

*Journal of the*

**Australasian Cave and Karst Management Association**



# The ACKMA Journal

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## IN THIS ISSUE

Editorial .....	Page 3
President's report.....	Page 4
Australian Cave Animal of the Year .....	Page 5
Savannah Guides Field School .....	Page 8
Impacts of Fire & Storms - Yarrangobilly.....	Page 10
Natural values assesment & environmental monitoring of Naracoorte Caves .....	Page 14
An entry into the Creative Arts Category of the IYCK Competition.....	Page 15
Kosciuszko National Park Wild Horse Heritage Management Plan .....	Page 16
ANDYSEZ 62 .....	Page 19
Winner of the Photography Category of the IYCK Competition.....	Page 22
Capricorn Caves - Art Retreat .....	Page 21
Winning entry of the Creative Arts Category of the IYCK Competition.....	Page 22

# Editorial

Christian Bom

It is a great pleasure to present to you my second edition of the ACKMA Journal. I have received some great feedback after publishing the September edition. I encourage those willing to provide feedback to please do so. This is not something I have done before, and I have a lot to learn. There are countless years of experience in the readership of this journal, and I am willing to take on board any feedback or suggestions you have for me to improve in future editions. I hope to maintain the high standard that has been set by previous editors over the last 124 editions.

The October ACKMA meeting and guide school was a great success and it was wonderful to see many of you attend. The presentations were fantastic and there were presenters from all over the world. The presentations included natural disaster stories, fascinating behaviours of platypus in the Blue Mountains, the effects of cave lighting, and much more. The presentations are now available in the members section of the ACKMA Website. The guide school component was run by Savannah Guides. It is a great pleasure to announce I have been invited onto the Board of Directors of Savannah Guides. There are countless opportunities for future collaboration between Savannah Guides and ACKMA and I am looking forward to seeing what this relationship will bring.

Another year is coming to an end, there have been some tough times for us all but as we have heard from Jodie Strickland in the recent ACKMA meeting, it is all about

resilience. So, I thought I would share Jodie's definition of resilience once again; "The Process of adapting to stressors by using all the tools, resources and support you have in order to push through the struggle and the stress and ultimately to grow." Thanks to Jodie for this wonderful reminder.

The arts competition for the Australasian Celebration of the International Year of Caves and Karst has now concluded. I am excited to share some of them with you over the next few editions of the journal. It has been a great collaboration by the NZSS, ASF, and ACKMA.

In this journal you will find an article from Capricorn Caves' Amber Countryman, who is bursting with passion to share her love of the caves with fellow artists. Amber recently facilitated an Art Retreat at The Caves which was a huge success and will now be a yearly event.

The new Cave Animal of the Year has been announced, and this one certainly hits home for me as it is the Ghost Bat! *Macroderma gigas* have been in a steady decline across Northern Australia so there is no better time to celebrate this amazing creature. I had the pleasure last year of being taken through some of Mt Etna Caves National Park's caves by Ghost Bat expert John Augusteyn. John has clearly spent countless hours observing these creatures as he could even call to them! It was a wonderful sight and something I will not soon forget.



**UPDATE**

## ACKMA 2022 EVENT NEW ZEALAND.

Due to uncertainty around isolation requirements immediately after the NZ border reopens to Australia on 30th April 2022, the committee has agreed the 2022 ACKMA AGM will now be held in May and will be 'online'.

The NZ conference is tentatively postponed to early October 2022. The NZ team will continue to plan the event with an update to be provided at the next committee meeting on 27th February 2022.

We recognise the traditional people of the lands of all our members and editorial contributors.

ACKMA acknowledges the Traditional Owners of the land on which we meet and work, and all Traditional Owners of country throughout Australia. We recognise Aboriginal and Torres Strait Islander peoples' continuing connection to land, place, waters, and community. We pay our respects to their cultures, country, and elders past present and emerging.

ACKMA recognises the unique role of Māori as Tangata Whenua and embraces Te Tiriti o Waitangi recognising Māori as tino rangatira of Aotearoa/New Zealand while embracing the three guiding principles of the Treaty – Partnership, Participation, and Protection. We will endeavor to implement bicultural policies and practices that incorporate and value Māori cultural concepts, values, and practices.

# ACKMA President Report December 2021

Ian Eddison

Since my September report we had our major event hosted by Wellington Caves and sponsored by Weidmuller. The whole event was online and comprised the Savannah Guides led EcoGuide course over 20-21 October and then our meeting 23-24 October. We had an engaged group of guides involved in the EcoGuide training and then a very full program of professional presentations with over 40 people attending online at one point. Overall, it was a very full few days to be tied to the computer screens but also very rewarding for those who could manage the time.

The meeting included the launch of the second edition of 'Caves', two copies which were auctioned for the life members fund, Sixteen Legs watch party, our guest speaker Anthony Sharwood on his book 'From Snow to Ash' and the latest book 'Brumby Wars'. All reports were that the training for guides and the meeting very appreciated by those who could attend.

Behind the scenes were several people managing the ZOOM and supporting presenters. Thanks especially to Andy and Kirsty. It was great to see so many take part and if we had been physically able to get together we would not have had the time for so many presenters so that was a positive of the online ZOOM. The final program planning, trial ZOOM and facilitator was David Gillieson which we owe a great deal of gratitude for his work.

Other behind the scenes work continued:

- A submission has been made on the Wild Horses management within the Kosciuszko National Park. This work was a collaboration of ACKMA and ASF. I particularly want to thank John Brush for his work on this.
- Communications have occurred regarding asbestos and a plan of remediation work at Dip cave, Wee Jasper to enable further input. Caving communities and cave and karst management were not initially sought for input. That seems to have changed and we look forward to having opportunities to be engaged.

It remains a difficult site to remediate. Once again John Brush has played an integral role in this so far.

- The creative Celebration of Caves and Karst in Australasia competition, a joint initiative of ACKMA, ASF and NZSS has been well attended and is now closed. Judges are assessing the entries which will be announced on 12th December. Our joint organisations will provide the \$1,000 grand prize and Ledlenser are providing four \$500 vouchers. There are 41 entries in all, from different media. The most popular section was written entries comprising poems and stories. You will see many entries in our journal and our social media in the coming months.

Earlier in the year I encouraged cave managers to work closely with local arts groups to run their own arts event. I am not aware of this having occurred but if any of our show cave managers would like to exhibit the entries of our competition then by all means let me know and I shall provide the entries electronically.

- The Atmospheric Data Logger project continues, and you should have seen reports updated. Despite the challenges with restrictions due to the COVID-19 pandemic, the team continue to support the various sites engaged in this research.
- The Naracoorte Inter-agency Reference Group have met, and Brian Clark has represented ACKMA. A report has been supplied to the committee and is available to other members on request.

