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The mammal, bird and fish bone from the Islay Caves Project: 2002, 2003 and 2004  
seasons

by

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## **The mammal, bird and fish bone from the Islay Caves Project: 2002, 2003 and 2004 seasons.**

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### **Summary**

*This report presents analysis of the bone from a programme of coastal test-pitting on the island of Islay, Southern Hebrides. The project contributes to the growing corpus of work demonstrating the multi-period use of Scotland's coastal caves and rockshelters.*

KEYWORDS: ISLAY; SCOTLAND; ZOOARCHAEOLOGY; CAVES

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# **The mammal, bird and fish bone from the Islay Caves Project: 2002, 2003 and 2004 seasons.**

## **Introduction**

This report presents analysis of the faunal remains from a programme of coastal survey and test pitting by the Islay Caves Project on the island of Islay, Southern Hebrides, Scotland.

## **Methods**

Five radiocarbon dates from 4 of the test pitted sites (appendix i) were available (Cauldwell *pers comm.*), all dates were taken on limpet shell (*Patella vulgata*). Full analysis of the mammal, bird and fish material was restricted to those test pits with a radiocarbon date (ICP7, ICP104, ICP109 and ICP110). Recording of the assemblages from the dated test pits followed the York protocol as outlined by Harland *et al.* 2003. For all other test pits the proportion of taxa within a context was recorded, and is provided in appendices ii, iii and iv. The latin names for taxa mentioned in the text are listed in appendix v.

Under the York system, all specimens are counted and weighed and are classified as either 'diagnostic' or 'non-diagnostic' elements. The diagnostic elements are identified to species level where possible. All other non-diagnostic elements are usually recorded as unidentified. Exceptions to this include specimens of species present in the assemblage but not represented by diagnostic elements.

Seventeen diagnostic mammal bone elements are routinely recorded in detail, including element zones present and maximum linear dimension. Preservation is assessed by two criteria: surface texture and element completeness. Recording for the bird bone follows that of mammals, with 8 diagnostic elements typically recorded in full. For fish a suite of 18 to 22 diagnostic cranial and appendicular elements are recorded in detail. Criteria including estimation of fish size, element completeness, bone modification (such as butchery) and metric data are recorded. Unless modified in some way vertebrae are not recorded in detail beyond taxonomic identification.

All measurements taken are provided in appendix vi. Mammal and bird measurements are based on von den Driesch (1976), fish measurements follow those defined in the York system and references therein.

The complete archive has been submitted to the National Museums of Scotland with this report, as a Microsoft Access database file and a series of text files which duplicate its content. A copy of the archive will also be kept on file at the University of York, and will be accessible via the Centre for Human Palaeoecology's website.

## **Preservation**

The bone was rarely poorly preserved (tables 1 and 2), however, the small numbers of identified elements prevents further meaningful comment on the element completeness and surface texture of diagnostic elements from the dated test pits. Only from ICP7 was there a significant amount of burnt bone, around half of the mammal bone was either charred black or calcined white (table 3). Gnawing or other such modification of the mammal or bird bone was absent. Similarly, the fish bone from all dated test pits showed no signs of crushing or digestion, or of the white concretion often associated with otter spraint (Nicholson 2000).

## **Taxonomic abundance**

### **ICP7 (test pit 2)**

From test pit 2 a total of 776 mammal bones were recorded, of which only a small proportion (34) were diagnostic (table 4). A smaller fish bone assemblage was recovered (86 identified specimens), with a higher proportion of diagnostic elements (22) than the mammal (table 5). No bird bones were found.

Based on the number of identified specimens (NISP) sheep (including elements identified as either sheep or goat) was the most common mammal from the site. Other taxa were pig, red deer and cattle. Cod was the most common fish from the site, predominantly from context 113. Saithe, elements identified to either saithe or pollack, haddock, and elements identified to the cod family, wrasse family and plaice family were also identified.

### **ICP104 (test pit 1)**

A total of 35 bones were recorded (table 6). One red deer ulna and one rock dove humerus were the only diagnostic elements. Sheep was noted as present. Fish bone was absent.

### **ICP109 (test pit 1)**

From test pit 1 a total of 140 mammal bones, of which 9 were diagnostic, were recorded (table 7). Cattle, horse, pig and sheep or goat were recorded in small numbers, red deer was noted as present. One bird bone was recovered, a pigeon and dove family coracoid (table 7). Fifteen diagnostic fish bones, from a total of 66, were recorded, predominantly from context 5 (table 8). Eel, rockling sp., ling, eelpout, butterfish and species belonging to the cod family, wrasse family and plaice family were also identified.

