



FUSSI

Newsletter

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DAVID LIVING THE DREAM... OF A TURTLE!

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Turtle formation, Coppermine Cave,
Yarrangobilly, New South Wales.

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Editor, FUSSI or the Federation.*

A message from your Editor:

Thanks so much to Sarah Gilbert who contributed to yet another newsletter with a great article, including some outstanding images, of the Dreamland section of Corra Lynn cave.

This article was prepared months ago and in good time by Sarah, but it has taken this long for me to find the time to put this edition of the newsletter together because of lack of articles from other members.

It takes a lot of effort by a few to arrange and execute trips for members – please show your appreciation by writing an article – it doesn't have to be long – just one or two pages is all it takes.

We are looking for articles that tell us if you enjoyed the trip (or anything that you did not enjoy), if it was your first trip what did it feel like, did we provide a safe and enjoyable experience for you, if you previously had fears of entering caves how did you feel in once in the cave, what were your emotions, what were the highlights for you, etc?

Or you can just provide images to me by email. I see members taking pictures on trips but they do not submit them for inclusion in the newsletters. If you did, that would help other people who do not have any images to submit with their articles.

If you submit these to the newsletter it is a lasting record that many people can get pleasure from, and you will always be given credit for these. Don't just provide images to your Facebook page and/or the FUSSI Facebook page.

The newsletter needs these images, and has a far wider audience as FUSSI newsletters are available for reading by anyone on the Internet.

This is what it takes to produce an interesting and enjoyable article for your club, which even your overseas friends and family can share. And writing articles for your club is a good look on any resume – it demonstrates your eagerness to contribute to the group.

Neville.

PAST TRIPS

Sun 5th Nov 2017

Yorke Peninsula - Corra-Lynn cave (Dreamland section)

Participants: Thomas Varga (trip leader), Sarah Gilbert and Neville Skinner. Also present on a separate CEGSA trip were Ian Lewis, Graham Pilkington and two State Heritage photographers.

Sat 3rd - Sun 8th Feb 2018

Yarrangobilly caves, Snowy Mountains

Participants: Clare Buswell, Heiko Maurer, Tim Featonby, Garry Smith, David Mansuetto, Neville Skinner, and esteemed photographer Garry K. Smith (Newcastle & Hunter Valley Speleological Society).

Sun 4th Mar 2018

Murray River trip – Punyelroo & Gloop caves

Participants: Clare Buswell (trip leader), Thomas Varga (boat operator), Nicole Schiller, Dee Trewartha, David Mansuetto, Neville Skinner, William Cooper, Nathan Ball, Elise Kalderovskis, Imogen Marshall, Matthew Timms, Emily Costello, Hannah Stampke, Lewis Rosenberg, Parish Hughes and Kendall Whittaker.

WANDERING IN DREAMLAND

Sun 5th Nov 2017

Text by Sarah Gilbert

Trip participants:

Thomas Varga (Trip Leader), Sarah Gilbert and Neville Skinner with cameo appearances from Ian Lewis, Graham Pilkington and two State Heritage photographers.

With an early morning rendezvous in Saint Peters the three of us headed towards The Yorke (do I sound like a local yet?) listening to the Blues. We made the obligatory coffee/breakfast stop in Port Wakefield and met up with Ian and Graham who were heading the same way. We saw each other again in Curramulka for introductions with two photographers from State Heritage who were interested in documenting the cave. We entered the cave ~11am and left the photography party to gear up. We never saw them again...

We went the usual route from the Entrance to Grand Central, down the road and through the Letterbox. I then had plenty of time to study the soles of Thomas' boots with endless commando crawling through the escape tunnels dug by Corra Lynn's inmates of the caving past. There's been an impressive amount of digging done in this cave. It still has dig potential, apparently. Maybe next time.

