

A Light in Dark Places: Later Prehistoric Mortuary Activity in Caves in Scotland and Northern England

By BEN HUME and IAN ARMIT

Supplementary appendices

APPENDIX S1: DETAILS OF EACH INDIVIDUAL INCLUDED IN THE DATASET

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference							
BORNESSE CAVE (Cave Catalogue no. 14)																																							
Scotland	Dumfries & Galloway	1878	IA	2784±30 BP (SUERC-61320, 1006-844 cal BC)		x					Disart.	Cranial frags, mid-section humerus					x				x												Cave formed after Neolithic. Found in stalagmite & breccia. Assoc. samian. No raw date	Clarke 1876; 1878; Sheridan <i>et al.</i> 2019					
			IA	As above		x						Disart.	Distal end femur					x										x					No evidence of gnawing. Assoc. samian. No raw date						
COVESEA CAVE 1 (5)																																							
Scotland	Moray		BA	3731±36 BP (SUERC-61925, 2278-2027 cal BC)			x				Disart.						x				x													Unpublished					
COVESEA CAVE 2 (6)																																							
Scotland	Moray	1960s	BA	2738±29 BP (SUERC-68715, 970-816 cal BC)			x				Disart.		x														x			x		Some evidence of cut marks & post-hole alignments that could suggest laying out & processing of remains	Büster 2014; Büster & Armit 2019; Sheridan <i>et al.</i> 2019						
			BA	2757±29 BP (SUERC-67816, 977-829 cal BC)			x				Disart.			x														x			x			As above					
			BA				x				Disart.								x			x																	
			BA				x				Disart.								x				x																
			BA				x				Disart.								x					x															
			BA				x				Disart.								x																				
			BA				x				Disart.								x																				
			BA				x				Disart.								x																				
			BA				x				Disart.								x																				
CRINAN FERRY ROCK SHELTER (8)																																							
Scotland	Argyll & Bute	1880	BA			x			x		Inhum.	cist burial					x											x	Pottery vessels, 1 is a beaker		Evidence of domestic cave use as well as funerary practices	Tolan-Smith 2001							
			BA			x			x		Inhum.	cist burial					x											x	as above		as above								
FISKAIVAIG (1)																																							
Scotland	Highland	2009	RIA	1850±35 BP (SUERC-28068, cal AD 85-315)					x		Disart.						x										x		x		Cranial frag., drilled hole	Birch 2009; Shapland & Armit 2012							

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference
RHODES LINKS CAVE (4)																																
Scotland	Highland	1907	RIA								Un-known						x															Richardson 1907
GASWORKS CAVE (9)																																
Scotland	Argyll & Bute	1877	BA			x		x			Disart.				x												x		Found with EBA pottery	remains v. fragmentary	Turner 1895	
GLENNAN (10)																																
Scotland	Argyll & Bute	2000	BA								Crem.	Urned			x														EBA urn		C14 dating problematic with indirect date from hazel charcoal suggesting Neolithic date. Urned cremation more likely of BA date. Cremated with young goat/sheep remains	McGregor 2003
HIGH PASTURE CAVE (2)																																
Scotland	Highland	2003-2009	IA	2503±29 BP (SUERC-6638, 778-540 cal BC)				x		B	Disart.	Stray teeth					x														Finds of metal-working debris, eg. slag	Birch 2004; Armit 2022
			IA	2160±27 BP (SUERC-66381, 355-59 cal BC)				x		J	Disart.	Pelvic frag.					x															
			IA	2nd century BC				x		L	Disart.	Charred cranial frags					x															
			IA	2233±29 BP (SUERC-66363, 388-201 cal BC) & 2217±30 BP (SUERC-66362, 383-197 cal BC)	x			x		K	Disart.						x			x												
			IA	2499±27 BP (SUERC-66384, 776-540 cal BC)	x			x		C	Disart.	Stray teeth								x												
			RIA	1890±40 BP (SUERC-14946, cal AD 30-239)				x		A	Inhum.	Buried beneath stones		x									x	x							Age 25-40 & poss crushed to death <i>in situ</i> by the stones	
			RIA	1857±27 BP (SUERC-66370, cal AD 122-241)				x		D	Un-known						x			x												
			RIA	1867±29 BP (SUERC-66372, cal AD 85-240)				x		E	Inhum.	Complete					x	x														
			RIA	1st-2nd century AD				x		F	Disart.	Single element					x		x													

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference	
			RIA	1884±29 BP (SUERC-66371, cal AD 80-234)				x		G	Inhum.	Complete inhum.					x	x															
			RIA	2048±27 BP (SUERC-66383, 154 cal BC-cal AD 25)				x		H	Un- known						x		x													Gnaw marks to bone suggesting exhumation	

MacARTHUR CAVE (11)

Scotland	Argyll & Bute	1895	IA	2170±55 BP (OxA-4485, 376-54 cal BC)				x			Disart.													x	x							Above sealed Mesolithic occupation layer. Gnaw marks on some bones suggests exhumation	Saville & Hallén 1994; Hedges <i>et al.</i> 1995; Shapland & Armit 2012; Armit 2022
			IA	2365±55 BP (OxA-4486, 751-234 cal BC)				x			Disart.													x	x				x		1 individual has had section of cranium removed while bone still fresh in similar fashion to frag. found at Fiskavaig		
			IA	2460±55 BP (OxA-4487, 763-414 cal BC)				x			Disart.		x																		2 males may have been brothers or father & son based on mitochondrial haplogroups		
			IA	2295±60 BP (OxA-4488, 538-177 cal BC)				x			Disart.		x														x				As above		

