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Riddles in the Dark? The human use of caves during the 1st millennia BC and AD across the British Isles

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Appendix 2: Regional Viewshed & Access Analysis

Below are regional outlines for the location of caves within contemporary landscapes, which were used to analyse the relationship of caves and contemporary landscape activity. Attached and stored in the CD-ROM are two word documents, which detail the individual viewshed and access analysis of caves within the two study regions.

Isle of Mull & Northern Lorn

			Sites		
Cave	Cave Name	0-1	1-2	2-5	5-10
<u>ID</u>		Mile	Miles	Miles	Miles
131	MacArthur Cave	0	3	1	30
147	Scoor Cave	0	1	4	8
148	Nun's Cave	0	1	0	7
156	Allt Dubhaig	0	2	3	21

			All Caves		
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles
131	MacArthur Cave	5	4	3	3
147	Scoor Cave	0	0	0	0
148	Nun's Cave	1	0	0	2
156	Allt Dubhaig	0	2	0	1

Table: Archaeological sites and natural caves

Caves & Site Densities

Evidence of archaeological activity in the immediate vicinity of the 4 caves on the Isle & Mull and Northern Lorn, indicates that they may have been located on periphery of dense areas of settlement with little activity in the immediate vicinity of the caves. Only a handful of sites are within a 1-5 mile radius of the four caves compared to an increase of sites from a 10 mile radius near MacArthur Cave (131), located on the edge of the Firth of Lorn and Allt Dubhaig (156) on the Northern coast of Mull.

Radiocarbon dates taken from deposits of human remains in MacArthur Cave (131) point towards a late 1st millennium use of the cave. Parallel evidence of late 1st millennium BC use in Northern Lorn, is lacking with the majority of forts and duns remaining unexcavated. Finds of two flat rotary querns from the dun An Dun, some 7.2 miles east of the cave, may indicate first millennium occupation (RCAHMS 1975: 78), whilst finds of undated metalwork,

including a bronze mount and dagger from the vitrified fort Dun Mac Sniachan, 8 miles North, may represent late 1st millennium BC use of a vitrified fort (Harding 1997: 131; Mackie 1976: 233-234; Neike 1997).

Fragments of Dunagoil Ware (see Chapter 3 for dating discussion) also indicate a possible Iron Age or Roman Iron Age use of Allt Dubhaig (156), Northern Mull. Despite dunagoil ware being found on numerous site and caves, its ubiquitous non-diagnostic nature means the form has a long duration of use. Excavations of the promontory fort, Creag a'Chaisteal 4 miles North of Allt Dubhaig cave (156), produced a limited comparative assemblage

The likely contemporary Early Christian use of both Scoor (147) and Nun's Cave (148), on the Southern Coast of Mull share a sparser landscape indicated by the lack of settlement within a 10 mile vicinity. However, a number of parallel Early Christian inscriptions are recorded near the caves, including a Latin cross on an upright slab at Carsaig (Fisher 2001: 124), 2 miles East from Nun's Cave and a similar example from a slab at Pennyghael, 5.5 miles north (Fisher 2001:121).

Topographic Experience in Mull & North Lorn

CaveID	Cave	Geographical	Cave	Altitude	Class	Distance to Bay (m)
	Name	Location	Mouth			
			Orientation			
131	MacArthur	Rock Face	North	25	Cave/Fissure	146
	Cave					
147	Scoor Cave	Narrow Inlet	South-West	35	Single	337
					Chamber	
148	Nun's Cave	Cliff Base	South-East	55	Single	56
					Chamber	
156	Allt	Rock Face	South	126	Cave	145
	Dubhaig					

Table: Topographic Location of Caves in Mull & North Lorn

All caves are located with 200 metres of an accessible coastal bay and consequently share viewsheds out towards the sea. MacArthur's Cave (131), also commands good views of the Sound of Kerrera, a tidal inlet which serves as the entrance for the modern ferry route.

By accounting for all recorded settlement, not just those with excavated material, it is apparent that there is little evidence for settlement in the immediate vicinity around both MacArthur's Cave and Allt Dubhaig Caves during the 1st millennium BC. The number of sites associated with the cave increases when considering a range of 5-10 miles around the caves, which is partly as a result of the search size but also may suggest that these caves were on the periphery of high densities of settlement (see below).

During the Early Christian period, the two caves on Mull, appear to be further isolated from settlement patterns, although there is limited evidence of contemporary Christian activity in the area.

