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THESPROTIA EXPEDITION III
LANDSCAPES OF NOMADISM AND SEDENTISM

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Cover: The Bronze Age site of Goutsoura seen from the south. Photo: Björn Forsén

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Faunal Remains of Goutsoura: The Late Middle Bronze Age to Early Iron Age Strata

Stella Macheridis

Introduction

The site of Goutsoura (PS 12) was first settled during the Early Bronze Age (EBA) when it was permanently inhabited. After a short hiatus the site was used mainly as a cemetery, from the late Middle Bronze Age (MBA) through to the late Late Bronze Age (LBA) or perhaps even early Early Iron Age (EIA). A tumulus in Area 2 and a separate cemetery in Area 3 that belong to this phase of the site were excavated by the Thesprotia Expedition. Activity on the site may have continued even longer, although the evidence of this is limited to the finds from one small trial trench, Trench H, which only could be roughly dated to the EIA or later.[1]

In this chapter, the results from the osteological analysis of the faunal remains from late MBA to EIA contexts at Goutsoura are presented. The bones derive from three types of contexts.[2] Most were found in the uppermost cultural layer of the site which is dated to the late LBA or possibly even the early EIA. This layer could be traced in Area 1, Area 2, Area 3 as well as in the large trial trench of 2008 and Trenches F, E1-2, E6-7 and E21-22. It post-dates not only the tumulus, but also the cemetery in Area 3 and seems to derive from the occasional revisiting of the site. Most of the faunal remains from this layer were found above the tumulus which itself was erected at some stage between the late MBA and early LBA. The animal bones can perhaps shed light on the kind of activities that took place at the tumulus after its usage phase.

The second context concerns the small animal bone assemblage from Trench H, approximately dated to the EIA or even later. Thirdly, we have faunal remains from the cemetery in Area 3, dated between the late MBA and late LBA. The bones of this last category are somewhat mixed, deriving from the usage of the graves as well as shortly thereafter. While they might not be from the actual graves, they derive from activities connected with them. As they are associated with graves in some way or another, zooarchaeological perspectives can shed some light on the burial activities on-site.

In this report, the material studied and methods used in the zooarchaeological examination are described. Next, the taxonomic representation is discussed together with taphonomic issues regarding the material. A short presentation of the range of identified taxa is followed by a more general zooarchaeological discussion of the finds. Subsequently, the animal bones are discussed contextually, starting with the earliest sub-

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[1] For a preliminary overview of the site, see Forsén *et al.* 2011. For more detailed studies of different aspects of the site, see the contributions by Forsén, J. Forsén, Doulkeridou, Deckwirth, Niskanen and Lima in this volume. Fig. 9 is by Esko Tikkala, all other illustrations by the author.

[2] For these three contexts and their date, see Forsén, this volume. No exact date could be given to the finds from Trench H, which therefore here are treated separately. Trench H is located on a higher terrace than all the other excavation areas and trenches of Goutsoura and contained a rock tumble interspersed with EIA or later pottery.

assemblage from the late MBA to the late LBA, followed by the late LBA to the early EIA. Finally, this material is compared to the animal bones from the EBA layers which have been examined by Vivi Deckwirth.[3]

Material and methods

The studied material consist of 644 fragments (2,843 g), of which the majority of the fragments were recovered in Area 2 (Fig. 1).[4] Many fragments also derive from Area 1, the large trial trench of 2008, as well as Trenches F, E1-2, E6-7 and E21-22, all located only some 5-10 m to the southeast of Area 2. In general the uppermost cultural layer, dated to the late LBA to early EIA, contained the majority of the fragments (55%). This is not surprising as this layer covered most of the excavated areas (in total ca. 152 m^2), while the earlier bone fragments were found only associated with graves in Area 3, and Trench H only had a size of 2 m^2.[5]

	Late LBA to early EIA				Late MBA to late LBA	EIA or later	Total
	Large trial trench, Trenches F, E1-2, E6-7 and E21-22	Area 1	Area 2	Area 3	Area 3	Trench H	
NSP	150	31	351	15	54	43	644
Weight	311	140	1519	104	530	259	2863

Fig. 1. Distribution of animal bone fragments as Number of Specimens (NSP) and weight (g).

All bones were hand collected during the excavation. No sieving or water flotation took place, which could explain the complete absence of fish and avian remains. Furthermore, the fragments were not washed when stored or studied in the archaeological storage facilities at the village of Gardiki.[6] Different atlases of animal osteology were used in connection with the study,[7] but the lack of physical references has significantly lowered the identification rate. Age and sex assessments could only be made on few bone fragments.[8] Measurements were taken when possible.[9] The Number of Identified Specimens (NISP) has been used as quantification.[10] Number of Specimens (NSP) is also used to include unidentified fragments. Because the bones were not washed, a

[3] Deckwirth, this volume.
[4] For a quantative distribution of all fragments, see Appendix I.
[5] According to Forsén, this volume, the large trial trench of 2008 covered 19 m^2, Trench F, E1-2, E6-7, E21-22 and H 2 m^2 each, Area 1 13 m^2, Area 2 62 m^2 and Area 3 50 m^2.
[6] This decision was made during the archiving of the material, based on the preservation of the bones; the fragments were however brushed.
[7] E.g. Pales and Lambert 1971; Pales and Garcia 1981; Schmid 1972; Hillson 2005.
[8] Age assessment based on postcranial fusion data in domestic mammals followed Silver 1969; Habermehl 1961 and Vretemark 1997, 41. No intact mandibles with all molars and fourth premolars were found. Reliable age assessments based on tooth wear and eruption could thus not be made. Sex assessment based on suid canine morphology followed Mayer and Lehr Brisbin Jr 1988. Cattle pelvic morphology was used for sex determination according to Vretemark 1997, 43-44.
[9] All measurements were taken according to von den Driesch 1976, except ungulate crown heights which were taken following Klein and Cruz-Uribe 1984, 47.
[10] See Lee Lyman 2008.

systematic recording of taphonomic markers was not possible, although such have been noted. Weathering was recorded following Behrenmeyer's score system.[11] Fire impact was recorded after colouration.[12] Butchery marks have been noted and when possible, attributed to filleting, skinning or dismembering, as described by Binford.[13] Smaller cut marks have more probably been hidden than more obvious chop marks. Marks of gnawing were also noted.

Issues of taphonomy and taxonomic representation

Almost all bone fragments (640 NSP) derive from mammals, while four from tortoise or turtle. The unidentified mammal fragments were, when possible, categorized by the size classes *Large-sized mammals*, including mainly large herbivors equids, bovids and cervids, and *Medium-sized mammals* including suids, ovicaprids, and canids. The assemblage comprises 143 fragments of large-sized mammals and 264 fragments of medium-sized ones. A total of 147 fragments (28%) could be identified to genus. In Fig. 2 the percentage of identified bones within each sub-assemblage is illustrated. The percentage of identified bone (%NISP) is highest in the late MBA to late LBA contexts (46%). However, this should be taken with caution, since the total number of bones is low. From the much richer late LBA to early EIA layer, a total of 115 bone fragments were identified (21%), whereas 16% of the bones in the small assemblage from the EIA were identified.