ARCHERFIELD CAVE (13)

Scotland	E. Lothian	1909	RIA					x			Disart.						x																Cree 1909
----------	------------	------	-----	--	--	--	--	---	--	--	---------	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-----------

SAINT BALDRED'S CAVE (AULDHAME; SEACLIFF CAVE) (12)

Scotland	E. Lothian	1831	BA			x	x				Inhum.						x			x											Crude red earthenware IA pottery associated with remains	Layard 1934	
			BA			x	x				Inhum.						x			x													

SAND 1 ROCK SHELTER (3)

Scotland	Highland	1999-2000	BA	3615±65 BP (AA-50698, 2195-1772 cal BC)					x		Disart.	Isolated permanent central incisor					x														Site contains mostly Mesolithic deposits. No raw date or lab code	Schulting 2009
----------	----------	-----------	----	---	--	--	--	--	---	--	---------	------------------------------------	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	---	----------------

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference			
SCULPTOR'S CAVE (7)																																			
Scotland	Moray	1928-1930 & 1979	RIA	1795±35 BP (SUERC-16617, cal AD 133-362)			x				Disart.					x											x			x	decapitation	Armit & Büster 2020			
			RIA	1735±35 BP (SUERC-16618, cal AD 245-405)			x					Disart.					x						x								x		decapitation		
			RIA	1738±33 BP (UB-6930, cal AD 245-403)			x						Disart.			x													x				x	decapitation	
			RIA	1835±35 BP (SUERC-16619, cal AD 12-325)			x						Disart.					x											x				x	decapitation	
			RIA	1740±35 BP (SUERC 16620, cal AD 244-403)			x						Disart.					x						x									x	decapitation	
			RIA		assoc. with directly dated vertebrae			x					Disart.					x											x				x	fracture poss. Assoc. with decapitation	
			RIA	1780±35 BP (SUERC-16621, cal AD 209-379)			x						Disart.			x														x			x	peri-mortem spiral fracture to tibia	
			RIA	1770±35 BP (SUERC-16627, cal AD 215-382)			x						Disart.					x						x											thoracic vertebra
			RIA		assoc. with directly dated remains			x					Disart.					x						x											maxilla frag.
			RIA	1696±29 BP (SUERC-68712, cal AD 255-419)			x						Disart.		x															x				male according to ancient DNA analysis of left temporal bone	
			BA		assoc. with directly dated remains			x					Disart.					x					x										x	aged 1-2 frontal element with trauma	
			BA	2845±35 BP (SUERC-16623, 1118-913 cal BC)			x						Disart.					x						x										x	aged 4-6 mandible with trauma
			BA	2845±35 BP (SUERC-16622, 1118-913 cal BC)			x						Disart.					x						x										x	aged 2-4 perimortem trauma to mandible at gonial angle
			BA		same context as SUERC-16622			x					Disart.					x						x										x	around 7 years old mandible with cut marks

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference		
			BA		context still LBA found with built structures		x				Disart.						x												x	aged 14-16 mandible with no trauma				
			BA				x				Disart.																				Mix of MNI 19 although due to disturbance of remains & records, this number could be much higher			
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							
							x				Disart.																							

TORRS CAVE (DIRK HATTERAICK COVE) (15)

Scotland	Dumfries & Galloway	1935-1937	RIA			x	x				Disart.	Isolated tibia						x													x		x	Bone had been worked. Found in IA layer with worked animal bone & samian	Morris 1937
----------	---------------------	-----------	-----	--	--	---	---	--	--	--	---------	----------------	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	---	--	---	--	-------------

ANTOFTS WINDYPIT (20)

England	Yorkshire	1955	BA	3110±28 BP (OxA-13000, 1441-1290 cal BC)				x			Disart.			x																			Found in chamber 3 with beaker pottery but later radiocarbon date	Leach 2006
			BA			x	x				Disart.		x										x										As above	
			BA			x	x				Disart.		x										x										As above	

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference
			IA			x		x			Disart.					x		x											x	Found in chamber 2 with IA Calcite-Gritted Ware. Chamber 2 has strong bias towards adult remains. Cut mark evidence of defleshing		
			IA			x		x			Disart.		x										x						x	As above		
			IA	2380±29 BP (OxA-13001, 712-393 BC)				x			Disart.				x							x							x	As above		
			IA			x		x			Disart.				x								x						x	As above		
			IA			x		x			Disart.		x											x						As above		

BUCKLAND'S WINDYPIT (21)

England	Yorkshire	1956-60	RB	1864±24 BP (OxA-11798, cal AD 124-235)				x		Skull 6	Disart.				x								x						x	Peri-mortem blunt force trauma leading to fracturing of the cranium.	Leach 2006
			RB	1829±24 BP (OxA-11799, cal AD 129-313)				x		Skull 1	Disart.		x										x						x	As above	
			RB		Assoc. with skulls 6 & 1			x		Skull 5	Disart.		x									x							x	Poss. evidence of peri-mortem blunt force trauma to cranium	
			RB		Assoc. with skulls 6 & 1			x		Skull 3	Disart.		x											x					x	Prob. peri-mortem blunt force trauma to cranium	
			RB		Associ. with skulls 6 & 1			x		Skull 4	Disart.				x											x				No evidence of peri-mortem trauma although preservation v. poor	
			RB		Assoc. with skulls 6 & 1			x		Skull 2	Disart.					x										x				Poor preservation but appears robust enough to be adult	

