

Journal of the

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FRONT COVER: Marjorie Coggan and John Brush in Eagles Nest Cave, Yarrangobilly Caves, New South Wales.

INSIDE BACK COVER: John Brush in Copper Mine Cave

BACK COVER: Top. Looking down Yarrangobilly River from Tricketts Cave. Bottom. Margot Bulger in Copper Mine Cave

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FROM THE EDITOR

This journal is very, very late. I have written begging for material for several journals, and material only trickles in. I sincerely thank those who have provided their articles for this issue, which will be closely followed by the June edition (hopefully). The journal is also much smaller than the previous 70 or so journals, I have to go back to the first 20 journals/newsletters of ACKMA to find an edition of a similar number of pages.

This edition has taken so long to prepare for reasons that I won't divulge here, that the editorial has had to be rewritten. The conference is not approaching, it has been. But I won't publish conference proceedings and reports in a journal that precedes the conference!

In October last year, I was booked into a training course in Canberra. I looked at the flight options, which involves a 4 hour drive to Adelaide, wait in airport, take a flight to Canberra and then taxi to hotel - we all know what that's like. Or, I could drive over to Canberra via Yarrangobilly and spend a few days caving. Not a difficult choice really. John Brush and Marjorie Coggan were very obliging and came from Canberra to Yarrangobilly for a few days caving, and I am very grateful for this and their hospitality in Canberra.

George Bradford, Manager, Yarrangobilly Caves kindly provided permits to visit several caves. I am a member of the Canberra Speleological Society which may seem a little odd given where I live, but am not the most remote member of this club! We visited some very nice caves, but the highlight was the trip into Eagles Nest Cave. Like many, I read about the "deepest cave on the mainland" (I assume it still is) and had an image in my mind as to what it would be like. Who would have thought the deepest cave does not need a rope? The



*Speleothems in Eagles Nest Cave, Yarrangobilly Caves.
Photo: Steve Bourne*

cave is fantastic; some climbing, squeezing, big chambers and nice decoration. Marjorie was incredibly patient as John and I accumulated gigabytes of images on our cameras. I have come to the conclusion that Marjorie is the most photographed lady of Australian caving and quite possibly could be immortalised with a cave photography scale bar in her likeness in the future. Possibly a marketing opportunity! The cover shot is however a rarity, one with John Brush in *front* of the camera lens.

The Jenolan Caves saga rolls on, with many good people leaving the site, either voluntarily or by their own choice. I tried for months to get a response from management, Sandy McFeeters and Bob Conroy, but despite several assurances that comment was coming "next week", next week never arrived. It is a real pity, because until the government and senior management explain what the long term vision and plans are for Jenolan Caves, their decisions affecting staff and operations and removing good people seem baffling. I am tempted to reproduce the correspondence, but would serve little purpose. I cannot understand how senior government staff indicate in writing that a response will be forthcoming and fail to deliver. One day we will receive information and it will hopefully be clearer.

Mulu National Park Manager Alison Pritchard advised the caving world that the park has experienced a serious flood just after Christmas 2014. Her email reads as below.

*Dear Friends of Mulu,
Some of you may not be aware that Mulu and the region experienced severe flooding on 29th December.*

The Melinau River rose to 2.5m, (slightly higher than the bridge to Royal Mulu Resort) as water was pushed up stream from the swollen Tutoh River.

Although the Penan community of Batu Bungan were relatively unscathed, unfortunately Long Iman and many of the houses around the national park were completely flooded and families have lost the content of their homes.

As you have experienced, the generosity of this community is legendary and their resilience inspirational and the only sign of something different the next day was that some staff weren't wearing a uniform.

I still can't believe they turned up to work after spending the night watching the water wash through their homes and sweep away their possessions!

In such an isolated region their story goes unnoticed but I know that the people I'm sharing this news with have close ties with these communities and you might want the opportunity to help.

Mulu National Park comes to aid of Long Iman flood victims

MIRI: Mulu National Park manager Alison Pritchard and staff recently delivered much needed supplies to the Penan community of Long Iman after the Dec 29 flood.

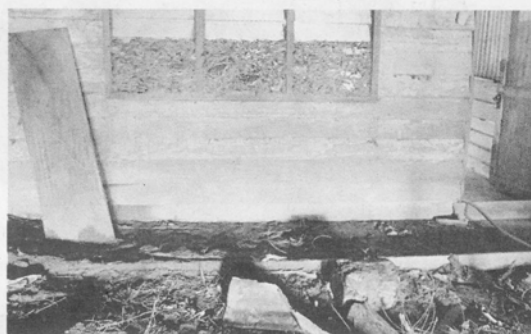
This was the worst flood in history for the area as the water rose in three consecutive waves, causing a raging Tutoh River to engulf their homes within 30 minutes. With little time to evacuate and with many families away for the holidays, most of their possessions were washed away or destroyed.

The families fled to higher ground at a nearby hill and returned when the river subsided early in the morning.

Through fund-raising efforts and donation from the community as well as explorers and researchers from across the globe, Mulu National Park was able to purchase food and kitchen equipment, provide clothing and encouraged volunteers to help with the clean-up, but Long Iman still needs more help to get back on track.

"It seems that the communities downstream were more heavily impacted and thankfully, the national park survived without any damage as park tours resumed when water subsided the following day.

"After seeing Long Iman first hand, I realise the scale of work involved to get this community back on track, but with an army



Mud on the louvers show the high tide mark.

It seems that the communities downstream were more heavily impacted and thankfully, the national park survived without any damage as park tours resumed when water subsided the following day.

Alison Pritchard, Mulu National Park manager

of passionate volunteers we can rebuild and reinforce the river bank (which was washed away), remove the debris, and restore and paint the church.

"Thankfully the bricks and mortar can be replaced and everyone reached higher ground in time to avoid the rising water," said Allison.

Borsarmulu Park Management Sdn Bhd has opened the doors of the research centre to universities

and corporate groups who would like help tidy up and rebuild, while musicians from Miri Country Music Festival are raising funds to replace the lost instruments in the church.

For details on how to help track their progress or send support, visit Facebook group - I CARE, supporting flood affected families of Mulu, Sarawak or email via the park's website www.mulupark.com.



Left: Newspaper article on the flood.

Above: Mulu National Park Manager Alison Pritchard on a shopping trip.

A follow up email indicated that the appeal had been generously supported. I understand the Mulu community rebounded quickly and the site is operating as normal.

Tony Culberg is my primary proof reader. With someone as precise as Tony, a pool of editors seems a little unnecessary! He has provided some advice to writers that will make his job and mine simpler. I encourage everyone to note and endeavour to provide your article in a state ready for publication. Before Tony's proof reading notes, I remind submitters to provide;

- the main body of text as a word document; PDFs need to be altered for incorporation into the journal format and image quality is lost - and its very time consuming.
- identification within the text where images should be placed.
- images should be sent as individual jpg files. Others can be managed if necessary. The largest image will be printed at 18.5cm wide, so high resolution images over a metre across are unnecessary.

