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Identification of Skriduklaustur´s animal bones 2002

Skýrslur Skriðuklaustursrannsókna III
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Reykjavík

Skriduklaustur Excavation 2002

Elements to remember and to consider when looking at the information which I have provided on the bones from the excavation, are numerous and concerned with either a limitation of accuracy or the explanation of the information that has been provided and what it means.

Identification
The identification has been divided into 2 aspects fish and other, namely mammal bones. The majority of the bones were sheep, cow and horse. The identification of some of these elements could be made a lot more accurate with the availablity of a specimens. Horse and cow have been nearly impossible to distinguish simply because a) I don't have the appropriate information and b) no specimen to compare. I have made a rough evaluation based upon the fact that I have a reasonable quantity of information on sheep, and anything larger than this is going to be cow or horse. However it is highly possible for a very young cows bones (even fetal!) to look similar to a sheep. I have no information based upon icelandic species (the amount of difference this makes is not going to be large but may be some!) The exception to this is the feet bones which are very different and in the majority of cases these have been distinguished.
The identifications should therefore be checked with the aid of specimen of each likely species of domestic and commonly hunted large animal (deer?!?), prior to any asumption that the data is accurate.
Some bones have been listed as bird, this is based upon they don't look like mammal, no anatomical information could be given about such bones.

Teeth
Teeth have been preserved exceedingly well, and as such it should be possible to gain a lot of information from them, this is especially the case of sheep mandibles with teeth included. Several aging systems have been established and widely agreed to provide a relatively accurate date of a sheep from a mandible. They are based upon the eruption and wear of individual teeth. If such a study was undertaken it may provide evidence for the farming strategy wich was employed, regarding the slaughter ages and possibly even times of year. There would be inaccuracies caused by Icelandic sheep being differnet from the sheep used in the study, the icelendic environment resulting in different animal growing rates, individual case of malnourishment etc… Such studies have been undertaken by Payne 1973, Wilson et al 1982 and others.
Within the data, I have identified (as best I can) which teeth are present, this is based upon a standarised system (At least within the UK; I don't know who developed it!). This is outlined on one of the pieces of paper that I have given you.

Marrow tapping
Several of the bones show evidence of marrow extraction e.g. a hole at both ends or having been broken (In some larger cases this would have required considerable effort!). The techniques used should be specifically identifiable, time has been the controlling factor affecting the limitation of this angle of study at this time. It is clear however that

the importance of marrow should not be underestimated if ever a nutritional study is undertaken on Icelandic people. Several bones that display marrow extraction also display a lot of cut marks, often around the area where the bone has broken, possibly suggesting that several different techniques were employed depending upon which bone was being processed (a hypothesis that I haven´t checked!!).

Long bones (Leg bones; Humerus, Femur, Tibia, ulna, radius etc…)
Within this assemblage there are a large number of long bone fragments and relatively few complete long bones (in comparison to the number of metapodials for example). It is possible that identification of the ratio of long bones to other elements may result in there not being a sufficient quantity of one in repect to the other. This could mean a lot of things, including butchery was being undertaken elsewhere on the site, butchered at other sites (meat brought in) etc... This may mean an understanding of the economy based around this site may be possible.

Proximal/distal
These discribe which end of a bone is present when it is not whole but an end is identifiable. Proximal being nearer the spine, distal being nearer the feet.

Vertebrae
The elements that make up the spinal column vary dramatically along it´s length; it should be possible to identify the majority of these to specific areas of the spine. I have not attempted this in the majority of cases because of a lack of corroborative data. There is at least 1 example which has cut marks on it where it may be of interest to identify where it is positioned along the spine so as to identify the specific butchery technique employed.

Process
A process in this context is ´a prominence clearly extending out from the body of the bone´ one of the best examples being on the vertebrae.

Condyle
A cylindrical articular surface (commonly found at the end of metapodials). I don't know if there have been goats present in Iceland in the past but these condyles can be used to distinguish between sheep and goat when both are present.

Mandibles
The majority of sheep mandibles are broken either just before or just after M3 (final molar). I have no explanation other than it could be either a butchery technique (I believe Icelanders sometimes eat sheeps heads!) or marrow extraction form the flat bone of the joint.

Metapodial
Metapodial is the term for both metatarsels and metacarpels; in this case it has been used because I have not undertaken a specific identification to separate the two.

Condition
In the majority of cases the bones which have been foud during this excavation have been in fantastic condition. Where the condition has not been so good it should go some way to explaining misidentification.

Unidentified/condition
These aspects were not really included for your benefit but insterad for anyone who looks at this database in the future it gives them an idea of the accuracy/inaccuracy of the identification; caused by the bone condition and my skill.
There are a number of bones within the same contexts which I have grouped together; in each case this is because no distinguishing information would have been recorded and this saved time.

Skridukslaustur's Fish Bones 25/11/2002 Jonathan Moller

Fish is an important source of essential oils within environments as ecologically narrow and fragile as that of Iceland. It is as such an important element of life at Skridukslaustur.