HEIGHTS LANE GRIKE, SKYRETHORNS (22)

England	Yorkshire	1994	IA	2420±65 BP (OxA-6109, 761-396 cal BC)				x			Disart.					x													x	Previously cited as evidence for 'Celtic head cults', was found in deep crevice near round-house	Bronk Ramsey <i>et al.</i> 2002
---------	-----------	------	----	---------------------------------------	--	--	--	---	--	--	---------	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	---	--	---------------------------------

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference
---------	----------	-----------	------	-------------	---------------	------------------	----------	------------	--------------	-----------------	-------------------	------------	------	--------	-------	---------	-------------	----------------------------	------------------------	--------------------------	-----------------	--------------------	---------------------	----------------------------	--------------------------	--------------------	--	-------------	-------------	--------	-------	-----------

RAVEN SCAR CAVE (24)

England	Yorkshire	1973	BA	2808±29 BP (OxA-13536, 1048-855 cal BC)				x			Disart.																					Date from human bone	Leach 2006						
			BA	2832±29 BP (OxA-13535, 1107-906 cal BC)					x			Disart.		x																				Date from human tooth					
			BA						x			Disart.		x																									
			BA						x			Disart.			x																								
			BA						x			Disart.																											
			BA						x			Disart.																											
			BA						x			Disart.																											
			BA						x			Disart.																											
			BA							x			Disart.																										
			BA							x			Disart.																										
			BA							x			Disart.																										
			BA							x			Disart.																										
			BA							x			Disart.																										

NORTH END POT (23)

England	Yorkshire	1985-88	IA	2260 BP (HAR-8056, error range unavailable)				x			Disart.																							Cranium from entrance of cave, previously used for deposition of Neolithic remains	Leach 2006
---------	-----------	---------	----	--	--	--	--	---	--	--	---------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	------------

SHUTTLEWORTH POT (25)

England	Yorkshire	2010	BA	2200-2026 BC raw date unavailable				x			Disart.		x																					No raw date available	Lord & Howard 2013
---------	-----------	------	----	-----------------------------------	--	--	--	---	--	--	---------	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-----------------------	--------------------

SLIP GILL ('SNIP GILL') WINDYPIT (26)

England	Yorkshire	1949, 1956, 1981	RB		Assoc. with directly dated remains			x			Disart.		x																					Missing Skull	Leach 2006		
			RB	1931±27 BP (OxA-14440, cal AD 23-204)				x			Disart.			x																						Missing Skull.	
			RB	1991±25 BP (OxA-11800, 44 cal BC-cal AD 110)					x			Disart.																									Decapitation.
			RB		Assoc. with directly dated remains				x			Disart.																									Twig peel fracture to the femur

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference
			RB		As above			x			Disart.						x								x			As above				
			RB		As above			x			Disart.						x				x							As above				
			RB		As above			x			Disart.						x							x				As above				
			RB		As above			x			Disart.						x							x				As above				
			RB		As above			x			Disart.						x				x							As above				
			RB		As above			x			Disart.						x				x							As above				
			RB		As above			x			Disart.						x					x						As above				
FAIRY HOLES (40)																																
England	Lancashire	1946, 2013	BA			x		x			Crem.	Urned					x										x		Frag BA Collared Urn		Both individuals placed in same urn	Peterson 2013
			BA			x		x			Crem.	Urned					x			x								As above		As above		
HEANING WOOD BONE CAVE (38)																																
England	Cumbria	1958	BA	x		x		x			Disart.		x														x		Assoc. with BA Collared Urn		Remains may have been discarded down crevice leading to cave below. AMS 'Early Bronze Age dates'	Barnes 1970; Smith 2012
			BA	x		x		x			Disart.		x														x		As above		As above	
			BA	x		x		x			Disart.			x													x		As above		As above	
RAWTHEY CAVE (39)																																
England	Cumbria	1996-97	BA	3167±55 BP (AA-22519, 1535-1287 cal BC)				x			Disart.						x										x				Skull frag.	Hedges <i>et al.</i> 1998
			RB	1865±40 BP (OxA-7450, cal AD 69-309)				x			Disart.			x													x				Skull	
BISHOP MIDDLEHAM QUARRIES (18)																																
England	County Durham	1932	IA			x		x			Inhum.	Crouched under large, flat stone					x										x				Assoc. with IA pottery & bone point of similar type to Grimthorpe Warrior in E. Yorkshire	Whimster 1981
			IA			x		x			Inhum.	As above					x										x				As above	
			IA			x		x			Inhum.	As above					x										x				As above	
			IA			x		x			Inhum.	As above					x										x				As above	
			IA			x		x			Disart.						x										x				As above	
			IA			x		x			Disart.						x										x				As above	
			IA			x		x			Disart.						x										x				As above	
			IA			x		x			Disart.						x										x				As above	
			IA			x		x			Disart.						x										x				As above	

