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Caves of Wonder: A Preliminary Analysis of the Faunal Assemblages from the Covesea Caves, NE Scotland

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The Covesea Caves are a series of later prehistoric sites located on the Moray Firth in north-east Scotland. Human remains have been recovered from several of these caves: the Sculptor's Cave, Covesea Cave 1 and Covesea Cave 2 (Benton 1931; Shepherd and Shepherd 1979; Büster and Armit 2016), and display unusual characteristics that may indicate complex ritual and funerary practices (Shepherd 2007; Armit et al. 2011). However, there has been less attention given to the significant number of faunal remains from the Covesea Caves. These faunal assemblages are now the subject of research at the University of Bradford. Focused analysis of the taphonomic and processing characteristics observed on the faunal bones will examine the role of animals in the overarching narrative of the Covesea Caves, as well as further investigate the complex funerary treatments to which the human remains were subject.

This paper outlines a method-driven pilot study undertaken on unstratified faunal remains from the 'Wolf Chamber' in Covesea Cave 2. Results from this study will be discussed and compared to select stratified remains from the main chamber of Covesea Cave 2; this will be accompanied by data collected from assessments undertaken on the main chamber faunal assemblage. Through this, the taphonomic nature of the cave environment and the role of caves in later prehistoric cosmology will be explored.

Introduction

On the north-east coast of Scotland, excavations in the Covesea Caves have uncovered assemblages of human remains displaying unusual characteristics that may indicate complex later prehistoric ritual and funerary practices. Although significant analysis has been undertaken on the human remains (Armit et al. 2011), the faunal remains have not been the focus of an equally detailed investigation.

The on-going project detailed in this paper continues analysis of the Covesea Caves by focusing on these faunal assemblages. These remains will be used to understand how the treatment and utilisation of animals fit into the narrative of these cave sites. Additionally, comparison of taphonomic factors and evidence for processing in the faunal assemblage will

provide a greater understanding of the complex funerary treatments to which the human remains were subject.

The Covesea Caves

The Covesea Caves are located in north-east Scotland, on the south coast of the Moray Firth. It is notoriously difficult to access these caves; one must either navigate the cliff side by using a rock cleft known as “the Lummie” (Büster and Armit 2016: 11) or wait until low tide to use the rocky shoreline (Armit et al. 2011: 251).

Sculptor’s Cave is arguably the best known among the Covesea Caves. It was excavated from 1928 to 1930 by Sylvia Benton (1931), and again in 1979 by Ian and Alexandra Shepherd (1979). The name derives from Pictish symbols found on the entrance walls (Büster and Armit 2017). Metalwork assemblages recovered by Benton indicated activity at the Sculptor’s Cave in the Late Bronze Age and the Roman Iron Age (Benton 1931: 203-204); funerary use of the cave also characterises these periods of use, as indicated by recent AMS dating undertaken on the human remains (Armit et al. 2011: 259-260). The quantity of human remains from the Sculptor’s Cave was considerable, and notably included a high number of juveniles, including juvenile mandibles found at the cave entrance, dated to the Late Bronze Age (Shepherd 2007: 198-199)

Covesea Cave 2 is located 100m west of the Sculptor’s Cave and may have been used for similar funerary activity, forming a coastal mortuary complex altogether (Büster 2015). Previous amateur excavations in the 1960’s by G.L. Darge were not recorded, but produced significant quantities of human bone. New excavations are revisiting the original trenches and recovering a preponderance of disarticulated human and faunal remains, similar to and contemporary with those at the Sculptor’s Cave (Büster and Armit 2016).

Methods

“Analysis” and “assessment” are the main methods used for investigating the Covesea Caves assemblages. For the purposes of this particular project, “analysis” entails in-depth examination that includes identification of species, element, and pathology, as well as identification and recording of fragmentation, appearance and severity of taphonomic characteristics. “Assessment”, on the other hand, is a brief overview where observed characteristics such as preservation and bone modification are noted, but not quantified to the same extent as in an analysis.

Guidelines for the identification of species, element, and other noteworthy characteristics from the recording handbook of the North Atlantic Biocultural Organisation’s

Zooarchaeological Database (McGovern et al. 2008) were consulted and adapted for this research.

The reference collection located at the University of Bradford was consulted for the identification of species and element through comparative anatomy analysis. In the case of inaccessible reference skeletons, manuals were consulted (Cohen and Serjeantson 1986; Hillson 1992). Measurements were taken for both dimensions and weight, following von den Driesch (1976).

Comprehensive guides to common pathologies found in faunal assemblages by Baker and Brothwell (1980) and Bartosiewicz (2013) were also consulted for recording.

