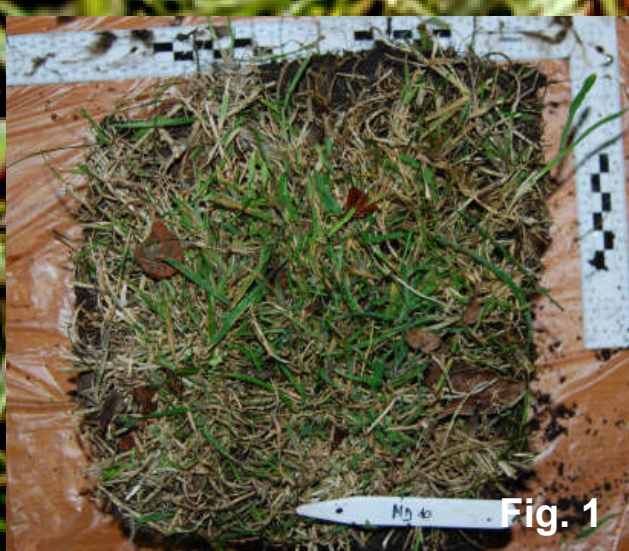
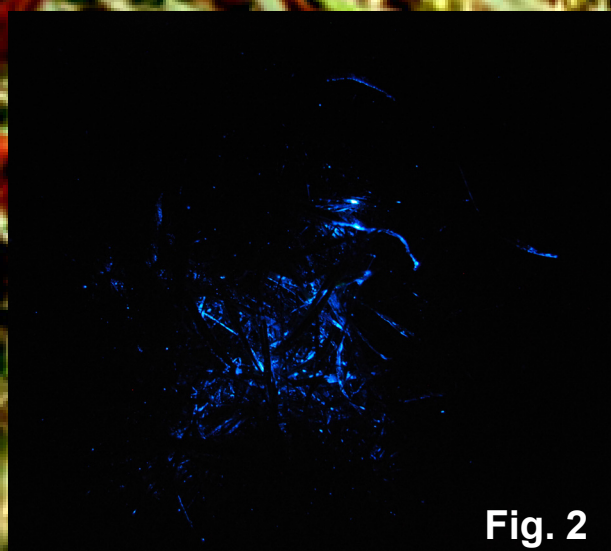


Outdoor environments introduce a myriad of variables that can affect the post-depositional fate of trace evidence. With respect to bloodstain pattern analysis, little has been documented on the survival and degradation of bloodstains on various natural surfaces outdoors. Grass, despite being a commonly encountered vegetation at outdoor crime scenes, has not had any research published on the degradation and detection of bloodstains deposited upon it.

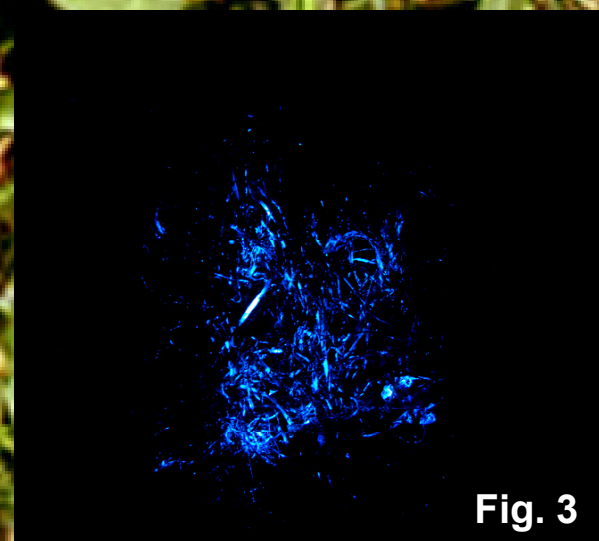


This research augments that of Adair *et al.* (2006, 2007) who studied the survival of blood patterns on and in soils. To study the preservation of bloodstains on grass, human blood patterns were deposited on test plots and exposed to the elements for 2, 6 and 10 weeks (fig. 1). After these time intervals, the samples were tested with Bluestar® Forensic (www.bluestar-forensic.com), the successor to luminol. The results show that although the visibility of the bloodstains was significantly affected by rainfall, a chemiluminescence reaction was detected with Bluestar® Forensic on all of the samples tested (fig. 2). As would be expected, the older the bloodstains the less intense this reaction became.



However, cutting the grass back to a height of approximately 1 cm above the soil significantly enhanced most of the reactions (fig. 3) as blood residues had been washed onto the lower parts of the blades and surface of the soil while broadly retaining the patterning of the original deposit. Furthermore, for some samples, a reaction was detected 2 cm down in the soil.

This research has demonstrated the value of Bluestar® Forensic for detecting bloodstains that are up to 10 weeks old deposited on grass and soil, the significance of cutting back the grass to enhance detection, and the transport of blood residues into the soil profile. As well as extending the time intervals for this experiment, it is suggested that further work should look at blood pattern survival on a wider range of vegetation and soil types, on other natural surfaces (e.g. rock), together with investigating the rates of transport of blood residues into and through soil profiles, and how best to minimise destruction and maximise evidence recovery in such situations.



Refereneces:

- Adair, T.W., Shimamoto, S., Tewes, R. And Gabel, R., 2006. The Use of Luminol to Detect Blood in soil One Year After Deposition. *International Association of Bloodstain Pattern Analysts(IABPA) News* September 2006 22(3):4-7.
- Adair, T.W., Shimamoto, S., Tewes, R. And Gabel, R., 2007. Detecting Blood Patterns in Soil with Luminol Two Years after Deposition. *IABPA News* March 2007 23(1):14-10.

Acknowledgements:

- This research was done as part of the requirements of an MSc in Forensic Archaeology at Bournemouth University.
- The authors would like to thank Alex Otto, Forensic Demonstrator, School of Conservation Sciences, Bournemouth University, for her assistance in advising on the preparation and use of Bluestar® Forensic.