CAVES AUSTRALIA

The Journal of the Australian Speleological Federation

Farewell TESS

Irish Expedition to Papua New Guinea

Undara's Troglobitic Underworld

No. 192 • MARCH 2013

COMING EVENTS

This list covers events of interest to anyone seriously interested in caves and karst. The list is just that: if you want further information the contact details for each event are included in the list for you to contact directly. A more extensive list was published in ESpeleo *earlier this year. The relevant websites and details of other international and regional events may be listed on the UIS/IUS website http:///www.uis-speleo.org/ or on the ASF website http://www.caves.org.au. For international events, the Chair of International Commission (Nicholas White, nicholaswhite@netspace.net.au) may have extra information.*

2013 looks very busy with the next ASF Conference TroGalong in January at Galong NSW, the ACKMA Conference in May at Waitomo Caves, NZ , the Jenolan science symposium in May and the International (UIS) congress in July at Brno, Czech Republic.

We'll keep you posted on these events in future Caves Australia *issues.*

2013

January 6 -11

Trogalong 29th Biennial ASF Conference, Galong. NSW. Australia Hosted by the New South Wales Speleological Council. Registration is now open and details are available on the Trogalong website http://www.asfconference.org.au/2013/Default.aspx. You will need to book your accommodation immediately. Pre and post conference trips are planned.

March 28

Closing date for ASF grant applications. For details see ASF website. Enquiries Fiona Beckwith fbeckwith@yahoo.com

April 6- 7

The ASF/Australian Cave Rescue Commission's cave rescue orientation program (CROP) is coming to NSW after successfully implementing a series of workshops in four other states. More details will be provided soon Contact Joe Sydney jsydney@choice.com.au, w: (02 9577 3361 0405 039 398

May 12 - 18

ACKMA Conference, Waitomo Caves NZ. 20th Cave Management conference. For details see the ACKMA website www.ackma.org where there is a lot of information on the dedicated conference page, or contact conference convenor Libby Chandler: conference.convenor@ackma.org

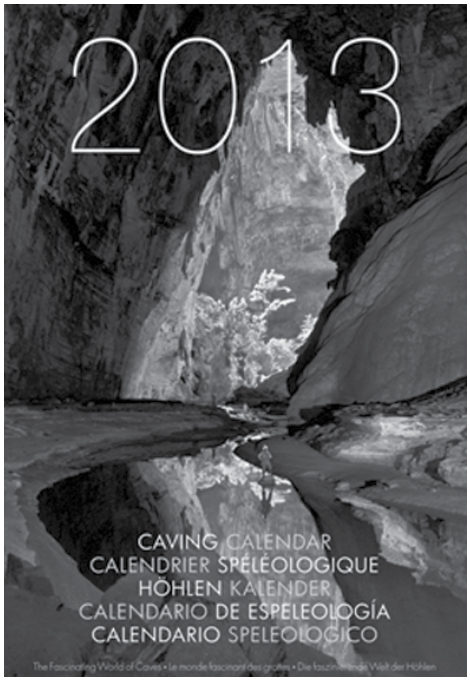
May 23–24

Symposium on the Science of Jenolan Joint symposium with the Linnean Society of NSW at Cave House. Details published in *ESpeleo* #5 2012. Enquiries to Bruce Welch bruce@bookproduction.org (02) 9569 9928 OR John Dunkley jrdunkley@gmail.com (02) 6286 1783.

July 21 - 28

16th International Congress of Speleology, Brno, Czech Republic. For details see the website http://www.speleo2013.com/ The second circular is now available for download and online registration has been available since 1st August 2012. The circular has lots of information. For personal registration, booking accommodation and making reservations for excursions and field trips, register online or use the paper form which can be downloaded from the website, filled in and returned by fax or as an email attachment. For interest, Ryanair (www.ryanair.com) has cheap flights from Stansted airport north of London direct to Brno. The ICS is a spectacular event that occurs every four years and it is also a function of the International Union of Speleology (IUS). You can find detailed information about fees, accommodation and excursions on the Congress website www.speleo2013.com and also in the recently published second circular.

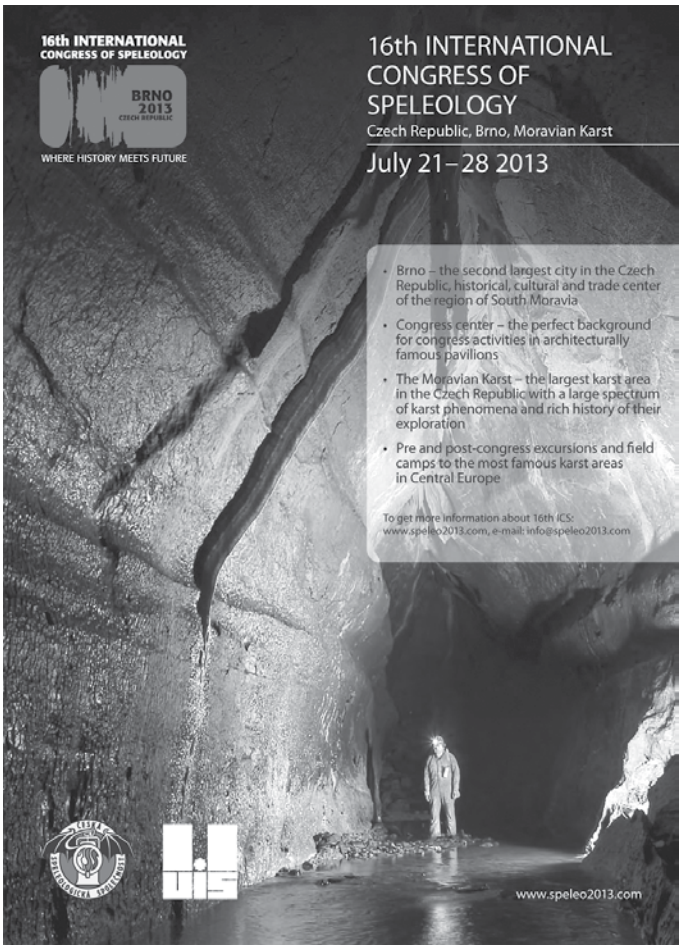
Speleo Projects Calendar



A LIMITED number of these spectacular calendars is still available without the need for international money transfers.

This year the donation is to the ASF Karst Conservation Fund. Make a tax-deductible donation of $40 or more to ASF Karst Conservation Fund and receive a gift calendar for your enjoyment.

Twelve stunning images take you on an enchanting subterranean journey to caves around the world — Brazil, France, Iceland, Malaysia, Mexico, Puerto Rico, Slovenia, Spain, the United States and Wales. Make your donation soon and don't miss out on this great gift. Send your cheque to Grace Matts, ASF Karst Conservation Fund, 176 William St, Bankstown, NSW, 2200.



WANTED
ARTICLES FOR *CAVES AUSTRALIA!*

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

CAVES AUSTRALIA

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ASF

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Cover: Looking upstream at the entrance of Weini cave, Papua New Guinea
Photo by Axel Hack

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EDITORIAL

GENERALLY, cavers I talk to are satisfied with this magazine which represents them. If there are any muted qualms it is not about the articles themselves (we recognise we are a broad church); criticism is generally about presentation.

Recent comments have been made to the publication team of *Caves Australia* expressing disappointment that the magazine comes out in black and white and has not moved into the world of colour.

Arguments such as 'We are behind the times' and 'We now have the money to print in colour' have been raised.

Much discussion has taken place amongst us, arguments of philosophy and finance being central.

First: cost details. Those of you who negotiate printing for club magazines will understand the costs and difficulties. Every colour section of *Caves Australia* (four pages) adds about $500 to the cost. The magazine is printed on A3 sheets and then folded into A4. That means pages 1, 2, 23 and 24 are linked; 3, 4, 21 and 22 are linked, and so forth. This in itself produces odd combinations of colour pages. Only the four centre pages are consecutive.

Consider a colour cover. The back page (24) is an advertisement, the inside page is usually Coming Events and the inside back page a half page advert—not a good use of colour. Should we try to load all colour photos into these consecutive pages, thus separating photos from their relevant articles, the result would be a dog's dinner.

The ASF, true, is not currently as short of money as it was some years ago (thankfully, there have been reductions in exorbitant insurance premiums). Some argue fees should be reduced—logical—others that the money should be spent on core ASF values such as protection of karst or publishing karst-related material.

If, however, readers want colour above all else, this can be realised cheaply with the digital publication of our magazine. Many of us now read online and tablet technology is readily available. Are you ready for a digital magazine?

Please make your opinions known—publications@caves.org.au

—Ian Curtis

President's Report

2013 IS WELL UPON US. Summer is promising to leave us, and take with it all those things associated with hot weather: bushfires, storms, snakes, sunburn and excessive food and beer swilling.

There have been several highlights so far this year which we may have constructed together but are worth remembering and sharing again.

The Trogalong conference was a success in so many ways that are not always apparent. The caving community was represented by attendees from all states with clubs and we came together with a sense of expectation to exchange and confer friendship and cave wisdom.

We enjoyed the benefits of excellent organisation by the Green Team, catering by the Conference Centre staff and a compact, inspiring and spectacular venue.

At Council meetings we received information, sorted business and confirmed directions to move forward to future targets.

As always, an eclectic mix of passionate cavers demonstrated the qualities of The Good, The Bad and the Ugly (I put my hand up for that one) of our individual and unique personalities.

I enjoyed greatly the challenges and look forward to the next Council meeting in 2014 and Conference in 2015.

Another highlight we all celebrate is the recognition of the service to Australian speleology by John Dunkley and his AM award on Australia Day 2013.

John has provided us with a stunning model of what can be achieved over many years by consistently being passionate about caving in Australia and overseas.

He continues to be involved in all aspects of speleology, including organising trips, documenting, organising and publishing cave data, mentoring individuals, leading and representing the ASF, and publishing cave books.

John is a repository of cave history and an inspiration for the future in his consistent involvement in developing the mindset, infrastructure and financial planning to enable ongoing cave conservation.

Well done, John!

Let us make 2013 a year to remember with each of our clubs providing the necessary range of support and control and mentoring of members that will continue to keep the ASF in a positive growth phase.

Let us continue to support the ASF and to make the rest of the world sit up and take notice as we progress national and international speleology.

In Caving
Stan Flavel

Farewell TESS

Peter Bannink and Bruce Swain

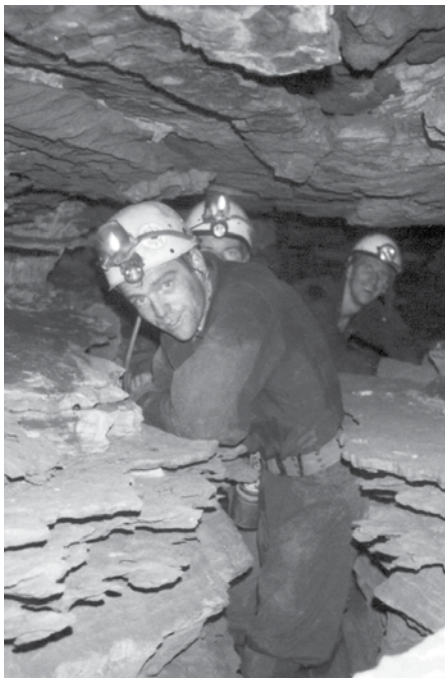
INTRODUCTION

It is with great regret that I have to advise that Bruce Swain, the last member of the Top End Speleological Society (TESS), finally hung up his caving helmet in 2010, closed the Society and left the Northern Territory (NT) for a new life in New Zealand.

