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New radiocarbon dates from Fishmonger's Swallet, Alveston, South Gloucestershire, UK

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Abstract: This report presents six new radiocarbon dates from disarticulated human (3) and dog (3) bones from Fishmonger's Swallet, Alveston, South Gloucestershire, increasing the total to 17 dated specimens from the site. The findings suggest a relatively concentrated period of use as a mortuary site during the Late Iron Age, with overlapping deposition episodes for humans and dogs, and evidence that might indicate an earlier onset of dog remains interment.

Keywords: AMS, Bayesian modelling, burial archaeology, funerary archaeology, Late Iron Age, Early Roman.

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Introduction

Fishmonger's Swallet, Alveston, South Gloucestershire, is a small swallet cave located close to the outcrop boundary between shales of the Penarth Group and the Clifton Down Limestone Formation, on the west flank of the Coalpit Heath Syncline, and close to the Ridgeway Fault. It was discovered and first excavated by Clive Grace (the Fishmonger), with digging duties being continued by the Hades Caving Club (HCC) from the 1990s onwards (Hardwick, 2022). The archaeological deposit in the entrance shaft continues to be investigated by a group from the University of Bristol Spelaeological Society (UBSS), and all finds are curated in their museum by kind permission of the landowners. Figure 1 shows excavation underway in 2021.

This programme builds on previous dating efforts, including a recent study by Bricking *et al*. (2022a) that dated seven skeletal elements from humans and canines (identified as domestic dogs, see Peto *et al*., 2022) and incorporated these with previously obtained dates during a project associated with the British *Time Team* television series in 2000.

Utilising accelerator mass spectrometry (AMS) techniques, the new dates that are presented here expand the dated corpus for the site to seventeen specimens, representing a minimum number of individual humans to four, and dogs to six, based on the sampled elements. These new data offer further insights into the chronology of the depositional practices at Fishmonger's Swallet.