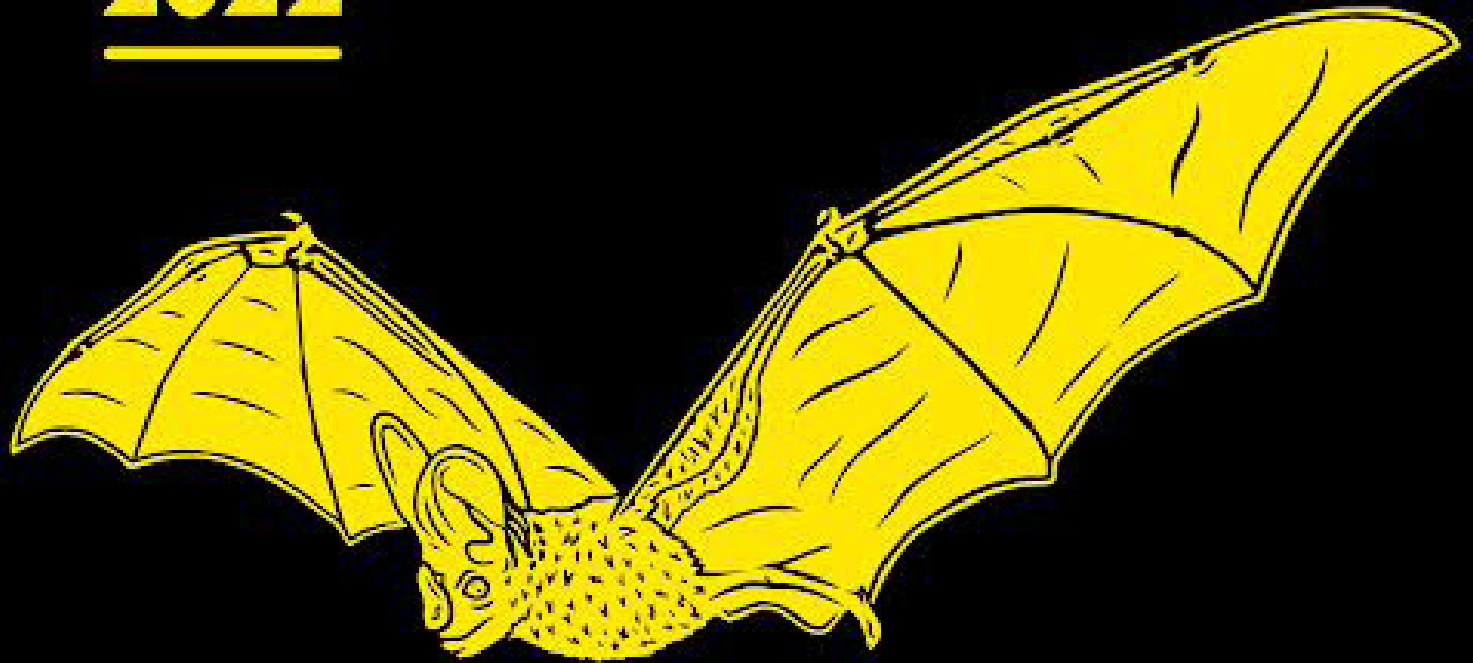
I wish you all continued health, improved economic situations in your respective work. We are headed to new changes and fewer COVID restrictions now but do keep your guard up. Please remember to promote the International Year of Caves and Karst and the themes explore, understand, and protect.

*Ian Eddison*

*President*



# AUSTRALIAN CAVE ANIMAL OF THE YEAR **2022**



## Ghost bat

*Macroderma gigas*

### It's time to bat for bats!

Emerging from forests and caves to feed in the darkness, bats pollinate our crops and feed on insects that could, if left unchecked, become plague species. But 'out of sight and out of mind', people are often oblivious to bats. With declining populations and a range of threats, bats need humans actively on their side.

A resident of tropical areas in northern Australia, the endangered ghost bat is the only carnivorous bat in Australia. Its large eyes, huge ears (twice the length of the head!) and nose-leaf all assist its keen hunting skills to find prey, which includes small birds, mice, insects and snakes.

Cave Animal of the Year celebrates our little-known cave animals and the importance of caves as their homes. Join with us and learn more at:  
[www.caveanimaloftheyear.org.au](http://www.caveanimaloftheyear.org.au)  
[hello@caveanimaloftheyear.org.au](mailto:hello@caveanimaloftheyear.org.au)

# Announcing the Australian Cave Animal of the Year 2022

## Ghost bat (*Macroderma gigas*)

Cathie Plowman, Australian Cave Animal of the Year coordinator.

The Australian Cave Animal of the Year program seeks to celebrate cave animals and the importance of caves as animal habitat. With great delight we announce the ghost bat as our 2022 Cave Animal.

Bats have plenty of friends in the ACKMA membership, but bats and their important ecological role are not necessarily appreciated by the wider community. We can all be part of changing that in 2022 by assisting in the promotion of the Cave Animal of the Year.

### Getting to know our 2022 Australian Cave Animal

Different authors give alternate reasons for the name 'ghost bat'. Some say it's for the pale colour of the wing membrane and pale skin, while others link the name to the near white to pale grey colour of the fur. Whatever the reason, the pale colours evoke ghostly associations.

Ghost bats are endemic to Australia and were once widespread over northern Australia including the arid lands. Today they are confined to three separate regions that are all north of the Tropic of Capricorn, all either near the coast or within about 400 kilometres of it.

A prominent feature of ghost bats is their large nose-leaf. Like most other bats, ghost bats use echolocation to navigate, and the ultrasonic waves of echolocation are generated in the larynx. The nose-leaf of the ghost bat is part of the complex system of directing and receiving echolocation to detect prey.

### Batting for bats in 2022

Modelled on the German program of the same name that has been running since 2008, the Australian Cave Animal of the Year program is entering its fourth year. Other countries that now have Cave Animal programs are Italy, Switzerland, Spain, the USA, Greece, Portugal and Austria.

As COVID-19 limited opportunities to promote the International Year of Caves and Karst in 2021, the International Year has been extended to throughout 2022. Countries with Cave Animal programs all selected to have a cave beetle in 2021, and we're all combining to have a bat in 2022.

### You can bat for bats

We've produced our attractive and popular items of poster, bookmark, sticker and tea/coffee mug. The poster, bookmark and sticker are all free of charge. Postage and packing fees are minimal. Donations are appreciated.

Mugs are \$10.00 each plus postage.

Help spread the word about ghost bats by displaying posters at show cave sites and in other public areas such as libraries, outdoor shops, Scout halls, cafes, schools and anywhere where we can increase public awareness about cave animals, and in 2022 the ghost bat. Use your imagination, the fitting rooms at the Paddy Pallin store in Launceston have Cave Animal posters in them.

The poster is not intended for private homes and offices. But if you can display one in a public area you can collect it back at the end of the year and have your own copy. Win win! (There are also a few 2021 cave beetle posters still available.)

We've got plenty of stickers and bookmarks that can be distributed free of charge at cave sites, outdoor clubs and conservation groups, school students and anywhere where there might be people interested in learning more about cave animals.