Below is a brief review of the history of the club, highlighting some of the caving activities undertaken by TESS in its 27 years of existence and, more importantly, some of the characters involved.

BEGINNINGS

TESS was officially established in 1983, under the guiding hand of (the late) Cliff Ellis (then Ranger stationed at Cutta Cutta Nature Park) and Paul Dahl, who laid down the foundations for the formation of the club. Caving activities began with a small group of enthusiastic cavers, notably David Stockwell, Rod and Kathy Silburn, Paul Rendell and Todd Dennis.



G.BANNINK

Exploring Guy Cave, 'the razer-blades' section (1989)

Early caving activities were predominantly carried out on Cutta Cutta Cave Reserve, exploring and documenting some of the caves previously explored by the VSA in the 1970s and any new entrances which came to the attention of the local rangers.

Efforts were made to rediscover caves which had been explored by the Darwin Speleological Group, who were active in the Katherine area in the 1960s. Few records exist of these very early caving exploits (early records were destroyed in Cyclone Tracy) but it is possible that caving activities in the 1960s were sporadic and poorly documented.

Todd Dennis left after three years and the future of the new club lay with Rod Silburn, who kept speleology alive in the NT for the next seven years.

Long-term member Bruce Swain joined the club in 1986 and remained with the club until its last year of activity in 2009. Trips in the early years were infrequent, but Rod and Kathy Silburn continued to cave in the Katherine region, while always exploring the NT for new and interesting caves.

Rod and Bruce also visited many remote regions of the NT and Kimberley and encouraged visiting cavers to join them on some of the many trips they undertook.

Highlights were the discovery of Oolite Cave in Katherine and Wounded Knee, 80 km east of Katherine.

The latter was discovered by accident while Rod was looking for some privacy along the Victoria Highway near Mathison Creek.

Rod and Scott Crawford surveyed the first 1.3 km and later (in 1984), with Simon Jolly and other members of UQSS, extended the cave by another 700 m. Every attempted trip led to cavers being overcome with heat exhaustion and high levels of CO_2 sickness. Since then exploration of the system has not continued.

Rod took cave mapping very seriously, undertaking a theodolite survey of Kintore Cave, which took 12 weekends of laborious work with his wife Kathy, in often very oppressive conditions.

On a memorable occasion, the happy couple got disoriented when exiting the cave at dusk and spent half the night trying to sleep in the scrub, before finally finding the car at 2.00 am. It can get below 5°C at night in July, so southerners beware.

Rod and Bruce ventured further afield in 1987, visiting Limestone Gorge and exploring caves in the Ningbing Ranges and the enormous sandstone cave Whalemouth in Western Australia.

The next year Rod and Bruce assisted bat researcher Sue Churchill in monitoring and counting colonies of Orange Horseshoe bats in the NT. Together they explored any sort of cave or mine which might contain bats, visiting over 100 mineshafts.

Caving really picked up in 1989 when experienced cavers Andrew Wygralak and

P. BANNINK

Andrew Wygralak practising his vertical skills at a local waterfall (1992)

S. JACUPS

Guy and Bruce in the entrance to Birthday Cave BAA4 (1995)

Guy Bannink joined the club. Guy, from Tasmania, was very enthusiastic about the caving potential in the NT and Andrew was suffering long-term caving withdrawals from his old stomping ground in Poland.

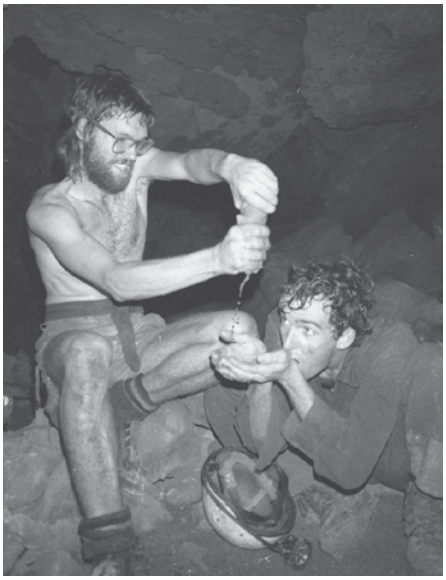
Guy was also very successful in recruiting many unsuspecting new members from the Royal Darwin Hospital where he worked. The outback experience took on new meaning, crawling through small, hot, humid passageways and camping in very basic conditions at 'Hotel TESS', the storage shed on Cutta Cutta Reserve. Everyone took to the punishment with amazing enthusiasm and a new and very energetic core of cavers developed.

Andrew, a devoted vertical caver, inspired everyone to seek vertical caving thrills in Indonesia where massive mountains of limestone awaited discovery and exploration.

In June 1991, after weeks of planning, five TESS cavers traveled to the island of Sulawesi to explore an area of Tertiary limestone around the mountain Gunung Masale. Disappointingly, only minor vertical caves were discovered, but locals were very hospitable and all agreed it was a successful reconnaissance trip.

The club applied for a heritage grant in 1990 to explore and document karst in the NT and was ecstatic to be allocated $15,000 to assist in this work. Systematic exploration and documentation of the NT karst began in earnest with extensive exploration of Cutta Cutta Cave Reserve.

A detailed external survey of the Guy Cave Outcrop was undertaken, numerous entrances tagged and systematic surveying of known systems—Guy Cave, Beginners Hole and Sunbeam—began. Each trip always resulted in new passage being found, resulting in more and more surveying to be done.



G.BANNINK

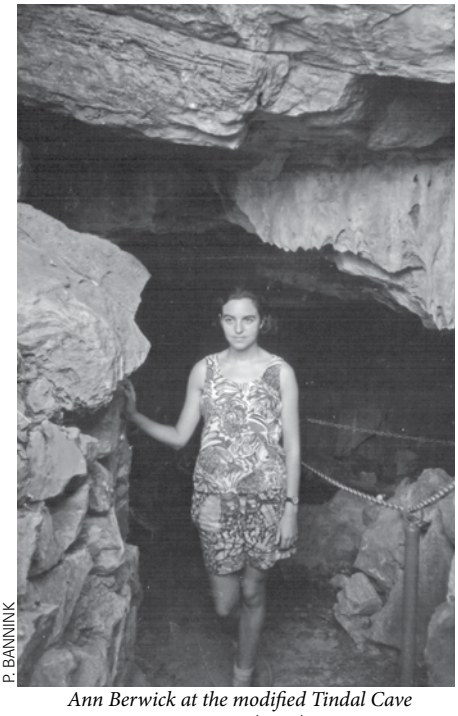
Rod Silburn and Mark Crapelle hot and thirsty in Guy Cave (1990)

Two hot issues at the time were the preservation of the large ghost bat colony at Kohinoor Adit and the proposed development of Guy Cave for tourism.

The club stood against the development of Guy Cave as it was one of the largest caves in Katherine and was a favorite recreational cave for the club. Development would effectively exclude the club from this area.

The bats were saved with a campaign spearheaded by the NT Environment Centre, while the new cave development encountered some major problems.

A second entrance to Guy Cave (MAH31) was enlarged for tourist access. Due to this process, the cave began to dry out, resulting in roof cracks and mass movement near the exit.



P. BANNINK

Ann Berwick at the modified Tindal Cave entrance (1991)

The entrance was subsequently returned to its original size and the probable collapse of the chamber was prevented.

A detailed survey of cave passage in this area was undertaken but a further development plan for another section of the cave, Ruined Castle, was never undertaken. Guy Cave (originally named by the club after a ranger at Cutta Cutta) was officially renamed Tindal Cave and the club's recreational use of the area dwindled as it opened for tourism.

A CHANGE OF DIRECTION

In 1991 a three-week expedition of karst exploration in the NT was planned to document karst in the more remote regions of the NT, taking in Fergusson River, Gregory National Park and revisiting the Ningbing Range in the Kimberley.

Guy's brother Peter Bannink joined TESS at that time and was fortunate to travel with an eager group of nine other cavers. The expedition is one of the photographic highlights in the club's records , documenting caves at Fergusson River, Katherine, Gregory National Park and the NingBing Ranges in WA.

P. BANNINK

Alison Simmonds, Kathy Silburn and Maxine Wilson in BAA16 (1991)

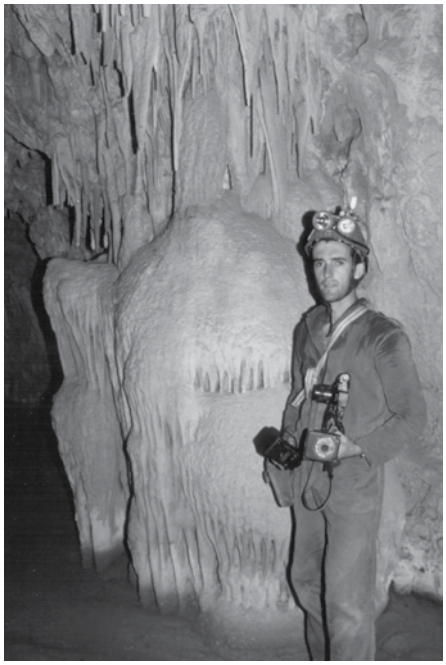
While exploring the Gregory Karst, the potential for discovering and documenting new caves in this area was realised when members were lucky on the second last day at 5.30 pm to stumble into one of the largest cave systems in the region. Ann Berwick, the ultimate cave 'wriggler,' headed down a low, crawling sump passage that seemed to go nowhere. The report that extensive walking cave passage lay beyond fired the expedition group into action.

The size of the cave system was breathtaking, with 10 cavers in teams of two exploring new passage for the whole of the next day, often getting briefly lost in a maze of rifts, squeezes, chambers and pits. The largest known cave in the area until then was about 8 km, but this new cave had the potential to be more than double that size.

Later Peter and Guy often raised the ludicrous possibility that it could be bigger than Exit Cave in Tasmania—now *that* would put the NT on the map.

Manic Monday, as the entrance was later named, was typical of the Gregory systems, but very different to the caves in Katherine, usually small, horrible, hot, humid holes. The Gregory caves offered kilometres of cool walking passage, a virtual cavers' paradise.

Before the end of the year Peter, Rose McGready and Ann had travelled the 700 km back to Gregory just for a weekend to begin surveying the new system. The discovery of this cave would change the club's direction dramatically, as a major focus for the club would now be at Gregory National Park.



