TILMEN HÖYÜK. ZOOARCHAEOLOGICAL ANALYSIS OF A MIDDLE AND LATE BRONZE AGE URBAN CENTRE (EXCAVATION CAMPAIGNS 2003-2007)

Antonio Curci

1. INTRODUCTION [1]

The publication of this work, like any scientific investigation, is not a point of arrival but rather a step towards new ideas and interpretive perspectives. As argued elsewhere (Marchetti *et al.* 2017), archaeology is a systematic search for knowledge about ancient history through the study of materials correlated to the past. Fieldwork data are used, already while still in the field but mainly afterwards, to build interpretations of ancient social dynamics by applying repeated steps of standardised algorithms characterised by some degree of consistency.

Digging and recording in archaeology involves unearthing, observing and interpreting material remains. Within this process, which mixes subjectivity and objectivity, accuracy is measured in terms of the traceability of each step of the process and the abundance of the recorded evidence. Since the digging of archaeological remains is not repeatable, it is obviously crucial that the recording operations be as accurate as possible. Ultimately, however, the aim of archaeological research should be the creation, integration, discussion and dissemination of datasets from multidisciplinary field research.

2. THE ARCHAEOLOGY OF TILMEN HÖYÜK

Tilmen Höyük is located in south-eastern Turkey (37°1'48.49" N, 36°42'16.48" E), in the province of Gaziantep, district of Islahiye. The 5.5 hectare site lies in the Islahiye valley, which connects the lower Orontes valley to the southern foothills of the central Taurus range. The Islahiye valley, delimited to the west by the Amanus Range and to the east by the Kurt Dağları, is disseminated with basalt outcrops.

The first excavations in the area were conducted in 1883 by the German expedition at Zincirli Höyük (ancient Sam'al). However, systematic surveys in the valley were only first undertaken in 1955, when U. Bahadır Alkım of Istanbul University moved here coming from Karatepe. Bahadır Alkım started an archaeological research program also involving large-scale excavation, which continued until 1972. Tilmen Höyük, in particular, was excavated between 1959 and 1964 and between 1969 and 1972 (Duru 2003, 2013; see also Marchetti 2011c on the history of archaeological studies of the Islahiye valley and the excavation of Tilmen Höyük).

In 2003, a joint Turkish-Italian Mission headed by Nicolò Marchetti on behalf of the Department of Archaeology of the Alma Mater Studiorum – University of Bologna, in collaboration with Refik Duru of Istanbul University and Gaziantep Museum, started a new research project in Tilmen Höyük with the aim of extensively investigating the levels of the second millennium BC and understanding the site in its environmental and territorial context (Pl. I).

During the Bronze Age, the region was part of the Inner Syrian cultural area. Over time, it acquired a highly strategic significance in the connections between Upper Mesopotamian and Levantine lowlands on one side and the Anatolian highlands on the other. Settled since the Late Chalcolithic period, Tilmen Höyük flourished during the Middle Bronze II (ca. 18th-17th centuries BC), when it is probably to be identified with ancient Zalbar/Zalwar. Key evidence suggests that the site also hosted an Old Babylonian trading station, which was part of a network running from the Middle Euphrates to Cilicia, paralleling that of Ashur (Marchesi and Marchetti 2019). With its massively walled lower city and fortified acropolis with 'Cyclopean' walls of basalt blocks, Tilmen Höyük was one of the most monumental cities in the region at the time (Marchetti *et al.* 2020).

2.1 The Middle Bronze Age

The initial phases of the Middle Bronze Age (phase IA, ca. 2000-1900 BC) included buildings and ceramic horizons (Areas C, L and K-5), which are still fully embedded in the earlier local tradition. While indisputable architectural vestiges have been uncovered only on the acropolis, evidence of occupation and open-air production areas dating to this phase have been documented all around the site (Areas P, V and Z). In the Middle Bronze Age IB (ca.1900-1800 BC), a transformation in cultural relations occurred, involving the introduction of North Syrian ceramic typologies and a complete urban reorganisation whereby Tilmen evolved into a monumental urban centre. This evolution probably coincided with the increased political power of the site, which became the regional capital. The built area extended into what became the lower city, eventually encompassing an area of 5.5 hectares, and was now enclosed by two wall circuits with casemates.

Until the end of the Middle Bronze II – when an evident level of destruction bears witness to the town's conquest by the Hittite king Khattushili I, who in his annals claims he sacked and destroyed Zalbar, which is identified with Tilmen.

Acropolis: The royal palace (Area A) stood on the southern side of the acropolis. The building is not particularly large compared to other Old Syrian palaces, but it includes all the essential elements of this type of structure, such as a monumental entrance and a throne room with two entrances, while two large stairways led to the private apartments on the upper floor. Next to the palace was an imposing building (Area E) with a portico on its main facade, probably to be interpreted as an Anatolian-type temple dating to the 19th century BC.

Lower City: In the lower city, a monumental temple (Area M) with towers on its facade was accessible through a temenos divided into two courtyards, which possibly framed a processional route originating on the acropolis (Pl. II: 1). A splendid basalt stela carved in a late Old Syrian style was discovered in the *cella*. The stela probably depicts the storm god Addu (later Hadad), and it can therefore be assumed that the temple of Tilmen was dedicated to this deity (Pl. II: 2).

Fortifications: The city of the Middle Bronze Age II was divided into an acropolis and a lower city, both surrounded by their own circuit of casemate walls (Pl. III). The outer wall, which extended around the lower city for over 900 meters, opened about halfway along the eastern front into a monumental gateway comprising an avant-corps (Area K-6) and a main door (Area K-1) connected by walls. The other two entrances to the city, K-2 and K-3 in the North and West sections, respectively, were less monumental and can be rather described as narrow postern gates, not suitable for the passage of carts or pack animals (Orsi, forthcoming). The inner wall was completely independent from that of the lower city and ran at a higher elevation along the edge of the acropolis. Some tower-fortresses were integrated into both the internal and external defensive systems. The inner walls had at least four corner fortresses, two of which (Areas H and Q) have been entirely excavated. The tower-fortresses of Tilmen constituted a fundamental element in the city's defence. They were undoubtedly part of an organic and unitary project reflecting the complete codification of a defensive architectural tradition that became widespread in the Syro-Palestinian region since the beginning of the second millennium BC (Pl. IV).

Residences: The domestic architecture of Tilmen is characterised by foundations made of basalt blocks and mud-brick walls. Some houses also had a second story, as borne out by their stairwells. The larger residences differ from the ordinary houses in both complexity and size, but also in their finishing, e.g. in the use of large squared blocks (orthostats) in the entrances. Area G and Area K-5 are of particular interest for the study of domestic architecture. The former is located on the highest part of the acropolis, overlooking the large, paved square in front of the royal palace. Due to its layout and proximity to the main entrance to the acropolis, residence K-5 may have had a public function (Pl. V).

2.2 The Late Bronze Age I
In the Late Bronze I (about 1600-1400 BC), Tilmen Höyük lost its status as a capital and became a centre of secondary importance. The settled area was reduced and the acropolis did not house a royal palace anymore. However, this was not a period of complete decline,

as witnessed by the presence of imposing private buildings such as Residence C, a two-story building with an upper floor – whose existence is witnessed by the discovery of a stairwell that connected its public to its private areas. East of Residence C, several domestic buildings have been found, including Residence K-5. The settlement also encompassed small areas in the lower city (Areas M and P), on the slopes of the acropolis (Area H) and on the acropolis (Areas C, D, G, L and Q), where a destruction level was uncovered.

3. METHODS OF ZOOARCHAEOLOGICAL ANALYSIS

During the 2003-2007 excavation campaigns conducted at Tilmen Höyük by the University of Bologna, a total of 5122 animal bone remains were recovered from various areas of the site. Their conservation was rather variable and highly dependent on the depositional conditions of the individual areas. A good degree of conservation alternates with a high fragmentation index, while traces of taphonomic modification caused by external agents, such as the chemical action of the soil or the gnawing of carnivores and rodents, are also often observed (Pls. IX, XIV).

The percentage of animal bone remains with combustion traces is high; in many cases, even a sort of vitrification of the bone tissue is observed due to exposure to high temperatures (Pl. XXI). This condition is probably the result of major fires and brings to mind the city's destruction by the Hittite king Khattušili I at the end of the Middle Bronze Age.

The first operation carried out on the animal bone remains, after their cleaning and a first restoration to reconstruct the fragmented finds, was to identify each anatomical element and then the species it belongs to. These identifications were mainly based on the reference osteological collection of the ArcheoLaBio – Research Centre for Bioarchaeology at the University of Bologna, but well-known atlases of parallels or specific studies were also used (Boessneck 1969; Schmid 1972; Barone 1981; Wilkens 2002; De Grossi Mazzorin 2008). The remains that were not identifiable were sorted by the hypothetical size of the animal, based on the thickness of the diaphyses and other morphological characteristics, which, while not allowing accurate identification of the species, narrowed down the possible size range.

The next phase involved absolute quantification of the identified remains, which allowed us to understand in what percentage each species is attested and obtain evidence about the exploitation of animal resources in the context under examination. The calculation of both the number of remains (NR) and the minimum number of individuals (MNI) was carried out following the method proposed by S. Bökönyi (1970). Remains from different areas and assemblages were counted as belonging to distinct individuals. This counting method resulted in an overestimation of individuals, in particular for the less frequent species. However, even though the number of remains (NR) is probably a more reliable quantification parameter, it is certainly useful to compare the results of both calculation methods. In addition to quantification, an estimate of the meat yield can be used to hypothetically assess the economic significance of each species. Several studies

on the meat yield of domestic species exist; they either attempt to accurately estimate its entity (Flannery 1969; Vigne 1991; Maini 2012) or use more practical and down-to-earth criteria (Bökönyi 1992). Updating what Flannery originally proposed, Vigne suggested that about 30 kg of meat could be obtained from a sheep/goat, about 100 kg from a pig, and about 250 kg from an ox. Such estimates need to be adjusted to account for geographic and chronological peculiarities (Maini 2012).

Bökönyi, instead, uses the so-called 'caprovine unit'. In his system, the quantity of meat obtained from a pig is about one and a half that obtained from a sheep/goat, which, in its turn, is seven times less than the meat obtained from a cow. These values probably underestimate the amount of meat supplied by pigs and overestimate that from cattle, the latter being as a rule relatively small during the Bronze Age. Thus, a more reasonable hypothesis would be to raise to two the number of 'caprovine units' corresponding to a pig and lower to five that for the bovine (in sum, a sheep/goat counts for one, a pig for two, and a bovine for five caprovine units).

Determining the age-at-death of animals is essential to understand how animal resources were exploited, especially the domestic species, and more specifically, whether the focus was more on meat production or on secondary products such as milk, wool, or traction. This determination is based on the welding process of the long-bone epiphyses and the eruption and wear of the teeth. For domestic mammals, we calculated age-at-death based on the values proposed by Silver (1969), compared with those from Cornevin and Lesbre (1894), Bruni and Zimmerl (1951), and Barone (1981). For the estimation of age based on the eruption and wear of sheep/goat teeth, we followed Payne (1973). The resulting data led us to distinguish the following age groups: foetuses or newborns (F/N), very young (VY), young adults (YA), adults (A), senile (S), and indeterminate age but certainly not young (Ind.).

The distinction between the genera Ovis and Capra was based on the observations made by Cornevin and Lesbre (1891), Boessneck (1969), Zeder and Pilaar (2010). For pigs, as is known, the distinction between domestic pig (*Sus domesticus*) and wild boar (*Sus scrofa*) is only based on dimensional data; this methodological limit makes it impossible to make this distinction within an assemblage, except among large adults.

The identification of equids is complicated by the possibility of the co-occurrence of domestic forms of different sizes, such as horses and donkeys, and wild forms, such as the wild horse (although this would have been already unlikely in the Bronze Age) or the onager (Arbuckle and Öztan 2018). Although we believe that most of the equids found at Tilmen Höyük are domestic, recent developments in equine genetics suggest putting off the final verdict on this until further investigation (Bennet *et al*. 2017).

