

# Cotter Cave (PR1) cleaning and restoration project

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Over the last several years, the Canberra Speleological Society Inc (CSS) has been involved in a cave cleaning and restoration project in the Cotter (or Paddys River) karst area in the Australian Capital Territory (ACT). This article provides an update on the work that has been undertaken so far.

Cotter Cave is an interesting and spacious cave in the Bullen Range Nature Reserve, about 30 minutes' drive from central Canberra. Although the cave has little more than a 100 metres of passage, it is easily the longest cave in the ACT. It is a roosting site for eastern the bent-wing bat (*Miniopterus schreibersii*) which is a listed vulnerable species in the ACT and NSW. Two species of cave-dwelling spider (*Stiphidon facetum* and *Epimecinus sp. nov.*) have been recorded in the cave and it is the type locality for the latter (Gray, 1973). In terms of European history, pencilled graffiti throughout the cave records visits by European visitors dating back to the early years of the 20th century. Low key commercial tours were regularly conducted into the cave between the 1930s and 1950s. The varied natural and cultural values of the cave and its surroundings were formally recognised by the ACT Government in March 2011 when the area was placed on the ACT Heritage Register.

Unfortunately, the cave has suffered considerable damage over the years and there have been significant impacts, including breakage and removal of speleothems and graffiti, since the heritage listing in 2011.

CSS first became interested in the Cotter karst area in the 1950s and has mapped and documented a total of seven caves in the area. Since 2005, CSS has been working with the ACT Parks and Conservation Service (ACT Parks) to address management issues in the area, especially with the main cave.

The saga of CSS's efforts to improve protection of Cotter Cave were covered in an earlier issue of the Journal (Brush, 2019a) which noted that, after promising preliminary consultations, ACT Parks ignored our advice

and constructed a monstrous new entrance barrier and gate in early 2007. Unfortunately, the massive structure was not 'bat-friendly' and was easily breached by vandals, thereby exposing the cave to potential damage and the general public to hazards. CSS called for the structure to be replaced or at least modified as an interim measure. Over the next decade, several modifications were made but these were of limited success in overcoming the original design flaws.

As the integrity of the entrance barrier was often compromised by vandalism, all manner of rubbish accumulated in the cave and graffiti attacks were common. In some areas, four or five layers of paint could be seen (Figure 1). CSS made many trips to the cave to remove rubbish. It also conducted graffiti cleaning trials in 2016 and 2017 and developed a suite of techniques for removing paint from a range of cave surfaces (Brush, 2019b). However, CSS decided a major cleaning effort would be futile unless a more secure entrance structure was installed.

In 2018, the need for action became more urgent. As noted in the earlier article (Brush, 2019a):

'The entrance barrier was breached on several occasions and in April, the gate was completely removed (Figure 2) and thrown into the cave. Vandalism within the cave also became more serious with portable power tools being used to cut off stalagmites and slabs of flowstone (Figure 3). Additionally, new spray-painted graffiti appeared throughout the cave. CSS ramped up its representations and also lobbied politicians. Once again there were sympathetic responses but there was not much action apart from temporary repairs to the entrance structure.'

Unfortunately the following paragraph, critical to the narrative, inadvertently disappeared during the production process:



Figure 1. In parts of the cave, there were four or five layers of painted graffiti.



Figure 2 In 2017 and 2018 the entrance barrier was regularly damaged and at one stage, the gate was completely cut off and thrown into the cave.



Figure 3 Portable power tools have seriously damaged speleothems throughout the cave.

The real breakthrough came in November 2018 when Marjorie Coggan, as CSS Secretary, informed the ACT Heritage Council of the recent damage to the heritage-listed site and provided supporting photographic evidence. The response was dramatic. Funds became available, meetings took place, CSS was asked for advice on bat-friendly gates, proposed designs were discussed, ACT Parks obtained quotes and, by the end of the year, it had engaged a contractor.'

The article continued:

The contractor commenced on-site work on 21 January 2019. ACT Parks decided to keep the framework of the existing structure so that the round bars would be simply cut off and replaced with larger square-section tube, which included features to increase resistance to damage. The round bars were replaced on a panel-by-panel basis so that the cave was not left unprotected overnight. Staff of ACT Parks closely supervised the work and were equipped to deal with any stray sparks resulting from the cutting and welding work.'

Construction of the new entrance barrier was completed in March 2019 and incorporated several modifications to the original design to increase its resistance to vandalism. In the months following its completion, the new gate successfully resisted several attempts at unauthorised access and, on each occasion, ACT Parks promptly repaired the damage.

With a secure entrance barrier in place, CSS decided it was time to commence a major cleaning and restoration effort in the cave. In May 2019, there were two joint trips during which CSS members instructed ACT Parks' staff on cave-friendly cleaning methods. During the remainder of the year, ACT Parks undertook two further trips and CSS did likewise.