To order your 2022 Cave Animal of the Year products or any enquiries, please email: [hello@caveanimaloftheyear.org.au](mailto:hello@caveanimaloftheyear.org.au)

To learn more about ghost bats: [www.caveanimaloftheyear.org.au](http://www.caveanimaloftheyear.org.au)

Thanks to the ASF Karst Conservation Fund for ongoing support of the Australian Cave Animal of the Year program.





Cave animal of the year,  
the Ghost Bat.

Photo credit  
Bruce Thomson.

# Savannah Guides Field School

## Gulf Savannah - 28-31 October 2021

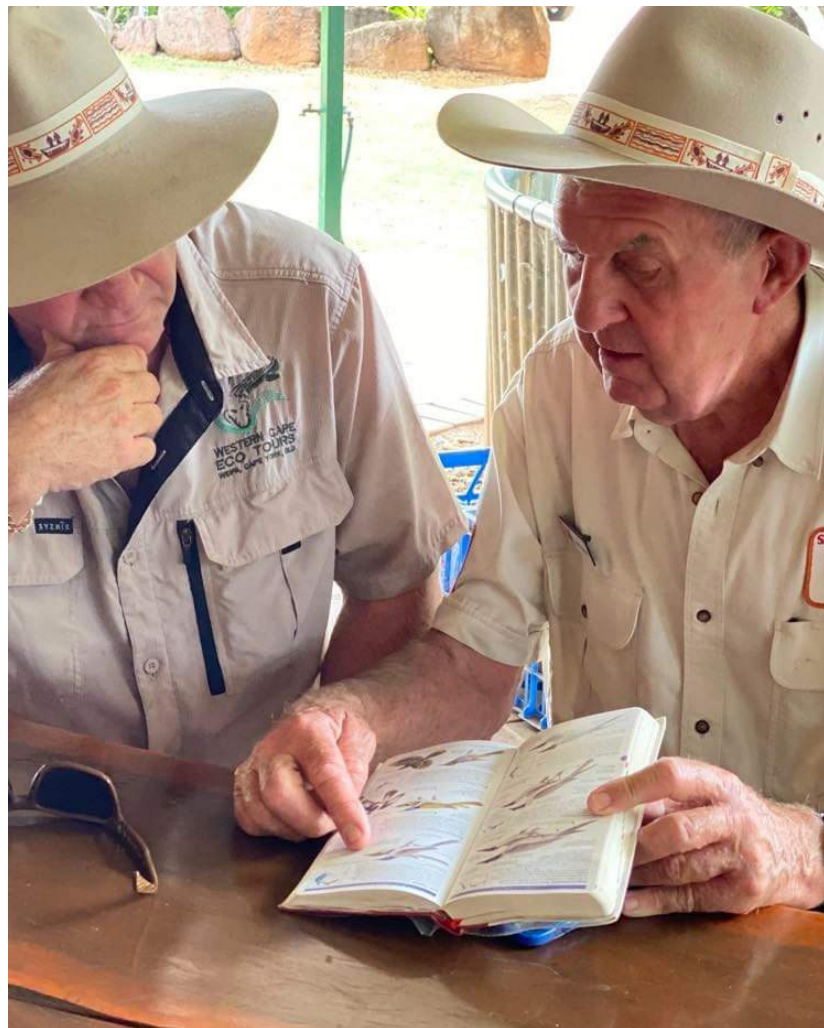
Thanks to Kim Murray, Friend of Savannah Guides

The Savannah Guides Field School starts on Wednesday for me. It's an early start and we are off to Ravenshoe where we meet the bus and enjoy Breakfast / Morning Tea at Ravenshoe Bakery. For those of you not familiar with the Ravenshoe Bakery, they cater for the whole population of the town and surrounding districts, twice over every morning! Providing pies, cakes, coffee to all and it is always PACKED. That, my friends, is the sign of an excellent bakery. This is not a paid advertisement. At Ravenshoe, I met the irrepressible Melissa from the Cairns Museum who has the best laugh I have ever heard.

Onward, to Bedrock Village at Mt Surprise to gather more participants including Ivor "Birdman" Davies and Bram Collins, amongst others. Chatter in the bus at this stage rivalled mating season on a goose farm! It was a fabulous, happy noise. We pushed on towards Normanton and arrived late in the afternoon. We settled into our rooms and then headed to the Albion Hotel for a well-earned beverage and meal. Well, that's when the manure hit the oscillating cooling device! Despite ALL of Sam Boswell's proper prior planning, you still can't

prevent a poor performance if the Chef doesn't turn up! Sam was not phased and was straight onto the phone to try and organise a meal for 40 people in Normanton with no notice whatsoever - good Luck with that one! Long story short - the Albion Hotel called out the cavalry and meals and pizzas soon started arriving in short order and they were delicious. Crisis averted; the world was saved. The Field School hasn't even officially started!

Thursday - Day One of the Field School. We get to know each other at Introductions around the Room. Listening ears were on and plenty of notes taken during Russell's "Transformational Tourism and Travel for Good" Presentation. But then things turned dark. This room of nature-lovers, environmental warriors, saviours of endangered species, Protectors and Interpreters of the Outback, upholders of professional guiding standards and behaviours? Vanished! Gone in an instant! Why? Hirani Kydd announces the TWITCHATHON! Teams are announced and leaders nominated. Ranks are drawn, lots of side-eye to other teams, strategies for bribery are suggested. Let the birding begin!



Savannah Guides discussing bird identification during the 'Twitchathon'

Lunch at Karumba Sunset Tavern on the Gulf, sponsored by an anonymous Savannah Guide. Thank you. The highlights here were the raptors (Kites?) who were abundant in the Tavern area and behaved like seagulls on a hot chip! It was wonderful to see them so close. We were treated to a behind-the-scenes tour of the Les Wilson Barramundi Discovery Centre which is truly world-class, and we all learnt so much. Lots of nodding heads and raised eyebrows! Later we went on a short cruise on the Norman River, with nibbles and drinks.

Back to Normanton in the bus, I noticed that numbers on the bus were dwindling, and more people were joining the self-drivers in the comfort of their larger seating and cold air-conditioning! All in the name of keeping the self-drivers company, I'm sure! A dinner venue with a difference, on the breezy platform of Normanton Railway Station. A great night was had by all.

Friday and it was all aboard "The Gulflander" for a round trip to Critters Camp and back. Ken was full of information and stories and Glen looked after us passengers like silkworms, plenty of icy-cold water on board because, guess what? It was HOT! Back on the bus to Croydon and the numbers on the bus are smaller again. Lunch at Lake Belmore then a wander through the history of Croydon at the True Blue Visitor Centre and a fascinating discussion led by Hirani Kydd on water usage and gold in the pioneering days.





Savannah Guides discussing river systems.