Problems of determination are evident for some wild species. Among cervids, in the Near and Middle East it is possible to find deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), and fallow deer. For this last species, it is generally agreed that the distributional ranges of the European fallow deer (*Dama dama* or *Dama dama dama*) and the larger Persian fallow deer (*Dama mesopotamica* or *Dama dama mesopotamica*) did not overlap. However, recent studies suggest that the two species (or subspecies according to some authors) may have shared the same range and even hybridised in south-eastern Turkey

(Werner *et al*. 2015). Some morphological features and, above all, differences in size allow many of the anatomical elements of these species to be distinguished. In our study of the Tilmen Höyük material, when the fragmentation of bones and antlers obscured these morphological features, we preferred to leave the determination uncertain and only assign them to the Cervidae family as a taxon. We used the same approach for the genus Gazella, for which in the Near and Middle East at least four different species occur: the Dorcas gazelle (*Gazella dorcas*), which was once widespread in North Africa and in the rocky deserts of the Middle East and presently occurs in southern Israel and Jordan, although its range does not seem to extend to their northernmost areas; the mountain gazelle (*Gazella gazella*), which currently prefers the foothills of the Arabian Peninsula and areas with a higher humidity than *G. dorcas*, but in the past seems to have been widespread in Syria and in the Aleppo region of Lebanon; the goitered gazelle (*Gazella subgutturosa*), which lived instead in flat, steppic and semiarid areas in Anatolia, Iran, Iraq, and part of Afghanistan up to Mongolia; finally, the sand gazelle (*Gazella marica*), once regarded as a subspecies of G. *subgutturosa*, actually a smaller species of goitered gazelle native to the Syrian and Arab deserts, which lives in sandy deserts, on limestone plateaus, basaltic lava expanses and slopes of sedimentary rock, and in coastal plains. For the osteometric data needed to discriminate between all these species, we followed von den Driesch (1976), whose abbreviations we also used. All measurements taken are listed in the Appendix, together with the estimation of height at the withers when it was possible to apply the available coefficients (the method is summarised in De Grossi Mazzorin 2008).

An accurate taphonomic analysis was conducted on the animal bone remains to assess all alterations and modifications to the finds, from the treatment of carcasses to post-depositional alterations. As far as slaughtering traces are concerned, they usually consist of cutting traces, which are lighter and less intrusive, and percussion traces, which are deeper and more evident. In general, it is possible to distinguish five different types of anthropogenic traces (Noe-Nygaard 1989): percussion, cutting, slashing, scraping, and sawing. The characteristics of the slaughtering striae (morphology, frequency and size) also depend on the tool utilised (lithic or metal) and its size (Pls. VI-VII). However, it should always be kept in mind that, aside from instances of intentional cutting of bones, the contact between the bone surface and the cutting tool is accidental, as the cutting action is generally aimed at severing tendons and cutting flesh masses; in fact, contact could undermine tool sharpness and should hence be avoided (Giacobini 1995).

4. THE FAUNAL ASSEMBLAGE OF TILMEN HÖYÜK

4.1 Area L

Area L is located in the northern part of the acropolis excavated in 2005. It consists of a rectangular structure with construction phases ranging from the Middle Bronze Age to the Late Bronze Age. A total of 427 animal bone remains were recovered from Area L (Table 1), 45% of which have been attributed to taxa, while it was impossible to determine 55%

of the remains. Most of the indeterminate remains consist of small diaphyseal splinters from which it was not even possible to recognise the original size of the animal.

Most finds belong to Middle Bronze Age levels, while fewer are those belonging to the transition phase to the LBA and to the LB I. Considering the data, for the Middle Bronze Age domestic taxa clearly prevail, accounting for about 77.4% of the identified remains. Among them, sheep/goats (*Ovis* vel *Capra*) are the most abundant, with about 45.1%, while cattle (*Bos taurus*) are about 21.8% and domestic pigs (*Sus domesticus*) are only 8.3%. The remains of equid and a donkey (*Equus asinus*), together with a dog remain(*Canis familiaris*) are counted among domestic mammals as well.

Wild species are very well represented, with a percentage reaching up to 21.1% of the identified remains. Among them, fallow deer (*Dama mesopotamica*) predominate with 12% of the total, followed by remains of deer (*Cervus elaphus*) with 8.3% (Pl. VIII), and a few of bear (*Ursus arctos*) (Pl. IX: 1) and gazelle (*Gazella* sp.). The remains of a tortoise complete the faunal assemblage of Area L.

In the minimum number of individuals (MNI), the relative abundance of domestic taxa is much lower than in the NR (Table 2). Again, a 2:1 ratio between domestic and wild species bears witness to the importance of hunting in this context. Sheep/goats are the most numerous, with 11 individuals (32.4% MNI): 1 very young individual less than 4-6 months old; 1 young between 6 and 12 months; 2 adults between 2 and 8 years; and 7 individuals of indeterminate age. Cattle are represented by 6 individuals (17.6% MNI): 2 young between 6 and 15 months; 1 young adult between 15 and 30 months; 2 adults between 30 months and 8 years and 1 adult individual of indeterminate age. Pigs are represented by 4 individuals (11.8% MNI): 1 young between 7 and 12 months; 1 adult between 2 and 4 years; and 2 individuals of indeterminate age.

As regards the estimated abundance of wild species, it must be remembered that species represented by fewer remains tend to be over-represented in terms of the minimum number of individuals. Deer is the most represented wild species (11.8% MNI), followed by fallow deer (8.8% MNI), bear and gazelle. For the wild individuals, there were insufficient data to calculate the age at death. They were usually adults, except for a young deer and two young adult fallow deer (Table 3).

Leaving aside the very few faunal remains referable to a transition unit from MB to LB (Table 2, middle), which refer to two sheep/goats (*Ovis vel Capra*) and a single remain of wild boar (*Sus scrofa*), the remains referable to the Late Bronze Age, although few in number, show a composition quite similar to that of the previous period (Table 2, right).

Domestic taxa sharply prevail, accounting for about 88.5% of the identified remains. Among them, cattle (*Bos taurus*) with about 49.2%, while sheep/goats (*Ovis vel Capra*) 29.5% and domestic pigs (*Sus domesticus*) only 4.9%. In addition, a remain of a donkey (*Equus asinus*) completes the set of domestic animals.

Wild species are represented only by the fallow deer (*Dama mesopotamica*) with 6.6% of the total, followed by remains of deer (*Cervus elaphus*) with only 4.9%.

In the minimum number of individuals (MNI), the relative abundance of domestic taxa is slightly lower (81.8%) (Table 2) than in the NR (Table 1). Cattle are the most numerous, with 4 individuals (36.4% MNI): 1 young adult between 15 and 30 months; 2 adults

	MB I	MB II	MB II	MB II			MB II-LB I			LB I	LB I			
Locus	F.522	F.516	F.606	F.612			F.506			F.521	L.527/ F.612			
Pottery bucket	161/1	1/1	8/1	12/1	Total MB		153/1	Total MB II-LB I		11/1	29/2	Total LB		Total
Sample n.	2004/ 39	2005/ 2	2005/ 8	2005/ 17			2004/ 7			2005/ 6	2005/ 26			
					NR	%		NR	%			NR	%	NR
Dog (*Canis familiaris*)				1	**1**	*0.8*					2	**2**	*3.3*	**3**
Equids (*Equus* sp.*)*				1	**1**	*0.8*								**1**
Donkey (*Equus asinus*)				1	**1**	*0.8*					1	**1**	*1.6*	**2**
Pig (*Sus domesticus*)		4	3	4	**11**	*8.3*				3		**3**	*4.9*	**14**
Sheep/Goat (*Ovis vel Capra*)	2	23	12	23	**60**	*45.1*	2	**2**	*66.7*	10	8	**18**	*29.5*	**80**
Cattle (*Bos taurus*)	1	8		20	**29**	*21.8*				15	15	**30**	*49.2*	**59**
Domestic mammals	**3**	**35**	**15**	**50**	**103**	*77.4*	**2**	**2**	*66.7*	**28**	**26**	**54**	*88.5*	**159**
Brown bear (*Ursus arctos*)		1	1		**2**	*1.5*								**2**
Wild boar (*Sus scrofa*)							1	**1**	*33.3*					**1**
Fallow deer (*Dama mesopotamica*)			4	12	**16**	*12.0*				4		**4**	*6.6*	**20**
Red deer (*Cervus elaphus*)	1	5	3	2	**11**	*8.3*					3	**3**	*4.9*	**14**
Gazelle (*Gazella* sp.)		1			**1**	*0.8*								**1**
Wild mammals	**1**	**7**	**8**	**14**	**30**	*21.1*	**1**	**1**	*33.3*	**4**	**3**	**7**	*11.5*	**38**
Tortoise	1				**1**									**1**
Tot. ident. Specimens	**5**	**42**	**23**	**64**	**134**		**3**	**3**		**32**	**29**	**61**		**198**
Large size Mammals														
vertebrae	1	8	1	3	**13**					1	7	**8**		**21**
ribs		5	1	5	**11**						11	**11**		**22**
varia		3		10	**13**					21		**21**		**34**
Small-Medium size Mammals														
vertebrae		4		7	**11**					3	3	**6**		**17**
ribs		2		5	**7**						3	**3**		**10**
varia		3			**3**					39	9	**48**		**51**
Unidentifiable		14	14	46	**74**									**74**
Tot. unident. Specimens	**1**	**39**	**16**	**76**	**132**					**64**	**33**	**97**		**229**
Tot.	**6**	**81**	**39**	**140**	**266**		**3**	**3**		**96**	**62**	**158**		**427**
Worked		3			**3**									**3**
Burnt	1	1			**2**									**2**
Butchered		4	1	2	**7**					2	1	**3**		**10**
Gnawed by carnivores		3		3	**6**						1	**1**		**7**

Table 1. Area L. Total number of determined and indeterminate remains.

	MB I	MB II	MB II	MB II			MB II-LB I			LB I	LB I				
Locus	F.522	F.516	F.606	F.612			F.506			F.521	L.527/ F.612				
Pottery bucket	161/1	1/1	8/1	12/1	**Total MB**		153/1	**Total MB II - LB I**		11/1	29/2	**Total LB**		**Total area L**	
Sample n.	2004/ 39	2005/ 2	2005/ 8	2005/ 17	**MNI**	**%**	2004/ 7	**MNI**	**%**	2005/ 6	2005/ 26	**MNI**	**%**	**MNI**	**%**
Dog (*Canis familiaris*)				1	**1**	*2.9*					1	**1**	*9.1*	**2**	*4.3*
Equids (*Equus* sp.*)*				1	**1**	*2.9*								**1**	*2.1*
Donkey (*Equus asinus*)				1	**1**	*2.9*					1	**1**	*9.1*	**2**	*4.3*
Pig (*Sus domesticus*)		1	1	2	**4**	*11.8*				1		**1**	*9.1*	**5**	*10.6*
Sheep/Goat (*Ovis vel Capra*)	1	4	3	3	**11**	*32.4*	1	**1**	*50.0*	1	1	**2**	*18.2*	**14**	*29.8*
Cattle (*Bos taurus*)	1	2		3	**6**	*17.6*				2	2	**4**	*36.4*	**10**	*21.3*
Domestic mammals	**2**	**7**	**4**	**11**	**24**	*70.6*	**1**	**1**	*50.0*	**4**	**3**	**9**	*81.8*	**34**	*61.7*
Brown bear (*Ursus arctos*)		1	1		**2**	*5.9*								**2**	*4.3*
Wild boar (*Sus scrofa*)							1	**1**	*50.0*					**1**	*2.1*
Fallow deer (*Dama mesopotamica*)			1	2	**3**	*8.8*					1	**1**	*9.1*	**4**	*8.5*
Red deer (*Cervus elaphus*)		2	1	1	**4**	*11.8*					1	**1**	*9.1*	**5**	*10.6*
Gazelle (*Gazella* sp.)		1			**1**	*2.9*								**1**	*2.1*
Wild mammals		**4**	**3**	**3**	**10**	*29.4*	1	**1**	*50.0*	**1**	**1**	**2**	*18.2*	**13**	*27.7*
Total Determined	**2**	**11**	**7**	**14**	**34**	*100*		**2**	*100*	**5**	**4**	**11**	*100*	**47**	*100*

Table 2. Area L. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
MB	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	Total
Dog (*Canis familiaris*)													2		2
Equids (*Equus* sp.*)*													1		1
Donkey (*Equus asinus*)									1						1
Pig (*Sus domesticus*)					1	25.0			1	25.0			2	50	4
Sheep/Goat (*Ovis vel Capra*)			1	9.1	1	9.1			2	18.2			7	63.3	11
Cattle (*Bos taurus*)					2	*33.3*	1	*16.7*	2	*33.3*			1	*16.7*	6
Brown bear (*Ursus arctos*)									1	50.0			1	50.0	2
Fallow deer (*Dama mesopotamica*)							2	*66.7*					1	33.3	3
Red deer (*Cervus elaphus*)							1	*20.0*					4	80.0	5
Gazelle (*Gazella* sp.)													1	100	1

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
LB	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	Total
Dog (*Canis familiaris*)													1	*100*	1
Donkey (*Equus asinus*)									1	*100*					1
Pig (*Sus domesticus*)													1	*100*	1
Sheep/Goat (*Ovis vel Capra*)							1	*50.0*	1	*50.0*					2
Cattle (*Bos taurus*)							1	*25.0*	2	*50.0*			1	*25.0*	4
Fallow deer (*Dama mesopotamica*)													1	*100*	1
Red deer (*Cervus elaphus*)													1	*100*	1

Table 3. Area L. Minimum number of individuals by age class.

