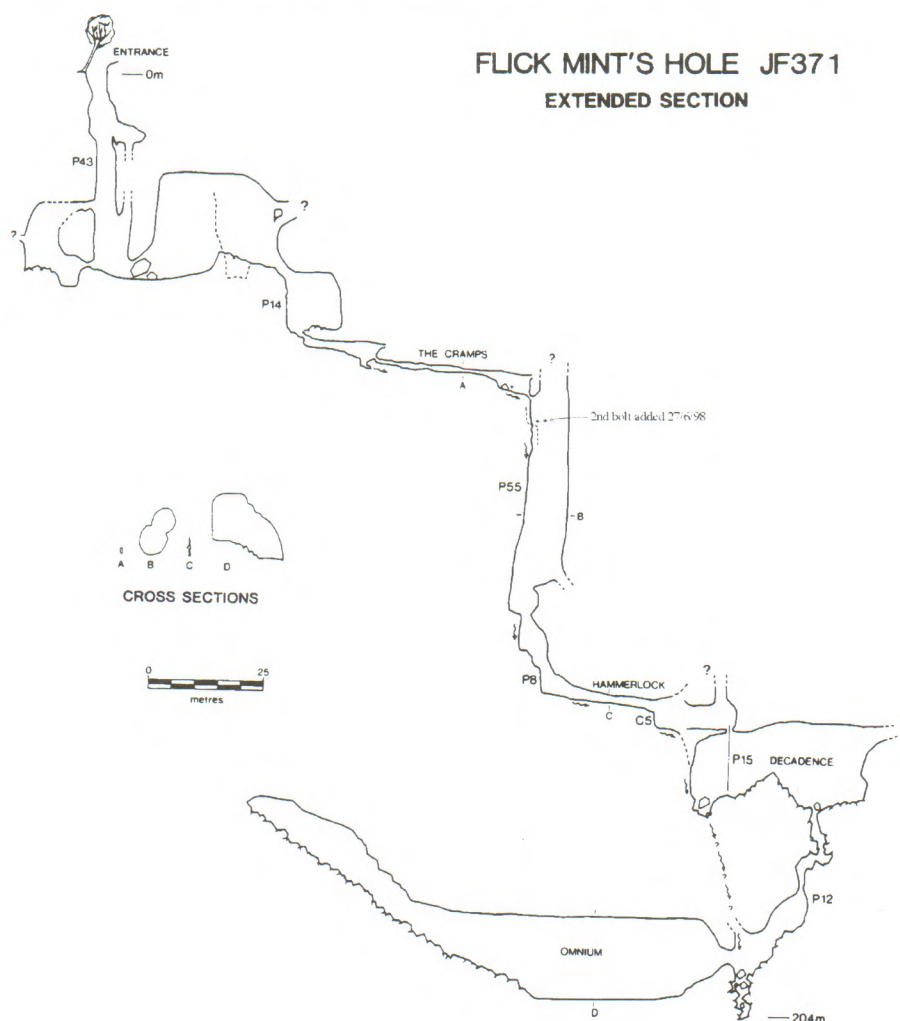
**I did not push fate by hanging around, as the rope above could have easily been damaged and about to fail at any instant. I smoothly descended to the boulder pile floor, but couldn't stand on the sloping floor on my damaged/shaky legs. Damian came to my assistance and helped me move away from directly beneath the pitch lest some more rocks come down.**

I felt feint and told Damian that I felt like lying down for a little sleep! I vividly recall Damian saying **"Don't go to sleep"**. I guess I was **slightly concussed** and not behaving rationally for a moment-something that you may encounter with

someone who has just had a bang on the head and/or a bit of a fright. The **concerned/stern tone of Damian's voice was very effective** and I soon was with it. I then realised that I had lost my glasses (in none of life's little incidents like bike crashes and skiing stacks have I ever lost my glasses before, so never bother with any sort of retaining strap). Damian helped me assess my damage. It was **immediately obvious that my helmet had saved me from any serious head injury** as there were only minor scalp bleeds beneath the impact site. I also had a few minor bleeds on the face from where the frame of my glasses punctured the skin. Incidentally, my **glasses had hardened glass lenses, not plastic**. This is a risk I have been taking for many years; my replacements will have plastic lenses.

My helmet is a **UIAA conforming "Ultimate"** (Joe Brown style) glass reinforced polyester (i.e. fibreglass) model of 1984 vintage. Yes, it is 14 years old, but was in good condition. Solely because of it's age, on and off I had been thinking of replacing it over the last year. Despite it's age, it did a magnificent job saving my skull! After cleaning the mud off it, the **damage to it was alarming**. The damage area is roughly elliptical in shape, with a major axis of 13 cm and a minor axis of 8 cm, on one edge is a 5 cm long crack that goes almost right through, on the other side is a 10c piece sized divot that likewise almost goes right through. There are several spongy bits in the damaged area as well. Several internal attachment points (between shell and harness) were broken or missing-all going west in taking the impact and the helmet is now a teaching aid!

A helmet conforming to UIAA standards must pass





several tests; including an Impact Test, where a 5 kg weight is dropped from 2 m above and not more than 10 kN force should be transmitted to the head (i.e. to stop damage to the neck); a Penetration Test, where a pointed 1.5 kg weight is dropped from 2 m above and it must not penetrate the shell (i.e. to stop damage to the skull). From how my helmet stood up to this incident, which was a more severe test than either the Impact or Penetration Test, it is obvious that **my 14 year old helmet still exceeded the UIAA specifications**. I might hasten to add that I don't recommend this method for testing your helmet! In relation to the age of my helmet, it is interesting to note the quote below:

..... **glassfiber/polyester resin laminate**. This is the **most durable system for helmet construction giving a service life 2 to 3 times longer than injection moulded thermoplastic shells**. They suffer very little from ultra violet degradation, have no plasticisers to migrate and are very resistant to chemical attack. Under impact they **absorb energy by progressive disruption of the laminate which gives the lowest transmitted force figures for any shell material**. After **severe impact the damage is readily apparent to the untrained eye** so unlike many thermoplastic shells, which can hide damage, they will be discarded before unsafe use. (Speleotechnics, 1998).