P. BANNINK

Rod Silburn documenting caves in the Ningbing Ranges

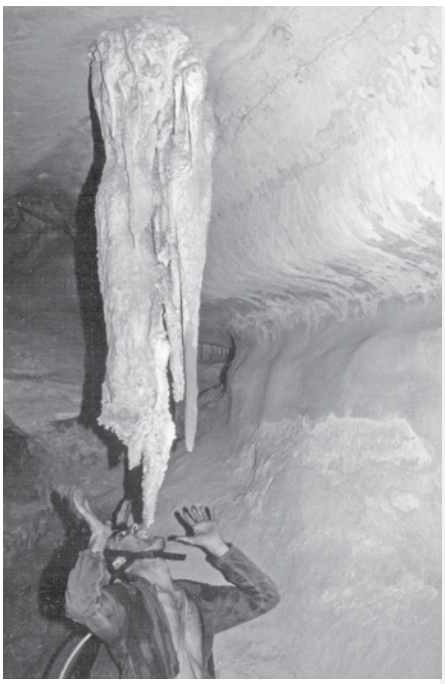
KARST RESEARCH CONTINUES

In January 1992 Peter and Guy continued exploration of the new cave with long-term TESS member Darrel Nation. A new lead doubled the size of the system, with continued major potential. The new cave was also multilevel so the Grade 5 survey undertaken was slow and tedious. Plotting with AutoCAD software proved invaluable in highlighting unexplored regions.

Documentation of karst features in Katherine continued with new cave discoveries in karst north of Katherine. Additional expeditions to Gregory were organised and Tassie cavers Stuart Nicholas and Chris Davies joined the Gregory trips, helping to survey the new cave and explore more of the Gregory Karst.

A September 1992 expedition saw member Karen Magraith, along with Guy and Peter Bannink, explore another large block of karst, locating and exploring four more large caves in Gregory National Park.

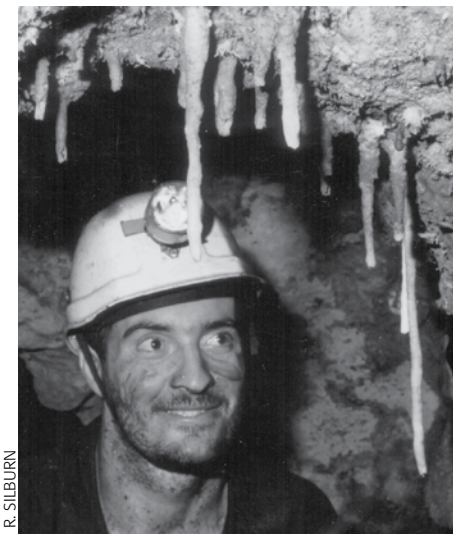
Karst documentation at Gregory grew rapidly, leaving little time for relaxation on these extensive expeditions. As the survey work in Manic Monday continued, Peter and Bruce Swain began a more systematic exploration of caves in Katherine.



P. BANNINK

Rod Silburn, 'photo fun' in the Ningbing Ranges, WA (1991)

Assistance was also given to local researchers Danuta Karp and Professor Stein-Eric Lauritzen, in their study of the Katherine Karst. Peter, a biologist, also began surveying the cave fauna, while geologist Andrew Wygralak undertook a speleothem study in three caves in Katherine. Recreational caving in the NT had changed from 'getting as grotty as you can' to extensive karst research.



R. SILBURN

Paul Spillane examining formation in FEB10 (1991)

LOSS OF MEMBERS

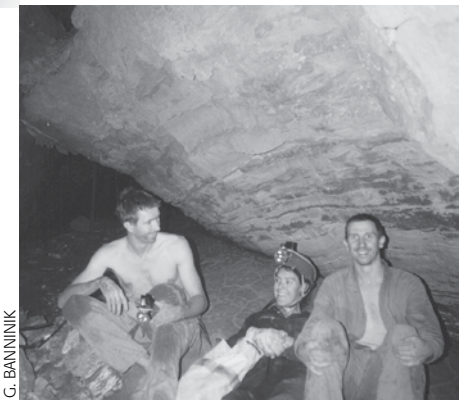
The constant need to document everything did change the dynamics of the club considerably, but with Guy Bannink moving to Adelaide in 1992, Peter, Karen and

Andrew kept the club ticking over.

Future recruitment of new cavers from the Royal Darwin Hospital ceased and some existing members moved overseas. Active cavers reached a critically low number—two—as Peter and Bruce continued to document caves to fulfill commitments for the heritage grant.

Peter and Andrew also travelled to much more remote regions to investigate large dolines on Wave Hill Station, the Headley Limestone region on the NT/WA border and the Wingate Mountains south of Daly River. Caves were also visited on Dry River Station south of Katherine and at Fergusson River.

From this work it was clear that many caving regions were very remotely located and also widely distributed throughout the NT. Few regions were as extensive in area or as productive in terms of finding and exploring new caves systems as those associated with the Gregory Karst.



G. BANNINIK

Peter, Karen and Guy after exploring the Manic Monday Cave sump area (1992)

In 1993 and 1994 continued exploration of Manic Monday led to more extensive passages being discovered. In July 1993, a squeeze which Karen Magraith negotiated finally connected the system to Dingo Cave, which had been surveyed by Operation Raleigh in 1990.

Club members were also fortunate to visit a deep doline spotted by Kevin DeWitte from a helicopter in the Newcastle Range. At about 75 m deep and 40 m wide it was a very impressive hole in a sandstone-capped mountain range. Although promising, an extensive rock fall masked any underlying cave system.

P. BANNINIK

Bruce exploring a remote section of Manic Monday Cave BAA38 (1998)

A SLOW DECLINE

In 1996 Guy and Karen moved to Adelaide and long-term TESS member Bruce Swain offered to continue to store the club's archival material and hold the club together.

A couple of annual trips to Bullita were held for the next five years with the main focus being on the mapping of the karst, north of Limestone Gorge.

During this period, apart from Bruce, Sue Jacups from Darwin was the most active member. A number of new members were briefly active before moving on. These include Craig Finch, who was based in Timber Creek and Scott Connolly in Katherine.

In this period Bruce and, on one occasion, Scott began attending the Bullita expeditions organised by CSS and later by the Bullita SIG. Peter Bannink continued to support the club after he relocated to North Queensland, continuing vital documentation, plotting and mapping data gathered by the members in the field.

Little work was done in the Katherine region in the last 10 years, though the region has great potential for finding small caves and documenting the area's cave biology.

Peter Bannink currently holds all the current surveys and maps of the Katherine region which will be archived with the Chillagoe Caving Club. Future work in documenting the Katherine karst region is planned.

THE FUTURE

It is unknown whether a new club will re-form in the Northern Territory or if TESS will be resurrected. The last few years have seen an upsurge of caving activity in Northern Australia from various southern clubs and interested groups (Gregory SIG). New karst regions are being identified and explored in the NT and the work of documenting and mapping caves at Gregory National Park is continuing.

There is no longer a local club to ensure that exploration results are gathered and archived for local cavers.

On the upside, modern methods of electronic documentation mean more information is being recorded, shared and archived than ever before.

All current TESS caving records have been forwarded to the ASF archives for long-term storage. Duplicate copies of some of the material, surveys and maps are also being retained with the CCC archive in Cairns. Hopefully a new NT club will not have to begin again from scratch, but can continue to build on what TESS achieved in its 27 years of existence.

Irish Caving Expedition to Papua New Guinea

December 2011 – January 2012

Seamus Breathnach
VSA

BACKGROUND

Ireland is a country not particularly renowned for its warm, humid weather, expansive rainforests or exotic wildlife, but it has a healthy caving scene and Irish cavers regularly wander off on various expeditions, keen to pursue some exploration outside of their home turf.

In 2008, the British Broadcasting Corporation (BBC) visited the village of Fogomai'yu, located in the jungles of the Southern Highlands province of Papua New Guinea.

Their goal was to film *The Lost Land of the Volcano,* a documentary about the remarkable ecosystem nestled around and inside the crater of the nearby extinct Mount Bosavi volcano.

Tim Fogg, a venerable caver and rope access specialist in Ireland, worked as a safety and caving consultant with this BBC film crew. He returned to Ireland with stories of abundant unexplored cave systems on the lands of the Kosua tribe in the Fogomai'yu area and this was the seed that ultimately grew into a plan to send an Irish caving expedition to Papua New Guinea in 2011-2012.

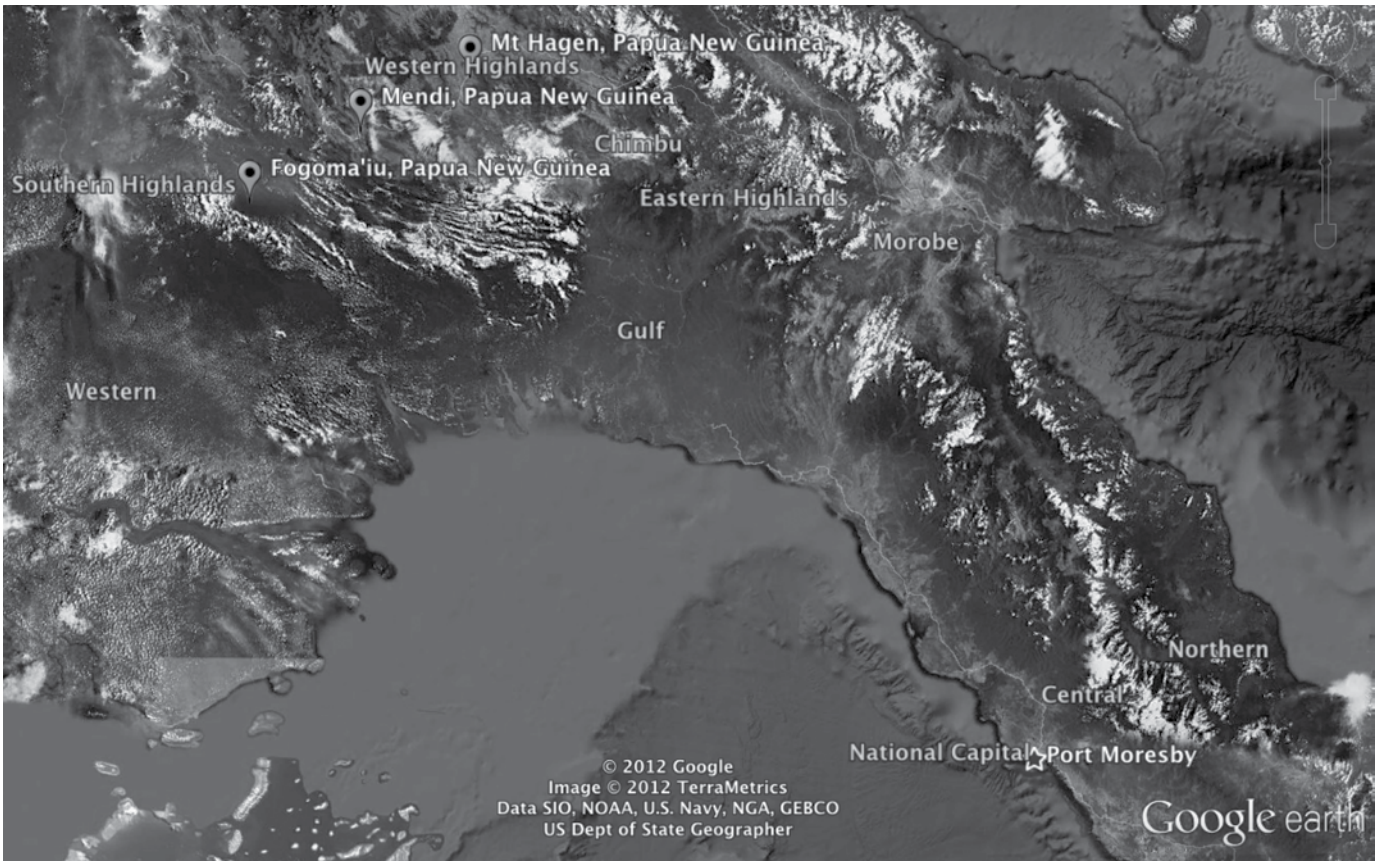
PREPARATION

Preparations began in mid-2010 and an idea was hatched over a few friendly pints of Guinness after a weekend's caving trip.