		Dog	Pig	Equids	Donkey	Sheep/Goat	Cattle	Brown bear	Fallow deer	Red deer	Gazelle
Horn/Antler						1				6	
Skull			1			2	2				
Upper jaw						3		1			
Upper teeth						5	1	1			
Lower jaw		1	1			5	1		1	1	
Lower teeth						2	1		1	1	
Teeth fragm.			1	1							
Atlas			2				1				
Axis											
Scapula						3	2		1		
Humerus	prox.						1				
Humerus	shaft-complete		1			4	1				
Humerus	dist.		1			2			1		
Radius	prox.					1					
Radius	shaft-complete		1			4			1		
Radius	dist.					1			1		
Ulna							1		2		
Carpals							1				
Metacarpus	prox.								1		
Metacarpus	shaft-complete					2					
Metacarpus	dist.								1		
Pelvic girdle						6	4		1		
Sacrum											
Femur	prox.					1	1		1		
Femur	shaft-complete										
Femur	dist.		1				1		1		
Rotula						1					
Tibia	prox.								1	1	
Tibia	shaft-complete					2					
Tibia	dist.				1	2	1			1	
Tarsals							2				
Metatarsus	prox.					3			1		
Metatarsus	shaft-complete		1			1	2				
Metatarsus	dist.					2					
Metapodial unident.						2					
Calcaneus							2		1	1	
Astragalus			1			3					
I Phalanx						1	1				1
II Phalanx						1	3				
III Phalanx											
Total		**1**	**11**	**1**	**1**	**60**	**29**	**2**	**16**	**11**	**1**

Table 4A. Area L. Identified anatomical elements for mammals for the MBA.

		Dog	Donkey	Pig	Sheep/Goat	Cattle	Fallow deer	Red deer
Horn/Antler					1		1	1
Skull				3	1	1		
Upper jaw								
Upper teeth						1		
Lower jaw		1			1	2	1	1
Lower teeth						1		
Teeth fragm.								
Atlas								
Axis					1			
Scapula					2	4		
Humerus	prox.				1			
Humerus	shaft-complete							
Humerus	dist.				1	3		1
Radius	prox.							
Radius	shaft-complete					2		
Radius	dist.							
Ulna					1	2		
Carpals								
Metacarpus	prox.							
Metacarpus	shaft-complete				1	1	1	
Metacarpus	dist.					1		
Pelvic girdle		1			2	1		
Sacrum					1			
Femur	prox.							
Femur	shaft-complete					1		
Femur	dist.				1			
Rotula								
Tibia	prox.							
Tibia	shaft-complete				1	1		
Tibia	dist.		1			1		
Tarsals								
Metatarsus	prox.							
Metatarsus	shaft-complete					1		
Metatarsus	dist.							
Metapodial unident.								
Calcaneus					2	1		
Astragalus					1			
I Phalanx						2	1	
II Phalanx						2		
III Phalanx						2		
Total		**2**	**1**	**3**	**18**	**30**	**4**	**3**

Table 4B. Area L. Identified anatomical elements for mammals for the LBA.

between 30 months and 8 years and 1 adult individual of indeterminate age. Sheep/goats with 2 individuals (18.2%): 1 young adult between 1 and 2 years; 1 adult between 4 and 8 years. Pigs are represented only by 1 individual of indeterminate age (9.1% MNI).

As regards the estimated abundance of wild species, fallow deer and red deer are equally represented by one individual each of indeterminate age (Table 3).

4.2. Area G

Area G is located on the highest part of the acropolis, overlooking the large, paved square in front of the royal palace. In the Middle Bronze Age II, various buildings stood along the northern side of the square, all sealed by a depositional layer which yielded evidence of a major fire. Two alleys joined at an acute angle, delimiting three buildings, one rectangular and paved in stone and another with two large square rooms, the northernmost of which contained many ceramic vessels, including two storage jars.

The animal osteological assemblage from Area G considered in this study comes from the 2005 and 2007 excavation campaigns, which yielded a total of 780 remains from MB loci, while only 3 remains were found in a LB level (Table 5). The percentage of determined remains for this area (30%) is quite low due to a high degree of fragmentation (Pl. IX: 2). Domestic taxa clearly prevail, exceeding 89% of the total number of identified remains. Among them, cattle (*Bos taurus*) predominate with about 39.8% of the NR, while sheep/goats (*Ovis* vel *Capra*) account for 35.3% and domestic pigs (*Sus domesticus*) for only 8.5. Scarce remains of dogs (*Canis familiaris*), horse and donkey complete the range of domestic animals.

Among wild mammals, fallow deer (*Dama mesopotamica*) clearly predominate with 6% of the NR, followed by red deer (*Cervus elaphus*) with 4.5%. A metapodial of a marten (*Martes* sp.) and bird remains complete the faunal assemblage.

In the MNI estimate of this faunal complex, the relative abundance of domestic taxa changes slightly compared to that observed in the NR (Table 6). With 24 individuals (31.6% MNI), cattle are still prevalent: 5 young between 6 and 15 months; 10 young adults between 15 and 30 months; 6 adults between 30 months and 8 years; 1 senile individual over 8 years old; and 2 individuals of indeterminate age. Sheep/goats are witnessed by 22 individuals (28.9% MNI): 6 young between 6 and 12 months; 8 young adults between 1 and 2 years; 7 adults between 2 and 8 years; 1 individual of indeterminate age. It was possible to distinguish between goat and sheep only in a few cases, notably those of a proximal sheep metacarpus and a distal sheep metacarpus in Sample 53; a distal sheep tibia, a distal sheep metatarsus and a goat mandible in Sample 103; and a proximal sheep metacarpus in Sample 19. Pigs are attested by 9 individuals or about 11.8% of the MNI: 1 very young, under 4-6 months; 1 young between 7 and 12 months; 3 young adults between 1 and 2 years; 3 adults between 2 and 4 years; and 1 individual of indeterminate age. All remains of dogs refer to adults, except for one pertaining to a young individual under 5 months. Particularly relevant is the observation of slaughtering traces in correspondence of the masseteric fossa of at least two mandibles (Pls. X-XI). Among equids, a metapodium and an unfused phalanx I identified a young individual, and there were an adult horse and a donkey of indeterminate age.

	MB IB-IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIB	MB IIB	MB IIB	MB IIB	Total MB		LB I	Total	
Locus	F.938/L.940	F.1240	F.1950	L.1968	L.1969	L.1971	L.1969	F.1970	F.1900	F.1900	F.1900			F.1958		
Pottery bucket	265/6	200/1	253/1	266/1	269/1	271/1	267/1	268/1	202/1	204/1	204/2			261/1		
Sample n.	2005/38	2007/10	2007/53	2007/103	2007/106	2007/143	2007/154	2007/93	2007/13	2007/19	2007/23	NR	%	2007/79	NR	%
Dog (*Canis familiaris*)		1	1		2	2						6	3.0		6	2.9
Equids (*Equus* sp.)							1			2		3	1.5		3	1.5
Horse (*Equus caballus*)										1		1	0.5		1	0.5
Donkey (*Equus asinus*)									1			1	0.5		1	0.5
Pig (*Sus domesticus*)	1		1		5		5			3	2	17	8.5		17	8.3
Sheep/Goat (*Ovis vel Capra*)	3	8	6	19	4	4	8	4	2	7	6	71	35.3	1	72	35.3
Cattle (*Bos taurus*)		11	4	10	15	5	14	1	5	8	7	80	39.8	1	81	39.7
Domestic mammals	**4**	**20**	**12**	**29**	**26**	**11**	**28**	**5**	**8**	**21**	**15**	**179**	**89.1**	**2**	**181**	**88.7**
Marten (*Martes* sp.)											1	1	0.5		1	0.5
Fallow deer (*Dama mesopotamica*)				1	1		3	2	2	3		12	6.0	1	13	6.4
Red deer (*Cervus elaphus*)		1		4						2	2	9	4.5		9	4.4
Wild mammals	**1**	**1**		**5**	**1**		**3**	**2**	**2**	**5**	**3**	**22**	**10.9**	**1**	**23**	**11.3**
Bird			2							2		4			4	
Tot.	**4**	**21**	**14**	**34**	**27**	**11**	**31**	**7**	**10**	**28**	**18**	**205**		**3**	**208**	
Large size Mammals vertebrae	1		4	1	1		3		5			15			15	
ribs	2	1	1	10	2		9		14	3	11	53			53	
varia	2	7		6					6	10	8	39			39	
Small-Medium size Mammals vertebrae					1	4	3	7	1	1		17			17	
ribs				6	3	10	2	3		4	5	33			33	
varia		3		7			7	2		5		24			24	
Unidentifiable		63		45	13	15		32	98	84	44	394			394	
Tot. unident. Specimens	**5**	**74**	**5**	**75**	**20**	**29**	**24**	**44**	**124**	**107**	**68**	**575**			**575**	
Tot.	**9**	**95**	**19**	**109**	**47**	**40**	**55**	**51**	**134**	**135**	**86**	**780**		**3**	**783**	
Worked											1	1			1	
Burnt										1	2	3			3	
Butchered				1	2	3	1			1	3	11			11	
Gnawed by carnivores				1	4		1			2		8			8	
Shells						1		2				3			3	

Table 5. Area G. Total number of determined and indeterminate remains.

	MB IB -IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIB	MB IIB	MB IIB	MB IIB			LB I
Locus	F.938/ L.940	F.1240	F.1950	L.1968	L.1969	L.1971	L.1969	F.1900	F.1900	F.1900	F.1970			F.1958
Pottery bucket	265/6	200/1	253/1	266/1	269/1	271/1	267/1	202/1	204/1	204/2	268/1	**Total MB**		261/1
Sample n.	2005/ 38	2007/ 10	2007/ 53	2007/ 103	2007/ 106	2007/ 143	2007/ 154	2007/ 13	2007/ 19	2007/ 23	2007/ 93	MNI	%	2007/ 79
Dog (*Canis familiaris*)		1	1		1	1						**4**	*5.3*	
Equids (*Equus* sp.)							1		1			**2**	*2.6*	
Horse (*Equus caballus*)									1			**1**	*1.3*	
Donkey (*Equus asinus*)								1				**1**	*1.3*	
Pig (*Sus domesticus*)	1		1		3		1		2	1		**9**	*11.8*	
Sheep/Goat (*Ovis vel Capra*)	1	2	3	4	2	1	2	2	2	1	2	**22**	*28.9*	1
Cattle (*Bos taurus*)		2	2	2	3	3	3	3	3	2	1	**24**	*31.6*	1
Domestic mammals	**2**	**5**	**7**	**6**	**9**	**5**	**7**	**6**	**9**	**4**	**3**	**63**	**82.9**	**2**
Marten (*Martes* sp.)										1		**1**	*1.3*	
Fallow deer (*Dama mesopotamica*)				1	1		1	1	1		1	**6**	*7.9*	1
Red deer (*Cervus elaphus*)		1		3					1	1		**6**	*7.9*	
Wild mammals		**1**		**4**	**1**		**1**	**1**	**2**	**2**	**1**	**13**	**17.1**	**1**
Tot.	**2**	**6**	**7**	**10**	**10**	**5**	**8**	**7**	**11**	**6**	**4**	**76**	*100*	**3**

Table 6. Area G. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
MB	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	Total
Dog (*Canis familiaris*)					1	25.0			3	*75.0*					4
Equids (*Equus* sp.)					1	50.0							1	*50.0*	2
Horse (*Equus caballus*)									1	*100*					1
Donkey (*Equus asinus*)													1	*11.1*	1
Pig (*Sus domesticus*)			1	*11.1*	1	11.1	3	*33.3*	3	*33.3*			1	*11.1*	9
Sheep/Goat (*Ovis vel Capra*)					6	27.3	8	*36.4*	7	*31.8*			1	*4.5*	22
Cattle (*Bos taurus*)					5	20.8	10	*41.7*	6	*25.0*	1	*4.2*	2	*8.3*	24
Marten (*Martes* sp.)													1	*100*	1
Fallow deer (*Dama mesopotamica*)									5	*83.3*			1	*16.7*	6
Red deer (*Cervus elaphus*)			1	*16.7*			2	*33.3*	1	*16.7*			2	*33.3*	6

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
LB	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	Total
Sheep/Goat (*Ovis vel Capra*)							1	*100.0*							1
Cattle (*Bos taurus*)									1	*100*					1
Fallow deer (*Dama mesopotamica*)									1	*100*					1

Table 7. Area G. Minimum number of individuals by age class.

