

What is zooarchaeology?

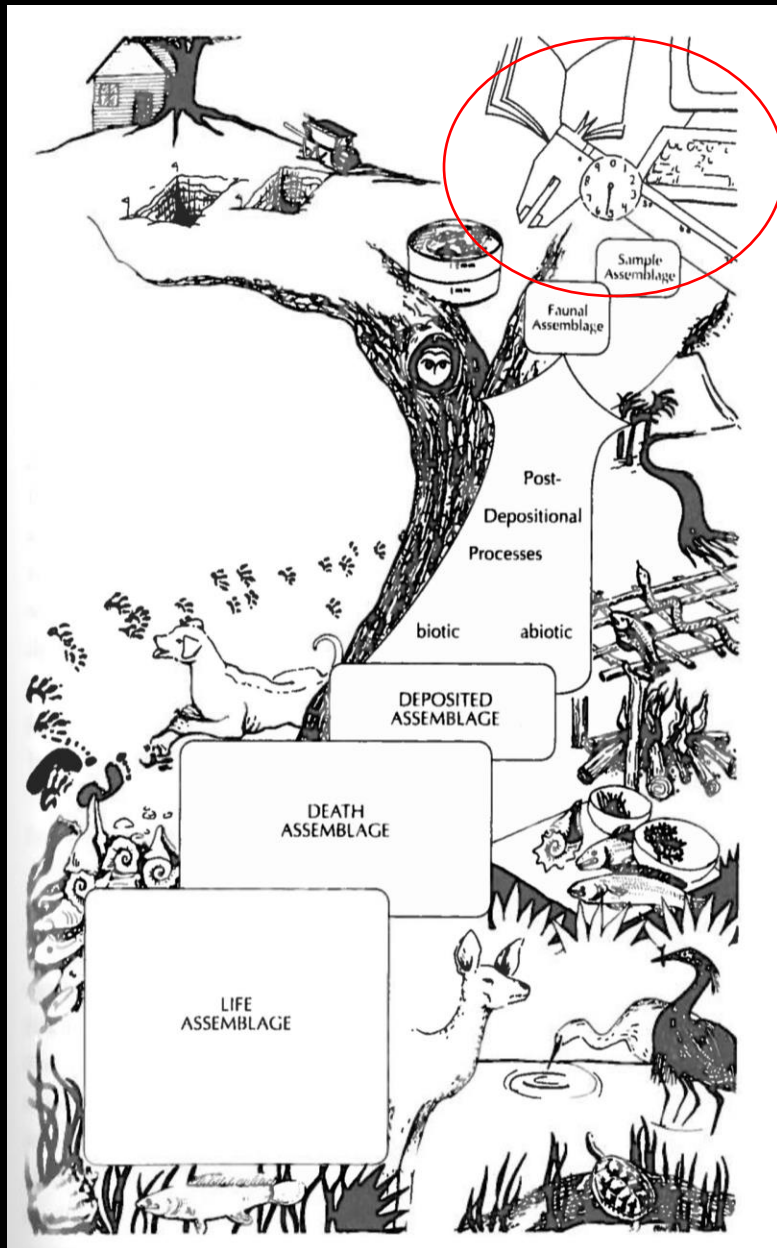


Major Research Topics

- Economic transitions (Secondary Products Revolution)
- Production and provisioning of cities
- Impacts of climate change on human subsistence
- Domestication of plants and animals (microevolution)
- Human culture (taboos and totems)
- Human identity (animals as food and markers of human status)
- Animals as vectors (markers of trade, colonization, vectors of disease)

Zooarchaeological assemblage [RECOVERY AND SAMPLING]

Animal bones which were collected during excavation
Impacted by excavation and sampling method



Post depositional Processes

Dog and rodent gnawing
Weathering
Bioturbation
Bone preservation

Deposited assemblage [SITE FORMATION AND DEPOSITION]

Animal bones which were incorporated into the site by humans reflecting diet, cultural taboos and butchery preferences

+

Animals accidentally incorporated by other animals or conditions

Death assemblage [HUMAN EXPLOITATION]

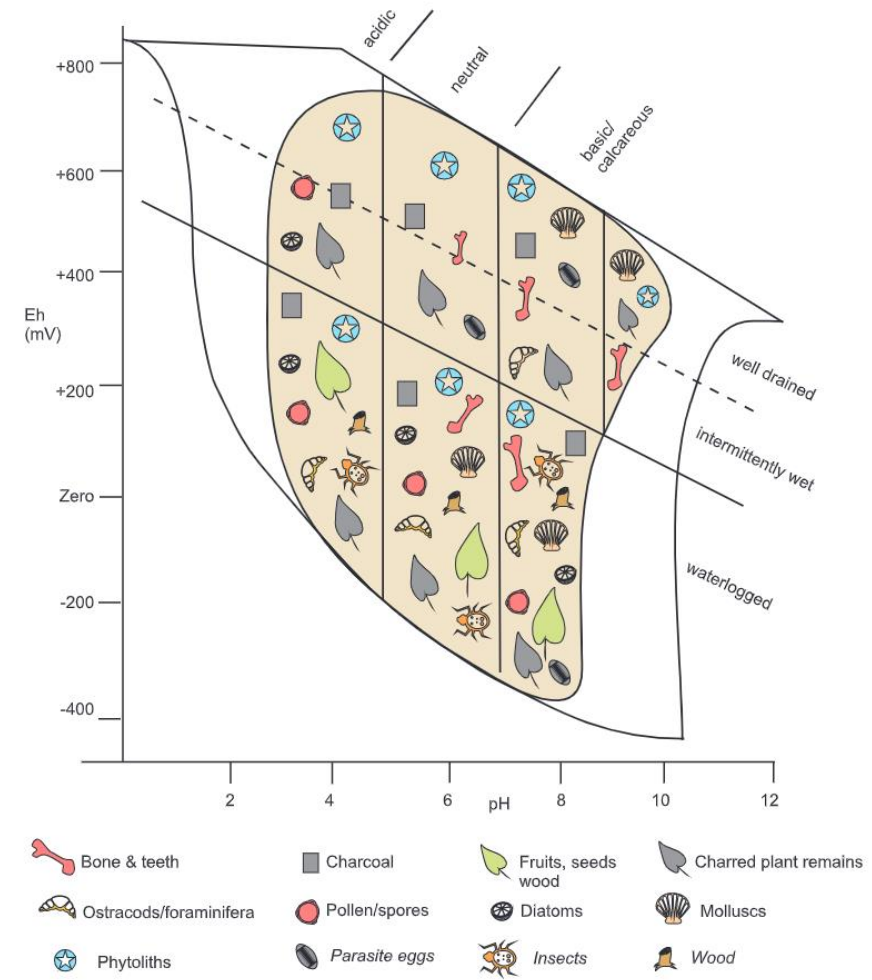
Animals which were killed by humans

Life assemblage [ECOLOGY]

Animals which live near the site (or maybe not!)

Bone preservation

Fig 2 Schematic representation of environmental conditions and types of material typically preserved.



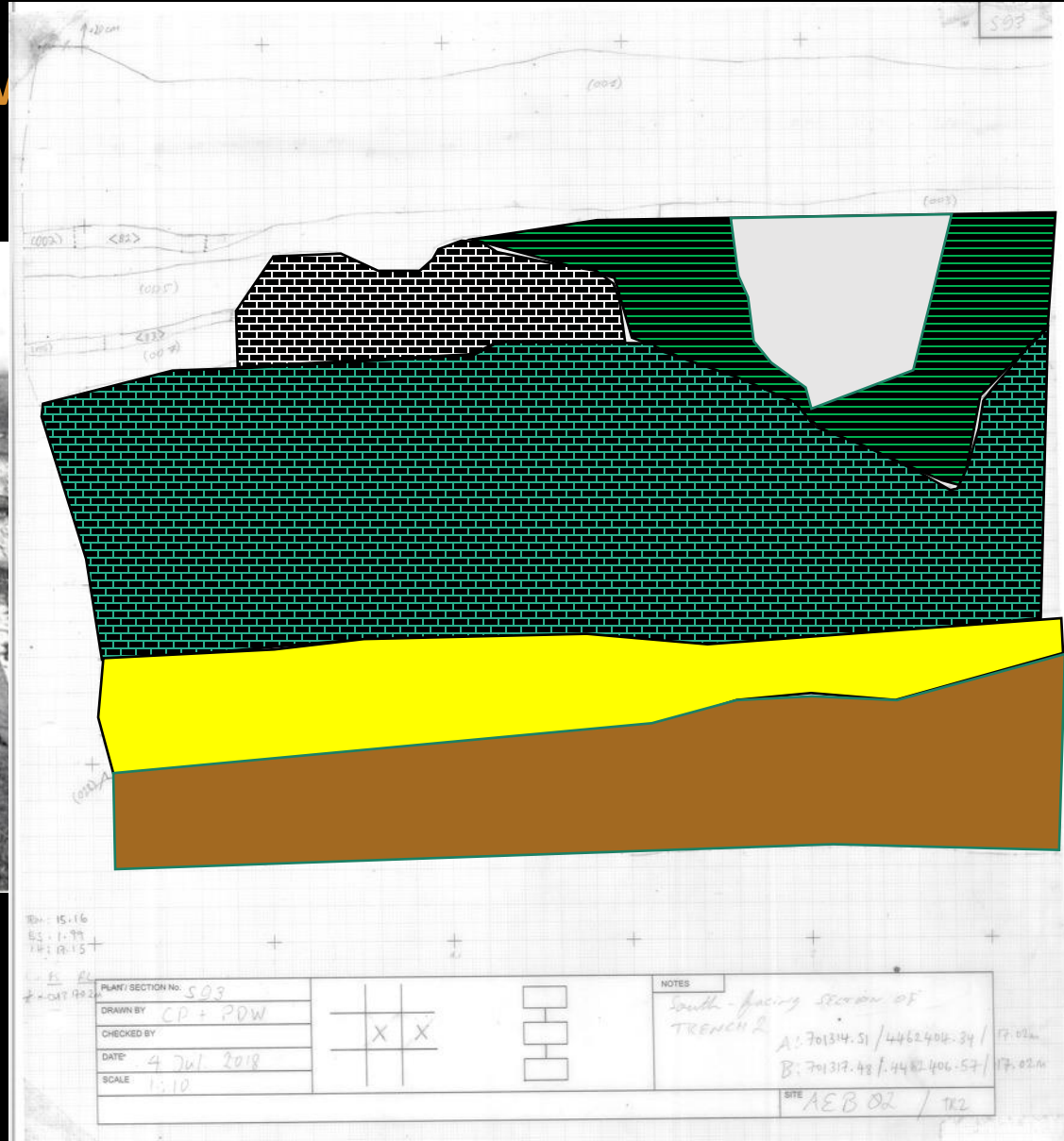
Schematic representation indicating under which depositional environments specific categories of environmental remain can be expected to survive and hence be recovered using appropriate sampling techniques.

Filled area = envelope into which most naturally derived sediments fit. Material outside these limits tends to reflect human activity, eg. basic slag and other industrial deposits.