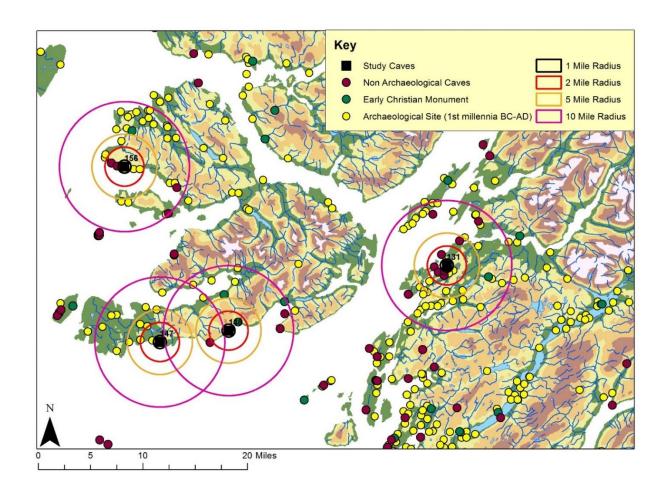


Figure: Site Densities- Mull & North Lorn

Mid-Argyll & Southern Lorn

		Sites		
Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles
St Columba's Cave	0	5	8	14
Ellary Boulder Cave	1	4	9	10
The Tinkler's Cave	0	3	5	15
St Cormac's Cave	2	0	3	18
Uamh Na Mine	0	10	6	6
Uamh Righ	0	0	0	2
Kilchoman	3	5	5	15
Inchmarnok Site 9	1	2	3	13
Inchmarnok Site16	1	2	3	13
Kilnaughton Bay 2	1	3	9	9
MacArthur's Head ICP 109	1	0	2	26
MacArthur's Head ICP 110	1	0	2	26
North Carraig Fhadda ICP 7	1	3	7	11
Dunagoil Cave	2	2	2	11
Uamh Breidairton	0	0	0	0
Uamh Phort Luinge Mhic-Ruaridh	0	4	11	9
	St Columba's Cave Ellary Boulder Cave The Tinkler's Cave St Cormac's Cave Uamh Na Mine Uamh Righ Kilchoman Inchmarnok Site 9 Inchmarnok Site 16 Kilnaughton Bay 2 MacArthur's Head ICP 109 MacArthur's Head ICP 110 North Carraig Fhadda ICP 7 Dunagoil Cave Uamh Breidairton	St Columba's Cave 0 Ellary Boulder Cave 1 The Tinkler's Cave 0 St Cormac's Cave 2 Uamh Na Mine 0 Uamh Righ 0 Kilchoman 3 Inchmarnok Site 9 1 Inchmarnok Site 16 1 Kilnaughton Bay 2 1 MacArthur's Head ICP 109 1 North Carraig Fhadda ICP 7 Dunagoil Cave 2 Uamh Breidairton 0	Cave Name 0-1 Mile 1-2 Miles St Columba's Cave 0 5 Ellary Boulder Cave 1 4 The Tinkler's Cave 0 3 St Cormac's Cave 2 0 Uamh Na Mine 0 10 Uamh Righ 0 0 Kilchoman 3 5 Inchmarnok Site 9 1 2 Inchmarnok Site16 1 2 Kilnaughton Bay 2 1 3 MacArthur's Head ICP 109 1 0 MacArthur's Head ICP 110 1 0 North Carraig Fhadda ICP 7 1 3 Dunagoil Cave 2 2 Uamh Breidairton 0 0	Cave Name 0-1 Mile 1-2 Miles 2-5 Miles St Columba's Cave 0 5 8 Ellary Boulder Cave 1 4 9 The Tinkler's Cave 0 3 5 St Cormac's Cave 2 0 3 Uamh Na Mine 0 10 6 Uamh Righ 0 0 0 Kilchoman 3 5 5 Inchmarnok Site 9 1 2 3 Inchmarnok Site16 1 2 3 Kilnaughton Bay 2 1 3 9 MacArthur's Head ICP 109 1 0 2 MacArthur's Head ICP 110 1 0 2 North Carraig Fhadda ICP 7 1 3 7 Dunagoil Cave 2 2 2 Uamh Breidairton 0 0 0

			Natural		
			Caves		
Cave	Cave Name	0-1	1-2	2-5	5-10
ID		Mile	Miles	Miles	Miles
143	St Columba's Cave	6	13	4	27
144	Ellary Boulder Cave	0	17	7	25
145	The Tinkler's Cave	0	0	0	2
150	St Cormac's Cave	0	1	5	33
158	Uamh Na Mine	2	7	10	3
235	Uamh Righ	0	1	0	0
247	Kilchoman	0	0	0	1
249	Inchmarnok Site 9	1	0	0	2
250	Inchmarnok Site16	1	0	0	2
251	Kilnaughton Bay 2	1	0	0	1
253	MacArthur's Head ICP 109	1	0	0	0
254	MacArthur's Head ICP 110	1	0	0	0
255	North Carraig Fhadda ICP 7	1	0	0	1
256	Dunagoil Cave	0	0	0	3
259	Uamh Breidairton	0	0	1	3
274	Uamh Phort Luinge Mhic-Ruaridh	0	0	0	2

			Study	Caves		
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles	Cave IDS
143	St Columba's Cave	0	1	0	1	144; 150
144	Ellary Boulder Cave	0	1	0	1	143;150
145	The Tinkler's Cave	0	0	0	0	
150	St Cormac's Cave	0	0	0	2	143;144
158	Uamh Na Mine	0	1	0	0	246
235	Uamh Righ	0	0	0	0	
247	Kilchoman	0	0	0	0	
249	Inchmarnok Site 9	1	0	0	1	250; 256
250	Inchmarnok Site16	1	0	0	1	249; 256
251	Kilnaughton Bay 2	1	0	0	1	251;274
253	MacArthur's Head ICP 109	1	0	0	0	254
254	MacArthur's Head ICP 110	1	0	0	0	253
255	North Carraig Fhadda ICP 7	1	0	0	1	251;274
256	Dunagoil Cave	0	0	0	2	249;250
259	Uamh Breidairton	0	0	0	0	
274	Uamh Phort Luinge Mhic-Ruaridh	0	0	0	2	255;255

Table: Archaeological Sites, Natural Caves and Study Sites

Caves & Settlement

In comparison to other regions in Argyll, there are higher number of caves in use in Mid-Argyll, which may be as a result of higher densities of contemporary settlement and also natural caves along the Western coast of Jura. Despite this, parallel evidence of immediate activity around the study caves is lacking, whilst instead caves appear to be on the edge of distribution of settlements, indicated by an increase of sites between 5-10 miles.