		Dog	Equids	Horse	Donkey	Pig	Sheep/Goat	Cattle	Marten	Fallow deer	Red deer
Horn/Antler							1	2		1	
Skull						2	5	1			
Upper jaw						3	8	3			2
Upper teeth							2	5			1
Lower jaw		3				1	8	8		1	1
Lower teeth		2	1				6	15			
Teeth fragm.							1				
Atlas						1	3				
Axis							1				1
Scapula							2	8			
Humerus	prox.						3	1			
Humerus	shaft-complete					3	2	2		1	1
Humerus	dist.					1	1	2		1	
Radius	prox.						2				
Radius	shaft-complete						2	1		1	1
Radius	dist.							1			
Ulna						1	1	2			
Carpals											
Metacarpus	prox.				1		1	3			
Metacarpus	shaft-complete						2	3			
Metacarpus	dist.							3			1
Pelvic girdle						1	4	2		1	
Sacrum											
Femur	prox.						2			1	
Femur	shaft-complete										1
Femur	dist.							6			
Rotula							1				
Tibia	prox.						1	1			
Tibia	shaft-complete					1	3				
Tibia	dist.					1	1			2	
Tarsals								1			
Metatarsus	prox.						1				
Metatarsus	shaft-complete	1					1			1	
Metatarsus	dist.						2	1			
Metapodial unident.			1				2		1		
Calcaneus							1	4		1	
Astragalus				1			1			1	
I Phalanx			1			2		3			
II Phalanx								1			
III Phalanx								1			
Total		**6**	**3**	**1**	**1**	**17**	**71**	**80**	**1**	**12**	**9**

Table 8. Area G. Identified anatomical elements for mammals.

	MB I	MB IB-IIA	LB I		
Locus	F.1279	F.1487	F.1282		
Pottery bucket	76/1	142/4	80/1		
Sample n.	2006/41	2006/111	2006/72	**Total**	*%*
Pig (*Sus domesticus*)			1	**1**	*11.1*
Sheep/Goat (*Ovis vel Capra*)			3	**3**	*33.3*
Cattle (*Bos taurus*)	2		3	**5**	*55.6*
Domestic mammals	**2**		**7**	**9**	*100*
Burnt			2	**2**	
Shell		1		**1**	

Table 9. Area G west. Total number of remains.

	MB I	LB I	
Locus	F.1279	F.1282	
Pottery bucket	76/1	80/1	
Sample n.	2006/41	2006/72	*%*
Pig (*Sus domesticus*)		1	*20.0*
Sheep/Goat (*Ovis vel Capra*)		2	*40.0*
Cattle (*Bos taurus*)	1	2	*40.0*
Domestic mammals	**1**	**5**	*100*

Table 10. Area G west. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
MB I	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	**Total**
Cattle (*Bos taurus*)					1	*100*									**1**

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
LB I	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	**Total**
Pig (*Sus domesticus*)													1	*100*	**1**
Sheep/Goat (*Ovis vel Capra*)							1	*50.0*	1	*50.0*					**2**
Cattle (*Bos taurus*)							2	*100*							**2**

Table 11. Area G west. Minimum number of individuals by age class.

		MB I	LB I		
		Cattle	Pig	Sheep/Goat	Cattle
Horn/Antler					
Skull			1		
Upper jaw					
Upper teeth					
Lower jaw		1		1	
Lower teeth					
Teeth fragm.					
Atlas					
Axis					
Scapula					
Humerus	prox.				
	shaft-complete				
	dist.			1	
Radius	prox.				
	shaft-complete				
	dist.				
Ulna					
Carpals					1
Metacarpus	prox.				
	shaft-complete				
	dist.				
Pelvic girdle					
Sacrum					
Femur	prox.				
	shaft-complete				
	dist.				
Rotula					
Tibia	prox.				
	shaft-complete				
	dist.				
Tarsals					
Metatarsus	prox.				
	shaft-complete	1			
	dist.				
Metapodial unident.					
Calcaneus				1	
Astragalus					
I Phalanx					
II Phalanx					2
III Phalanx					
Total		**2**	**1**	**3**	**3**

Table 12. Area G west. Identified anatomical elements for mammals.

As for wild species, fallow deer (8.9% MNI) is mostly represented by adults, one of which was over 3 years old, and two individuals of indeterminate age. Deer is represented by a very young individual, 2 young adult, 1 adult, and 2 individuals of indeterminate age.

4.3 Area G West

Only three samples excavated in Area G West during the 2006 season have yielded a few animal remains referable to levels of both the MB and both LB (Table 9). Only domestic mammals were present, including 5 remains of cattle, 3 of sheep/goat, and 1 of pig. A shell was found in Sample 111.

The calculation of the minimum number of individuals (Table 10) returned at least 3 cattle (50% MNI), including 1 young under 15 months and 2 young adults (one older than 2 years and the other about 2 years old); 2 sheep/goats, including a young adult under 2 years of age and an adult individual of about 8 years; 1 pig of indeterminate age (Table 11).

4.4. Area G East

The 2006 excavation campaign in Area G East (Table 13) produced eight samples, which yielded a total of 247 animal remains. Around 45% of this assemblage was not determinable to species and showed a clear prevalence of large animal bones.

The remains found in the samples referable to MB II are only 39 and only 29 have been identified to species. Only domestic mammals were identified, mainly cattle (*Bos taurus*) (60.7% of the NR) and a few sheep/goats (*Ovis vel Capra*) (28.6%), 2 pigs (*Sus domesticus*) (7.1%), and an indeterminate equid (*Equus* sp.) (3.6%). By calculating the MNI, however, the relative abundance between the different species is less marked (cattle 41.7%; sheep/goat 33.3%; pig 16.7% and equid 8.3%) (Table 14). No wild mammals have been found in the MB levels and only 1 tortoise remain testifies to collection activities.

The remains referable to the LB are certainly more numerous. As for the determined remains, about 86.6% was attributed to domestic animals, with a prevalence of cattle (44.6% NR), followed by sheep/goats (37.5%), and finally pigs (3.6%). There was only one remain of a dog (0.9% NR). Among the wild species, fallow deer (*Dama mesopotamica*) is the most abundant taxon (9.8% NR), while red deer (*Cervus elaphus*) is represented by 4 remains (3.6%). The faunal assemblage is completed by 2 remains of bird.

As regards the MNI (Table 14), Area G East returned 25 individuals from the LB levels. The great majority belonged to domestic species (80% MNI), with a substantial balance between cattle (32.0%) and sheep/goats (36%), followed by pigs (8%), and dogs (4%). The MNI for cattle was 8 – 2 young between 6 and 15 months; 4 young adults, of these, one was about 30 months old and one between 30 and 36 months; 2 adults between 36 months and 6 years. Sample 34 included a portion of a mandible with pathological modifications, probably the remodelling of bone tissues due to an inflammatory process (Pl. XII). There were at least 9 sheep/goats – 1 very young individual, under 4-6 months; 3 young adults between 1 and 2 years; 4 adults between 3 and 6 years; and 1 individual of indeterminate age. The minimum number for pigs was 2 individuals: 1 young individual under 6 months; 1 young adult between 1 and 2 years. Dogs are represented by one individual of indeterminate age.

	MB II	MB II	MB II	MB II			LB I	LB I	LB I		
Locus	F.1242	F.1240	F.1241	F.1239			F.1233	F.1233	F.1233		
Pottery bucket	26/1	24/1	25/1	23/1	**Total MB**		19/1	19/1	19/2	**Total LB**	
Sample n.	2006/96	2006/107	2006/108	2006/109	**NR**	*%*	2006/34	2006/74	2006/76	**NR**	*%*
Dog (*Canis familiaris*)							1			**1**	*0.9*
Equids (*Equus* sp.*)				1	**1**	*3.6*					
Pig (*Sus domesticus*)		1	1		**2**	*7.1*		2	2	**4**	*3.6*
Sheep/Goat (*Ovis vel Capra*)	2	1		5	**8**	*28.6*	7	17	18	**42**	*37.5*
Cattle (*Bos taurus*)		3	8	6	**17**	*60.7*	9	21	20	**50**	*44.6*
Domestic Mammals	**2**	**5**	**9**	**12**	**28**	**100**	**17**	**40**	**40**	**97**	**86.6**
Fallow deer (*Dama mesopotamica*)							2	6	3	**11**	*9.8*
Red deer (*Cervus elaphus*)							1	3		**4**	*3.6*
Wild Mammals							**3**	**9**	**3**	**15**	*13.4*
Birds								2		**2**	
Tortoise		1			**1**						
Tot.	**2**	**6**	**9**	**12**	**29**		**20**	**51**	**43**	**114**	
Large size Mammals											
vertebrae			1		**1**		15	13	2	**30**	
ribs	1	1		1	**3**		8	3	9	**20**	
varia			1	1	**2**		8	1		**9**	
Small-Medium size Mammals											
vertebrae							1	3	2	**6**	
ribs	1				**1**		1		2	**3**	
varia							1	3		**4**	
Unidentifiable			3		**3**		11	4	7	**22**	
Tot. unident. Specimens	**2**	**1**	**4**	**3**	**8**		**45**	**27**	**22**	**94**	
Tot.	**4**	**7**	**13**	**15**	**39**		**65**	**78**	**65**	**208**	
Pathologic							1			**1**	
Burnt									1	**1**	
Butchered				1	**1**		1	1	1	**3**	

Table 13. Area G east. Total number of determined and indeterminate remains.

	MB II	MB II	MB II	MB II			LB I	LB I	LB I		
Locus	F.1242	F.1240	F.1241	F.1239			F.1233	F.1233	F.1233		
Pottery bucket	26/1	24/1	25/1	23/1	**Total MB**		19/1	19/1	19/2	**Total LB**	
Sample n.	2006/96	2006/107	2006/108	2006/109	**MNI**	*%*	2006/74	2006/34	2006/76	**MNI**	*%*
Dog (*Canis familiaris*)								1		**1**	*4.0*
Equids (*Equus* sp.*)				1	**1**	*8.3*					
Pig (*Sus domesticus*)		1	1		**2**	*16.7*	1		1	**2**	*8.0*
Sheep/Goat (*Ovis vel Capra*)	1	1		2	**4**	*33.3*	3	1	5	**9**	*36.0*
Cattle (*Bos taurus*)		1	2	2	**5**	*41.7*	3	2	3	**8**	*32.0*
Domestic Mammals	**1**	**3**	**3**	**5**	**12**	*100*	**7**	**4**	**9**	**20**	**80.0**
Fallow deer (*Dama mesopotamica*)							1	1	1	**3**	*12.0*
Red deer (*Cervus elaphus*)							1	1		**2**	*8.0*
Wild Mammals							**2**	**2**	**1**	**5**	*20.0*
Tot.	**1**	**3**	**3**	**5**	**12**		**9**	**6**	**10**	**25**	*100*

Table 14. Area G east. Minimum number of individuals for mammals.

MB	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		Tot
	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	
Equids (*Equus* sp.)													1	*100*	**1**
Pig (*Sus domesticus*)							1	*50.0*					1	*50.0*	**2**
Sheep/Goat (*Ovis vel Capra*)					1	*25.0*	1	*25.0*	1	*25.0*			1	*25.0*	**4**
Cattle (*Bos taurus*)									2	*40.0*			3	*60.0*	**5**

LB	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		Tot
	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	
Dog (*Canis familiaris*)													1	*100*	**1**
Pig (*Sus domesticus*)					1	*50.0*	1	*50.0*							**2**
Sheep/Goat (*Ovis vel Capra*)			1	*11.1*			3	*33.3*	4	*44.4*			1	*11.1*	**9**
Cattle (*Bos taurus*)					2	*25.0*	4	*50.0*	2	*25.0*					**8**
Fallow deer (*Dama mesopotamica*)									3	*100*					**3**
Red deer (*Cervus elaphus*)									2	*100*					**2**

Table 15. Area G east. Minimum number of individuals by age class.

Few data are available about wild species, which are represented by 3 adult fallow deer of indeterminate age and 2 adult deer of indeterminate age.

4.5 Area K-5

Given its proximity to the main access to the acropolis, building K-5 may have had a public function as well as a residential one, the occupation of which extends from the MB to the LB. This large structure is only partially known due to the heavy erosion of the slope. It was arranged around three courtyards and included an upper floor and rooms dedicated to production activities, documented by two large basalt tanks, two bread ovens, numerous grinding stones, and three large, decorated ceramic water vats. Area K-5, excavated during the 2005 and 2007 campaigns, yielded a total of 443 remains (Table 17), 171 from MB and 272 from LB. Overall, just more than 40% was determined to species while the remaining indeterminable 60% circa mainly included bone fragments from large animals.

As for the materials referable to the MB, among the 74 remains determined domestic taxa clearly prevail, with 77.6% of the total. Sheep/goats (*Ovis* vel *Capra*) predominate (40.3% NR), followed by cattle (*Bos taurus*) (28.4%) and pigs (*Sus domesticus*) (9%). Among wild mammals, fallow deer (*Dama mesopotamica*) and red deer (*Cervus elaphus*) are equally attested, with 7 remains each (10.4% of the NR each), while hare (*Lepus* sp.) is represented by one remain. The faunal assemblage is completed by 4 remains of bird and 3 of fish.