Modified from Retallack, 1984

Box Grid (W)

Maiden Castle 1934-1936



Open plan single context (MOLA style)

Durotriges Project

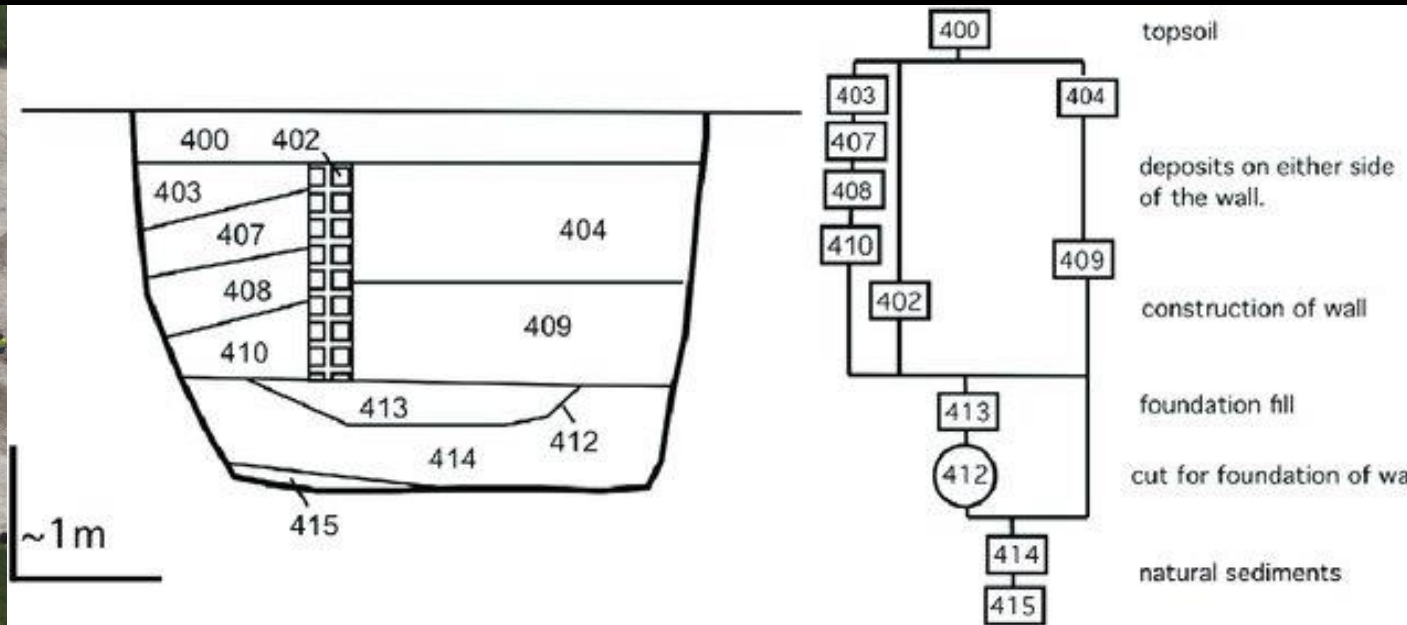
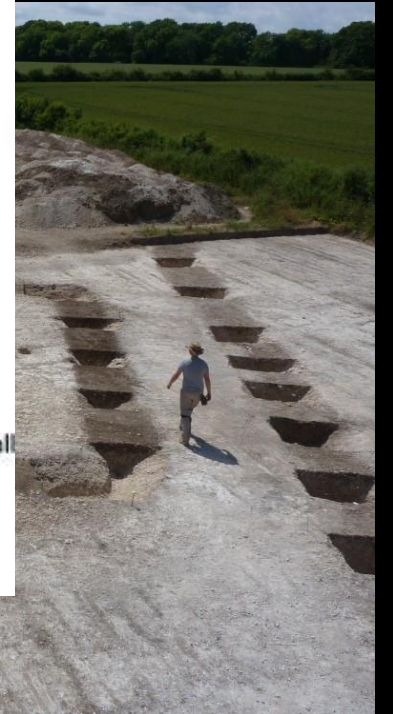


Photo: Photos-Jones 2011



Photos: Bournemouth University

Sieving and Sampling



Fig 1 Sampling prehistoric deposits for lithics (green lids) and biological remains (blue lids) at Stainton West, near Carlisle.
(photo by J P Huntley).

Collection method differences



Fig 6 Hand-collected (1) and >4mm coarse-sieved (2) assemblages from a medieval context at Winds
[photos F Worley].

Ecology - Taxonomic identification

Barda Zooarch Recording

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General

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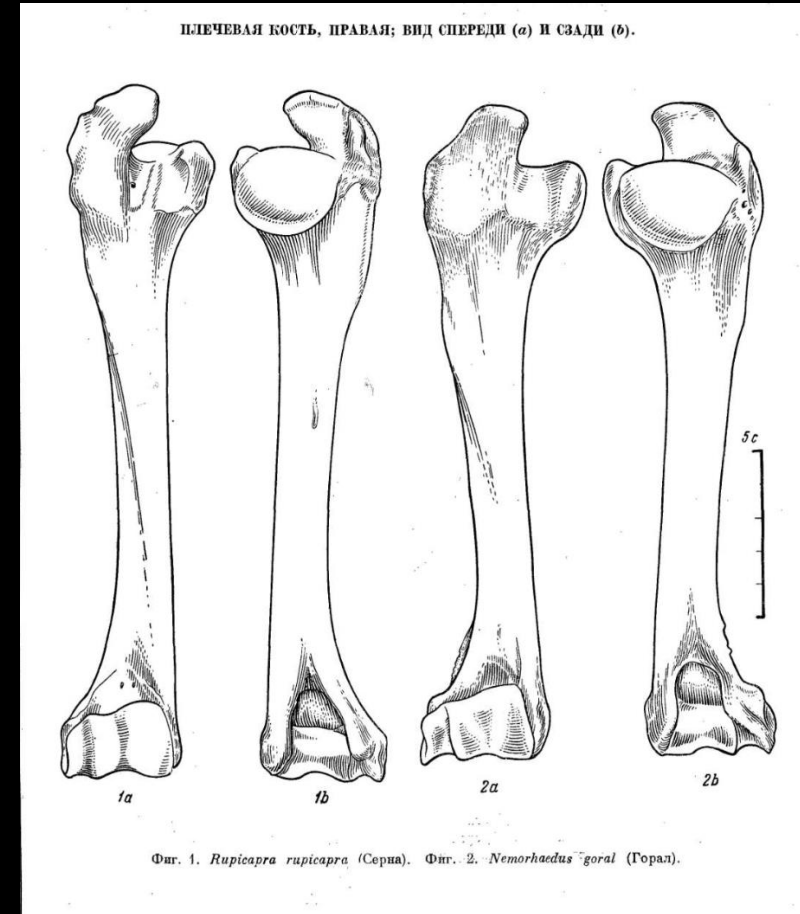
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293	292	1		217	Bos taurus	Radius	Left	-	-	Fused	3,4,8,9,10, J	Helical	1	-	Cuts on ante	-	-	-	
294	293	1		217	Bos taurus	Humerus	Right	-	-	Fused	3,4,5,6,7,8	Helical, dry	1	-	-	-	-	-	
295	294	1		217	Rupicapra	Humerus	Right	-	-	Fused	3,4,5,6	Helical	1	-	-	Dog gnawing	-	-	
296	295	1		217	O. aries	Humerus	Right	-	-	Fused	3,4,5,6,7,8	Helical, dry	1	-	-	-	-	-	
297	296	1		217	Medium ma	Humerus	Right	-	-	-	7,8	Helical	1	-	-	-	-	-	
298	297	1		217	Medium ma	Humerus	Right	-	-	-	7,8	Helical	1	-	-	-	-	-	
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310	309	1		217	Medium ma	Radius	Right	-	Fused	-	2	Helical	1	-	-	-	-	-	