The most pain was coming from my **visibly swollen** right thigh, and there were two large holes through my caving-suit and thermals, one on each thigh. There was also some blood running down the outside of my right gumboot. **Having done several wilderness first aid courses**, I was primarily concerned that perhaps I had broken my right femur, as it hurt rather badly (though I'm sure that it didn't hurt anywhere near enough to what a broken femur would actually feel like!) and was already showing marked swelling (internal bleeding). If that had happened I doubt that I'd be here today given that: a broken femur can result in the internal loss of a couple of litres of blood; the air temperature was about 8°C; it would be **at least an eight to ten hour wait before any significant medical aid could reach me**; it was a difficult cave, a stretcher simply wouldn't fit through the Cramps or Hammerlock, nor would a caver with a splinted femur! Some prodding and the ability to half stand indicated that it fortunately wasn't broken. The bleed on my right lower leg was only a minor one, and whilst Damian went to find my glasses, I dug out my emergency kit and applied a Triangular bandage to the **bleed (my hands were clean due to wearing gloves**, Damian's ungloved

hands were mud caked-this is another good reason to wear gloves). I did think about applying an elastic roller bandage over the top of my trog-suit to my right thigh for support/protection but decided against it, realising that given the nature of the cave it would not stay there for very long. I thought it best to keep it for on the surface where I might need it more. Damian found my destroyed glasses and noticed two football sized pieces of fresh rock.

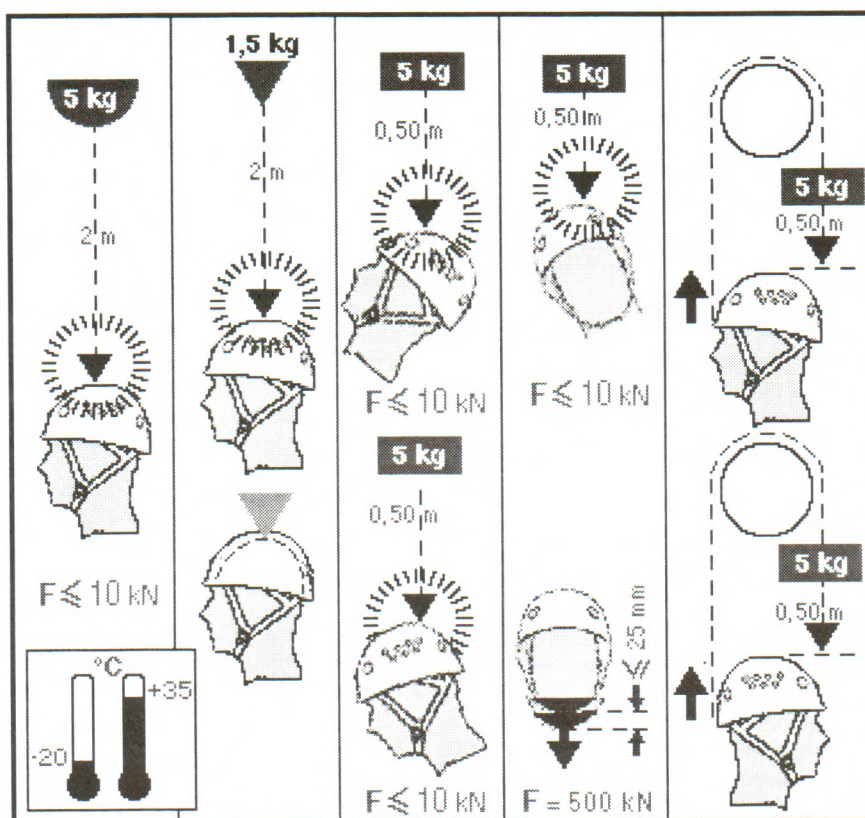
To **prevent getting cool** (whilst we waited for Hugh and Dave to come to the pitch head to **check out the state** of the rigging and rope) I **donned my balaclava**, and **ate my lunch** (which I'd not bothered to eat earlier as we were on the move, and we'd had morning tea earlier). I did have a spare jumper, but as I **was warmly dressed** decided not to put it on due to the difficulty of trog-suit gymnastics with an injured hand. Eating let me know that I had a sore jaw, presumably jaw-lash, as I was hit the impact site was diametrically opposed to my jaw. I was pleasantly surprised that my neck felt fine, the helmet obviously did it's job there. I felt very bodily sore, and guess I was probably a little shocked. If our party was only two in number, then we would have had to make a decision about whether someone should risk prussiking up the rope, or whether we would wait for outside help

would have been quite serious as a self rescue would not have been possible. In addition, outside help would have been at least 8-10 hours away and any serious injuries would be verging on life-threatening after that sort of wait. Fortunately my injuries weren't that severe and I **was quite confident that I could get myself out, but realised it would probably be a slow and painful exercise**. I was keen to get moving as soon as possible before my injuries began to stiffen.

Our first problem was, safely ascending the pitch. We waited for Dave and Hugh to reach the pitch head, and after a few communication problems (Dave and Hugh said 'I didn't sound like the normal Jeff' and they also didn't realise that I'd been injured for a short while.) The knot holding the tape and krab to the missing anchor was wedged in a notch, Damian had to weight the rope for them to be able to free it. They inspected the rope, it was apparently OK, which was fortunate as the only other rope at hand only reached half way down the pitch (of course they could have just end for ended it and/or knotted out any damaged section). The two anchors were intact and none of the knots in the rope were tight, showing that there was virtually no shock load transmitted when the lower anchor let go. I requested them to backup the existing anchors, which they did and they re-rigged the original rope.

