

Southampton French Quarter 1382

Specialist Report Download E1: Animal and Bird Bone - Appendices

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Appendix 1: Fragmentation against frequency of elements

The following graphs plot the frequency, as measured by the NISP of elements as a percentage of the most frequently occurring element, against the completeness, as measured by the number of zones recorded as a percentage of the potential number of zones, of the principal stock animals. Long bones are separated into proximal and distal ends. NISP counts count the diaphysis and metaphysis as one bone where they can be joined, with this total used to calculate the total number of zones, which should be present, if complete bones were excavated.

Smaller bones, such as sesamoids, are generally fairly complete, but have a low recovery in hand-collected samples. As such, they are drawn towards the top left corner of each graph, and have similar frequencies in counts of NISP and MNE. Highly fragmented material have lower survival rates, due to low bone-density values, and are drawn towards the bottom left corner. More complete bones have better survival and recovery rates, but are size dependent, and are drawn towards the top right corner. The exception is the mandible, which, although it survives well across its length, is clearly prone to a high degree of fragmentation. It therefore differs from long bones in that, although it performs well in counts of NISP, it is often different parts of the mandible that are being counted. A typical long bone, such as a humerus, will normally be counted in MNE counts by a zone from one end, ie the distal end, as the proximal end is normally lost due to its low bone-density value. The mandible is, therefore, drawn towards the bottom right corner. The pelvis also has similar fragmentation, although this is countered somewhat by only counting the pelvis as an 'A' bone where part of the acetabulum is present.

Consideration of MNE counts dramatically reduces the often apparent abundance of mandibles, but conversely increases an apparent abundance of carpal and tarsal bones, particularly in cattle, where they are sizeable bones which have better rates of recovery by hand collection, and also metapodials, as they are quite dense elements and have suffered less a degree of fragmentation. As such, they produce the same zones more frequently. The fragmentation of elements against their frequency is, therefore, an important consideration in body-part analysis to avoid the over-interpretation of an abundance of butchery waste, particularly in cattle.