Reference Material



Skeletal part identification -> How to count

Barda Zoarch Recording

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General

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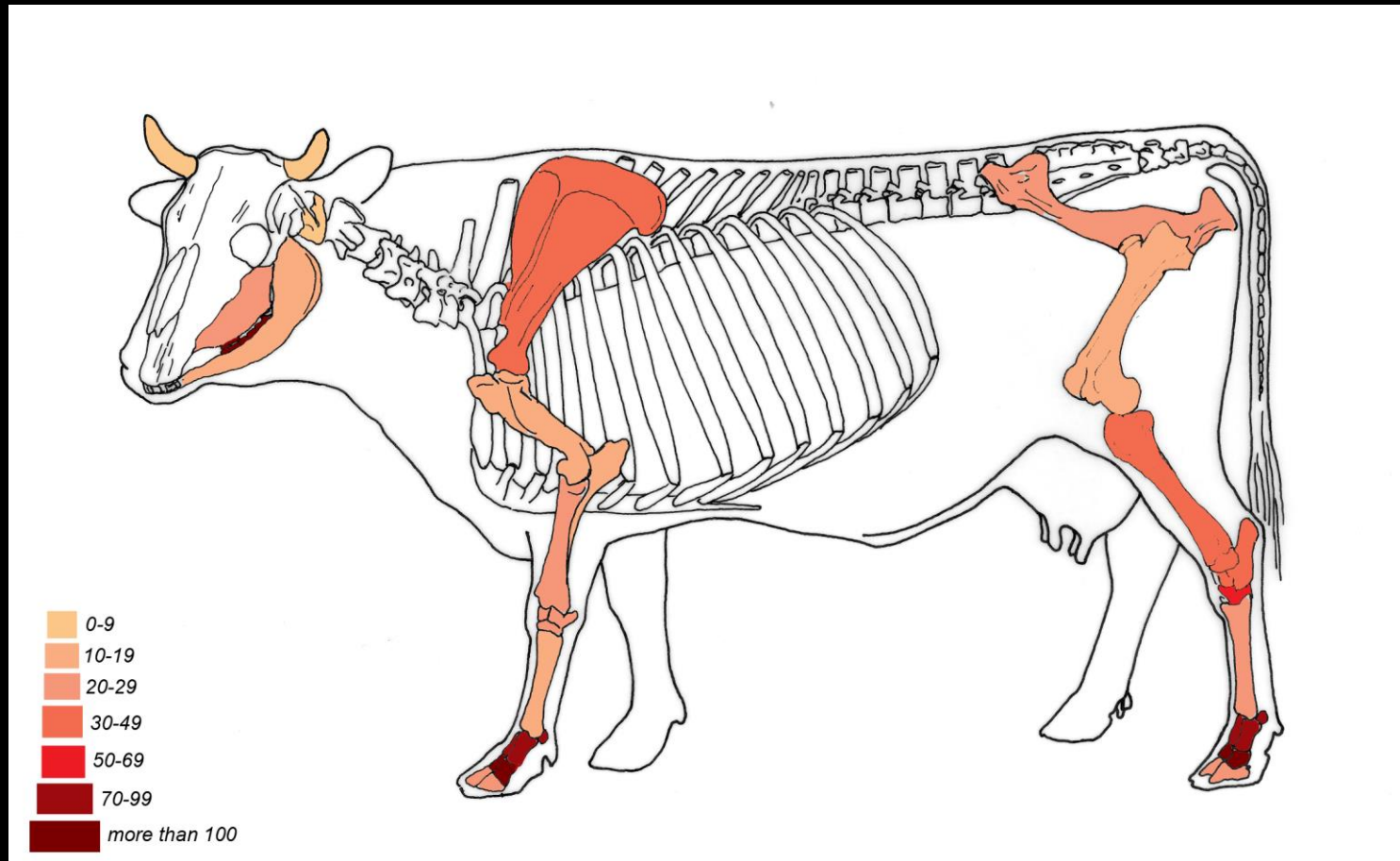
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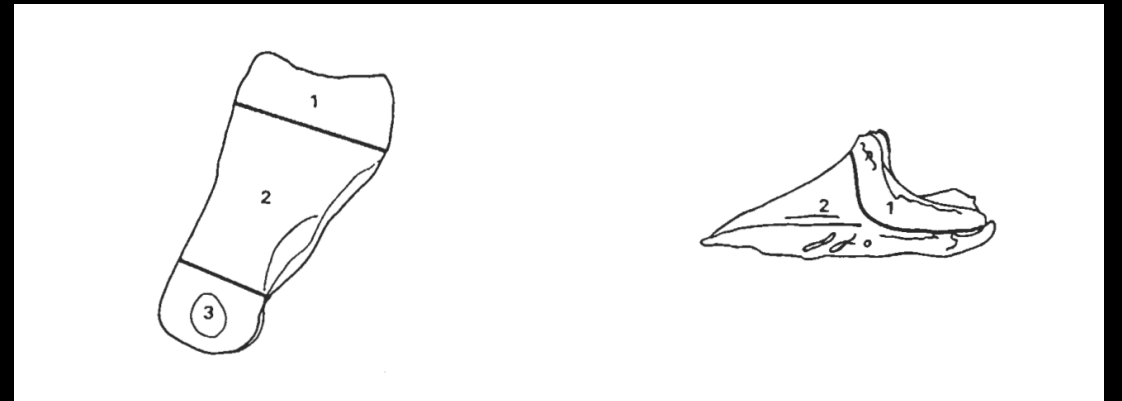
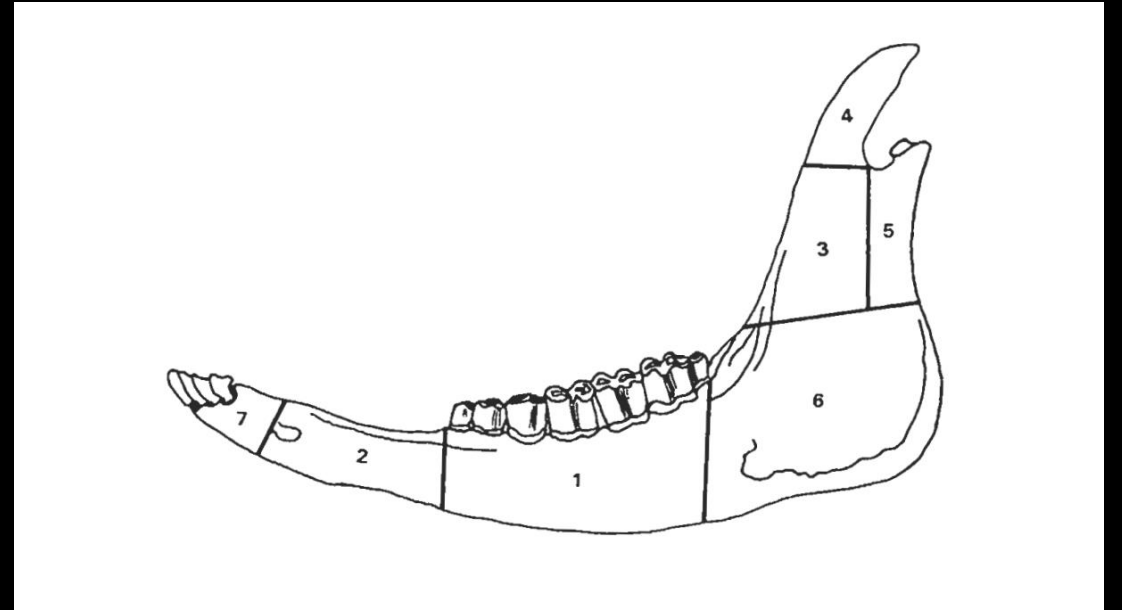
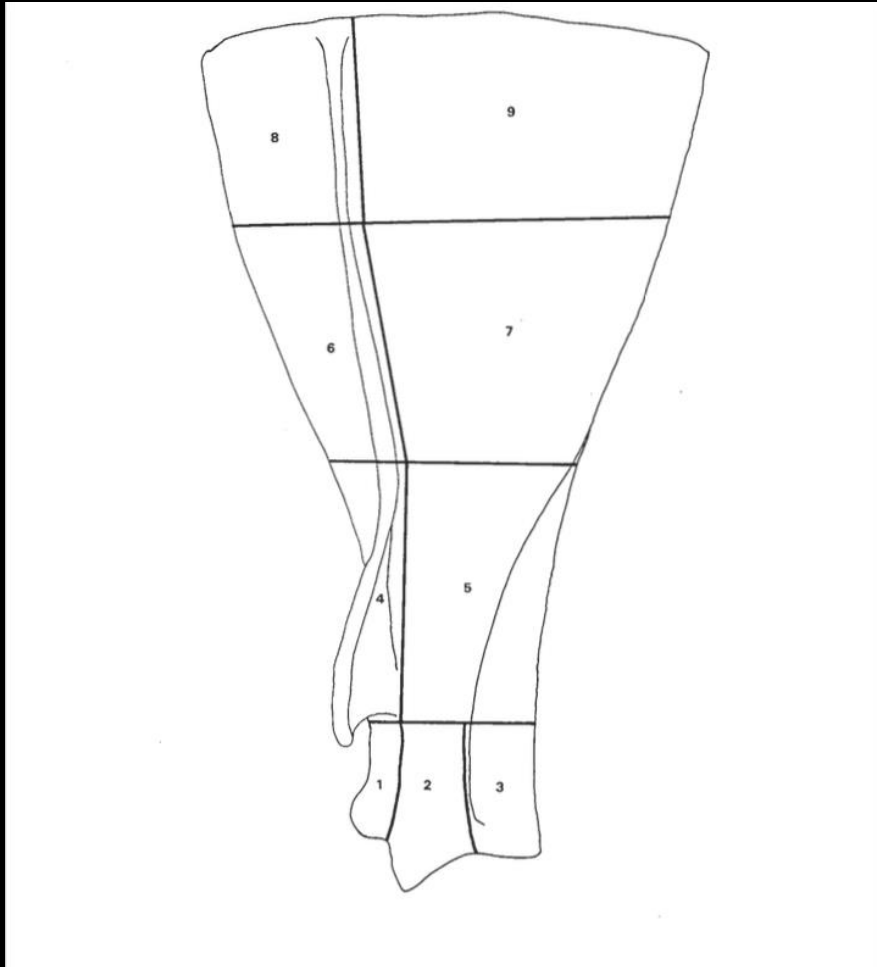
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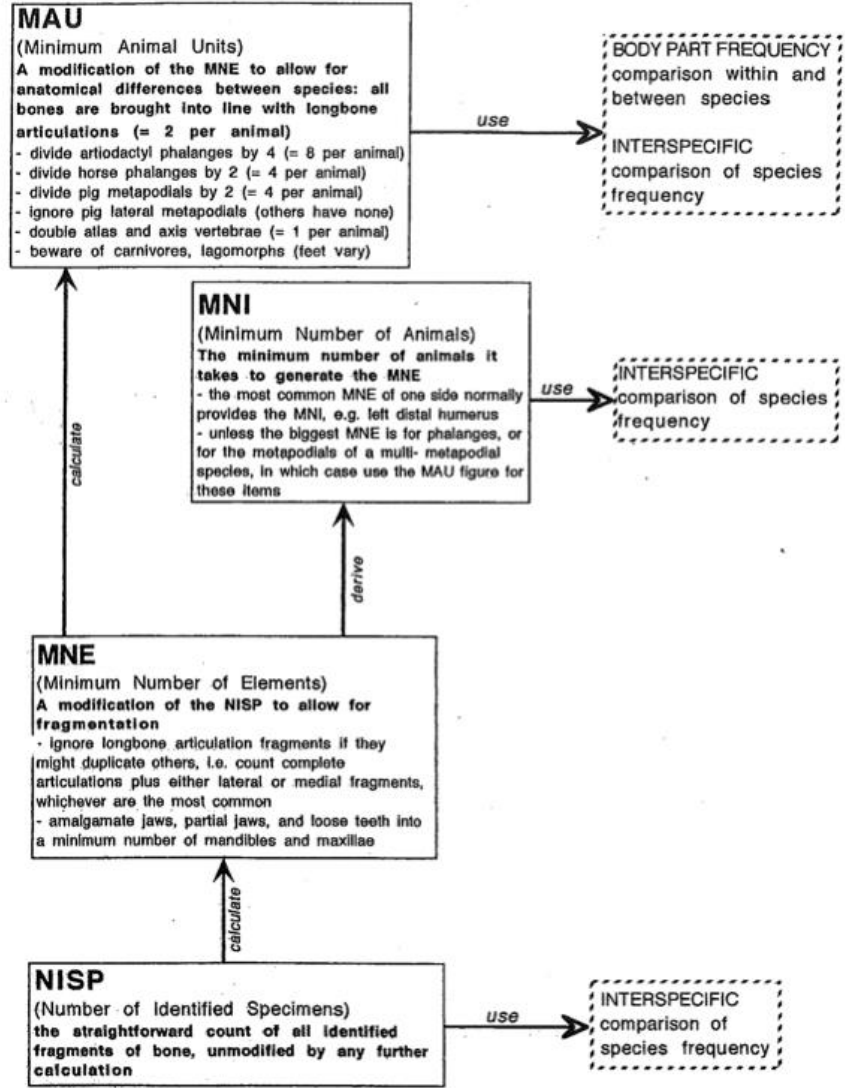
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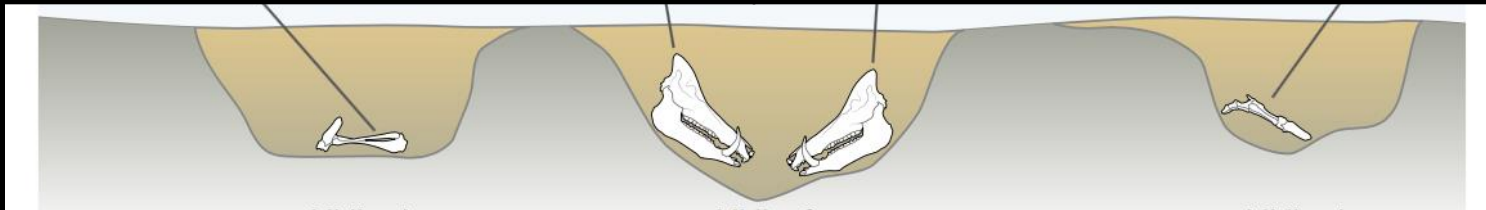
Bone Zones



BONE QUANTIFICATION: SCHEMATIC VIEW OF METHODS



How to count



Minimum Number of Individuals (MNI): Depends on the stratigraphic unit of interest!

If each pit different unit: MNI 4

If each pit part of same unit of interest: ... MNI : 2

Dental ageing with mandibles

Barda Zoarch Recording

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General

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Dental ageing with mandibles

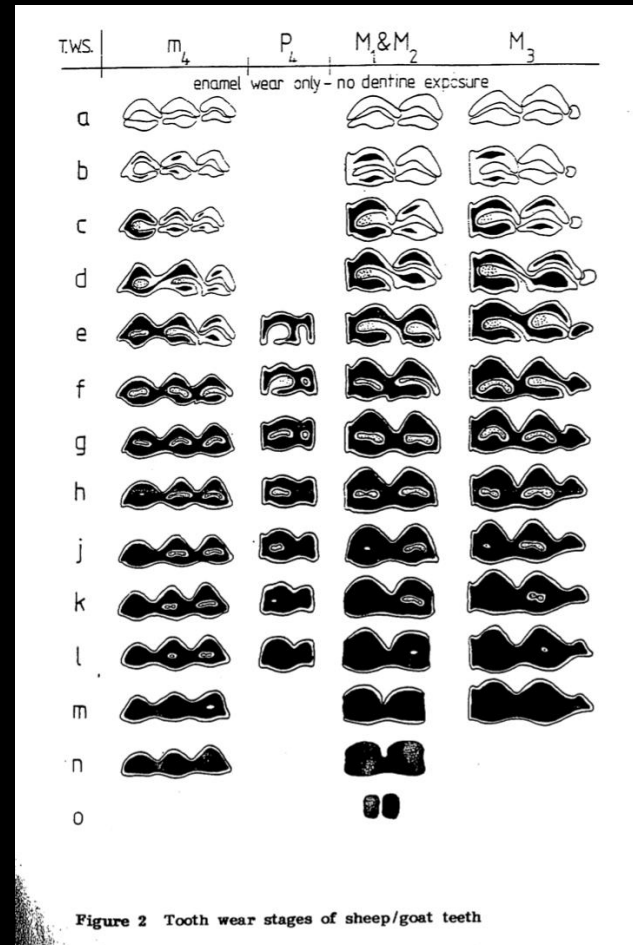


Figure 2 Tooth wear stages of sheep/goat teeth

Ageing with bone fusion

Barda Zooarch Recording

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291	290	1			217 Bos taurus	Radius	Left	-	Fused	-	1,2,5	Helical, dry	2	-	-	-	-	-	-
292	291	1			217 Bos taurus	Radius	Left	-	Fused	-	1,2,5	Helical, dry	2	-	-	-	-	-	-
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Ageing with bone fusion