We finally made it to the Portal, with its homemade rope ladder designed by someone with longer legs than mine. Thomas The Tall went up first and made it look almost easy. I however, was slowed down a rung below the top. No matter how much I swore, my right leg wouldn't grow an extra 3 inches nor did I spontaneously develop the muscle to do a one handed chin up. Luckily Thomas took pity on me and rigged a customised foot-loop, and I was up. After I'd shown Neville how not to do the climb, he made it up in no time.

We stopped for lunch at the top and contemplated the way on. Once we found the Freeway to orientate ourselves we headed off with the map in hand to discover the wonders of Dreamland. We reached an area with relic, eroded flowstone which formed quite extensive false floors. There was plenty of gypsum on the walls and even a couple of stalactites. This was an area of the map where the white levels overlay the black levels overlaying grey levels, making it a little harder to navigate on paper. Mental note to self, remember to bring a compass next time. We'd pretty much reached our turnaround time by then and enthusiasm was disappearing with our sense of direction, so we started heading back collecting our bread crumb trail of caving gear along the way.



Sarah examines the coral while Thomas explores The Freeway



Large amount of coral formation in The Freeway



Twin Stalactites in an otherwise undecorated chamber

As a short side trip we walked to the end of The Freeway and discovered the best decorated region we'd seen so far. Walls and floor covered with gypsum flowers and needles. Well worth the detour.



Wafer thin sections of black stained rock on the ceiling



Thomas & Sarah check out gypsum creations forming on the floor



Gypsum creations covering the floor



Crystals covering the rocks and walls of the western end of The Freeway

We then retraced our steps left, right, right, left, down the Portal, crawl, crawl, crawl, squeeze through the Letterbox, walk, stoop, walk and out again into the daylight at around 5pm. Overall a fun trip with enough hard work to give a sense of achievement.



Sarah points out large piece of gypsum growing out of the floor



Thomas waits for Sarah to leave before him



Descending The Portal



Are we there yet?

REVIEW OF ALTERNATE CEDUNA ACCOMMODATION

Text & Photos by Neville Skinner

En-route to the Nullarbor last September I took the opportunity to check out the “A1” Caravan Park, since I had been unhappy with the squalid state of the rooms in the caravan park on the eastern-most side of town.

The A1 Caravan Park is a mixture of purpose built standalone buildings and Atco huts, which are not much to look at because of the tannic stains caused by falling eucalypt leaves. However, on the inside they are spotlessly clean. I stayed in one of the basic rooms and for \$65 a night it offered Queen size bed, TV, fridge, microwave, en-suite and linen. I had no complaints with the room – see pictures below. And the park has a very large rainwater tank for clients use, so topping up fresh-water tanks is not a problem.



The room that I stayed in



Rainwater tank (tap to left of top-centre of wall)



BBQ, play area and shared shower & wash block



Huts on one side and purpose built on the other (with space to manouvre trailers & vans)

I will be staying here in future and have no problem recommending this place to others. The A1 Caravan Park is at 41 McKenzie Street (almost opposite DEWNR offices) and can be contacted up until 9pm on 08-8625 2578. Their website and more information at <http://www.a1cabinsceduna.com.au/>.

THE CASE OF THE EXPLODING TORCH

Author: Neville R. Skinner

Last month, whilst preparing for a dive (I was already in my dry suit) at Fossils cave, a water dragon or the like, of a reasonable size about 30-40cm long and maybe around 10cms across the body, came out of the grass surrounding the doline, shot down the vertical rock face and then travelled about 50cms in a horizontal direction at an incredible speed into one of the grass covered holes in the northern side of the doline. It appeared to be of a black & white appearance, or should I say a black & white blur, because this creature moved so fast that it was difficult to capture an image on the retina. There were four of us present and I was pleased that one of the other three also reported seeing it, but was also not able to register any detail(s). At that point I decided to withdraw from the dive, so that I could look for the creature whilst the other three completed the dive.