A quick stop at Cumberland Chimney on our way to Georgetown, make no mistake dear readers, elbows are out and so are the binoculars. It's Twitchin' time. No quarter is taken or asked for, this is serious stuff. Our barbecue dinner at Latara Resort Motel is held inside because, you guessed it, It's HOT! After dinner a large circle gathered out the back of the Motel (yes, there was a cool breeze) for what turned out to be a mini Savannah Guides Jam Session!

On Saturday, we embarked on a fabulous Treasure Hunt through The Terrestrial Centre. After a short walk down the dry Etheridge River bed, we sat in the shade under a road bridge and listened to an amazing explanation of rivers and their influence, complete with sand drawings, over time by our president Michelle Whitehouse. Even I understood!

Saddle up! Onwards to Bedrock Village, Mt Surprise. There are six people left on the bus, everyone else is crowded into private vehicles. It's lovely to see everyone getting along so well. We hear from Peter and Adam from Flat Creek Station, both of whom could have

talked all day in my humble opinion. Fascinating what they are doing with their cattle and the many different breeds. Friend of Savannah Guides, Wendy Kelton had a tough act to follow with "Mosquitoes – the Good, the Bad and the In-Between" but her work is amazing and important to the health of all Australians. Very good Friend of Savannah Guides, Sarah Swan gave a wrap up of her observations and thoughts of the previous days. Finally, a reflective walk along Elizabeth Creek discussing "Healthy Creek Systems: Past, Present and Future" with Bedrock Owner and Senior Savannah Guide, Joe Lockyer.

Free time and a last opportunity to spot birds, sneak up on other Teams' sheets, cajole information, bribe judges, make dodgy drawings and all the other general good fellowship stuff that comes out of a Twitchathon. Formalities got underway with Bram introducing us to Founding Member and Life Member of Savannah Guides – Bruce Butler, who had joined us for the evening with his wife Niccy. What an honour for us all. Madame President, Michelle Whitehouse, accredited Emily Monacella and Shaun Brown from Red Cat Adventures as Savannah Guides. Lots of tears, hugs, and congratulations.

As the sun went down out came some seriously delicious nibblies! Dinner of course, was Bedrock's famous Wood-

Fired Pizzas, followed by their equally famous, Vanilla Slice! The Jam Session got underway, and a highlight was JR singing a heartfelt rendition of "Seasons in the Sun" ... it was beautiful. CRACK! ... then some serious gravel-travelling whip-cracking by Darren Corke! I'm sure that wasn't part of the plan!

Sunday morning and "The Magic Keys to Guiding" from Ivor "Birdman" Davies went down very well. We then gathered ideas from around the room on how to continue our Professional Development and where we can gather resources. Now – the moment we were all waiting for, the results of the Twitchathon! I don't know who won, I don't care. It was great fun and we all learnt something more about birds. Shaun Brown from Red Cat Adventures was a complete convert and his partner, Emily Monacella, also from Red Cat Adventures, was chosen as the person who gained the most from the Twitchathon.

All too soon it's time to turn our heads for home. The bus was full again and it once again sounded like mating season at a goose farm. That's always a good sign. See you at the next Field School.



# Impacts of Fire and Storms on Influencing Change at Yarrangobilly

Regina Roach

Yarrangobilly Caves is located in Kosciuszko National Park in the NSW Snowy Mountains. The Yarrangobilly karst area is 11 kms and up to 1.5km wide and has over four hundred cave entrances. In the tourist precinct, six caves are designated as show caves and two other caves are used as adventure caves.

The fire front which ravaged the Yarrangobilly valley on 4 January 2020 was followed by several wind and storm events which exacerbated the earlier environmental changes and impacted significantly upon the infrastructure and tourist activities at the caves.

This article views some of the changes which followed, and the challenges presented to management as they sought to either repair or upgrade the damaged infrastructure.

Simultaneously NSW National Parks and Wildlife Service' are placing greater emphasis on increasing revenue from its park assets. During 2020-21 the public were invited to comment on the two development proposals which would impact development at Yarrangobilly - the *Draft Mountain Bike Trail Master Plan* and the *Yarrangobilly Caves Draft Precinct Plan*. This combination of all these factors will result in changes at Yarrangobilly.



Stage 2 - Clearing of dangerous burnt trees. Stage 1 focused on creating access to Yarrangobilly Caves. The new bridge has been constructed. It provides access to the picnic areas and is higher, wider, and fireproof. The previous bridge burnt in the fire.



Walking track to South Glory Cave after the fire. Extensive spalling and many new fossils are now evident. The 100-year-old pines which had been blown over in a storm about 6 years previously were partially burnt in the fire and are lying above the path.



Due to a combination of loose soil, little vegetation, and a major rain event the pines were displaced onto the path. This resulted in the closure of the South Glory Cave and limited access to the walks and Thermal Pool. The pine trees were sectioned and moved from the path and the fence repaired.



This is Rules Creek. The Yarrangobilly Caves water supply / hydro power pipeline is located underneath this track. The 1956 asbestos hydro line burnt or was damaged by falling trees in the fire. Some pipes needed to be retrieved from above the creek - a difficult asbestos clean-up task. As visitors drive down to the caves, they clearly view the replacement hydro line scar in the bush.



These are the replacement hydro line pipes. Due to the steepness of the site the pipes were stored on the Caves' Exit Road until the trench was dug. As the trench was located above the Entry Road this necessitated the closing of road for short periods so displaced rocks could not land on any vehicles.



Rules Creek Dam with silt - Yarrangobilly's water and hydro power source. The rain event, after the fire, when the hills had little vegetation cover deposited large amounts of silt into the waterways and dam. This limited the capacity of the hydro plant to produce electricity. The dam was unable to be desilted during the winter because the wet ground and steep terrain made it too dangerous for the excavator to access the site. The lack of power limited Yarrangobilly's ability to utilize all show caves by using electricity.



Yarrangobilly Caves was closed for some time after the fire, the storm limited access to the South Glory Caves, then COVID lockdown occurred, then 'freedom time' and visitation records were smashed. However, lack of available electricity resulted in many show caves being unavailable for touring so the small, highly decorated delicate Jillabanan Cave was showcased for tours as it required less electricity, and a greater number of tours could be accommodated in it. This half of the stalagmite was cut and removed from the cave in 1992 to enable the cave to become wheelchair accessible.



This is the other half of the stalagmite located in situ in the cave. Not only was black ash tracked into the cave on people's footwear, but the continual lights caused a significant lampenflora issue. The black lampenflora grew on the walls and ceiling, ash/dirt coated the floor and slashed onto formations. Later cave cleaning commenced under the guidance of volunteers, John Brush, Marj Coggan and Beth Little who showed guides how to clean caves and the lampenflora prevention techniques. Future issues like this may be averted if there is recognition that caves do have a limited carrying capacity and caves /karst are fragile ecosystems. Will this cave recover, or will the damage be permanent?