### **ICP110 (test pit 2)**

Sixty-seven mammal bones, and 31 fish bones were recorded; no bird bone was present (tables 9 and 10). Saithe, pollack and wrasse family diagnostic elements were recorded. Sheep was the only mammal species recorded.

## **Butchery, age at death and fishing practices**

Cut marks were present on a cattle calcaneum and ulna, a large mammal rib and on an unidentified fragment of mammal bone at ICP 7. A description is provided in table 11. A small number of cow and sheep sub-adult, juvenile and neo-natal specimens were recovered from ICP7 and ICP104 (table 12).

The species and size of fish present in an assemblage can be used to infer fishing methods. The number of diagnostic fish specimens available from ICP7, ICP109 and ICP110 is too small to reveal any leaning towards large or small sized fish (table 13). However, species such as wrasse, and small cod family fish are usually associated with inshore fishing.

## **Discussion**

Whilst the assemblages from the Islay Caves Project test pits are small, they contribute to the growing corpus of zooarchaeological data from Scotland's caves and rockshelters. The Islay sites appear to reflect small-scale use, with fish and mammal remains included in midden deposits within the caves. What is apparent from this and other programmes of research, such as the Scotland's First Settlers Project (Hardy and Wickham-Jones forthcoming) and Tolan-Smith's work in Argyll (Tolan-Smith 2001, Leitch and Tolan-Smith 1997) is the chronological diversity of use of these sites, from the Mesolithic until well into the post-medieval period.

## **Acknowledgements**

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	ICP104 test pit 1	ICP109 test pit 1			ICP110 test pit 2	ICP7 test pit 2								
	3	6	7	8	5	113	104	107	109	110	111	116	117	118
<b>texture</b>														
<b>bird</b>														
excellent		1									1			
<b>mammal</b>														
excellent	1		4	2	2		5	3		4				2
good	1		2				3	3		4				2
fair	1			1		2						1	1	
poor								1	1	1		1	1	
<b>element completeness</b>														
<b>bird</b>														
41-60%											1			
81-100%		1												
<b>mammal</b>														
0-20%	1		2				5							1
21-40%	1			1	1		1	2		2				1
41-60%			2			1	2							
61-80%			1		1	1		2		1		1		
81-100%	1		1	2				3	1	6		1	2	2

Table 1. ICP104, ICP109, ICP110 and ICP7 mammal and bird preservation

	ICP109 test pit 1			ICP110 test pit 2		ICP7 test pit 2				
	5	6	8	5	6	109	110	111	113	118
<b>texture</b>										
excellent	2	1	1		1				1	1
good				1		1	2	2		
fair	1								1	
<b>element completeness</b>										
0-20%									1	
21-40%	1			1			1			
41-60%			1					1		
61-80%	1					1		1	1	
81-100%		1			1		1			1

Table 2. ICP109, ICP110 and ICP7 fish preservation

sitecode	test pit	context	calcined	charred
<b>mammal</b>				
ICP104	1	3		5
	2	1	5	
		3		15
ICP109	shovel pit 2		11	
	shovel pit 3			1
	shovel pit 4		23	7
	shovel pit 5			1
	1	8	8	12
ICP110	1	1		1
	2	5		14
ICP7	2	113		17
		104	3	18
		106		10
		107	3	18
		109		2
		110	63	78
		111	10	12
		116	14	16
		117		2
		118	3	22
<b>bird</b>				
ICP7	2	110	2	
<b>fish</b>				
ICP110	2	5	1	1
		6	2	2
ICP7	2	113	1	1

Table 3. ICP104, ICP109, ICP110 and ICP7 burning, mammal, bird and fish bone



		ICP7 test pit 2														
taxon	element	101	102	104	106	107	108	109	110	111	113	114	116	117	118	total
<b>pig</b>	2nd phalanx														1	1
<b>red deer</b>	metacarpal										1					1
	mandible			1												1
						present										
<b>cattle</b>	astragalus					1										1
	calcaneum					1					1					2
	humerus			1												1
	pelvis					1										1
	1st phalanx								1							1
	ulna								1							1
	mandible			1												1
<b>sheep</b>	humerus								1							1
	metatarsus					2										2
	mandible			1												1
	pelvis					1										1
	phalanx								1							1
	1st phalanx								1							1
	2nd phalanx								3							3
	3rd phalanx					1										1
	radius			1												1
	scapula							1								1
	ulna								1							1
										present						