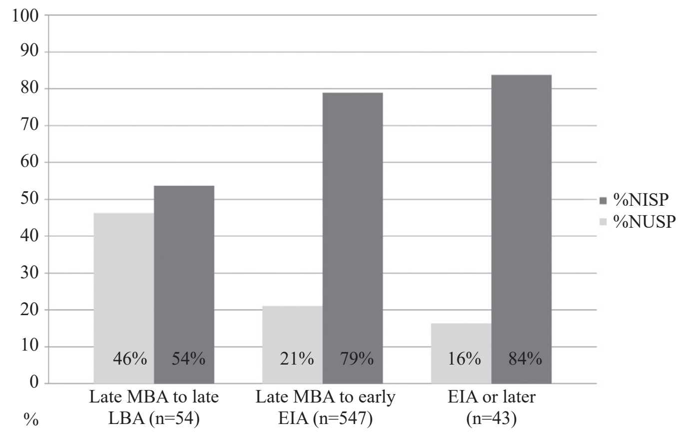


Fig. 2. Percentage of identified and unidentified bone fragments (NISP and NUSP) within each of the studied sub-assemblages.

The proportion of identified bone within each sub-assemblage is connected to the degree of preservation as well as the taphonomy of the animal bones, i.e., in which ways different formation processes, factors and agents have helped to shape the material at hand.[14] In Fig. 3 such markers are presented. Bone fragments from the earliest assemblage are heavier, with an average weight of 9.81 g,[15] than

[11] Behrensmeyer 1978.
[12] Lee Lyman 1994, 386, fig. 9.9 with further references.
[13] Binford 1981.
[14] For an overview on vertebrate taphonomy, see Lee Lyman 1994.
[15] To nuance the picture of fragmentation within the material even more, the average weight per identified fragment is calculated as 17 g. For unidentified fragments the average weight is only 3.62 g.

Period	Cut marks	Gnawing	Burnt bone	Weathering	Root etching	Average size (mm)	Average weight (g)
Late MBA to late LBA	1	4	0	5	0	52.18	9.81
Late LBA to early EIA	3	22	3	6	1	37.74	3.79
EIA or later	3	7	0	1	0	43.45	6.02

Fig. 3. Distribution of taphonomic markers, average weights and sizes of the animal bones in different sub-assemblages.

the bones from later deposits. The average size is also larger, with an average size of 52.18 mm. This indicates that the earliest assemblage is better preserved. Since the assemblages share approximately the same geological conditions for preservation, perhaps this is due to pre-depositional activities.

Even if the fragments are dirty, some have been clean enough to show signs of taphonomic impact (Fig. 3). Gnawing marks are the most abundant. This indicates in general that carnivores had access to the bones before deposition. That weathering is present also supports the idea that at least some of the bones were exposed during a period of time before deposition. Three fragments have been exposed to fire; none were calcined. Most probably the fire impact derives from pre-depositional activities such as food preparation, rather than using fire as fuel or burning as waste management strategy.

Range of taxa

Among the identified specimens, presented in the taxonomic list in Fig. 4, domesticated mammals dominate. In general, cattle fragments are the most numerous, followed by those from sheep/goat, pig, and dog. In the most bone-rich period (late LBA to early EIA) sheep/goat is most abundant. Suids are in general more common during the late LBA and later. This increase can however only be hypothesized due to low NISPs of the earliest and latest assemblages (see Fig. 4). There are also difficulties in distinguishing between wild boar and domestic pig, while some fragments remain on the genus identification level.[16] Dog is present in all contexts except in the EIA or later context. Besides the domesticated animals, human, deer and tortoise are identified.

Taxon	NISP	Weight	NISP	Weight	NISP	Weight	NISP	Weight
Cattle (*Bos taurus*)	11	217	38	563	3	116	52	896
Sheep/goat (*Ovis aries* or *Capra hircus*)	2	12	41	186	1	5	44	203
Suid (*Sus sp.*)	1	16	4	19	2	39	7	74
Pig (*Sus domesticus*)	1	8	24	174	1	21	26	203
Dog (*Canis familiaris*)	4	46	5	39			9	85
Deer (*Cervus sp*)	1	83					1	83
Human (*Homo sapiens*)	3	39	2	13			5	52
Tortoise unspec. (*Testudines*)	2	4	1	1			3	5
Total	25	425	115	995	7	181	147	1601

Fig. 4. Identified taxa from the late MBA to EIA contexts, quantified by NISP and weight (g).

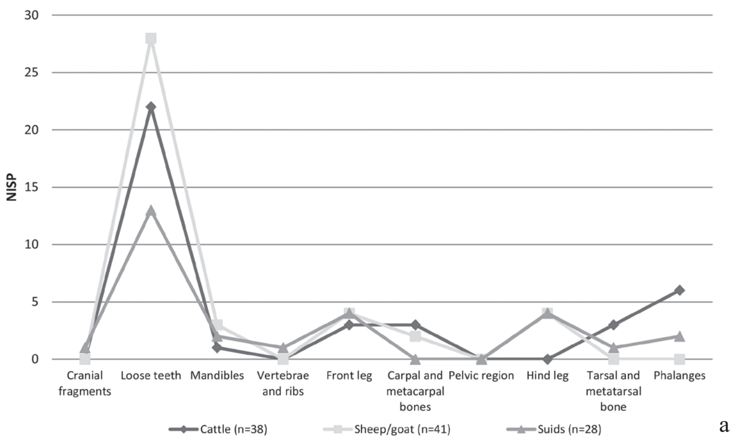
16 This problem is well-known and was noted already by Gejvall 1969, 19-20.

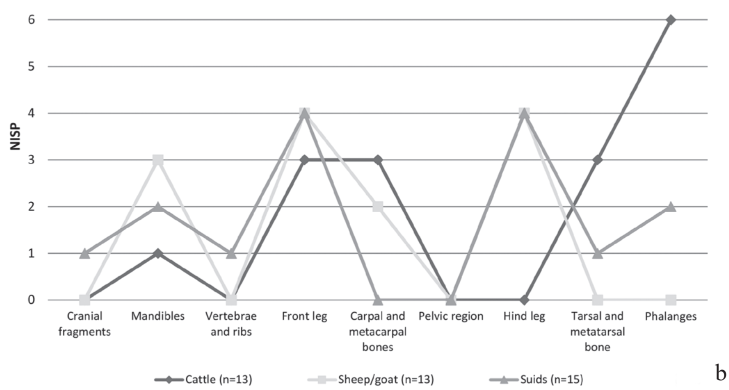
Zooarchaeological overview

The sub-assemblages from the late MBA to the late LBA, and from the EIA or later are small. Therefore, the following summary focuses mostly on the bone fragments from the late LBA to early EIA. Human bone fragments are clearly intrusions from nearby graves and therefore not included.