It was about 3:45 p.m., that I shot up the rope (prussiking with the left leg only) at an impressive speed, there must have been some adrenalin working there? My injured left hand was still quite useable if I kept it in a constant position, but made me wince every time I moved my longest finger; I suspected a broken knuckle there. A **plan was formulated** as Damian ascended. I commented to my mates that I was **feeling very selfish and self-centred** (which is probably normal for an injured person) as I handed my half empty pack and it's contents to the other three. Dave would head out ahead of me, Damian and Hugh behind. Dave took the short rope with him, as I requested that he **belay me up the two short**

**unprotected climbs** (5 m after Hammerlock, 4 m after The Cramps), as I had restricted use of both legs, the right one did not want to bend very much and kept on cramping when I attempted to lift it high). Also, without my specs, my vision was hazy, but I could see sufficiently well [roughly 6:1 (i.e. see at 1 m what normal people see at 6 m), sometimes when bushwalking in drizzle/rain I find I see better without my specs. However, if your **uncorrected vision is much worse than this, then it would be wise to carry spare glasses on any trip.**] to get by. Fortunately, for most of this cave one is either



A summary of UIAA helmet tests and standards.

(which would be about 15 hours away) [Lots of good Emergency Management Protocols practise was done on this trip, many different critical times were calculated and the old brain was considering lots of different options.] I would have tenderly prussiked up the rope as is, reasoning that if it held during the impact and for the last bit of the abseil, it probably wasn't too badly damaged.

If my injuries had been more severe, e.g. bones broken rather than just badly bruised, or a head injury rather than just concussion, then the situation



on rope, or lying down in squeezes, i.e. you don't really need to see. Going up the ropes was fine (pitches of 10m, 55m, 16m, 43m), and I actually found that I provided I didn't take too big a bite with each prussik I could put near full weight on my right leg. The long constrictions were quite painful, whenever my thighs touched rock they let me know. It's amazing how letting a little wince out somehow helps ease pain. I stayed on my left side as much as possible. Without the burden of a pack, I found that I could easily keep up to Dave ahead of me.

To be honest, getting out of the cave wasn't too bad at all, despite my injuries. My caving fitness and familiarity with the cave obviously served me in good stead there. At no time did I ever doubt my ability to get myself out, having a positive frame of mind is advantageous in these sorts of situations. I emerged on the surface at 6:30 p.m.

It was quite cold on the surface (say 4-5°C, whereas it was about 9-10°C underground). An oversight here was that Dave didn't have my spare jumper or emergency kit in his pack. Dave **donated me his neck-warmer and I ate my last chocolate bar** (kept in my trog-suit pocket, **not under my helmet** where some cavers store things!!) which helped significantly. We calculated that the others would be about 45 minutes behind us (to the base of the entrance pitch), but 75 minutes later there was no noise of them. I felt concerned that they may have themselves had a problem, Dave too. It was easy to think of other disasters that may have happened to slow them down, but none of these

were realistic scenarios; they were just moving a lot more slowly than we did. They arrived on the surface at about 8 p.m., the 90 minute wait had cooled me down and stiffened my legs up somewhat.

The most difficult part of the trip was yet to come, i.e. the walk back along the downhill taped route through the rainforest in the dark. Dave did a good job out the front in keeping us on the correct path. The steepness caused me a lot of thigh pain, and I did a lot of the steep bits on my namesake at this meant that I didn't have to bend my legs much. The number of logs to cross was also a hassle, but I soon learned the least painful way of handling obstacles. I was most concerned with sudden slips/trips as these caused significant pain and because of my reduced vision I had to travel very slowly. Once we reached McCallum's track it was a lot easier. We arrived back at the car at about 10 p.m.

Phone calls from Maydena announced our later return. I got dropped off at Casualty at the Royal. Triage wise I was walking wounded, i.e. low priority. After the normal wait (a busy Friday night) I received some attention, X-rays of my swollen right leg and swollen left hand showed nothing broken. [I am however having on-going problems with my thigh and my left hand is not quite what it used to be; soft tissue injuries tend to be more difficult.] My scalp and face only had minor lacerations. My lower leg wound was dressed and at 4:30 a.m. I

taxied home, feeling rather sore, cold and hungry. A hot shower helped no end and I flaked, it had been a long day.

I feel that I was very lucky, some would say that I was unlucky, but I like to look on this experience positively). I am a happy to be gracious and accept that I escaped-it just wasn't my time on Friday. **Adventure activities do have risks associated with them, caving is no exception. Indeed the risks associated with caving are somewhat heightened by the difficulty of any rescue. Being well prepared, having good equipment and using sound caving practices help reduce the risks, but this doesn't eliminate them entirely. Knowing what to do in an incident, using available resources and being prepared to endure a bit of physical discomfort allowed an easy self-rescue from a difficult cave.**

Many thanks to my caving buddies for their assistance. I am ever so grateful that it wasn't any of them that got scionned on rigging installed by me, even if it was just bad luck.

***I hope that everyone reading this picks up a few pointers that may help them prevent having an accident, or helps them out in knowing what to do if they are unfortunate enough to be on a trip in which an accident happens. Guano does happen!***

## Recent additions to SUSS Publications.

Released on the Societies 50<sup>th</sup> celebrations are a number of additions to the SUSS Publication sales. Other than the widely recognised Mammoth and Jenolan (The Northern Limestone) books, the Society also has for sale Frenchman's Cave and Serpentine Cave maps. On the 50<sup>th</sup> weekend, the Society released its two newest additions; the Tuglow book, written by Ian Cooper, Martin Scott and Keir Vaughan-Taylor, and the complete Spider maps, by Phil Maynard, Jill Rowling and Mark Staraj.

The Tuglow book represents almost 11 years of research, and is a compilation of history, biology, surveying, geology and hydrology of Tuglow Caves.

The Spider maps are the culmination of nearly 23 years of effort on behalf of many people, and represents a significant achievement. Spider Cave, located in Jenolan and first discovered in 1975 is around 2.5km in length. Each Spider map set comprises 6 large maps.

Both the Tuglow book and Spider Maps are available direct from the Society. The schedule of costs includes a category for postage and packaging, and payment by credit card (bankcard, visa or master).