<b>sheep or goat</b>	femur													1	1	
	mandible			1												1
	pelvis			1												1
	1st phalanx											1	1			2
	2nd phalanx												1			1
	scapula											1		1		2
	tibia			1												1
<b>unidentifiable mammal</b>		1	3	82	14	68	9	16	208	56	43	11	73	76	82	742
<b>total</b>		1	3	90	14	75	9	17	217	56	45	11	75	78	85	776

Table 4. ICP7 (test pit 2) mammal number of identified specimens (NISP) and element distribution

taxon	element	ICP7 test pit 2								
		104	109	110	111	113	114	116	118	total
saithe	hyomandibular					1				1
saithe or pollack	ceratohyal			1						1
	caudal vertebra			1						1
	caudal vertebra 1			1						1
cod	abdominal vertebra 1					2				2
	abdominal vertebra 2					2				2
	ceratohyal				1					1
	caudal vertebra 1					1				1
	caudal vertebra 2					1	1			2
	first vertebra					2				2
	infrapharyngeal				1					1
	maxilla			1						1
	vertebra							1		1
haddock	abdominal vertebra 3					1				1
cod family	dentary					1				1
	quadrate		1							1
wrasse family	infrapharyngeal							1		1
plaice family	abdominal vertebra					1				1
unidentified		5	1	5	14	35	4			64

<b>total</b>	5	2	9	16	47	5	1	1	86
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Table 5. ICP7 (test pit 2) fish number of identified specimens (NISP) and element distribution

taxon	element	ICP104 test pit 1	
		3	7
red deer	tibia	1	
	ulna	1	
sheep		present	
rock dove	humerus		1
unidentified mammal		33	
total		35	1

Table 6. ICP104 (test pit 1) mammal and bird number of identified specimens (NISP) and element distribution

taxon	element	ICP109 test pit 1					total
		2	4	6	7	8	
cattle	3rd phalanx					1	1
	scapula			present	present	1	1
horse	calcaneum				1		1
pig	astragalus					1	1
	femur				1		1
sheep	astragalus				1		1
	mandible				1		1
sheep or goat	mandible				1		1
	scapula				1		1
red deer				present			
deer family					present		
pigeon and dove family	coracoid			1			1
unidentified mammal		5	1	11	42	72	131
<b>total</b>		<b>5</b>	<b>1</b>	<b>12</b>	<b>48</b>	<b>75</b>	<b>141</b>

Table 7. ICP109 (test pit 1) mammal and bird number of identified specimens (NISP) and element distribution

taxon	element	ICP109 test pit 1				total
		5	6	7	8	
<b>eel</b>	caudal vertebra	1				1
<b>rockling sp.</b>	caudal vertebra				2	2
	caudal vertebra 1	1	1			2
<b>ling</b>	dentary	1				1
<b>cod family</b>	abdominal vertebra 1	1		1		2
<b>wrasse family</b>	dentary	1			1	2
	posttemporal	1				1
<b>eelpout</b>	caudal vertebra	2				2
<b>butterfish</b>	premaxilla		1			1
<b>plaice family</b>	abdominal vertebra			1		1
<b>unidentified</b>		43		3	5	51
<b>total</b>		51	2	5	8	66

Table 8. ICP109 (test pit 1) fish number of identified specimens (NISP) and element distribution

<b>taxon</b>	<b>element</b>	<b>ICP110 test pit 2</b>			<b>total</b>
		<b>4</b>	<b>5</b>	<b>6</b>	
<b>sheep</b>	ulna		2		
<b>unidentified mammal</b>		3	25	13	41
<b>total</b>		3	27	13	43

Table 9. ICP110 (test pit 2) mammal number of identified specimens (NISP) and element distribution



taxon	element	ICP110 test pit 2		total
		5	6	
<b>saithe</b>	abdominal vertebra 2		1	1
	abdominal vertebra 3		1	1
	ceratohyal		1	1
<b>pollack</b>	caudal vertebra 1	1		1
<b>wrasse family</b>	abdominal vertebra	1		1
	caudal vertebra		1	1
	dentary	1		1
<b>unidentified</b>		3	21	24
<b>total</b>		6	25	31

Table 10. ICP110 (test pit 2) fish number of identified specimens (NISP) and element distribution

site	test pit	context	bone id	taxon	element	description
ICP7	2	107	ICP7-162	cattle	calcaneum	3 parallel cut marks (metal)
ICP7	2	110	ICP7-141	cattle	ulna	3 parallel cut marks below trochlear notch
ICP7	2	118	ICP7-458	large mammal	rib	circular man-made hole, 4mm diameter
ICP7	2	111	ICP7-205	unidentified mammal	unidentified fragment	4 parallel metal cut marks