Species
Within the assemblage gathered from this dig, it was possible to distinguish the presence of a number of different fish. The identification of these fish to specific species level is again (similarly to the mammal bone) based upon datasheets and not specimen examples. It is therefore possible that the identifications in some cases may be wrong. These datasheets were constructed using British fish and it is highly possible that there may be fish species within Icelandic waters that have a similar bone structure to those of British species, but are a different species.

Mortality profiles
It may be possible (with a large enough sample of bone) to identify the acquisition strategy that was in place within the monastery e.g. the ratio of river to sea caught fish. Whether specific ages of fish were chosen i.e. younger fish were thrown back.

Age
Is generally possible to identify within species due to size of specific skeletal elements. The most accurate is the Otolith (at least proven in some species to be) this is a calcium deposit within the skull that grows in proportion to length.

Survival to inclusion within this database
To a certain extent this is more of a problem with fish bone than it is with mammals. This is due to several factors:

- The bones are smaller. This means that the bones are less likely to be collected during standard excavation procedures (except for the very large bones).
- The bones are more often eaten (either by human, domesticated animals or rodents), this results in the bones either being entirely digested or at the least seriously weakened and a lot more likely to decompose faster. This is reflected within the data.
- Fish is often cooked whole or at least without the bones having been removed. The parts most commonly removed is the head, this is because it has the worst bone:meat ratio. Bones that were cooked first before entering the archaeological record will be more prone to decomposition than those which weren't. This may be reflected in the quantity of skull to spine bones.
- Fish bones are more prone to acidic soils than mammal bones. The peaty soils at Skriduklaustur are acidic (I think they are anyway) this will mean that the quantity of fish bones that entered the archaeological record is not reflected in the number that came out even without any intervention by man or animal.
- Hand excavation is not suited to the recovery of bones of this size. It would require a flot system to sieve through the soil coming off the excavation to recover even a small proportion of the fish bone that is still present at the site.

Due to all of these aspects it is quite surprising that we recovered the quantity of fish bone that we did. Having stated all these reasons why the fish bones shouldn't survive, the majority of the bones that we did recover were in good condition and as a result may suggest that the majority of the bones were not destroyed by the soil. It is very difficult to be certain of the original quantity of fish bone at the site and hence the ratio of fish to mammal consumed at the monastery.

I think that fish would have been an essential element of the monastery's food intake, supplementing during poor years and broadening the diet during the good ones. The quantity of bone identified within the course of this excavation does not reflect accurately this importance.

SKRIÐUKLAUSTURSRANNSÓKNIR 2002 - greining beina

Area/find	Bone element	Species (if known)	p/w/d	condition	Comments
Surface A	Tooth	sheep	w	g	Molar M3
	Phalange	sheep	w	g	
	Pelvis	Cow/horse			Joint, little else
	Pelvis	Cow/horse		g	2x fragments
	metapodial	sheep	w	g	
	metapodial	sheep	p	g	tapped, condyle missing
	metapodial	sheep	c	p	
	metacarpel	sheep	w	g	
	Mandible	Cow/horse		p	fragment
	mandible	Cow/horse		p	fragment
	Carpel	Cow/horse		p	half fragments
	Bone?				Cut/saw marks x2
	Unidentified x2				
A4	Carpels	sheep	w	p	x2
	Femur	Horse/cow	p	g	fractured ~20cm down
	Femur	sheep	d	p	fractured lengthways + ~20cm down
	Phalange	sheep	w	p	epiphyses missing
	Phalange	sheep	w	p	
	Phalange	sheep	w	g	
	Phalange	sheep	w	p	epiphyses missing
	Rib	Sheep		p	10 fragments
	Tibia	sheep	p	p	
	Vertebrae	horse/cow	w	g	both epiphyses missing
	Vertebrae	Horse/cow	w	g	epiphyses x3
	Vertebrae	Horse/cow			ventral column

P	**Proximal**
W	**Whole**
D	**Distal**
LT	**Loose Tooth**
C	**Central**

Condition= Poor (p) / Good (g)

	Vertebrae	sheep		p	
	Vertebrae	sheep		p	
	Bone				1x burnt bone fragments
	5 unidentified				
A5	rib	?		p	fragment(neither end present)
	Skull	sheep		p	fragment of skull 4x3cm
A 13	metapodial	horse	w	g	
	Pelvis	horse/cow	w	g	
	Skull	sheep		g	left side half of brain box
	tibia	horse/cow	w	g	
B2	Bone				Burnt x3
	Carpel	sheep	w	g	
	Carpel	sheep	w	g	
	Femur	sheep	p	p	ball end, fractured 8cm down
	long bone		w	g	which?
	long bone		w		fragments x10, differnet thicknesses
	Mandible	horse/cow		g	Mandibular condyle
	Metapodial	sheep	p	g	
	Metapodial	sheep	d	g	Condyle fused
	Metapodial	sheep	d	p	condyle
	metapodial	sheep		p	ends missing
	metapodial	sheep	w	g	
	Metapodial	sheep	p	p	tapped P+D
	Metapodial	sheep	p	p	distal end missing
	metapodial	sheep	d	p	half
	Phalange		w	p	
	Phalange 2/3	sheep		p	
	Tooth	sheep			M3 worn, P?x2, incisor x1
	Tooth	sheep		p	Unworn
	Upper dentition				2 teeth