With a concept in hand, we checked with our European and Australian caving colleagues and verified this area had not been previously explored by cavers.

Soon afterwards the first of the international flights were booked and we began to form a plan. In the Southern Highlands the difference between the rainy season and the dry season is little, in that the rainy season (December to March) gets a little more rain than the dry season and is still hot, wet and humid.

We locked in the dates of 12 December 2011 to 6 January 2012 to maximise available holidays over the Christmas period.



GOOGLE AND TERRAMETRICS

AXEL HACK

The team at Mendi airstrip. From left: Ed Whelan, Steven 'Bus' McCullagh, Seamus Breathnach, Brian MacCoitir, Alegra 'Ally' Beatus, Axel Hack, Steven 'Muh' MacNamara, Paul O'Dowd, Stephen 'Jock' Read

The aim was to travel to PNG on a reconnaissance expedition to explore and document as many caves as possible and evaluate potential for future expeditions.

Our research on local PNG customs gave us some indication of what to expect from the population when we got there.

Many sources pointed to the tradition of 'Tok Tok' as the main means of talks—negotiations. The Tok Tok, which is conducted in the local language (or in Pidgin English), is well renowned as a tiresome activity that requires a degree of robust argumentative posturing to get what you want. And often, due to unknown reasons, it results in stalemate and frustration.

We would have to sit through many a Tok Tok in negotiating land access, guides, food etc. This thought concerned us throughout our planning stages.

To have any chance of achieving our expedition objectives in such a short period of time we would need to minimise this unnecessary downtime.

To this end, one of our earliest decisions was to invite Paul O'Dowd along on the expedition. Paul is an Australian national and specialises in local relations and natural history support for remote expeditions, notably to areas in PNG. He is fluent in Pidgin English but more importantly he has also been to the Fogomai'yu village a number of times with the BBC and has cemented good contacts with the local tribe.

Throughout the length of our expedition, Paul spent most of his time in discussions with the village negotiating our logistical requirements, allowing us to concentrate on our caving activities.

When Paul first contacted the village to ask for permission to visit them for this expedition, the request caused some mild consternation in the community.

In Ireland (and probably in most other countries) it is sometimes difficult to explain to a non-caver what speleology is about and it was no different with the people of the Kosua tribe.

Despite living in a remote jungle region, the Kosua people are not completely isolated from the outside world and were well aware that outsiders did not always have the best interests of the village at heart.

Logging and mining companies, amongst others, had encroached upon their way of life in recent years and therefore our request was viewed with a degree of suspicion, particularly because we wanted to look at holes in the ground.

Nevertheless, Paul helped calm many of these doubts and the people of Fogomai'yu welcomed us into their village with open arms.

AXEL HACK

Being welcomed in ceremonial style to the village of Fogomai'yu by the Kosua tribe

GEOGRAPHY

The rugged terrain and dense rainforests around Mount Bosavi are not documented in tourist topographical maps.

Extensive searches for maps of the area resulted in some interesting finds; two of the maps are shown on page 11—a geological survey from the 1970s (txu-oclc-6552576-sb54-12 Lake Kutubu) and a terrain map from the 1950s (Darai Kikoro Map).

The geological survey and some other maps we were able to get a look at (which unfortunately cannot be shared because of copyright restrictions) showed what seemed like hundreds of sinkholes around the Mount Bosavi foothills, validating Tim Fogg's claim that the area had some good caving potential.

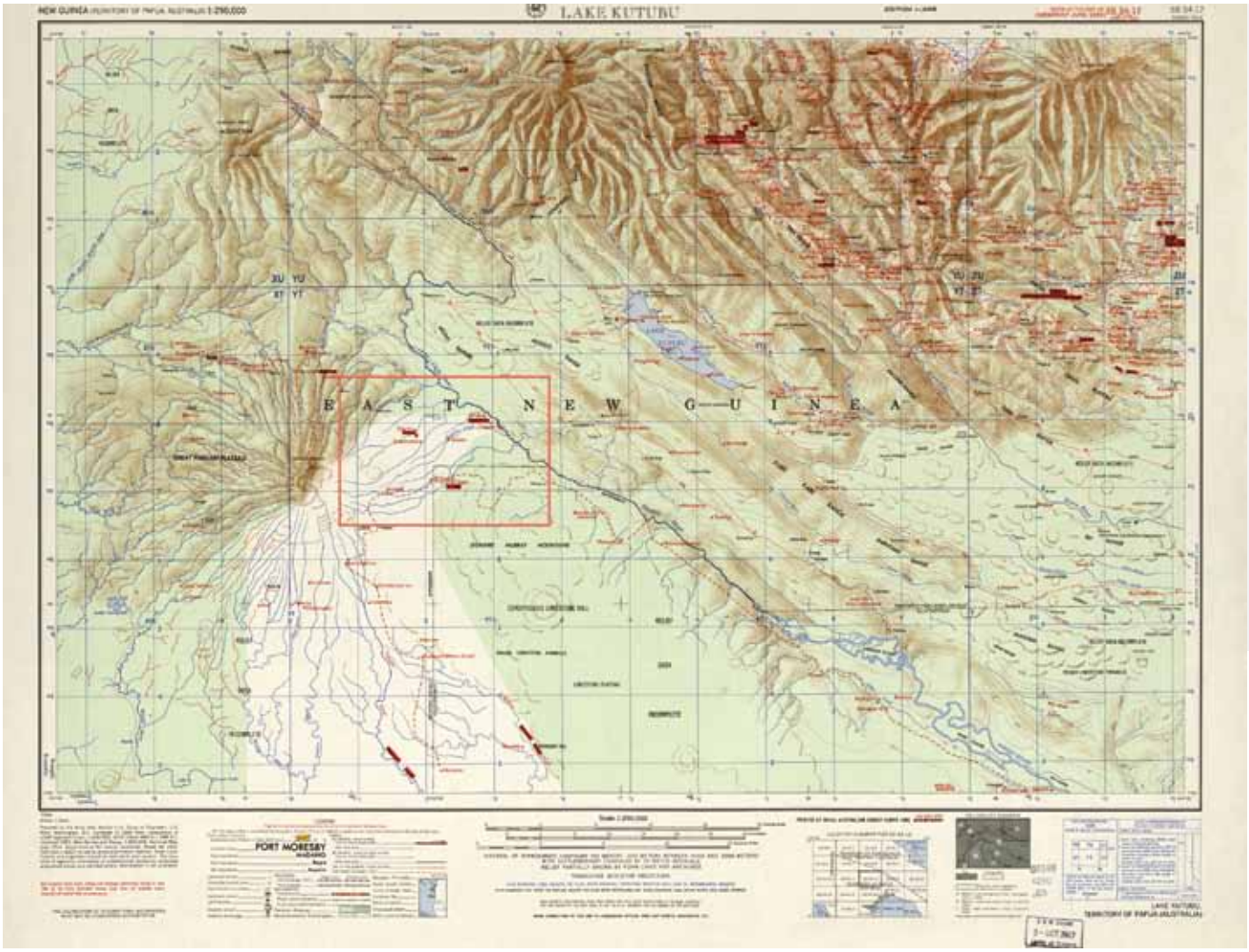
Although the potential for cave discovery is great, the logistics of getting to the cave entrances made (and will make) additional discoveries difficult, but not impossible.

The Kosua people have a good knowledge of the immediate and surrounding areas stretching up towards Mt Bosavi, and even at that, some of the locals found new caves while we were there.

The area around the village of Fogomai'yu is dominated by three geological features. The first and most prominent is Mount Bosavi, an extinct volcano that lies to the South West of Fogomai'yu. Mount Bosavi is a 2,397 m high Pleistocene stratovolcano[1] with a distinct horseshoe-shaped crater 4 km wide and 1 km deep. To the north of Mount Bosavi, right around to the eastern and southeastern slopes, there exist large areas of ancient volcanic ash and lava flow.

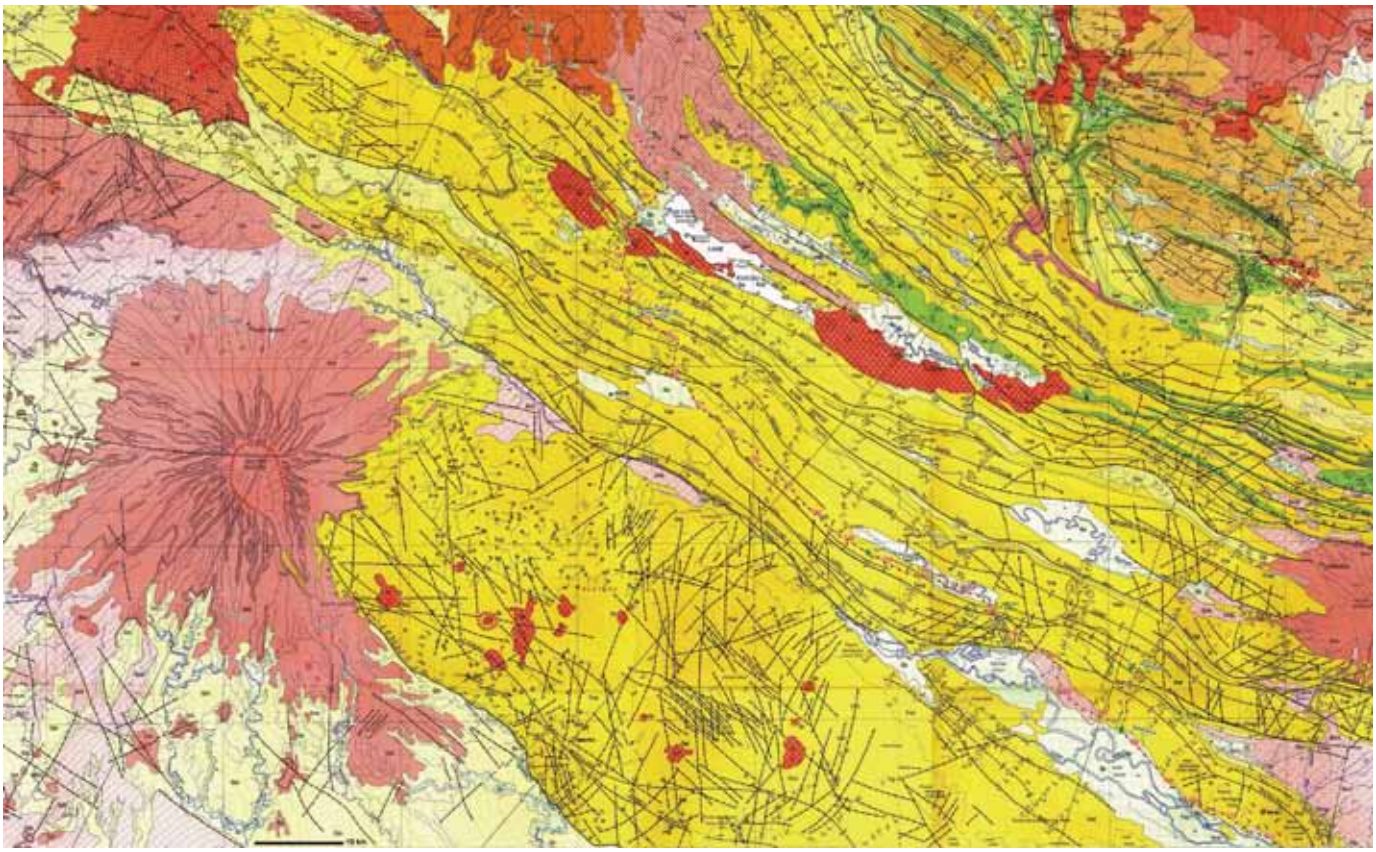
The second is the Darai Plateau, a vast tract of upland area to the southwest of Mount Bosavi that extends for at least 100 km in the southwesterly direction and encompasses an area of probably well over 3,000 square kilometres. The plateau rises to approximately 400 m above sea level and is a major geographical feature of the Papuan Fold Belt.[2]

It is an extensive stretch of karst limestone country and is particularly inhos-



AUSTRALIAN ARMY SURVEY CORPS

1967 map of the Fogomai'yu region



SOURCE UNKNOWN

Darai Kikori map - Geological map of the Mt. Bosavi and Fogomai'yu area.