Caves near Archaeological Sites

There are however a number of sites that are located close to settlement. Dunagoil Cave (256) located at the base of Dunagoil Fort, is also near a second fort known as Little Dunagoil (Marshall 1915, 1938). Cave use was likely contemporary to activity at the twos, which ran from the Late Bronze Age into the Early Medieval period (Mann 1915; Marshall 1915; Ritchie 1915; Marshall 1938; Marshall 1963; Harding 2004; Geddes et al. 2010).

Similar relationships to contemporary settlement can also be seen in Early Christian activity at St Cormac's Cave (150) on the island of Eilean Mor; often considered a possible site of an early Monastic settlement associated with the Leinster saint Abbán Moccu Corbmaic (Fisher 2001: 4). A standing cross shaft in the 10th century AD chapel, decorated with four animals and double-beaded knotwork (Fisher 2001: 145) and a cross-marked stone have been considered 7th-9th century AD in date. Such activity is paralleled by Christian artwork found in St Cormac's Cave (150) and must be seen as part of a wider association with monastic islands seen across the Western Atlantic (see below).

Cave & Settlement in Mid-Argyll

Three miles from the two caves on Inchmarnok Point, excavations at the dun at Dun Scalpsie uncovered 2 occupation levels with evidence of metal slag and crucibles indicating metalwork, along with finds of spindlewhorls and a fragment of bone comb (MacCallum 1963).

Elsewhere, limited evidence of metalworking from the small cave at Kilchoman (247), Port Askaig is difficult to date and is associated with an array of sites. These include two Early Christian cross slabs (Fisher 2001: 137) and a D-shaped dun, named An Dun (RCAHMS 1984: 103-4), where fragments of 9th-10th century AD Viking pottery were found (Newall 1966: 7).

Parallel finds of undated metalworking debris recorded from the Tinkler's Cave, Knapdale, perhaps contemporary to activity at both Ellary Boulder Cave (143) and St Columba's Cave (144), is also close to the excavated D-shaped dun at Caisteal Mhic Eoghainn (RCAHMS 1992: 259), the Early Medieval crannog at Loch Glashan (Crone and Campbell 2005) and 7 Early Christian monuments. Finds from both St Columba's Cave and Ellary Boulder Cave indicate long term use, beginning in the Late Bronze Age and ending in the Medieval period (see Chapter 3). Metalworking deposits, like those found in The Tinkler's Cave, could indicate parallel periodic activity in the caves (see Chapter 4) and therefore contemporary to nearby Early Medieval settlement, which also produced evidence of craftworking-including metalwork.

Cave Relationships

Samples taken from a series of caves on Arran and Bute (Lowe 2001; Conolly et al. 2002; Hardy 2002) also indicate a close relationship between caves in their immediate landscapes. At Kilnaughton Bay, Islay, two caves provided radiocarbon dates (Kilnaughton Bay 2 & North Carraig Faddh ICP 7), indicating Early Medieval shell midden accumulation. Similar Early Medieval dates were also reported from two caves at MacArthur Head, Islay (MacArthur Head

ICP 109 &110). On Bute, dates from a series of caves on Inchmarnok Point, also identified contemporary build-up of midden deposits from the entrances of two caves during the late 1st millennium BC and late 1st millennium AD (Lowe 2001; Conolly et al. 2002). The use of multiple caves in an area is evidenced from a number of regions in the study (see below) and suggests comparative practices along with association to topographic features in the landscape. In total, eleven of the caves in Mid-Argyll are within a 10-mile radius of at least 1 other cave with 1st millennium BC and AD use.

Topographic Experience in Mid-Argyll & Southern Lorn

CaveI D	Cave Name	Geographical Location	Cave Orientation	Mouth	Altitud e	Class	Distance to Bay (m)
143	St Columba's Cave	Cliff Base	South		9.14	Single Chamber	108
144	Ellary Boulder Cave	Boulders	East		7	Boulder Cave	433
145	The Tinkler's Cave	Cliff Base	South		36	Single Chamber	270
150	St Cormac's Cave	Inland Gully	North-West		21	Single Chamber	48
158	Uamh Na Mine	Cliff	West		30	Cave	322
235	Uamh Righ	Cliff Base	South		9	Multi- Chamber	49
247	Kilchoman	Cliff	West		35	Single Chamber	1275
249	Inchmarno k Site 9	Cliff Base	South-West		6	Rockshelt er	129
250	Inchmarno k Site 16	Cliff Base	South-West		6	Single Chamber	82
251	Kilnaughto n Bay 2	Cliff	East		31	Multi- Chamber	251
253	MacArthur's Head ICP	Cliff Base	North-East		10	Cave	142
254	MacArthur' s Head ICP 110	Cliff Base	North-East		10	Cave	181

255	North Carraig Fhadda ICP 7	Cliff Base	North-East	6	Cave	67
256	Dunagoil Cave	Cliff Base	South-West	70	Single Chamber	292
259	Uamh Breidairton	Cliff	West	16	Cave	81
274	Uamh Phort Luinge Mhic- Ruaridh	Cliff Base	East	10	Single Chamber	40

Table: Topographic location of caves in Mid-Argyll & Southern Lorn

Apart from Kilchoman cave (247) which lies 1275m inland on a cliff, all caves in Mid-Argyll & Southern Lorn are coastal in nature and are associated with bays. Viewshed analysis of cave entranceways also indicate this coastal nature with all caves having visibility of the sea. Ellary Boulder Cave (144) lies on the North-Western shore of the tidal loch, Loch Caolisport, which feeds into the Sound of Jura and is a unique example of a cave formed of boulder collapse (see Chapter 4).