After they entered the water I grabbed one of my backup dive torches off a tank, and proceeded to look in all the holes on the northern side of the doline. I had no luck seeing anything of interest and came away with nothing more than a few nettle stings. I then went across to the southern side of the doline and was checking out the holes when the torch exploded in my hand. The sound was like a shotgun going off, with a clear conical shaped image that resembled a shock wave, about 20cms long, emanating from the face of the torch, and a smaller conical shaped flash, bluish in appearance for the first 15mm, appeared within this. The foul odour given off was quite strong and I later learnt these fumes are very toxic and should not be breathed.

I instinctively dropped the torch on the ground, and when I bent down to pick it up, I found it was far too hot to handle and could only be picked up by the dog clip attached to it. The glass from the front of the torch was gone and there was brown staining around the reflector, but the LED remained in place. I took it to the water's edge to cool it before deciding to let it cool naturally rather than allow any contaminants to enter the water. I was thankful the torch was not made of plastic and that it had been machined out of aluminium, which had largely contained the explosive energy.



The two destroyed batteries, with two others bought at the same time – note one is considerably swollen.

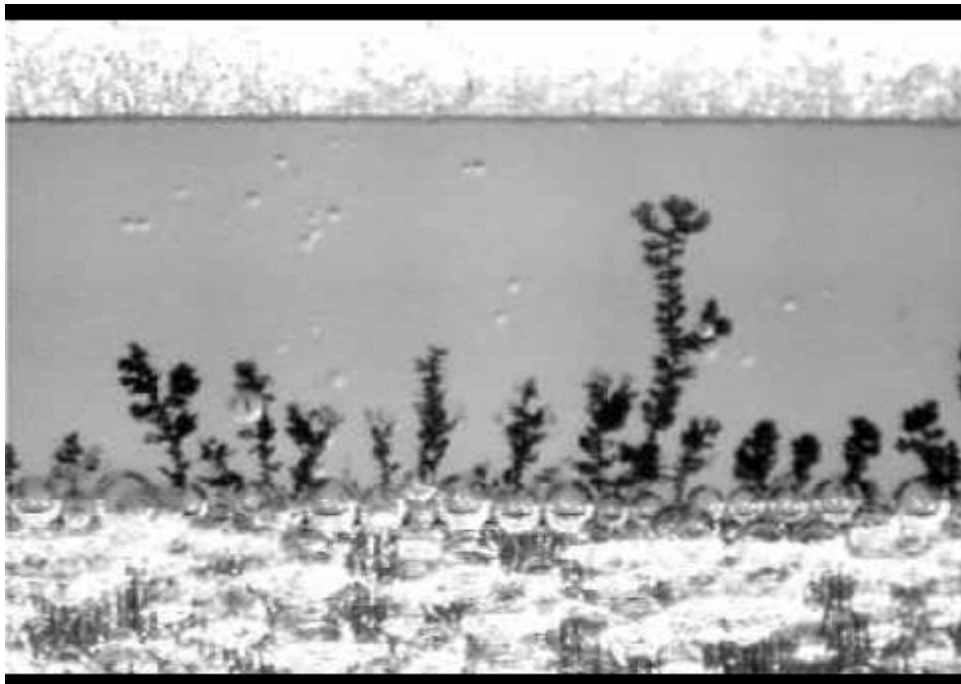
The torch had contained two TOVATEC non-rechargeable Lithium CR123 dry cell batteries, out of four that came with my two backup torches, and are used for their longer burn time (no pun intended) and longer shelf life, compared to the usual Li-Ion or Li-Po batteries that one might suspect as being more likely to explode. The batteries had been in the torch for around two years and were still fully charged and ready for use. They remained in the dive tub with the other gear when not in use and were stored in the spare

bedroom hallway between trips. I could think of no reason for them exploding, nor had they been mistreated in any way.

I have no doubts that had this happened in the vehicle or at home in the house whilst I was at work, or sleeping, the result would have been far more serious.

Much has been written about rechargeable Lithium-Ion and Lithium-Polymer batteries and their reputation for exploding during charging, but that is not what I am talking about here. I am talking about **non-rechargeable** Lithium-Metal batteries exploding for no apparent reason.