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference			
CORBY'S CRAGS (16)																																			
England	Northumberland	1975	BA			x			x		Crem.	Urned					x												x	BA urn		Crem. covered by capstone. Also standing stone & cup and ring marks on nearby stone	Beckensall 1976		
DUNALD MILL HOLE (41)																																			
England	Lancashire	2014	RB	1900 BP (SUERC-52518, error range unavailable)				x			Disart.					x																Isolated fragmentary cranium of juvenile aged 3-6. Remains most likely entered through fluvial system rather than intentional deposition in cave	Cameron <i>et al.</i> 2019		
GOATSCRAG (17)																																			
England	Northumberland	1967-8	BA			x			x	Burial 1	Crem.	Urned					x											x	BA Food Vessel Urn			Burgess 1972			
			BA			x			x	Burial 4	Crem.	Unurned						x											x	Single sherd similar to Burial 1 & burnt flint flake with use wear		Maybe similar or earlier date to Burial 1 as covered by same hard deposit. Token deposit due to lack of remains			
			BA			x			x	Burial 2	Crem.	Urned						x													BA Food Vessel Urn		Both individuals placed in same urn & covered by stone slab		
			BA			x			x	Burial 2	Crem.	urned							x													As above		As above	
			BA			x			x	Burial 3	Crem.	Unurned							x													Barrell shaped lignite bead & large unused flint flake		Token deposit of poorly cremated remains covered by stone slab	
HEATHERY BURN CAVE (19)																																			
England	County Durham	1843, 1859-72	BA			x		x			Disart.						x												x	pottery sherds, bronze armlet, bronze spearhead & bone pins & 'knives'		Highly fragmented remains could represent more than 1 individual	Elliot 1862a; 1862b		

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference				
ASH TREE CAVE (27)																																				
England	Derbyshire	1938-9, 1949-57, 1959-60	BA	3730±90 BP (OxA-4446, 2454-1897 cal BC)				x			Disart.						x															Disart. remains covered by rocks. Other individuals nearby though poss. Neolithic	Armstrong 1956; Hedges <i>et al.</i> 1996a			
BULL PIT (28)																																				
England	Derbyshire	2011-19	RB	1868±21 (SUERC-90243, cal AD 125-230)				x			Disart.		x																				Chamberlain <i>et al.</i> 2020			
			RB		1868±21 (SUERC-90243, cal AD 125-230)				x			Disart.		x																			C14 date from other assoc. individual			
CARDEN PARK ROCK SHELTER (42)																																				
England	Cheshire	1996-9	BA			x		x			Crem.	Unknown					x												x	Frag. beaker vessel		Remains heavily eroded & fragmented after burning	Fitzpatrick-Matthew 2006			
CARSINGTON PASTURE CAVE (29)																																				
England	Derbyshire	1998-9	IA	2230±20 BP (PSUAMS-8289, 381-203 cal BC)				x		I12778	Inhum.		x						x													Sexed through aDNA. Found in 2nd chamber suggesting area for neonate deposition	Chamberlain 1999; 2001; Booth 2022			
			IA					x		I12781	Inhum.		x							x													As above (CPC15-051, 400-100 BC)			
			IA	2200±20 BP (PSUAMS-8287, 361-177 cal BC)					x		I12775	Inhum.		x							x													As above		
			BA	3515±20 BP (PSUAMS-8288, 1918-1750 cal BC)					x		I12776	Inhum.			x							x													As above	
			IA	2210±20 BP (PSUAMS-8290, 370-197 cal BC)						x		I12779	Inhum.			x						x													As above	
			IA	2217±44 BP (UBA-30798, 390-171 cal BC)						x		I12770	Inhum.			x						x													As above	
			IA	2460±30 BP (OxA-29233, 758-416 cal BC)						x		I12774	Disart.		x															x				Adult remains scattered through cave & disart. through cave processes & carnivore action. More individuals found but not been dated		

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference
			IA					x		I12773	Disart.		x													x				as above. (CPC-99-31, 500-100 cal BC)		
			IA					x		I12780	Disart.		x														x				As above (CPCY-08-093, 500-100 cal BC)	
			IA					x		I12777	Disart.		x														x				as above (CPC03-070, 500-100 cal BC).	
			IA	2321±36 BP (UBA-32284, 513-210 cal BC)				x		I12771	Disart.		x														x				As above	
			IA	2209±31 BP (UBA-30432, 377-177 cal BC)				x		I3014	Disart.			x													x				As above	
			IA	2435±55 (OxA-9806, 758-403 cal BC)				x		CPC-98-103	Disart.						x										x				As above	

FRANK 'I' TH' ROCKS CAVE (30)

England	Derbyshire	1925	RB	1765±30 BP (OxA-34199, cal AD 230-380)				x			Disart.		x														x				Portions of skulls, jaws, teeth, vertebrae & clavicles numerous but few long bones & no adult skulls. Could suggest removal of elements after decomposition. C14 date from radius	Palmer & Lee 1928; Branigan & Dearne 1991; Fear & O'Regan 2019
			RB	1786±31 BP (OxA-34200, cal AD 208-361)				x			Disart.					x			x												As above. C14 date from femur	
			RB			x		x			Disart.																x				As above	
			RB			x		x			Disart.						x				x										As above	
			RB			x		x			Disart.						x					x									As above	
			RB			x		x			Disart.						x														As above	
			RB			x		x			Disart.						x														As above	
			RB			x		x			Disart.						x														As above	
			RB			x		x			Disart.						x														As above	