Cattle, sheep/goat and pig

The identified taxa (Fig. 4) are dominated by the four most common animal domesticates, i.e., cattle, sheep, goat and pig. To better understand the presence of these taxa, it is important to consider which parts of the body are represented. In Figs. 5a-b, the skeletal part frequencies of cattle, sheep/goat and pig are illustrated, both with and without loose teeth. Only the late LBA to early EIA layer is considered.[17] Because the assemblage is small, any observed trend in animal parts representation is only tentative. Loose teeth dominate the assemblage. By removing them from our counts, we can instead see an



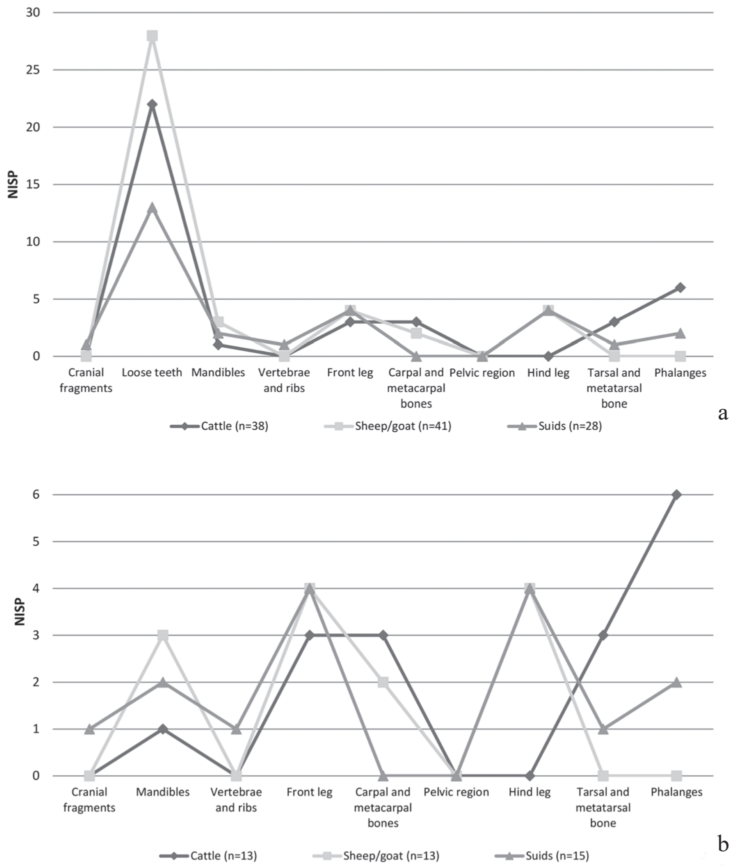


Figs. 5a-b Skeletal part frequencies of cattle, sheep/goat, and suids, including loose teeth (5a) and excluding loose teeth (5b), from the late LBA to the early EIA layer.

[17] More detailed anatomical distributions for all animals are given in Appendix 1.

overrepresentation of long bones, such as those belonging to the front leg. Fragments of the leg bones are more compact and resilient against post-depositional destruction than other elements such as the vertebrae, which have more spongy bone structure. Cattle fragments are also overrepresented by distal compact bones, such as tarsals and carpals. Small compact bones are more prone to survive fragmentation caused by butchery or scavenging by carnivores.[18]

If we group these bones in the two main animal size groups, i.e. large-sized cattle, and medium-sized suids and ovicaprids, a more nuanced picture emerges. In Fig. 6a, we can observe a continued strong presence of loose teeth. However, for the medium-sized mammals, long bone fragments from either the front or the hind leg totally dominate the assemblage. This is also the case for large-sized mammals, but not to the same extent. For both size classes, vertebrae and ribs are much more abundant than seen in Figs. 5a-b. This can be explained by the fact that such bone fragments are hard to identify according to species despite them being easily recognized anatomically (especially ribs). We still



Figs. 6a-b. Skeletal part frequencies (NISP) of large-sized mammals and of medium-sized mammals, including loose teeth (6a) and excluding loose teeth (6b), from the late LBA to the early EIA layer.

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[18] Marean 1991.

see an almost complete lack of finds of the pelvic region from large-sized mammals. Even so, the overall picture seems to indicate that the whole body, dead or alive, was more or less present. It is hard to say if the animals were slaughtered within the excavated activity area, or if there was a specific place for slaughtering nearby. If the settlement was relatively close, the animals could also have been roughly processed there. A reminder is perhaps needed that the above discussion regards only the bones from the late LBA to the early EIA layer.

Fourteen fragments of bone deriving from cattle, sheep/goat, or pig were suitable for age assessments. Twelve of these derive from the late LBA to early EIA layer. Most belong to adult individuals. The only certain remains of juvenile animals are of one pig below 12 months old, and one ovicaprid below the age of 18-30 months. The remaining two age-assessed fragments derive from adult individuals of cattle; one from the late MBA to late LBA, and one from the EIA or later layer.

Sex assessments have been possible on four suid canines from the late LBA to early EIA layer. All were male. One female pelvic bone of cattle was identified from late MBA to late LBA contexts. No bones were complete enough to yield body size calculations.[19] No certain pathologies were identified, although the unclean state of the bone fragments might hide some lesions.

When it comes to butchery marks, only two were observed on cattle; one *humerus* bears filleting marks produced by a sharp instrument, and one phalanx was split in half. Both were from the late LBA to early EIA layer. Only one pig *humerus*, found in the EIA trench, shows signs of butchering – fine cut marks on the distal end of the shaft. Similarly, one sheep/goat mandible shows signs of chopping. Probably, more butchering marks remains unrecorded because of the unclean state of the bones. Chopping and pounding the bone produce splinters. The high fragmentation of the assemblage is an indication of this. The fragmentation is higher within the late LBA to early EIA and the EIA (or later) deposits.

Dogs

Nine fragments of dogs have been identified within the assemblage. Four of these fragments were found in the late MBA to late LBA context. These bones articulate with each other to form the front leg of a dog. The bones derive from a large dog.[20] Clear gnawing marks are visible on the proximal ulna, and the shaft of the radius is weathered, as can be seen in Fig. 7.[21] Weathering covered all remains of this individual. This is interesting since the first impression might have been that they are part of a grave. But that does not explain the weathering and the gnawing, which indicates exposure rather than rapid deposition. Also the scapula seems to be chopped, although this is hard to ascertain due to the erosion of the bone.

From the late LBA to early EIA layer, five fragments of dog were identified. The shaft of a tibia was weathered and gnawed. One mandibular fragment was also weathered, again suggesting exposure of the bones, rather than rapid burial. Otherwise these bones were relatively well preserved. One maxillary fragment was also found, as well as a loose canine. These bones derive from adult individuals.

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19 All measurements taken can be found in Appendix III.
20 See measurements in Appendix III.
21 Stage 1 as described by Behrensmeyer 1978. See also Madgwick and Mulville 2011, 514, fig. 2.