	Vertebrae	sheep			Cauder?
	long bone				fragments x7
	Unidentified x1				
B3	Femur	sheep	p	p	fragment
	Fibia?	sheep		p	fragment
	long bone				fragments 3
	Metapodial	sheep	w	g	tapped
	metapodial	sheep	p	g	fractured both ends half of bone only
	Metapodial	sheep	c	p	shaft
	Pelvis	sheep		p	fragments
	tooth	sheep		p	fragment
B3	Skull	Horse/cow	w	p	fragmented
B4	Femur	?	p	p	Joint only
	Mandible	?			2 fragments
B4	Metapodial	Horse	p	g	Condyle missing
	Phalange	horse	w	g	
	Femur	horse/cow	p	p	2 fragments
	Metacarpel	sheep	w	g	2
	Vertebrae	sheep			1,5
	rib	?		g	2 fragments
B4	Femur	cow/horse?		p	marrow extraction splinter?
	Long bone	cow/horse?			fragment only, but large
	mandible	sheep		g	1 tooth present, bone fractured
	mandible	sheep			hole for tooth but no tooth present
	metpodial	cow		g	Distal condyle disconnected
	metacarpel	sheep		g	x2 both in similar condition
	phalange	Cow	w	p	
	rib	?		g	2 small pieces of bone probably rib (id. Questionable)

	Vertebrae	sheep	w	g	1.5 vertebrae still articulated
B5	birdbone	?		g	
B6	Humerus	sheep	d	g	Joint and ~13cm of shaft, fractured from 3cm
	long bone	sheep		p/g	cracked along length as well as missing ends (Possible femur)
	long bone	cow/horse		g	2 fragments of large long bone
	metacarpel	sheep	w		
	Metapodial	horse	w	p	
	metapodial	sheep	d	p	Partial condyle fragment
	Pelvis	sheep		p	small fragment including ball socket
	Phalange	sheep	w		
	Phalange 2/3	sheep	w	g	
	Skull	sheep		g	
	Tibia?	sheep?	d	g	split along length, proximal end and epiphyses missing
	Tooth	cow/horse	LT	p	2 individual cusps (may have been one originally!)
	Tooth		LT	g	worn
	Tooth		LT		Fragment of molar, less than half a tooth
	Unidentifiable bones = 7				
B7	3x possible bird bones				
	2x oxidised long bones				
	Femur	sheep		p	fractured along length and at both ends
B8	Humerus	sheep	d	p	10cm to fracture
	Humerus	sheep	p	p	ball joint
	Phalange	cow/horse	g		
	tooth	sheep		g/p	left side Molar
	long bone	sheep		p	3 bad condition fragments
B8	Humerus	sheep	d	p	Fractured ~12cm down, rollers damaged
	metapodial	sheep	p	p	distal end damaged, condyle missing has been drilled for marrow
	Vertebrae	sheep		p	

B9	mandible	sheep			left side, M2-P3, M3 missing broken before and after
	Scapula	sheep	d	p	including partial joint
	vertebrae	sheep		p/g	
B10	Humerus	Cow	d	g	broken ~20cm down
	metapodial	sheep	p	g	fragment of proximal joint and some shaft
	metapodial	sheep	p	p/g	fragment of proximal joint and some shaft marrow tapped
	phalange	cow/horse	w	p	
	rib			g/p	7 ribs; each slightly differnet so probably from the same ribcage
	scapula	sheep		p	central ridge section, probably sheep from size
	Upper dentition	sheep		g	5 teeth present
	vertebrae	sheep		p	ventral column
	Vertebrae	sheep		p	ventral column
	long bone				3 fragments
	3 unidentified				
C-surface	Phalange	horse-small	w	p	
	scapula	sheep	d	p	distal joint damaged
	tooth	horse/cow		g	v.worn
	humerus	sheep	d	p	joint gone
	long bone				5 fragments
	unidentified 7				
C2	Humerus	sheep	d	p	x3
	Mandible	sheep			P2-P4 fractured either side
	Metacarpel	sheep	w	p	Cut mark, big
	Metapodial	sheep	d	p	condyle fused
	Phalange 2/3	sheep	w	p	
	Rib	sheep			central
	25 unidentified				
C3	Bone			p	Burnt