So what might have happened? I researched this and learnt that over time a crystalline structure called Dendrites will grow out of the Lithium metal anodes. As these Dendrites grow long enough they can short with the cathode, producing a heat source that in turn leads to a condition called thermal runaway, where the heat generation feeds on itself and the temp increases rapidly until the battery explodes.



Microscopic Lithium dendrites growing out from the anode, toward the cathode

I did locate one article at <https://seekingalpha.com/article/3976731-teslas-huge-mistake-thin-film-lithium-ion-batteries-power-ev-revolution> that explains in simple terms the history of batteries, the different types and gives some insight into the pros & cons for each battery. (I highly recommend reading this article if you have any interest in batteries.)

In this article it says:

“Experimental Lithium Metal batteries had existed in the literature for many decades, but were considered too dangerous because of their unfortunate tendency to explode. Finally, in 1981, Dr. John Bannister Goodenough of Oxford University had a breakthrough and invented modern Lithium Ion batteries, specifically the Cathode material which makes them possible. Sony commercialized the technology in 1991 when it paired the new cathode material with a charcoal anode. The revolutionary batteries became an instant blockbuster, and helped Sony sell a tremendous amount of equipment like hand-held video recorders. All modern Lithium batteries, including Tesla's, derive directly from this technology.”

Another good article *“Stabilizing lithium metal using ionic liquids for long-lived batteries”* can be found at <https://www.nature.com/articles/ncomms11794>, where it explains how they discovered that immersing

the electrodes in ionic liquid electrolytes for a period of time before battery assembly suppresses dendrite formation at the lithium metal anodes during cycling, thus preventing the battery from exploding.

So it seems that Lithium-Ion batteries were created to replace the unstable Lithium-Metal batteries that were inclined to explode, leaving me puzzled as to why it is still possible to buy the mongrels.

Further research on this led me to http://batteryuniversity.com/learn/article/primary_batteries: “High specific energy, long storage times and instant readiness give primary batteries a unique advantage over other power sources. They can be carried to remote locations and used instantly, even after long storage; they are also readily available and environmentally friendly when disposed.” “The most popular primary battery is alkaline. It has a high specific energy and is cost effective, environmentally friendly and leak-proof even when fully discharged. Alkaline can be stored for up to 10 years, has a good safety record and can be carried on an aircraft without being subject to UN Transport and other regulations. The negative is low load currents, limiting its use to light loads such as remote controls, flashlights and portable entertainment devices. **Moving into higher capacities and better loading leads to lithium-metal batteries.**

These have very strict air shipping guidelines and are subject to Dangerous Good Regulations involving Class 9 hazardous material. (See [BU-704a: Shipping Lithium-based Batteries by Air.](#)) The Figure 1 compares the specific energy of lead acid, NiMH and Li-ion as secondary, as well as alkaline and lithium-metal as primary batteries.”