Sandstone blocks in a limestone environment!! These limestone blocks and a new footbridge located near the Yarrangobilly Visitors Centre are part of the cultural walk as proposed in the *Yarrangobilly Caves Draft Precinct Plan*. This work was completed while the Plan was in the public consultation phase. The location of the proposed walk is very close to the creek with sediment likely to enter the Rules Creek influx. Maybe its route requires changing?



Thermal Pool after the first major rain event. The steep terrain, loose soils and the vegetation denuded slope resulted in soil sliding into the pool. The large Eucalyptus trees which once grew on this slope were removed after damaged sustained in the 2003 fires. Only their stumps remain.



Thermal pool a year after the fire. Massive regeneration of trees and vegetation rehabilitation beside the stairs. To place the *Yarrangobilly Caves Draft Precinct Plan* and the *Draft Mountain Bike Trail Master Plan* into perspective. The Draft Precinct Plan proposes a large covered shade area beside and parallel to the cement of the far side of the pool. The new toilet block and changerooms will be located behind the seat on the swampy ground where the seeps up from either underground (the water is 27 degrees and rises from about 270m underground) or from the old course of the Yarrangobilly River.



Yarrangobilly River is located 40m from the thermal pool. The water from the Thermal Pool flows into the Yarrangobilly River here. The Draft Precinct Plan's proposed two onsens with gas heated water be located here beside the river. Both would have been washed away in the first rain event. The proposed *Draft Mountain Bike Trail Master Plan* proposed the construction of a bridge at this location which has Aboriginal significance. This Draft Mountain Bike Plan is still 'alive/active' although it was not selected initially for funding.

The *Yarrangobilly Caves Draft Precinct Plan* results have not been released yet. The future? How to incorporate the past, keep the aesthetics and move forward will be a challenging balance on this karst landscape.

# Natural values assessment and environmental monitoring of Naracoorte Caves

Elizabeth Reed<sup>1,2</sup>

<sup>1</sup>*School of Biological Sciences, The University of Adelaide, Adelaide, SA, 5005.*

<sup>2</sup>*South Australian Museum, Adelaide, SA, 5000.*

## Background

Caves contain some of the most fragile terrestrial ecosystems on Earth and are inherently vulnerable to human impacts (Gillieson, 2021). The biodiversity of caves is intimately tied to the cave environment, with a vast diversity of unique organisms and habitats. Caves are also remarkable windows on the natural world, providing a glimpse into the past, present, and future. As archives of the past, caves accumulate long term records of ancient environments via sediments, fossils, and speleothems. These records can be used by scientists to inform modern and future patterns of biodiversity and climate change (Reed, 2021).

Today, caves face several key conservation challenges including increased tourism and global warming. In the 2020 World Heritage Outlook Report (Osipova et al., 2020), the International Union for Conservation of Nature (IUCN) identified climate change as the major future threat to World Heritage sites. However, the impact of this threat to cave and karst systems is still emerging as a topic of research. Effective management of cave sites relies on thorough knowledge of the distribution, variety, and conservation status of its natural values. Impacts to cave values (anthropogenic and natural) are cumulative and sometimes difficult to detect until significant; therefore, collection of scientific data is critical to understanding baseline conditions and managing change.

## A new project for Naracoorte Caves

Naracoorte Caves in the Limestone Coast of South Australia is World Heritage listed for its vertebrate fossil deposits (Figure 1) which tell the story of biodiversity in south-eastern Australia over the past 500,000 years (Reed, 2021). The Park has other significant natural (Figures 2 and 3) and cultural values and has been an important regional tourist attraction for over a century. Interpretation and education programs at the caves focus on the World Heritage fossil values and other natural heritage such as bats and geology. Scientific research has been ongoing at the caves for more than fifty years. Speleological exploration has been central to fossil site discoveries and documenting cave features.

It seems appropriate that in this International Year of Caves and Karst 2021 a new conservation project has commenced at the Naracoorte Caves. Earlier this year the University of Adelaide was awarded a grant under the *Australian Government's Australian Heritage Grant Scheme*. This project (*Natural values assessment and conservation monitoring of Naracoorte Caves*) is a collaborative venture with the National Parks and Wildlife service of South Australia and focusses on natural values assessment and science-based conservation monitoring to inform management of this globally significant site. The aim of this paper is to provide a broad overview of the project.

The key objectives of the project are:

- 1) conduct a detailed natural values assessment and inventory process to capture data on the known range of values, their condition and conservation issues.
- 2) establish ongoing science-based conservation monitoring to ensure baseline data are available to inform management and sustainable development.
- 3) encourage engagement and understanding of the park's natural values through targeted communication activities disseminated to a broad audience.

The project aligns with several key goals in the park management plan (Department for Environment and Heritage, 2001) namely:

*Fauna* - encourage research on cave fauna and produce an inventory of species.

*Caves* - establish schedule of cave values; establish a monitoring program around cave usage; maintain records of cave development and usage.

*Presentation and marketing* - incorporate research into interpretation; establish research on visitor impacts.

*Research and monitoring* - establish a program to monitor conditions and change; provide ongoing advice on scientific progress and management of the park.

It also aligns with the IUCN World Heritage Outlook assessment 2020 for the Australian Fossil Mammal Sites (Riversleigh/Naracoorte) which recommends that a sustained, collaborative scientific monitoring program should be established for Naracoorte Caves to “keep track of the conservation status of natural values” (IUCN 2020).

## Project plan

The project will run until September 2023 and involves a multidisciplinary team including researchers with expertise in palaeontology, sedimentology, entomology (specifically cave invertebrates), geology, microbiology, ecology, botany, physics, speleology, and karst management. The Naracoorte Caves management team and other staff will also be involved in the project management, fieldwork, and public outreach activities.

Core activities for the project will include detailed scientific assessment of the natural values of the caves via desktop data analysis, physical inspection, documentation and values mapping, and collection of baseline data to quantitatively inventory values. The aim is to first identify and then associate particular values with specific parts of the cave system. The first ongoing environmental monitoring program for Naracoorte Caves will be established with this project. The funding has allowed for the purchase of datalogging equipment to measure cave conditions including temperature, humidity, air flow, light, speleothem drip rate and

carbon dioxide. This equipment will remain the property of the park for future use and staff will be trained in its operation. Data obtained from this project will be used for a range of analyses that will be applied to questions around several key areas such as characterising the 'natural' environmental conditions in the cave system, determining the degree of anthropogenic impacts on the caves; determining conservation and condition status of the values, and assessing future conservation needs and management strategies.

This new project is timely as there is an urgent need for assessment of the extent and condition of the park's natural values. The management plan is now 20 years old (2001) and will likely be updated within the next few years. Currently there are insufficient scientific data related to the current status of the park's natural values to inform this process; part of which includes and reviewing cave classifications and access zoning. This project will provide the foundation data to inform these review processes. Recent advances in scientific knowledge, and the acquisition of new (unclassified) caves, further exacerbate the information gaps in the existing plan.