Item	Cost	Postage
Tuglow Book	\$13 Members (\$14 credit card) \$16 Others (\$17 credit card)	\$4 (within NSW/ACT) \$4.50(Interstate)
Spider Maps	\$25 Members (\$26.50 credit card) \$30 Others(\$31.50 credit card)	Cost varies

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# ATTACK OF THE KILLER WOMBAT.

JENOLAN CAVES 30/5/98

Gary & Jenny Whitby.

*The following article an account of a true event that occurred on the Playing Fields Carpark at dusk on the evening of 30<sup>th</sup> June 1998. Only the name of the wombat has been changed to protect its identity.*

The story begins walking back from Wiburds Lake Cave after a day's exploration in the North Western Passage using scaling poles. After passing a wombat hole along the track, the conversation turned to stories about the fabled killer wombat. It was dusk when we approached the Playing Fields, a place where David Jackson was chased up a tree on a previous encounter with this creature.

We had just started to detrog at Gerrard Collin's 4WD, when a friendly? wombat trotted out from near the wallaby enclosure. When Ian Cooper greeted our furry friend with a "Hello Mr Wombat", it suddenly stopped with a dazed look, as if in a trance. At this point, Ian said "Wouldn't it be funny if it went for the jugular, just like a Monty Python sketch!" As if on cue, the wombat suddenly charged towards Ian.

As the 80cm long wombat attempted to bite Ian on the legs, he fended it off by placing his foot on its forehead. This continued for about a minute with the wombat jockeying for an offensive position, and Ian manoeuvring for the defensive. Eventually the wombat got bored (or maybe distracted) and decided to check out the cave packs lying on the ground. Ian saw this as an opportunity to get changed out of his cave suit. The cave packs didn't hold the wombat's attention long, as he was sizing up his next victim, Mathew Hole.

Like a flash, the wombat set chase after Mathew around the 4WD until a collision occurred between Mathew and Ian, who had his blue cave suit around his ankles. Whilst the guys were frantically trying to untangle themselves and get up off the ground, the wombat now had two easy targets. Mathew escaped, however Ian bore the brunt of the attack again, and the wombat this time got a taste of speleo blood. After some frantic kicking and pushing, Ian managed to get to his feet, but the attack still continued.

Eventually Ian reached the relative safety of Gerrard's 4WD and managed to seat himself on the rear tray. Meanwhile the wombat was entertaining itself, chewing on the cave suit still dangling from Ian's ankles. At this point our furry "friend" focused its attention on another blue cordura cave suit standing nearby. Having already acquired a taste for the contents of these blue wrappings it intended to "taste test" this one as well. Fortunately for Gary Whitby, he was still carrying a length of scaling pole to use as a defensive "distancing" tool. With this he managed to keep the wombat at pole's length as it pursued him around the nearby tree.

Meanwhile Ian, thinking the wombat was adequately distracted, foolishly alighted from his safe haven in the 4WD to continue removing his cave suit. Again, seeing an easy target within its sights, the wombat charged Ian and knocked him to the ground. Ian now found himself sitting, still unable to shed his cave suit past his boots, with the wombat thrashing away inside the suit. The situation now became threatening as the wombat has its sights set on sampling Ian's "family jewels".

Gary, seeing the severity of the situation, came to the rescue and attempted to pin down the aggressor by holding the scaling pole across its back. This allowed Ian to get to his feet, whilst holding on for grim death to the wombat's ears. At the same time the wombat was pushing forward, thereby pulling Ian's arms between his legs,



Jenny Whitby

and thrashing about trying to sink those fangs into the back of Ian's legs. Eventually the situation was reached where the scaling pole, across the wombat's back, was against Ian's shins. Consequently Ian's arms were so far between his legs that any further forward movement by the wombat would cause him to complete a forward somersault. All this time Mathew and Gerrard showed much concern from the safety of the 4WD!!!

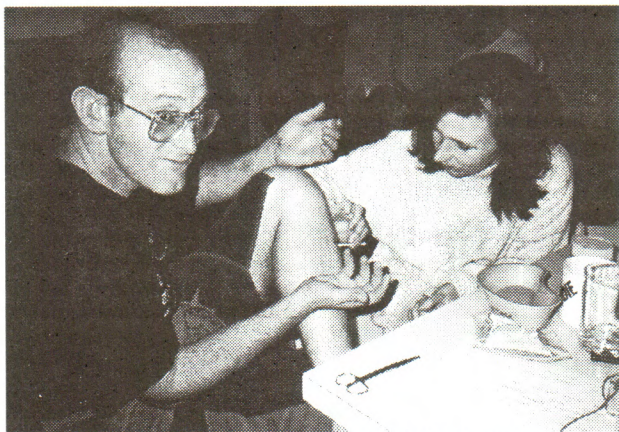
Eventually Gary asked Ian the vital question, "What are we going to do now?" Ian replied "I'm not letting go or he'll turn around and bite me". Obviously he couldn't see the mere millimetres between those 5cm fangs and the back of his

unprotected legs. Ian eventually saw reason and a planned (desperate) release was made. Ian, still with the cave suit around his ankles, waddled, hopped and jumped into the rear of the 4WD whilst Gary played "rodeo clown" to divert the wombat's attention while Ian made good his escape.