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference	
LANGWITH CAVE (31)																																	
England	Derbyshire	1903-12, 1927	IA	2330±60 BP (OxA-2232, 746-201 cal BC)				x			Disart.				x												x					Originally thought to be Upper Palaeolithic due to surrounding context until IA C14 date. Also many faunal species represented	Mullins <i>et al.</i> 1913; Hedges <i>et al.</i> 1991
MOTHER GRUNDY'S PARLOUR (32)																																	
England	Derbyshire	1876	IA	2210±80 BP (OxA-1832, 403-50 cal BC)					x		Disart.					x																Assoc with other juvenile remains although these appear to be Neolithic	Hedges <i>et al.</i> 1991
PIN HOLE CAVE (33)																																	
England	Derbyshire	1874, 1924-38	BA			x		x			Inhum.					x																Neolithic C14 dates could be inaccurate due to mixing of charcoal samples. Assoc. Beaker & Collared Urn dated to c. 1550-1400 BC	Gilks 1974
			BA			x		x			Inhum.					x												x				As above	
POOLE'S CAVERN (34)																																	
England	Derbyshire		RB			x		x			Disart.					x																Wide range of RB metalwork assoc. Also 1 other skeleton although poss. medieval date. Remains v. fragmented, lots of missing elements	Bramwell <i>et al.</i> 1983; Branigan & Dearne 1991
			RB			x		x			Disart.					x													x			As above	
			RB			x		x			Disart.					x													x			As above	
ROBIN HOOD'S CAVE (35)																																	
England	Derbyshire	1887-80, 1885, 1969, 1981	RB	1785±50 BP (OxA-6581, cal AD 130-400)				x			Disart.					x												x			Remains highly fragmented & poor stratigraphic preservation in cave. Poss. other individuals assoc. but not been dated	Hedges <i>et al.</i> 1997	

Country	Location	Excavated	Date	Direct date	Indirect date	Typological date	Sea cave	Karst cave	Rock shelter	Skeleton number	Funerary practice	Grave type	Male	Female	?Male	?Female	Unknown sex	Foetus (40 weeks in utero)	Neonate (around birth)	Infant (birth-11 months)	Juvenile (1-12)	Adolescent (13-17)	Young adult (18-25)	Young middle adult (26-35)	Old middle adult (36-45)	Mature adult (46+)	Adult (too incomplete to assess but over 18)	Unknown age	Grave goods	Trauma	Notes	Reference	
WHALEY ROCK SHELTER NO. 2 (36)																																	
England	Derbyshire	193-48, 1966	BA	3470+65 BP (OxA-4021, 1957-1614 cal BC)					x		Disart.						x															Human bones mixed with disart. animal remains	Armstrong, 1949; Hedges <i>et al.</i> 1996b

BA = Bronze Age; IA = Iron Age; RB = Romano-British; RIA = Roman Iron Age; Inhum = inhumation; Crem = cremation; Disart = disarticulated