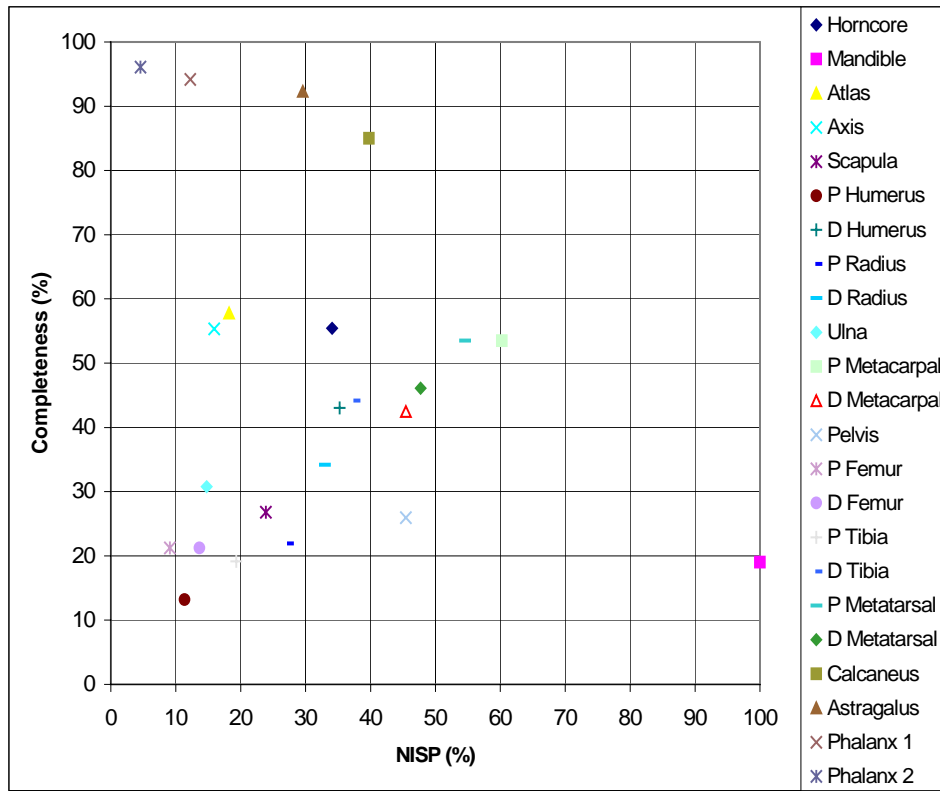


Fig 1: Late-Saxon cattle

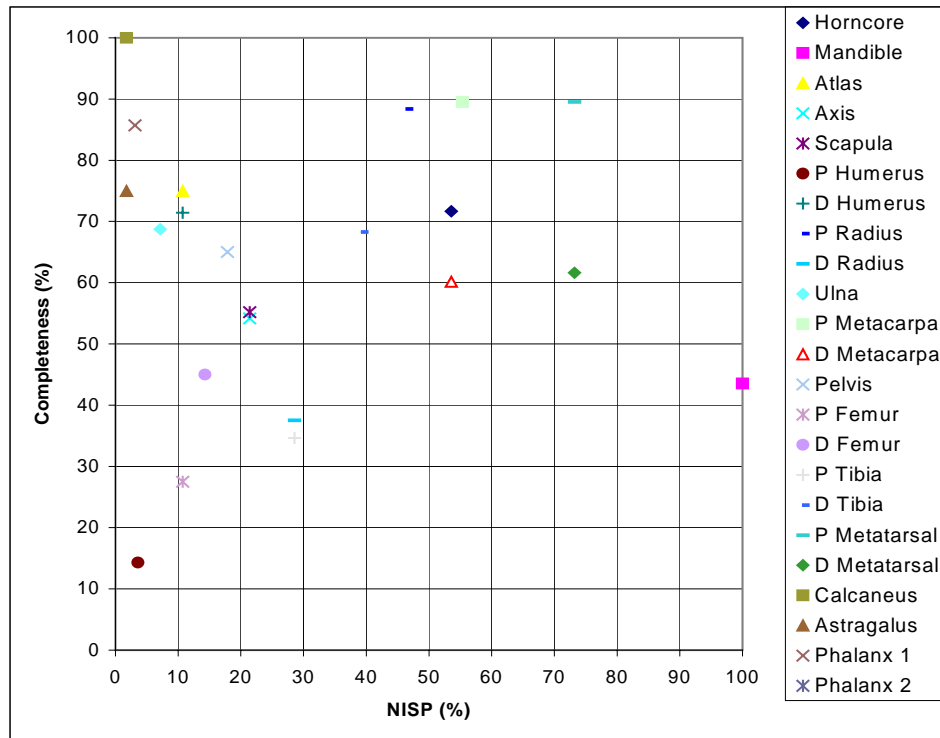


Fig 2: Late-Saxon sheep and goat

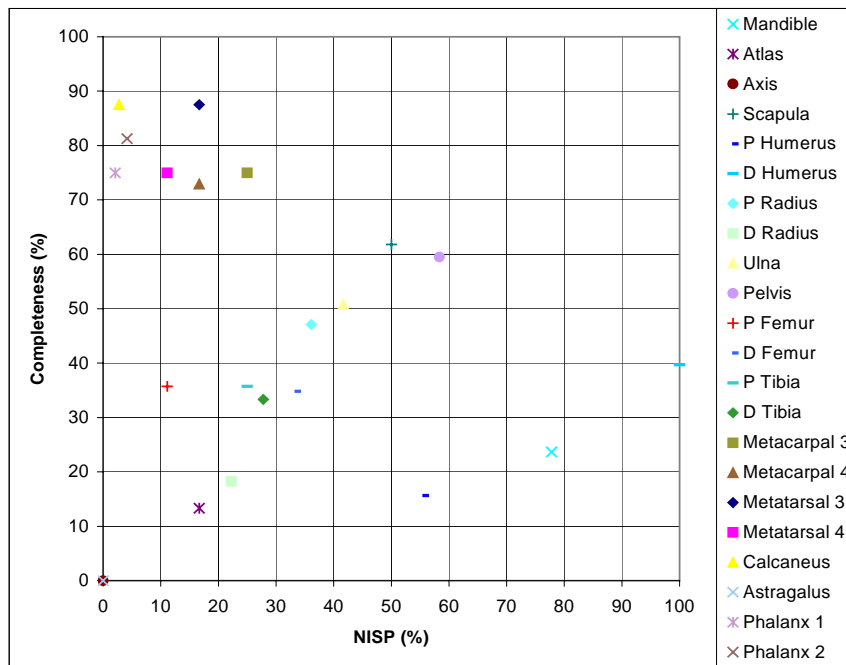


Fig 3: Late-Saxon pig

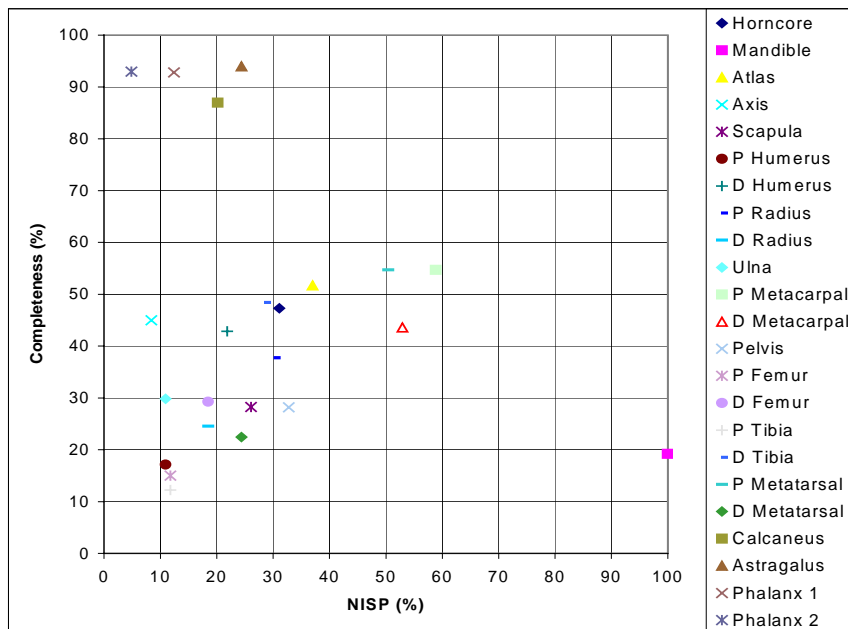


Fig 4: Anglo-Norman cattle

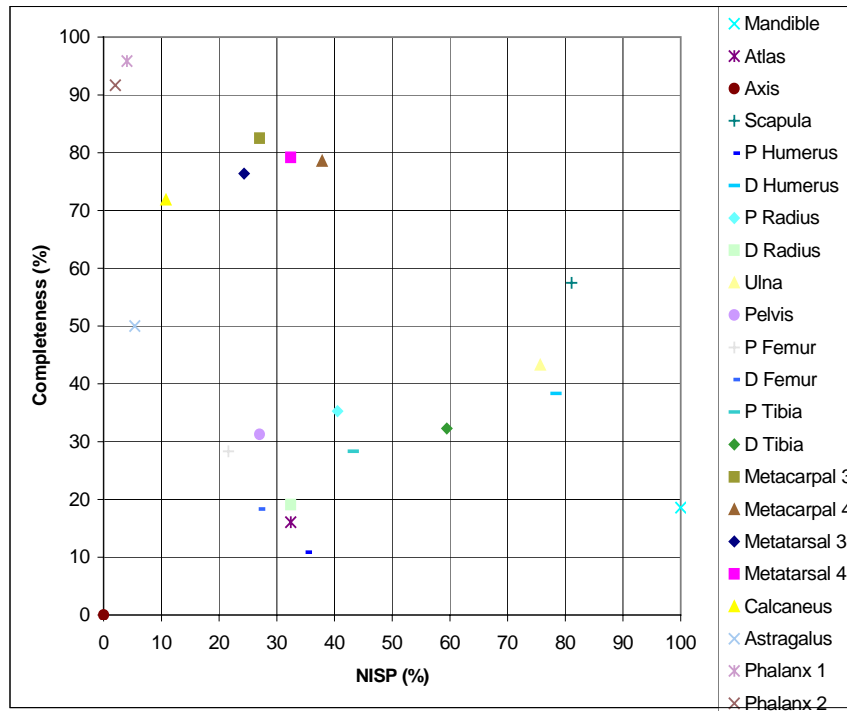


Fig 5: Anglo-Norman pig

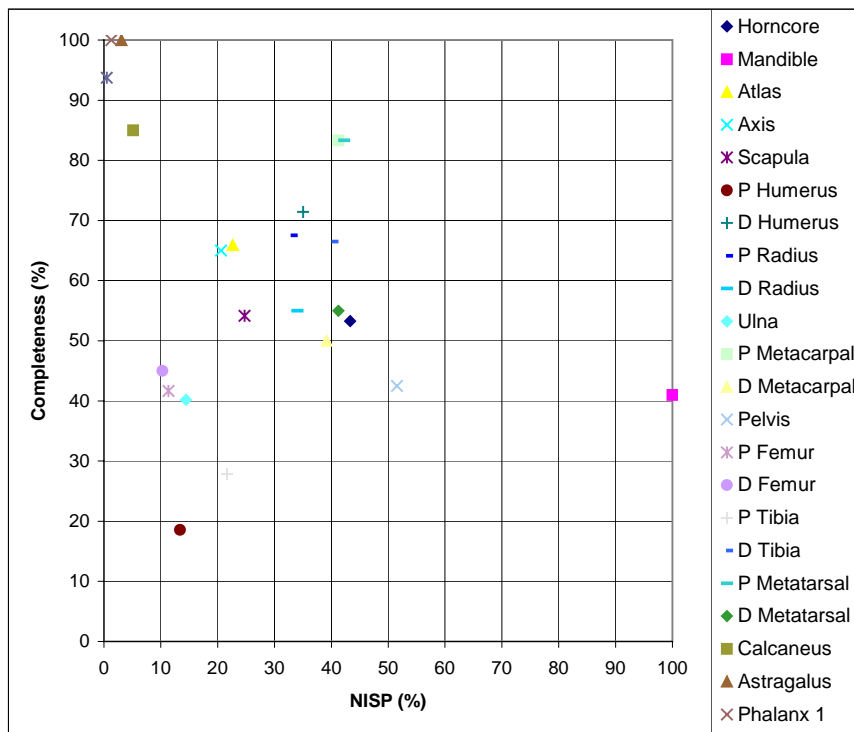


Fig 6: Anglo-Norman sheep and goat

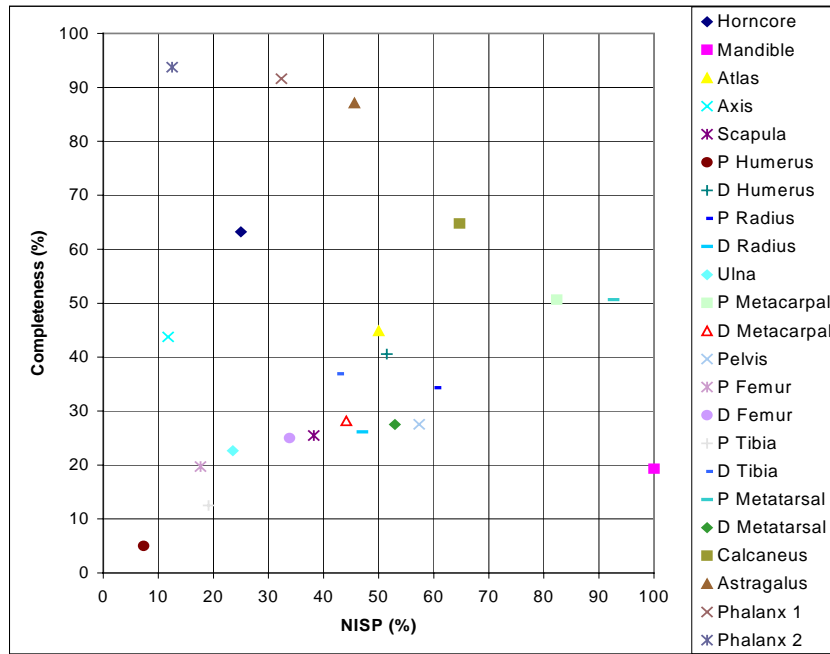


