

# Cave restoration work at Cotter Cave, ACT

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## Canberra Speleological Society Inc

Members of the Canberra Speleological Society Inc (CSS) have been working in partnership with the ACT Parks Service to remove graffiti from the Cotter Cave (ASF Index – PR 1) in the ACT. CSS is also conducting trials to see how effective it is to cover or disguise graffiti in areas that are too delicate or too difficult to clean.

As noted in the June issue of the Journal (Brush, 2019), representations to the ACT Government by CSS over many years achieved a significant milestone early this year when construction work on a new entrance barrier was completed. Not only was this structure more bat-friendly than its predecessor, but it was designed to be more resistant to illegal entry, thus paving the way, it was hoped, for remedial work on the extensive graffiti throughout the cave.

Cotter Cave, or Paddys River Cave as it is also known, has little more than 100 metres of passage, but it is easily the longest cave in the ACT. With its spacious passages (the main passage averages 6m in width and is generally 4 to 8m high), white marble walls and speleothem decoration, it would have once been a spectacular cave. And in fact, it once operated as a low-key show cave. Sadly, the cave has suffered greatly since those days. As noted in the earlier article, the cave had become a site for lighting fires, dumping rubbish, painting graffiti, mining speleothems and, apparently, for satanic rituals.

In 2016 and 2017, CSS conducted graffiti cleaning trials and developed a suite of techniques for removing painted graffiti from a range of cave surfaces. Our key objectives were to preserve historic pencilled signatures while removing (spray) painted graffiti using the lightest means possible. On some surfaces we found nylon bristle brushes (scrubbing brushes, kitchen brushes and even tooth brushes) and clean water were effective. For more stubborn graffiti we trialled a battery drill-powered rotary brush that had small abrasive particles embedded in thick plastic bristles. Where paint was thick and/or more securely bonded to the rock, we tried using wire brushes.

After the trials were evaluated, we held back from implementing a full-scale cleaning effort. CSS members realised it would be a futile exercise until such time as a more secure entrance barrier could be installed. Our concerns were justified. A site just inside the entrance that had accumulated five layers of graffiti, including three between 2001 and 2016 (see Figure 1), was the site of a cleaning trial in 2016 but was attacked again in late 2018 (see Figure 2).



**Figure 1—This is a boulder just inside the cave entrance that had accumulated at least 5 layers of graffiti before cleaning in 2016**



**Figure 2—The same boulder as in Figure 1. A new layer of graffiti that appeared between April and November 2018 was scrubbed off in November 2019**

The new entrance structure and gate completed in March 2019 has successfully withstood at least two attempts to break in. In addition, ACT Parks has committed to monitor the cave more closely and promptly repair any damage to the gate, which so far has been done.

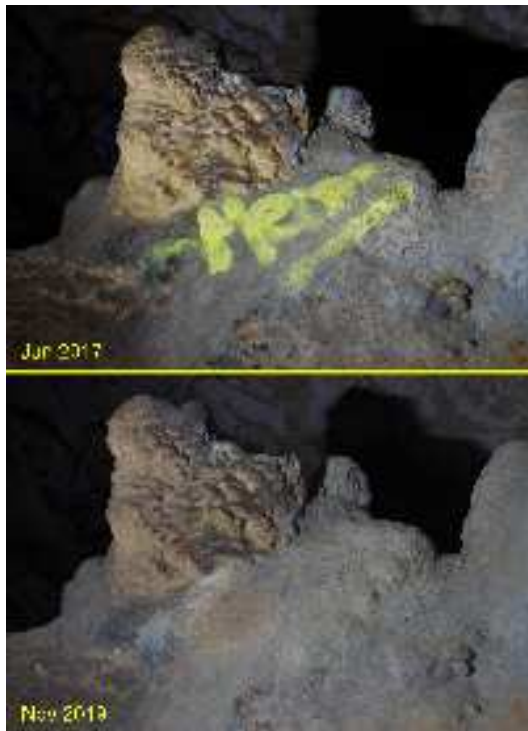
In May 2019, CSS and ACT Parks initiated an extensive graffiti cleaning effort, commencing with two joint trips during which we instructed staff on cave-friendly cleaning methods. Since then, Parks has conducted two further trips, as has CSS.

On the cleaning trips we have used the full range of removal techniques noted above. The wire brushes are regarded as a last resort and their use is restricted to surfaces of bare rock, or to speleothems that are intermittently active so that any scratch marks will, over time, be covered by new layers of calcite.

We also use drop sheets and absorbent mats to capture runoff water, paint fragments and any loose bristles. In case any fragments or bristles are missed, surfaces below the cleaned areas are swept on the next trip.