APPENDIX S2: DETAILS OF EACH SITE INCLUDED IN THE DATASET

Site name	Cave cat. no.	Country	Location	Scotland	NE	NW	Latitude	Longitude	BA	IA	RIA/RB	Dateable finds	AMS date on human remains	MNI	Notes
Borness Cave	14	Scotland	Dumfries & Galloway	x			54.77784	-4.1458562		x		Samian	2784±30 BP	2	
Covesea Cave 1	5	Scotland	Moray	x			57.71865	-3.3865585	x					1	
Covesea Cave 2	6	Scotland	Moray	x			57.71865	-3.3865585	x			Pottery	2784±30 BP	10	
Crinan Ferry Rock Shelter	8	Scotland	Argyll & Bute	x			56.08622	-5.5390279	x			Beaker pottery, worked flint		2	
Gasworks Cave	9	Scotland	Argyll & Bute	x			56.41405	-5.4699387	x			BA pottery		1	
Glennan	10	Scotland	Argyll & Bute	x			56.15334	-5.4436389	x			Food Vessel		1	Charcoal date from cremation? Problematic radiocarbon dates but urn dated typologically to Early BA
Fiskavaig	1	Scotland	Highland	x			57.2048	-5.984887			x			1	Drilled cranium
Rhodes Links Cave	4	Scotland	Highland	x			56.06108	-2.683604			x			1	
MacArthur Cave	11	Scotland	Argyll & Bute	x			56.4174	-5.4723526		x			2460±55–2170±55 BP	4	
Archerfield Cave	13	Scotland	East Lothian	x			56.06168	-2.8064701			x				
Saint Baldred's Cave (Auldham; Seacliff Cave)	12	Scotland	East Lothian	x			56.05154	-2.6365539		x		Pottery		2	
Sand 1 Rock Shelter	3	Scotland	Highland	x			57.47348	-5.8637596	x			Pottery	3615±65 BP	1	Direct date of tooth
Sculptor's Cave	7	Scotland	Moray	x			57.71865	-3.386559	x		x	metalwork, pottery, worked bone	2845±35 BP 1835±35–1696±29 BP	16	2 phases: Late BA & RIA with direct dating
Torr Cave (Dirk Hatteraick Cove)	15	Scotland	Dumfries & Galloway	x			54.77872	-4.0589765			x	Pottery, worked human bone		1	Associated samian
High Pasture Cave	2	Scotland	Highland	x			57.2048	-5.9848866		x	x	Iron axe, pottery	2503±29 BP; 2160±27 BP; 2233±29 BP; 2217±30 BP; 2499±27 BP; 1890±40 BP; 1857±27 BP; 1867±29 BP; 1884±29 BP; 2048±27 BP	11	
Antofts Windypit	20	England	Yorkshire		x		54.23904	-1.1080528	x	x		Beakers	3110±28 BP; 2380±29 BP	8	2 phases: Early BA and IA
Buckland's Windypit	21	England	Yorkshire		x		54.23753	-1.09934		x			1864±24 BP; 1829±24 BP	6	
Heights Lane Grike, Skyrethorns	22	England	Yorkshire		x		54.07641	-2.054984		x			2420±65 BP	1	Associated with IA round-house
North End Pot	23	England	Yorkshire		x		54.18356	-2.4872279		x			2260 BP error range unavailable	1	1 IA individual; 3 others dating to Neolithic
Raven Scar Cave	24	England	Yorkshire		x		54.17601	-2.4163606	x				2808±29 BP; 2832±29 BP	15	
Shuttleworth Pot	25	England	Yorkshire		x		54.21263	-2.5196175	x				2200–2026 BC raw date unavailable	1	
Slip Gill ('Snip Gill') Windypit	26	England	Yorkshire		x		54.24593	-1.1160378			x		1991±25 BP; 1931±27 BP	4	
Dog Hole Cave (Haverbrack Bank Pot)	37	England	Cumbria			x	54.21491	-2.794902			x	1941±26–1711±25 BP	1941±26–1895±30 BP 1746±27–1711±25 BP	29	RB with 2 phases of funerary activity. Phase 1: neonate inhumations with horse & dog. Phase 2: disarticulated adult and juveniles with cow heads & feet as well as dogs
Dunald Mill Hole	41	England	Lancashire			x	54.10227	-2.741973			x		1900 BP error range unavailable	1	
Fairy Holes	40	England	Lancashire			x	53.91601	-2.526279	x			BA pottery & iron artefacts		2	Cremations associated with BA Collared Urn
Heaning Wood Bone Cave	38	England	Cumbria			x	54.16402	-3.123989	x				Early Bronze Age	3	BA AMS dates & BA Collared Urn
Rawthey Cave	39	England	Cumbria			x	54.37042	-2.435566	x		x		3165±55 BP; 1865±40 BP	2	
Bishop Middleham Quarries	18	England	County Durham		x		54.68278	-1.486271		x		Pottery & BA artefact		11	Associated with IA pottery & bone point
Corby's Crags	16	England	Northumberland		x		55.38066	-1.799541	x			Food Vessel, cremation		1	BA urned cremation
Goatscrag, Ford	17	England	Northumberland		x		55.62657	-2.038087	x			Food Vessel, cremation		5	BA unurned & urned cremations
Heathery Burn Cave	19	England	County Durham		x		54.76555	-2.020794	x			Pottery, lignite bead		1	BA objects found with disarticulated remains
Ash Tree Cave	27	England	Derbyshire		x		53.27984	-1.22938	x			Pottery	3730±90 BP	1	1 Individual dating to BA. Others may be Neolithic
Bull Pit	28	England	Derbyshire		x		53.3297	-1.841552			x		1868±21 BP	2	
Carden Park Rock Shelter	42	England	Cheshire			x	53.07962	-2.801593	x			Pottery		1	BA pottery with remains
Carsington Pasture Cave	29	England	Derbyshire		x		53.0798	-1.640942	x	x			2230±20–2217±44 BP	12	Middle–Late IA on neonates
Frank i' th' Rocks Cave (Palmer's Dig Cave)	30	England	Derbyshire		x		53.12262	-1.804658			x	Artefacts	1786±31 BP; 1765±30 BP	11	RB metalwork & pottery
Langwith Cave	31	England	Derbyshire		x		53.21995	-1.225813		x			2330±60 BP	1	
Mother Grundy's Parlour	32	England	Derbyshire		x		53.26264	-1.198206		x		RB artefacts	2210±80 BP	1	AMS date of juvenile; other 3 juveniles appear to be Neolithic
Pin Hole Cave	33	England	Derbyshire		x		53.26123	-1.20243	x			Pottery		2	Neolithic AMS dates contaminated with bulk sample. BA Collared Urn & Beaker
Poole's Cavern	34	England	Derbyshire		x		53.24958	-1.926524			x	Artefacts		3	RB objects
Robin Hood's Cave	35	England	Derbyshire		x		53.26203	-1.200767			x		1785±50 BP	1	
Whaley Rock Shelter No. 2	36	England	Derbyshire		x		53.24365	-1.235275	x				3470±65 BP	1	

BA = Bronze Age; IA = Iron Age; RIA = Roman Iron Age; RB = Romano-British; MNI = Minimum number of individuals