Ongoing environmental monitoring established during this project is needed to monitor change, which will be critical considering the potential impacts of climate change. Managing and understanding visitor impacts is vital for long-term conservation of the site. Decision making regarding cave access and sustainable business growth will be informed by this research. Communication activities associated with the project will focus on promoting an understanding and appreciation of all natural values at the park. Visitor enjoyment and understanding of the site's values will be improved when results are integrated into on-site interpretation and promotion.

Provision of this funding by the Australian Government will enable critical conservation management research to be undertaken at the caves and deliver a framework for monitoring and assessing the natural values of this globally significant World Heritage Area into the future.

#### References

Department for Environment and Heritage (2001): Naracoorte Caves National Park Management Plan. Department for Environment and Heritage, Adelaide.

Gillieson, D. (2021) Caves: processes, development and management. John Wiley and Sons.

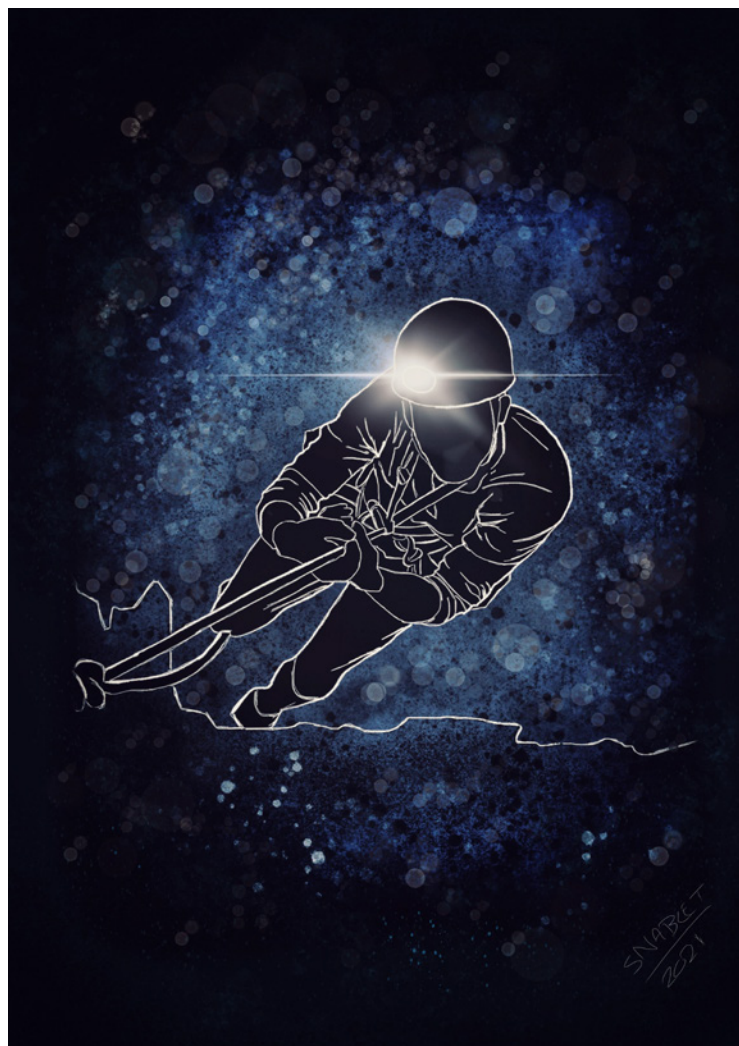
IUCN (2020) Conservation Outlook Assessment, Australian Fossil Mammal Sites (Riversleigh/Naracoorte). (<https://worldheritageoutlook.iucn.org/explore-sites/wdpaid/61604>).

Osipova, E., Emslie-Smith, M., Osti, M., Murai, M., Åberg, U., Shadie, P. (2020). IUCN World Heritage Outlook 3: A conservation assessment of all natural World Heritage sites, November 2020. Gland, Switzerland: IUCN.

Reed, E. (2021) World Heritage values and conservation status of the Australian Fossil Mammal Sites (Riversleigh / Naracoorte). Zeitschrift für Geomorphologie, Supplementary Issues, 62(3), 213-233.

## An entry into the International Year of Caves and Karst Art Competition

### Title - Ability to Swing



Created by -  
Peter "Snablet" MacNab - NSG NZSS

Statement - inspired by swinging into action above a spray lashed misty void in Middle Earth.

Medium - Digital Art using Procreate & Apple Pencil  
Date - 4th November 2021

**DEADLINE** >>>>>

#### DEADLINE FOR MARCH JOURNAL

Could you please send through any articles for the **March edition** of the journal by the second Friday of February. **Friday 11th February 2022.**



Startled by our approach, a group of horses bolt from where they were feeding beside a shallow water-filled doline.

## **Kosciuszko National Park Wild Horse Heritage Management Plan** *aka Kosciuszko National Park Feral Horse Protection Plan*

John Brush

Yarrangobilly Caves is located in Kosciuszko National Park. In a modest win for cave and karst protection, representations by the cave and karst community have resulted in an additional 3606 hectares of the Yarrangobilly and Cooleman-Upper Goodradigbee karst areas being added to horse removal areas in the Wild Horse Heritage Management Plan for the Kosciuszko National Park (KNP). The final version of the plan was released by the New South Wales Government on 24 November 2021.

Under the plan, horse numbers in the KNP will be reduced from 14,380 (as per a survey in 2020) to 3000 by 30 June 2027. Horses will be kept out of the 47% of KNP that is currently horse free. In addition, they will be removed from a further 21% of the park, but will be allowed to continue occupying the remaining 32% - covering an area of approximately 220,000 hectares.

The new management plan was a requirement under the *Kosciuszko Wild Horse Heritage Act (2018)* that was championed by John Barilaro, until recently the NSW Deputy Premier. The legislation overrides the *National Parks and Wildlife Act 1974* and the KNP Plan of Management and enshrines protection of horse populations within KNP. How a feral animal could be granted heritage status within the boundaries of one of the most environmentally diverse and sensitive national parks in NSW is bewildering - but that is a discussion for another time.

A draft version of the plan that was released for public comment at the beginning of October generated

considerable community debate and the National Parks and Wildlife Service (NPWS) received more than 4000 submissions, including from ACKMA and several ACKMA members as well as from the Australian Speleological Federation Inc, a number of caving clubs and individual cavers. I have read several of these submissions and they presented well-reasoned and soundly-based arguments for protecting a range of sensitive areas, including the full extent of individual karst areas, as well as their entire catchments. This approach was consistent with the current KNP Plan of Management (2006, as amended) and the previous KNP Wild Horse Management Plan (2008).

That the new plan was finalised and implemented within three weeks of the end of the 30-day public exhibition period is remarkable. In fact, this was almost as fast as a mob of brumbies<sup>1</sup> galloping through a delicate alpine bog. In just a couple of weeks NPWS staff read, summarised and considered all submissions before briefing the NPWS Executive and Environment Minister Matt Kean.