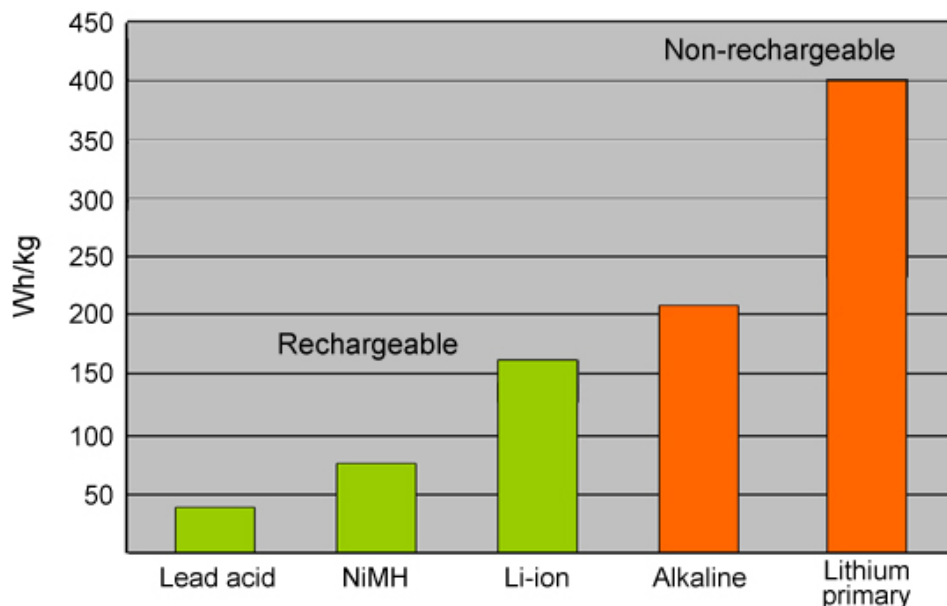


Figure 1: Specific energy comparison of secondary and primary batteries.

(Yes, I understand Lithium-Ion and Lithium-Polymer batteries can also explode, but as far as I know this is invariably when being recharged under incorrect or uncontrolled conditions, leading to overvoltage or overcurrent charging, again resulting in the battery getting hot and then running into thermal runaway. It is worth saying here, that one must always use a good quality, properly designed Li-Ion charger to charge Li-Ion batteries, as it is the electronic circuitry that prevents them from exploding. And one should only use high quality brand-name Li-Ion batteries that contain the appropriate internal electronic circuitry to prevent overcharging or overvoltage.)

The [Lithium Batteries Safety Guidelines](#) for the Concordia University in Montreal, Canada says:

2.2 Lithium-Metal Batteries

Lithium-Metal batteries (Figure 3) are known as primary batteries and are usually non-rechargeable. They contain metallic lithium and feature higher charge densities (longer life) than other non-rechargeable batteries (e.g. alkaline or zinc-carbon). The most common type of lithium batteries use metallic lithium as

anode, manganese dioxide as cathode and a salt of lithium dissolved in an organic solvent, usually composed of a mixture of a high-permittivity (e.g. propylene carbonate) and a low-viscosity solvent (e.g. dimethoxyethane).



Figure 3: Examples of lithium metal batteries

Having a longer life, lithium-metal batteries can replace ordinary alkaline batteries in many consumer devices, such as calculators, pacemakers, remote car locks, cameras or watches.

And at http://batteryuniversity.com/learn/article/bu_304c_battery_safety_in_public, it says:

“While Li-ion is rechargeable, there are non-rechargeable lithium batteries that exceed Li-ion in capacity. They contain a metallic anode and are often called lithium-metal. This increases volatility and these batteries are subject to tighter shipping regulations than the more benign lithium-ion. Primary lithium batteries come in many varieties and are mainly used for industrial uses. (See [BU-106a: Choices of Primary Batteries](#).)

From http://batteryuniversity.com/learn/article/safety_concerns_with_li-ion:

“All batteries carry a safety risk, and battery makers are obligated to meet safety requirements; less reputable firms are known to make shortcuts and it’s “buyer beware!” Battery manufacturers strive to minimize the presence of metallic particles. The semiconductor industry has spent billions of dollars to find ways in reducing particles that reduce the yield in wafers. Advanced cleanrooms are Class 10 in which 10,000 particles larger than 0.1µm per cubic meter are present (ISO 4 under ISO 14644 and ISO 14698). In spite of this high cleanliness, particle defects still occur in semiconductor wafers. Class 10 reduces the particles count but does not fully eliminate them.”

“There are two basic types of battery failures. One occurs at a predictable interval-per-million and is connected with a design flaw involving the electrode, separator, electrolyte or processes. These defects often involve a recall to correct a discovered flaw. The more difficult failures are random events that do not point to a design flaw. It may be a stress event like charging at sub-freezing temperature, vibration, or a fluke incident that is comparable to being hit by a meteor.”