The abundance of domestic taxa in the NR is slightly reduced in the MNI (Table 18). Sheep/goats is still predominant, with at least 10 individuals (31.3% of the MNI) – 2 young individuals between 6 and 12 months; 1 young adult between 1 and 2 years; 3 adults between 2 and 8 years; and 4 individuals of indeterminate age. Only in a few cases was it possible to distinguish between goat and sheep, that of a sheep metatarsus in

		Equids	Pig	Sheep/Goat	Cattle
Horn/Antler					
Skull					1
Upper jaw					
Upper teeth					
Lower jaw				2	
Lower teeth			1		1
Teeth fragm.					
Atlas					
Axis				1	
Scapula					1
Humerus	prox.				
	shaft-complete			2	4
	dist.				1
Radius	prox.			1	
	shaft-complete				1
	dist.				1
Ulna					
Carpals					
Metacarpus	prox.				
	shaft-complete				
	dist.			1	2
Pelvic girdle		1			1
Sacrum					
Femur	prox.		1		1
	shaft-complete				
	dist.			1	
Rotula					
Tibia	prox.				
	shaft-complete				
	dist.				1
Tarsals					
Metatarsus	prox.				1
	shaft-complete				1
	dist.				
Metapodial unident.					
Calcaneus					
Astragalus					
I Phalanx					
II Phalanx					
III Phalanx					
Total		**1**	**2**	**8**	**17**

Table 16A. Area G east. Identified anatomical elements for mammals for the MBA.

		Dog	Pig	Sheep/Goat	Cattle	Fallow deer	Red deer
Horn/Antler				1			
Skull			1	4	1		
Upper jaw			1	2	3		
Upper teeth		1			3		
Lower jaw				1	8	1	
Lower teeth							
Teeth fragm.							
Atlas			1				
Axis				3			
Scapula				3	2		
Humerus	prox.					1	
	shaft-complete						
	dist.			2	3		
Radius	prox.			1	1	1	
	shaft-complete			2		1	
	dist.			1	1	1	
Ulna					3		
Carpals					1		
Metacarpus	prox.			2	1	1	
	shaft-complete				2		
	dist.				1		1
Pelvic girdle				7	3		
Sacrum							
Femur	prox.			1			
	shaft-complete			1		1	1
	dist.			2	1		
Rotula							
Tibia	prox.				1		
	shaft-complete			1			
	dist.			1			1
Tarsals					1		
Metatarsus	prox.			1			
	shaft-complete			1	1		
	dist.				1		
Metapodial unident.							
Calcaneus				2	1	1	
Astragalus				1		2	
I Phalanx				2	6	1	
II Phalanx					4		
III Phalanx					2		1
Total		**1**	**4**	**42**	**50**	**11**	**4**

Table 16B. Area G east. Identified anatomical elements for mammals for the LBA.

Sample 86 and a goat humerus in Sample 63.

Cattle are represented by 8 individuals (25% MNI): 2 young adults between 15 and 30 months; 3 adults between 36 months and 8 years; and 3 individuals of indeterminate age. Pigs are represented by 4 individuals (12.5% MNI): 1 very young one, under 4-6 months; 1 young; 1 young adult and 1 individual of indeterminate age.

As for wild species, fallow deer is represented by at least 5 individuals (15.6% MNI): 2 young individuals; 1 young-adult; 1 adult; and 1 individual of indeterminate age. Deer is represented by 4 individuals (12.5% MNI): 1 young adult; 2 adults; and 1 individual of indeterminate age.

Domestic taxa prevail with 89.1% of the total also in the LB levels (Table 17). Sheep/goats (*Ovis* vel *Capra*) predominate (51.8% NR), followed by cattle (*Bos taurus*) (30%) and pigs (*Sus domesticus*) (6.4%). A single remain of dog (*Canis familiaris*) completes the range of domestic species. Among wild mammals, fallow deer (*Dama mesopotamica*) and red deer (*Cervus elaphus*) are equally attested with 5 remains each (4.5% of the NR each), while gazelle and wild boar are represented by one remain each.

As for the MB, also for the LB the most numerous species in NR show a reduction in their representation after calculation of the MNI (Table 18). Sheep/goats are still predominant with at least 11 individuals (36.7% of the MNI) – 2 young individuals between 6 and 12 months; 2 young adults between 1 and 2 years; 7 adults between 2 and 8 years. Only in the case of a sheep mandible and a tibia in Sample 68 was it possible to distinguish between goat and sheep. Cattle are represented by 7 individuals (23.3% MNI): 1 young between 6 and 15 months; 1 young adult between 15 and 30 months; 3 adults between 36 months and 8 years; and 2 individuals of indeterminate age. Pigs are represented by 4 individuals (13.3% MNI): 1 very young one, under 4-6 months; 1 young; 1 young adult; 1 adult between 2 and 4 years. One jaw from Sample 68 was attributed to a female. One dog remain belongs to an individual of indeterminate age, probably adult (Table 19).

As for wild species, fallow deer is represented by at least 2 individuals of indeterminate age (6.7% MNI). Deer is represented by 3 individuals (10% MNI): 1 adult and 2 individuals of indeterminate age. The faunal assemblage also includes one gazelle, attested by a horn core with working traces from Sample 87 (Pl. XIII). An adult individual of wild boar was also present.

4.6 Area K-5 West

Area K-5 West was excavated in 2006, yielding a total of 52 animal remains (Table 21), all belonging to the MB. Such a small number, unfortunately, does not allow for accurate statistical evaluation. The percentage of determined remains is relatively high (more than 52%) due to better conservation of the bones. In the absolute count of remains, domestic taxa clearly prevail (81.5% of the NR). Among them, cattle (*Bos taurus*) predominate (44.4% of the NR), followed by sheep/goats (*Ovis* vel *Capra*) (29.6%), and pigs (*Sus domesticus*) (3.7%). Equids, probably domestic horses (*Equus caballus*) are also attested (3.7%). Among wild mammals, deer (*Cervus elaphus*) is attested by a distal humerus and a distal metacarpus (7.4%), while a calcaneus fragment belongs to an undetermined cervid and a proximal radius to a fallow deer (*Dama mesopotamica*). The femur of a weasel (cfr. *Mustela nivalis*) was also found.

Locus	MB	MB I	MB I-II	MB IIB	MB II	MB II	MB II	MB II	MB II	Total MB NR	Total MB %	LB I	LB I	LB I	LB I	LB I	Total LB NR	Total LB %
Pottery bucket / Sample n.	F.1876 141/1 2007/88	F.1704 5/1 2007/63	L.1805 108/1 2007/17	F.876 175/1 2005/66	F.881 179/1 2005/70	F.1884 147/1 2007/84	F.893 188/2 2005/86	F.1856 136/1 2007/90	L.1832 145/1 2007/91			F.1804 107/1 2007/4	F.793 160/3 2005/27	F.1828 118/1 2007/57	F.1843 127/1 2007/68	F.1843 133/1 2007/87		
Dog (*Canis familiaris*)															1		1	0.9
Pig (*Sus domesticus*)		4			1				1	6	9.0		3	2	2		7	6.4
Sheep/Goat (*Ovis vel Capra*)		4	2	7	2	2	9	1		27	40.3	11	30	6	9	1	57	51.8
Cattle (*Bos taurus*)	1	3		5	1	3	2	2	2	19	28.4	9	8	5	9	2	33	30.0
Domestic Mammals	1	11	2	12	4	5	11	3	3	52	77.6	20	41	13	21	3	98	89.1
Hare (*Lepus* sp.)		1								1	1.5							
Wild boar (*Sus scrofa*)														1			1	0.9
Fallow deer (*Dama mesopotamica*)		1		4		1			1	7	10.4	5					5	4.5
Red deer (*Cervus elaphus*)		3		3				1		7	10.4	1	3	1			5	4.5
Gazelle (*Gazella* sp.)																1	1	0.9
Wild Mammals		5		7		1		1	1	15	22.4	6	3	2		1	12	10.9
Bird		2					2			4								
Fish				1			2			3								
Tot.	1	18	2	20	4	6	15	4	4	74	100	26	44	15	21	4	110	100
Large size Mammals																		
vertebrae	1	1		15			1			18		1	1	2	6	5	15	
ribs		1		9	1					11		6	10	1	1		18	
varia	1	1						4		6		9	10			3	22	
Small-Medium size Mammals																		
vertebrae		1	1	1		2	6			11			8	1	2		11	
ribs		1		2						3		6	6				12	
varia		5								5		2	2			1	5	
Unidentifiable			1	20	7		10	5		43		49	11			19	79	
Tot. unident. Specimens	2	10	2	47	8	2	17	9		97	56.7	73	48	4	9	28	162	
Tot.	3	28	4	67	12	8	32	13	4	171		99	92	19	30	32	272	
Worked												1				1	2	
Burnt				1					2	3		4	10		1		15	
Butchered		1				6	1			8		1	3	5	1	4	14	
Gnawed by carnivores												1				1	2	

Table 17. Area K-5. Total number of determined and indeterminate remains.

	MB	MB I	MB I-II	MB IIB	MB II	MB II	MB II	MB II	MB II	Total MB		LB I	LB I	LB I	LB I	LB I	Total LB	
Locus	F.1876	F.1704	L.1805	F.876	F.881	F.1884	F.893	F.1856	L.1832			F.1804	F.793	F.1828	F.1843	F.1843		
Pottery bucket	141/1	5/1	108/1	175/1	179/1	147/1	188/2	136/1	145/1	MNI	%	107/1	160/3	118/1	127/1	133/1	MNI	%
Sample n.	2007/88	2007/63	2007/17	2005/66	2005/70	2007/84	2005/86	2007/90	2007/91			2007/4	2005/27	2007/57	2007/68	2007/87		
Dog (*Canis familiaris*)															1		1	3.3
Pig (*Sus domesticus*)		2					2			4	13		2	1	1		4	13.3
Sheep/Goat (*Ovis vel Capra*)		1	1	2	2	1		1	1	10	31.3	2	3	2	3	1	11	36.7
Cattle (*Bos taurus*)	1	1		1	1	1	1	1	1	8	25.0	1	1	2	2	1	7	23.3
Domestic Mammals	**1**	**4**	**1**	**3**	**3**	**2**	**3**	**2**	**2**	**22**	**68.8**	**3**	**6**	**5**	**7**	**2**	**23**	**76.7**
Hare (*Lepus* sp.)		1								1	3.1							
Wild boar (*Sus scrofa*)														1			1	3.3
Fallow deer (*Dama mesopotamica*)		1		2	1	1				5	15.6	2					2	6.7
Red deer (*Cervus elaphus*)				2				1	1	4	12.5	1	1	1			3	10.0
Gazelle (*Gazella* sp.)																1	1	3.3
Wild Mammals		**2**		**4**	**1**	**1**		**1**	**1**	**10**	**31.3**	**3**	**1**	**2**		**1**	**7**	**23.3**
Tot.	**1**	**6**	**1**	**7**	**4**	**3**	**3**	**3**	**3**	**32**	**100**	**6**	**7**	**7**	**7**	**3**	**30**	**100**

Table 18. Area K-5. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
MB	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	**Total**
Pig (*Sus domesticus*)			1	*25.0*	1	*25.0*	1	*25.0*					1	*25.0*	**4**
Sheep/Goat (*Ovis vel Capra*)					2	*20.0*	1	*10.0*	3	*30.0*			4	*40.0*	**10**
Cattle (*Bos taurus*)							2	*25.0*	3	*37.5*			3	*37.5*	**8**
Hare (*Lepus* sp.)													1	*100*	**1**
Fallow deer (*Dama mesopotamica*)					2	*50.0*	1	*25.0*	1	*25.0*					**4**
Red deer (*Cervus elaphus*)							1	*25.0*	2	*50.0*			1	*25.0*	**4**
	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
LB	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	**Total**
Dog (*Canis familiaris*)													1	*100*	**1**
Pig (*Sus domesticus*)			1	*25.0*	1	*25.0*	1	*25.0*	1	*25.0*					**4**
Sheep/Goat (*Ovis vel Capra*)					2	*18.2*	2	*18.2*	7	*63.6*					**11**
Cattle (*Bos taurus*)					1	*14.3*	1	*14.3*	3	*42.9*			2	*28.6*	**7**
Wild boar (*Sus scrofa*)									1	*100*					**1**
Fallow deer (*Dama mesopotamica*)													2	*100*	**2**
Red deer (*Cervus elaphus*)									1	*33.3*			2	*66.7*	**3**
Gazelle (*Gazella* sp.)													1	*100*	**1**

Table 19. Area K-5. Minimum number of individuals by age class.