- captions for images! these are ideally placed at the end of the main body of text from where I can extract them.

If you have any questions as to how to do this, ask John Brush. His articles are well presented and the easiest to prepare for the journal. Now the instructions from Tony Culberg.

One of the problems I find while proof reading is expanding the various abbreviations used by writers.

It is a long time since I wrote any papers which were reviewed by anyone else, but my recollection is that there are some conventions used in academia and other places.

The primary one is to give the name of the organisation in full the first time it is used in an article. It is expected that the standard abbreviation will follow in brackets

So, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) would be set out



that. It is then permissible to use UNESCO in the rest of the article.

That usually reduces any confusion. PSI has at least two expansions, Pounds per Square Inch and Personal Services Income. AU can mean Australia or Astronomical Units.

The second convention is to show clearly the jurisdiction in which the article is based. DEH I think means Dept of Environment and Heritage, but I have no idea whether this is in NZ, SA, Tas or a Federal department. The first time an authority is named its jurisdiction should also be carefully stated, eg South Australia's Dept of Environment and Heritage, DEH(SA). SA itself is ambiguous, it could also be South Africa or Societe Anonyme, so clarity is also needed here.

The ACKMA journal goes to all states and overseas; not all readers will be totally familiar with the abbreviations in present use. And with the rate of change of the names of various Govt departments (almost every department changes name with each change of ruling party, and often enough with just a reallocation of portfolios) it is critical to clearly identify who the organisation is.

A third convention is to either have at the beginning of the article or at the end a complete list of all abbreviations used and their expansions. This allows the reader to confirm the full name etc.

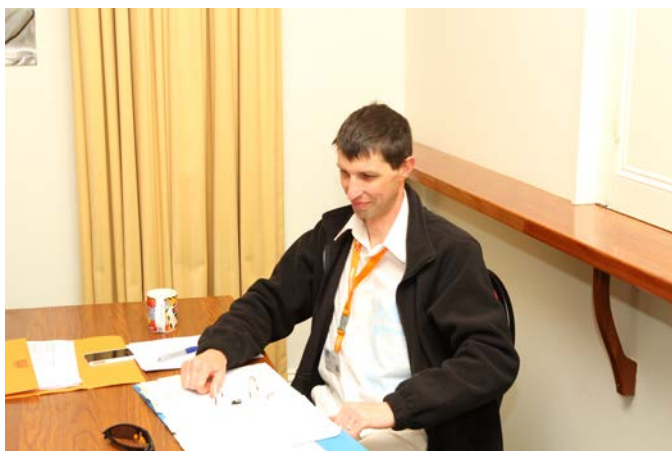
*Tree trimming at Mulu National Park.
Can you see the staff member in the tree?
Photo: Alison Pritchard*

like

Coming Events	
2016: 4-8 May	ACKMA Annual General Meeting and Cave Guides Workshop, Rockhampton, Queensland
2017: May	ACKMA Annual General Meeting, Auckland (tentative)
2017: 23-30 July	International Union of Speleology Congress, Penrith, NSW, Australia
2018: May	ACKMA Biannual Conference, Wombeyan Caves, New South Wales (tentative)
	Do you know of an event that may interest ACKMA members? Please send to publications@ackma.org

PRESIDENT'S REPORT

Dan Cove



Dan Cove deep in thought during the ISCA Congress held at Jenolan Caves 2014.

Photo: Steve Bourne

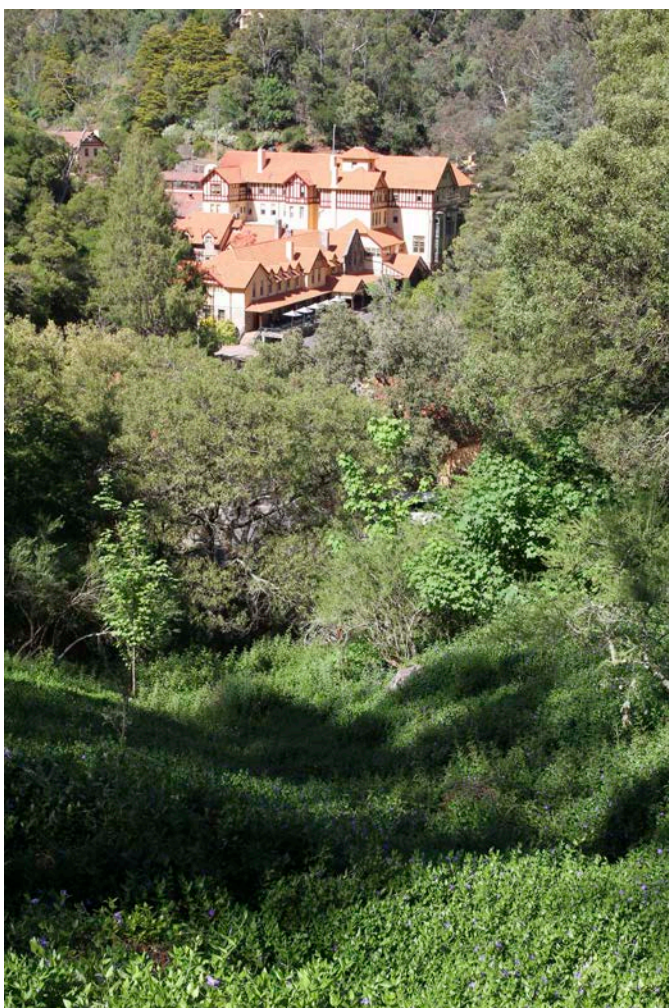
Attentive ACKMA members (which I am sure means all members!) may have noticed the absence of a President's column in the last Journal. I think that I was rather in a puddle of exhaustion at the time following the conclusion of the 7th Congress of ISCA at Jenolan Caves, with my laxity covered by the redoubtable Steve Bourne – thanks Steve!

The 7th Congress of ISCA was a highly successful event, and a wonderful opportunity for the International show cave community to interact with their Australasian colleagues. The gathering reinforced for me just how important such associations are, and how vital they are for successful cave and karst management. Although this is broadly true of all environmental management, it is particularly relevant to management of cave systems that can be irreversibly damaged so quickly through application of poor management practices. Associations such as ACKMA bring together such a weight of experience and knowledge that should be drawn upon by anyone serious about long-term resource management. I have always believed that collaboration and consultation are vital aspects of cave management requiring the synthesis of expertise from often disparate fields. I am hopeful that the upcoming ACKMA Conference at Naracoorte will highlight this importance yet again.

As many members will also be aware, I am now no longer directly involved in this management having resigned as Cave Operations Manager at Jenolan as of last December. This was a very hard decision for me, and one not made quickly or lightly. However, it was ultimately the right decision for myself and for my family. Long term Jenolan Guide and ACKMA member

Peter Walsh has been appointed as Acting Manager following my resignation.