*Battered and bruised Ian Cooper contemplates his brush with the killer wombat*





*Ian cooper has his wounds attended to by nurse –  
Jodie Shoobert)*

At this point Jodie Shoobert & Jenny Whitby arrived on the scene. The girls missed the previous incidents, but heard a commotion at the carpark area as they walked across the playing fields. When they approached the vehicle, they soon saw what the fuss was all about. The wombat was still charging like a bull at Ian's cave suit, which was dangling on the ground. Ian was safe in the back of the 4WD, along with Gerrard Collins & Mathew Hole. Gary Whitby was still outside the vehicle armed with a scaling pole. As the girls approached the 4WD, the wombat turned around, and seeing some new victims, trotted off down the hill towards them. As soon as they saw it coming their way, the girls sprinted towards the playing fields gate, diving onto the top rail with the wombat hot on their heels. The wombat circled underneath them for a little while, and was given a persuasive boot to move along. This had the desired effect, but instead of heading into the bush, the wombat returned back towards the 4WD, with Jenny following at a safe distance. The wombat wasn't interested in the girls, and Jodie reckons this was because it couldn't smell any testosterone! Halfway back to the 4WD the wombat's strategy changed as it then headed towards a high vantage point in the bush. At this stage, Jenny decided to take a chance and made a dash for the 4WD. Jodie was not so keen, and remained stranded on the fence. The odds were now one on one, with the wombat from its vantage point ready to charge, and Jodie too chicken to make a

run for the 4WD. This was despite the moral support and encouragement being yelled from the vehicle. A 4WD rescue was mounted, but the wombat launched a final attack on the rear wheel, as the vehicle reversed towards the gate to rescue the stranded speleo. With Jodie safely aboard, we zoomed off up the hill. On a conservation note - No animals were harmed during this event, only speleos.

#### **CAVE ACCIDENT REPORT 30/5/98. KILLER WOMBAT ATTACK.**

The following information was submitted to the ASF on a Cave Accident & Incident Report by the victim Ian Cooper (SUSS) and is the record of an actual event.

**Date of Incident:** 30/5/1998.

**Source of Information:** Victim.

**Contributing Factors:** Unsafe practice, bad luck.

**Injuries sustained:** Minor, first aid required.

**Brief description of injuries:** leg abrasions, hand abrasions, bruises.

**No. of people injured:** 2.

**If rescue was required, how was it undertaken:** Self rescue, assistance required (unofficial)

**Cave Description/Physical location:** Surface, Playing fields Jenolan.

**Party Size:** 4 - 10 ASF affiliated group.

**Details:** Killer Wombat Attack.

**Has the incident been written up in a journal:** SUSS Bull 38(1), & Newcaves Chronicles No 11.

The following information was also supplied by the victim on the reverse of the accident report, complete with bloodstains.

Approached known dangerous wombat area (Jenolan Playing Fields) at dusk. 80cm wombat charged party and butted and attempted to bite through overalls. Caving overalls provide protection. Thermals do not!

During 2nd wave of attack, minor victim was chased around car and ran past major victim who had overalls around ankles getting changed. Wombat and minor victim knocked major victim to ground. Wombat bit through thermals and grazed shins. Major victim received hand abrasions when falling.

Member of party rescued off fence by car. Wombat attacked car and then got bored and departed.

**End of official report**

## **Safety Auditing Caving Ropes** **One Practical Experience**

Jeff Butt

**(this article is a slightly modified version of  
an article that appeared in the *Speleo-Spiel*  
#308, May-Jun 1998.)**

### **Background**

I thought it might be useful to write of my experiences with a safety audit of caving ropes belonging to the Southern Tasmanian Caverneers (STC). As STC Equipment Officer I was faced with this problem after the amalgamation of the Tasmanian Caverneering Club (TCC), the Southern Caving Society (SCS) and the Tasmanian Caves and Karst Research Group (TCKRG).

Because of the depth of Tasmanian Caves it is impractical for any individual caver to own several hundred meters of their own rope. As a result, Tasmanian Clubs generally own a large pool of rope that is freely available to club members. This has many advantages, but of course there are disadvantages too. Perhaps

the worst is, that gear not owned personally is not cared for as well as personal gear normally is. In addition, responsibility for the safety of any individual rope is largely transferred from the person using the rope to the person who has the honour (burden) of being Equipment Officer.

With the amalgamation, all of a sudden there was approximately 2 km of caving rope (about 1 km from each of TCC and SCS) amassed in the Equipment store. Most of the SCS ropes were labeled with the length and year of purchase. Some of the TCC ropes were labeled with the length, but very few were labeled with any date. As SCS equipment officer for many years I had a good idea of the history of the ropes originating from SCS, but little idea for any of the ropes originating from TCC. Some ropes were known to be over 15 years old. Both clubs documented who

borrowed rope in a Gear Loans book, but neither club kept any records of the amount of use any particular rope received. In addition the TCC ropes included several suspect ropes (e.g. some donated by visiting Czechoslovakian cavers and other ropes of unknown quality or origin).

Most club members had their own ideas about which ropes they trusted and which they did not, but these ideas ("myths") were not necessarily well founded. Some people wouldn't touch one plain (single colour) type of rope, believing this to be old Czech rope (the 9mm version was actually PMI, the 10 mm version Bluewater). Others preferred a nice supple 9 mm, believing this to be Beal (but it was actually old Donghys polyester rope that was in a very dangerous condition!)



Obviously this was not a very satisfactory situation. Any rope held in the Equipment Store (or one's private rope store) should be able to be trusted and be safe to use. In addition, records should be kept about when ropes were purchased and put into service, their construction material (e.g. polyamide/nylon or polyester/terylene) and the amount of use they receive should be recorded. One should have an active rope retirement/replacement plan and this should be adhered to.

## An Overview of the Safety Audit Process

Throughout February and early March I conducted a comprehensive safety audit of all the club ropes. This process involved; procuring all club ropes (several trips just to de-rig installed ropes were made. Often some pitches in caves are left (semi-)permanently rigged), washing any unwashed ropes (some cavers are very slack with this task), inspecting the entire length of all ropes visually and by feel. Where any damage (including discoloration, soft-spots) was found or suspected, the ropes were cut. I was very ruthless with this process, the rope cutting knife had a good work-out! Some long sections were removed from a couple of ropes. Several suspicious (e.g. Czech donations), older and very stiff Bluewater ropes were also put in the rubbish pile. A couple of furry ropes (i.e. many sheath fibres cut) were likewise discarded.