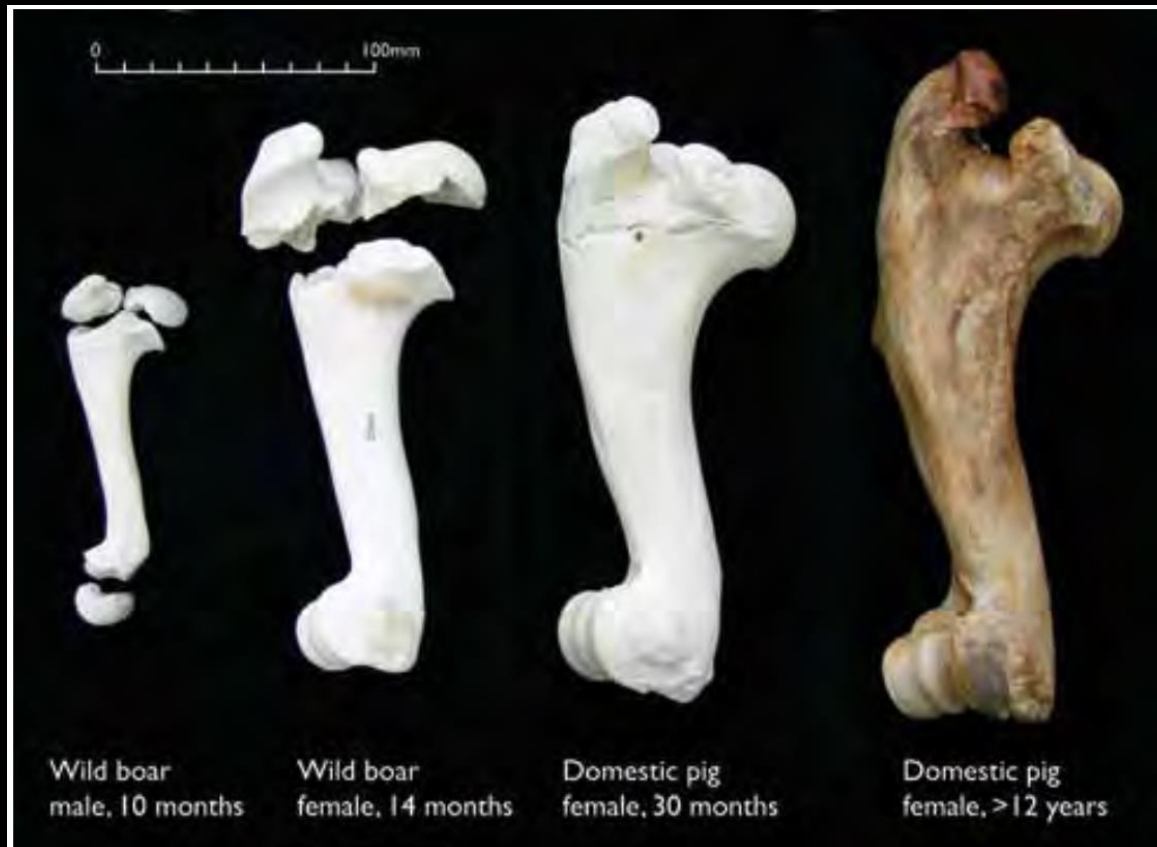
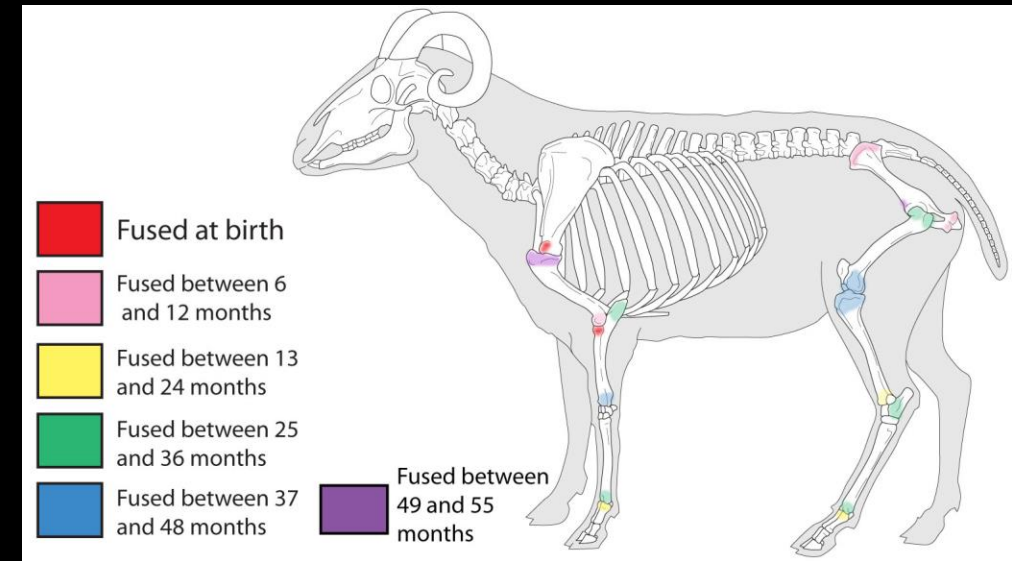
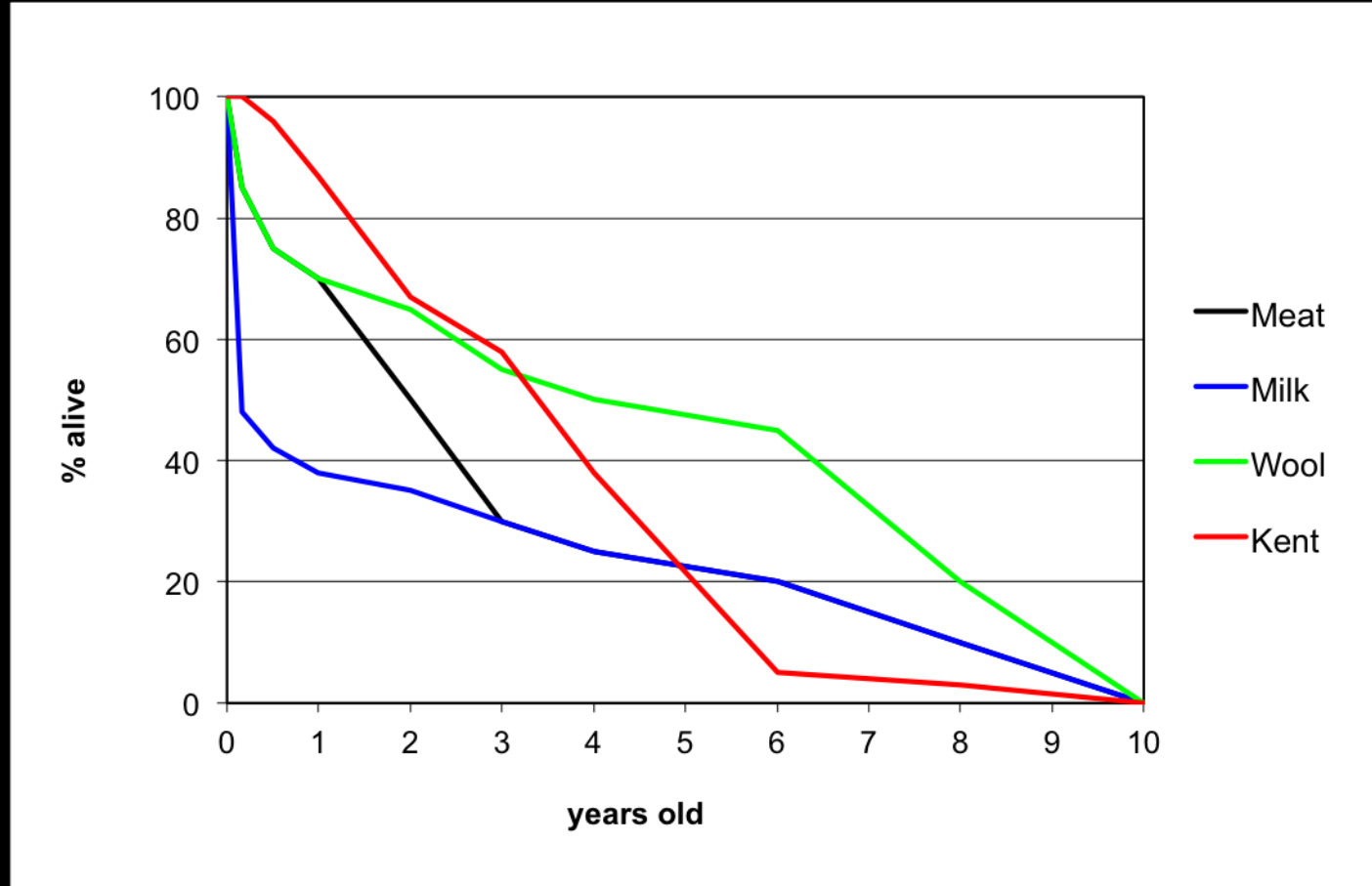


Fig 23 Pig and wild boar humeri showing the sequence of bone fusion [photo P Baker].



Survival Models for Exploitation

Sheep and Goat at
Kent, Kazakhstan



Changing slaughter patterns through time

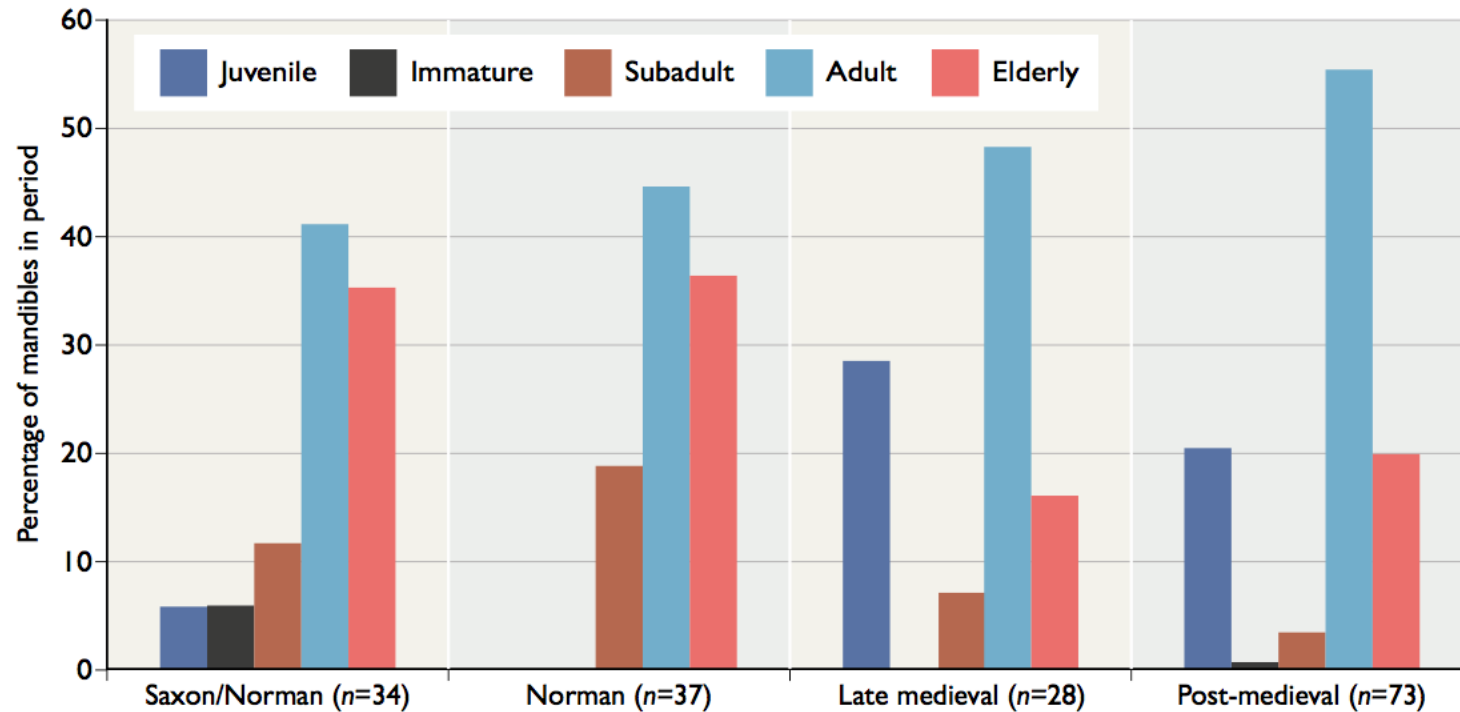


Fig 22 A cattle mortality profile showing an increase in culling of calves from the late medieval period onwards; this reflects a change in husbandry towards meat, and in particular veal production [data from Albarella et al 1997, table 15; mandibular tooth wear stages following O'Connor 1988].

Modification of bones

Barda Zooarch Recording

Search Sheet

Home Insert Page Layout Formulas Data Review View

Calibri (Body) 12 A A

Wrap Text Merge & Center

General

Conditional Formatting Format as Table Cell Styles

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D1

fx Context

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Unique Z ID	Trench	Bag	Context	Species	Element	Side	Sex	Prox. Fusion	Dist. Fusion	Completeness	Frag Type	Weathering	Burned	Cut Marks	Modification Pathologies	Tooth Wear	Frag #	
283	282	1			217 Medium ma	Scapula	Left	-	-	-		4 Modern	1	-	-	-	-	-	-
284	283	1			217 C. hircus	Scapula	Right	-	-	-	3,4,5,6,7,8	Dry	1	-	-	-	-	-	-
285	284	1			217 Rupicapra	Scapula	Right	-	Fused	-	1,2,3,4,5	Helical	1	-	-	-	-	-	-
286	285	1			217 Large mamn	Scapula	-	-	-	-		7 Helical	1	-	-	-	-	-	-
287	286	1			217 Large mamn	Scapula	-	-	-	-		7 Dry, modern	1	-	-	-	-	-	-
288	287	1			217 Medium ma	Scapula	-	-	-	-		7 Helical	1	-	-	-	-	-	-
289	288	1			217 Medium ma	Scapula	-	-	-	-		7 Dry	1	-	-	-	-	-	-
290	289	1			217 Rupicapra	Radius	Right	-	-	Fused	3,4,9,10	Helical, dry	1	-	-	-	-	-	-
291	290	1			217 Bos taurus	Radius	Left	-	Fused	-	1,2,5	Helical, dry	2	-	-	-	-	-	-
292	291	1			217 Bos taurus	Radius	Left	-	Fused	-	1,2,5	Helical, dry	2	-	-	-	-	-	-
293	292	1			217 Bos taurus	Radius	Left	-	-	Fused	3,4,8,9,10, J	Helical	1	-	Cuts on ante	-	-	-	-
294	293	1			217 Bos taurus	Humerus	Right	-	-	Fused	3,4,5,6,7,8	Helical, dry	1	-	-	-	-	-	-
295	294	1			217 Rupicapra	Humerus	Right	-	-	Fused	3,4,5,6	Helical	1	-	-	Dog gnawing	-	-	-
296	295	1			217 O. aries	Humerus	Right	-	-	Fused	3,4,5,6,7,8	Helical, dry	1	-	-	-	-	-	-
297	296	1			217 Medium ma	Humerus	Right	-	-	-	7,8	Helical	1	-	-	-	-	-	-
298	297	1			217 Medium ma	Humerus	Right	-	-	-	7,8	Helical	1	-	-	-	-	-	-
299	298	1			217 O. aries	Humerus	Left	-	-	Fused	3,4,5,6,7,8	Helical, dry	1	-	-	-	-	-	-
300	299	1			217 Sus scrofa	Humerus	Left	-	-	Fused	3,4,5,6, 8	Helical	1	potential cal	on posterior	-	-	-	-
301	300	1			217 Medium ma	Humerus	Left	-	-	-	7,8	Helical, mod	1	-	-	-	-	-	-
302	301	1			217 Medium ma	Humerus	Left	-	-	-	7,8	Helical	1	-	-	Dog gnawing	-	-	-
303	302	1			217 Sus scrofa	Humerus	Left	-	Unfused	Unfused	7,8,9,10,11	-	1	-	-	-	-	-	-
304	303	1			217 Felis sp.	Humerus	Right	-	-	Fused	3,4,5,6,7,8	Helical	1	-	-	-	-	-	-
305	304	1			217 Aves	Femur	Right	-	Fused	Fused	Complete	-	1	-	-	-	-	-	-
306	305	1			217 O. aries	Radius	Left	-	-	Unfused (epi	3,4	-	1	-	-	-	-	-	-
307	306	1			217 O. aries	Radius	Right	-	Fused	-	1,2,5	Helical, dry	1	-	Chop leading	-	-	-	-
308	307	1			217 O. aries	Radius	Right	-	Fused	-	1,2,5	Helical, dry	1	-	-	-	-	-	-
309	308	1			217 Medium ma	Radius	Right	-	Fused	-		1 Helical	1	-	-	-	-	-	-