	Carpel				x2
	Femur	sheep	d	p	fragment
	Pelvis	sheep		p	Ball + Socket, cut?
	Phalange	sheep	w	p	
	Tooth	sheep		g	molar unworn fragment
	Tooth	sheep			molar M3?
	Unidentified x7				
C4	Carpel	Horse/cow	w	g	x2
	carpel	Horse/cow	w	g	x4
	Femur	sheep	d	g	Joint only
	Fibia?		w	g	x2
	Humerus	Horse/cow	P	g	Epiphyses
	long bone			g	7 fragments
	Mandible	horse/cow			teeth unworn, 6 teeth present, Right side
	Metacarpel	sheep	w	g	
	metacarpel	sheep		p	
	Metapodial	Horse	w	g	
	Metapodial	sheep		p	Central section
	Phalange	sheep	w	g	
	Phalange 2/3	sheep	p	p	
	Tooth	sheep		p	Molar
	Tooth	Horse/cow		p	fragment
	5 Unidentified				
C4	Metapodial	horse	d	g	marrow fracture?, cut marks?
	Phalange 2/3	sheep	w	g	
	long bone				1 burnt fragment, 1 not
C5	long bone				4 unidentifiable fragments
	metapodial	sheep		v.p	fractured both ends
	Pelvis	sheep		g	ball socket, lots of cut marks/grooves
	phalange	sheep		p	

	skull	cow/horse		g	brain texture
	Tooth				unworn, charred/stained blck bicuspid tooth
	Tooth	cow/horse		p	large, some mandible remains attached
	Tooth	sheep	LT		Right hand side, M2 black stained
	Tooth	sheep	LT		mandible remains partially around it M3?
	Tooth	?	LT	Well worn	
	5 unidentifiable fragments				
C6	Femur	sheep?	p	g	proximal tibia
	Humerus?	sheep?	p	p	The epiphyses disconnected from shaft, in 2 parts which fit perfectly
	long bone	sheep?		p	has been gnawed or cut???
	Pelvis/scapula	cow/horse	d	p	The socket of a ball joint, no surrounding bone
	Radius?	?	d	p	articulatory surface, fractured 8cm down
	Scapula	sheep	d	p	
	Tooth	sheep?		p	
C6	Long bone	sheep (prob.)		p	
	Metapodial	Sheep	d	g	fractured, cut marks and condyle fused
	Phalange	Cow/horse	w	g	12cm long
	Tooth	sheep	LT		probable M3 some wear
	Vertebrae	Cow/horse	w	g	Lumbar vertebrae??
	Vertebrae	Cow/horse	w	g	
	Vertebrae			p	cut/sawn, difficult to identify which end or which vertebrae
C8	femur	sheep		p	fragment
	Humerus	sheep	d	g	missing roller, and has been snapped quite cleanly 8/9cm down
	long bone	sheep		g/p	2 fragments
	long bone	sheep		p	possible cut marks, snapped 8/9cm down
	Pelvis	sheep		p	central portion of medium sized pelvis
	Tooth	cow/horse		g/p	large
	Vertebrae	sheep			No process´, related to the pelvis?
	Vertebrae	sheep			wide and flat, pelvis related

C9	metapodial	sheep		g	marrow tapped, condyle fused
	metapodial	sheep	d	p	10cm of distal end
	metapodial	sheep	p	g	Possible bite mark, last 8cm
	rib			g/p	Both ends missing, diamond cross section
	Skull	sheep	g	p	fragment of brainbox
	Tibia	cow	p	p	central section, possibly cut at distal end
	Tooth	sheep		g	3xincisors
	vertebrae	sheep		p	central aperture only
C10	Bone	?		p	fragment of burnt bone, possibly long bone
	long bone				3 pieces of long bone, 3 different thickness
	metapodial	sheep	d	p	condyle fused but broken from shaft
	Phalange?	sheep		v.p.	id. Questionable
	skull	?			Fragment of skull with brain texturing
C10	Phalange	sheep	w	g	
	Phalange 2/3	cow?	w	g	
	rib				2 fragments
	vertebrae			p	epiphyses missing
D-Surface	Upper dentition	Sheep		g	Partial skull, including teeth
D-surface	mandible	sheep	w	g	right side, all teeth present
	metacarpel	horse		p	id. Questionable
	mandible	sheep		p	2 teeth
	phalange	sheep	w	g	
	scapula	horse/cow	w	g	small bits missing
	scapula	horse/cow			4 fragments
	metacarpel	?			only two of this type I've seen
	vertebrae	sheep	w	g	
	long bone				3 fragments
D3	mandible	sheep		p	3 teeth M1-M3

mandible, teeth, long bones and fragments of scapula: 30-40 unidentified time!!!