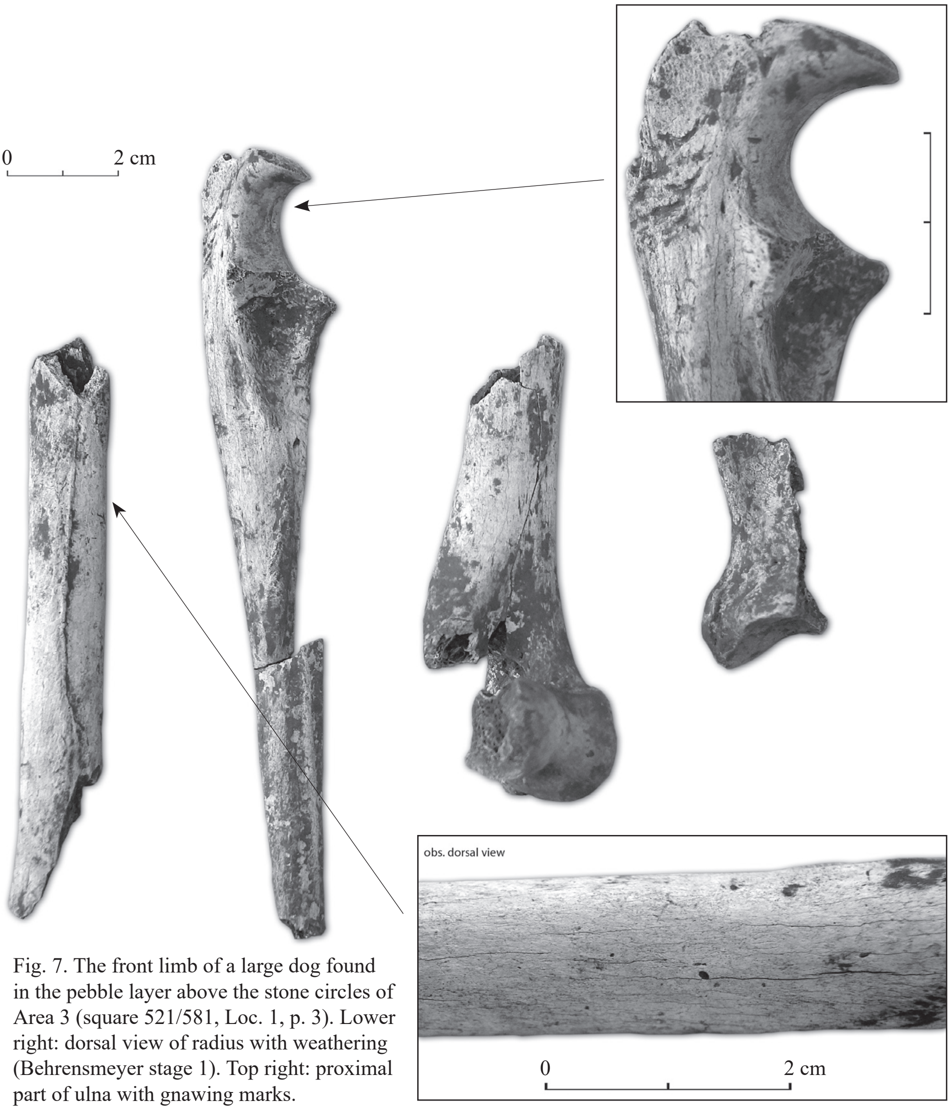

Fig. 7. The front limb of a large dog found in the pebble layer above the stone circles of Area 3 (square 521/581, Loc. 1, p. 3). Lower right: dorsal view of radius with weathering (Behrensmeyer stage 1). Top right: proximal part of ulna with gnawing marks.

Furthermore, the frequent presence of gnawing marks on bone fragments deriving from most identified bone fragments of various taxa is a sign of indirect presence of dogs. It is also an indication that dogs had access to the food leftovers that were lying around the settlement and that they played some role in the formation of the assemblages of Goutsoura.

Wild animals

Four bone fragments have been identified as deriving from wild animals, namely one deer radius and three tortoise/turtle shell fragments (*carapace* and *plastron*). Land turtles can often be found nesting in, or close to prehistoric sites. The tortoise fragments at Goutsoura are perhaps from land turtles. They do not bear any modification marks (e.g. cut marks or burning), and as they could be present naturally, they are maybe not remains of human consumption; they could be considered chance finds. As only a few fragments have been noted,[22] it is also possible the people at the site did consume this resource as food or for other purposes.[23] The issue remains open.

The single deer radius is an indication of hunting. This particular specimen was found in Area 3, associated with the late MBA to late LBA grave clusters. Unfortunately, it could not be determined as to species, but judging by size it derives from either red deer (*Cervus elaphus*) or fallow deer (*Dama dama*). It is splinted proximally, from dismembering.

The late MBA to late LBA sub-assemblage

These remains are not especially numerous, but their association with the grave cluster in Area 3 makes them significant. They are much better preserved than the other sub-assemblages. This is visible in the higher percentage of identified bone (Fig. 2), as well as the larger size and weight of the fragments (Fig. 3). The human bones found in this area came from the stone circles (square 527/579, Loc. 2, p. 2). They probably derive from the individuals buried in Grave 4, Grave 5 or Grave 6.[24] From Grave 3, only one small tortoise fragment and one unidentified mammal fragment were found.

The majority of the animal bones was found in the pebble layer above the stone circles (25 fragments), as well as in the soil layer above them (12 fragments). Eight fragments can be connected to the infill of the circles. Although the assemblage in general is well preserved, there are only few complete bones. This fragmentation, together with gnawing marks on some of the bones might indicate exposure of the bones after consumption instead an immediate burial. All in all, it is more reasonable that these bones represent general scatter from nearby consumption, rather than deriving from particular single eating events. Cattle, sheep/goat, suids, dog, and deer are present. The presence of cattle, sheep/goat and pig is not surprising, since they are the typical meat providers in Bronze Age Greece.

There are two more interesting taxonomic occurrences in this sub-assemblage. One is the aforementioned deer radius, which testifies to hunting. It also suggests that in the mortuary meals which took place in the vicinity of the graves not only the domestic animals were consumed. Hunting is a common theme in Mycenaean iconography.[25] It seems to have been an important ideological activity, associated with authority and power.[26] There is a possibility that similar symbolism also permeated the hunting at this site. However, this remains uncertain, and more examples are needed to fully discuss this theme.

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[22] As Deckwirth, this volume, mentions, articulated remains and/or a more complete shell can be seen as criteria for identifying winter-hibernating turtles, i.e., later intrusions. However, this does not take into account prehistoric intrusions between times of occupation.

[23] For example, Gejvall proposes, according to Åström 1968, 56, that turtle was consumed during periods of starvation during the Mycenaean period at Midea.

[24] For the graves and the persons buried in them, see Niskanen, this volume.

[25] E.g. Hamilakis 2003, 243

[26] Hamilakis 2003, 243-244. According to him, hunting and war were strongly connected in Mycenaean societies. Furthermore, the idea of hunting was stronger than the actual activity of hunting, is why few osteological examples are found.