I am looking forward very much to the Naracoorte Conference and hope to see a good turnout of members. Given the issues and challenges facing cave and karst management currently, the need for a strong Association with a strong voice of advocacy is more relevant than ever. The Committee has been working hard recently – particularly through Dave Smith and John Brush – on the revision of the Rules of the Association and this will be an important matter to address and hopefully to finalise at the Conference. But most important in my mind is the reinforcement of the value of ACKMA and establishing a positive direction and agenda for the coming years. I know that this will be a strong theme of the Conference, and am hoping for a good and constructive discussion.



Jenolan Caves House, November 2014.

Photo: Steve Bourne

SHOW CAVES in the MOTHER LODE COUNTRY of the SIERRA NEVADA, CALIFORNIA

John Brush
Canberra Speleological Society

There are several show caves scattered along the western foothills of the Sierra Nevada (which roughly translates from Spanish as “snowy mountains”) and when the mountains are being battered gale-force winds, rain, sleet and, at higher altitudes, too much nevada, what better way could there be to spend a day away from the ski slopes than to head into some caves.

Marjorie Coggan and I had visited Moaning Caverns several years ago and in February this year, we had an opportunity to visit Black Chasm Cavern and Mercer Caverns, thanks to the unfriendly weather.

All of the caves noted below are in an area of the Sierra Nevada foothills known as the Mother Lode Country, an area about 200km long and a few kilometres wide that was the source of much of the gold discovered during the California Gold Rush in the 1850s. Following the initial gold discovery in 1848, prospectors poured into the area and it is hardly surprising that all the caves - or caverns - mentioned here were discovered by prospectors.

Many American show caves are called caverns and the distinction between a cave and a cavern is not immediately apparent, but on reflection, it seems that many small American show caves are called caverns whereas many large ones are simply called caves. In other words, cavern would appear to be used for marketing reasons and it reminds me of the old joke:

What is the difference between a cavern and a cave? ... About \$15!

Mercer Caverns

Mercer Caverns is a short distance along a sealed, but narrow and winding road from the town of Murphys, a small town about 150 kilometres southeast of Sacramento, the state capital. The cave was discovered by Walter Mercer while looking for gold early in September 1885. At first, all he could do was drop rocks through a small drafting hole, but after borrowing equipment from a nearby mine, the hole was soon enlarged and Mercer and a friend were lowered in. Their quest for gold was in vain, but they did find several human skeletons and Mercer emerged from the cave with a thigh bone and the germ of an idea in his head. Within weeks Mercer had gated the entrance and was charging a fee to show visitors into the cave. He called his discovery New Cavaleras Cave – Cavaleras apparently meaning “place of the skulls”.



*Entrance to the Mercer Caverns Property
Photo: John Brush*

Walter suffered from ill health, partly due to a fall sustained in the cave after a rope broke and he died in 1900 at the age of 46 and so never experienced the electric lighting that was installed in 1901. Over time, the cave became known as Mercer Cave and it remained in the Mercer family until it was sold in 1946. At that time, the new owners renamed it Mercer Caverns.

Not long after Walter Mercer discovered the cave, he built a small house right beside the entrance. In later years the cottage was used as a ticket office and gift shop and today it remains as a historic relic and, as we



The original cottage built by Walter Mercer right beside the cave entrance later became the ticket office and gift shop and is now a historic relic. The artificial exit tunnel is to the right of the cottage.

Photo: John Brush



A Mercer Caverns guide explaining that this twin stalagmite is the one and only speleothem in the cave that visitors are allowed to touch.

Photo: John Brush

discovered on the day of our trip, its veranda serves as a very welcome rain shelter while waiting for cave tours to start. As we waited under the veranda, a jovial character emerged from the cave clutching a large tripod and camera gear and introduced himself as “Steve”. It was Steve Rawlings, the cave owner and current President of the National Caves Association, the American equivalent of ACKMA.

In a few minutes, our guide arrived and after Steve headed off, the party was ushered into the cave. From the entrance, steps lead down to Gothic Hall, the largest chamber – or is that cavern – in the cave. This chamber is not overly decorated but it does have some notable features including, a brown-stained twin stalagmite, which since Walter Mercer’s day has been the sole speleothem in the cave that visitors are allowed to touch, and nearby, a 1.5 metre stalagmite with an inclined drill hole near the top which was apparently used in the early days as a lantern holder. From here, the steps continue



PVC-wrapped handrails in Mercer not only reduce any risk of electrocution, but are also smoother to the touch.

Photo: John Brush



Aragonite crystal clusters, Mercer Caverns.

Photo: John Brush

down past the Angel’s Wings, a superb pair of shawls that are about a metre wide and over 2 metres long. They are protected from inquisitive hands by a sheet of clear plastic.

Passage dimensions in the lower section are relatively modest but many of the walls are encrusted with clusters of branching aragonite crystals. The clusters are spectacular and it was not surprising to hear that one removed from the cave was exhibited at the Paris World Fair in 1900 and won the Grand Prize.

The cave is about 60 metres deep with the tour route bottoming out at nearly 50 metres (and 208 steps) below the entrance. On the trip out of the cave, involving a climb up 232 steps, we began to wonder why all the iron handrails had been wrapped in black plastic insulation tape. Was it to reduce the risk of electrocution from any faulty wiring? Or was to improve visitor comfort by covering up the rusty pipe-work? A branch in the path took us back up by another route and out through a



An early form of lighting in Mercer. On climbs, the paddle handle was clenched between teeth.

Photo: John Brush



*The Angel's Wing shawl.
Photo: John Brush*

second entrance that was dug out by Walter Mercer and which was, incidentally, the site of his unfortunate fall.

Although the cave is relatively small, there is much to see during the 45 minute tour. Photography is allowed in the cave, but as I had not intended to do any cave photography on this trip, the results with the equipment to hand were a little disappointing.

Black Chasm Cavern

Black Chasm lies in wooden hill country near the town of Volcano, about 60km (by road) north of Mercer. The short gravel road into the property leads steeply uphill to a large and welcoming visitor centre and gift shop. The shop has a wide range of cave publications on sale as well as the more usual racks of T-shirts and jackets, polished 'gem' stones, and plastic trinkets. Browsing through it all easily filled the 30 minute wait for our tour.

As with Mercer, this cave was discovered by gold miners. The first documented trip was in 1854, but it is likely the cave was known to miners for two or three years before that. In the late 1850s, miners enlarged the entrance



*Queueing to enter Black Chasm Cavern.
Photo: John Brush*

and constructed steps and a wooden viewing platform in the upper level and tours were offered for several years during the 1860s. After just a few years of use, the wooden infrastructure deteriorated and tours ceased. The cave is about 50 metres deep and those early visitors would have been lucky to see anything of the lakes in the inky depths below the viewing platform.