To record fragmentation, Dobney and Reilly's (1988) zonation system for faunal remains was used. This will later be used in conjunction with the human zonation system by Knüsel and Outram (2004) for the purposes of cross-assemblage comparative analysis; this is particularly useful for mixed deposits (Outram et al. 2005), as well as for understanding taphonomic and depositional changes to an assemblage (Fibiger 2016: 4).

Butchery marks were identified and noted using an extensive recording system developed by Binford (1981), which also provides possible causes for the identified marks (i.e. filleting, dismembering, etc.). Binford has also developed criteria to identify bones that have been specifically cracked open by humans for marrow removal, which has been utilised for this project as well.

Gnawing was identified to species by using criteria developed from experimental archaeology with modern animals (Haynes 1983; Moran and O'Connor 1992; Young et al. 2015).

Weathering was quantified using the stages of bone degradation developed by Behrenmeyer (1978). This, alongside gnawing and butchery marks, was found to be useful for examining excarnation as a possible method of modification, as these characteristics can be useful indicators as to whether remains were exposed (Dowd et al. 2006; Smith 2006; Dowd 2008; Madgwick 2008), or perhaps manually defleshed prior to secondary deposition in the caves (Robb et al. 2015).

Pilot Study: the Wolf Chamber

An unstratified assemblage consisting of 194 faunal bones were retrieved as surface collection from a recently discovered second chamber in Covesea Caves 2. These faunal

remains were used in a pilot study to further develop methodology and framework for this project.

87.7% of the faunal assemblage was identified to Domesticated mammalian species, with most mammalian bones identified as sheep (*Ovis aries*); 39.0% of these bones were identified specifically as neonates. Other terrestrial mammalian species represented include one cat (*Felis catus*), one European hare (*Lepus europaeus*), and a large canid species that has tentatively been identified as a wolf (*Canis lupus*).

Most bird bones were identified as herring gulls (*Larus argentatus*), making up 34.2% of the assemblage. Also noteworthy were four bones which were identified as a now-extinct bird species, the Great Auk (*Pinguinus impennis*).

Marine fauna were not well-represented, with only four Atlantic cod (*Gadus morhua*) bones, one combined articular/dentary bone from an eel species (possibly conger eel), and three bones identified as grey seal (*Halichoerus grypus*).

Seven anthropogenic processing marks were identified. Only three bones had identifiable marks according to Binford's (1981) recording system; this included a bovine calcaneus which had a cut mark on the lateral face indicating possible dismemberment (ibid: 139), and two bird humeri with similar cut marks also suggesting dismemberment (ibid: 140-141). Sixteen bones displayed breakage of the diaphysis that suggested modification for marrow retrieval (ibid:155-162); at least three of these marrow cracked bones also had evidence of gnawing, which suggests that at least some was modification by animals. Approximately 11.3% of the bones in the assemblage had evidence of gnawing from animals, with marks identified to canid and felid teeth.

Another observed taphonomic characteristic was an unusual purple discolouration on three bones. A similar discolouration has been noted on human remains previously excavated from Covesea Cave 2 (Büster pers. comm.).

Covesea Cave 2: Select Contexts and Assessments

A selection of faunal remains from stratified contexts excavated from the main chamber of Covesea Cave 2 were identified to species and element, but only briefly analysed for taphonomic features and not to the extent of the analysis on the assemblage from the rear chamber. This brief preliminary analysis provides an idea of what the overall composition of the Covesea Cave 2 assemblages will look like.

Overall, bones identified from the Neolithic contexts were observed to have little to no indications of weathering. An example of this notable lack of weathering is the relatively intact cranial vault of a red deer from context 447.

Deer-like remains comprise 56% of the Neolithic assemblage; these bones have tentatively been identified as red deer, but can later be confirmed with ZooMS analysis. A left mandible identified as one of these large deer/elk measured approximately 350mm.

Both the Neolithic and Iron Age assemblages included burnt and possibly butchered bone, but in particular the Neolithic assemblage had five distinctly butchered *and* burnt fragments of long bone, unidentified to species.

In contrast to the Neolithic bones, those from the Iron Age contexts had more evidence of severe weathering. One of the few exceptions to this was a mostly complete, articulated bird skeleton.

In comparison to earlier periods of Covesea Cave 2, very few deer remains were identified; instead, the Iron Age assemblage is comprised mostly fish and bird remains, together representing 70% of the total. This includes seven fish bones with a serrated texture that were unable to be identified. This assemblage also had the only identified pig, represented by half of a right mandible with some pathologic or taphonomic characteristics that require further investigation.