The other phenomenon is the articulated front leg of a dog. Initially it was thought to be an in-mix; the remains of a larger hunting hound buried with its master from a nearby grave. Dogs in burials or pure dog burials are not uncommon in Aegean prehistory.[27] However, the bones are clearly weathered and they are also gnawed on by other canids (see Fig. 7). They do not seem to come from any grave or closed deposit. It could be consumption waste, as the scapula seems to be chopped. There are examples of other sites with evidence of dog meat consumption. One such is Lerna, where the few dog fragments showed a high prevalence of cut marks associated with consumption.[28] This is similar to the fragments of dog at Iron Age Kastro on Crete, which also showed high frequencies of cut marks.[29] The dog fragments here are not from settlement layers, but from funerary activities. It is thus possible that this consumption might have some ritual overtones, being one rare example of consumption of dog meat in ritual settings.[30]

The late LBA to early EIA sub-assemblage

The uppermost cultural layer that covered most of the site derives from activities connected to people returning periodically to the site. These revisits should be seen as associated with the tumulus and the other graves that are special to the site.[31] The majority of the animal bones were found in Area 2 from above, or in direct connection to the tumulus. The bones are more fragmented than the ones from earlier contexts. The most abundant species are cattle, sheep/goat and pig. All body parts are represented among the preserved bones. Perhaps this is an indication that the animal was slaughtered on the site, or close to it.[32] Most animals slaughtered were adult. The bones do not indicate a large number of individuals. If we were to use the Minimum Number of Individuals as quantification, remains from at least three of each cattle and ovicaprids and two suids are present. Dog is also identified as well as human and tortoise, although in very low numbers. The human bone fragments are probably from the underlying graves.

The distribution of animal bones in Area 2 reveals minor clustering of animal bone fragments in two main areas (Fig. 8). The largest concentration seems to be west of Child grave 1. Another is above the central cist grave. Some scattering of bones can also be seen in connection with the other child graves. Several bones bear gnawing marks, indicating that canids had access to the bones. Probably they also acted as agents of dispersal. That the rest of the excavated areas contained at the most ten fragments, argues in favour of this idea. The animal bone fragments and their spatial distribution support

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[27] Day 1984. In her catalogue of dog burials and occurrence of dog in the Aegean LBA and EIA, we can find, for example, Dendra, Mycenae and Asine on the mainland as well as Knossos and Gournes on Crete. See also Hamilakis 2003, 243-244. He connects the LBA practice of depositing dog remains in burial contexts to the ideological importance of hunting.
[28] Gejvall 1969, 18. He concluded that dogs were eaten by the presence of cut marks on meat-rich anatomical elements, such as the humerus.
[29] Snyder and Klippel 2003. They suggested that the eating of dog at Iron Age Kastro was not ritually charged, but part of the ordinary consumption behaviour.
[30] For the ritual use of dogs in LBA Greece, see Day 1984.
[31] Forsén, this volume; Lima, this volume.
[32] This was discussed in the previous section. It is still hard to explain exactly why pelvic fragments are almost totally absent in both Figs. 5-6.

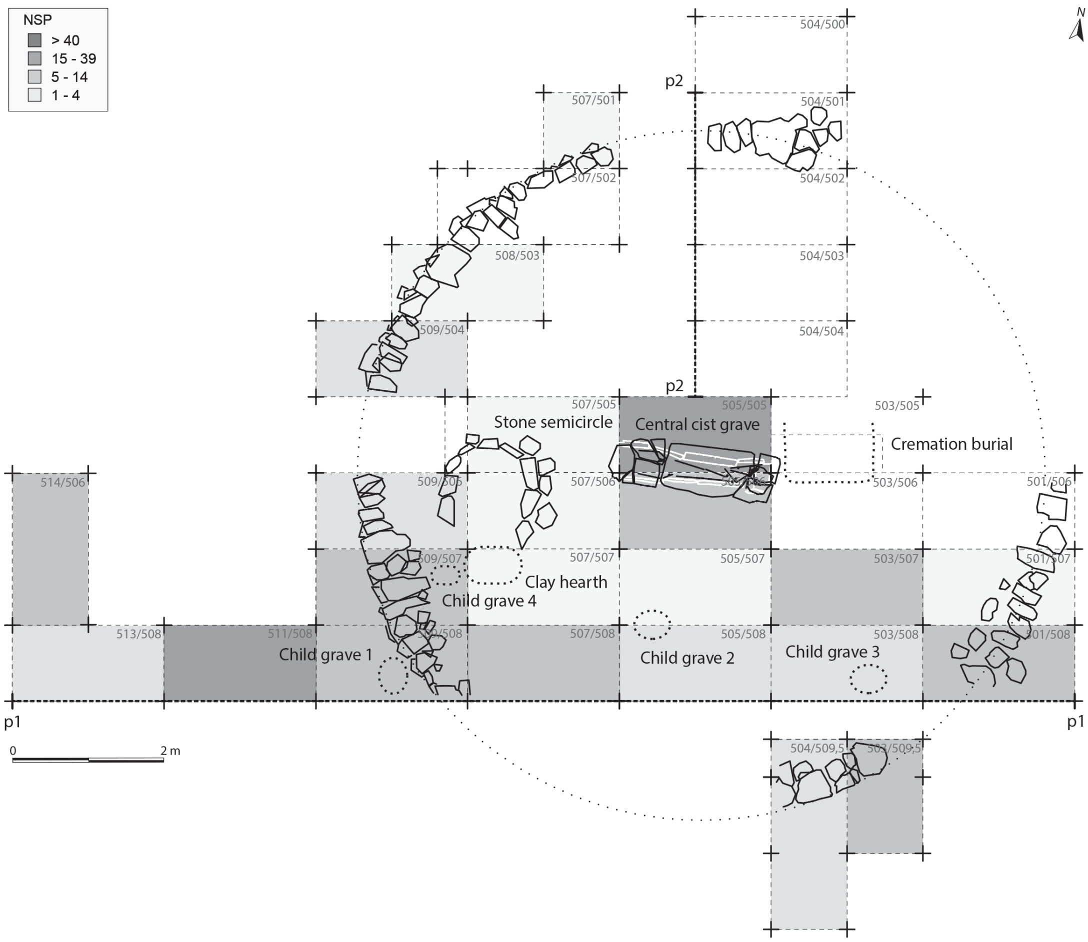

Fig. 8. Spatial distribution of animal bone fragments (NSP) in the uppermost cultural layer covering the tumulus in Area 2. The density is given as number of bones per square, i.e., per 2 m². However, square 507/508, Loc. 2 was excavated as a 4x1 m area encompassing also what later was called 509/508, and square 504/509.5 was partly also excavated as 504/510. The size of square 507/501 was as an exception 1 m², that of 503/509.5 1.5 m² and that of 504/509.5 2.5 m².

the archaeological interpretation that the late LBA to early EIA people periodically visited the site, rather than lived there permanently. It seems that most of the preparation and consumption took place in Area 2, close to the child graves and above the central cist grave inside the tumulus.

The long term zooarchaeological perspective

The animal bones from the EBA deposits at Goutsoura have been analyzed by Deckwirth.[33] She finds that the economy was foremost based on pigs and ovicaprids. Furthermore, she

[33] Deckwirth, this volume.

identifies several wild species, such as roe deer, red fox and hedgehog. The osteological analysis of the EBA animal bones is based on a larger assemblages of remains than in the present one. To facilitate comparison, only the EBA and the Late LBA to Early EIA assemblages will be considered here. Fig. 9 illustrates the distribution of cattle, ovicaprids and suid fragments over different periods of time.