***Figure 1**: Excavating in Fishmonger's Swallet during June 2021. [Photo: Linda Wilson.]*

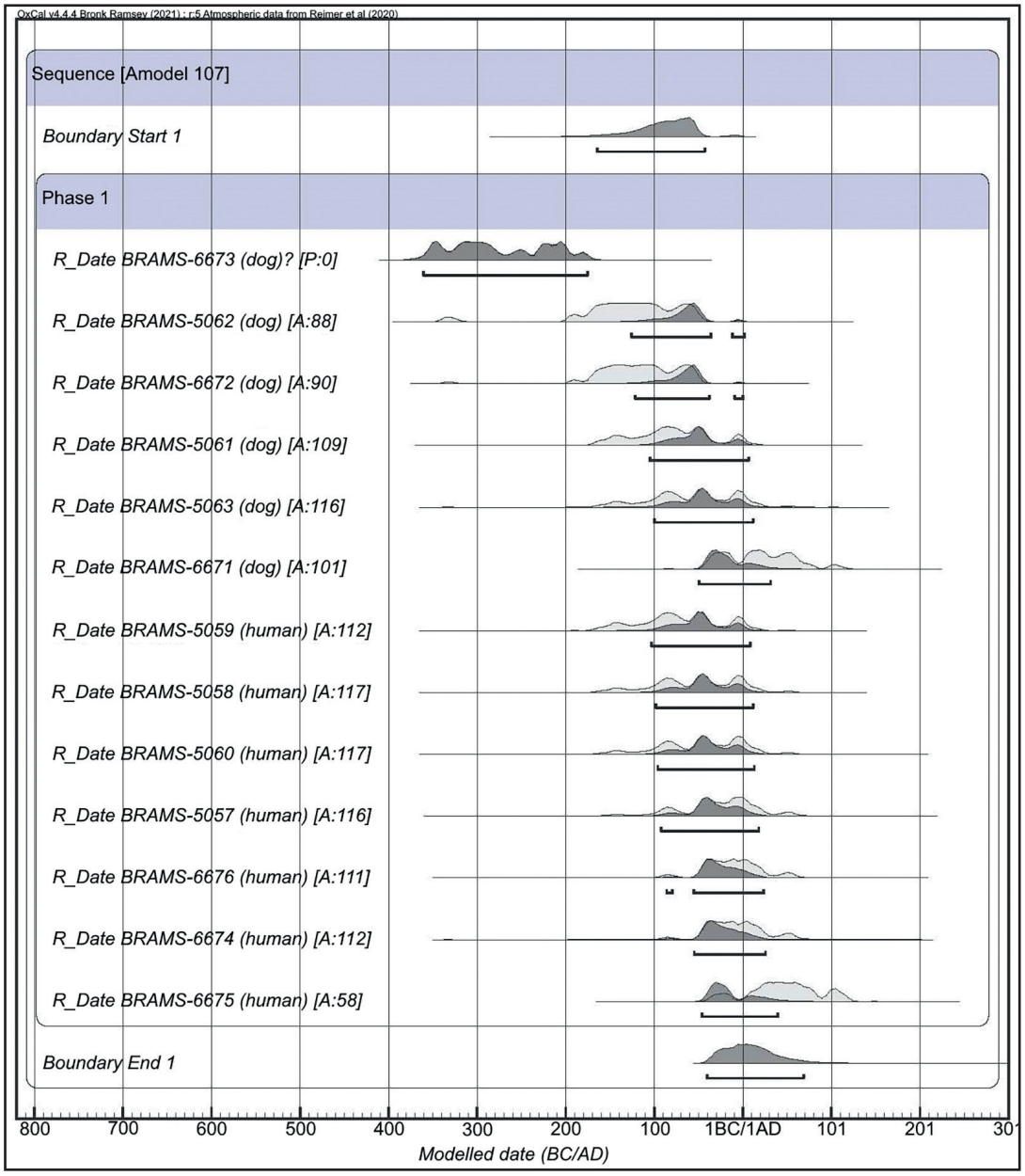

Figure 2:
Bayesian model for radiocarbon dates from bone samples from Fishmonger's Swallet, obtained during the present study and by Bricking et al.*, 2022.*
Generated using OxCal v.4.4.4 (Bronk Ramsey, 2021); r:5 atmospheric data from Reimer et al.*, (2020).*
The paler (greyed-out) probability distributions are the calibrated date estimates and the darker (filled) ones are the modelled results. The index of agreement for BRAMS-6673 was only 42% when modelled, suggesting that this determination does not fit well within the same phase of activity as the others; it is either a statistical outlier or an earlier burial. It is here modelled as an outlier.

Results and discussion

The calibrated results of the new radiocarbon dates, as well as all other radiocarbon dates thus far obtained from the site, are presented in Table 1, and illustrated in Figure 2.

Overall, the new dates are largely aligned with those reported in Bricking *et al*. (2022a), falling within the expected Late Iron Age to Early Roman timeframe. However, one of the sampled dogs produced the earliest radiocarbon date from the site so far (BRAMS-6673), dating to 370–170 cal BC, and one of the humans produced the latest dates (BRAMS-6675), dating to 40 cal BC–AD cal 120.

Bayesian modelling using OxCal (v.4.4.4, Bronk Ramsey, 2021) refines the chronology, suggesting a relatively brief period of deposition during the Late Iron Age (c.100 BC–AD 43). All dates apart from the earliest dog (BRAMS-6673) have been modelled as one contemporary depositional event because there is currently no evidence to suggest otherwise. The assemblage is heavily disturbed, with no stratigraphic context to inform depositional sequence and no artefactual evidence to suggest an earlier or later episode of use until modern (c.20th century) infiltration of debris. The outlier (BRAMS-6673) perhaps suggests that the mortuary practice afforded to human remains might have followed an already established tradition of depositing dog remains in the swallet. However, due to the incompleteness of excavation and the disarticulated nature of the deposits, it is possible that there are earlier human remains that have not yet been subject to radiocarbon dating, or that the outlier is incidental and unrelated to the deposition events concentrated in the first century BC.