The minimum number of individuals confirms the prevalence of domestic taxa (77.8% MNI) (Table 22). Cattle are represented by at least 7 individuals (38.9% MNI): 1 young adult between 2 and 3 years attested by a lower molar and an unfused heel; 2 adults of over 3 and a half years; and 4 individuals of indeterminate age (Table 23). Sheep/goats are represented by 5 individuals (27.8% MNI): 1 young individual less than 1 year; 3 adults between 3 and 4 years; and an individual of indeterminate age. Pig is represented by one very young individual, and horse by one adult.

Wild species amount to just over 22% (MNI), including a single individual of weasel, fallow deer, red deer and an undetermined cervid.

4.7 Area E

Next to the Royal Palace (Area A) there is an imposing building (Area E) with a portico on its main façade. Based on planimetric and urbanistic considerations, it may have been an Anatolian-type temple. In the Levant, in the first half of the second millennium BC, the main city temples were always located next to the royal palace in a close topographic and ideological association. The state of conservation of this building is exceptional, the walls being preserved for a height of over six meters. However, their characteristic building technique employing large beams inserted horizontally at regular distances in the stone masonry made the excavation quite dangerous. It was, therefore, possible to reach the original ground floor only in one of the two stairwells. Radiocarbon dating of the charred

	Pig	Sheep/Goat	Cattle	Hare	Fallow deer	Red deer
Horn/Antler						
Skull	1	2				
Upper jaw	1	2			1	
Upper teeth						
Lower jaw	2		2			
Lower teeth	1		2			
Teeth fragm.			1			
Atlas		2				
Axis		2				
Scapula		1	1			1
Humerus prox.						
Humerus shaft-complete		2	1			
Humerus dist.		3	1	1		1
Radius prox.		1	1			
Radius shaft-complete		1				
Radius dist.		1	1			
Ulna						
Carpals						
Metacarpus prox.			1		2	
Metacarpus shaft-complete		2				
Metacarpus dist.						
Pelvic girdle		2				
Sacrum	1					
Femur prox.		1				2
Femur shaft-complete		2				
Femur dist.						1
Rotula						
Tibia prox.						
Tibia shaft-complete						
Tibia dist.			2		1	
Tarsals						
Metatarsus prox.		1				
Metatarsus shaft-complete		1			1	
Metatarsus dist.						
Metapodial unident.			1		1	
Calcaneus			2		1	
Astragalus		1	2			1
I Phalanx			1			1
II Phalanx						
III Phalanx						
Total	**6**	**27**	**19**	**1**	**7**	**7**

Table 20A. Area K-5. Identified anatomical elements for mammals for the MBA.

		Dog	Pig	Sheep/Goat	Cattle	Wild Boar	Fallow deer	Red deer	Gazelle
Horn/Antler					1				1
Skull			1	2	1				
Upper jaw				1					
Upper teeth				1	1				
Lower jaw				4	4				
Lower teeth		1							
Teeth fragm.									
Atlas									
Axis				3					
Scapula				10	2			1	
Humerus	prox.								
Humerus	shaft-complete		1	5	2				
Humerus	dist.			3	3				
Radius	prox.			2				2	
Radius	shaft-complete			2					
Radius	dist.		1	1					
Ulna			1	1	1	1			
Carpals					1				
Metacarpus	prox.			1					
Metacarpus	shaft-complete			3			1		
Metacarpus	dist.				1				
Pelvic girdle			1	2	3				
Sacrum									
Femur	prox.			3	1				
Femur	shaft-complete		1	2			1		
Femur	dist.		1	3					
Rotula									
Tibia	prox.								
Tibia	shaft-complete			4	1				
Tibia	dist.			1					
Tarsals							1	1	
Metatarsus	prox.								
Metatarsus	shaft-complete			1	1				
Metatarsus	dist.			1	2			1	
Metapodial unident.				1	2				
Calcaneus					1		1		
Astragalus							1		
I Phalanx					2				
II Phalanx									
III Phalanx					3				
Total		**1**	**7**	**57**	**33**	**1**	**5**	**5**	**1**

Table 20B. Area K-5. Identified anatomical elements for mammals for the LBA.

	MB IB-IIA	MB IB-IIA	MB II	MB II	MB II	MB II		
Locus	F.1493	F.1487	L.1377	F.1484/F.793	F.1484	F.793		
Pottery bucket	134/6	142/4	111/1	127/XX	128/1	143/2		
Sample n.	2006/84	2006/110	2006/25	2006/52	2006/75	2006/98	**NR**	*%*
Horse (*Equus caballus*)			1				**1**	*3.7*
Pig (*Sus domesticus*)						1	**1**	*3.7*
Sheep/Goat (*Ovis vel Capra*)	3		4			1	**8**	*29.6*
Cattle (*Bos taurus*)			6	3	1	2	**12**	*44.4*
Domestic Mammals	**3**		**11**	**3**	**1**	**4**	**22**	*81.5*
Weasel (cfr. *Mustela nivalis*)			1				**1**	*3.7*
Fallow deer (*Dama mesopotamica*)			1				**1**	*3.7*
Cervidae		1					**1**	*3.7*
Red deer (*Cervus elaphus*)			2				**2**	*7.4*
Wild Mammals		**1**	**4**				**5**	*18.5*
Tot.	**3**	**1**	**15**	**3**	**1**	**4**	**27**	
Large size Mammals								
vertebrae			1				**1**	
ribs			1			2	**3**	
varia	2		2			1	**5**	
Small-Medium size Mammals								
vertebrae			1			1	**2**	
ribs			5			1	**6**	
varia			3				**3**	
Unidentifiable			5				**5**	
Tot. unident. Specimens	**2**		**18**			**5**	**25**	
Tot.	**5**	**1**	**33**	**3**	**1**	**9**	**52**	
Butchered			1				**1**	

Table 21. Area K-5 west. Total number of determined and indeterminate remains.

beams confirmed that the structure was built in the 19th century BC. The site must have been destroyed in the second half of the 17th century BC.

Unfortunately, the 2007 campaign in Area E yielded a total of only 38 animal bone fragments (Table 25), all belonging to the MB II. As much as 66% of the remains were found to be determinable to species or family, quite an exceptional percentage in archaeological contexts, which could be explained by the type of deposit and/or preventive sampling carried out during the excavation.

The small number of remains could introduce a bias in their statistical analysis. In any case, domestic species are still preponderant (83.3% NR), with a great majority of sheep/goats (*Ovis* vel *Capra*) (66.7%) and fewer cattle (*Bos taurus*) (16.7%). Wild species include gazelle and wild boar represented by one remain each, and 2 remains of an unidentified cervid.

Turning to the minimum number of individuals (Table 26), sheep/goat amount to at least 6 individuals (54,5% MNI): 2 very young ones; a young about 1 year old; a young adult; 2 adults, one of which definitely over 3 years old. Cattle comprise two adult individuals (18.2% MNI), while a wild boar, a cervid and a gazelle are represented by a single individual of undetermined age (Table 27).

	MB IB-IIA	MB IB-IIA	MB II	MB II	MB II	MB II		
Locus	F.1493	F.1487	L.1377	F.1484/F.793	F.1484	F.793		
Pottery bucket	134/6	142/4	111/1	127/XX	128/1	143/2		
Sample n.	2006/84	2006/110	2006/25	2006/52	2006/75	2006/98	**MNI**	**%**
Horse (*Equus caballus*)			1				1	*5.6*
Pig (*Sus domesticus*)						1	1	*5.6*
Sheep/Goat (*Ovis vel Capra*)	1		3			1	5	*27.8*
Cattle (*Bos taurus*)			3	2	1	1	7	*38.9*
Domestic Mammals	**1**		**7**	**2**	**1**	**3**	**14**	*77.8*
Weasel (cfr. *Mustela nivalis*)			1				1	*5.6*
Cervidae		1					1	*5.6*
Fallow deer (*Dama mesopotamica*)			1				1	*5.6*
Red deer (*Cervus elaphus*)			1				1	*5.6*
Wild Mammals		**1**	**3**				**4**	*22.2*
Tot.	**1**	**1**	**10**	**2**	**1**	**3**	**18**	*100*

Table 22. Area K-5 west. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
Total MB	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	**Total**
Horse (*Equus caballus*)									1	*100*					1
Pig (*Sus domesticus*)			1	*100*											1
Sheep/Goat (*Ovis vel Capra*)					1	*20*			3	*60*			1	*20*	5
Cattle (*Bos taurus*)							1	*14.3*	2	*28.6*			4	*57.1*	7
Weasel (cfr. *Mustela nivalis*)									1	*100*					1
Fallow deer (*Dama mesopotamica*)									1	*100*					1
Cervidae					1	*100*									1
Red deer (*Cervus elaphus*)									1	*100*					1

Table 23. Area K-5 west. Minimum number of individuals by age class.

4.8 Area H

Excavations in Area H were conducted in the 2003 and 2004 seasons. Area H encompassed a tower-fortress located on the East side of the Royal Palace (Area A) in the south-eastern corner of the acropolis. The excavated structure revealed two adjoining small square rooms and two elongated parallel rooms that were probably stairwells leading to the entrance on the ground floor, since such military structures were usually accessed from there.

Based on the three-metre thickness of the walls, it was calculated that the structure might have exceeded 11 metres in height. The archaeological materials found in Area H include a large quantity of kitchen pottery, tools and faunal remains, suggesting that food was regularly processed and consumed near the building. Their chronological assessment indicates that the fortress was built during the Middle Bronze Age and remained in use until the end of the Late Bronze Age. All the faunal remains found in this area belong to LB I levels.

		Horse	Pig	Sheep/Goat	Cattle	Weasel	Fallow deer	Cervidae	Red deer
Horn/Antler					1				
Skull			1		1				
Upper jaw									
Upper teeth					1				
Lower jaw				1					
Lower teeth				3	1				
Teeth fragm.									
Atlas									
Axis									
Scapula				1	1				
Humerus	prox.								
	shaft-complete								
	dist.								1
Radius	prox.				1		1		
	shaft-complete								
	dist.								
Ulna									
Carpals									
Metacarpus	prox.								
	shaft-complete			2					
	dist.								1
Pelvic girdle					1				
Sacrum									
Femur	prox.				1				
	shaft-complete					1			
	dist.								
Rotula									
Tibia	prox.								
	shaft-complete			1					
	dist.								
Tarsals									
Metatarsus	prox.								
	shaft-complete								
	dist.								
Metapodial unident.									
Calcaneus					2			1	
Astragalus					1				
I Phalanx		1							
II Phalanx					1				
III Phalanx									
Total		**1**	**1**	**8**	**12**	**1**	**1**	**1**	**2**

Table 24. Area K-5 west. Identified anatomical elements for mammals.

	MB II	MB II	MB II		
Locus	F.1985	F.1990	F.1990		
Pottery bucket	264/1	278/3	280/1		
Sample n.	2007/145	2007/147	2007/176	**NR**	*%*
Sheep/Goat (*Ovis vel Capra*)	4	10	2	**16**	*66.7*
Cattle (*Bos taurus*)	4			**4**	*16.7*
Domestic Mammals	**8**	**10**	**2**	**20**	*83.3*
Wild boar (*Sus scrofa*)	1			**1**	*4.2*
Cervidae			2	**2**	*8.3*
Gazelle (*Gazella* sp.)		1		**1**	*4.2*
Wild Mammals		**1**	**2**	**4**	*96*
Birds		1		**1**	
Tot.	**8**	**12**	**4**	**25**	
Large size Mammals					
vertebrae			1	**1**	
ribs	1	1		**2**	
varia		1		**1**	
Small-Medium size Mammals					
vertebrae	1	3		**4**	
ribs	1	1	1	**3**	
varia		1	1	**2**	
Unidentifiable					
Tot. unident. Specimens	**3**	**7**	**3**	**13**	
Tot.	**11**	**19**	**7**	**38**	
Worked			1	**1**	
Burnt	5	8	3	**16**	
Shell	1			**1**	

Table 25. Area E. Total number of determined and indeterminate remains.

Overall, 2315 animal bone remains were recovered from Area H (Table 29), 53.1% of which was determined to species. Among the indeterminable remains, fragments of medium-sized or small size animals clearly prevail, especially rib fragments and diaphyseal splinters, while remains of large animals were relatively scarce.

According to the number of remains, domestic taxa were clearly predominant (92.5% NR), with a majority of sheep/goat (*Ovis* vel *Capra*) (62.5%), followed by cattle (*Bos taurus*) (19.3%), and domestic pigs (*Sus domesticus*) (8.6%). There are also remains of donkeys (*Equus asinus*) (1,8%) and of equids (*Equus* sp.), probably domestic.

Among wild mammals, fallow deer (*Dama mesopotamica*) accounts for 3.8% of the NR, while deer (*Cervus elaphus*) and unidentified cervids for 1,4% each (Pl. XIV: 2). Large carnivores such as bear (*Ursus arctos*), wolf (*Canis* cfr. *lupus*) (Pl. XIV: 1) and hyena (cfr. *Hyaena hyaena*) are also attested by very few remains. For these remains and a proximal tibia of a possible squirrell (cfr. *Sciurus* sp.), species determination is still ongoing.