D4	Vertebrae	Cow/horse	w	p/g	
	Rib	sheep		p	fragments 4
	Phalange	?	w	g	long + thin
	Metapodial	Cow	w	g	
	Metacarpel	sheep	w	p	
	Mandible	sheep		p	condyle
D10	humerus	sheep	d	p	fractured 5cm down
	humerus	sheep	p	p	fractured 5cm down
	long bone	?		p	3 fragments
	mandible	sheep		p	2 fragments probable
	skull	?		p	4 fragments
	Tibia	sheep	p	g	fractured just before distal end
	tooth	sheep			left side, worn
	Vertebrae	sheep		g	some process´missing
	Vertebrae	cow/horse		p	top process still present to ~7cm
	large fragment of flat bone, and 2 unidentified				
D10	Mandible	sheep	w		Left side, teeth present but in v. bad condition (maybe be disease/illness?)
	Humerus	sheep	w	p	V.small possible lamb
	Pelvis	sheep		p	Ball socket present but in poor condition
	metapodial	cow/horse	w		cut marks
	metapodial	cow/horse	p	g	Proximal joint, fractured ~13cm along
	long bone				2 fragments
	1 partial articulation surface				
D11	Femur	Cow		g	fragment
	Humerus	sheep	d	g	Roller joint at the end of the humerus and ~12cm of shaft, fractured from 2cm
	Humerus	sheep?	w		Thin and small maybe lamb?!?
	long bone	?		g/p	2x unidentified fragments
	mandible	sheep		p	left side, M2 + M3 (unworn)+ present fractured before and after

	mandible	cow/horse		g	2 pieces of the same bone, inc. mandibular condyle (massive)
	Metapodial	sheep	w	p	condyle fused, marrow tapped at proximal end
	Phalange 2/3	sheep		p	
	rib	sheep		g	12cm long neither end present
	Scapula	cow/horse	w	g	cut marks at proximal and distal ends
	Scapula	sheep		g	fragment
	tooth	cow/horse	LT		worn
	Vertebrae	?		g	6 from the same animal
	2 pieces of unidentifiable bone probably mandible				
2002-36-09	Metapodial	cow	d	g	Condyle only
	Metapodial	sheep	p	g	marrow tapped, spiral fracture
	bird bone	?			v. thin joint
	Femur	sheep	p	p	
	long bone				3 long bone fragments- different thickness of bone
	mandible	sheep		p	left side 2 teeth
	mandible	sheep		p	front fragment no teeth
	femur	sheep	p	p	baLL JOINT
	rib	sheep			fragment
	skull	sheep			fragment
	tibia	sheep	d	p	joint fragment
	tooth	?		g	incisor
	tooth	sheep		g	M? left side
2002-36-11	unidentified				1
2002-36-12	tibia? Big bone	sheep???	d	g	
	long bone			g	splinter
2002-36-15	Vertebrae	Cow/Horse		P/G	15 vertebral columns, some with processes some without
	Metapodial	Cow/Horse	d	P/G	half of condyle
	Scapula	Sheep	d	P/G	Central section near distal end
	mandible	Sheep		p	3 molars

	Metapodial	Sheep		p	Both ends missing
	Mandible	Sheep		p	3 teeth P2-P4 diastema included
	Scapula	Cow/Horse	d	p	Distal joint
	Rib	Cow/Horse	p	p	4 fragments
	Metacarpel	Sheep		p	fragment
	Long bone	Sheep			fragemnet 10cm long
	Pelvis	cow?		p	Joint, cut marks both ends, in two pieces
	Pelvis	cow?		p	2 pieces
	Pelvis	Cow?		P/G	Central column
2002-36-20	vertebrae	sheep?		g	cut
2002-36-21	horn	sheep	w	p	
2002-36-28	skull	horse		g	fragment from right side
	rib	sheep	d	g	no joint
	phalange	sheep	w	g	different sizes x3
	3 unidentified				
2002-36-30	rib	horse/cow			drilled at 1 end, heavily worked
2002-36-32	Carpel	sheep	w	g	
	metapodial	sheep		p	condyle
	tooth	Cow/horse	LT	g	Large tooth very little wear
	tooth		LT		LT
2002-36-33	?	?		p	2 pieces of burnt bone (White)
	Mandible	Sheep		g	Right side P3->M2 fractured after this point
	Metacarpel	Sheep	w	g	
	Pha 2/3	?	w	g	
	Tibia	Sheep	d	g	fractured 3cm along
	Tooth	Sheep (prob.)			2 fractured pieces of tooth
	Upper dentition	Sheep			Right side 4 teeth present. No more skull present in assemblage