Summary

Excavation and sampling of cave concentrations highlights the possibility of further deposits in natural caves throughout Argyll. With the current evidence available and by considering all forms of settlement, including non-excavated sites, caves across Mid-Argyll present a complex relationship with settlement. Although only a handful of caves are associated with possible related sites within a 1 mile radius, the relationship of caves with settlement increases when considering sites beyond 2 miles.

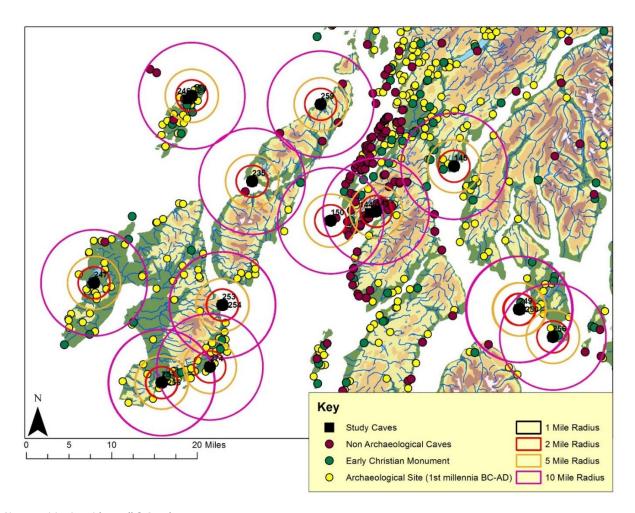


Figure: Site Densities in Mid-Argyll & Southern Lorn

Southern Argyll

			Sites		
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles
142	Keil Cave	2	2	5	11
149	St Ciaran's Cave	0	2	2	20
151	St Molaise's Cave	1	1	2	2
152	King's Cave	0	0	1	3
233	Smuggler's Cave	2	2	1	2
252	Culzean Cove	0	1	1	2

			Natural Caves		
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles
142	Keil Cave	5	1	1	2
149	St Ciaran's Cave	19	4	2	3
151	St Molaise's Cave	2	0	0	1
152	King's Cave	0	0	1	0
233	Smuggler's Cave	2	2	0	1
252	Culzean Cove	0	0	0	1

		Study Caves				
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles	Cave IDS
142	Keil Cave	0	0	0	0	
149	St Ciaran's Cave	0	0	0	0	
151	St Molaise's Cave	1	0	0	0	233
152	King's Cave	0	0	0	0	
233	Smuggler's Cave	1	0	0	0	151
252	Culzean Cove	0	0	0	0	

Table: Archaeological Sites, Natural Caves and Study Sites

Caves & Settlement

Patterns of site relationship across Southern Kintrye & Argyll are limited, but appear to mirror similar distributions elsewhere in the region. Generally there is restricted evidence for settlement in the immediate landscape of caves, although a number an unexcavated dun is recorded 0.7 miles from Keil Cave.

The three caves in the region that present Early Christian activity also appear to be isolated in the landscape but also related to other monuments. On Holy Island, Arran, both Smugglers Cave (233) and St Molaise Cave (151) are associated with a series of crosses on beach boulders and a holy well (Balfour 1909: 153; Fisher 2001: 29), suggesting contemporary association with the island. Interestingly, St Ciaran's Cave, Kintrye (149) is also 2.8 miles away from Kildalloig, a Galleried Dun (Bigwood 1964) with evidence of two periods of occupation during the Roman Iron Age and Early Medieval period.

Topographic Experience of Southern Argyll

CaveID	Cave Name	Geographical Location	Cave Mouth Orientation	Altitude	Class	Distance to Bay (m)
142	Keil Cave	Cliff	South	16	Single Chamber	67
149	St Ciaran's Cave	Cliff	East	97	Single Chamber	18
151	St Molaise's Cave	Cliff	South-West	6	Rockshelter	25
152	King's Cave	Cliff	West	3	Single Chamber	25
233	Smugglers' Cave	Cliff Base	West	6.5	Single Chamber	54
252	Culzean Cove Main System	Cliff	West	40	Multi- Chamber	144

Table **Error! No text of specified style in document.-**1: Topographic Location of Caves in Southern Argyll

All the caves in Southern Argyll are coastal in nature with viewsheds out to sea. A number such as Keil Cave (142), St Ciaran's Cave (149) and King's Cave (152) are located on accessible bays, whist all the sites lie with 150 metres of a bay and the sea.

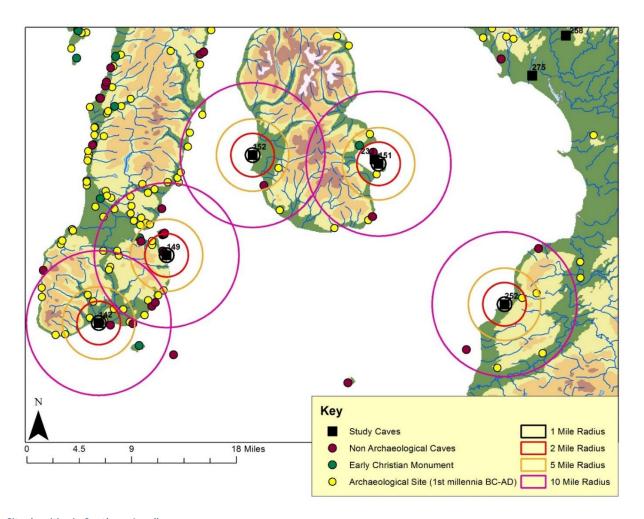


Figure:: Site densities in Southern Argyll

Mainland Western Argyll

			Sites		
Cave	Cave Name	0-1	1-2	2-5	5-10
ID		Mile	Miles	Miles	Miles
159	Ardmore Point	0	1	0	5
248	Meikle Cloak Cave	0	0	1	3
258	Ceeves Cove	0	0	0	5
275	Ardeer	0	0	0	6