The faunal assemblage is completed by some remains of bird, fish, tortoise (most of them compatible with *Testudo graeca*) (Pl. XV), and shell.

	MB II	MB II	MB II		
Locus	F.1985	F.1990	F.1990		
Pottery bucket	264/1	278/3	280/1		
Sample n.	2007/145	2007/147	2007/176	**MNI**	*%*
Sheep/Goat (*Ovis vel Capra*)	1	2	3	6	*54.5*
Cattle (*Bos taurus*)	2			2	*18.2*
Domestic Mammals	**3**	**2**	**3**	**8**	*72.7*
Wild boar (*Sus scrofa*)	1			1	*9.1*
Cervidae			1	1	*9.1*
Gazelle (*Gazella* sp.)		1		1	*9.1*
Wild Mammals	**1**	**1**	**1**	**3**	*27.3*
Total Determined	**4**	**3**	**4**	**11**	*100*

Table 26. Area E. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	**Total**
Sheep/Goat (*Ovis vel Capra*)			2	*33.3*	1	*16.7*	1	*16.7*	2	*33.3*					**6**
Cattle (*Bos taurus*)									2	*100*					**2**
Wild boar (*Sus scrofa*)													1	*100*	**1**
Cervidae													1	*100*	**1**
Gazelle (*Gazella* sp.)													1	*100*	**1**

Table 27. Area E. Minimum number of individuals by age class.

Butchering marks were detected on 15 remains of sheep and goat, two bovine mandibles, a single remain of fallow deer, and an equid metapodium. Burning traces were found on 86 remains, and one metacarpus of sheep and goat shows traces of gnawing. Evidence of pathological modifications was found on two osteological remains (Pls. XVI-XVII).

The relative abundance of domestic taxa does not change significantly in the MNI compared to the NR (Table 30). Sheep/goats comprise at least 113 individuals (50.7% MNI): 7 foetuses or newborns; 11 very young individuals under 6 months; 22 young between 6 and 12 months; 23 young adults between 1 and 2 years; 45 adults between 2 and 8 years; 2 senile individuals over 8 years old; and 3 individuals of indeterminate age. Cattle are represented by 37 individuals (16.6% MNI): 1 foetus or newborn; 2 very young individuals less than 5 months old; 6 young between 6 and 15 months; 14 young adults between 15 and 30 months; 13 adults between 30 months and 8 years; and 1 individual of indeterminate age. Pigs are represented by 32 individuals (14.3% MNI): 2 foetuses or newborns; 7 very young individuals under 4-6 months (Pl. XVIII); 13 young between 7 and 12 months (Pl. XIX); 6 young-adults; 1 adult between 2 and 4 years; and 3 individuals of indeterminate age.

		Sheep/Goat	Cattle	Wild Boar	Cervidae	Gazelle
Horn/Antler					1	
Skull						
Upper jaw						
Upper teeth						
Lower jaw		1				
Lower teeth		1				
Teeth fragm.		1				
Atlas						
Axis						
Scapula		1		1		
Humerus	prox.					
	shaft-complete	1				
	dist.	1				
Radius	prox.					
	shaft-complete				1	
	dist.					
Ulna						
Carpals						
Metacarpus	prox.					
	shaft-complete					
	dist.					
Pelvic girdle		3				
Sacrum						
Femur	prox.					
	shaft-complete					
	dist.					
Rotula						
Tibia	prox.					
	shaft-complete	1	1			
	dist.	1	1			
Tarsals						
Metatarsus	prox.					
	shaft-complete	1				
	dist.					
Metapodial unident.						
Calcaneus		2				
Astragalus		1	2			1
I Phalanx		1				
II Phalanx						
III Phalanx						
Total		**16**	**4**	**1**	**2**	**1**

Table 28. Area E. Identified anatomical elements for mammals.

	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I		
Locus	F.336	F.331	F.336	F.329	F.332	F.336	F.338	F.325	F.327	F.325	F.325	F.325		
Pottery bucket	165/1	109/1	164/1	159/1	112/1	110/1	111/1	156/1-2	163/1	160/1	104/1	104/2		
Sample n.	2003/21	2004/24a+b	2003/25	2003/27	2004/43	2004/50	2004/51	2003/22+23	2003/24	2003/26	2004/12+52	2004/52	NR	%
Equids (*Equus* sp.)							1	4					5	*0.4*
Donkey (*Equus asinus*)	15						6						21	*1.8*
Pig (*Sus domesticus*)	3	4		3		2	1	67	4	7	12		103	*8.6*
Sheep/Goat (*Ovis vel Capra*)	13	129	6	95	2	10	11	193	94	39	138	19	749	*62.5*
Cattle (*Bos taurus*)	2	8	4	48	1	6	4	35	28	9	71	15	231	*19.3*
Domestic Mammals	**33**	**141**	**10**	**146**	**3**	**19**	**22**	**299**	**126**	**55**	**221**	**34**	**1109**	*92.5*
Squirrell (cfr. *Sciurus* sp.)											1		1	*0.1*
Hyena (cfr. *Hyaena hyaena*)									1				1	*0.1*
Wolf (*Canis* cfr. *lupus*)	1			2				3					6	*0.5*
Brown bear (*Ursus arctos*)	1												1	*0.1*
Fallow deer (*Dama mesopotamica*)		1	3	7	3	4	3	9	13	1	1		45	*3.8*
Cervidae	1	7	2				1	3			3		17	*1.4*
Red deer (*Cervus elaphus*)				5		2		6			2	2	17	*1.4*
Gazelle (*Gazella* sp.)												2	2	*0.2*
Wild Mammals	**3**	**8**	**5**	**14**	**3**	**6**	**4**	**21**	**14**	**1**	**7**	**4**	**90**	7.5
Bird	1	5			2	6		2					16	
Tortoise	1				4			1	1		6		13	
Fish								1					1	
Tot.	**38**	**154**	**15**	**160**	**12**	**31**	**26**	**324**	**141**	**56**	**234**	**38**	**1229**	
Large size Mammals														
vertebrae	5	6	1	24				6	3	6		1	**52**	
ribs	6	2	2	27				29	5	7	1	7	**86**	
varia	26		1	36				18	12	6	3	8	**110**	
Small-Medium size Mammals														
vertebrae	23	26		40	4			46	25	3	4	10	**181**	
ribs	4	55		28	2			72	11	3	24	5	**204**	
varia	4			31	8			101	36	3	44	7	**234**	
Unidentifiable	102		1	22				57	9	4	6	18	**219**	
Tot. unident. Specimens	**170**	**89**	**5**	**208**	**14**			**329**	**101**	**32**	**82**	**56**	**1086**	
Tot.	**208**	**243**	**20**	**368**	**26**	**31**	**26**	**653**	**242**	**88**	**316**	**94**	**2315**	
Worked		2		1							1		**4**	
Pathologic	1			1			1	1	3				**7**	
Burnt	12			76			1	2	2	2	6		**101**	
Butchered	1	5	2	13			2	7	5	3	16	4	**58**	
Gnawed by carnivores		1		3					4		1	1	**10**	
Crab	1				2	1	15			2			**21**	
Shells		3		1				3	3		1		**11**	

Table 29. Area H. Total number of determined and indeterminate remains.

	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I	LB I		
Locus	F.336	F.331	F.336	F.329	F.332	F.336	F.338	F.325	F.327	F.325	F.325	F.325		
Pottery bucket	165/1	109/1	164/1	159/1	112/1	110/1	111/1	156/1-2	163/1	160/1	104/1	104/2		
Sample n.	2003/21	2004/24a+b	2003/25	2003/27	2004/43	2004/50	2004/51	2003/22+23	2003/24	2003/26	2004/12+52	2004/52	MNI	%
Equids (*Equus* sp.)						1		2					**3**	*1.3*
Donkey (*Equus asinus*)	2						1						**3**	*1.3*
Pig (*Sus domesticus*)	1	2		1		1	1	16	2	3	5		**32**	*14.3*
Sheep/Goat (*Ovis vel Capra*)	5	20	2	12	1	6	6	21	13	6	16	5	**113**	*50.7*
Cattle (*Bos taurus*)	1	4	1	5	1	1	2	4	3	1	12	2	**37**	*16.6*
Domestic Mammals	**9**	**26**	**3**	**18**	**2**	**9**	**10**	**43**	**18**	**10**	**33**	**7**	**188**	*84.3*
Squirrell (cfr. *Sciurus* sp.)											1		**1**	*0.4*
Hyena (cfr. *Hyaena hyaena*)									1				**1**	*0.4*
Wolf (*Canis* cfr. *lupus*)	1			1				1					**3**	*1.3*
Brown bear (*Ursus arctos*)	1												**1**	*0.4*
Fallow deer (*Dama mesopotamica*)		1	1	2	1	1	1	3	2	1	1		**14**	*6.3*
Cervidae	1	2	1			1	2				1		**8**	*3.6*
Red deer (*Cervus elaphus*)				2		1		1			1	1	**6**	*2.7*
Gazelle (*Gazella* sp.)												1	**1**	*0.4*
Wild Mammals	**3**	**3**	**2**	**5**	**1**	**2**	**2**	**7**	**3**	**1**	**4**	**2**	**35**	*15.7*
MNI Total	**12**	**29**	**5**	**23**	**3**	**11**	**12**	**50**	**21**	**11**	**37**	**9**	**223**	*100*

Table 30. Area H. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	**Total**
Equids (*Equus* sp.)							1	*33.3*	1	*33.3*			1	*33.3*	**3**
Donkey (*Equus asinus*)									2	*66.7*			1	*33.3*	**3**
Pig (*Sus domesticus*)	2	*6.3*	7	*21.9*	13	*40.6*	6	*18.8*	1	*3.1*			3	*9.4*	**32**
Sheep/Goat (*Ovis vel Capra*)	7	*6.2*	11	*9.7*	22	*19.5*	23	*20.4*	45	*39.8*	2	*1.8*	3	*2.7*	**113**
Cattle (*Bos taurus*)	1	*2.7*	2	*5.4*	6	*16.2*	14	*37.8*	13	*35.1*			1	*2.7*	**37**
Squirrell (cfr. *Sciurus* sp.)									1	*100*					**1**
Hyena (cfr. *Hyaena hyaena*)									1	*100*					**1**
Wolf (*Canis* cfr. *lupus*)									1	*100*					**1**
Brown bear (*Ursus arctos*)													1	*100*	**1**
Fallow deer (*Dama mesopotamica*)									8	*57.1*			6	*42.9*	**14**
Cervidae			1	*12.5*			1	*12.5*					6	*75.0*	**8**
Red deer (*Cervus elaphus*)							2	*33.3*	2	*33.3*			2	*33.3*	**6**
Gazelle (*Gazella* sp.)													1	*100*	**1**

Table 31. Area H. Minimum number of individuals by age class.

		Equids	Donkey	Pig	Sheep/Goat	Cattle	Squirrel	Hyena	Wolf	Brown bear	Fallow deer	Cervidae	Red deer	Gazelle
Horn/Antler					30	4					4	8	1	
Skull				11	21	27					1	3		
Upper jaw				2	30	10								
Upper teeth					9	8								
Lower jaw				12	119	25					8	1		
Lower teeth				3	31	7					2			
Teeth fragm.					3									
Atlas				1	7	1								
Axis					9	2					1			
Scapula				7	66	15					8			
Humerus	prox.			3	7	3							2	1
	shaft-complete		1	8	26	7					1			
	dist.			1	25	4			1		1			
Radius	prox.	2			8	3					1	1		
	shaft-complete			5	23	4					1			
	dist.			1	8	6					1	1		
Ulna				4	25	10							1	
Carpals					1	1								
Metacarpus	prox.		2		15	6					3			
	shaft-complete		2	2	29	4			2				1	
	dist.		1		7	6					3			
Pelvic girdle		1		10	56	8			1		3		5	1
Sacrum				1	2	1								
Femur	prox.			1	12	4					1			
	shaft-complete			6	11	4					2		1	
	dist.			5	8	3							1	
Rotula						1								
Tibia	prox.			2	10	5	1				1		2	
	shaft-complete			5	15	5								
	dist.		1		30	5					1		1	
Tarsals					1	1								
Metatarsus	prox.		1	1	11	5		1				1		
	shaft-complete		1	6	36	1						2		
	dist.	1			8	2							1	
Metapodial unident.		1	5	2	2	7			1					
Calcaneus			3		6	5								
Astragalus			1	1	8	4				1				
I Phalanx			1	3	30	9			1		1			
II Phalanx			2		1	6								
III Phalanx					3	2					1		1	
Total		**5**	**21**	**103**	**749**	**231**	**1**	**1**	**6**	**1**	**45**	**17**	**17**	**2**

Table 32. Area H. Identified anatomical elements for mammals.