	Vertebrae			g	Missing P end, shows signs of root marks
2002-36-34	Metapodial	sheep	w	g	proximal end tapped for marrow, distal epiphyses missing
	Metapodial	sheep		g	d epiphyses missing
	Tibia?	sheep		p	Both ends in poor condition (id. Difficult)
	Upper dentition	Sheep		p	M4 unerrupted, very little wear on M3 ~2-3yr old
	Vertebrae			p	Cauder (??? One of the vertebrae close to the pelvis)
2002-36-34	metapodial	sheep	p	p/g	
	vertebrae	sheep		p/g	ventral column
	phalange 2/3	sheep		g	x2
	rib	sheep		p/g	1 fragment
	long bone				5 fragments
2002-36-35	Carpel	Horse/cow	w	p	x4
	long bone				burnt x2
	Metacarpel	sheep	w	g	Stained
	Phalange	Cow	w	g	
	Phalange	sheep	p	g	
	Phalange	Horse	w	g	
	Phalange 2/3	sheep	w	g	
	tibia?	Sheep?	w	g	
	Tooth	Cow/horse		g	
	Vertebrae		w	g	
	Vertebrae		w	g/p	
	Vertebrae		w	g	
	vertebrae	sheep		p	ventral column missing
	Vertebrae			p	Ventral column missing
2002-36-35	?	bird		g	Probable birdbone species unknown
	?	bird		p	small fragment of possible birdbone (maybe?!?)
	Metacarpal	?	w	g	
	Phalange	sheep	w	g	

	Phalange		d	p	fractured at p? end
	Rib	Sheep		g	12cm of rib ~1cm at widest point
	rib			p	small fragments
	Scapula	sheep (prob.)	p	p	separate part in assemblage?
	Tooth	?	LT		3 teeth; 2xM1/M2, 1xsmall fragment
	Vertebrae	Cow/horse?		p/g	
2002-36-35	Skull	sheep		g	half a sheeps skull, no upper dentition
2002-36-35	metapodial	sheep	p	p	marrow tapped, distal end missing
	Pelvis	sheep		g	half
	metapodial	sheep	w	p	marrow tapped big hole proximal end, small hole distal
	metapodial	sheep	d	p	epiphyses missin distal end, proximal end missing
	metacarpel	sheep	w		
	Vertebrae	sheep		p	ventral column
	Tooth				insisor
	long bone			g	5 fragments
	carpel	sheep	w	g	
	2 unidentified				
2002-36-39	mandible	sheep		p	right side, 4 teeth broken either end
	mandible	sheep		p	mandibular condyle
	femur	sheep			epiphyses disconnected
	phalange	sheep	w	g	
	long bone	sheep?			1 fragment
	tooth	sheep?			molar
2002-36-41	Femur/humerous	Cattle (prob.)	p	p	ball of joint only
	M1/M2	Cattle (prob.)			LT
	M1/M2	Cattle (prob.)			LT
	Metapodial	Sheep	w	g	condyle dettached. Marrow extraction holes proximal and distal ends
	Metapodial	Sheep	p	p	marrow extraction hole
	Scapula			p	Partial

	Scapula	Cattle (prob.)	d	p	
	Scapula	Sheep		p	
	Tibia	Sheep	d	g	Stepped/columnar fractured 4.5cm from end
	Tibia	Cattle (prob.)	p	p	broken fracture damaged
2002-36-42	Scapula	Cow/horse	d	g	
	Metapodial	sheep	p	g	Joint only
	Mandible	Sheep		g	Marrow tapped, distal end missing
	UD/mandible	Cow/horse		g	2 teeth present M1, P3, left side, broken both ends
	Skull	?			3 teeth present molars, some bone present
	Femur	sheep/lamb	w	g	fragment of skull
	Upper dentition	Cow/horse			v.small
	Rib	sheep	d	g	2
	long bone				fragment of rib
	tooth			g	4 fragments
	tooth			g	2 bicuspid teeth, unworn
					Possibly cut at bottom, some wear
2002-36-45	carpel	cow (prob.)	w		
	metacarpel	sheep	w		
	?				punctured
2002-36-45	carpel	cow/horse	w	g	dense flat
	metapodial	sheep			
	unidentified x1				
2002-36-50	Carpel	?		g/p	small dense bone
	Carpel				small dense bone
	long bone				4/5 long bone fragemnts specifically unidentifiable to species or bone element
	mandible	sheep		g	M1/M2 barely worn, M3 present
	mandible	sheep		p	No teeth present
	Metacarpel	sheep		g	Cut marks (5 minimum)
	Metapodial	sheep	d	p	Fractured proximal end, condyle missing
	Metapodial	sheep	w	p	Condyle missing, p end tapped