			Natural Caves		
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	5-10 Miles
159	Ardmore Point	0	0	0	0
248	Meikle Cloak Cave	0	0	0	0
258	Ceeves Cove	0	0	0	2
275	Ardeer	0	0	1	1

	Study Caves						
Cave	Cave Name	0-1	1-2	2-5	5-10	Cave	
ID		Mile	Miles	Miles	Miles	IDS	
159	Ardmore	0	0	0	0		
	Point						
248	Meikle	0	0	0	0		
	Cloak Cave						
258	Ceeves Cove	0	0	0	1	275	
275	Ardeer	0	0	0	1	258	

Table: Archaeological Sites, Natural Caves and Study Sites

Settlement & Cave-Use

Interpreting cave association with settlement on the Scottish mainland is complicated by a lack of identified sites given intensive settlement and land-use in the region. The finds of 2 quernstones from a rockshelter behind a waterfall at Meikle Cloak (248) may however be related to evidence of late 1st millennium BC activity at Marshall Moor fort (Newall 1964).

Further south, both the cave souterrain at Ardeer (275) and Ceeves Cove (258) are within a 10-mile radius of each other, although there is insufficient evidence to suggest that these were of contemporary date. Finds of Roman glass from Ardeer, does however point to Roman Iron Age construction for the cave, which could relate to a similar timescale of construction for the souterrain at Killean, which was abandoned by the mid-3rd century AD (Burgess 1976; Ritchie

1997: 48). Finds of Roman Iron Age material were also reported from excavations at Coal Hill Dun 6 miles North-East from Ardeer, along with Iron Age and Roman Iron Age finds 9 miles North at Aitnock dun (Roberston 1970: Table 1).

Topographic Experience of Mainland Western Argyll (Table 5.12)

CaveID	Cave Name	Geographical Location	Cave Mouth Orientation	Altitude	Class	Distance to Bay (m)
159	Ardmore Point	Cliff	North-West	15	Rockshelter	150
248	Meikle Cloak Cave	Cliff	South	126	Rockshelter	13455
258	Ceeves Cove	Cliff	South	71	Single Chamber	8299
275	Ardeer	Plateau	South	10	Cave Souterrain	1199

Table:: Topographic Location of Caves in Mainland Western Argyll

Two caves in North Ayrshire, Meikle Cloak Cave (248) and Ceeves Cove (258) are inland but are associated with rivers and waterfalls. Ardmore Point (159) lies on the hill of Ardmore on a coastal promontory, whilst the cave souterrain of Ardeer is dug into the base of a rock plateau.

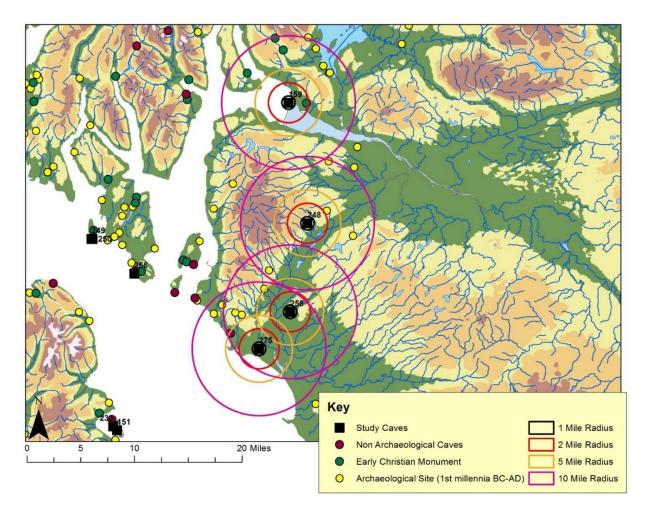


Figure: Site Densities in Western Mainland Argyll

5.53 Caves & Settlement in the Craven District of the Yorkshire Dales

Littondale, Wharfedale & Malhamdale

			Sites	
Cave	Cave Name	0-1	1-2	2-5
ID		Mile	Miles	Miles
7	Fairy Hole	4	12	26
8	Dowkerbottom	4	5	42
	Cave			
12	Chapel Cave	1	1	29
96	Scoska Cave	3	2	32
270	Calf Hole Cave	3	5	42
271	Langscar Cave	2	6	28

		Natural Caves	
Cave Name	0-1	1-2	2-5
	Mile	Miles	Miles
Fairy Hole	2	1	27
Dowkerbottom	0	1	42
Cave			
Chapel Cave	0	0	38
Scoska Cave	7	9	132
Calf Hole Cave	3	2	9
Langscar Cave	0	3	17
	Fairy Hole Dowkerbottom Cave Chapel Cave Scoska Cave Calf Hole Cave	Fairy Hole 2 Dowkerbottom 0 Cave Chapel Cave 0 Scoska Cave 7 Calf Hole Cave 3	Cave Name0-1 Mile1-2 MilesFairy Hole21Dowkerbottom Cave01Chapel Cave00Scoska Cave79Calf Hole Cave32