The stratified faunal assemblages from Covesea Cave 2 were also formally assessed and recorded. This also included an experimental element, in which the assessment was undertaken "blind", i.e. with no prior of consultation of the chronological period assigned to each context. After these patterns were noted, the tentative dates for each context were revealed. Surprisingly, clear chronological patterns were observed.

Bones dated to the Neolithic had very little weathering, and were light in colour with some instances of black discolouration, similar to the purple discolouration of the bones from the rear chamber of Covesea Cave 2. Species composition of the Neolithic assemblage consisted mostly of deer (50.4%), including several considerably large deer-like bones that may represent a larger species of ungulate, such as elk. Human activity also appears to be present, in the form of burnt and marrow-cracked bone fragments.

Deer continued to comprise the majority of the mammalian assemblage in the Bronze Age (25.9%). Cattle, which were not observed in the Neolithic contexts, comprise 12.1% of the Bronze Age faunal bones. Burnt bone and butchered bone continue to be seen in this assemblage, as well as the black discolouration on some bones.

The Iron Age assemblage exhibits a severe amount of weathering throughout, but also included several articulated bird bones. The colours of the bones are much darker and some bones were too heavily fragmented for identification. This assemblage is mostly dominated by fish and bird remains (58%), with the amount of deer remains dropping considerably in comparison to the Neolithic and Bronze Age. However, evidence of human activity appears to continue throughout this period, based on the amount of burnt and butchered bone.

Conclusions

The preliminary analysis performed on the faunal remains from both chambers of Covesea Cave 2 opens up a wealth of opportunities for further research. Human activity is apparent in the analysed assemblages, mostly by burnt and butchered bone; in turn, this supports the proposed comparative analysis with the human remains from Covesea Cave 2 as a means of investigating differences between the treatment of human and animal bone, and also confirms that there will be culturally-based agents of taphonomy at work in these assemblages.

The analysis of select bones from the main chamber of Covesea Cave 2 also led to the observation of chronologically-distinct patterns that were later confirmed by the bone assessments of the entire cave's assemblage. Bones from Neolithic contexts were light in colour and had little evidence of weathering. Both burning and marrow cracking were consistently observed throughout the assemblage. Deer make up the majority of species composition at 50.9%. Bones from Bronze Age contexts were only examined through a brief bone assessment, but appeared to share similar physical characteristics with the Neolithic assemblage; however, there was more evidence of weathering. Deer continue to be represented in large quantities (25.9%), but the proportion of cattle also increases from 0 to 12.1%. The number of fish and bird bones also increases significantly, now comprising 43.5% of the assemblage. In the Iron Age contexts, there is evidence of more severe weathering and the colour of the bones is significantly darker. The amount of deer in this assemblage has decreased to 18.0% of the overall species composition. Despite the poorer preservation of this assemblage, there is still a significant amount of fish and bird bones (38.1% of the overall assemblage), which are more fragile and usually less likely to survive taphonomic factors; most noteworthy are two instances of articulated bird remains.

Based on these patterns, further investigation into identifying and differentiating between the specific taphonomic agents that caused variations in the characteristics and composition of the assemblages over time will be vital to future research and comparison with the human bone assemblages; these patterns also make a case for the application of histological

analysis to see if the taphonomic characteristics of the remains can be used to develop a depositional history.

Further Work

As of the writing of this paper, formal identifications and recording of the remaining faunal bones excavated from the Covesea Caves are underway. Similar patterns are continuously being observed in these other assemblages, again affirming that the methodology used in the preliminary analysis is sufficient for this project. Several bones that have been given tentative identifications are currently undergoing ZooMS (zooarchaeology by mass spectrometry) and ancient DNA analysis to confirm their species. Microscopy has been employed to further investigate taphonomic characteristics, which has revealed a significant degree of preservation is prevalent in the faunal assemblages.

Other forms of analysis have been proposed for this project. For example, bone histology will be used to examine both treatment and preservation to develop the depositional histories of the sites (Booth and Madgwick 2016). Elemental index analysis will also be used to investigate specific methods of selection and processing; this has previously been undertaken on material from the Sculptor's Cave (Büster et al. forthcoming) and Covesea Caves (Shaw pers. comm.). In addition, radiocarbon dating will be undertaken on select bones from the rear chamber of Covesea Cave 2 to contextualise these unstratified assemblages.

Comparative analysis will also be a significant part of further research for this project. Treatment of the human remains from Covesea Cave 2 will be compared with findings from the faunal remains; this comparison should further develop the interpretations of both assemblages and lead to a greater understanding of complex later prehistoric funerary rites. To provide a control group for comparison, this project will also include small, domestic faunal assemblages from contemporary sites. To account for environmental and cultural factors that may be unique to cave sites, similar faunal assemblages from other caves will also be used for comparison with the assemblages from the Covesea Caves.

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