Suids are never as common as during the EBA; however, their relative abundance seems not to decrease greatly (Fig. 9) from the EBA to the LBA, a phenomenon which is not unique for Goutsoura. A decrease of suids from the EBA to the LBA is visible in other sites in the Aegean area.[34] It has been explained by changed climatic conditions, which favoured bovid species, i.e. cattle and ovicaprids.[35] Other scholars suggest it might reflect a changed regional strategy which increased centralization and control over the economic base.[36] In the case of Goutsoura, it might however also reflect the function of the site. EBA Goutsoura has been interpreted as a permanent settlement, while the late LBA to early EIA layers at the site more likely represent seasonal or occasional visits. The decrease of pig might be explained by this change. The later revisits were connected to the burials on site. It is probable that meat animals were required for these purposes. Since there is a more or less even distribution of cattle, sheep/goat and pig during the time of these revisits (the late LBA to early EIA, see Fig. 9), it could be suggested that it was

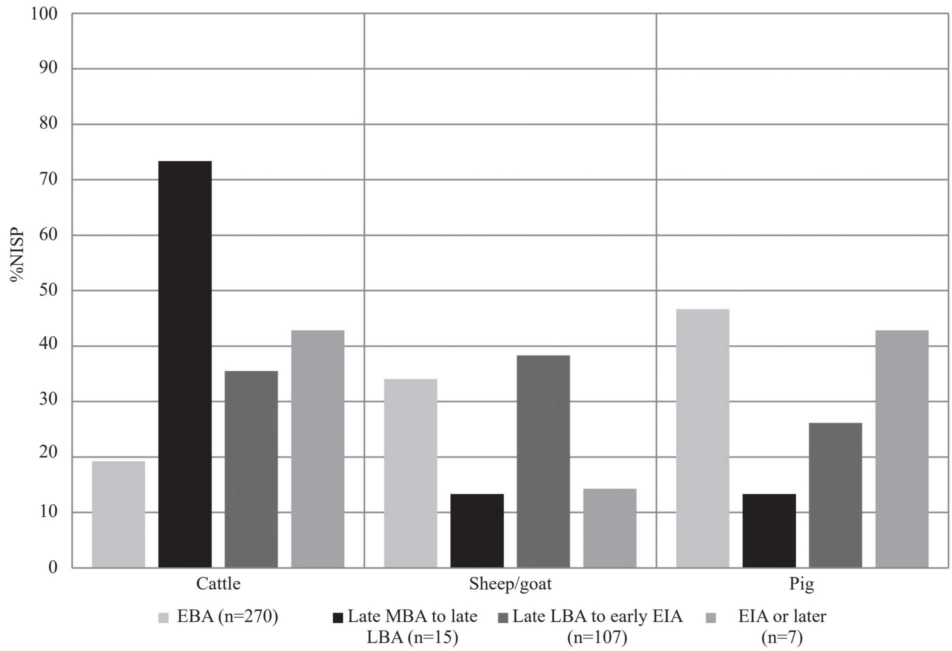

Fig. 9. Abundances of cattle, ovicaprids and suids during different historical periods at Goutsoura. The data for the EBA is taken from Deckwirth, this volume.

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[34] Examples of such sites are Tiryns (von den Driesch and Boessneck 1990) and Hala Sultan Tekke on Cyprus (Ekman 1977; Macheridis 2011).

[35] Ekman 1977, 169; Schwartz 1974, 271.

[36] Macheridis 2011.

not important which animal type was brought to the site. It might rather have been based on practical assessments, i.e. which animals were available.

During the usage phase of the graves in Area 3 (the late MBA to late LBA) and the later revisits of the site during the late LBA to early EIA, food consumption was part of the activities associated with the graves. Based on the small bone assemblage, it is perhaps premature to discuss this eating in terms of, for example, feasting.[37] Nevertheless, even on a small-scale, we should be able to regard eating as a social phenomenon. Food and drink consumption in funerary settings has been suggested as an active and social performance in LBA Greece.[38] It is reasonable that this also was the case at Goutsoura, and as such constituted an important part of the activities that took place during the later phase of the site.

Concluding summary

In this chapter the animal bone assemblages from the late MBA and later at the site of Goutsoura are presented. The remains come from three types of context: the late MBA to late LBA layers, the late LBA to early EIA layer, and finally the trench dated to the EIA or later. The smallest sub-assemblage from the EIA or later yielded too few fragments for a contextual discussion. Although also the other sub-assemblages are quite small, substantial information on the fauna, human activities and site function have been gathered.

The animal bones dated to between the late MBA and late LBA derive from activities roughly contemporary with the graves and stone circles in Area 3. Although not many, they constitute the better preserved part of the Goutsoura bone assemblage. In order of abundance, there have been identified cattle, sheep/goat, suids, dog, deer and tortoise. These bones, with the exception of the turtle remains, are most likely the traces of meals connected with the graves. It is interesting to note that dog seems to be amongst the food left-overs. This is presumably an example of dog consumption with ritual undertones. Hunting had also a role to play in these mortuary meals.

Food consumption in relation to the graves apparently continued during the late LBA to early EIA in Area 2, producing the most bone-rich sub-assemblage, where cattle and ovicaprids are the most common animals, followed by suids. Fragments of dog, human, and tortoise are also present, emphasizing some continuation in the choice of consumed species (with the exception of turtle). Deer however, or any other game animal, is absent in this later phase. The distribution of the bones seems to point to two or three foci within, or close to the tumulus, which would seem to be significant. It is probable that these foci represent the main places for consumption within the occasional revisits of the tumulus during the late LBA to the early EIA. Since the three most common domesticates occur in approximately the same proportions, it seems probable that no specific animal was preferred, and that meat availability was more important than the right taxa for the revisits.

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[37] For an ethnoarchaeological discussion of feasts in connection with funerals and death, see Hayden 2009. For an overview of Mycenaean feasts, see Wright 2004.

[38] Hamilakis 1998. He further suggests that eating in mortuary settings played an important role in remembering and forgetting, both connected with death. According to him, this was important in the negotiation and manifestation of power, especially in LBA Greece.

From being permanently settled during the EBA, Goutsoura changed to being a funerary site during the late MBA to late LBA, to being revisited occasionally during the late LBA to early EIA.[39] The animal bones studied here do not contradict this. The comparison with the EBA animal bone assemblage showed that pigs were more common during the earliest phase, while the taxonomic abundances are more even in the later periods. It also showed a more diverse set of fauna, with several wild species during the EBA, as opposed to a more restricted range of taxa in the later periods. This difference is probably related to the different use of the space and not necessarily to the different economic interests of the people in the area.

39 Deckwirth, this volume.

Appendix I. Distribution of animal bone fragments in the excavated late MBA to EIA strata of Goutsoura 2008-2010.