Butchery and cut marks



Fig 28 Butchered scapulae. (1) Roman cattle scapulae from Elms Farm (Essex), showing characteristic 'hook damage' [photo U Albarella]; (2) pig scapula from a late Neolithic context at Marden henge (Wilts) showing fine cut marks characteristic of flint tools [photo F Worley].



Burning and temperature



Metrics

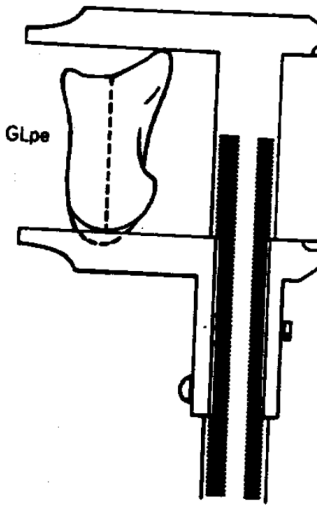


Figure 45e: Bos phalanx posterior, peripheral vi

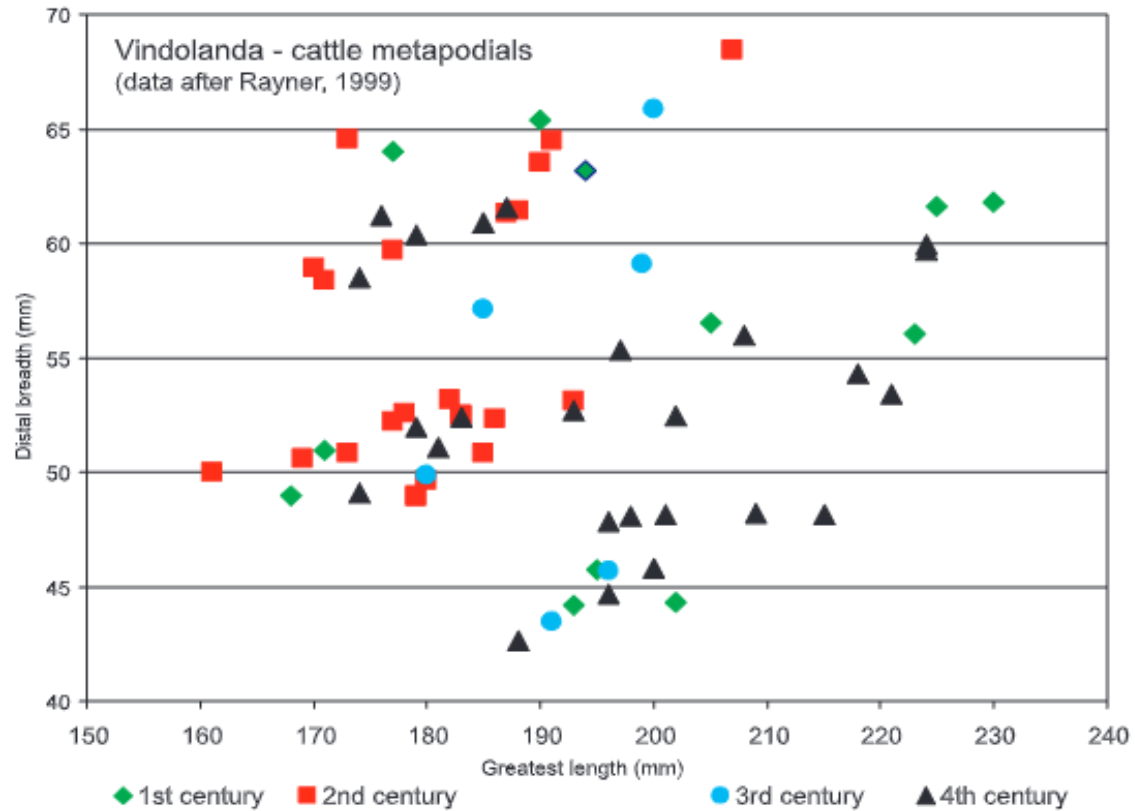
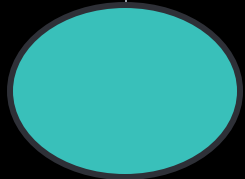


Fig13 Measurement of animal bones can demonstrate changes in livestock through time, as here at Vindolanda on Hadrian's Wall, where larger animals are more common during the 4th century; while this might reflect local breeding programmes or the import of larger stock, changes in proportions of the sexes cannot be ruled out.





Using an integrated archaeological scientific approach to animal remains: a case study from the medieval city of Dhzankent

DISCUSSION

Sort by:

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Reply

**Curves** > George Dvorsky
7/09/20 12:03pm

29

I don't see the mystery in it. They were people just like us, with feelings and emotions that are not always practical in nature, and someone loved that cat and took care of it. It didn't have to serve a practical purpose other than to be a someones little fluff ball, just as modern cats are.

↳ Reply

**DVDDDDVD - search ACLU Mobile Justice App** > Curves
7/09/20 12:10pm

14

And the attachments tend to go both ways when the cat is raised and interacted with.

↳ Reply

**Curves** > DVDDDDVD - search ACLU Mobile Justice App
7/09/20 12:24pm

20

Whats more, with the trauma evidence, someone may have saved this cat from

**Xhzyzygy** > Curves

7/09/20 6:19pm



2

Yeah, and there's evidence elsewhere in the area of cats being kept as pets from a thousand years before this. Guess cats are just easy clickbait for this increasingly ad-riddled site.

↳ Reply

SCIENTIFIC REPORTS

nature research

Check for updates

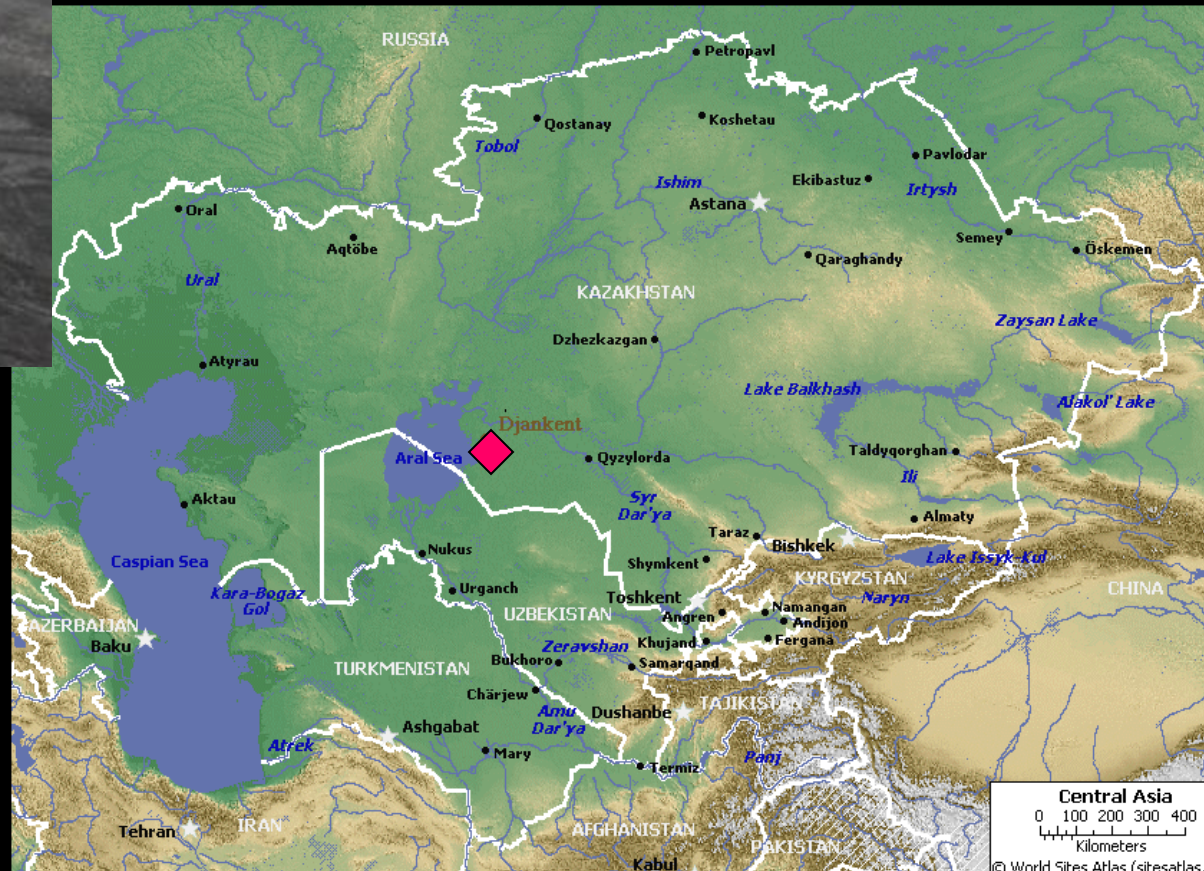
t

15^{7,8}, A. Barlow⁹,
3^{8,12}, R. Thomas¹²,



- ‘For I will consider my cat Jeffrey... for he is good to think on’ - from *Jubilate Agno*, by Christopher Smart (1722-1771)
- ‘We can understand, **too**, that natural **species** are chosen **not** because they are "good to eat" but because they are "good to think"’ – Claude Lévi-Strauss

Dhzankent



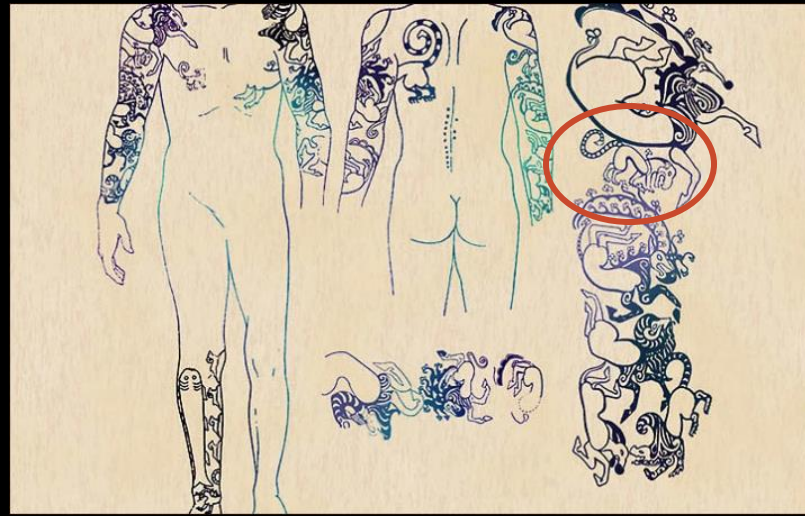
Cats and Nomadic pastoralist assemblages



Wild felids



Rhyton terminating in the forepart of a wild cat, Parthian, 1st century BC. (Metropolitan Museum of Art, New York)



Animal style tattoos, Pazryk 'Ice Maiden', c. 5th century BCE, Altai Mountains



Rhyton with the Protome of a Desert Lynx Catching a Fowl, Iran or Central Asia, Late 2nd - 1st century B.C. (Miho Museum, Japan)