On the graffiti-cleaning trips, we have used the full range of paint removal techniques trialled in 2016 and 2017. The key objective has been to preserve historic, pencilled signatures, while removing painted graffiti using the lightest touch possible. In a few cases, a gentle spray of water was sufficient to remove paint from dusty surfaces. More commonly, it was necessary to wet scrub with nylon bristle brushes (Figures 4), ranging in size from toothbrushes to floor scrubbers, or to use drill-powered rotary brushes with abrasive particles embedded in thick plastic bristles (Figure 5). As a last resort, we have used wire brushes for stubborn graffiti on bare rock surfaces and on speleothems that are intermittently active, so that any scratch marks will in time become covered by new layers of calcite. Drop sheets and absorbent mats

(such as old bath towels) are used to capture runoff water, paint fragments and loose bristles (Figure 6). Any stray fragments or bristles are swept up on subsequent trips.

The degree of success in removing painted graffiti without significant impacts on the cave depends on a range of factors, including the colour, thickness and type of paint, and on the nature of the cave surface that was painted. One example of the cleaning efforts is shown in Figure 7 and a second is on the front cover of this edition.

As the range of scrubbing and brushing techniques is not a treatment for chiselled or carved graffiti, and cannot be used for painted graffiti on delicate surfaces, CSS agonised over whether to simply leave these areas alone or attempt to mask them. After on site discussions with ACT Parks, CSS was given the go ahead to conduct graffiti masking trials. But what to use? It had to be something that was a completely reversible means of covering the graffiti but was also benign, effective and relatively cheap. After much deliberation, we decided to trial a blend of ground limestone, purchased from a garden shop, with potters clay. These are mixed with clean water to form a slurry that can be dabbed on with a small brush (Figure 11). The clay acts as a binder and, when mixed in different proportions, it can be colour matched to a range of cave surfaces. To complicate matters, the slurry changes colour as it dries and, in the cave, this can take a week or more. Our solution, to remove the guesswork from colour matching, was to make up a series of laminated colour cards with samples of the different blends.

Following successful small-scale trials on a range of surfaces in November 2019, CSS undertook more extensive masking work (Figure 12) in January 2020 and in March 2021. While masking appears to be a useful technique in some situations, removal by scrubbing remains the preferred method for dealing with painted graffiti in the cave. To date, scrubbing has been used at an estimated 85%-90% of the sites we have worked on. The issue of how to deal with scratched or carved graffiti on flowstone and other speleothems remains unresolved. The masking trials included a small area of graffiti incised on dry, brown flowstone and the results are reasonably acceptable. However, we are not planning to attempt masking on speleothems that are either clean or intermittently active.

The cleaning and restoration efforts have now removed or masked an estimated 60%-70% of the graffiti that was present when CSS initiated the project. Most of the 'easy' sites have now been tackled. This means sites that



Figure 4 Wet scrubbing graffiti and capturing the loosened paint fragments.



Figure 5 Removing stubborn paint with a mildly abrasive brush attached to a drill.



Figure 6 Drop sheets and towels are used to capture runoff water and paint fragments.



are within comfortable reach and where the paint can be removed - or masked - without too much difficulty. What remains is paint that is either stubbornly attached or will need ladders and climbing gear to safely reach.

CSS is averaging about two cleaning trips a year to Cotter Cave. This appears to be about the maximum level that can be sustained in our small group, without completely killing off enthusiasm. At that rate it is likely take another couple of years to deal with the remaining graffiti. And then what?

There is spray painted graffiti on the walls of Powder Store Cave (PR-2), one of the small caves in the area. Much of the graffiti is on flowstone and cave coral (Figure 13) and CSS has yet to seriously discuss what, if anything, can or should be done in the cave.

If any ACKMA members are passing through Canberra and would like to visit the cave, please get in touch and we will guide you on a detailed inspection trip after thrusting a scrubbing brush into your hand.



Figure 7 Going, going and still not quite gone. A long term project at the base of the entrance pitch. The green colouration is algae.



Figure 11 Covering graffiti by dabbing on a slurry of ground limestone and potters clay.



Figure 12 Working on a large area of graffiti that was sprayed onto a delicate and flaky surface.



Figure 13 Colourful and difficult to remove. A graffiti site in Powder Store Cave. CSS is yet to discuss what can or should be done here.

**References:**

Brush, John (2019a), Recent developments at Cotter Cave, ACT, ACKMA Journal 115:24-27.  
 Brush, John (2019b), Cave Restoration work at Cotter Cave, ACT, ACKMA Journal 117:25-27  
 Gray, M.R. (1973) Survey of the spider fauna of Australian caves, Helictite 11(3):47-75