	Metapodial	sheep		g	Condyle missing, 2 small cut marks
	metapodial	sheep	p?	p	Fracture, distal end
	Pelvis	sheep			Fragment including ball joint
	Phalange	sheep	d	g	Proximal epiphyses missing
	Phalange	sheep		g	Some surface damage
	Phalange	sheep		p	both ends missing
	Phalange	sheep		p/g	
	Phalange	sheep		p/g	epiphyses visible but not fully fused
	Phalange	sheep		g	Epiphyses
	Rib				4 rib fragments
	Scapula	sheep		g	Fragment neither end present, near proximal end?
	Skull			g	Fragment of skull identified from texture left by brain
	Skull				3 fragments (skull is a guess)
	Skull				Orbit surround?
	Tooth	cow/horse		g	
	17 unidentifiable bone fragments (mostly under 2cm in length)				
2002-36-52	Vertebrae	sheep		g	Upper process present, 1 epiphyses missing
	Vertebrae	sheep		g	1 epiphyses missing
2002-36-58	Phalange	cow	p	g	
	carpel	cow			dense fklat bones x2
	tibia	cow	d	g	epiphyses only
	Tarsel?	cow	w		inc roller joint
	tibia	cow		g	shaft only
	long bone			g	fragment
	metapodial	cow	w	g	
2002-36-59	Bone			p	Fragment of burnt bone (white) maybe rib
	long bone			p	Fragment 7xcm, possible markings of chewing
	metapodial	sheep	p	p	marrow extraction as possible sign of condition no distal end
	Phalange 2/3		p	p	General shape visible, larger than sheep
	Phalange 2/3		p	p	probable sheep

	Tibia/Humerus	small (species ?)	d	p	Very poor condition
	Tooth	sheep		p	3 Teeth; M2 partial, P4, P4 (id. Questionable)
	Vertebrae	sheep		p	ventral column all process´ missing
	Vertebrae	sheep		p	5 fragments maybe from above vertebrae
	Bone				Articulatory surface from unknown anatomical element
2002-36-59	Femur	Cow	d	g	Fractured, proximal end missing (marrow extraction)
2002-36-60	mandible	sheep		g/p	M3, unworn
	rib	?		g/p	fragment
	mandible	sheep		g/p	mandibular condyle
	mandible	sheep			1 fragment
	tooth	sheep			molar, worn
	skull	sheep		g/p	2 fragments
2002-36-61	tooth	?	LT	g	molar individual, or unworn
	mandible	sheep		p	mandibular condyle
	tooth	sheep	LT		M3 unworn
	rib	sheep?			fragment
	long bone	?		p	fragment
	long bone	sheep		g	fragment
2002-36-62	long bone	?			2 long bone fragments
	?	?			3 bone fragments unknown anatomical position
2002-36-63	tibia	sheep	d	g	fractured just below joint
	phalange 2/3	sheep	p	g	
	metapodial	sheep	p	g	marrow tapped p+d
	metapodial	sheep	p	p	distal end missing
	vertebrae	sheep		g	epiphyses missing
	mandible	sheep		g/p	M1 +M2 in wear M3 unerrupted
	Humerus	sheep	d	g	roller joint
	rib				2 rib fragments

	skull	sheep			fragment of brain box
	Humerus	small?	d	g/p	fragment of roller joint
	long bone				6 fragments
2002-36-69	Carpel	cow/horse		g/p	
	Long bone	sheep?		g	6 fragments, specific elements unidentifiable
	long bone	Cow/Horse		g	Thick fragment of long bone
	Long bone	?		p	3 long bone fragments
	Metacarpel	sheep (lamb?)		g	V.smll example of sheep metacarpel
	Metacarpel	cow?		g	x2 not sheep size
	Metapodial?	not sheep		g	2 halfs of an unfused metapodial, condyle not present
	Phalange	sheep	d	p	small fragment
	phalange 2/3		p	g	
	rib	sheep		g	Length of rib neither end present
	Skull	?		g	small fragment
	Skull	?			5 small fragments
	Tibia	Sheep	p	g	Proximal joint
	Tooth				2 cusps of a larger tooth which was very worn
	Tooth	?		g	2 heavily worn teeth, almost identical, single root in each case
	upper dentition	?		p	Id from tooth holes
	Upper dentition/skull	Not sheep			Right side, last molar unerrupted(4 molars present)
	Vertebrae	sheep (lamb?)		g	Neither epiphyses present
	Vertebrae	sheep		p	Ventral column (id. Questionable)
2002-36-75	Phalange 2/3	sheep	w	p	
	Vertebrae	sheep	w	p/g	
	Tibia	sheep	p	g	Central section
	Phalange	sheep	w	p	
	Femur	sheep?	p	g	
	Tooth	cow/horse	w	p	
	long bone				5 frgaments
	Phalange	sheep	p	p	
	rib	cow/horse		g	2 fragments

	3 unidentified				
2002-36-82	antler	deer	p	g/p	fragment ~13cm long, worked
2002-36-94	bone				2 pieces of burnt bone
	Carpal	sheep	w	p/g	
	Long bone	sheep (prob.)		p	epiphyses present but not fused, fractured (marrow extraction?)
	Phalange	sheep	w		
	Rib	cow	w	p	
	Scapula	sheep	p	p	Very poor condition
	Tooth	sheep	LT		P1-P3?
	Tooth	?	LT	p	
	Vertebrae			p	Epiphyses of ventral column
2002-36-99	carpel		w	p	
	Femur		d	g	Distal femur joint, 7cm present
	Femur		p	p	Fragment (id. Questionable)
	Long bone				12 fragments (marrow extraction)
	Mandible			p	1 unworn tooth still insitu, otherwise v. poor condition
	metapodial	sheep	p		distal end fracture (marrow tapping?!)
	metapodial	sheep		p	fractured at both ends (marrow tapping)
	Phalange	sheep (prob.)		g	2 phalange ~same length (2cm) but differnet widths and heights
	rib			p	small fragement
	Scapula	sheep	p	p	5-6cm long joint missing
	Skull?			p	fragment probably from the skull
	tooth	?	LT		Bigger than sheep small than cow (calf??)
	Vertebrae	cow/horse	w	g	1 process missing and small surface damage
	Vertebrae	sheep (prob.)	w	p	small process´ missing
	Vertebrae	Sheep (prob.)		p	small section of process and ventral column
	Vertebrae		p	p/g	Several possible cutmarks towards distal end.
	Vertebrae				