The cave lay forgotten for many decades until cavers took an interest in exploration, including diving the lakes, in



*An array of helictites in the Landmark Room showing
Black Chasm Cavern's trademark dragon.
Photo: Lisa Boulton © Sierra Nevada Recreation
Corporation.*



*Visitors admiring decorations from the viewing platform in The Landmark Room, Black Chasm.
Photo: John Brush*

the 1950s and 1960s. Although there were very early references to spectacular crystal growths in the cave, it is cavers who are generally credited with discovering the extensive displays of large helictites near the end of the current show cave route.

The cave is adjacent to a quarry and was in danger of being destroyed during the 1960s. However it was reprieved by a fall in the price of limestone, which slowed quarrying, and lobbying efforts by the National Speleological Society. Continued lobbying to formally protect the cave and its magnificent helictites resulted in the cave being declared a National Natural Landmark in 1976. The quarry owner subsequently separated off the cave area and in 1996, the cave property was bought by the Sierra Nevada Recreation Corporation. After several years of offering adventure-style trips, the company installed lighting and low-impact (corrosion-resistant) walkways and steps that enabled normal show cave tours to commence in 2000.



*Fine drapery display in The Landmark Room, Black Chasm.
Photo: John Brush*

Tour group size is limited to 20 and on our Saturday afternoon tour, we must have been approaching that number, making for a very slow descent on the steep and narrow stairways. However, the show cave route is quite short, and there ample opportunity to see everything – and take photos – during the 50 minute tour. The show cave route ends in The Landmark Room and from the elevated viewing platform there are spectacular displays of speleothems in all directions and it is difficult to decide which way to look first. Towards the undercut flowstone cascade, or the magnificent draperies, the helictite wall or perhaps the helictite clusters on the roof above?

The return trip follows the same route back to the entrance, enabling another look at the interesting features along the way.

Moaning Cavern

Moaning Cavern can be found about 12km south of Mercer Caverns. We did not visit the cave on this trip, but were able to see it while in the area with Californian caving friends in 2007.

The show cave route starts inside the Visitor Centre and descends on narrow wooden steps and walkways in a



*The steel spiral staircase in Moaning Caverns dates from 1922 – and looks it. Note the abseiler, top left, who has chosen a possibly safer means of descent.
Photo: John Brush*



*Marjorie Coggan near the top of the 8-revolution spiral staircase in Moaning Caverns.
Photo: John Brush*

tight fissure before opening out into a huge pit, the floor of which – and the end of the tour route – is about 50 metres down. Total depth of the cave is about 125 metres. Arguably, the most spectacular feature of the cave is a 30 metre steel spiral staircase with 144 steps in 8 revolutions that takes visitors to the floor of the pit. The staircase was fabricated in 1922 using steel from the hull of a World War I battleship and was apparently the first arc-welded project in California. Superficially at least, the staircase looks to be showing its age and for the faint-hearted, an abseil descent is offered as an extra-cost alternative. However, abseilers still have to use the stairs to return to the surface.

The cave was discovered by gold prospectors in 1851, but as no gold was found, the cave was soon forgotten. It was rediscovered in 1919 and tours were first offered to the public in 1920. At first, visitors were lowered in an ore bucket on the end of a rope. Access became much easier – and safer – after the spiral staircase was built.

The early gold explorers are reputed to have named the cave after a moaning sound that could be heard in the pit and listening for it was a feature of the ore-bucket descents. However, by the time the spiral staircase was finished, the sound had disappeared and in subsequent decades the moaning sound was little more than a

legend. When the cave was purchased by the Sierra Nevada Recreation Corporation in 1977, its principals Steve and John Fairchild, became intrigued by early reports of the moans. After considerable research they discovered that the sound was made by water drops falling into drip holes in flowstone on the floor of the pit. The moaning ceased when debris from construction of the staircase partly covered the drip holes and the dripping water was diverted away from the steel structure. And so, with this discovery, the Fairchild brothers were able to restore the moaning sound that was last heard in 1922. Somewhere along the way, the cave also became a cavern.

California Cavern

We did not have time to visit California Cavern, which is about 40 minutes' drive north of Mercer Caverns, but it sounds like an interesting cave. It is the largest show cave in the area and appears to be the most varied. It also lays claim to being the first show cave to open in California, in 1851.

The cave is another in the Sierra Nevada Recreation Corporation portfolio. Two tours are offered, depending on the season, as well as several adventure caving options.



*Upstream end of the lower Cavaleras Natural Bridge.
Photo: John Brush*



*Upstream end of the lower Cavaleras Natural Bridge.
Photo: John Brush*

The Cavaleras Natural Bridges

Strictly speaking, the natural bridges are not show caves, but they are spectacular, publicly-accessible features that are well worth a visit. They are just a few kilometres down the road from Moaning Cave and to visit them involves an easy 20 minute walk from the road.

The bridges are in travertine and formed as deposits from spring waters slowly covered over two sections of

Coyote Creek. In other words, they are accretion caves. The upstream cave is larger and at 70 metres is slightly longer than the downstream cave. Both are well decorated and the lower one has actively-forming rimstone dams. On a hot summer's day, a swim through the caves would be a pleasant through-trip, but in late winter, the time of our visit in 2007, the water is decidedly frigid.

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INTERNATIONAL SHOW CAVES ASSOCIATION CONGRESS JENOLAN CAVES, NEW SOUTH WALES, NOVEMBER 2014

Catherine Loder

Many ACKMA members found themselves amongst the crowd gathering at Jenolan Caves in November 2014 for the 7th ISCA Congress. Always keen to take advantage of any opportunity that arises to visit one of our great cave and karst locations, I signed up! This is a personal account of some of the activities during the congress.

Many visitors to Jenolan Caves arrived via coach from Sydney and this was the case for most of the ISCA delegates. Two buses departed Sydney for the Blue Mountains, stopping at the Mt Tomah Botanic Gardens along the way, to allow everyone to stretch their legs and eat lunch. The following stage of the journey into Jenolan Caves saw the buses come alive with chatter due to the impressive drops on the left side of the bus and negotiations with oncoming traffic on the right side of the bus. It is said that first impressions count, and the final sections of the road into the Jenolan valley, particularly observed from the higher and overhanging perspective of a bus window seat definitely starts a visit with the right impression!

The Gundungurra people welcomed ISCA to Country, officially starting the week long program. A display of possum skin cloaks with the story lines of their owners was available for congress attendees to look at during the week.

A snapshot of some of the presentations

Armstrong Osborne's keynote address on "Science for show cave conservation, development and interpretation" set a good platform for a number of the talks that would follow. His key message was that by supporting research projects, a number of opportunities can arise to improve the way sites are managed and research findings can help to provide a point of difference. Of particular focus during the presentation was the working relationship that should be developed between researchers, cavers, cave managers and guides. The better the relationship, the more information that is shared and this can lead to positive outcomes for all parties. Having learnt so much as a guide by spending many volunteer hours with researchers, I could definitely relate to the message of this presentation.

Kyung Sik Woo gave a very comprehensive presentation about the "Scientific investigation, monitoring and effective management of natural and tourist caves in South Korea." He shared information on the baseline studies undertaken and the ongoing monitoring of environmental conditions in South Korean caves.