BIBLIOGRAPHY

- Armit, I. 2022. Macarthur Cave, Oban, Argyll and Bute, Scotland, UK. Supplementary Information p. 142 in Patterson, N., Isakov, M., Booth, T., Büster, L., Fischer, C.-E. *et al.*, Large scale migration into southern Britain at the End of the Bronze Age. *Nature* 601, 588–94. [https://10.1038/s41586-021-04287-4](https://doi.org/10.1038/s41586-021-04287-4)
- Armit, I. & Büster, L. 2020. *Darkness Visible: The Sculptor's Cave, Covesea, from the Bronze Age to the Picts*. Edinburgh: Society of Antiquaries of Scotland
- Armstrong, A. 1949. Exploration of prehistoric sites in East Derbyshire. *Derbyshire Archaeological Journal* 69, 69–73
- Armstrong, A. 1956. Report on the excavation of Ash Tree Cave, near Whitwell, Derbyshire, 1949 to 1957. *Derbyshire Archaeological Journal* 76, 57–64
- Barnes, F. 1970. Prehistoric pottery from Furness. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 70, 2–8
- Beckensall, S. 1976. The excavation of a rock shelter at Corby's Crag, Edlingham. *Archaeologia Aeliana* 4, 11–16
- Birch, S. 2004. *Evidence for Metalworking from Trench 1, Bone Passage – July 2004*. http://www.high-pasture-cave.org/index.php/latest_finds/comments/73/ [Accessed 8 July 2021]
- Birch, S. 2009. *Latest Finds from the Fiskavaig Rock Shelter site*. http://www.high-pasture-cave.org/index.php/latest_finds/comments/178/ [Accessed 7 July 2021]
- Booth, T. 2022. Carsington Pasture Cave, Brassington, Derbyshire, England, UK, in Patterson, N., Isakov, M., Booth, T., Büster, L., Fischer, C.-E. *et al.*, Large scale migration into southern Britain at the end of the Bronze Age *Nature* 601, 588–94. [https://10.1038/s41586-021-04287-4](https://doi.org/10.1038/s41586-021-04287-4)
- Bramwell, D., Dalton, K., Drinkwater, J., Hassall, M., Lorimer, K. & Mackreth, D. 1983. Excavations at Poole's Cavern, Buxton: an interim report. *Derbyshire Archaeological Journal* 103, 47–74
- Branigan, K. & Dearne, M. 1991. *A Gazetteer of Romano-British Cave Sites and Their Finds*. Sheffield: Department of Archaeology and Prehistory, University of Sheffield
- Bronk Ramsey, C., Higham, T., Owen, D., Pike, A. & Hedges, R. 2002. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 31. *Archaeometry* 44(1), 1–150
- Burgess, C. 1972. Goatscrag: a Bronze Age rock shelter cemetery in north Northumberland, with notes on other rock shelters and crag lines in the region. *Archaeologia Aeliana* 50, 15–69
- Büster, L. 2014. *The Covesea Caves Project*. Society of Antiquaries of Scotland. Last updated: 2014. <http://www.socantscot.org/research-project/the-covesea-caves-project/> [Accessed 11 August 2021]
- Büster, L. & Armit, I. 2019. *The Covesea Caves Project: Fieldwork 2018 Data Structure Report*. Bradford: unpublished report, University of Bradford
- Cameron, J., Arthurs, D., Cornhill, S., Morris, J. & Peterson, R. 2019. Human remains from Dunald Mill Hole, Nether Kellet, Lancashire, UK. *Cave and Karst Science* 48(1), 69–73
- Chamberlain, A. 1999. Carsington Pasture Cave, Brassington, Derbyshire: a prehistoric burial site. *CAPRA* 1. <http://web.archive.org/web/20090906184710/http://www.capra.group.shef.ac.uk/1/carsing.html> [Accessed 2 August 2021]
- Chamberlain, A. 2001. Radiocarbon dates from Carsington Pasture Cave, Brassington, Derbyshire. *CAPRA* 3. <http://web.archive.org/web/20120311085309/http://www.capra.group.shef.ac.uk/3/carsdates.html> [Accessed 2 August 2021].
- Chamberlain, A., Mason, E. & Williams, N. 2020. Radiocarbon dating of vertebrate remains from Bull Pit, Perryfoot, Derbyshire. *Proceedings of the University of Bristol Speleological Society* 28(2), 329–57
- Clarke, W.B. 1876. Notice of excavations in the Borness Cave in the summer of 1874. *Proceedings of the Society of Antiquaries of Scotland* 11, 305–9