2002-36-125	Humerus	sheep		p	2 pieces possibly 1 bone
	metacarpel	sheep		p	
	Scapula	cow/horse		p	central ridge
	Tibia	sheep	p	p	small fragment of joint
	Vertebrae	sheep		p	upper process´partial present lower missing
	Vertebrae	sheep		p	process´s missing
	7 unidentified				
2002-36-142	Vertebrae	Horse/cow		g	cut along 2 axis´, Huge ~14cm
2002-36-149	metacarpels	sheep			burnt x2
2002-36-160	epiphyses	sheep			burnt
2002-36-170	Femur	sheep	d	g	fractured 12cm along
	humerus	cow	p	g	fractured ~15cm along
	long bone	sheep?			2 long bone fragments
	mandible	sheep		p	3 teeth, M1-M3? Broken after here but mandibular condyle present separately
	pelvis	cow		g/p	ball joint present, cut on all 3 arms of the pelvis, miscut also present
	pelvis	sheep		p	id. Questionable
	scapula		d	g/p	distal joint present
	vertebrae	sheep		g/p	process´ missing
	vertebrae	sheep		g/p	1 and a half articulated
	vertebrae			p	ventral column missing
	2 unidentified				
2002-36-208	Mandible	horse		p	5 teeth present, right side, ~25cm long
	metapodial	sheep	w	g	marrow tapped
	phalange 2/3	sheep?	w	g	
	rib	cow/horse		p	central section
	rib	?	p	g	proximal joint
	scapula	sheep	d	p	joint just missing

	scapula	cow/horse		p	central section, ridge visible
	skull	?		g	
	Vertebrae	sheep		g	
	4 unidentified				
2002-36-209	Humerus	horse?	w	g	massive ~40cm long. Not the same size as 2002-36-59, same as 2002-36-209?
2002-36-210	Tibia	horse?	W	g	massive ~33cm. Suggest maybe this is horse because it is intact
2002-36-211	birdbone	?		g	has been cut at 1 end, fractured at other
	humerus		d	p	Fragment of joint
	humerus	cow	w	g	
	long bone	?		g	fractured along long and at both ends
	metapodial	sheep	w	g	marrow tapped proximal end, condyle damaged
	metapodial	cow/horse	d	p	No joint (id. Questionable)
	phalange	sheep	w	g	
	vertebrae	cow/horse		g/p	large
2002-36-212	skull	horse	w	g	missing front teeth, 42cm long by 20cm wide
2002-36-213	rib		p	g	proximal end and 30cm on length
	Scapula	cow/horse	d	p	distal joint and ridge present
	vertebrae	cow/horse		g	8 vertebrae almost certainly from the same animal
	metapodial	sheep	p	p	marrow tapped p. end fractured ~13 down
	metapodial	sheep	d	p	1 condyle and length of bone
	rib	sheep		p	2 fragments
	4 unidentified				
2002-36-237	Skull	Horse	w	g	Complete including front dental

Area/finds number	species distinguishable	Premaxilla	Maxilla	Dentary	articular	palatine	Quadrate	Hyomandibular	Preopercular	opercular	Subopercular	ceratohyal	epihyal	urohyal	post temporal	supracleithrum	cleithrum	ribs	vertebrae	unknown	
																					1
D- surface								1	1									2	3		1
2002-36-33				1	2		1										2	2	11	1	1
																					1
2002-36-41				7	3		7	4	7	5	4		2			2	2	6	18	30	1
	Salmon/trout							2	2	4											8
	Herring							2													2
	Cod				3				5	1	3										12
																					1
2002-36-65	Salmon/trout								1	1									2	2	6
	Herring																				0
	Cod															1	1				2
	inconclusive				1																1
																					1
2002-36-69		1													1						1
C8									2											4	1
2002-36-99										1									1	2	1
2002-36-34										2										2	1
																					1
																					1
																					1
																					1
																					1
																					1
																					1
																					1

Side	D/P2	D/P3	D/P4	M1	M2	M3	stage	condition/comments		
L	W									
mandible						***		articulation only	***	fractured at
R	PM	LT worn	00C	CC	C=	***		poor		