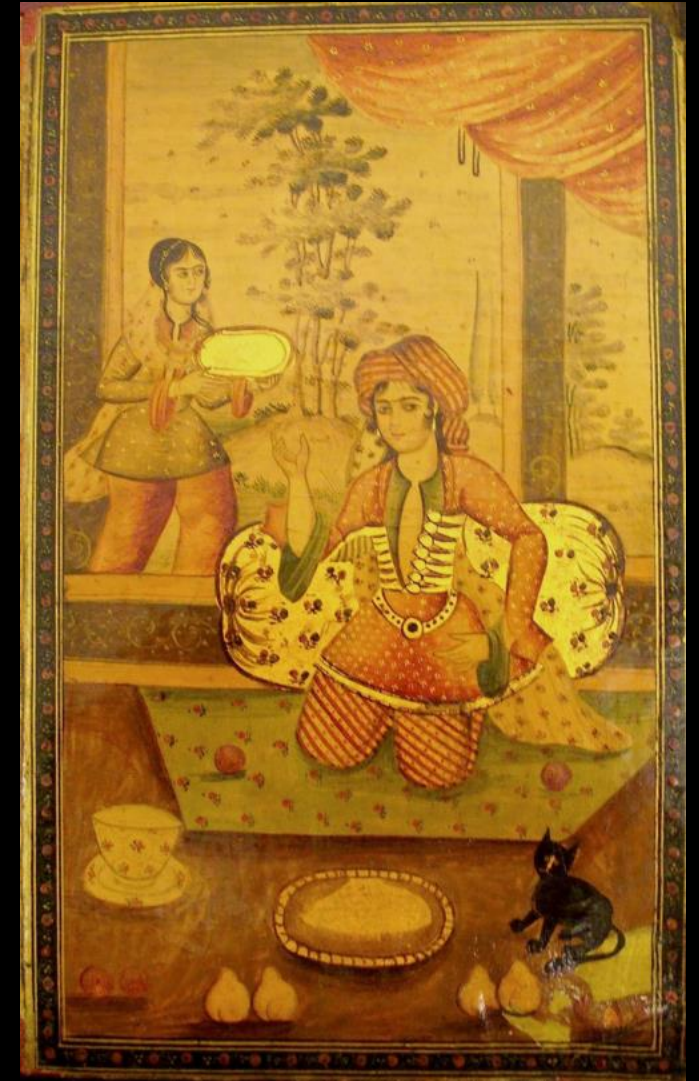
Lion Capital, Ashokan Pillar at Sarnath, c. 250 B.C.E., polished sandstone (Archaeological Museum Sarnath, India)

Feline predators, Kazakhstan, 'Saka' period, c. 5th century BC, Kazakhstan



(Domestic) Cats in medieval Persia

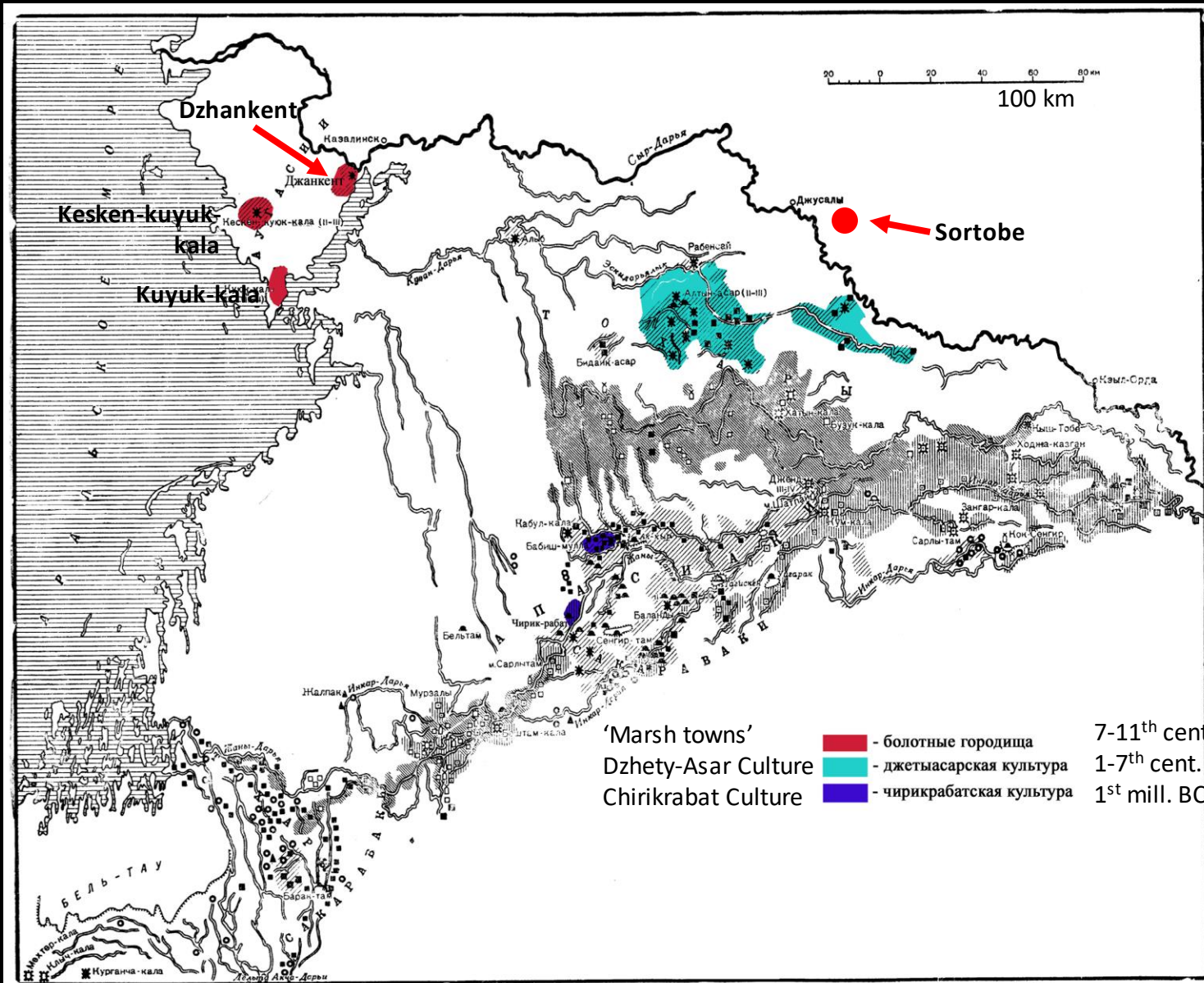
- Trade in cats is attested from the 3rd/6th century (Jāḥeẓ, V, p. 339). Thus, grocers in the time of Jāḥeẓ kept a variety of cats well-known for their mousing skills called *baqqālī* (from *baqqāl* “grocer” or *monammer* “leopard cat,” Jāḥeẓ, V, p. 318);
- Kittens were more expensive than adult cats and that women adorned their kittens with earrings and necklaces, dyed their furs, and would kiss them and let them sleep in their beds (Jāḥeẓ, V, pp. 315, 337-38).
- To the Zoroastrians the cat was treacherous and one of the “noxious creatures” (*xrafstra*), in contrast to the dog, which they praised for its loyalty (Boyce, *Zoroastrianism* I, pp. 90-91). Jāḥeẓ reports that the Zoroastrians believed that if a cat were to urinate in the sea ten thousand fish would die (Jāḥeẓ, V, p. 321).

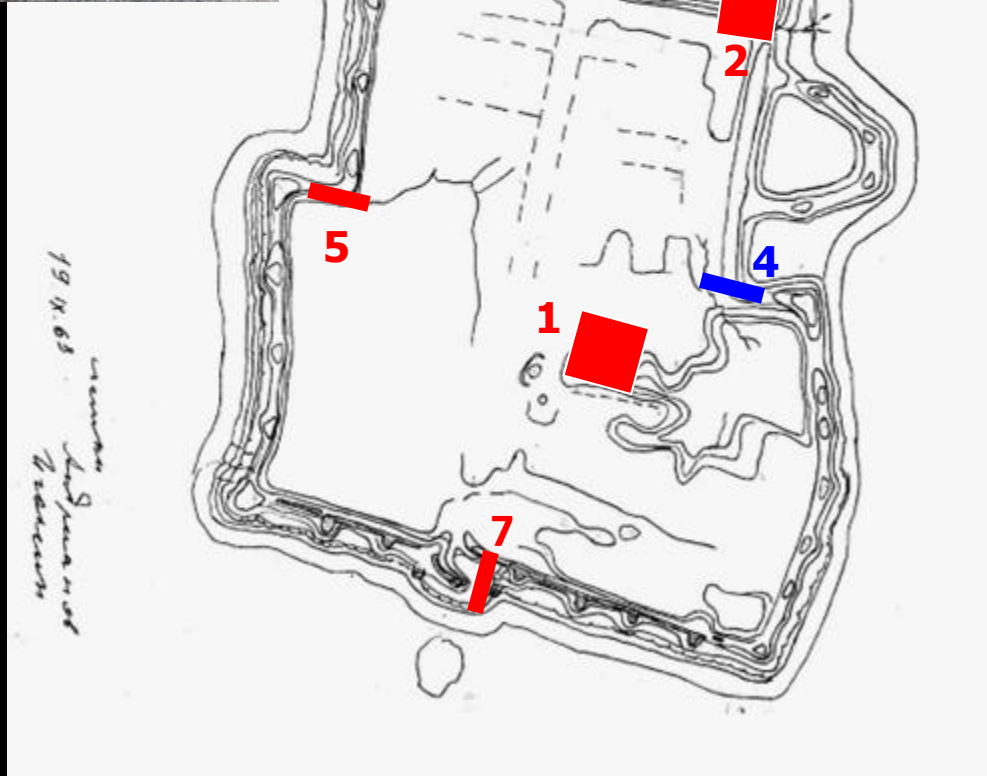


Inside front cover from a Qajar binding depicting a woman with her attendant and pet cat. Late 18th century (Add. 7760)

'Marsh towns' in the delta of the Syr-Darya

Coast line as in 1930s – 1940s





- Trenches:
- 1 – lower town
 - 2 – citadel wall
 - 3 – citadel interior
 - 4 – northern wall
 - 5 – southern wall
 - 6 – citadel interior
 - 7 – east gate
 - 8 – southwest quarter

Excavations
2005-2018:

-  Almaty
-  Moscow/
Kyzylorda/
Tübingen

Pottery traditions at Dzhankent

Dzhety-Asar tradition
(red-slip ware,
rim decoration)

‘Oguz pottery’
(after Tolstov)
(rough, hand-made,
vegetal ornament
on body of vessel)

Khorezmian and
Kerder pottery
(thin-walled,
wheel-turned)