Dates acquired in 2000 have not been used as part of the modelling, because these were all obtained by beta-counting, and the samples did not undergo modern pre-treatment processes now used routinely when obtaining dates using AMS techniques. They are, however, included in Table 1 for completeness.

Interestingly, the modelled end-date for the represented humans and dogs suggests an abrupt termination of skeletal remains deposition at the site by the close of the first century AD. This might indicate abandonment of the site, due to changes in mortuary practice or other ritual traditions, or relocation or elimination of the local community, possibly as a result of Roman influence. Alternatively, environmental changes (e.g. collapse of the cave wall) might have meant that the site could no longer function as it had.

The site's relatively constrained use as an ossuary offers a unique window into the obscure mortuary practices of the Iron Age, particularly those that result in disarticulation. This adds a new dimension to our understanding of post-mortem treatments of human remains at the swallet, which includes evidence for post-mortem manipulation and exposure of human bone such as fresh longitudinal fractures, cut marks, and canid gnawing (Cox and Loe, 2022; Bricking *et al*., 2022b)

	Lab code	Sample cat no.	Species	Element	14C yr	±	Cal BC/AD (95%)		δ¹³C‰
2023	BRAMS-6671	G10-21.114	Canid	Skull	1995	23	−50	110	−20.4
	BRAMS-6672	G10-21.35	Canid	Skull	2104	23	−200	−40	−22.1
	BRAMS-6673	G10-21.27	Canid	Skull	2198	23	−370	−170	−20.3
	BRAMS-6674	G10-1.5	Human	Femur	2020	23	−90	70	−21.3
	BRAMS-6675	G10-1.6	Human	Mandible	1973	23	−40	120	−20.9
	BRAMS-6676	G10-1.7	Human	Mandible	2024	23	−100	70	−22.8
2021	BRAMS-5057	G10-1.2	Human	Femur	2036	28	−150	70	−20.1
	BRAMS-5058	G10-1.3	Human	Mandible	2052	28	−110	80	−20.5
	BRAMS-5059	G10-1.4	Human	Mandible	2063	28	−170	10	−20.3
	BRAMS-5060	G10-1.1	Human	Femur	2048	28	−160	30	−20.3
	BRAMS-5061	G10-21.24	Canid	Mandible	2070	28	−170	10	−21
	BRAMS-5062	G10-21.202	Canid	Mandible	2109	29	−340	−40	−21.4
	BRAMS-5063	G10-21.208	Canid	Mandible	2055	29	−160	30	−21.4
2000	Beta-150613	G10-1.1	Human	Femur	1940	40	–	–	−20.6
	WK-8222	–	Human	?	1990	80	−180	240	−26.6
	WK-8223	–	Bovid	?	2030	80	−350	210	−24.4
	WK-8224	–	Canid	?	2030	100	−360	310	−23.8

***Table 1**: Radiocarbon determinations from Fishmonger's Swallet.*
Calibrated in OxCal v4.4.4 (Bronk Ramsey, 2021); r:5 Atmospheric data from Reimer et al. *(2020). Dates are rounded by 10.*

The mandible shown in Figure 3 is an example of post-depositional damage; there is no evidence that this was broken deliberately. The concurrent interment of human and domestic dog remains also sheds light on human–canine relationships during the pre-Roman Late Iron Age. To provide further insights into human–animal relationships represented at the site, and to clarify the cave's evolving role over time, future dating efforts should focus on non-canine animal bones. Results of such studies might lead to significant deepening of our understanding of the site's multifaceted functions throughout its period of use. An account of the current understanding of the non-canid domestic faunal assemblage at the site is provided by Peto *et al.* (2022, p.110).

***Figure 3**:*
A fractured human mandible from Fishmonger's Swallet that has been broken post-deposition across the site of a large, partially-healed abscess. Refitted from two specimens. Museum Catalogue No. G10-1.4. [Photo: Adelle Bricking.]

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