Table 11. Butchery on mammal bone

site	test pit	context	taxon	neo-natal	juvenile	sub-adult	
ICP104	1	3	cow		1		
			sheep		1	1	
ICP7	2	104	cow		1		
		107	cow	1	1		
			sheep				
		110	cow		1		
		116	sheep or goat		1		

Table 12. Age of death (mammal) based on epiphyseal fusion

size		ICP109 test pit 1	ICP110 test pit 2	ICP7 test pit 2		110
		5	6	111	113	
tiny	<151mm		1			
medium	301-500mm			1		1
large	501-800mm	1				1
very large	801-1000mm			1		
extra large	>1000mm				1	

Table 13. ICP109, ICP110 and ICP7 fish size (QC1 elements only)

site	test pit	context	date uncalibrated BP	calibrated date	probability	laboratory number
ICP7	2	118	1605+/-40	AD 690-900	95.4%	SUERC-3384 GU-12000
ICP104	1	3	455+/-40	AD 1755-	95.4%	SUERC-3380 GU-11996
ICP109	1	3	1245+/-40	AD 1060-1260	95.4%	SUERC-3381 GU-11997
ICP109	1	8	1180+/-40	AD 1150-1310	95.4%	SUERC-3382 GU-11998
ICP110	2	5	665+/-40	AD 1540-1700	95.4%	SUERC-3383 GU-11999

probability calibrated after Stuiver et al 1998

Appendix i. Radiocarbon dates for ICP7, ICP104, ICP109 and ICP110

site	test pit	context	taxon	% abundance
ICP06	3	4	cattle	50
ICP06	3	4	sheep or goat	50
ICP104	2	2	unidentified mammal	90
ICP106	3	3	sheep or goat	90
ICP106	3	4	large mammal	90
ICP18	1	1	cattle	90
ICP18	2	2	unidentified mammal	90
ICP33	1	2	cattle	90
ICP33	1	2	cattle	50
ICP33	1	2	red deer	50
ICP33	1	3	red deer	90
ICP50	1	3	unidentified mammal	90
ICP50	2	2	cattle	90
ICP50	2	1	unidentified mammal	90
ICP50	2	2	unidentified mammal	90
ICP50	2	1+2	sheep	50
ICP50	2	1+2	cattle	50
ICP57	1	3	unidentified mammal	90
ICP57	1	4	unidentified mammal	90
ICP57	1	5	unidentified mammal	90
ICP81	1	1	sheep	90
ICP81	1	3	unidentified mammal	90
ICP81	2	2	unidentified mammal	90
ICP88	shovel pit		sheep or goat	50
ICP88	shovel pit		cattle	50
ICP89	1	3	cattle	50
ICP89	1	3	pig	50
ICP89	1	2	cattle	90
ICP89	1	3	red deer	10
ICP89	1	3	cattle	50
ICP89	1	3	sheep	50
ICP89	1	3	fox	10
ICP89	1	2	cattle	90
ICP89	2	6	sheep or goat	90
ICP89	2	6	cattle	90
ICP89	2	6	cattle	90
ICP89	2	10	sheep or goat	90
ICP89	2	4	unidentified mammal	90
ICP89	2	10	unidentified mammal	90
ICP89	2	8	large mammal	90

ICP89	2	6	sheep	50
ICP89	2	6	red deer	30
ICP89	2	6	cattle	30
ICP89	2	9	unidentified mammal	90

Appendix ii. Proportion of mammal taxa for ICP sites not dated

<b>site</b>	<b>test pit</b>	<b>context</b>	<b>taxon</b>	<b>% abundance</b>
ICP06	3	4	Laridae	100
ICP110	1	3	Columbidae	100
ICP110	1	4	Columbidae	100
ICP89	2	3	Laridae	100
ICP89	2	6	unidentified bird	100