Cave	Cave Name	0-1	1-2	2-5	Cave IDS
ID		Mile	Miles	Miles	
7	Fairy Hole	0	0	1	270
8	Dowkerbottom	0	0	2	96; 270
	Cave				
12	Chapel Cave	0	1	4	11;15;16;271;
	_				298
96	Scoska Cave	0	0	1	8
270	Calf Hole	0	0	2	7; 8
	Cave				
271	Langscar Cave	0	1	4	11; 12; 15; 16;
	-				298

Table: Archaeological Sites, Natural Caves and Study Sites

Caves & Settlement

By consider the distribution of caves in density of caves it is clear that they are often found on the periphery, as well as near to field systems and settlement. Finds of a 3rd century bronze coin at the entrance of Scoska Cave (96) can be compared to parallel finds of a coin of Gordianus Pius c.288-244 AD and 3rd century mortarium found at Thornsber Barn Settlement (MYD4194), 200 metres to the east.

Close to Grassington in Upper Wharfedale, a number of field systems and enclosures (see discussion above) have provided dates of contemporary character to activity in Fairy Hole (7), which included a cave bear femur, dated to the Post-Roman period, and Iron Age pottery (Taylor 2013: 19). Parallel finds of Iron Age pottery at Calf Hole Cave (270), west from Fairy Hole, may also be of similar date to finds of an Iron Spearhead and coarse pottery, 116m South-East (MYD4110).

Cave Relationships

One of the striking patterns of evidence of cave-use in the Yorkshire Dales, is their interconnected relationship. Not only is this seen in the contemporary dating evidence (see Chapter 3) but also the close proximity of a sequence of sites focused on parallel locations. Caves such as those around Malham Tarn (12; 271) are located within a 5-mile reach of the concentration of activity of Attermire Scar, whilst Dowkerbottom Hole (8) is within close proximity to contemporary use at Scoska Cave (96) in the same valley. This process indicates specific patterns of cave selection, also seen in the overall densities and distribution of natural caves in each Dale (see below).

Topographic Experience in Littondale, Wharfedale & Malhamdale

CaveID	Cave Name	Geographical	Cave	Altitude	Class	Distance to
		Location	Mouth		River (m)	
			Orientation			
7	Fairy Hole	Scar	South	199	Cave/Fissure	776
8	Dowkerbottom	Plateau	None	381	Vertical	1378
	Cave				Shaft	
	C1 1.C		G 1.E	401	3.6.12	2606
12	Chapel Cave	Outcrop	South-East	401	Multi-	2686
					Chamber	
96	Scoska Cave	Scar	North-East	343	Multi-	368
					Chamber	
					>100	
270	Calf Hole	Scar	West	332	Rockshelter	1622
	Cave					
271	Langscar Cave	Scar	Unknown	442	Rockshelter	3000

Table: Topographic Location of Caves in Littondale, Wharfedale &Malhamdale

Caves in the three Dales are varied in the localised topographic nature, but do share a similar focus on route ways and valley interfaces. Valley interfaces can be defined as areas of transition from valley to the next, which also represent a change in geography and landscape experience. In terms of localised access, four caves are located on the face of limestone scars, whilst Dowkerbottom Hole (8) is found on the floor of a flat limestone plateau. Accessing caves on scar faces requires users to scale up glacial debris below the cave, which would have influenced the overall experience of cave-use. Parallel experiences of cave access are seen in scar caves throughout the Yorkshire Dales (see below) and would have been a vital part of the act of cave deposition.

Summary

Evidence from the dales discussed above suggest that many were associated with field systems and settlement. As a result many of the caves would have been regularly perceived by those inhabiting the landscape, as well as those who moved along the valley edges and interfaces.

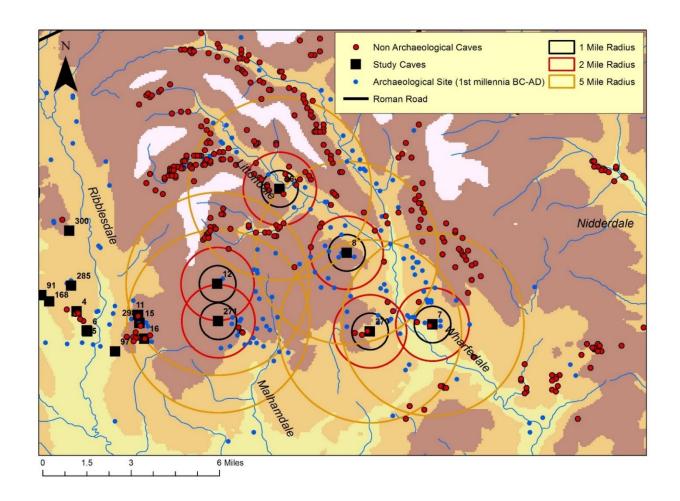


Figure Error! No text of specified style in document.-1: Site Densities in Littondale, Wharfedale & Malhamdale