AXEL HACK

The team in the entrance of Walofani Cave

AXEL HACK

Steve 'Muh' in the main streamway of Kikiwari Cave

AXEL HACK

Man-made structure for catching flying foxes in cave entrance

Jock and Steve 'Bus' under

River crossing a

the waterfall of Weini Cave

t Albert's camp

AXEL HACK

AXEL HACK

Steve 'Bus,' Steve 'Muh' and Jock inside Walofani Cave

AXEL HACK

Decoration in Himasili Cave

AXEL HACK

Seamus at helictites in Natila Cave

A child holds up dinner, a flying fox at Fogomai'yu village

AXEL HACK

Paul holding an Amblypygid, also known as a whip spider, in Manena cave

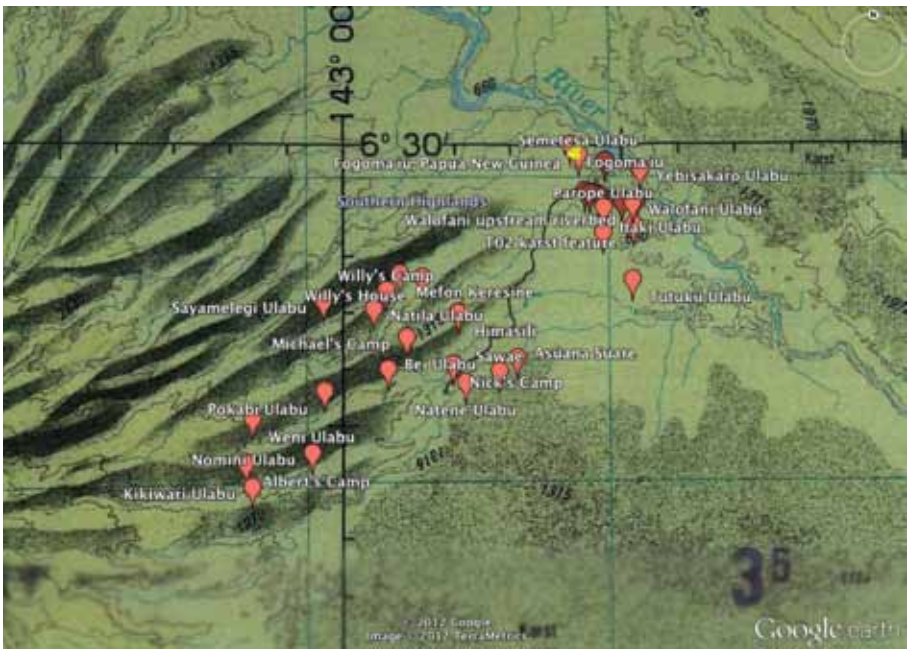
AXEL HACK

GOOGLE AND TERRAMETRICS

Dispersion of caves around Mt. Bosavi and Fogomai'yu

AXEL HACK

Cave dweller—Cave crab in Manena cave



GOOGLE AND TERRAMETRICS

Closer view of caves visited around Mt. Bosavi and Fogomai'yu

AXEL HACK

Jungle dweller— a Eupholus snout beetle

pitable due to its extensive dolines, karst pinnacles, its sharp-edged escarpments and the cover of dense lowland forest.[3] The people of the Kosua or nearby tribes rarely visit this area as surface water is scarce and progress through the terrain is difficult, especially in bare feet on sharp rock. As far as they know, the area is uninhabited.

The Darai plateau developed on thrust blocks of late Eocene to late Miocene Darai Limestone. Darai Limestone is a sequence of Oligocene deep-water shelf limestones overlaid by extensive Miocene reef limestones.

These formed in the shallower areas of the marine carbonate platform. The carbonate reef growth kept pace with the sea level fluctuations until the mid Miocene when the area was covered by rich siliceous (quartz) sediments from the uplifted parts of the Papuan Basin. As a result of this the lower Miocene limestone is quite thick.

Finally, the village of Fogomai'yu is situated a few hundred metres in from the western banks of the Hegigio River, which eventually becomes the Kikoro River further south. The river runs in a south-easterly direction and probably forms the main drainage for the area, in particular the eastern side of the Darai Plateau.

Of the caves we visited, most were located close to the basalt/limestone interface at the foothills of Mount Bosavi. In the main, the caves contained active streamways or larger river passages with some sections of fossil passage. The caves toward the top of the area were mainly in white limestone (reminiscent of Ulster White Limestone) with chert/flint nodules.

GETTING THERE

The approximate distance travelled from Dublin in Ireland to our destination in Fogomai'yu village was about 19,000 km, covered over five days or more, depending on international flight options. Due to its location, the only viable access to the village is by air and it is not served by commercial flights. It has a small grass airstrip suitable for light aircraft and only usable if the people of the village cut the grass on the airstrip beforehand.

An option to walk in to Fogomai'yu (one day's walk) via the town of Moro is possible, but logistically challenging.

Our route involved flights to Australia and then onwards to Port Moresby. Air Niugini kindly allowed us to bring an additional 50 kg of equipment on board in return for an article for their in-flight magazine.

As this was a reconnaissance expedition, we specifically limited the amount of technical caving equipment we would bring as a team. For example, we limited our usable rope to just over 100 m, with a similar amount in reserve for rescue purposes.

Any caves requiring more equipment would be logged for a return expedition. We were able to divide this equipment amongst the team luggage thanks to the excess baggage allowance.

A further commercial flight got us to Mount Hagen, the capital city of the Western Highlands province where we purchased all of our food and equipment supplies.

From there we travelled by road via the highlands highway to the town of Mendi, the provincial capital of the Southern Highlands province. This is where we met our charter plane, a Twin Otter aircraft, to bring us the final leg to our destination about 80 km west-south-west of Mendi. Our co-pilot for the flight to Fogomai'yu village was from New Zealand and had lived in the North of Ireland for some time near the caving region of County Fermanagh. It turned out that he knew some of same people we know back home: small world.

THE TEAM

Our caving team consisted of six Irishmen and a German, none of whom had visited Papua New Guinea before but who were all well accustomed to expedition caving.

Each member had plenty of work to do in planning the expedition. As I lived in Australia (and therefore in a similar time zone to PNG), my primary role was arranging anything that involved contact with folks in PNG and locally in Australia. This included travel, accommodation, security escort, international cave rescue options, medical support from the nearby Oil Search oil base.

Travelling through Papua New Guinea is a wonderful and rewarding experience. A bit of patience helps a lot; timetables are often only theoretical and unpredictable events tend to be frequent enough to keep you on your toes. Organising travel and accommodation from overseas is also a rewarding experience. Reliable communications, even to well-populated areas in PNG, are sometimes difficult. Western conveniences such as email can be scarce so explaining technical logistical requirements over an infrequently answered, poor quality telephone line—via a language barrier—requires a good sense of humour.

Paul O'Dowd, as mentioned earlier, joined the team to help manage access and interactions with the local tribe. And finally Allegra 'Ally' Beatus, a portrait photographer/documentarian from Israel but based in WA, also accompanied us into the area.

VILLAGE CAVING

Our arrival in the village was amazing. From the air, all you can see after leaving Mendi is rainforest, in every direction. As our plane touched down on the village airstrip, we saw that the men, women and children of Fogomai'yu had turned out to meet us.

AXEL HACK

Ceremonial dress of a "Sing Sing" performer in Fogomai'yu village

caption

A welcoming party in ceremonial tribal dress sang and danced a traditional sing sing while beating Kundu drums. It was an emotional experience clambering out of the plane to this spectacularly warm welcome, unsure of how to react but overjoyed to finally be there after months of preparation.

More welcoming ceremonies followed after our equipment was unloaded and the plane departed. We were given food and gifts, some speeches were made and then we were asked to announce our intentions.

Paul got to work explaining that we were looking for caves with large rivers entering or exiting, caves with waterfalls, caves with flying foxes, caves with mist or clouds in the entrance. The concept of cave size was explained as a hole that was big enough for a person to walk into and must go a long way into the darkness where no light can be seen.

These caves were called 'bigpela' caves (bigpela is 'big' in Pidgin English), a term that was used throughout our stay in the area. We produced some maps of the area and took notes as the landowners began to share information in this Tok Tok about caves on their lands.

Our first few caving trips were local to the village. This was deliberate, to help acclimatise to the humidity and terrain. Our base camp in the village was in a hut belonging to Captain Jack, a great fellow who got the nickname from having a patch over

AXEL HACK

Huts in Fogomai'yu village

one eye and being a boatman for the BBC during their visit to the area.

As was the norm in the village, the hut had no western conveniences such as electricity or running water but it was clean, had a roof and was a place to store our equipment and hang our hammocks and for that we were grateful.

As we were on a budget, we couldn't afford to fly in fuel for generators to power laptops etc. and a later attempt to buy fuel from the nearby town of Moro was unsuccessful. Therefore, we had to do without electricity and relied on solar chargers for charging cameras and other batteries.

Day 1 was a slow starter as we unpacked, checked and assembled our equipment while our guides for the day waited patiently outside. We eventually set off in two teams to hike through the jungle to our first two caves, Tutuku and Itaki.

Tutuku proved to be the more arduous of the day's trips as it was a 2.5 hour hike each way with little water en route. However, we only had time to survey upstream and left it with a promising downstream lead that will need to be looked at again sometime.

For the Kosua, caves are a valuable resource to have on your land. This is because caves are normally home to bats, birds and most importantly, flying foxes, all of which are a source of food for the Kosua.

Flying foxes are always a local favourite and a team of spectators would often accompany us to cave entrances to swat down and catch any flying foxes disturbed during our exploration. It was no surprise, then, that the Kosua had already been into some of the caves we visited in pursuit of flying foxes and would occasionally follow us into caves in bare feet and a hand torch, despite our protests.

We found that local people had even free-climbed down 20+ m pitches using tree branches as makeshift ladders to hunt for flying foxes. And they've been doing it for generations.