Fig 7: High-medieval cattle

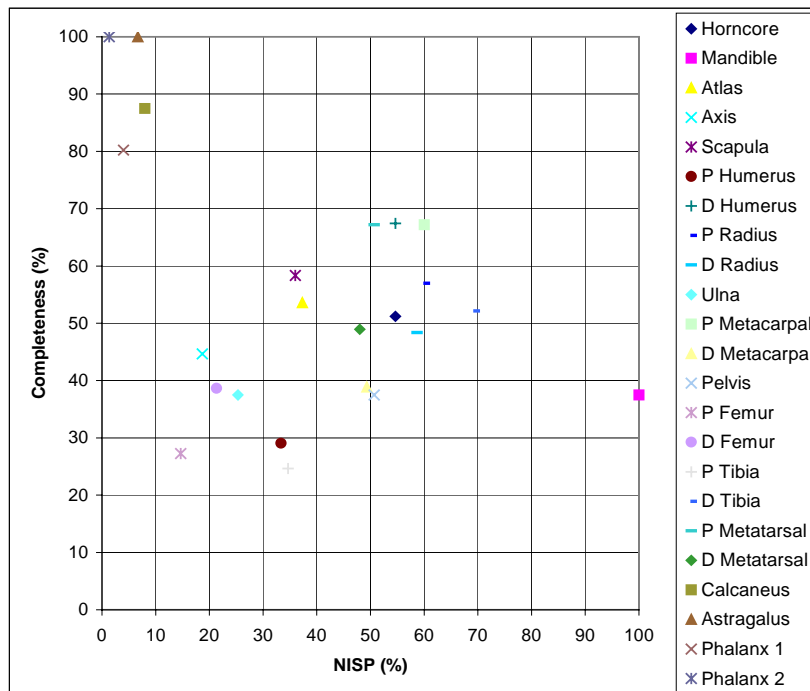


Fig 8: High-medieval sheep and goat

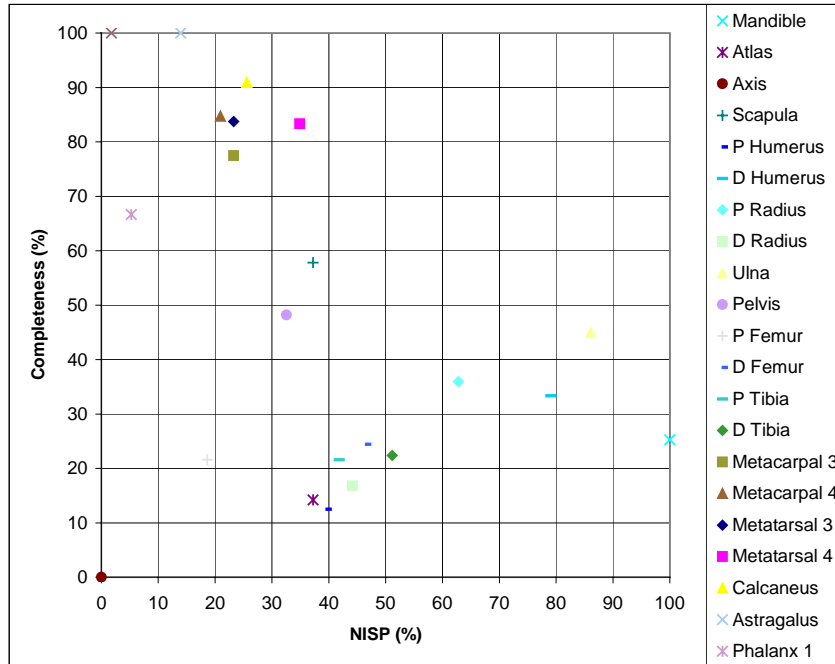


Fig 9: High-medieval pig

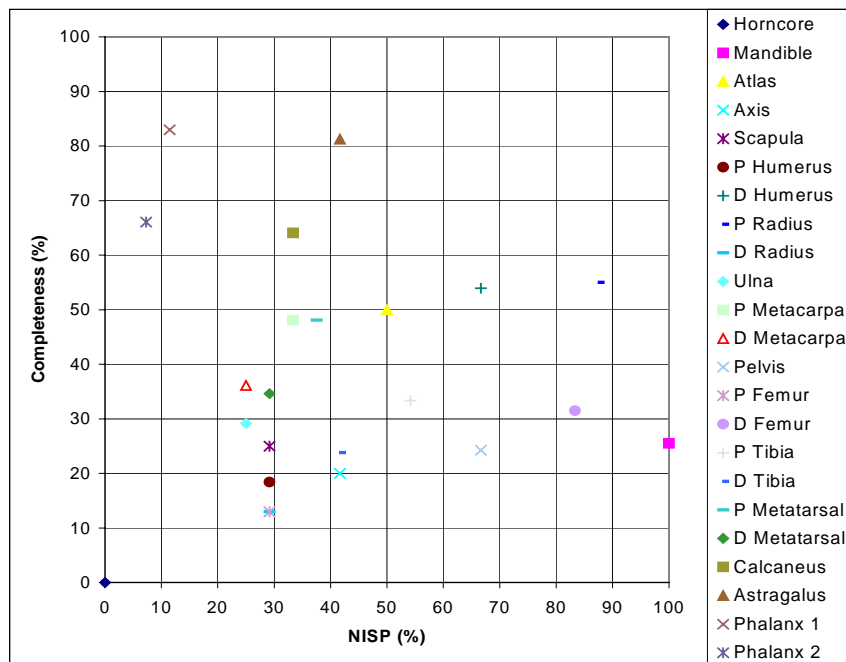


Fig 10: Late-medieval cattle

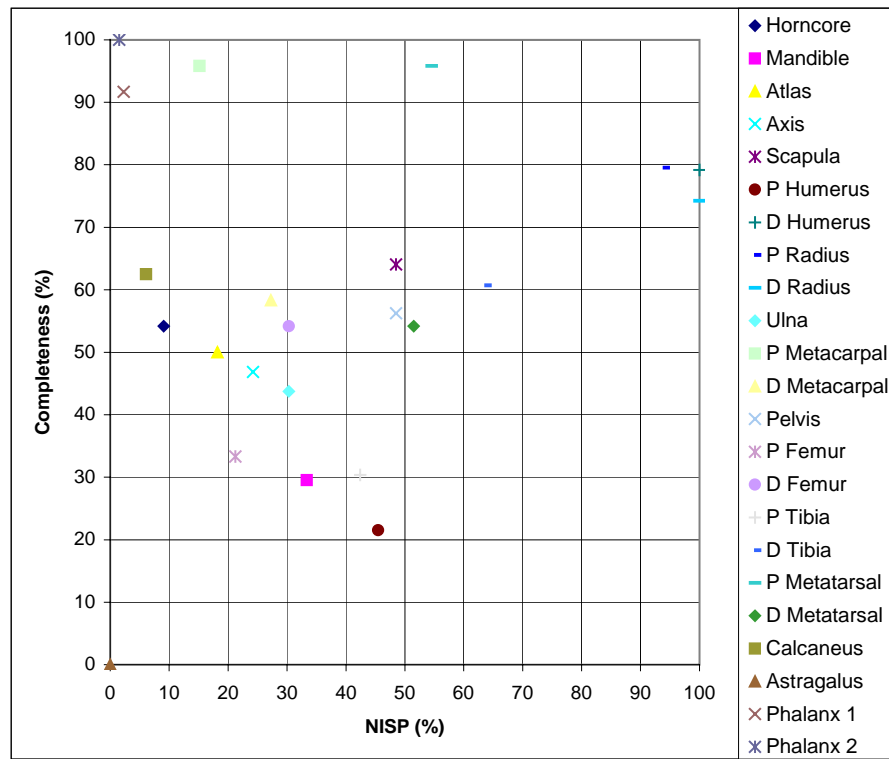


Fig 11: Late-medieval sheep and goat

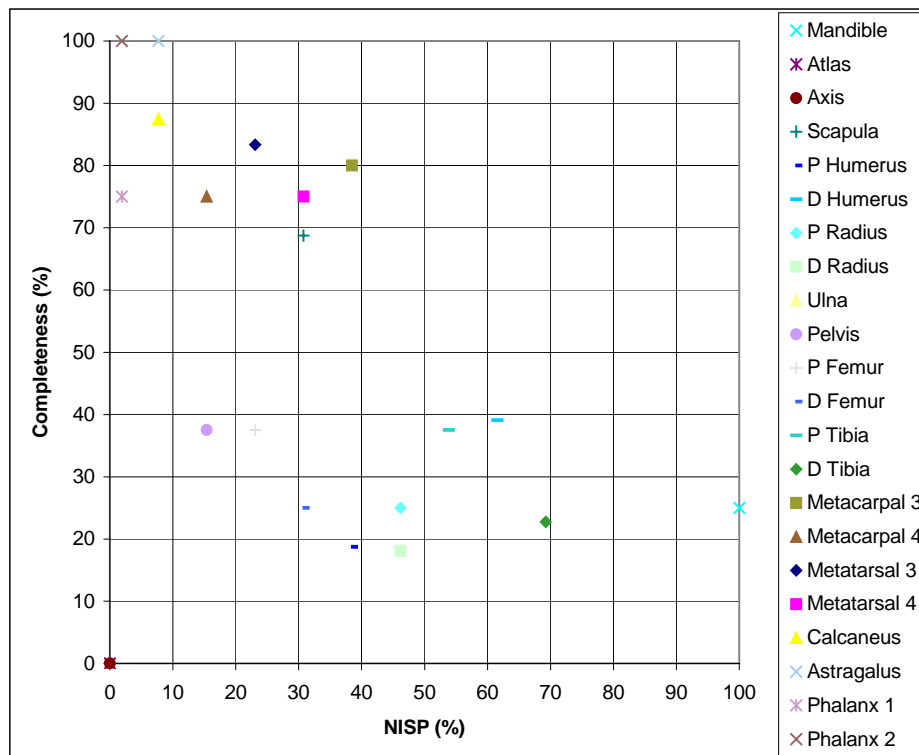


Fig 12: Late-medieval pig

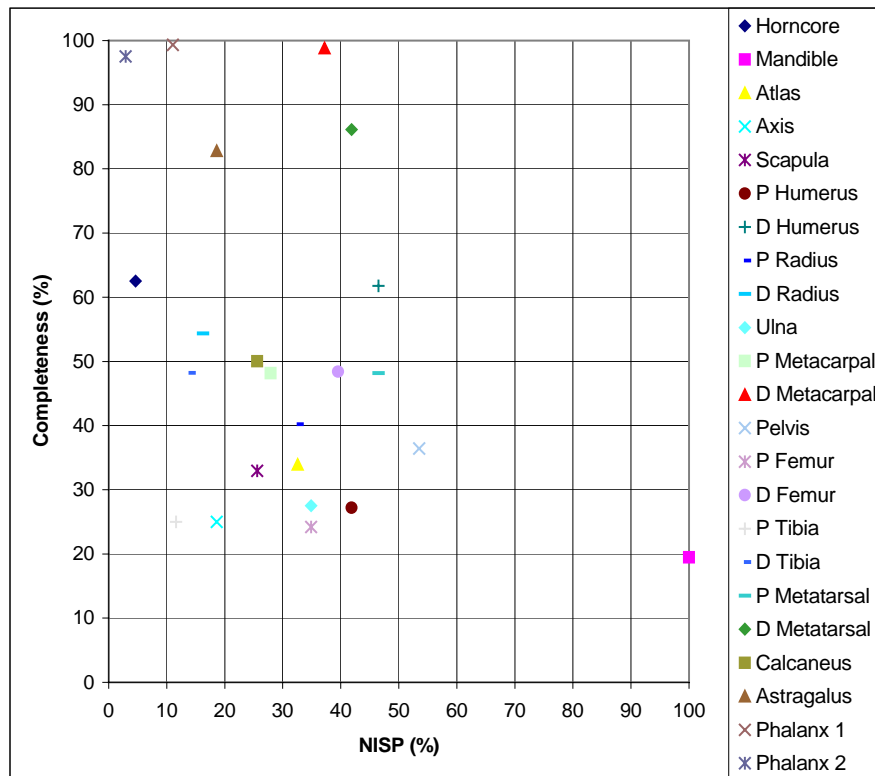


Fig 13: Post-medieval cattle