A small portion of each rope was dissected to locate any tracer thread or labeling (most ropes made after the mid 1980's have a colour coded tracer thread and/or identification strip within the core) that was present within and to look at the construction of the core. [Rope manufactures will supply this information if asked.] All of these provide clues to the year of manufacture and allow any associations between various bits of rope (i.e. pieces that originated from the same parent length) to be made. Note, that sometimes 'new' ropes purchased may already be several years old! The dissection also allowed an assessment to be made of how much mud had ingressed into the core. Generally the more mud within the core, the stiffer and the weaker the rope. According to Elliot (1986), "A far more precise indication of a rope's condition is gained by subjecting a short section of it to a destructive drop test." It was deemed wise to adopt this procedure as the history and age of many of the ropes was not documented or well known. So,

a 2.5 m sample was removed from the end (or if the rope was being cut at a damage point, then the sample was taken from adjacent to this point) of most ropes older than 4 years for destructive testing. Each rope was allocated a number and labeled via a label covered with transparent heat-shrink tubing. The label appears as below:

STC  
Rn-YY  
XX m

"STC" indicating STC ownership  
"Rn-YY" indicating the Rope number "n". Any rope shorter than 10 m is designated "SH" for a "short".  
"YY" is the last two digits of the year of purchase; if this is not known a "?" appears.  
"XX" indicating the length of the rope in meters.

The 2.5 meter sample was subject to destructive testing (Fall Factor 1 falls with an 80 kg weight; more details below) to ascertain if it was 'adequate' (meaning that it is able to withstand at least two consecutive falls). Several ropes were found to be 'inadequate' and were added to the rubbish pile. The remaining ropes are now racked in our new portable and modular rack. A log sheet (see example below) for each rope is kept in a folder. When returning ropes to the store club members will be asked for an indication of how much use each rope received and if any damage (e.g. abrasion points, shock loading, contamination etc.) occurred to the rope. All this information is recorded. In the future this Safety Auditing process will be an Annual Job and will involve less work than this initial Audit.

## Drop Testing Ropes

In the literature, various statements are made about Drop Testing, these include:

Warild (1988), "Ideally, 2 m off the end of any rope over five years old should be shock tested with a FF1 test every two years and should survive **at least** one FF1 fall."

Elliot (1986), "A drop test rig is used to apply two consecutive shock-loads resulting from a factor-1 fall with an 80 kg mass. If a rope can withstand this, it is considered adequate." ... "Should the rope support only one shock and break on the second one, then the test must be repeated with a further sample from the same rope. If it again supports a single shock then the rope is adequate, but should be tested again before too long" ... "It is recommended that ropes are tested routinely after three year's of regular use and annually thereafter."

All agree that any portion of a safe caving rope must be able to withstand at least one fall factor 1 (FF1) fall with an 80 kg mass. [The fall factor

is the ratio of the length of the fall to the length of the rope involved. 80 kg is a typical mass for a kitted caver. With good rigging the maximum fall factor likely to be experienced is around 0.3, however, sometimes rigging can be sub-standard and simple mistakes are made (e.g. two horizontal bolts are rigged with a stand-in loop between them, but otherwise are not connected, if the loaded bolt fails as a caver is

approaching it, a FF1 is achieved) and so one has to err on the side of caution in respect of rope-strengths.]

I decided that each sample should be able to withstand at least two 80 kg fall factor 1 falls before being regarded as adequate. Virtually any rope will withstand the first fall, as in this fall much of the impact is absorbed by tightening the knots. The second fall is more of a test of the rope itself. If the rope has been heavily prissiked on, then the knots will already be quite tight and this first-fall softening (i.e. knot tightening) effect will already be 'used up'.

The literature also says that ropes should be regularly assessed in this manner when they reach 5 years of age, or after 3 years of regular use. Most of the STC ropes fall into this category! Also, ropes are generally weaker when wet than dry; this effect being more significant for newer ropes than older ropes. Putting this all together, the following procedure was used for the Drop testing:

- the 2.5 m sample was soaked in water overnight,
- a figure eight knot was made in each end (a figure 9 is a stronger knot and should be used when rigging (especially when using thinner ropes), but often figure 8's are used underground and so this was chosen as the knot to use in the test),
- one end was attached to strong point (an 8 mm steel mailon attached to a wire trace on a convenient tree,
- a counterbalance haul was used to lift the 80 kg weight (three 0.7 m long pieces of railway line bolted together) so that it could be clipped to a mailon in the other end of the rope,
- the weight was slowly let down, which tightened the knots and squeezed out water,
- the length of the weighted rope was

ROPE LOG-Rope No. <u>5</u> -Page No. <u>1</u>									
Type= <u>BLUEWATER STATIC, 11mm</u>									
Label= <u>R5-92</u>									
Length (date)= <u>125m (6/2/97), 109m (15/2/98)</u>									
Date	Action	Person	Cave or other location	No. of descents	No. of ascents	Comments	Rope Care	Result	Cumm. Dist.
6/2/97	taken & used	Jeff Butt	Wentworth	1	1	First use	(Clean/ Wash etc.)	(length/diameter/ damage/action etc.)	Dist. "used" (m)
7/2/97	returned	Jeff Butt						OK	250
19/1/98	taken & used	Jeff Butt	Minimata	9	10	Two trips			
3/2/98	returned	Jeff Butt							
15/2/98	measured	Jeff Butt				Labelled	Clean & washed (15/2/98)	OK	2375
									2625



measured,

- then the weight was hauled up until the end attached to the weight was slightly higher than the end attached to the strong-point. A cowstail was then clipped for safety before gently transferring the weight onto a stringette,
- once I was off the rope and behind the tree the hauling rope was disconnected, then the cowstail removed and a knife touched to cut the stringette and send the 80 kg mass on its way down,
- if the rope did not break, its new length was measured and then the process was repeated. Typically it would take 5 minutes for a cycle to be done.
- For some ropes this process was repeated many times, for others due to the laborious nature, it was repeated only

a few times and the intact rope cut so that the next piece could be tested.

The results of the tests are shown in the table on the following page. A summary of the main features from these are:

- 171 drops were made using 36 samples of rope.
- The 36 samples included 3 pieces of 9 mm Dynamic (as used for cowstails), 15 pieces of 9 mm Static, and 18 samples of 10-11 mm Static rope.
- 24 sample pieces of rope were broken during a test.