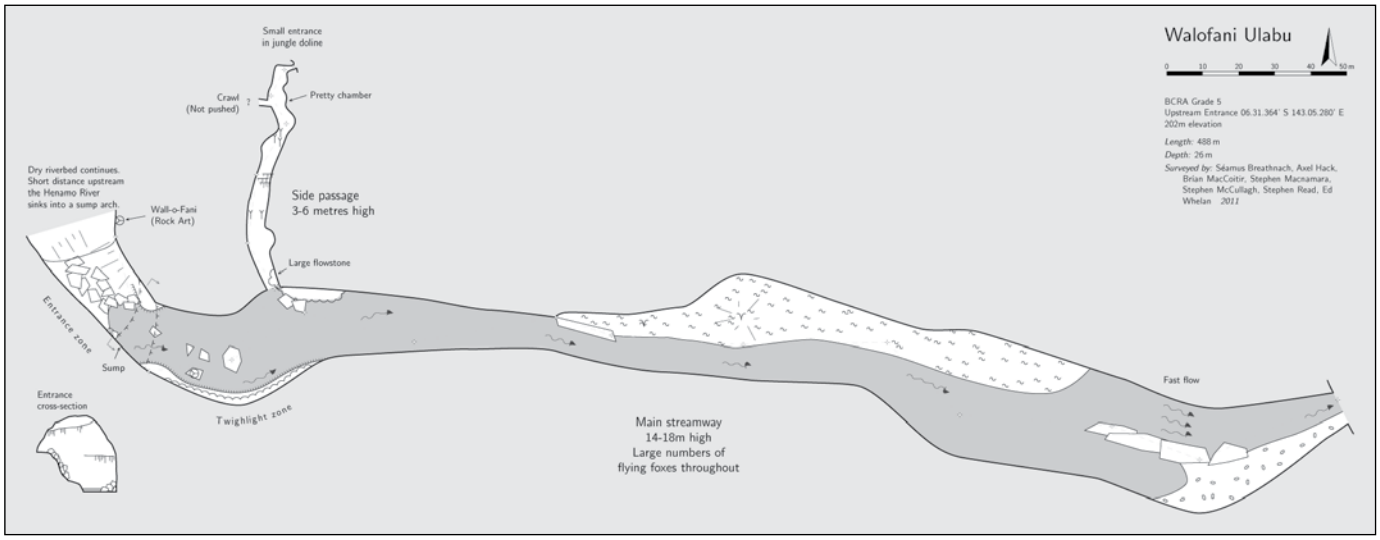
Despite all of this, the local population usually did not wander too far into the caves, so this left plenty of virgin passage for us to explore. Most caves were quite active and some carried larger rivers through them, such as the impressive Walofani with its 20 m high entrance archway and stone art that had ancestral myths and legends associated with it.

Surveying in deep water or while swimming was not unusual but the water was usually bearable for extended periods of time and was often a welcome reprieve from the heat and humidity of the jungle.

We quickly found our 'jungle feet' and became used to the hours hiking through the steep, muddy terrain. Time has little bearing on day-to-day life and estimating travel times and distance proved interesting at first—a walk described by our guides as only 15 minutes away could actually be an hour. And an hour's walk could end up being 20 minutes. It didn't ultimately matter, however, as we adopted the local routine of rising at sunrise and going to bed shortly after sunset.The first job in the mornings was to light the fire to boil water for coffee and porridge. Daily we ate vegetables—sweet potatoes, greens—and fruit—pineapple, bananas—from the forest prepared by local families, which of course we paid for.

We complemented this with our own food which we brought with us from Mount Hagen. One of our staple foods from the forest was sago (called 'saksak' in the local language), a starchy carbohydrate derived from the pith of the sago palm and cooked inside bamboo shoots to form a white rubbery substance.

This, and some of the regular vegetables, ended up being a bit tasteless after eating them every day for a few weeks so the addition of flavoring from curry power, soups, chili or tomato paste became a winning formula. We occasionally got some meat locally but relied on our tinned meats as a source of protein. Some of the foods we brought that worked out best included: porridge/oats—a consistent source of



PNG EXPEDITION TEAM

AXEL HACK

The team inside the entrance of Pokabi cave

energy to start a day; tinned meats and fruits—jungle-proof and complemented the local food supply; bags of rice, spaghetti and noodles—can be mixed with everything and bulked up local food offerings; and flavouring—curry powder, salt, soups, tomato paste, honey; all essential, and help to cheer up the bland taste after a few weeks eating the same food.

BUSH CAVING

After another few successful days' caving near the village, we arranged a three-day trip into the bush to visit the lands of a tribal elder named Willie, which bordered the land of Chief Waikatu from the neighbouring village of Talisu.

The lands were about 8 km to the south-west and a few hours trek from the village. We packed our rucksacks with enough equipment for the trip, leaving non-essentials behind at Captain Jack's house.

Willie promised that he had some big caves to show on his land but they could not be explored in a single day's trip. Willie and Chief Waikatu's families prepared a camp for us by clearing trees and vegetation in an idyllic setting on a tributary of the Henamo River.

The camp was on an island in the river which divided the lands, a nearby waterfall provided fresh water and we had a sheltered area built by Willie's family where we could hang our wet clothes and prepare food. We also had enough space to hang our hammocks on trees close to the camp.

It was at this point that we realised we weren't going to win the battle to keep our feet dry. The first thing we had to do every morning when leaving this island camp was to wade across a river and get our feet and boots wet. Regardless, the caving was good

PNG EXPEDITION TEAM

and we managed to explore three caves in the area named Sayamelegi Ulabu, Mefon Keresine and Natila Ulabu with a surveyed passage length of over 1500 m.

We returned to Fogomai'yu village to relax, gather our thoughts and celebrate Christmas. The southern highlands is a dry province. Years of alcohol-initiated tribal feuding has brought a law prohibiting alcohol in the province—not good if you're an Irishman over Christmas time. However, a bottle of Jamesons and one of Bushmills somehow managed to sneak their way into our luggage and made it across the highlands border, so we were happy to crack them open in the spirit of Christmas.

Christmas is celebrated in a Christian manner by some of the Fogomai'yu community, influenced by missionary visits over the years.

After Christmas we embarked on a more ambitious seven-day trip into the bush, higher up into the foothills of Mount Bosavi. Again, camps were prepared for us en route by each of the landowners, each seemingly better than the last. When we reached Albert's camp, we were given another ceremonial welcome, this time because we were the first white people ever to visit Albert's land. Again, food and gifts were provided as we were welcomed into the camp.For this longer excursion into the bush, we had a dedicated cook called Nick to source and prepare our food. He had served as a cook for the BBC crew when they were in the area.

This allowed us to venture out for longer during the day and not have to worry about carrying as much food with us. It was on this trip we started to hit the larger vertical caves requiring more acrobatic expedition rigging, thorough gardening of pitch heads and a little snake charming.

We continued as before by surveying as we went, bottoming where possible and documenting any leads for return visits. GPS coordinates were marked at every entrance but were sometimes awkward to get because of the canopy cover. Navigation through the jungle without local guides would be quite difficult, even with GPS coordinates.

Periodically, when at base camp, survey data from the preceding trips would be transcribed from the waterproof survey notebooks and collated into a central logbook while the information was fresh in our heads.

The battle with wet feet started to take its toll midway through the seven-day trip as we couldn't dry our boots every evening. We were still wading through several rivers every day and all the time caving in the same boots.

AXEL HACK

Ally in the streamway of Itaki Cave

Most people participated in the evening and morning rituals of disinfecting feet, applying foot rot medication, bandaging if required, putting on dry socks and then just getting on with it. Cuts and scratches had to be tended to every evening to avoid infection and we were also regularly treating local people for any ailments that we could assist with.

We surveyed another ten caves on this excursion and returned to base camp to prepare for departure on 3 January.

In total the team explored over 25 caves and surveyed just over 6 km of cave passage. We were happy with this result from such a small team on physically demanding terrain and it certainly demonstrates the untapped potential of the area for further discoveries. We hope that this will be the first of several expeditions to the area as we really only scratched the surface.

ACKNOWLEDGMENTS

Being a member of the VSA was very helpful with planning for the expedition and there are a few Australian friends of the expedition who helped make this trip possible and deserve a few words of thanks:

- Joe Sydney (NSW Cave Rescue Squad) for detailed maps of our destination, assisting with insurance, assisting with international rescue support options and just generally being very helpful.
- The VSA committee for the loan of surveying equipment and help finding contacts in PNG.
- Elery Hamilton-Smith of the VSA for the words of advice and stories of experiences in remote parts of the country which helped us prepare for the trip.

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In Search of Undara's Troglobitic Underworld

Joe Sydney, Graeme Smith and David Rothery
HCG

UNDARA Volcanic National Park is located about 300 km by road south-west of Cairns. After the Australian Speleological Federation (ASF) biennial conference held at Chillagoe in April 2011, three members of the Highland Caving Group (HCG) explored Undara lava tubes in search of rare cave-adapted life forms known as troglobites.

SHEBA'S BREASTS

The trip from Chillagoe to Undara is one of the most isolated and scenically beautiful and should only be undertaken by a serious 4WD, not a new Subaru Outback, as we experienced. On asking about the road and track conditions many locals looked at the Subaru and said, "She'll be right, mate!"

Later, we were in for a surprise. At Almaden we turned on to the Almaden-Gingerella Road, heading due south and pleasantly passing through Sheba's Breasts and our first major river crossing, the wide Tate River.

TATE RIVER

The Tate River was low and a series of concrete causeways made crossing this section easy, so we pushed on to the Rocky Tate River. By now we were hungry, so we pulled up near the causeway and were just about to put the billy on when a 4WD roared up and the female driver, in a state of panic, warned us that about 5000 head of cattle were about to be moved through this area, so it might be wise to move on. Packing up was very quick and we roared off back down the south road.

THE GREAT QUEENSLAND BULLFIGHT

A few kilometres on we came across two massive Brahman bulls with locked horns jostling each other back and forth across the dirt road. Just as we were about to pass, a third bull charged through the bush, smashing into the two and tossing them into the bush.

All this was caught on video and we were very relieved that our car wasn't charged. A few kilometres down the road we came to a fork in the road with a sign indicating that the river crossing had high water. We decided to drive on and have a look anyway in case the water had dropped since the sign was put up.

The road now turned into a track with wheel ruts, but it was in good condition for the Subaru so we pushed on. By the time we reached Bullock Creek we could see why this section of track was rated only for 4WDs; there were many small dry creek crossings and during the wet season it would be impossible to cross. We thought the car had nearly reached the major road junction and we were excited as we only had 40 km to go.