1



2

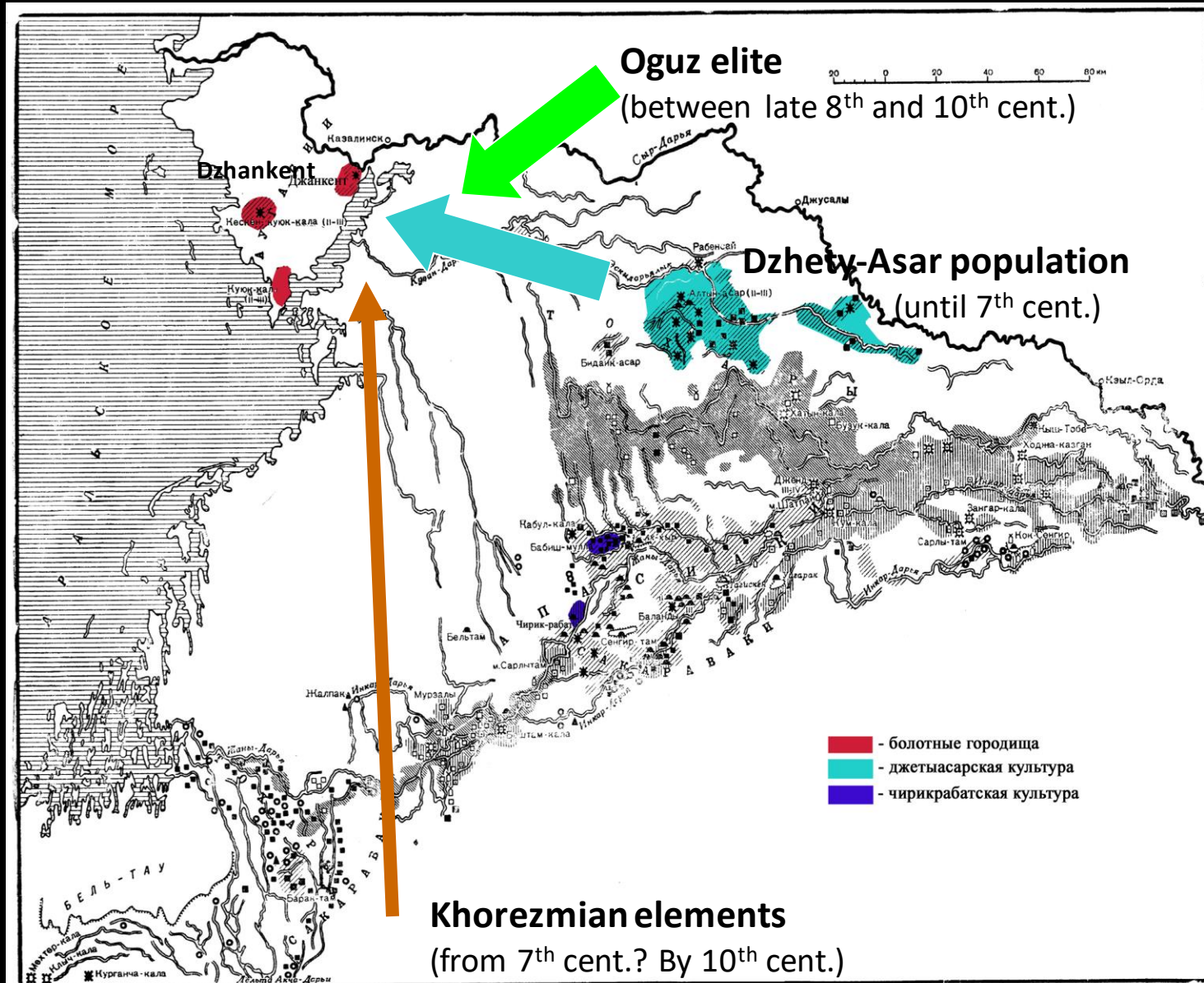


3



Oguz state formation and urbanization in the Syr-Darya delta

Coast line in 1930s – 1940s



Archaeological Context: domestic waste infill





Pathologies

- Ankylosis
- New bone formation
- Enthesosphyes



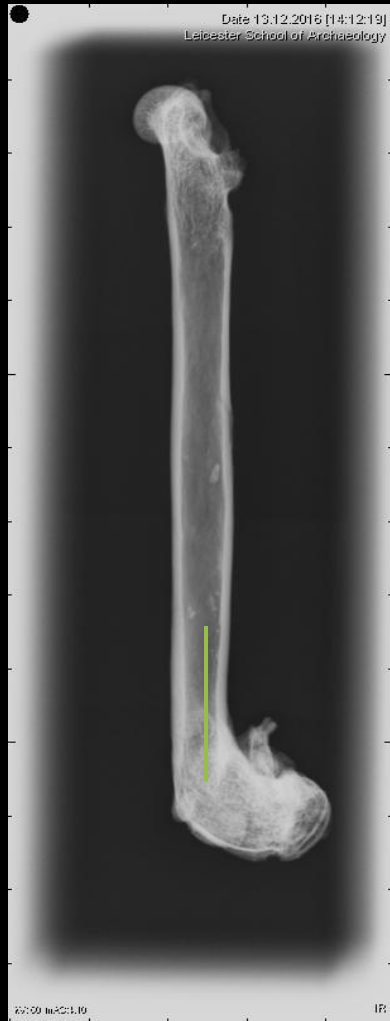
- Osteophytes
- Flattening of acetabular border (Coxofemoral luxation)
- Porosity on iliac crest



- Articular fracture
- Osteophytes at humeral head
- Enthesosphyes



Pathologies



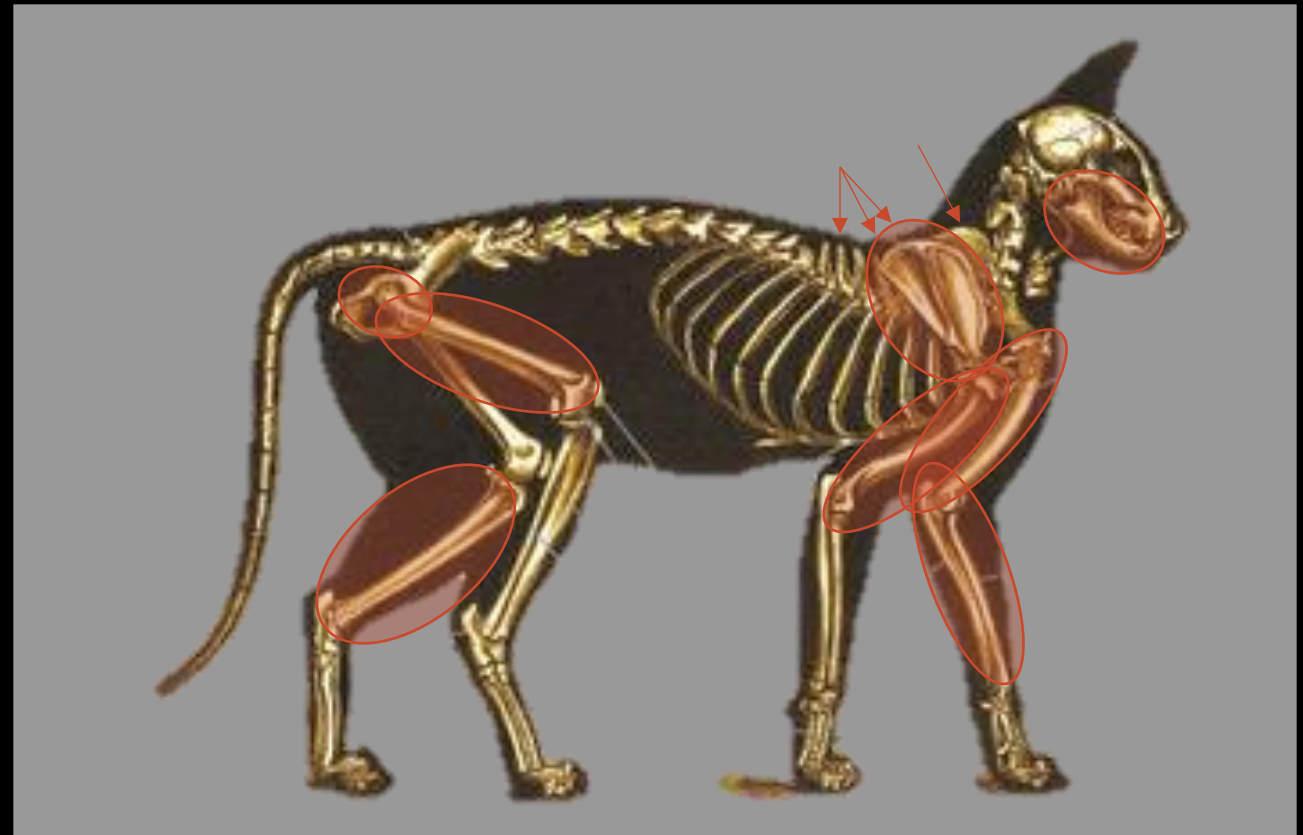
Pathologies

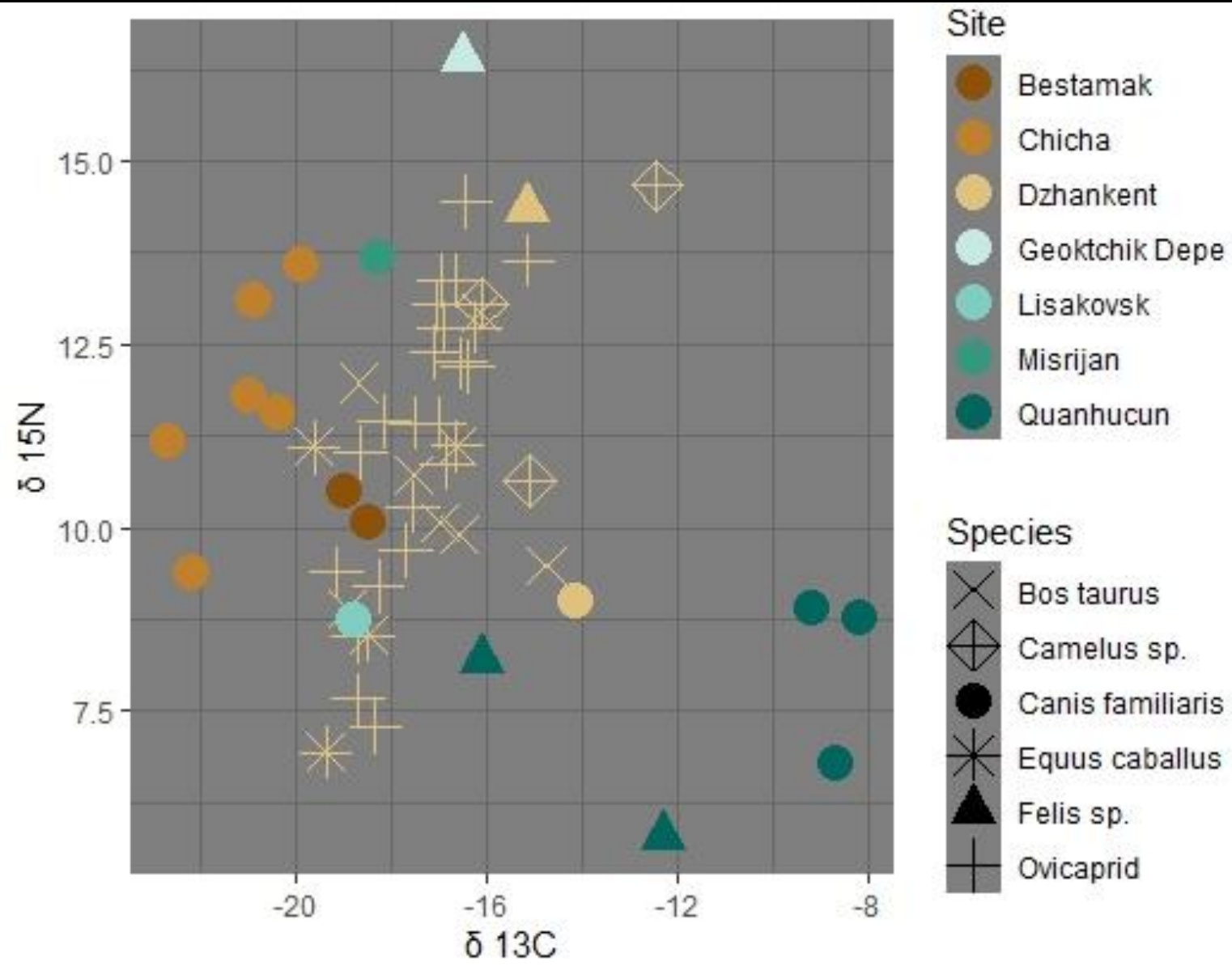


Total skeletal pathologies

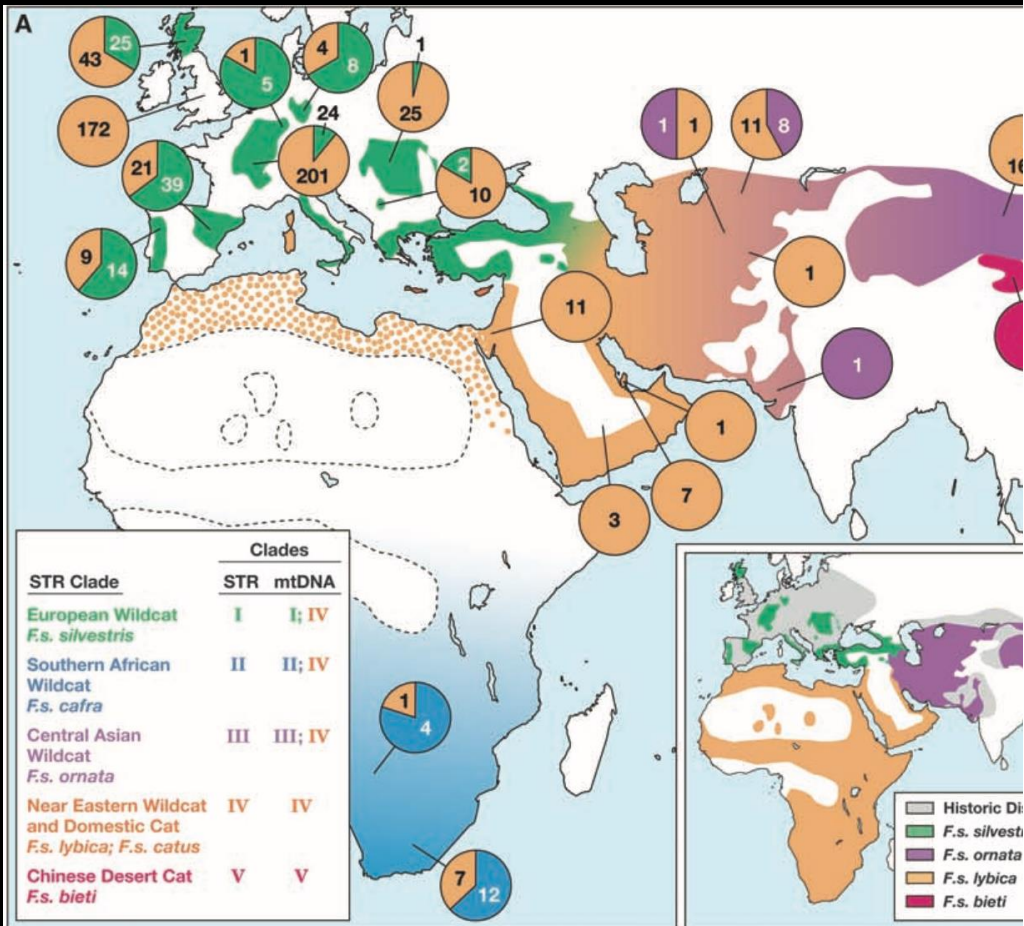
Left	Right
Scapula	Humerus
Humerus *	Radius
Pelvis	Ulna
Tibia	Femur *
Mandible	Mandible