Ropes that failed, with the exception of one double rope cowstail, failed in one of the knots (13 failed in the Top Knot, 10 in the Bottom Knot). Knots in ropes severely weaken ropes, obviously there are benefits in using the strongest knots possible, i.e. use figure 9 knots

(especially in thinner ropes) instead of figure 8 knots (According to Warild (1988), when loaded normally, figure 9 knots have 70% of original rope strength and figure 8 knots have 55%).

The fact that the double rope cowstail held 4 FF1 falls whereas a newer standard design cowstail only held 2 FF1 falls suggests that the double rope version has merit. Also, since this was the only sample piece that did not break in the knot it suggests that the single large bulky knot has a strength similar to that of the unknotted rope.

As the number of falls increased on a particular sample of rope, the increase in the % elongation gradually decreased. For many ropes, as soon as the length stopped increasing you could successfully predict that the rope would break on the next fall.

## Results from Drop Testing Ropes with 80 kg Fall Factor 1, Feb.-Mar. 1998.

Rope No.	Diameter (mm)	Brand/Type	Marked or known date	Tracer colour &/or date	No. FF 1 falls held	Failure mechanism	Amount of brown colour evident in the core	% elongation in last held fall	Notes
n/a	9	Beal/Dynamic	1990	yellow	4	3 cm from knot	none, but lots of dye	n/m	Old double rope cowstail
n/a	9	Beal/Dynamic	1993		2	bottom knot	none, but lots of dye	33%	Old cowstail
n/a	9	Beal/Dynamic	1996		5	top knot	none, but lots of dye	30%	A not so old cowstail
36/37	9	Beal/Low Stretch	??????	none	2	bottom knot	hint in outer bundles	19%	Long time on the roll
15	9	Bluewater 2/Static	1986	none	3	top knot	some in outer bundles	11%	
14	9	Bluewater 2/Static	1990??	none	3	bottom knot	hint in outer bundles	17%	
44	9	Bluewater 2+/Static	1993	green 1993	1	top knot	hint in outer bundles	16%	Worn sheath, a piece from SB
17	9	Donaghys/Abseiling	mid 80's?	pink	1	bottom knot	none	14%	Polyester rope
17	9	Donaghys/Abseiling	mid 80's	pink	1	bottom knot	hint only	15%	Polyester rope
SH	9	Donaghys/Abseiling	mid 80's	pink	0	top knot	hint only	n/a	Polyester rope
12	9	Edelrid/Superstatic	1988	red 1987	3	bottom knot	none	18%	
31	9	Edelrid/Superstatic	1995	black 1995	4	top knot	none	19%	
29	9	Edelrid/Superstatic	early 80's?	none	1	top knot	some throughout	16%	Looks old and tired
29	9	Edelrid/Superstatic	early 80's?	none	1	top knot	some throughout	17%	Looks old and tired
41/SH	9	Edelrid/Superstatic	1988	red 1987	3	bottom knot	hint in outer bundles	21%	
45	9	Edelrid/Superstatic	early 80's?	none	1	top knot	hint in outer bundles	17%	Looks old and tired
18	9	PMI	1984	1984	1	bottom knot	some throughout	13%	Untrusted rope
SH	9	PMI	1984	1984	1	top knot	hint in outer bundles	13%	Untrusted rope
7	10	Bluewater 2/Static	1989	black	5	top knot	some in outer bundles	24%	
10	10	Bluewater 2/Static	1989	black	3	bottom knot	brown outer bundles	25%	
9	10	Bluewater 2/Static	1989	black	>5	n/a	brown outer bundles	27%	
38/39	10.5	Edelrid/Superstatic	1995	black 1995	>10	n/a	none	27%	
SH	11	n/a	mid 80's?	none	3	bottom knot	some in outer bundles	25%	A piece from NH
49/50	11	Edelrid/Softstatic	?	purple 1984 or 1994?? ?	2	top knot	hint in outer bundles	26%	Old gym rope JHS
21	11	Bluewater 2/Static	?	orange	>15	n/a	none	25%	
19	11	Bluewater 2/Static	1983	black	>10	n/a	hint in outer bundles	27%	
25	11	Bluewater 2/Static	1986	none	5	bottom knot	brown outer bundles	25%	
24	11	Bluewater 2/Static	1985	none	>5	n/a	hint in outer bundles	24%	
28	11	Bluewater 2/Static	mid 80's?	none	>5	n/a	brown outer bundles	24%	
20	11	Bluewater 2/Static	mid 80's?	none	>3	n/a	some in outer bundles	25%	
32	11	Bluewater 2/Static	mid 80's?	none	>3	n/a	brown outer bundles	22%	
23	11	Bluewater 2+/Static	1992	purple 1992	>5	n/a	none	24%	
n/a	11	Czech 'blue fleck'	mid 80's?	none	>3	n/a		15%	
n/a	11	Czech 'pink fleck'	mid 80's?	red/white /blue	>3	n/a		15%	
48	11	Edelrid/Superstatic		purple 1994?	>7	n/a	hint in outer bundles	23%	
n/a	11	Edelrid/Superstatic	<1984	green 1982	6	bottom knot	some in outer bundles	27%	An old piece



The % elongation at failure was typically in the low thirties for 9 mm dynamic, the teens for 9 mm static and the high twenties for 10-11 mm static ropes. Only one sample (Donaghys 9 mm) broke on the first fall; a totally inadequate rope! This rope is a Polyester rope, which gives it extremely low stretch, and less resistance to shock loading. Polyester ropes are also known to lose strength much faster than Nylon (polyamide) ropes. All our other ropes are Nylon ropes.

Eight other 9 mm Static rope samples broke on the second fall, all these ropes are also regarded as inadequate. All of these samples were either, polyester (Donaghys), ~15 years old (PML, old Edelrid) or visibly looking old and tired (young Bluewater 2+).

Our 9 mm Beal of indeterminate (~5-10 years) age (we have 400 m of this rope, 200 m still on the roll) withstood 2 consecutive FF1 falls (when new it should survive 5, see the Table below). It has obviously degraded somewhat in storage. This rope is long overdue for going into service, and once there will need to be tested annually to ensure it stays adequate for use. [Sometimes getting a rope at a bargain price is false economy!]