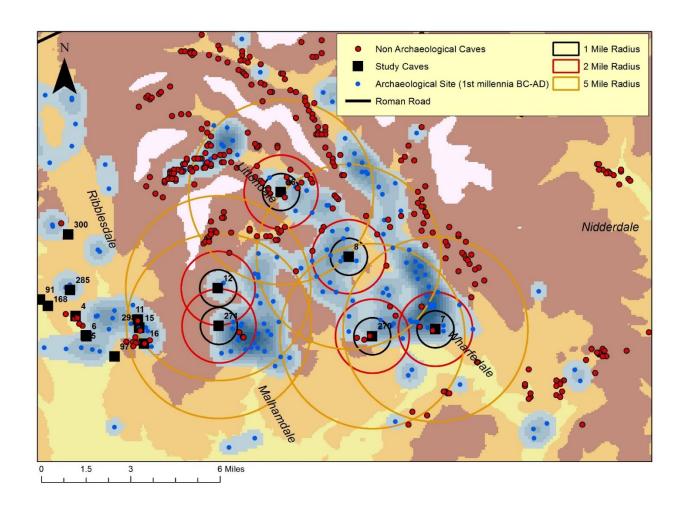


Figure: Kernel Densities of Sites in Littondale, Wharfedale &Malhamdale

Ribblesdale & Chapel-le-Dale

			Sites	
Cave	Cave Name	0-1	1-2	2-5
ID		Mile	Miles	Miles
4	Kinsey Cave	0	13	15
5	Lesser Kelcoe	2	8	17
	Cave			
6	Greater Kelcoe	2	8	17
	Cave			
10	North End Pot	0	1	23
11	Jubilee Cave	5	5	13
15	Victoria Cave	5	6	10
16	Attermire Cave	5	2	18
97	Spider Cave	1	8	11
106	Raven Scar Cave	6	12	23
168	Cave Ha	1	4	30
285	Dead Man's Cave	2	3	18
297	Fern Cave	0	4	14
298	Wet Cave	5	6	10
299	Doe Pot Cave	1	6	21
300	Combs Scar Cave	2	2	17

		All	
Cave Name			2-5
	Mile	Miles	Miles
Kinsey Cave	0	5	14
Lesser Kelcoe	3	4	16
Cave			
Greater Kelcoe	3	4	16
Cave			
North End Pot	12	13	174
Jubilee Cave	3	6	14
Victoria Cave	4	9	12
Attermire Cave	11	4	12
Spider Cave	1	10	11
Raven Scar Cave	10	16	92
Cave Ha	1	6	12
Dead Man's Cave	0	7	13
Fern Cave	0	0	2
Wet Cave	4	9	12
Doe Pot Cave	11	4	70
Combs Scar Cave	1	0	13
	Lesser Kelcoe Cave Greater Kelcoe Cave North End Pot Jubilee Cave Victoria Cave Attermire Cave Spider Cave Raven Scar Cave Cave Ha Dead Man's Cave Fern Cave Wet Cave Doe Pot Cave	Kinsey Cave Cave Cave Greater Kelcoe Cave North End Pot Jubilee Cave Attermire Cave 1 Raven Scar Cave 10 Cave Ha Dead Man's Cave 0 Wet Cave 4 Doe Pot Cave 11	Cave Name 0-1 Mile 1-2 Miles Kinsey Cave 0 5 Lesser Kelcoe Cave 3 4 Greater Kelcoe Cave 3 4 North End Pot Doe Pot Cave 12 13 Jubilee Cave Doe Doe Pot Cave 4 9 Attermire Cave Doe Doe Pot Cave 10 16 Cave Ha Doe Pot Cave 0 7 Fern Cave Doe Pot Cave 4 9 Doe Pot Cave Doe Doe Pot Cave 11 4

			Study	Caves	
Cave ID	Cave Name	0-1 Mile	1-2 Miles	2-5 Miles	Cave IDS
4	Kinsey Cave	0	5	6	5;6;11;15;16;91;97;168;285;298;300
5	Lesser Kelcoe Cave	1	1	7	6; 97
6	Greater Kelcoe Cave	1	1	7	5; 97
10	North End Pot	0	0	0	0
11	Jubilee Cave	2	1	5	15; 198; 16; 285; 4; 6; 5; 37
15	Victoria Cave	2	1	7	11; 16; 298; 97; 12; 271; 6; 5; 168; 285
16	Attermire Cave	2	1	7	16;298; 11; 12;271;97;6 ;5 ;4 ;285
91	Sewell's Cave	1	1	4	4; 5;6;168;285; 300
96	Scoska Cave	0	0	1	8
97	Spider Cave	0	5	4	4;5;6;11;15;16; 91;285; 298
106	Raven Scar Cave	0	1	0	299
168	Cave Ha	1	2	8	4;5; 6; 11; 15; 91;97; 285 168; 285; 300
285	Dead Man's Cave	0	3	8	4;91;168; 300
297	Fern Cave	0	0	1	300
298	Wet Cave	2	1	7	11; 16; 298; 97; 12; 271; 6; 5; 168; 285
299	Doe Pot Cave	0	1	0	106
300	Combs Scar Cave	0	0	5	4; 91; 168; 285; 297

Table: Archaeological Sites, Natural Caves and Study Sites in Ribblesdale & Chapel-le-Dale

Comparing cave location with densities of settlement around the valleys of Ribblesdale and Chapel-le-Dale indicates similar processes as those discussed above. The relationship of caves to areas of settlement and land-use is demonstrated by the intensive use of caves in the Settle area. The 11 caves found on both Attermire and Giggleswick Scar overlook the more agricultural rich lowland zone and the entrances to both Ribblesdale and Chapel-le-Dale.

Evidence of contemporary activity occurring near caves is found in a number of excavated examples. Finds from the enclosure of Attermire Camp (discussed above) indicate contemporary periods of mining and metalworking to the 5 caves around Attermire Scar. Below Attermire Scar are also a series of enclosures and field systems of apparent Romano-British Date (King 1986: 167). Finds from the valley base of Ribblesdale, also indicate contemporary activity including a Collingwood Rii brooch, 3 coin hoards dating to the 2nd-3rd centuries AD, a bronze terret ring of Late Iron Age or Roman date and a Roman silver fibula.