Appendix iii. Proportion of bird taxa for ICP sites not dated



site	test pit	context	taxon	% abundance	Gadidae size
ICP106	3	3	unidentified fish	90	
ICP109	shovel pit 1		Gadidae	90	<500
ICP109	shovel pit 1		Labridae	10	
ICP109	shovel pit 2		other	90	
ICP109	shovel pit 4		Gadidae	90	<500
ICP110	1	2	Gadidae	90	<500
ICP110	1	5	Labridae	50	
ICP110	1	5	Gadidae	50	<500 and >500
ICP110	1	6	Gadidae	90	<500
ICP110	unprov	unprov	unidentified fish	90	
ICP33	1	2	Labridae	90	
ICP33	1	3	Labridae	90	
ICP57	1	3	Gadidae	90	<500
ICP57	1	3	Anguillidae	10	
ICP57	1	3	other	10	
ICP57	1	3	Labridae	10	
ICP57	1	3	Gadidae	90	<500
ICP57	1	4	Gadidae	90	<500
ICP57	1	4	Labridae	10	
ICP57	1	4	unidentified fish	10	
ICP57	1	4	Gadidae	50	<500
ICP57	1	4	Labridae	50	
ICP57	1	4	Gadidae	70	<500
ICP57	1	4	Labridae	10	
ICP57	1	4	unidentified fish	10	
ICP57	1	5	Gadidae	90	<500
ICP57	1	5	Labridae	10	
ICP57	1	5	Pleuronectidae	10	
ICP57	1	5	Anguillidae	10	
ICP57	1	5	Congridae	10	
ICP57	2	unprov	Gadidae	70	<500
ICP57	2	unprov	Labridae	30	
ICP81	1	1	Gadidae	90	<500
ICP81	1	2	unidentified fish		
ICP81	1	3	Gadidae	90	
ICP89	2	8	unidentified fish	90	

Appendix iv. Proportion of fish taxa for ICP sites not dated

Common name	Latin name
pig	<i>Sus domesticus</i>
cow	<i>Bos taurus</i>
sheep	<i>Aries ovis</i>
sheep or goat	Caprine
horse	<i>Equus caballus</i>
deer	<i>Cervus elaphus</i>
rock dove	<i>Columba livia</i>
pigeon and dove family	Columbidae
eel	<i>Anguilla anguilla</i>
cod	<i>Gadus morhua</i>
saithe	<i>Pollachius virens</i>
pollack	<i>Pollachius pollachius</i>
ling	<i>Molva molva</i>
haddock	<i>Melanogrammus aeglefinus</i>
rockling sp.	<i>Ciliata/Gaidropsarus</i>
cod family	Gadidae
wrasse family	Labridae
eelpout	Zoarctidae
butterfish	<i>Pholis gunnellus</i>
plaice family	Pleuronectidae

Appendix v. Common and Latin names for taxa mentioned in text

site code	test pit	context	bone id	taxon	measurements					
<b>mammal</b>										
<b>astragalus</b>					<b>Bd</b>	<b>DI</b>	<b>GLI</b>	<b>GLm</b>		
ICP109	1	7	ICP109-26	sheep	18.8	15.9	29	25.7		
ICP33	1	3	ICP33-306	red deer	29.3	25.1	46.1	47.7		
<b>calcaneum</b>					<b>C</b>	<b>C+D</b>	<b>DS</b>	<b>GL</b>		
ICP7	2	107	ICP7-162	cattle	20.8	42.4	34.9	117		
ICP109	1	7	ICP7109-18	horse	403					
<b>humerus</b>					<b>BT</b>	<b>HTC</b>	<b>HT</b>			
ICP7	2	110	ICP7-143	sheep	25.4	11.7	15.6			
<b>mandible</b>					<b>BP4H</b>	<b>LMH</b>	<b>BMH</b>	<b>LM2</b>	<b>BM2</b>	
ICP109	1	7	ICP109-488	sheep or goat	6.49	11	6.9	12.8	7.28	
<b>metacarpal</b>					<b>BFp</b>					
ICP7	2	113	ICP7-187	red deer	38.3					
<b>phalanx 1</b>					<b>GL</b>	<b>SD</b>	<b>Bp</b>	<b>Dp</b>	<b>Bd</b>	<b>BFd</b>
ICP33	1	2	ICP33-301	cattle	52.1	22.2	25.2	25.6	24.2	
ICP50	2	5021	ICP50-273	sheep	31.3	8.5	10.2	9.61	10.3	

ICP7	2	110	ICP7-144	sheep	30.8	8.93	10.5	11.6	9.77	10.3
<b>radius</b>					<b>Bp</b>	<b>BFp</b>				
ICP7	2	104	ICP7-181	sheep	27	25.1				
<b>scapula</b>					<b>GLP</b>	<b>SLC</b>				
ICP109	1	8	ICP109-29	cattle	61.6	45				
<b>ulna</b>					<b>BPC</b>					
ICP89	1	3	ICP89-245	sheep	18.1					
<b>bird</b>										
<b>humerus</b>					<b>GL</b>	<b>SC</b>	<b>Bp</b>	<b>Bd</b>		
ICP104	1	104	ICP104-16	rock dove	48.5	5.84	17.1	11.7		
<b>fish</b>										
<b>dentary</b>					<b>M1</b>					
ICP109	1	5	ICP109-435		3.17					

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Appendix vi. Mammal, bird and fish measurements from all ICP sites