Three year Edelrid Superstatic 9 mm rope still reached specifications (i.e. 4 FF1 falls, see the Table below) and ten year old Edelrid Superstatic 9 mm rope still held 3 FF1 falls.

Twelve year old Bluewater-2, 9 mm rope still held 3 FF1 falls (rated at about 4 FF1 falls).

All other thicker (10, 10.5, 11 mm) static ropes tested survived at least two falls, all are regarded as adequate.

One 15 year old 11 mm Bluewater rope (1983 vintage) was still going strong after 10 falls.

Fifteen falls was the most I subjected any rope to, and after this the old piece of Bluewater 11 mm rope was still intact and I was tired of hauling 80 kg up and so gave up. It seems that Old Bluewater 11 mm rope never seems to die, it just gets stiffer with age! However, one shouldn't be complacent, all ropes will eventually degrade to such an extent that they are unsafe. Our old 11 mm ropes still need to be checked regularly.

Generally the stiffer the rope, the more mud has ingressed the core of the rope and the weaker the rope. One sample of stiff Bluewater 11 mm rope was found to have all bundles of fibres in the outer

core coloured brown, this rope broke on the sixth fall.

As an incidental to testing the ropes, several old karabiners, maillons and traces were also tested. There are some interesting results. Firstly, the swages on some retired 20 year old wire traces were still quite sound. Initially I attached the 80 kg weight to the rope via a 10 mm Big-D steel karabiner with a dubious locking mechanism on the gate. On about the third test, the screw on the gate slipped, the gate bounced open, the D straightened out somewhat and the rope just bounced out sending the 80 kg west! One 8 mm steel maillon with a rusted thread (so the gate would slip) simply pulled straight on the first fall. So if you have any karabiners or maillons with dodgy thread then replace them as a matter of urgency. The \$2 Zennit maillon brought from a local hardware store used to attach the sample rope to the trace around the tree is still intact after 171 falls and the gate still unscrews with finger pressure. However the maillon is no longer oval in shape, but has a pear shaped bottom.

Manufacturers Specifications: Number of 80 kg FF1 falls held.				
Diameter	9 mm	10 mm	11 mm	Information Source
Rope type				
Beal/Low stretch	5	5 (100 kg)	13 (100 kg)	Beal-Internet homepage
Bluewater 2/Static			~7 ???	Spelean-email
Bluewater 2+/Static	4+		17	Spelean-email
Edelrid/Softstatic	7	9	9	Edelrid 1995 Catalogue
Edelrid/Superstatic	4	7	18	Edelrid 1995 Catalogue
Manufacturers Specifications: Longevity of Static rope.				
Edelrid	approx. 6 years	with occasional use and no signs of wear		Edelrid Catalogue
Edelrid	10 years max.	no use and optimal storage conditions		Edelrid Catalogue

It is interesting to examine the specifications from the manufacturers for new ropes and compare them with the results obtained for our ropes. [Note that in Europe in 1996 a new standard (EN1891) for low stretch ropes has come into effect, this uses a standard weight of 100 kg and the way ropes are rated is done differently (by specifying the maximum allowable impact force). However after a bit of a search it was possible to find 80 kg FF1 data for some ropes, where possible, these are shown in the table.]

One manufacturer (Edelrid) also provides 'maximum storage' (10 years) and 'occasional use' (~6 years) lifetimes as well. From the test results I obtained for ropes not visibly worn, it 'appears' (i.e. qualitatively only; I don't have enough data to make any quantitative comments) that the ability of ropes to hold FF1 falls remains fairly constant in the first 5-8 years, then only slowly decreases till about 10-12 years, but then rapidly falls. This fits in reasonably well with the 6 and 10 year figures quoted by Edelrid. The thicker ropes probably go down-hill at about the same rate (I did not test enough samples to destruction to determine this trend), but since they have higher specifications to begin with, their degradation doesn't become critical as fast as with the thinner ropes. Ropes that see heavy use will obviously deteriorate a lot faster than this.

Using the Edelrid longevity figures by themselves as a guide suggests that three-quarters of our ropes have lived their life (i.e. more than 6 years old) and should be disposed of. I don't believe that age 6 is the end of a ropes useful life, but is more of an "err on the side of safety" (CYA) statement, which is quite a reasonable and responsible thing to do. Provided older ropes are regularly (e.g. annually, as recommended by experienced cavers like Warild (1988) and Elliot (1986)) tested the onset of more rapid deterioration should be picked up and the ropes can then be retired. With respect to testing, one should also consider that perhaps the samples of rope tested were not necessarily representative of the condition of the whole rope and that elsewhere the rope may be weaker. This is a valid concern and suggests that test pieces of rope should be taken from the most worn part of a rope, or that more than one test piece should be taken from any rope to be tested. [Elliot (1986) suggests this for any rope with a sample that only holds a single 80 kg FF1 fall.]

**If for any reason this annual testing is not carried out, then of course these ropes should be retired in accordance with the manufacturers specifications. If anyone is going to continue to use ropes beyond the manufacturers**

**recommendations then you need to have some sound evidence (e.g. Drop test results) to be able to make an informed decision.**

At the end of my testing about one-quarter of the ropes were designated inadequate and have been retired. We are left with 1530 m of good rope, with a high average age. I would like to see the amount of rope we have decrease in both total length and average age, to something like 800 m with at least half under 5 years of age. Ideally it would be good to retire rope because it is worn-out from use, rather than from being under-used and decaying from old-age.

I would be interested to hear from anyone who has done any of their own testing, or of any schemes/methods that others use to pension off their ropes. I can be contacted via post at:

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By the way, Steve Bunton is currently doing a survey of Static Ropes for Wild Magazine, watch out for this, it should contain a lot of good information.

## References

Dave Elliot (1986) "Single Rope Techniques"  
Alan Warild (1988) "Vertical"