The discussion of science based presentations continued with Julia James' "A review of environmental monitoring at Jenolan". In this presentation Julia went through the history and role of the science advisory



*Armstrong Osborn delivering his keynote address.
Photo: Steve Bourne*

committee at Jenolan Caves. Of particular interest during the presentation were the predictions of annual visitor growth and how this was going to be monitored and measured in terms of visitor impacts.

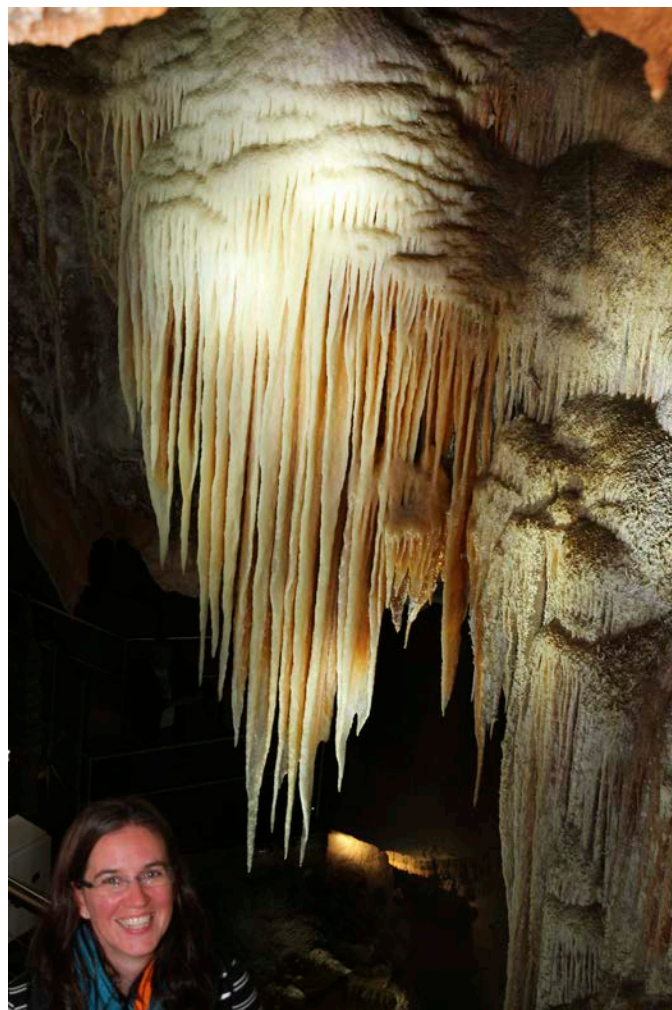
Cathie Plowman raised awareness on the impacts of coins during her presentation "Coins in cave pools. Is this an issue? Should they be managed?" "Giving many examples from across the world, Cathie covered aspects such as the historical context of the desire to throw coins and the potential impacts to cave structures and ecosystems. This presentation prompted the sharing of thoughts and opinions both during question time and into the lunch break that followed. Of particular note from the audience feedback were the socio-economic benefits through donation of funds collected.



*The Mulu contingent: Undi Mamat, Ester Abu, Alison Pritchard and Kenneth Nilong at the Pool of Reflection, River Cave.
Photo: Steve Bourne*



*David Summers (left) stood down as president of ISCA with Brad Wuest accepting the role.
Photo: Steve Bourne*



*Cath Loder at one of Jenolan Caves' features in Orient Cave.
Photo: Steve Bourne*

Nadja Hajna shared the journey of developing and implementing “The concept of a new interpretative exhibition at show cave Postojnska Jama”. With a partnership between the cave’s tourism operators and the Karst Research Institute, a plan was developed to integrate cave and karst science into an interactive and interesting display centre that would provide an additional attraction for visitors. With limited space available for the development, a project plan was initiated, identifying the key concepts that the attraction would present and how this could be done in the space provided. The implementation phase of the project was ‘in progress’ at the time of the ISCA congress, with some of the display areas still under construction.

Maryanne Leigh from Acoustiguide showcased her products as a tool for “*Interpretation of natural attractions in the digital age.*” Through use of different media types the range of products allowed for meeting the needs of visitors with hearing or vision impairments and to reach further audiences through language diversity. It was

highlighted how the use of such technology doesn’t necessarily replace guiding staff, but can be a complementary product that can also assist with guide training purposes. With Jenolan Caves offering an audio guide for the Nettle Cave self-guided tour and an App loaded with multiple self-guided walks, there was prime opportunity for conference delegates to put it to the test.

Ross and Jay Anderson continued the technological theme with their presentation on “Utilising interactive digital media to promote, conserve, interpret and present show caves.” Words are unable to describe the fantastic 360° panoramas that the duo are producing. With a bit of assistance from the crowd during this presentation, Ross stepped through the process of taking a 360° photo. Take a look at their website to check out some of the work!

David Head from Weidmuller Australia spoke about the evolution of “LED lighting in showcaves – showing caves in a better light.” From train lights to cave lights, there



*The new Weidmuller lighting is superb. A scene in Orient Cave.
Photo: Steve Bourne*

were more new lighting options on show during the congress.

Ann Augusteyn took attendees through “A never ending journey: Capricorn Caverns.” Capricorn Caverns has been transformed under the guidance of the Augusteyn family and dedicated staff over many years. Ann took us through the various stages of development that has seen the site prosper. A majority of the international crowd at the ISCA conference was from privately owned and/or operated sites, and as the only privately owned show caves on freehold land in Australia, this presentation really struck a chord with many in attendance.

A number of other ACKMA members gave presentations including:

Alison Pritchard, Kenneth Nilong, Undi Mamat and Ester Abu– “Mulu uncovered”

David Head – “LED lighting in showcaves – showing caves in a better light”

Pete Chandler – “Show caves at Waitomo, New Zealand with Glowworms of the *Arachnocampa luminosa* species”

Sasa Kennedy – “Building cave guides’ interpretative skill base: some strategic initiatives to strengthen your triple



*ISCA delegates enthralled in Orient Cave.
It appears the week was taking its toll!
Photo: Steve Bourne*



*Rod Graves of Leroy Caverns, Texas with a very friendly crimson rosella.
Photo: Steve Bourne*



*Anne Musser, Jenolan Caves, with Richard Bowerman, Stump Cross Caverns, United Kingdom in Nettle Cave
Photo: Steve Bourne*

bottom line” and “Looking to the past to provide sustainable show cave management into the future”

Scott Melton – “Digital media: A modern conundrum in an ancient landscape”

Steve Bourne – “Presentation of the Naracoorte Caves World Heritage Fossil Site”

In addition to the formal presentations, each show cave site represented at the congress had the opportunity to briefly introduce their part of the world. With representatives from the USA, Austria, Germany, China, Malaysia, Lebanon, Sweden, Italy, Czech Republic, Slovenia, South Africa, UK and more there was a whirlwind trip around the world!