Perhaps half of the graffiti that was present in early 2019 has now been removed. Examples of the cleaning efforts are shown in Figures 3, 4 and 5. Much of the graffiti that remains is

- a) very firmly bonded to the rock,
- b) in awkward positions that will require the use of ropes and ladders to access safely, or
- c) is on delicate surfaces that cannot be cleaned without inflicting significant - and unacceptable - levels of damage on the cave (Figure 6).



**Figure 3—Before and after the cleaning efforts on flowstone at the base of a large stalagmite (above)**

**Figure 4—Before and after images of a flowstone area. As the spray paint was applied over dusty**



**Figure 5—A cleaning project in progress. The charcoal was easy to remove, but paint removal requires considerable effort. The green colouration is algae – the site is just inside the entrance (above)**

**Figure 6—An ACT Parks staff member and Marjorie Coggan examining an area of delicate dry cave coral and flowstone as a possible site for a graffiti masking trial**

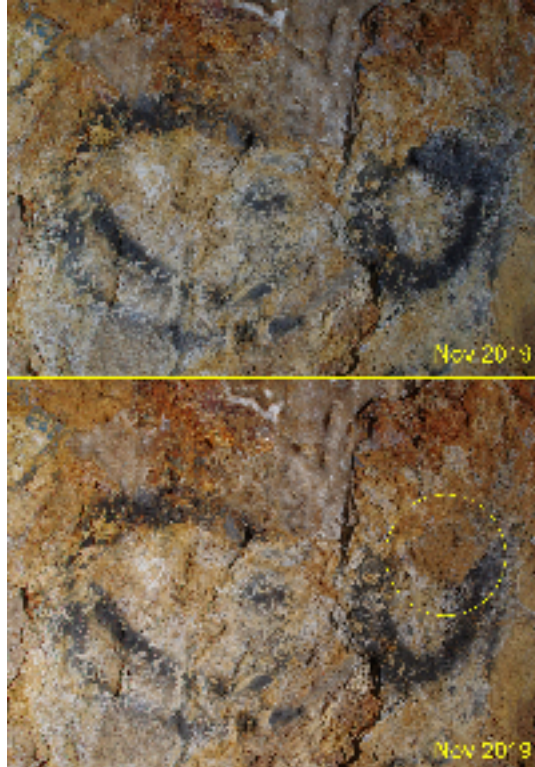


After onsite discussions with ACT Parks, CSS was given approval to conduct graffiti masking trials. But as a first step we needed to find a relatively cheap, effective, benign and completely reversible means of covering the graffiti. What we have come up with is a slurry comprising clean water, crushed limestone (as is found at garden centres) and a pale brown coloured potters' clay. The clay acts as a binding agent and is also useful for varying the colour of the mix. However, to make life difficult, the slurry changes colour as it dries. Slurry that starts as a pale grey-brown colour dries to an off-white. Initial application and removal trials on a garden wall at home were successful, so we moved to the cave in November.



Three sites were selected. One site was on bare white rock, another was on orange-coloured gossan - a fragile, deeply oxidised mineral layer - the third was a wall area partly covered in cream coloured cave coral and flowstone. A small paint brush was used to gently dab on the slurry.

The in-cave masking trials look promising (see Figures 7 and 8) for use on dry surfaces.



**Figure 7—Graffiti masking trial on an area of fragile gossan material. Note: the area was once partly covered with a thin layer of flowstone that was chipped off between 5 and 10 years ago (above)**

**Figure 8- A closeup of a section of graffiti in Figure 6. Slurry mix was applied on 2/11/2019 and allowed to dry for 12 days before taking the second photo**



The slurry worked well on the cave coral and also on the gossan, in part because loose gossan material from the floor was dusted over the test area immediately after applying the slurry. However, on the bare rock, the slurry mixture will need to be tweaked to lighten the colour. Our thinking is that we will need to purchase a range of clay colours and develop several mix ratios for different parts of the cave. To minimise the amount of trial-and-error colour-matching, we plan to make up colour cards so that we can compare the colour of dried slurry mixes with the cave walls.

Cotter Cave has suffered considerable damage over the years, especially in the last ten years. CSS is fully aware that missing speleothems and cut out sections of wall can never be replaced and that chiselled signatures on flowstone cannot be masked. However, we are confident that cleaning or masking of painted graffiti will significantly improve the appearance of the cave. Hopefully, the new entrance structure will continue to do its job and ACT Parks will continue to be diligent in dealing promptly with any attempts to break into the cave.

#### **Reference**

Brush, John (2019) Recent Developments at Cotter Cave, *ACKMA Journal 115*, June 2019, pp 25-27

## **Reminder**

**At the 2020 ACKMA Annual General meeting to be held at Jenolan Caves, vacancies will arise in the positions of President and Publications Officer (Journal Editor).**