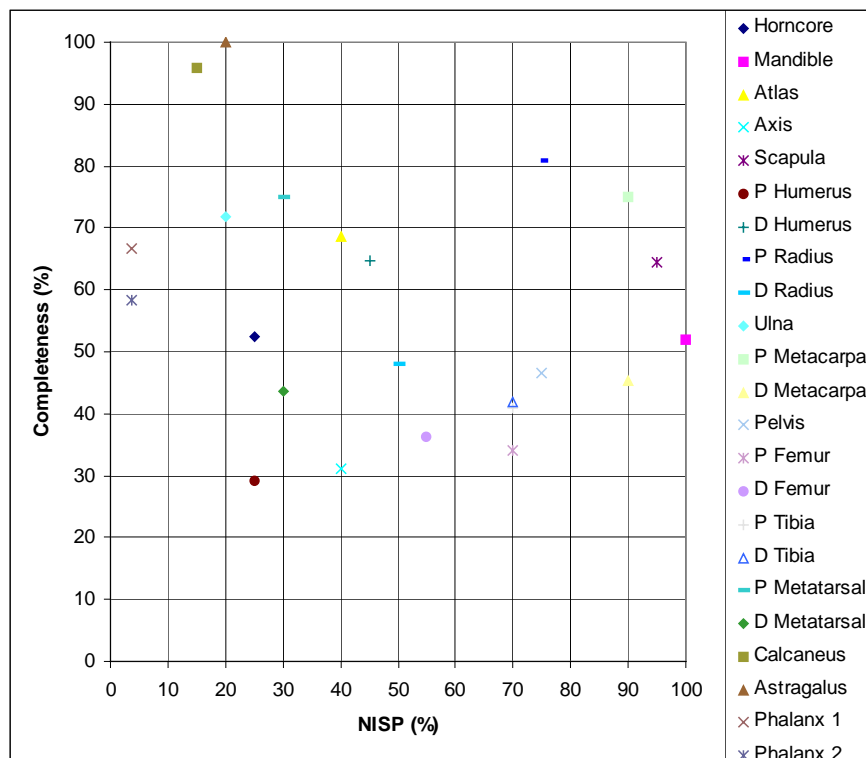


Fig 14: Post-medieval sheep and goat

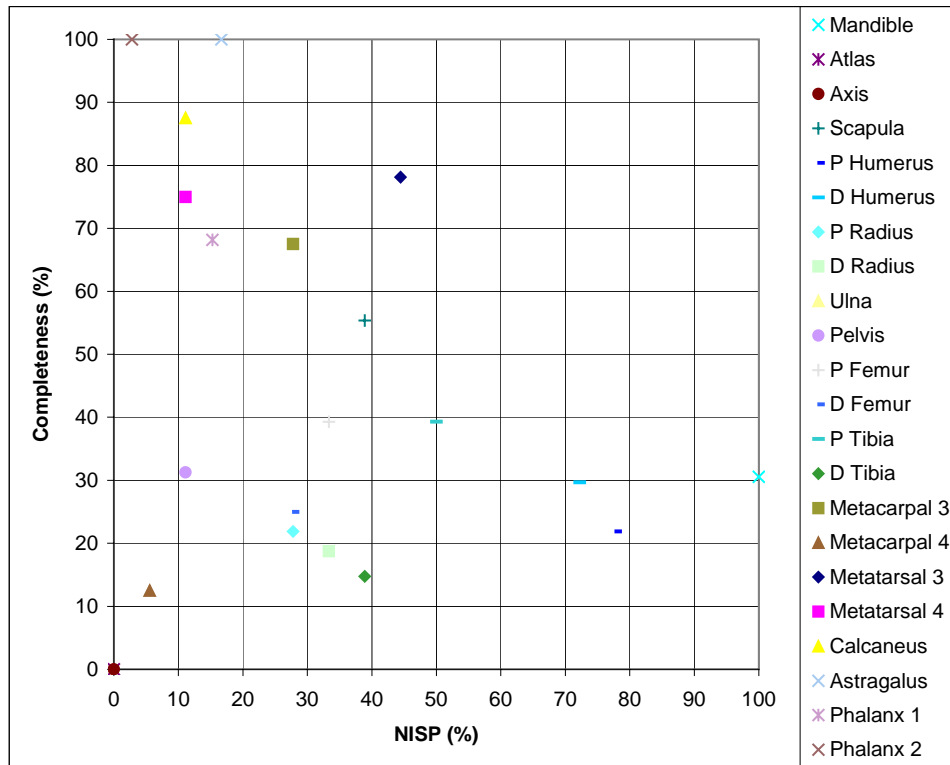


Fig 15: Post-medieval pig

Appendix 2: Summary table of the MNE, NISP and Fragmentation (completeness) of the principle stock animals

MNE and NISP values have been divided by the number each element occurs within the body to make

Anglo-Norman sheep and goat excludes pit 6063; high-medieval sheep and goat excludes fill 338 of pit 