Field Trips

Interspersed between presentations and formal ISCA business were plenty of opportunities to participate in tours. There were plenty of organised options for the

ISCA group, however many attendees also took the opportunity to join public tours that were available. Show cave tours, adventure caving, heritage tours, fossil tours, night stalks and garden tours were all enjoyed. The platypus in the lake was definitely a highlight, with several sightings across the week.

A mid-week full day tour to the Katoomba area showed off some of the Blue Mountains other attractions. People scattered in all directions at Scenic World taking in the Three Sisters, the Scenic Railway, Skyway, Cableway and walkway. After lunch, a visit to the Blue Mountains Cultural Centre allowed attendees to go through the “Into the Blue” exhibition. The exhibition highlights the Blue Mountains World Heritage Area from a natural and social perspective, using simple, yet very effective displays.

Overall, the ISCA congress was a great opportunity to meet many new people from all over the world.



*Tom Summers, Cave without a Name, USA enjoying Blue Mountains scenery.
Photo: Steve Bourne*



*Undi Mamat, Mulu National Park.
Photo: Steve Bourne*

WOMBEGAN KARST CONSERVATION RESERVE TURNS 150

David Smith

Manager Wombeyan Karst and Caves Reserve, New South Wales



Part of the crowd at the opening address.

Photo: David Smith

Not a bad innings, even by world standards. On February 2, 1865 Wombeyan Caves was gazetted as a reserve for the protection of limestone caves. This was quite remarkable given the relative remoteness of these caves and the lengths one had to go to reach them from civilisation. At the time Wombeyan Caves had a short history as a tourist attraction with a fellow named Charles Nicolas Chalker leading cave inspections to some of the new discoveries known to exist. Charles, and later his half-brother Thomas were instrumental in exploring and developing several of the show caves on public display today.

From the sketchy and somewhat questionable written history that exists today, we are led to believe that the first European exploration of the caves occurred in the 1820s and that several trips were made over the following decades. By the time Charles Chalker was officially appointed 'keeper of the caves' in 1868, around 300 visitors were making the journey each year, often travelling for days. It was appropriate then that measures were put in place to preserve these wonderful caves and features for future generations to experience.

Over the following 150 years a host of managers, researchers in many disciplines, speleologists and enthusiasts have contributed the wealth of information on the Wombeyan Karst, a feat certainly worth celebrating. So from March 13-15 2015 the staff of Wombeyan Caves in conjunction with the Office of Environment and Heritage Customer Experience Division delivered a public event to commemorate this milestone.

With a limited budget and a grant from the Great Eastern Ranges Initiative, the event was promoted as "The Blind Valley Festival", a term derived from the geological entity that now forms the exit of Fig Tree Cave and Victoria Arch where the Wombeyan creek disappears underground. The focus of the celebrations was conservation of the natural environment and, to that end, experiencing what we all have been striving to protect for a century and a half. Official proceedings began with an opening address from key note speaker and NPWS Deputy Chief Executive, Michael Wright, a brief history and blurb on the significance of the event from the writer and Welcome to Country by Sharyn Halls representing the local Gundungurra people. A replica of a plaque commemorating 150 years of conservation was delivered on horseback, a throwback to the days of the early mail runs.

Naturally there were several cave tours on offer and also a special candle light inspection of Coronation Cave – a spectacular but unlit section of the Wollondilly Cave. This extension had been partially developed for tourism in the early part of the 20th century, before electric lights were introduced, but later abandoned. The special ambience and breathtaking beauty of this passageway were not lost on the visitors who took the rare opportunity to inspect Coronation Cave.

Numerous local exhibitors showed off their wares and community organisations provided sustenance for the 300 or so that were in attendance. There were demonstrations from wildlife handlers, toolmakers, speleo sport activities and of course researchers from UNSW and Newcastle University displaying current and



Fun and games!
Photo: David Smith



Caves guide and local historian Ken Fleming.
Photo: David Smith

recent advances in our understanding of karst. A bagpipe procession led the crowd into the arch where the Cavernous Choir from the local conservatorium of music made good use of the natural acoustics. The event went on into the early evening with local musicians entertaining those that stayed on, and proceedings were capped off with the screening of Stephen Babka's latest production "Cave" a wonderfully descriptive narrative on Wombeyan and its history.

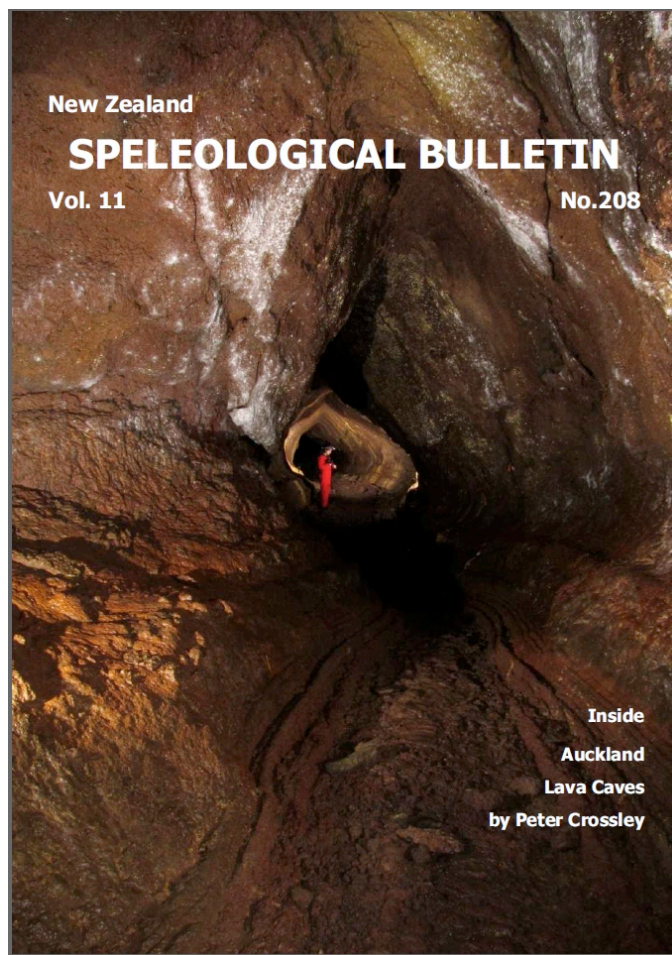
Probably the crowning glory of the celebrations was the re-opening of the old powerhouse as a museum of natural and cultural history. What had once contained the generators for illumination of the caves and buildings prior to connection with the grid, this old building had been demoted to a storage shed and free lodgings for rats and silverfish. But underneath the decades of mounting documents and steel offcuts were some exciting relics from the past including appliances and fittings from another time, bones and old cave exhibits collected from the quarry leases and photos and artworks long since forgotten. Several weeks were spent transforming this building into an interpretative display that NPWS can be proud of. Local historian and longest serving guide, Ken Fleming (who many visitors met in 1960), donated many of his own historical items to the event and was on hand (in period costume, see photo) to explain all things "Wombeyan" to those interested. With time (and funding) the intention is to further develop the powerhouse into an interpretation centre as outlined as a priority in the Plan of Management.