Area/Trench	Square	Locus	Pail	Excavation date	No	Weight (g)
1	492.5/509 Half	1	1	7.7.2009	1	9
1	493.5/508	1	2	13.7.2009	1	2
1	493.5/509	1	1	6.7.2009	1	26
1	495.5/509 Half	1	1	7.7.2009	5	15
1	495.5/510	1	1	3.7.2009	8	23
1	495.5/511	1	2	14.7.2009	1	1
1	495.5/512	1	1	13.7.2009	1	1
1	496.5/510 Half	1	1	10.7.2009	9	39
1	496.5/511	1		1.7.2009	1	3
1	497.5/511 Half	1	1	13.7.2009	3	21
2	501/507	2	2	16.6.2010	2	4
2	501/507	2	2	17.6.2010	1	1
2	501/508	2	1	15.6.2010	4	3
2	501/508	2	2	16.6.2010	7	5
2	501/508	2	3	17.6.2010	8	2
2	503/506	2	2	18.6.2010	7	10
2	503/507	2	1	15.6.2010	16	28
2	503/508	2	1	15.6.2010	4	79
2	503/508	2	3	17.6.2010	4	25
2	503/509.5	2	1	20.7.2009	1	2
2	503/509.5	2	2	21.7.2009	5	8
2	503/509.5	3	2	22.7.2009	4	2
2	503/509.5	4	1	22.7.2009	6	2
2	504/500-504	2	3	24.6.2010	4	7
2	504/509.5	2	2	13.7.2009	1	1
2	504/509.5	4	1	22.7.2009	6	7
2	504/510	2	1	10.7.2009	5	21
2	505/505	2	1	23.7.2009	43	300
2	505/506	2	1	17.7.2009	3	21
2	505/506	2	2	20.7.2009	22	24
2	505/507	1	1	17.7.2009	3	10
2	505/507	2	2	20.7.2009	1	2
2	505/508	2	2	10.7.2009	7	16
2	507/501	2	2	14.7.2009	1	62
2	507/505	2	1	15.7.2009	4	17
2	507/506	2	2	13.7.2009	3	16
2	507/506	2	1	7.7.2009	3	14
2	507/507	2	1	7.7.2009	2	57
2	507/508	2	1	1.7.2009	31	98
2	508/503	2	2	10.7.2009	1	10
2	509/504	2	1	8.7.2009	6	57
2	509/504	2	2	9.7.2009	9	21

Area/Trench	Square	Locus	Pail	Excavation date	No	Weight (g)
2	509/506	2	1	6.7.2009	8	34
2	509/507	2	1	2.7.2009	19	89
2	509/507	2	2	3.7.2009	1	4
2	511/508	2		2009	2	14
2	511/508	2	2	3.7.2009	37	240
2	511/508	2	3	6.7.2009	33	103
3	511/577	1	1	16.6.2010	5	14
2	513/508	2	1	1.7.2009	5	6
2	513/508	2	2	3.7.2009	1	6
2	513/508	2	2	8.7.2008	2	19
2	513/508	2	4	9.7.2009	2	15
2	514/506	2	3	8.7.2009	23	114
3	521/575	1	1	16.6.2010	2	28
3	521/575	1	2	17.6.2010	7	30
3	521/577	0	2	15.6.2010	1	1
3	521/577	3	1	21.6.2010	2	28
3	521/581	2e	2	23.6.2010	1	3
3	521/581	1	3	24.6.2010	10	72
3	521/583	0	3	21.6.2010	4	5
3	521/583	1	1	22.6.2010	1	83
3	521/583	1	2	25.6.2010	2	18
3	523/577	0	3	29.10.2010	1	7
3	523/577	8	3	30.6.2010	1	8
3	523/577	10	1	30.6.2010	2	2
3	523/581	2	1	25.6.2010	4	36
3	523/583	2	1	24.6.2010	1	6
3	525/577	2	3	30.6.2010	2	24
3	525/577 North side of locus	1		25.6.2010	2	23
3	525/579	0		23.6.2010	1	11
3	527/577	2	1	5.7.2010	3	12
3	527/579	2	2	6.7.2010	7	107
3	527/579	2	2	7.7.2010	1	34
3	532/577	8	1	29.10.2010	3	25
Large trial trench	E10	2	3	4.7.2008	3	15
Large trial trench	E10-11	3	1	10.7.2008	1	1
Large trial trench	E10-11	3	2	10.7.2008	1	1
Large trial trench	E10-11	3	3	11.7.2008	3	3
Large trial trench	E11-12	2	2	2.7.2008	1	1
Large trial trench	E12-13	4	1	14.7.2008	8	4
Large trial trench	E12-13	4	2	15.7.2008	13	33
Large trial trench	E14	2	3	10.7.2008	1	2
Large trial trench	G12-13	4	1	14.7.2008	1	1
Large trial trench	G12-13	4	4	15.7.2008	5	7
Large trial trench	G12-13	4	3	15.7.2008	1	7

Area/Trench	Square	Locus	Pail	Excavation date	No	Weight (g)
Large trial trench	G12-13	2	1	8.7.2008	1	1
Large trial trench	G14	4	1	14.7.2008	1	1
Large trial trench	G14	4	2	14.7.2008	1	1
Large trial trench	G9	3	2	10.7.2008	1	5
Large trial trench	G9	3	1	10.7.2008	2	5
Large trial trench	G9-11	4	4	11.7.2008	1	6
Large trial trench	G9-11	4	3	11.7.2008	4	15
Large trial trench	G9-11	3	5	14.7.2008	10	7
Large trial trench	G9-11	4	6	28.7.2008	5	2
Large trial trench	I12-13	2	2	22.7.2008	2	6
Large trial trench	I12-13	3	1	23.7.2008	1	8
Large trial trench	I12-13	2	4	24.7.2008	2	11
Large trial trench	I12-13	2	5	25.7.2008	12	8
Large trial trench	J7	4	1	21.7.2008	2	5
Large trial trench	J7	2	2	21.7.2008	3	31
Large trial trench	J8-9	2	1	16.7.2008	2	4
Large trial trench	J8-9	2	3	17.7.2008	6	21
Large trial trench	J8-9	3	1	18.7.2008	4	5
Large trial trench	J8-9	4	1	18.7.2008	3	8
Large trial trench	K6-7	2	1	23.7.2008	2	1
Large trial trench	K6-7	2	2	23.7.2008	3	6
Large trial trench	K6-7	2	3	24.7.2008	20	26
Large trial trench	K6-7	2	4	24.7.2008	2	6
E6-7		2	3	1.7.2008	1	3
E21-22		2	7	10.7.2008	1	12
H1-2		2	2	14.7.2008	1	7
H1-2		2	2	14.7.2008	5	9
H1-2		1	1	14.7.2008	1	2
F		2	1	15.7.2008	7	12
F		2	2	15.7.2008	2	4
H1-2		3	1	15.7.2008	8	15
E1-2		2	3	2.7.2008	2	10
H1-2		3	2	21.7.2008	19	173
H1-2		4	1	22.7.2008	1	10
H1-2		4	1	22.7.2008	1	32
H1-2		4	1	22.7.2008	7	11
E1-2		2	5	3.7.2008	6	3
E6-7		2	5	3.7.2008	3	3
					644	2863

Appendix II. Anatomical distributions of identified species, except tortoise of which only carapace fragments were identified.