172; post-medieval cattle excludes pit 7364 and post-medieval sheep and goat excludes pit 584, 3169 and 3549.

LSAX	Cattle			Sheep and Goat		
	MNE	NISP	Frag	MNE	NISP	Frag
Horn Core	11	15	55.4	13.5	15	71.7
Mandible	13.5	44	19.0	17.5	28	43.5
Skull (Maxilla)		11				
Atlas	6	8	57.8	3	3	75.0
Axis	5	7	55.4	6	6	54.2
Scapula	6	10.5	26.8	6	6	55.2
P Humerus	4	5	13.2	1	1	14.3
D Humerus	9.5	15.5	43.1	3	3	71.4
P Radius	8.5	12	21.9	13.5	13	88.4
D Radius	8.5	14.5	34.2	9.5	8	37.5
Ulna	6.5	6.5	30.8	2	2	68.8
P Metacarpal	18.5	26.5	53.5	15	15.5	89.5
D Metacarpal	18	20	42.5	14	15	60.2
Pelvis	9	20	25.9	4.5	5	65.0
P Femur	4	4	21.3	2.5	3	27.5
D Femur	4	6	21.3	3.5	4	45.0
P Tibia	5	8.5	19.1	8.5	8	34.6
D Tibia	14.5	16.5	44.1	12	11	68.3
P Metatarsal	19	24	53.5	21.5	20.5	89.5
D Metatarsal	18	21	46.1	20.5	20.5	61.6
Calcaneus	17.5	17.5	85.0	0.5	0.5	100.0
Astragalus	11	13	92.3	0.5	0.5	75.0
Phalanx 1	4.87	5.37	94.2	0.875	0.875	85.7
Phalanx 2	1.75	2	96.1	0.5	0.5	118.8