Community feedback on the event was very positive and there was almost unanimous support for an annual public festival at the caves, an idea certainly worth investigating.....

AUCKLAND, NEW ZEALAND LAVA CAVES

NEW ZEALAND SPELEOLOGICAL BULLETIN 208, JUNE 2014

Mary Trayes
NZSS Bulletin Editor



Early in 2014, I began editing this work for veteran New Zealand caver, Peter Crossley, taking much pleasure in doing so. This issue of the *NZSS Bulletin* is considerably longer than usual at 60 pages. It is the culmination of a lifetime's work by Peter in exploring, surveying and making scientific observations of the many lava caves in the Auckland area. The city is built on fifty volcanic cones nearly all of which have some measure of lava cave development.

Peter Crossley migrated from Britain to New Zealand as a young man in 1965. Since then he has notched up 50 years of caving and is still going strong. Based in Auckland, where he worked as a technician in the Geography Department at Auckland University under Professor Paul Williams, Peter explored both smaller lava caves close to home as well as larger limestone caves at Waitomo and in the South Island. About the time he could have become bored with the less adventurous lava caves he suddenly realised that some of them could no longer be found due to lost 'cave lore'

or obliteration during development. As a result he began making notes of where known ones were and mapping them. He also began to lobby landowners and land managers about the caves on their land, becoming really keen that local authorities, public and private landowners, the wider public and the caving fraternity all understood that this aspect of New Zealand's heritage was at risk.

The culmination of his interest is a well organised piece of work with many maps, photographs and anecdotes about Auckland's remaining lava caves. For cavers from either a show caves or wild caves background Peter's work provides another slant on caving altogether. Those who went on the 2013 ACKMA post conference tour which ended in Auckland gained some experience of this. They spent two days with Peter as guide, visiting Wiri Lava Cave (front cover photograph), looking at volcanic cones, visiting caves in suburban home gardens, pulling up manhole covers in leafy suburban streets and trooping round Rangitoto Island.

At one stage NZSS was in somewhat of a conundrum about publishing Peter's work because in contrast to the Society's general policy of being reticent about cave locations, Peter's work was full of maps and notes showing just exactly where they were and how to gain access. However once Peter pointed out that many of the lava caves were either on private property requiring landowner permission, already had restricted access



Tree roots are a feature in Stewart's Cave off Landscape Road in suburban Auckland. This is a relatively large and well known cave accessed through private property. It's one of the few remaining in the lava fields associated with the Three Kings volcanic cones.

Photo: Peter Crossley



Above. Kermies Cave on Rangitoto Island has a vertical entrance where real care is needed due to loose rock in the ceiling and entrance areas. The rest of the cave has some fine lava cave features making it well worth the visit. Below. The entrance to Kitenui Cavern in Mt Albert, Auckland is in a suburban street on public land. The City Council put in a manhole cover to allow access to the cave which goes under the road and several houses.

Photos: Peter Crossley

(gate or man-hole cover) or were just plain difficult to get to (abseil access or travel across rough lava-fields) it could be seen that a policy which worked well for wild caves bore much less relevance in an urban environment. Discussion in the end was short and publication of the work went ahead.

Peter makes it clear in the introduction to his work that a key aim of having it published was to ensure that local authorities have to take the existence of known lava caves into account when they consider resource consent applications for new developments such as buildings and roads. A cunning plan to ensure that the work Peter has already done over the last 20 years with various councils, the Department of Conservation and local Maori groups (iwi) will continue in the future.

I highly recommend this journal to you if you have either an interest in lava caves or the management of caves in an urban environment. Bulletin 208 has many maps and excellent photographs supporting succinct text. An excellent handbook to own if you ever aspire to exploring

lava caves on a visit to Auckland. A limited number of copies of *NZSS Bulletin 208* will be available at the 2015 ACKMA Conference at Naracoorte. Price A\$20.



CAVES in an ANCIENT LAND

17TH INTERNATIONAL CONGRESS of SPELEOLOGY

SYDNEY, NEW SOUTH WALES 23-30 JULY 2017



The theme chosen for the Congress captures features of the Australian landscape evident in its caves and karst. Proterozoic dolomites (1.4 – 1.8 billion years old) in Australia had not been explored by speleologists until 25 years ago but have now been shown to have significant caves. Jenolan Caves are rightly celebrated as beautiful and one of the first tourist caves to be electrically lit. More recent discoveries at Jenolan demonstrate their antiquity. Mineralization of sediments in the Jenolan Caves has been shown to be 340 million years old, demonstrating the caves were open at this time. Very much younger caves formed in carbonate dunes on the southern coast have shown that dunes less than 250,000 years old contain caves several kilometres in length.

Karst research in Australia has been rejuvenated with the application of many new techniques. New dating methods show that there are Nullarbor speleothems up to 10 million years old. At Chillagoe in North Queensland, detailed studies of speleothems have been done which correlate cyclone (hurricane or typhoon) events in the past 100 years with contemporary historical accounts of damage in coastal areas. The frequency of such events is important in understanding climate patterns and events and to manage the risks from them. Other studies from Southern Australia and New Zealand are elaborating climate histories for comparison with the Northern Hemisphere climate records.

The original descriptions of the marsupial megafauna of Australia were from cave deposits from Wellington, NSW by Sir Richard Owen in the nineteenth century. Caves continue to provide bones to elaborate this history. The Nullarbor caves have had megafauna dated at 3.5 MYa belonging to animals reliant on trees no longer present. The World Heritage Area at Naracoorte Caves in South Australia has contributed to these paleontological studies. The marsupial megafauna is now better known from the study of cave deposits.

These themes of modern speleological study will form part of the Seminar program at the Congress and will be integrated with other exciting new areas of speleological investigation across the world.

The Organising Committee recently hosted the UIS Bureau who toured the Penrith Panthers Congress Facilities and were presented with some of the Congress planning to date. These include plans for the Congress itself, a partners' program, a mid-week trip to Jenolan caves plus pre- and post-congress field trips and caving camps. Detailed information will be provided on the website during 2015.

The organising committee is particularly interested in ideas for the scientific program or inquiries about registration, trip planning etc.

Contact via email: speleo2017@caves.org.au.

Further information: www.speleo2017.caves.org.au



*The Organising Committee meeting.
Photo: Nicholas White*

FAUNA of NGILGI CAVE, WESTERN AUSTRALIA

Dominique Trouchet
Ngiligi Cave Guide



Tiny white cave spider, inset for scale.
Photo: Dominique Trouchet

Ngilgi Cave is a self-guided tourist cave, offers guided adventure cave tours and is located near Yallingup in the southwest of Western Australia. This article will provide some information about the cave fauna that can be seen in the cave.

With the diminishing volumes of water entering Ngilgi Cave, there has been a massive reduction in the number of species existing within the cave.