** Elements with fractures*

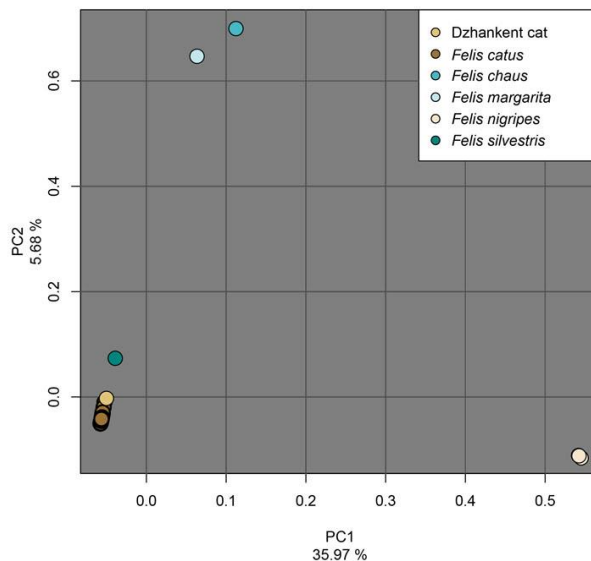




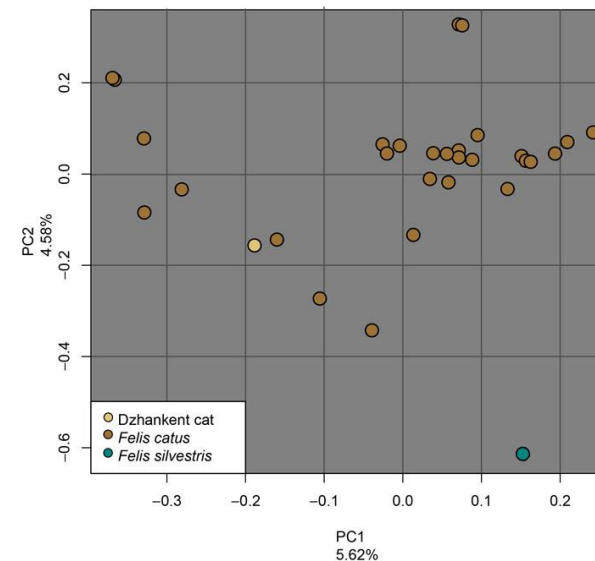
Felis silvestris ornata v. *Felis silvestris silvestris*



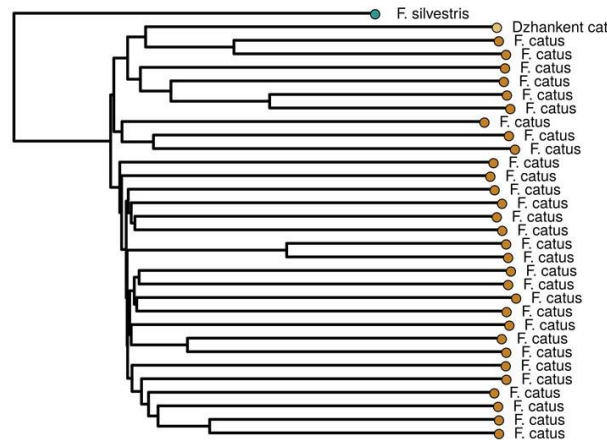
A) Multispecies Principal Components Analysis (928,665 variants)

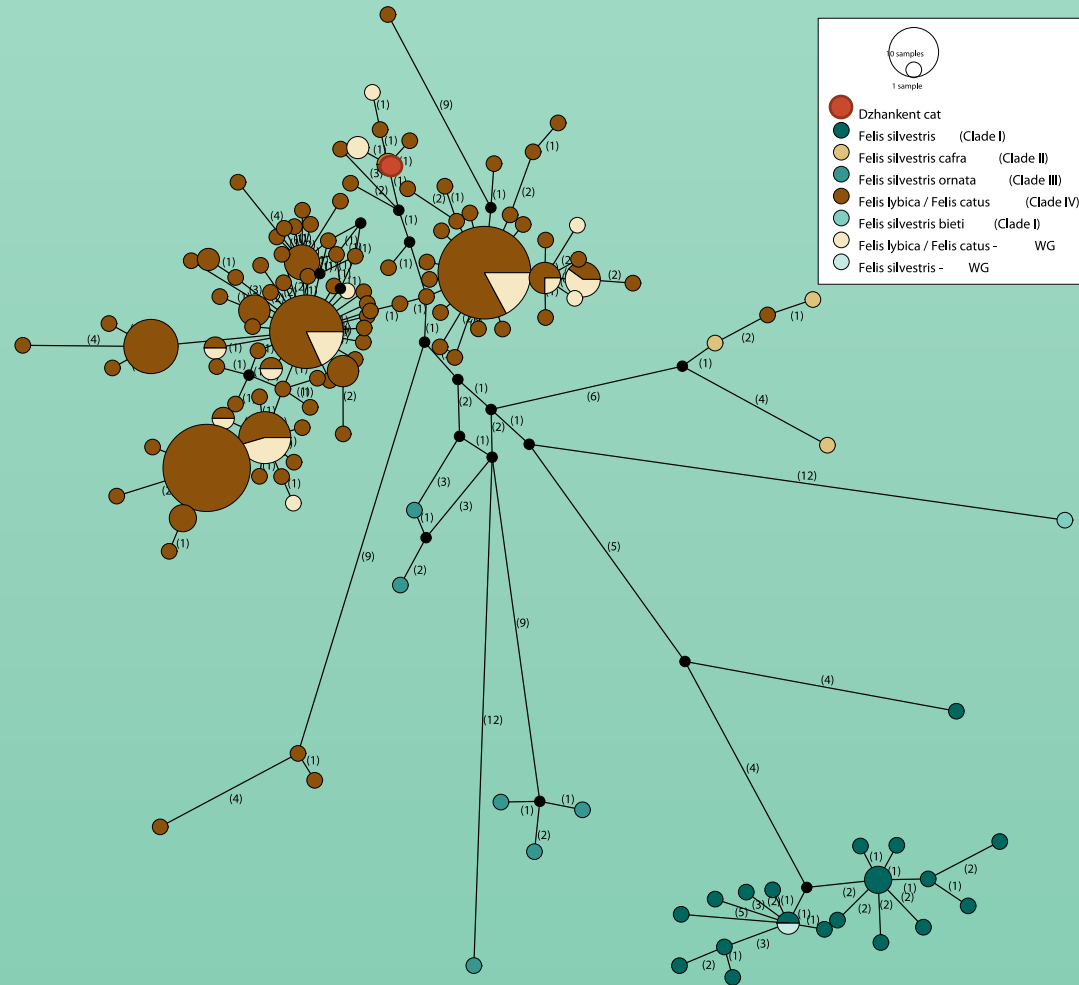


B) *F. catus* and *F. silvestris* Principal Component Analysis (764,913 variants)



C) Nuclear phylogeny (727,797 variants)





Supplementary Figure 1: Median-joining mitochondrial haplotype network including the Dzhankent cat, individuals used for nuclear analysis (Supplementary Table 3) and 233 additional published sequences (Supplementary Table 4), totalling to 264 taxa.

Pet



- Alive throughout extensive inflammatory response
- Difficulty hunting with lack of canine teeth
- Found largely intact, no evidence of postmortem fragmentation or modification

Commensal



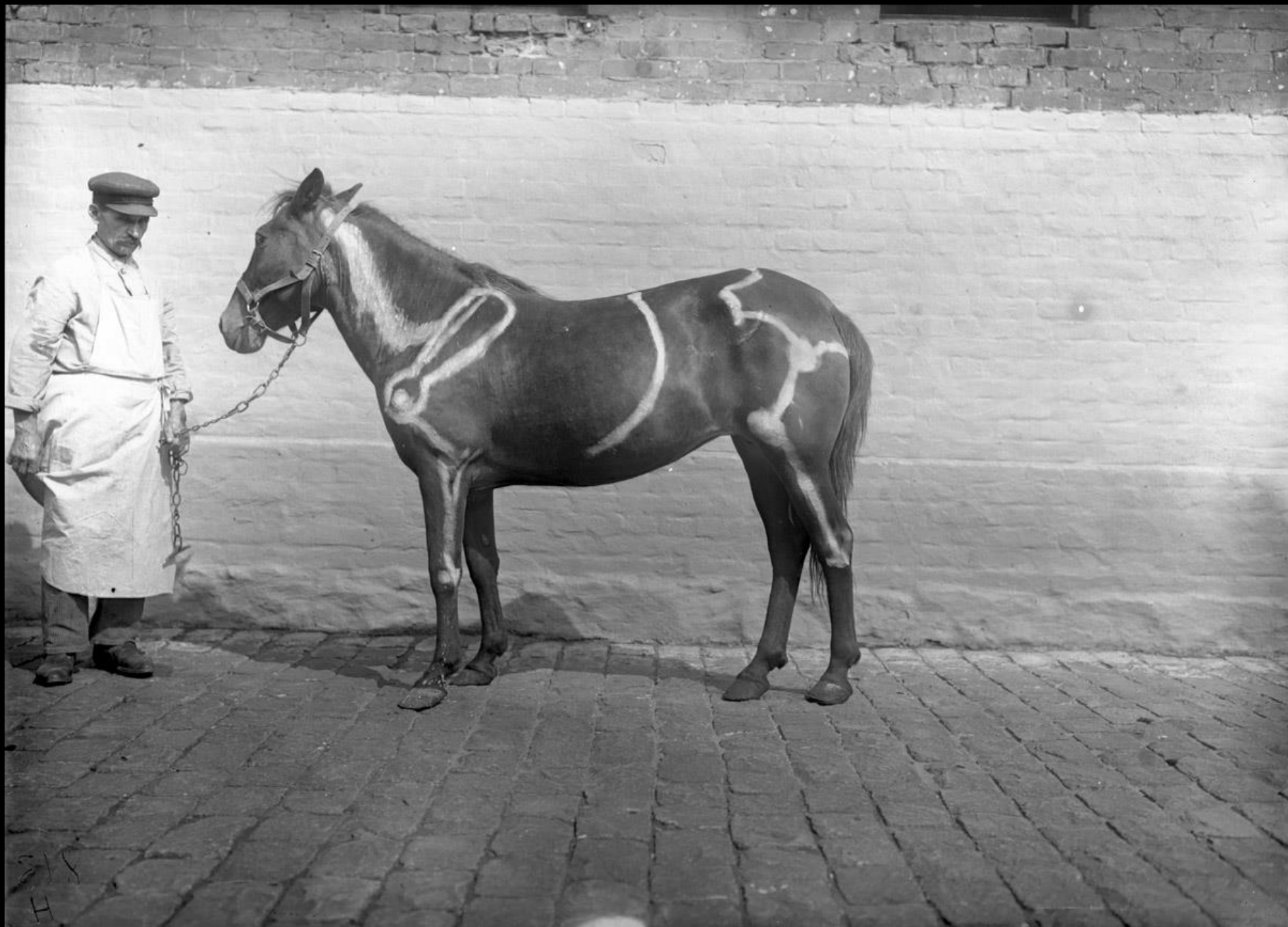
- Femur is not set
- Urban context provides food sources (garbage), no need to hunt
- No clear grave cut or specific 'ritual' context

Evidence of changing attitudes and worldview

- The influence of the heavy north/south trade routes may have begun to change the approach to animals within this more cosmopolitan context.
- General trend of increase in domestic cat population during this period, especially associated with maritime travel and trade.



*Oguz Yabgu at Dzhankent
(painting in Korkyt-Ata Museum)*



H
1/1