General

	Cattle	Sheep/goat	Pig	Dog	Deer	Human
Horn	0	0	not appl	not appl	0	not appl
Cranium	0	0	1	1	0	1
Dentes	22	28	13	1	0	0
Mandibulae	7	5	2	2	0	0
Vertebrae	0	0	0	0	0	0
Costa	0	0	1	0	0	0
Scapula	0	0	1	1	0	0
humerus	1	2	5	1	0	2
Radius+Ulna	3	2	1	2	1	1
Carpalia	1	0	0	0	0	0
MC	4	2	0	0	0	1
Coxae	1	0	0	0	0	0
Femur	1	1	2	0	0	0
Tibia+Fi+Mall	0	4	2	1	0	0
Tarsalia	3	0	1	0	0	0
MT	2	0	1	0	0	0
MP indet	0	0	0	0	0	0
Phalanges indet	7	0	2	0	0	0
Total	52	44	32	9	1	5

Late LBA-early EIA

	Cattle	Sheep/goat	Pig	Dog	Human
Horn	0	0	not appl	not appl	not appl
Cranium	0	0	1	1	1
Dentes	22	28	13	1	0
Mandibulae	1	3	2	2	0
Vertebrae	0	0	0	0	0
Costa	0	0	1	0	0
Scapula	0	0	0	0	0
humerus	1	2	3	0	0
Radius+Ulna	2	2	1	0	0
Carpalia	0	0	0	0	0
MC	3	2	0	0	1
Coxae	0	0	0	0	0
Femur	0	1	2	0	0
Tibia+Fi+Mall	0	3	2	1	0
Tarsalia	2	0	1	0	0
MT	1	0	0	0	0
MP indet	0	0	0	0	0
Phalanges indet	6	0	2	0	0
Total	38	41	28	5	2

EIA (or later)

	Cattle	Sheep/goat	Pig
Horn	0	0	not appl
Cranium	0	0	0
Dentes	0	0	0
Mandibulae	0	1	0
Vertebrae	0	0	0
Costa	0	0	0
Scapula	0	0	0
humerus	0	0	2
Radius+Ulna	0	0	0
Carpalia	1	0	0
MC	1	0	0
Coxae	0	0	0
Femur	1	0	0
Tibia+Fi+Mall	0	0	0
Tarsalia	0	0	0
MT	0	0	1
MP indet	0	0	0
Phalanges indet	0	0	0
Total	3	1	3

Late MBA-late LBA

	Cattle	Sheep/goat	Suids	Dog	Deer	Human
Horn	0	0	not appl	not appl	0	not appl
Cranium	0	0	0	0	0	0
Dentes	6	1	0	0	0	0
Mandibulae	0	0	1	0	0	0
Vertebrae	0	0	0	0	0	0
Costa	0	0	0	0	0	0
Scapula	0	0	1	1	0	0
humerus	0	0	0	1	0	2
Radius+Ulna	1	0	0	2	1	1
Carpalia	0	0	0	0	0	0
MC	0	0	0	0	0	0
Coxae	1	0	0	0	0	0
Femur	0	0	0	0	0	0
Tibia+Fi+Mall	0	1	0	0	0	0
Tarsalia	1	0	0	0	0	0
MT	1	0	0	0	0	0
MP indet	0	0	0	0	0	0
Phalanges indet	1	0	0	0	0	0
Total	11	2	2	4	1	3

Appendix III. Measurements.

Area / Trench	Square	Locus	Pail	Excavation date	Species	Element	Part	Side	Measurements (mm)
2	503/506	2	2	18.6.2010	Pig (Sus scrofa domesticus)	Phalanx 2	complete		bd: 13.8, sd: 13.4, bp: 16.2, gl: 23
2	503/508	2	1	15.6.2010	Pig (Sus scrofa domesticus)	Mandibula + Dentes	ramus, corpus, M3	dex	L: 30.1, B: 14.6
2	503/508	2	3	17.6.2010	Pig (Sus scrofa domesticus)	Humerus	shaft	sin	sd: 13.3
2	505/505	2	1	23.7.2009	Cattle (Bos taurus)	Metacarpale III-IV, os	proximal part	sin	bp: 66.5
2	505/505	2	1	23.7.2009	Cattle (Bos taurus)	Phalanx 2	complete		bd: 26.1, sd. 23.4, bp: 29.9, gl: 33.5
2	505/506	2	2	20.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M1-	dex	ch: 15.5
2	507/501	2	2	14.7.2009	Cattle (Bos taurus)	Astragalus	complete	dex	bd: 40.7, dm: 36.1, glm: 57.7, dl: 36.2, gll: 64.7
2	507/506	2	2	13.7.2009	Dog (Canis familiaris)	Mandibula + Dentes	corpus	sin	M1, l: 21.8, b: 8.3
2	507/507	2	1	7.7.2009	Cattle (Bos taurus)	Phalanx 1	complete	post	bd: 26.9,sd: 23.4, bp: 28.2, glpe: 59.7
2	507/508	2	1	1.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M2-	sin	ch: 21.7
2	507/508	2	1	1.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M1-	sin	ch: 14
2	507/508	2	1	1.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M2-	dex	ch 12.4
3	509/504	2	1	8.7.2009	Cattle (Bos taurus)	Dens	M1-	dex	ch: 27.6
2	509/506	2	1	6.7.2009	Pig (Sus scrofa domesticus)	Dens	M2-	sin	L: 20.6, B: 12.5
2	509/507	2	2	3.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M2+	sin	ch: 22.8
2	511/508	2	2	3.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Dens	M2+	sin	ch: 14.7
2	511/508	2	2	3.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Mandibula + Dentes	corpus: M1-3	dex	ch. M3: 25.7 M2: 25.5
2	511/508	2	3	6.7.2009	Sheep/goat (Ovis aries/Capra hircus)	Femur	proximal: caput	dex	dc: 21
3	521/577	3	1	21.6.2010	Cattle (Bos taurus)	Dens	M2+	dex	ch: 30.7
3	521/581	1	3	24.6.2010	Dog (Canis familiaris)	Humerus	distal part	dex	bt: 25, sd: 16.6
3	521/581	1	3	24.6.2010	Dog (Canis familiaris)	Radius	shaft	dex	sd: 14.4
3	521/583	1	1	22.6.2010	Red deer/Fallow deer (Cervus elaphus/Dama dama)	Radius	complete	dex	sd: 27.6 bp: 35.9, bd: 43.5, gl: 200, pl: 196 ll: 188
3	525/577	2	3	30.6.2010	Cattle (Bos taurus)	Dens	M3+	dex	ch: 29.4
3	525/579	0		23.6.2010	Pig (Sus scrofa domesticus)	Humerus	distal shaft		sd: 12.9
3	527/579	2	2	7.7.2010	Cattle (Bos taurus)	Calcaneus	almost compl.	sin	gb: 45
3	532/577	8	1	29.6.2010	Cattle (Bos taurus)	Dens	M2-	sin	ch: 37.6
Large trial trench	E12-13	4	1	14.7.2008	Sheep/goat (Ovis aries/Capra hircus)	Dens	M2-	dex	ch: 32.2
E21-22	E21-22	2	7	10.7.2008	Cattle (Bos taurus)	Phalanx 1	almost compl.		bd: 25.3, sd: 19.7
H1-2	H1-2	3	2	21.7.2008	Pig (Sus scrofa domesticus)	Humerus	distal shaft	sin	sd: 15
H1-2	H1-2	3	2	21.7.2008	Cattle (Bos taurus)	Metacarpale III-IV, os	distal end		bd: 54.8
H1-2	H1-2	4	1	22.7.2008	Suid (Sus sp.)	Humerus	distal part	dex	bt: 29.9, bd: 37.9

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