THE LYND RIVER

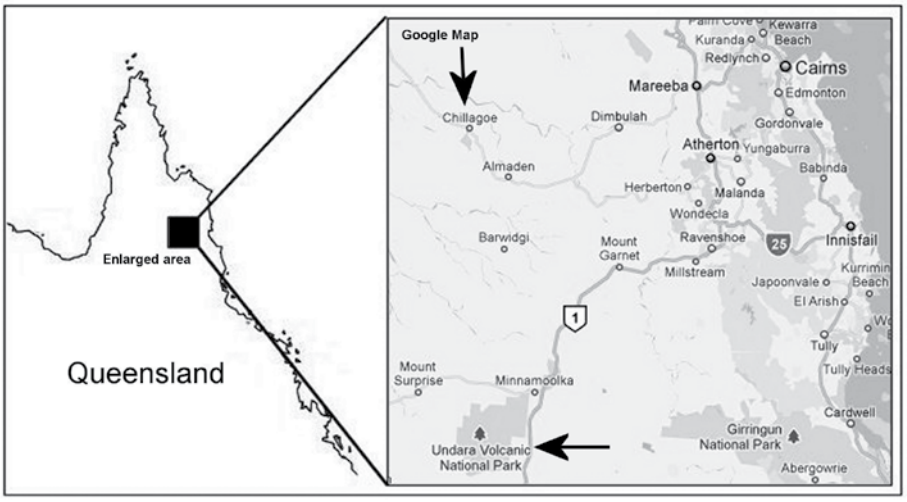
Pushing on, we finally reached the Lynd River and our jaws dropped—this was a river over 200 m wide and 1 m deep. Joe started walking across wondering if there were any crocs in this river. Luckily, there weren't, but the river bed was too rocky and in places too sandy for the poor Subaru to cross, so we started to head back to the turnoff. Being so close was disappointing but the drive around and to the Kennedy Highway was even more so, as it was a 150 km backtrack and detour.

The good news is that the Subaru made it down the track and back to the highway with no problems. Before we knew it, the turnoff to Undara appeared and we had arrived at our destination, the Undara Experience.

A TIME OF EARTHQUAKES AND VOLCANOES

Today, Australia is not known for massive earthquakes and volcanoes; it does suffer the odd quake but its volcanoes are long gone. Jump back in time to 300 million years ago, the Carboniferous period, and it was a different matter with a coastline littered with raging volcanoes ranging from far north Queensland to Victoria, forming the Great Dividing Range, a distance of over 3500 km.

Australia has been through many periods of volcanic activity including a more recent period around 190,000 years ago during the Cenozoic Era. In the North Queensland region this period formed the McBride volcanic province, which was



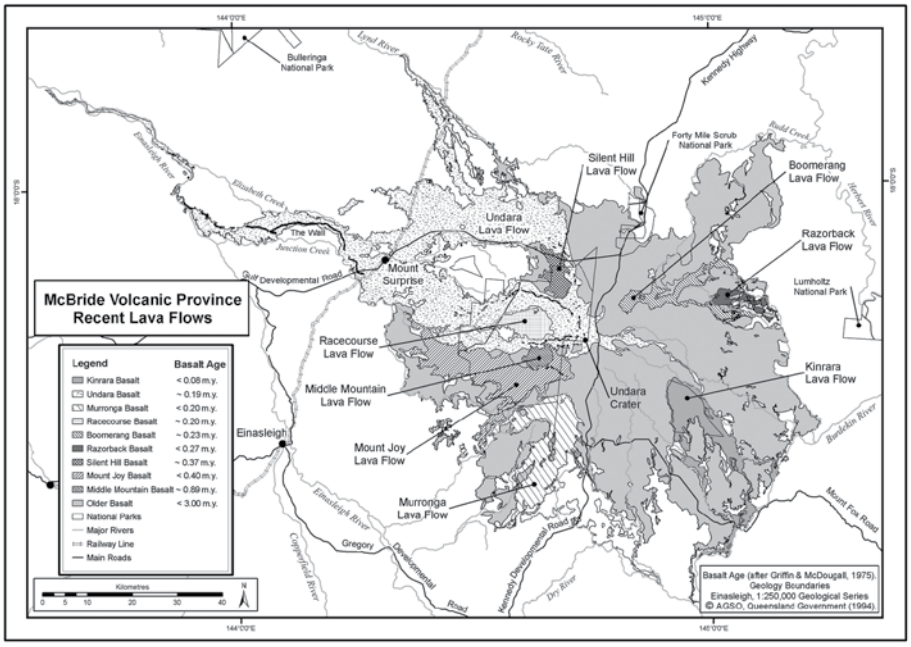
active from 3 million years ago to 13,000 years ago, contains 164 volcanoes, vents and cones covering an area estimated to be over 1550 sq km with 23 billion cubic metres of lava. That's the incredible amount of lava which eventually formed the Undara lava tubes. This produced a lave flow over over 156 km long which amongst the largest and longest on the planet. Today, just a few sections of the original tube systems remain; many sections have collapsed, leaving a few caves open to discovery.

HOW IS A LAVA TUBE FORMED?

The lava tubes were formed when rivers of lava confined to a valley crusted over and formed a roof. Insulated in its casing of solidified lava, the lava flow carried on for many tens of kilometres before draining out, leaving empty tubes of lava. Weaker sections of the roofs of the tubes later collapsed to form caves and depressions. More than 50 caves have been found in the park and douubtless many more are yet to be discovered.

UNDARA'S DISCOVERY

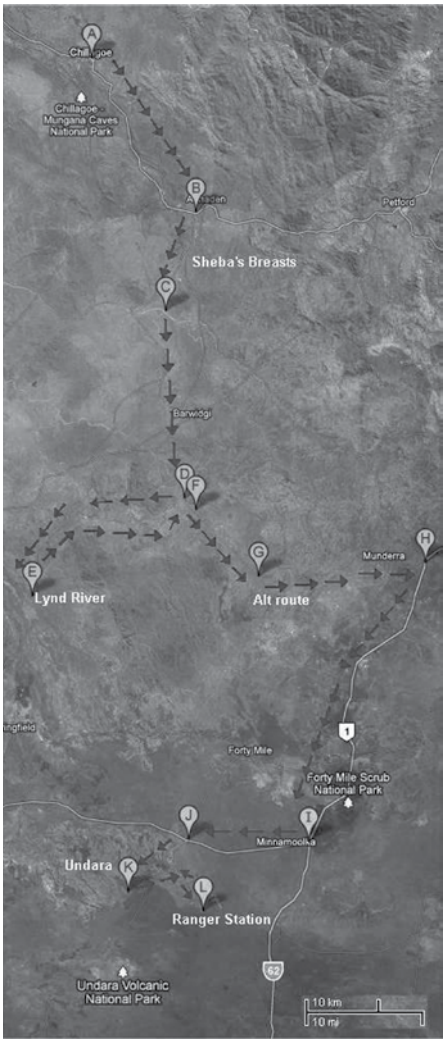
Local traditional owners were the first to discover this region with its many caves filled with a valuable resource, water, and named it Undara, meaning long way. Ancestors of today's Ewamain (pronounced yur-amin) lived and hunted in the area, leaving behind evidence including stone artefacts and scarred trees, vine-thickets and springs.



CHILLAGOE CAVING CLUB

Around the 1860s, the earliest white settlers to the area grazed their cattle and would have come across the lava tubes and a valuable water source not only for cattle but for the pastoral station known as Rosella Plains, owned by the Collins family. Although the nearby coast is considered wet and tropical, this region remains dry with savannah grasses suitable for cattle.

With more and more cattle families and farmers moving into the area, increased visitation and cattle movements to the curious lava tubes created an impact on the area. Evidence of visits can be found with signatures from long-forgotten visitors scrawled in some of the caves.



GOOGLE MAP OF 156 KM LAVA FLOW

UNDARA NATIONAL PARK

In June 1989 the Undara volcanic crater was gazetted as a national park. Over the next five years more land was gazetted from leases and portions of Yaramulla, Mount Rosey and One Hundred Mile Swamp stations. Reservation these properties preserves over 86,000 ha of lava plain, volcanoes, vents and lava tubes.

EXPLORATION

For over 50 years, Central Queensland Speleological Society (CQSS) has explored caves in Queensland.

Members have visited and explored the many karst areas including Chillagoe, Mitchell-Palmer and Undara National Park and produced many trip reports in its journal and publications.

Chillagoe Caving Club's most recent publication, *The Field Guide to Lava Tubes of the McBride Volcanic Province in North Queensland,* details discoveries, descriptions and cave maps as well as rare troglobitic fauna.

WHAT ELSE IS IN THE AREA?

Fossicking

Being a volcanic region, the region is rich in gems and minerals. Close by are the Mount Surprise gem fields and it is well worth a visit to the Gem Den where you can try your luck in finding that elusive gemstone.

Innot Hot Springs


JOE SYDNEY

On your way back to Cairns you must stop and try the Innot Hot Springs. These public springs are an easy stroll 50 m off the road behind the local caravan park. The spring itself is located in the creek and has a hot spot. A word of warning—the hot spot is extremely hot and a quick entry will scald your foot, so walk along the sandy creek bank until you find a spot cool enough for a dip. This therapeutic location is a must-see for a relaxing dip at the end of a long and dusty trip.

HCG VISITS UNDARA

We did not know what to expect at Undara as the recent Cyclone Yasi that devastated the coastal Cardwell area had dumped

metres of water into the hinterland, flooding much of the region. Luckily, by the time we reached Undara much of the water had dissipated but this also meant that nutrients had been washed into the caves that are necessary for cave life to flourish and breed in time for our visit, improving our chances of finding what we were searching for.

HCG is fortunate to have Graeme Smith, an entomologist and one of only four experts in the world on primitive silverfish, as a member.

The Chillicon conference in April 2011 provided an opportunity to also visit nearby Undara some 300km south.

Graeme secured a permit from Queensland Parks and Wildlife to interfere with the fauna of the lava caves in search of troglobitic insects as well as the elusive silverfish that he passionately studies. Two other HCG members, David Rothery and Joe Sydney, supported Graeme on this trip.

The trio met at Undara Experience, which is the only accommodation in the area.

Here a visitor can stay in luxuriously restored railway carriages, some with ensuite bathrooms, nestled in the Queensland bush and close to the lava tubes. As cavers, we opted for the bargain basement campsite and, as the Undara Experience website states, our own above-ground tents.

Mind you, staying at such an isolated resort had its perks with its fine restaurant and bar which we frequented after a hard day's activity. Stephen 'Bunty' Bunton (ex-HCG, now STC) and his family from Tasmania were also visiting Undara, so it was great to catch up over a few beers.

MEETING THE RANGER

On arrival at the ranger station Graeme entered the old homestead, now the office, to introduce himself to Senior Ranger Nick Smith and arrange for all activities. While Graeme was inside, the other two foraged around looking for silverfish at the base of any tree close by. A short time later they entered the office and introduced themselves. It wasn't long before they were allocated a ranger as guide and were off to the first lava cave, Pinwill Cave, close to the ranger station.

The terrain is quite flat and rocky, vegetated with dry savannah woodland, but one couldn't help but notice patches of greenery in the surrounding landscape. The lava tube roof has collapsed in many places, creating openings or entrances with a sloping boulder pile leading down to a flat floor. Lots of greenery surrounds the entrances with vines and shrubs surviving from the damp, cool cave environment and moist air emitted from the cave.

OUR FIRST LAVA TUBE —PINWILL CAVE U17

Pinwill Cave is a short drive and walk behind the ranger station. At the entrance we stopped and chatted about the permit and the work conditions to which the ranger had to adhere, as CO_2 monitoring is now a requirement. Joe pulled out his CO_2 meter just as Graeme popped in and sat inside the entrance and gave it the all clear; in some Undara caves, the CO_2 can be high and close to the entrance. With the all clear signal given, we entered our first lava tube.