AN	Cattle			Sheep and Goat		
Horn Core	11	18.5	47.3	16	21	53.3
Mandible	20.5	59.5	19.2	23	48.5	41.0
Skull (Maxilla)		17			14	
Atlas	14	22	51.7	10	11	65.9
Axis	4	5	45.0	10	10	65.0
Scapula	13	15.5	28.2	11	12	54.2
P Humerus	3.5	6.5	17.1	9.5	6.5	18.6
D Humerus	9	13	42.9	19	17	71.4
P Radius	16	18	37.7	19	16	67.5
D Radius	7.5	11	24.5	19.5	16.5	55.0
Ulna	7	6.5	29.8	7	7	40.2
P Metacarpal	24.5	35	54.7	21	20	83.3
D Metacarpal	24	31.5	43.6	19	19	50.0
Pelvis	12.5	19.5	28.2	22	25	42.5
P Femur	5.5	7	15.0	9	5.5	41.7
D Femur	7.5	11	29.3	7.5	5	45.0
P Tibia	4.5	7	12.2	16	10.5	27.8
D Tibia	15	17	48.4	24.5	19.5	66.5
P Metatarsal	22	30	54.7	24	20.5	83.3
D Metatarsal	12	14.5	22.5	23.5	20	55.0
Calcaneus	12	12	87.0	3	2.5	85.0
Astragalus	14.5	14.5	94.0	2	1.5	100.0
Phalanx 1	7.25	7.375	92.8	0.875	0.625	100.0
Phalanx 2	2.75	2.875	92.9	0.375	0.25	93.8
HMED	MNE	NISP	Frag	MNE	NISP	Frag
Horn Core	6	8.5	63.2	13.5	20.5	51.2
Mandible	12	34	19.3	22.5	37.5	37.5
Skull (Maxilla)		10			5	
Atlas	10	17	44.9	9	14	53.6
Axis	0	4	43.8	5	7	44.6
Scapula	9	13	25.5	15	13.5	58.3
P Humerus	4	2.5	5.0	12.5	12.5	29.1
D Humerus	11.5	17.5	40.6	17.5	20.5	67.4
P Radius	18	20.5	34.3	21	22.5	57.0
D Radius	10.5	16	26.1	23	22	48.4
Ulna	7	8	22.7	9.5	9.5	37.5
P Metacarpal	21.5	28	50.6	20	22.5	67.2
D Metacarpal	11.5	15	28.2	19	18.5	38.9
Pelvis	10.5	19.5	27.6	12.5	19	37.5
P Femur	5.5	6	19.7	9	5.5	27.3
D Femur	6.5	11.5	25.0	10	8	38.6
P Tibia	4.5	6.5	12.5	14.5	13	24.6
D Tibia	10	14.5	36.9	24	26	52.1
P Metatarsal	25.5	31.5	50.6	18	19	67.2
D Metatarsal	16	18	27.5	18	18	49.0
Calcaneus	19.5	22	64.8	3	3	87.5
Astragalus	15	15.5	87.1	2.5	2.5	100.0
Phalanx 1	10.37	11	91.6	1.375	1.5	80.2
Phalanx 2	4.25	4.25	93.8	0.25	0.5	100.0

	Cattle			Sheep and Goat		
LMED						
Horn Core				1	1.5	54.2
Mandible	5	12	25.5	4	5.5	29.5
Skull (Maxilla)		2.5			2.5	
Atlas	5	6	50.0	2	3	50.0
Axis	3	5	20.0	4	4	46.9
Scapula	3	3.5	25.0	8	8	64.1
P Humerus	3	3.5	18.4	7.5	7.5	21.5
D Humerus	6	8	53.9	14.5	16.5	79.2
P Radius	9	10.5	55.0	17.5	15.5	79.5
D Radius	3	3.5	13.0	17.5	16.5	74.2
Ulna	3.5	3	29.2	0	5	43.8
P Metacarpal	3.5	4	48.1	3	2.5	95.8
D Metacarpal	3.5	3	36.1	5	4.5	58.3
Pelvis	4.5	8	24.2	7	8	56.3
P Femur	4.5	3.5	13.0	6	3.5	33.3
D Femur	6	10	31.5	5.5	5	54.2
P Tibia	4.5	6.5	33.3	6.5	7	30.4
D Tibia	3.5	5	23.8	9	10.5	60.7
P Metatarsal	4	4.5	48.1	9.5	9	95.8
D Metatarsal	3.5	3.5	34.6	9	8.5	54.2
Calcaneus	3	4	64.1	1	1	62.5
Astragalus	4.5	5	81.3	0	0	
Phalanx 1	1.25	1.375	83.0	0.375	0.375	91.7
Phalanx 2	0.25	0.875	66.1	0.25	0.25	100.0
PMED	MNE	NISP	Frag	MNE	NISP	Frag
Horn Core	0.5	1	62.5		2.5	52.5
Mandible	6	21.5	19.5	7.5	10	51.9
Skull (Maxilla)		8.5			4	
Atlas	1.5	7	33.9	2	4	68.8
Axis	1	4	25.0	1.5	4	31.3
Scapula	3.5	5.5	33.0	9	9.5	64.5
P Humerus	7	9	27.2	3	2.5	29.2
D Humerus	6.5	10	61.8	4.5	4.5	64.6
P Radius	5.5	7	40.2	7	7.5	80.8
D Radius	2	3.5	54.3	6.5	5	48.1
Ulna	6	7.5	27.5	2	2	71.9
P Metacarpal	5	6	48.1	8.5	9	75.0
D Metacarpal	8	8	98.8	9	9	45.5
Pelvis	3.5	11.5	36.4	6.5	7.5	46.7
P Femur	6	7.5	24.2	4.5	7	34.1
D Femur	4.5	8.5	48.4	5	5.5	36.4
P Tibia	1.5	2.5	25.0	6.5	7	41.0
D Tibia	2	3	48.2	6	7	42.0
P Metatarsal	7.5	10	48.1	3	3	75.0
D Metatarsal	8.5	9	86.1	3	3	43.8
Calcaneus	4	5.5	50.0	1.5	1.5	95.8
Astragalus	4	4	82.8	1.5	2	100.0
Phalanx 1	2.37	2.37	99.3	0.25	0.375	66.7
Phalanx 2	0.62	0.62	97.5	0.25	0.375	58.3

