Upcoming PhD research on the bones of Backwell Cave

Hello! My name is Adelle, I'm a PhD candidate at Cardiff University researching Iron Age mortuary practice in southwest Britain. As part of my research, I am going to be looking at the human remains excavated from Backwell Cave to help solve the puzzle of who these people were and how they ended up in the cave.

Research background

During the Iron Age, burial practice was characteristically varied and there appears to be no "formal" way to dispose of a body. Cemeteries and 'typical' inhumations within graves don't become common until the later Iron Age (c.100 BC – AD 43). Instead, human bone is found within domestic sites, particularly grain storage pits and ditches that surround the settlement, in all states of articulation. Sometimes it will be a whole skeleton, others it'll be a torso or a leg, but more often it's a part of a skull or a single bone from an arm or leg. During this period, it appears there are a variety of *processes* afforded to a corpse as part of a funerary rite leading up to the final deposition. Part of my research is trying to figure out what these processes might have been.

Previous studies on Iron Age burial have focused on burial within settlement sites since majority of the evidence originates from them. However, human remains are also discovered in caves throughout the southwest, particularly in south Wales and Somerset. I hope to bring these into the conversation and give them the attention they deserve.

Backwell Cave makes a fascinating case study site because of the concentration of human bone within a small area as well as the confusion over the type of burial. The bones were not laid out in neat anatomically correct positions, rather they appeared to be disarticulated and scattered. Tratman (1937) suggested that these were either redeposited after being unearthed from disturbed burials elsewhere, or inhumed individuals that had parts removed from scavenging animals.

The excavation records do not provide context or stratigraphic detail for the human bone, so the information we can gain is limited. We can't say for certain if this assemblage represents a single event, such as a widespread illness or massacre, or if the bodies were deposited over a longer period of time. However, we can use scientific methods to determine how these individuals were laid to rest in the cave using histological light microscopy, what they ate using stable isotope analysis, and when they died using radiocarbon dating.

Materials and Methods

I have sampled five right adult humeri (upper arm bones) from the assemblage. The bones are very fragmented and considering the comingled nature of the deposit, I wanted to be sure that each sample represented a discrete individual, so I wouldn't duplicate data from the analyses and therefore skew the results. The analyses I plan to use are:

Histological light microscopy of bone diagenesis. This sounds very scientific, but it is quite simple and very useful to study individual bones or assemblages that do not make anatomical sense. To briefly summarise, after death, putrefactive bacteria that lives in the gut make its way into the skeletal system through small pores in the bone called Haversian canals. The bacteria begin to eat away at the collagen that make up the bone microstructure. By cutting a very thin

section off of a piece of cortical bone, the degree of destruction can be viewed under the microscope. The bioerosion is then scored on a scale of 0 to 5. The longer an individual is left whole after death, the more destroyed the microstructure will be. If the funerary treatment facilitated rapid decomposition—for example, excarnation, or being left open to the elements to be rapidly defleshed—then the microstructure will have minimal bacterial damage. If the samples from Backwell Cave show good microstructure preservation, we can suggest that these bones were brought to the cave after undergoing a funerary process that caused rapid removal of flesh or body parts. If not, we can suggest that these individuals were buried whole. Additionally, certain soil environments can cause bioerosion and fungal attack which can also be seen during this analysis.

I will compare the results from Backwell Cave to the rest of my database comprising of c. 200 samples from various sites throughout the southwest.

Stable isotope analysis. This will tell us what the individuals ate. This dietary data can be compared to other sampled individuals from the same time period. This will give us a better idea of what life was like for the people buried at Backwell.

Radiocarbon dating. Tratman (1937) suggested that these individuals were of Iron Age date based on some metalwork found among the burials. A radiocarbon date taken from a vertebrae yielded a Neolithic date. However, the assemblage was mixed, and the available reports do not give us stratigraphic/contextual information of the human remains. More radiocarbon dates will improve our understanding of burial chronology.

These analyses will give us a more comprehensive understanding of the use of the cave as a place of burial. Comparing this data with other samples from sites across the southwest will give us a better understanding of where Backwell Cave fits within Iron Age burial practice. These bones have such an incredible story to tell, and I'm so grateful to the University of Bristol Speleological Society Museum for giving me access to the collections. Watch this space as their story unfolds!

If anyone would like to know more about histological light microscopy of bone diagenesis and how it can be used to determine mortuary practices, here's a short blog that I wrote about it (with pictures!) https://cushareejournal.wordpress.com/2019/05/23/more-than-meets-the-eye-a-short-introduction-to-light-microscopy-of-bone-diagenesis-to-identify-funerary-treatments/