“A mild short will only cause [elevated self-discharge](#) and the heat build-up is minimal because the discharging power is very low. If enough microscopic metallic particles converge on one spot, a sizable current begins to flow between the electrodes of the cell, and the spot heats up and weakens. As a small water leak in a faulty hydro dam can develop into a torrent and take a structure down, so too can heat build-up damage the insulation layer in a cell and cause an electrical short. The temperature can quickly reach 500°C, at which point the cell catches fire or it explodes. This thermal runaway that occurs is known as “venting with flame.”

“Rapid disassembly” is the preferred term by the battery industry.”



The now worthless TOVATEC backup dive torch, caused by the “Rapid Disassembly” of a battery

For those seeking information on the best battery to use for a particular application, or the best method for charging a particular battery, etc., I highly recommend you read the articles found at <http://batteryuniversity.com/learn/>.

This is one of the most informative websites for battery information that I have seen and is a must-read for anyone considering designing or assembling their own battery packs.

The bad news is that I not only need to buy new batteries, but I also need a new torch. The good news – I get to keep my house!

Note:

- 1. Incorrect treatment of batteries includes excessive vibration, elevated heat and charging Li-ion below freezing.**
- 2. It is advisable to always store batteries when not in use in the refrigerator – this keeps them stable and extends their storage life dramatically.**

GLIMPSES OF CAR CRASH QUARRY

Neville Skinner

On the way to Clare's place for the T-Shirt printing & SRT training day on 14th Jan 2018, Will Cooper and myself decided to stop off at "Car Crash Quarry" to check it out.

This was something I had promised to do back in 2017, and to report back on, but never got around to.

We started from the junction of Old Belair Road and James Road, where it is possible to safely do a U-turn should you overshoot the quarry, and providing you get a break in the traffic.

While there appears to be several spots where one can park a car within reasonable walking distance of the quarry, re-entering Old Belair Road with the traffic doing 60-80kph, is rather hairy, to say the least. Downright dangerous in fact.

All of these spots are on some form of blind corner and the traffic is almost continuous, with a few spasmodic breaks. And these spots all coincide with fire access tracks that cannot be blocked.

I tested all these spots for safety of departure, and I strongly urge people not to use them.

I was thankful my little beast produces 143kW and jumps from 0 to 80kph in first gear. On this occasion, I used that feature liberally.



The quarry is adjacent to Old Belair Road, with the car-park just north (left) of this spot.

The only safe place to park is an off-road carpark, put there for the safety of people using the quarry. This carpark sits 600m south of the intersection of the Old Belair and James Rds, and 600m north of the first corner at the intersection of Old Belair Rd and Weemala Dve, just up from the Blythewood Rd roundabout. To get to the quarry, walk to the southern end of the carpark, where you will find a spot to walk up the slope, in a south-westerly direction for about 30m. This will bring you to the clearing (see image below) where you can follow the fire access track off to the right, where you will see the climbing area on your left.



Will walking toward the climbing area from the carpark. Access to the top is via a track on the far LHS.



Will stands on a large rock to view the cliff face(s), which are frequented by climbers.

SRT TRAINING WORKSHOP

Sunday 14th Jan 2018

Images by Neville Skinner



William learning the ropes



Look Mum... no hands! (David enjoying the SRT practice session)

NEWS & TITBITS

The SRT training has been a great success, with several members having gone to Sydney to undergo SRT Rescue training with Al Warild. This involves taking people off the rope that have suffered collapse or some other issue which renders them unable to get themselves off the rope.

The members who have completed this training are now passing that knowledge onto other SRT trained members, so that eventually all SRT competent members will have knowledge of rope rescue techniques. Hence the ongoing training sessions at Clare & Heiko's place.

Membership fees are now overdue, but gladly accepted anytime:

Student: \$65.00

Introductory: \$40.00

Single: \$88.00

Family: \$119 plus \$20 per family member

Payments may be made directly into FUSSI Bank Account:
Contact the FUSSI Treasurer for account details.