In addition to this, the grate over the entrance has prevented a variety of species from entering the cave, either by choice or falling into the entrance, reducing food sources for cave dwelling species.

As with most caves in the area, at the entrance is a thriving colony of cave daddy long legs, *Pholcus phalangioides*. They are equally proportioned on cave walls and the jarrah staircase.

Although the cave has volumes of large and impressive webs throughout the first two chambers, most of these

are relics from the past whose creators no longer exist. A variety of spiders is enjoying various aspects of the cave infrastructure.

The diminutive, tiny white cave spider, whose scientific name I have been unable to find, can be found throughout the board-walked sections of the cave. They are so small I have only ever seen a couple by chance. While some of their webs are located directly on formation, there are many more occupying small niches in the recycled plastic boardwalks and fittings. The underside of the plastic boardwalk provides an ideal habitat for these little spiders.

We also have the cave spider *Baiami tegenarioides* throughout the cave, though they are less prevalent than their smaller counterparts and tend to look undernourished. They tend to be located on and around LED light fittings. Occasionally you find *Baiami tegenarioides* off the boardwalk in the unlit sections of



Spider, species not known and a web in Ngilgi Cave.

Photos: Dominique Trouchet

the cave. You also see them on formations on both ceiling and floors.

The Ancient Riverbed Chamber, which has more off-boardwalk action than any other chamber, has a large population of isopods. There are centipedes and the occasional spider, though the isopoda are the dominant species.

Considering this chamber is utilised in all of our off boardwalk adventure tours, we are commando crawling through their domain on a regular basis. We as guides are proud of our ability to coexist with them and they are incorporated into all our off-boardwalk tours. Our visitors love the isopods, their fragility and their obvious adaptations are an important aspect of our tours and we interact in an up close and personal manner. As they live on our crawl track they have to be gently retrieved and returned to the safe side of our no go limestone barrier.

The isopoda exist in all the off-boardwalk chambers, the Ancient Riverbed Chamber has a beautiful array of roots from the peppermint tree *Agonis flexuosa* and these hair like roots provide a constant and viable food source which is why the isopoda are most prolific in this chamber. We observe their predilection for old roots or younger roots through their visible digestive tracts. We have isopoda in all stages of development, so they are successfully breeding at all times.

The Ancient Riverbed Chamber also has the largest number of centipedes as their main food source is the isopods. Consistently the prey continues to outnumber the predator indicating a fairly healthy little ecosystem.

An unwanted species, *Rattus rattus*, has in the last couple of years made it into this chamber and had a direct and rapid impact. These are very smart creatures and they disappear and reappear in other sections of the

cave making it very difficult to apprehend them. The rats appear to predate on the larger isopods leaving the population reduced and a little lost. You see an increase in centipedes post rat invasions as obviously their food source has diminished and they need to be more active to secure nourishment.

In other off-boardwalk chambers a couple of interesting carapaces from species which no longer exist serve to remind us of the multitude of species that previously existed within Ngilgi's walls.

The communication borehole into the main chamber has its own temporary inhabitants. Spiders and slugs make the downward journey over summer and congregate around the hole, when above ground moisture returns they exit and return to their normal habitats.

Cockroaches of the local bush varieties can be found throughout the show cave but in very small numbers and of course the more unexpected visitors are frogs and the occasional, once every ten years or so, snakes which through misadventure or desire make their way in.

The majority of fossils found in the cave belong to small reptiles, marsupials and birds.

Two complete thylacine skeletons and two additional skulls and a wonderful collection of other animals, over 35 species, have tumbled down the entrance and become part of the underground ecosystem.

Ngilgi had colonies of possums throughout the cave prior to the installing of the gridded gate. In fact one of the major motivations behind the entrance grid was to prevent possums from entering as they damaged and destroyed formations. In the past Ngilgi would have had an incredible array of splendidly adapted creatures to marvel at and learn from.

CYCLONE MARCIA HITS CAPRICORN CAVES, QUEENSLAND

Ann Augusteyn



*Caravan Park
Photo: Ann Augusteyn*

In the early hours of Friday 20 February 2015, Cyclone Marcia escalated from a category two to category five cyclone as it crossed over the Queensland coast. At 11.30am the eye of Marcia passed over Capricorn Caves, Queensland just to the north of Rockhampton.

Emerging from our bunker unscathed we gingerly walked out to inspect the aftermath. What a roller coaster of emotions. Trees had fallen like match sticks, covering the caravan park and blocking the roads but missing all the buildings. Tracks, paths and board walks into the caves were impassable, blocked by thick clumps of vine thicket and fallen trees. In one cave entrance an uprooted tree was held up by a vine over a suspension bridge. The forest floor was a sea of green leaves glistening after the rain in the evening sunlight. It was surreal — a calm quietness hung over the amazing shapes of trees stripped of their leaves. Surprisingly, no buildings were damaged except for dents in the gutters but the mass destruction to the dry rain forest was overwhelming and soul destroying.

The clean up began the next day. Hacking through the jungle of vines, and chain sawing the iron barks to open up essential roads and path ways was “hard yakka”. High humidity, temperatures over 35°C, green ants attacking, snakes slithering away and thorns from the vine thicket piercing every limb of your body made the whole recovery process incredibly challenging.

The staff have put in three weeks of hard labour but on Monday 23 February, they magnanimously volunteered their labour and brought along partners and family members yielding rakes and chain saws. Such a day was very emotional.

Later a Rotary Youth Leaders Award group (RYLA) which was staying in our Lodge, volunteered two hours of its time every morning before breakfast to help clear tracks. This not only produced amazing results but lifted the morale of the Caves’ staff.

With no electricity to pump water and treat waste water, no communication systems, no refrigeration for 11



This water tank saved a building from destruction

Photos: Ann Augusteyn



Cables entangled in vines

days, we were closed to visitors. The caves reopened on Monday 2 March.

Unfortunately the 240v cables supplying the cave lighting remain tangled in the vine thicket and the solar power supply was decommissioned as unsafe to use. We are currently running our brand new LED lights and CBus computerised system on generator power with fingers crossed that there is no long term impact.

Organising quotes for insurance companies, insisting on responsible clearing of the vine thicket to reinstate the power lines, not to mention the weeks of removing fuel for bush fires from the forest, continues to be challenging but we hope it will be business as usual by Easter. Please - no more cyclones anywhere in Queensland as that puts a blanket cover over the whole state in the eyes of the tourist.

As for the caves, there is not a single piece of evidence that the eye of Marcia had passed over the limestone ridge.



Cave guides Lucas and Kegan clear the track (note extensive safety equipment (Ed.))



Jordan Wheeler pulling away the vines

Photos: Ann Augusteyn



Above. Main visitor path to caves was inaccessible.

Right. Uprooted tree caught by a vine prevented it from crashing onto the suspended boardwalk.

Below. Arborist working up a tree to clear loose branches hanging in the canopy.

Photos: Ann Augusteyn