There is however little evidence of contemporary activity on Giggleswick Scar across Ribblesdale, although the sequence of caves does suggest a period of contemporary activity-similar to that on Attermire (see Chapter 3). Around Dead Man's Cave, which produced evidence of pre-Roman burial, a further possible burial with 2 iron knives, was also recorded by Raistrick (1939:37) within a crack in the limestone pavement of Feizor Grike- 277m North-East of the cave.

Cave Relationships

Clearly the location of the caves within the region around Settle indicate periods of contemporary association within the landscape. Indeed, these caves cannot be discussed in isolation but must be considered as part of a wider 'cave landscape' - related to wider processes within the landscape.

Topographic Experience in Ribblesdale & Chapel-le-Dale

CaveID	Cave Name	Geographical Location	Cave Mouth Orientation	Altitude	Class	Distance to River (m)
4	Kinsey Cave	Scar	South	300	Single Chamber	1358
5	Lesser Kelcoe Cave	Scar	South-East	187	Single Chamber	695
6	Greater Kelcoe Cave	Scar	South-West	168	Multi- Chamber	690

10	North End Pot	Scar	None	387	Vertical Shaft	530
11	Jubilee Cave	Scar	South-West	414	Multi- Chamber	2364
15	Victoria Cave	Scar	South-West	409	Multi- Chamber >100	2390
16	Attermire Cave	Scar	South-West	371	Multi- Chamber >100	1035
91	Sewell's Cave	Scar	South	203	Rockshelter	1134
97	Spider Cave	Cliff	South-East	411	Multi- Chamber	1117
106	Raven Scar Cave	Scar	North-West	320	Multi- Chamber	524
168	Cave Ha	Scar	South-West	229	Rockshelter	1202
285	Dead Man's Cave	Scar	Unknown	332	Cave	1593
297	Fern Cave	Scar	Unknown	320	Cave	308
298	Wet Cave	Scar	South-West	373	Single Chamber	2390
299	Doe Pot Cave	Scar	Unknown	490	Vertical Shaft	2186
300	Combs Scar Cave	Scar	Unknown	340	Cave	1000

Table: ; Topographic Location of Caves in Ribblesdale & Chapel-le-Dale

The majority of caves in the region are found on scar faces. Four of these are located on the same stretch of Attermire Scar, whilst 5 are on Giggleswick Scar. Consequently the majority of caves require physical effort to access and many command viewsheds down to the low

valleys of Settle. Significantly, the caves are also located on valley interfaces between the fertile zones south of Settle and access to Ribblesdale and Chapel-le-Dale (discussed below).

Summary

Caves in Chapel-le-dale and Ribblesdale were part of a wider association with cavescapes across the Yorkshire Dales. Whilst often found on the edge of densities of settlement, many of these caves were part of a wider perception of the landscape, becoming bound with wider topographic experience (discussed below). On Attermire Scar, cave use must be related to activity occurring at Attermire Camp and also the enclosures and field systems of contemporary date.

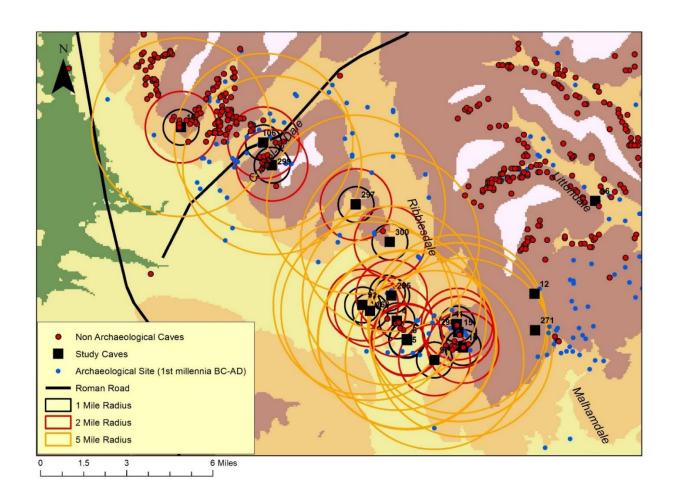


Figure: Site Densities in Ribblesdale & Chapel-le-Dale

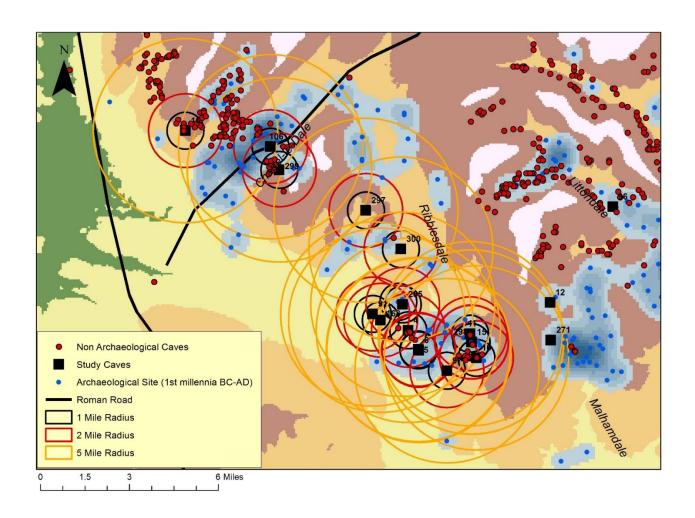


Figure: Kernel densities of sites in Ribblesdale & Chapel-le-Dale