Membership is valid for one calendar year and includes \$68.00 membership (less for student and introductory memberships) of the Australian Speleological Federation (ASF), who provide us with important services such as liability insurance, news about what's happening nationally, and a powerful organisation that can lobby governments on our behalf.

Please contact the FUSSI Treasurer if you require additional information.

If you would like to join in on some of the advanced trips involving SRT (Single Rope Techniques), then speak to Clare or Tania.

What it's about?

It's all about Abseiling down into a cave and Prussiking out of the cave, where there generally are no ladders to climb. Often these caves are in isolated locations (for example, Flinders Ranges, Tasmania, Yarrangobilly and Nullarbor Plains).

What is involved?

Learning the correct techniques in a safe environment, and gradually building up on the skills learnt, so that you become competent in safely negotiating difficult cave access and are able to recognise dangers specific to each cave, and your own limits.

It will take a lot of practice, perseverance and discipline, but it will empower you and increase your confidence in yourselves.

This does not happen overnight – it will require a big commitment from you, but you will be rewarded with the skills to enable you to tackle any cave, cliff or other obstacle at any time, for the rest of your lives. And you will be fitter and healthier.



Eisriesenwelt – world's largest ice cave inside Hochkogel mountain, Werfen, Austria

© Eisriesenwelt GmbH

(see laser mapped images at https://www.youtube.com/watch?v=_scnPbb_KIA)

FUSSI PROGRAMME 1st Jan – April 2018

Note: FUSSI holds a general get together/meeting on the Third Thursday of each month, except where notified otherwise. Programme subject to change.

Sun 14 th Jan	Noon onwards	Get together, noshup and T-shirt printing day. BYO T-shirt(s), something for lunch, eating implements, etc. At Clare & Heiko's house. RSVP by mid-day 12 th Jan to fussi@fussi.org.au .
Sat 3rd - 11th Feb:	Yarrangobilly (Yagby) trip	Wet, cool, sparkling caves in semi-alpine country. Best place to beat the heat of an Adelaide summer. Suitable for all. Bring your caving thermals. Clare coordinating. RSVP 30th Nov – permits have to go in!
Thu 15th Feb:	General meeting 6pm	Morialta Cliffs, at the second clambing area, followed by a beer in the Scenic Hotel.
Mon 19th - 20th Feb:	O-week Fairdays	FUSSI Stalls on campus. Help is needed. Put your hand up and help your club get new members. Contact Dee via fussi@fussi.org.au
Sun 4th Mar:	One day trip	Murray River trip. A trip for everyone. Thomas coordinating.
SEMESTER STARTS Feb 26th 2018		
Thu 15th Mar:	Social Meeting	Get your mojo working with a map & compass. Tania is going to show us how. Meet at the Uni foot bridge and prepare to show us how to get lost in the forest. 6pm-8pm. On campus.
Sun 18th Mar:	SRT Training	For the rope incompetent. 10am – 4pm at Clare & Heiko's.
Sat 24th – 25th Mar:	Naracoorte trip	A trip for everyone. RSVP: 28th Feb Noon. Don't miss out, get your name down, NOW! Clare coordinating. Contact fussi@fussi.org.au
MID SEMESTER BREAK: April 9th – 23rd 2018		
Sun 15th April:	One day trip	Yorke Peninsula. Thomas coordinating. If interested, let Thomas know.
Sun 29 th April	SRT Training	For all levels of rope competency. 10am – 4pm at Lonsdale

CONFERENCES:

31st ASF Conference, Devonport, Tasmania: Sunday 30 Dec 2018 – Friday 4th Jan 2019
Post conference caving trips to Mole Creek, Mt Cripps and Southern Tasmania.
See: <https://prezi.com/view/KavyRw5tX1ExvDqCr7aY/>

To be finalised:

Pick offs, counter balance rescue practice and cliff work at Morialta.
Also Brown Hill Creek quarry Stretcher Lifts.