LSAX	Pig		
	MNE	NISP	Frag
Mandible	7.5	14	23.7
Skull (Maxilla)		9	
Atlas	1	3	13.3
Axis		0	0.0
Scapula	9	9	61.8
P Humerus	9	10	15.6
D Humerus	15	18	39.7
P Radius	6	6.5	47.1
D Radius	4	4	18.3
Ulna	7.5	7.5	50.8
Metacarpal 3	4.5	4.5	75.0
Metacarpal 4	3	3	72.9
Pelvis	9.5	10.5	59.5
P Femur	2	2	35.7
D Femur	4	6	34.8
P Tibia	4.5	4.5	35.7
D Tibia	4.5	5	33.3
Metatarsal 3	3	3	87.5
Metatarsal 4	2	2	75.0
Calcaneus	0.5	0.5	87.5
Astragalus	0	0	
Phalanx 1	0.37	0.37	75.0
Phalanx 2	0.62	0.75	81.3
AN			
Mandible	6.5	18.5	18.6
Skull (Maxilla)		11	
Atlas	6	6	16.1
Axis		0	0.0
Scapula	15.5	15	57.5
P Humerus	6	6.5	10.8
D Humerus	14	14.5	38.3
P Radius	6.5	7.5	35.3
D Radius	6	6	19.1
Ulna	14	14	43.3
Metacarpal 3	5	5	82.5
Metacarpal 4	7	7	78.6
Pelvis	3.5	5	31.3
P Femur	3.5	4	28.3
D Femur	4	5	18.3
P Tibia	7.5	8	28.3
D Tibia	10.5	11	32.3
Metatarsal 3	4.5	4.5	76.4
Metatarsal 4	6	6	79.2
Calcaneus	2	2	71.9
Astragalus	0.5	1	50.0
Phalanx 1	0.75	0.75	95.8
Phalanx 2	0.37	0.375	91.7

HMED	Pig		
	MNE	NISP	Frag
Mandible	13	21.5	25.3
Skull (Maxilla)		11	
Atlas	8	8	14.2
Axis		0	0.0
Scapula	7	8	57.8
P Humerus	8	8.5	12.5
D Humerus	15.5	17	33.3
P Radius	13	13.5	35.9
D Radius	9	9.5	16.8
Ulna	17.5	18.5	44.9
Metacarpal 3	5	5	77.5
Metacarpal 4	4.5	4.5	84.7
Pelvis	6	7	48.2
P Femur	3.5	4	21.6
D Femur	7.5	10	24.4
P Tibia	7	9	21.6
D Tibia	10	11	22.4
Metatarsal 3	5	5	83.8
Metatarsal 4	7.5	7.5	83.3
Calcaneus	5.5	5.5	90.9
Astragalus	3	3	100.0
Phalanx 1	0.75	1.12	66.7
Phalanx 2	0.37	0.37	100.0
LMED			
Mandible	3.5	6.5	25.0
Skull (Maxilla)		1	
Atlas		0	0.0
Axis		0	0.0
Scapula	2	2	68.8
P Humerus	2.5	2.5	18.8
D Humerus	3.5	4	39.1
P Radius	2.5	3	25.0
D Radius	3	3	18.1
Ulna	2.5	2.5	47.5
Metacarpal 3	2.5	2.5	80.0
Metacarpal 4	1	1	75.0
Pelvis	1	1	37.5
P Femur	1.5	1.5	37.5
D Femur	2	2	25.0
P Tibia	3.5	3.5	37.5
D Tibia	4.5	4.5	22.7
Metatarsal 3	1.5	1.5	83.3
Metatarsal 4	2	2	75.0
Calcaneus	0.5	0.5	87.5
Astragalus	0.5	0.5	100.0
Phalanx 1	0.12	0.12	75.0
Phalanx 2	0.12	0.12	100.0
PMED			
Mandible	6	9	30.6
Skull (Maxilla)			

Atlas		0	0.0
Axis		0	0.0
Scapula	3.5	3.5	55.4
P Humerus	6	7	21.9
D Humerus	6.5	6.5	29.7
P Radius	2.5	2.5	21.9
D Radius	2.5	3	18.8
Ulna	2	2	40.6
Metacarpal 3	2.5	2.5	67.5
Metacarpal 4	0.5	0.5	12.5
Pelvis	0.5	1	31.3
P Femur	2.5	3	39.3
D Femur	2.5	2.5	25.0
P Tibia	4.5	4.5	39.3
D Tibia	3	3.5	14.8
Metatarsal 3	4	4	78.1
Metatarsal 4	1	1	75.0
Calcaneus	1	1	87.5
Astragalus	1.5	1.5	100.0
Phalanx 1	1	1.375	68.2
Phalanx 2	0.25	0.25	100.0