- Clarke, W.B. 1878. Final report on the Borness exploration. *Proceedings of the Society of Antiquaries of Scotland* 12, 669–81
- Cree, J. 1909. Notice of the excavation of two caves, with remains of early Iron Age occupation, on the estate of Archerfield, Dirleton. *Proceedings of the Society of Antiquaries of Scotland* 43, 243–68
- Elliot, J. 1862a. On the discovery of human and animal bones in the Heathery Burn Cave, near Stanhope. *The Geologist* 5, 34–7
- Elliot, J. 1862b. Further discoveries in Heathery Burn Cave. *The Geologist* 5, 167–71
- Fear, C. & O'Regan, H. 2019. The archaeology and human remains from Frank i' th' Rocks Cave, Derbyshire: a reassessment of the evidence. *Cave and Karst Science* 46(3), 99–106
- Fitzpatrick-Matthews, K. 2006. *Bronze Age Occupation. The Archaeology of Carnden Park, Cheshire.* <http://www.kmatthews.org.uk/carden/carden5.html> [Accessed 30 July 2021]
- Gilks, J. 1974. Early Bronze Age beakers from Pin Hole Cave, Creswell Crags. *Derbyshire. Derbyshire Archaeological Journal* 94, 8–15
- Hedges, R., Housley, R., Bronk Ramsey, C. & van Klinken, G. 1991. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 13. *Archaeometry* 33(2), 279–96
- Hedges, R., Housley, R., Bronk Ramsey, C. & van Klinken, G. 1995. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 19. *Archaeometry* 37(1), 195–214
- Hedges, R., Housley, R., Pettitt, P., Bronk-Ramsey, C. & van Klinken, G. 1996a. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 21. *Archaeometry* 38(1), 181–207
- Hedges, R., Pettitt, P., Bronk Ramsey, C. & van Klinken, G. 1996b. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 22. *Archaeometry* 38(2), 391–415
- Hedges, R., Pettitt, P., Bronk Ramsey, C. & van Klinken, G. 1997. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 24. *Archaeometry* 39(2), 445–71
- Hedges, R., Pettitt, P., Bronk Ramsey, C. & van Klinken, G. 1998. Radiocarbon dates from the Oxford AMS system: *Archaeometry* Datelist 26. *Archaeometry* 40(2), 437–55
- Layard, N. 1934. Evidence of human sacrifice in Seacliff Cave, Scotland. *Proceedings of the Prehistoric Society of East Anglia* 7(3), 399–401
- Leach, S. 2006. *Going Underground: an anthropological and taphonomic study of human skeletal remains from caves and rock shelters in Yorkshire.* Unpublished PhD thesis: University of Winchester
- Lord, T. & Howard, J. 2013. Cave archaeology. In Waltham, T. & Lowe, D. (eds), *Caves and Karst of the Yorkshire Dales*, 239–51. Great Hucklow: British Cave Research Association
- McGregor, G. 2003. *Excavation of an urned cremation burial of the Bronze Age, Glenman, Argyll and Bute.* Edinburgh: Scottish Archaeological Internet Report 8. <https://doi.org/10.5284/1017938>
- Morris, S.V. 1937. Excavation of Torrs Cave, Kirkcudbright. *Proceedings of the Society of Antiquaries of Scotland* 71, 415–30
- Mullins, E., Kennard, A., Woodward, B., Kieth, A. & Hinton, M. 1913. The ossiferous cave at Langwith. *Derbyshire Archaeological Journal* 35, 137–58
- O'Regan, H., Bland, K., Evans, J., Holmes, M., McLeod, K., Philpott, R., Smith, I., Thorp, J. & Wilkinson, D. 2020. Rural life, Roman ways? Examination of Late Iron Age to late Romano-British burial practice and mobility at Dog Hole Cave, Cumbria. *Britannia* 51, 83–116
- Palmer, L. & Lee, L. 1928. Frank-I'-th'-Rocks Cave and other northern caves in relation to the ice ages. *Proceedings of the University of Bristol Speleological Society* 2(3), 244–60
- Peterson, R. 2013. *Excavations at Fairy Holes Caves, Whitewell, Lancashire, 2013*, 1–18. Preston: University of Central Lancashire
- Richardson, J.S. 1907. Notice of kitchen-midden deposits on North Berwick Law, and other antiquities in the vicinity of North Berwick; with a note of an undescribed sculptured stone, with symbols, in the island of Raasay. *Proceedings of the Society of Antiquaries of Scotland* 41, 428–30
- Saville, A. & Hallén, Y. 1994. The 'Obanian Iron Age': human remains from the Oban cave sites, Argyll, Scotland. *Antiquity* 68, 715–23
- Schulting, R. 2009. Report on human teeth from Sand. In Hardy, K. & Wickham-Jones, C. (eds), *Mesolithic and Later Sites Around the Inner Sound, Scotland: the work of the Scotland's First Settlers*

- project 1998–2004*, section 3.10. Edinburgh: Scottish Archaeological Internet Report 31.
Available at <https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-310-1/dissemination/pdf/sair31.pdf>
- Shapland, F. & Armit, I. 2012. The useful dead: bodies as objects in Iron Age and Norse Atlantic Scotland. *European Journal of Archaeology* 15(1), 98–116
- Sheridan, A., Armit, I., Reich, D., Booth, T., Bernados, R., Barnes, I. *et al.* 2019. A summary round-up list of Scottish archaeological human remains that have been sampled/analysed for DNA as of January 2019. *Discovery and Excavation in Scotland* 2019, 1–23
- Smith, I. 2012. Radio-carbon dating of bones from caves in Furness. *Cumberland and Westmorland Antiquarian and Archaeological Society Newsletter* 70, 1–16
- Tolan-Smith, C. 2001. *The Caves of Mid Argyll: an archaeology of human use*. Edinburgh: Society of Antiquaries of Scotland Monograph 20
- Turner, W. 1895. On human and animal remains found in caves at Oban, Argyllshire. *Proceedings of the Society of Antiquaries of Scotland* 29, 410–38
- Whimster, R. 1981. *Burial Practices in Iron Age Britain: a discussion and gazetteer of the evidence c.700 B.C.–A.D.43 Part 1*. Oxford: British Archaeological Report 90