Given that early in the public review period, Deputy Premier Barilaro stated that he thought 3000 horses was "about the right number" for KNP and several weeks later, Minister Kean said the plan "strikes the right balance between protecting the heritage value of the wild horses and maintaining the exceptional conservation values of KNP", the outcome was fairly predictable. Nevertheless it was still extremely disappointing for many of us who made submissions that few amendments were made to

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<sup>1</sup> or feral horses as many ACKMA members prefer to call them.





Trampled creek banks near the western edge of Cooleman Plain.

the proposals contained in the draft. In fact there were only three significant amendments and two of these involved the Yarrangobilly and Cooleman karst areas. The third, an amendment to re-zone river flats beside the Murray River as a horse retention area appears to have been a trade-off for protecting more of the karst areas.

Despite the many disappointing features of the management plan, the cave and karst community should take some comfort from the fact that their efforts have helped to achieve modest additional protections for the Yarrangobilly and Cooleman areas.

At Cooleman, which I regard as including the Upper Goodradigbee karst area, an additional 1044 hectares has been included in the horse removal area. Importantly, this now includes limestone areas from upstream of the Cave Creek waterfall to the Goodradigbee River and then approximately two kilometres down that river. Some additional areas of catchment have also been included.

At Yarrangobilly, an additional 2562 hectares has been added to the horse removal area. The area is east and north of the Snowy Mountains Highway near Yarrangobilly Village and means that all of the Yarrangobilly limestone and some additional catchment is now covered. Unfortunately, a substantial part of the upper catchment of the Yarrangobilly River was not included.

There was no change in the status of any of the other karst areas in KNP. This means that the small Indi, Marble Creek/ Cowombat Flat and Cooinbil karst areas remain wholly in horse retention areas, with the Indi area being the most significant of these in terms of karst hydrology, caves and other karst features. The two remaining karst areas (Jounama Creek and Lobs Hole/ Ravine) are in areas that are currently horse free and will be managed to retain that status.

Now that the plan has been implemented, it remains to be seen how generously the NSW Government will fund the horse removal work, how progress towards achieving the goal of 3000 by mid-2027 will be monitored and how effectively horses can be kept out of the exclusion areas. It is also sobering to note that between 2008/9 and 2016/7, a total of 3003 horses were removed from KNP, an average of just 375 a year. Using numbers provided in the plan, reducing the population from 14,000 to 3000 in five years, will require the removal of 2,200 horses each year. However, this does not take into account the growth in numbers since 2020 or the net birth rate over the five year life of the plan. Taking those factors into account, around 3000 horses a year will need to be removed. A very substantial number indeed.

As an indication of the current horse situation at Cooleman, the attached images were taken during a mid-November 2021 trip by the Canberra Speleological Society Inc. Some people had claimed that no horses remain on Cooleman Plain after horse trapping and removal operations by NPWS over the last couple of years. Clearly, that is not so. During an 8 kilometre walk around the northern part of the plain (an area of about 500 hectares), we saw more than 100 horses in total, including one large group of about 50 that were clearly very unhappy with our presence on a part of the Cooleman area that is not commonly visited by humans.

On announcing the final plan, Minister Kean was quoted as saying "Kosciusko (sic) National Park is a very special place that needs to be protected for future generations". One can only hope that that this proves to be true. How the NSW Government manages both the removal of feral horses and the restoration of horse-damaged areas in KNP over the next five years will provide some good indicators of how well the park is being protected for future generations.



Horses galloping across a delicate spring area near CP26, one of the largest caves on the northern part of the plain.



Another startled group. Note the number of foals.

# ANDYSEZ 62 – *Mondmilch*.

Andy Spate

There have now been 125 ACKMA Journals – nearly half have had ANDYSEZs (and many other contributions from me).

So here is another one!

What, I hear you cry, is *mondmilch*? You may have heard the term ‘moonmilk’? The term comes from Germany where, and in many other countries, it has been used for medicinal purposes – probably for millennia. We will come back to this later.

Hill and Forti (1997, as I have said before this book, this book should be in every show cave office for the use of staff) state on page 81:

*Moonmilk is a term used to describe aggregates of microcrystalline substances of varying composition. Moonmilk is soft, plastic, and pasty when wet, but crumbly and powdery when dry. Wet moonmilk looks and feels like white cream cheese when rubbed between the fingers; dry moonmilk resembles talcum or chalk powder. [In Australian conditions the pasty form will sometimes set hard.] ... Moonmilk is a speleothem. Not a mineral.*

Hill and Forti discuss moonmilk at length pointing out that moonmilk is found in caves from alpine to tropical environments being more common in the latter. Palmer (2007) also provides a good discussion (page 298). Hill and Forti list four ways in which moonmilk can originate. An edited version of their list is:

1. *Freezing of limestone by water ice causes carbon dioxide to be expelled from the limestone, and a milky fluid is produced on the limestone wall. [Won't work for the tropics!]*
2. *Moonmilk is formed as part of the life cycle of microorganisms. Species of bacteria, algae, and fungus have all been isolated from moonmilk deposits ... However other authors ... did not find microorganisms ... It appears then, that microorganisms are a possible, but not essential factor in the formation of moonmilk ...*
3. *Moonmilk is a disintegration product of bedrock or speleothems ... This is the most frequently used and oldest explanation of the origin of rock milk, the theory first having been proposed by Lang in 1708: "Water ... in internal cavities appears to contain salts and superficial vapors behaving as solvents which substantially convert to moonmilk." This explanation does not adequately account for moonmilk flowstone issuing forth from cracks in the wall, nor does it account for the fact that moonmilk often contains silica and other impurities when the limestone bedrock may be free of these impurities ... [But where did the impurities come from, then?]*
4. *Probably the best theory – the one that explains the majority of moonmilk deposits – is that moonmilk precipitates directly from groundwater as do other speleothems such as stalactites and stalagmites, but that, for some reason, the crystals in the deposit never*

*grow large. This theory readily applies to magnesium carbonate minerals such as ... it is the nature of these minerals to form as finely microcrystalline to cryptocrystalline deposits. The existence of non-carbonate moonmilk is, from our point of view, also an important factor in favor of this theory, because it implies that moonmilk formation does not have to be strictly related to a defined chemical reaction, but only to particular physio-chemical conditions. [Known as having a bet each-way.] However, this theory does not readily explain why many moonmilk deposits are composed of minerals such as calcite and aragonite which usually form as microcrystalline or crystalline deposits.*

Gillieson (2021), in his splendid new book, has this to say about moonmilk:

*Moonmilk, a soft powdery calcite, has attracted a lot of attention primarily because of its unusual chemical composition and its use by humans. The precise reasons for its microcrystalline habit are unclear. (page 149)*

Well – there you have it. And probably as confused as I am!

Moonmilk was mentioned as far back by Agricola in 1546. Harking back to explanation #2 – microorganisms – some forgotten someone I was with in Jillabanan Cave, Yarrangobilly, many, many years ago noticed moonmilk on the bare limestone wall leading up to the ‘Crystal Grotto’ and suggested, having seen early 20th Century photos of the wall with little or no moonmilk, but now seeing a relative abundance wondered whether we humans could ‘infect’ one cave with microorganisms – food for thought. I have been unable to track down early Jillabanan photos.