Inside the cave was found to be damp with lots of guano making it quite sloshy when walking. The cave walls were typically oval-shaped, dark in colour and soaked up all light making our field of vision quite short. Deeper into the cave the humidity and CO_2 rose slightly and we started to see small white specks darting around the floor which excited Graeme; they were isopods and not the silverfish we were searching for. Disappointed, we moved on.

Further into the cave the path was blocked by a low ceiling so we stayed for a while searching on our hands and knees and around the base of the large tree roots hanging from the ceiling like columns in a cave.

The task was slow and tedious—picking up rocks carefully and examining their undersides. After what seemed like ages Joe yelled out, 'I've found something!' Graeme rushed over and was very excited as it was our first troglobitic insect. A later identification of the insect by Dr Fred Stone proved it to be a juvenile female noctocolid.

With tongue in cheek, one of the others muttered, 'Trust Joe to find a juvenile female,' and we all laughed.

Excited, we took our photos and placed the insect back in its original location and continued our search but sadly no other insects were found in that area. While se-searching for more insects we had to occasionally duck our heads as there were a small number of bent-wing bats darting around.

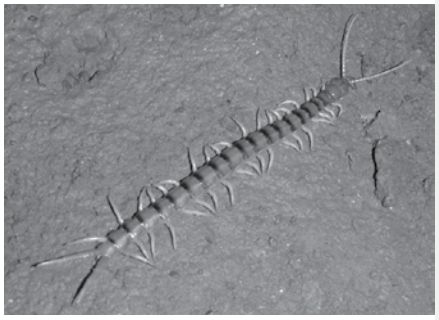
On exiting, one of the guys yelled 'Come over and look at the size of this sucker'—it was a 20 cm long centipede (*Scolopendra* sp.) crawling around the cave floor in search of prey, so we took a few more photos and left it alone.

With no luck in finding the elusive silverfish, we moved on and returned to the ranger station. By now the rangers had worked out that we knew what we were doing and gave us permission to visit many other caves provided that we kept in contact, so it was off to Bayliss Cave.

We did also find a single Atelurine silverfish associated with ants in Pinwill Cave.

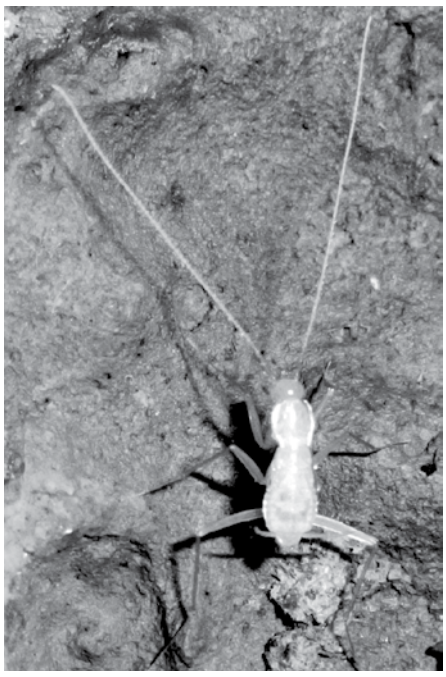
JOE SYDNEY

A lone isopod in Pinwill Cave



JOE SYDNEY

20 cm centipede Scolopendra *sp. in Pinwill Cave*



JOE SYDNEY

A juvenile troglobitic cockroach noctocolid in Pinwill Cave

All silverfish of the family Nicoletiinae, including the Atelurinae, are eyeless.

Those of the subfamily Nicoletiinae are long and thin and known from soil and cave habitats.

Those of the family Atelurinae are generally golden in colour and almost always found as tolerated guests in ant or termite colonies. We assumed the Atelurinae in Pinwill Cave were only there because their host ants were there.

BAYLISS CAVE U30

Bayliss Cave is located some 13 km from the ranger station, passing the Kalkani volcanic crater and One Hundred Mile

Swamp. It is a long cave with a length of 1.3 km, so we were expecting to find yet more insects.

At Undara the level of biological activity was mind-blowing; the floor of Bayliss Cave was seething with life. Unfortunately CO_2 levels were notably higher and we were unable to get to the part of Bayliss where Nicoletiinae were previously found. However, we were not discouraged and our collection efforts were to be eventually paid off with the best yet to come.

NASTY CAVE U46

Leaving the car on a small track, we were forced to walk to Nasty Cave. The terrain was open grassland, the ground littered with volcanic rocks hidden in high grass, making our walk slow and difficult. It wasn't long before we could see the green belt typical of collapsed lava tubes that provide moisture to differing vegetation. We walked past numerous small collapses wondering if there would be access to any hidden chambers but we did not have time to look so we pushed on.

At the Nasty Cave doline location, to our disappointment we found the entrance collapsed and sealed.

But while rummaging around looking for a cave tag, we disturbed a Burtons Snake Lizard *(Lialis burtonis)* and decided not to look any further or disturb the non-venomous snake.

This was quite disappointing, as Nasty Cave was reported to be full of fauna but we were somewhat relieved as the cave was named because of its very high CO_2.

BARKERS CAVE U34

Barkers Cave is an old tourist cave no longer in use and has long been known to stockmen and travellers. Its handrails and path made searching for insects that much easier.

On entering the cave you could feel the temperature difference which was influenced by a small fast efflux flowing close to the cave entrance.

Typical of such closed caves, the temperature and humidity increased the further we entered the cave following the efflux stream way path.

We noted the lava flow lines evident on both walls from floor to roof. It was also interesting to see the glazed remelt dribbles covering much of the walls. All along the pathway we kept an eye out for anything that moved in our torchlights.

We were nearing the end and had reached a point where the CO_2 was approaching the level at which we could not proceed any further.

We got down on our hands and knees for one last look only to be confronted with lots of small golden silverfish. Graeme estimated that there were about 30 per sq m with hardly an ant to be seen, and they covered the whole floor area. This excited all of us and we took many photos.

Clearly, conditions were good enough for these insects that they no longer required their hosts' services. Graeme spent the rest of the afternoon shaking his head mumbling 'Bizarre' to himself over and over.

Graeme later identified this silverfish as a species of *Pseudogastrotheus,* which is a large genus, with representatives in Australia and many other continents. He needs to improve his knowledge of the genus before he can decide whether it is new or not.

UNDARA EXPERIENCE

Kalkani Cone

KALKANI CRATER AND CRITTERS

The next day we decided to visit Kalkani Crater, an extinct volcano close to the ranger station.

We followed the self-guided walk around the eggcup-shaped rim with sweeping views across the lava plains. From the height of the rim one could clearly see the lava tube snaking its way across the valley floor with its occasional collapse and differing dark vegetation.

Signs along the track explain the explosive geology of the area, including the origins of the variety of volcanoes seen from the walk. All along the rim we searched for more insects, finding a Blind Snake and another large centipede hidden under rocks. Inside the crater the vegetation differed with a variety of grasses similar to the lava plains.

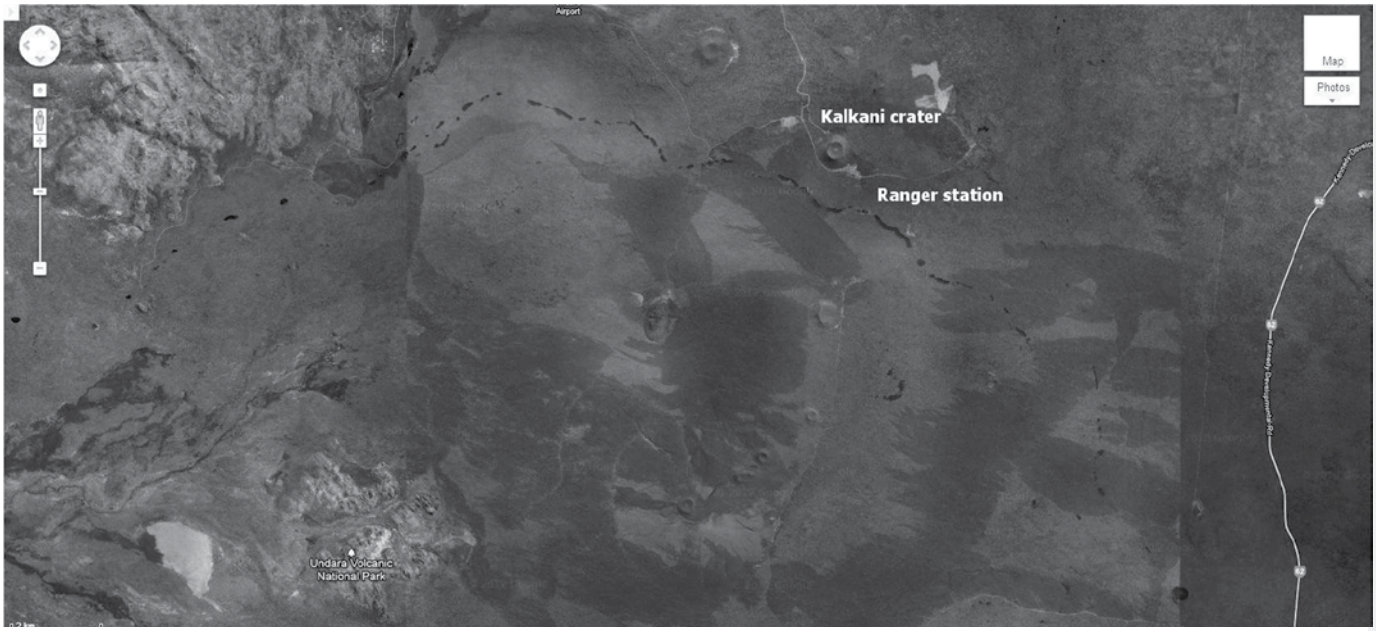
WIND TUNNEL CAVE U42 AND ARCHWAYS

The day was warming up fast so we moved on to Wind Tunnel Cave, a through cave with two entrances. It was obvious that we would not find anything in this cave owing to wrong conditions but it was very worthwhile to visit.

Moving on to the Archways, we found this to be a tropical paradise of temperate vegetation and flooded caves offering a cool swim in the heat of the day.

JOE SYDNEY

Barkers Cave



Google map showing a section of the 156 km lava flow with collapsed sections

Again, no silverfish were found but a scrub turkey made us feel welcome by following us for a short distance.

The day ended with a drive back to Undara Experience campsite and enjoying a few cold drinks after a hard day's search.

RETURN TO CAIRNS

On our return to Cairns we decided to visit Innot Hot Springs. They are certainly right when they say hot.

And again, a word of caution—don't jump straight in or else you'll be scalded. Take the time to find the right spot and sit in its warmth for a short while; it is most enjoyable.

Our thanks must be given to Peter Bannink, Winfried Weiss and Doug Irvin and other members of Chillagoe Caving Club who provided us with documentation to assist our research.

Thanks also to the National Park rangers and Undara Experience for further information and aerial photos.

READING LIST

Chillagoe Caving Club, *The Field Guide to Lava Tubes of the McBride Volcanic Province in North Queensland [Date?]*

Anne Atkinson, *The Lava Tubes of the Undara Volcano [Date?]*

Anne and Vernon Atkinson, *Undara Volcano and its Lava Tubes [Date?]*

Undara Experience tourist brochure

Queensland Parks and Wildlife, Undara Volcanic and Forty Mile Scrub National Park Plan of Management 2000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