Gillieson has this to say on this issue:

*The sudden appearance of Mondmilch (moonmilk) in some caves may be related to the introduction of bacteria foreign to the cave by speleologists (Derek Ford, pers. comm.) (page 273).*

Could it have been Derek and I in Jillabanan years ago?

Right – I have been avoiding the medical aspects of moonmilk thus far so let us take a look. Gillieson has this to say in this regard:

*The healing properties of caves and their contents have been highly regarded for millennia. Crushed stalactites were used in Chinese traditional medicine as early as the fourth century BCE. They were used as an antacid, to suppress coughs, to stop bleeding and to encourage lactation in nursing mothers. (page 324).*

Here I must stop and confess to a shameful event. At Yarrangobilly I was chatting with a young Indigenous man from the local Wiradjuri peoples. He told me that the Wiradjuri had been coming to Yarrangobilly to collect calcite for medicinal purposes. I (thankfully mentally) dismissed this as nonsense. If they did visit, they left

## ANDYSEZ 62 - *Mondmilch* continued

little trace of their coming. And then I started to think about moonmilk and the fact that calcite is an antacid. I am so glad I didn't voice my stupid, off the cuff, thoughts!

But let's look briefly at the history of moonmilk as medicine. What follows is an edited page of Shaw's page 224:

**Mondmilch** ...was commonly used as a treatment for eye diseases, for drying up of abscesses and wounds and for increasing the flow of mother's milk. It used to be sold also at county fairs as a medicament to admonish evil spirits and to bewitch loved ones. ... In veterinary medicine, the Swiss used mondmilch to reduce abscesses, to increase milk production in cases of udder disease, and the protect animals from mange. According to Gesner (1555):

Certain people superstitiously and foolish think it beneficial to use for any patient's disease, for which reason it is sought in the Mondmilchhlock Cave for that purpose.

... DeBoodt (1609) added that it is of special benefit to a patient if his name is mentioned when the mondmilch is taken from the cave. ...

Sennert (1667) used mondmilch in several prescriptions, including one to prepare a lozenge against the burning of the stomach (an antacid), a galactophore lozenge for wet-nurses, a powder to dry and heal ulcers and as a cometic to beautify the face and hands. [You can Google galactophore for yourselves] ...

De Costa (1557) recorded its continued use for "hemorrhages, ... diarrheas, dysenteries, the gravel, [??] malignant fevers & ... for the drying up of ulcers of all kinds'.

It appears that in the western world calcium carbonate from caves ceased to be used medicinally about the middle of the 18th century ...

This brief history doesn't mention the Asian use of moonmilk that goes back millennia as Shaw notes. But does it have any medicinal relevance today? It sure does!

The tetracycline collection of antibiotics – some used to treat eye problems – sound familiar? – originated as organics collected from soils and cave sediments! I cannot find a reference to tetracyclines from caves – I had one years ago but here are two for you to look at:

[https://researchbank.swinburne.edu.au/file/048bf8e2-0337-4ed2-9972-4ff572dd1de1/1/hasina\\_mkwata\\_thesis.pdf](https://researchbank.swinburne.edu.au/file/048bf8e2-0337-4ed2-9972-4ff572dd1de1/1/hasina_mkwata_thesis.pdf)

<https://core.ac.uk/download/pdf/55290962.pdf>

References (all are remarkable texts).

Hill CA and Forti P, (eds) 1997, *Cave Minerals of the World*, (2nd edition), National Speleological Society, Inc, Huntsville, Alabama.

Palmer AN, 2007, *Cave Geology*, Cave Books (an affiliate of the Cave Research Foundation), Dayton, Ohio.

Shaw TR, 1992, *History of Cave Science: The exploration and study of limestone caves, to 1900*, (2nd edition), Sydney Speleological Society, Sydney.



## Winner of the Photography Category of the IYCK Competition



### **Croesus Wandering - By John Oxley**

*Cave: Croesus, Northern Tasmania*

*Date: October 2020 Model: Ciara Smart.*

*Camera: Canon 600D – 2-second exposure - lit by a single LED light directed at the camera.*

# Capricorn Caves - Art Retreat

Amber Countryman – Capricorn Caves

If you are reading this journal, you are already obsessed with caves. Me too! It's hard to believe there are people out there who haven't experienced them, let alone spent a decent amount of time learning and exploring everything they have to offer. There is so much they have to offer isn't there?! I'm not just talking environmental significance. They offer wellness to those of us who need the wild in our lives. They offer backdrops for photographers who stand in awe. They offer places to hide for those of us searching for some solitude. They offer acoustics to those of us with well-shaped vocal cords. They offer many things; however, I'd really like to talk about the inspiration they offer to visual artists.

Before I was employed as a tour guide at Capricorn Caves, I spent some time as a professional artist, an environmental artist. Using art as my tool to highlight my concerns to the general public, in an effort to make the world a better place. As an eco-warrior I am continuing to fulfill my purpose, using the privilege of tour guiding to have positive environmental impact on those who visit. As a creative coming into the cave environment, I am constantly bombarded with inspiration. This place fills me with wonderment, so much so that I want to share that wonderment with other creatives and give them the opportunity to fall in love with this place as I have.... and spread that love once they leave.

We at Capricorn Caves have just held our first art related event, inviting artists to take part in a three-night, immersive Creative Retreat. We were able to secure grant funding from the Regional Arts Development fund to pay three facilitating artists and three arts workers. The artists designed workshops that were able to take full advantage of the surrounding environment, including the limestone, dry rainforest, and fauna - both past and present.

Erin Dunne guided eager participants through the experimental drawing process, using charcoal from our fire damaged forest along with more conventional art materials to create the most talented celebration of the caves ecosystem I have ever witnessed.

Roxanne Oakley, a Gangulu woman, showed her group how to use art to connect to country. In addition to block printing and traditional painting, the group experienced Didirri (deep listening), yarning circles and walking on country. This spiritual element to Roxanne's workshops will be remembered for a long time to come.

Noel Brady, a sculptor, brought several different materials and tools for his group to try. Once he had demonstrated techniques and possibilities, he allowed the group to wander and find their own inspiration from the environment before them. The diversity of the final works showed how much inspiration is to be found and how we all connect to different things in different ways.

Our intention at the Capricorn Caves is to continue the celebration of the cave environment, emphasizing it's significance, through the arts. Placing value on wild places that need our care and protection for the long-term future to benefit each and everyone of us.



**The Winning Entry of the Creative Arts Category  
of the IYCK Competition**

**Title - Harwoods Hole**



*Created by - Peter "Snablet" MacNab - NSG NZSS*

*Statement - Inspired by the thrill and trepidation of descending into the void*

*Medium - Digital Art using Procreate and Apple Pencil'*

*Date - 14th November 2021*