As to wild species, as usual, the minimum number of individuals over-represents taxa with a few remains only, bringing them up to a considerable 15.7% of the entire faunal assemblage of Area H. Fallow deer (6.3% MNI) is mainly represented by several individuals of indeterminate age and 8 adults (Pl. XX), while cervids comprise 1 very young individual, 1 young-adult under 32 months, 6 individuals of indeterminate age; while deer comprise 2 young-adults under 32 months, 2 adults and 2 individuals of indeterminate age. All the other wild species are attested only by 1 adult individual each.

4.9 Area Q

Area Q was a fortress guarding the north-eastern corner of the acropolis. It includes two adjacent small square rooms and two elongated parallel rooms that were probably stairwells leading to the entrance on the main floor. Fortress-towers like this one and that in Area H were a fundamental constituent of Tilmen's defence.

A total of 769 animal bone remains were found in this area (Table 33), all from MB II levels. Of these, only about 25% was determined to species, the remaining 75% being too heavily fragmented.

Based on the number of remains, domestic taxa clearly prevail (92.6% NR), with a majority of sheep/goat (*Ovis* vel *Capra*) (43.4%), followed by cattle (*Bos taurus*) (24.3%), and domestic pig (*Sus domesticus*) (12.7%). The remains of donkey (*Equus asinus*) and one remain of a dog (*Canis familiaris*) were also attributed to domestic animals.

Among wild mammals, most of the remains belong to cervids, with the same quantity of fallow deer (*Dama mesopotamica*) (1.6%) and deer (*Cervus elaphus*) (1.6%) remains. Two remains of bear (*Ursus arctos*) (1.1%) (Pl. XXI), one of gazelle (*Gazella* sp.) (0.5%) and one of a probable wolf (*Canis* cfr. *lupus*) were also found. The faunal assemblage is completed by a few remains of tortoise, 3 of crab, and 2 of shell.

In the MNI (Table 34), the relative abundance of domestic taxa slightly decreases compared to the NR (Table 33). Sheep/goat still predominate with 14 individuals (32.6% MNI): 3 very young individuals under 6 months; 2 young between 6 and 12 months; 1 young adult between 1 and 2 years; 5 adults between 2 and 8 years; and 3 individuals of indeterminate age. Cattle are represented by 11 individuals (25.6% MNI): 2 young individuals, 3 young adults between 15 and 30 months; 2 adults between 30 months and 8 years; and 4 individuals of indeterminate age. A minimum of 6 pigs were recognised (14.0% MNI): 1 newborn, 1 very young individual aged less than 4-6 months; 3 young adults between 1 and 2 years old; 1 adult between 2 and 4 years.

As for wild species, again, the fact that the minimum number of individuals tends to over-represent species attested by fewer remains brings wild animals up to a significant 23.3% of the entire faunal assemblage of Area Q. Fallow deer (7% MNI) and deer (4.7%) are mostly represented by individuals of indeterminate age and by a single adult; cervids are represented by a young adult individual. As to the other wild species with low numbers, they are generally adult individuals or of indeterminate age.

4.10 Area K-3

Area K-3 includes one of the entrances to the city. The structure was not a monumental gate but a narrow postern in the western section of the outer wall. Although accurately

	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA		
Locus	F.2067	F.2071	F.2067	F.2071	F.2071	F.2071	F.2092	F.2092	F.2092	F.2092	F.2094	F.2094		
Pottery bucket	409/2	410/1	409/4	410/4	410/6	410/5	432/1	433/3	433/3	433/1	423/3	423/2		
Sample n.	2007/76	2007/89	2007/92	2007/109	2007/118	2007/121	2007/133	2007/132	2007/138	2007/153	2007/123	2007/125	**NR**	*%*
Dog (*Canis familiaris*)		1											**1**	*0.5*
Donkey (*Equus asinus*)											13	9	**22**	*11.6*
Pig (*Sus domesticus*)						1		6	2	15			**24**	*12.7*
Sheep/Goat (*Ovis vel Capra*)		2				2	3	13		52	10		**82**	*43.4*
Cattle (*Bos taurus*)	1			2		1	4	3	3	31		1	**46**	*24.3*
Domestic Mammals	**1**	**3**		**2**		**4**	**7**	**22**	**5**	**98**	**23**	**10**	**175**	*92.6*
Wolf (*Canis* cfr. *lupus*)						1				1			**2**	*1.1*
Brown bear (*Ursus arctos*)								2					**2**	*1.1*
Fallow deer (*Dama mesopotamica*)						1			1		1		**3**	*1.6*
Cervidae										3			**3**	*1.6*
Red deer (*Cervus elaphus*)					1						2		**3**	*1.6*
Gazelle (*Gazella* sp.)											1		**1**	*0.5*
Wild Mammals					**1**	**2**		**2**	**1**	**4**	**4**		**14**	*7.4*
Tortoise										10	1		**11**	
Tot.	**1**	**3**		**2**	**1**	**6**	**7**	**24**	**6**	**112**	**28**	**10**	**200**	
Large size Mammals														
vertebrae		2							1	2	6	17	**28**	
ribs		1						7	1	37	4		**50**	
varia		1						11			4		**16**	
Small-Medium size Mammals														
vertebrae	1							1	1		6	3	**12**	
ribs								11		16	11		**38**	
varia		1						38	4		6		**49**	
Unidentifiable		6	20			6	38	114	7	96	57	32	**376**	
Tot. unident. Specimens	**1**	**7**	**24**			**6**	**38**	**182**	**14**	**151**	**94**	**52**	**569**	
Tot.	**2**	**10**	**24**	**2**	**1**	**12**	**45**	**206**	**20**	**263**	**122**	**62**	**769**	
Burnt	2	2		1		3	48			1			**57**	
Butchered							3	1					**4**	
Crab							2			1			**3**	
Shell								1		1			**2**	

Table 33. Area Q. Total number of determined and indeterminate remains.

built, it was a secondary gate, certainly not suitable for the passage of carts or pack animals (Orsi, forthcoming: 57-134). The 2005 excavations in this area yielded only 3 animal bone fragments from a MB II layer, belonging to one bovine (*Bos taurus*) of indeterminate age, while the remaining fragments were indeterminable (Tables 37-39).

4.11 Area M
Area M is located in the lower city, in the western part of the site, and included a monumental *in antis* temple with two construction phases, dated respectively to the final

	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA	MB IIA		
Locus	F.2067	F.2071	F.2071	F.2071	F.2071	F.2092	F.2092	F.2092	F.2092	F.2094	F.2094		
Pottery bucket	409/2	410/1	410/4	410/6	410/5	433/3	432/1	433/3	433/1	423/3	423/2		
Sample n.	2007/76	2007/89	2007/109	2007/118	2007/121	2007/132	2007/133	2007/138	2007/153	2007/123	2007/125	**MNI**	*%*
Dog (*Canis familiaris*)		1										**1**	*2.3*
Donkey (*Equus asinus*)										1	*	**1**	*2.3*
Pig (*Sus domesticus*)					1	1		1	3			**6**	*14.0*
Sheep/Goat (*Ovis vel Capra*)		2			1	1	2		7	1		**14**	*32.6*
Cattle (*Bos taurus*)	1		1		1	1	1	2	3		1	**11**	*25.6*
Domestic Mammals	**1**	**3**	**1**		**3**	**3**	**3**	**3**	**13**	**2**	**1**	**33**	*76.7*
Wolf (*Canis* cfr. *lupus*)					1				1			**2**	*4.7*
Brown bear (*Ursus arctos*)						1						**1**	*2.3*
Cervidae									1			**1**	*2.3*
Fallow deer (*Dama mesopotamica*)					1			1		1		**3**	*7.0*
Red deer (*Cervus elaphus*)				1						1		**2**	*4.7*
Gazelle (*Gazella* sp.)										1		**1**	*2.3*
Wild Mammals				**1**	**2**	**1**		**1**	**2**	**3**		**10**	*23.3*
Tot.	**1**	**3**	**1**	**1**	**5**	**4**	**3**	**4**	**15**	**5**	**1**	**43**	**100**

Table 34. Area Q. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	Tot.
Dog (*Canis familiaris*)									1						1
Donkey (*Equus asinus*)									1						1
Pig (*Sus domesticus*)	1	*16.7*	1	*16.7*			3	*50*	1	*16.7*					6
Sheep/Goat (*Ovis vel Capra*)			3	*21.4*	2	*14.3*	1	*7.1*	5	*35.7*			3	*21.4*	14
Cattle (*Bos taurus*)					2	*18.2*	3	*27.3*	2	*18.2*			4	*36.4*	11
Wolf (*Canis* cfr. *lupus*)													2		2
Brown bear (*Ursus arctos*)									1						1
Fallow deer (*Dama mesopotamica*)													2		2
Cervidae							1								1
Red deer (*Cervus elaphus*)									1				1		2
Gazelle (*Gazella* sp.)													1		1

Table 35. Area Q. Minimum number of individuals by age class.

		Dog	Donkey	Pig	Sheep/Goat	Cattle	Canis sp.	Brown bear	Fallow deer	Cervidae	Red deer	Gazelle
Horn/Antler						1				1		
Skull				5	2	1						
Upper jaw												
Upper teeth					1	4						
Lower jaw				1	4							
Lower teeth				2	5							
Teeth fragm.					2	2						
Atlas					1	1						
Axis					1	1						
Scapula					2	4						
Humerus	prox.			2								
	shaft-complete					1						
	dist.				4	4			1			
Radius	prox.				1	1				1		1
	shaft-complete				1	1						
	dist.				2	1						
Ulna			1	1	1	3			1			
Carpals			2			2						
Metacarpus	prox.											
	shaft-complete		1		1							
	dist.				1	2						
Pelvic girdle				1	7	3						
Sacrum												
Femur	prox.			1	2							
	shaft-complete										1	
	dist.	1	1		4							
Rotula						1						
Tibia	prox.		1		1	1						
	shaft-complete				1							
	dist.				2		1					
Tarsals			2									
Metatarsus	prox.		3		1							
	shaft-complete		1	1	1			1				
	dist.				2						1	
Metapodial unident.			1	1	2			1				
Calcaneus				1	6						1	
Astragalus				1	11	2	1		1			
I Phalanx			4	5	7	5				1		
II Phalanx			3	2	4	4						
III Phalanx			2		2	1						
Total		1	22	24	82	46	2	2	3	3	3	1

Table 36. Area Q. Identified anatomical elements for mammals.

	MB II		
Locus	L.814		
Pottery bucket	206/1		
Sample n.	2005/74	**NR**	*%*
Cattle (*Bos taurus*)	1	**1**	*100*
Domestic Mammals	**1**	**1**	*100*
Tot.	**1**	**1**	
Large size Mammals			
vertebrae			
ribs			
varia	1	**1**	
Small-Medium size Mammals			
vertebrae			
ribs			
varia	1	**1**	
Unidentifiable			
Tot. unident. Specimens	**2**	**2**	
Tot.	**3**	**3**	

Table 37. Area K-3. Total number of determined and indeterminate remains.

	MB II		
Locus	L.814		
Pottery bucket	206/1		
Sample n.	2005/74	**MNI**	*%*
Cattle (*Bos taurus*)	1	1	*100*
Domestic Mammals	**1**	**1**	*100*
Tot	**1**	**1**	

Table 38. Area K-3. Minimum number of individuals for mammals.

		Cattle
Horn/Antler		
Skull		
Upper jaw		
Upper teeth		
Lower jaw		
Lower teeth		
Teeth fragm.		
Atlas		
Axis		
Scapula		
Humerus	prox.	
	shaft-complete	
	dist.	
Radius	prox.	
	shaft-complete	
	dist.	
Ulna		
Carpals		
Metacarpus	prox.	
	shaft-complete	
	dist.	
Pelvic girdle		
Sacrum		
Femur	prox.	
	shaft-complete	
	dist.	
Rotula		
Tibia	prox.	1
	shaft-complete	
	dist.	
Tarsals		
Metatarsus	prox.	
	shaft-complete	
	dist.	
Metapodial unident.		
Calcaneus		
Astragalus		
I Phalanx		
II Phalanx		
III Phalanx		
Total		1

Table 39. Area K-3. Identified anatomical elements for cattle.

	MB II	MB II		
Locus	F.679	F.686		
Pottery bucket	68/1	76/1		
Sample n.	2005/43	2005/76	**NR**	*%*
Sheep/Goat (*Ovis vel Capra*)	1	4	**5**	*27.8*
Cattle (*Bos taurus*)	1	9	**10**	*55.6*
Domestic Mammals	**2**	**13**	**15**	*83.3*
Fallow deer (*Dama mesopotamica*)		1	**1**	*5.6*
Red deer (*Cervus elaphus*)		1	**1**	*5.6*
Gazelle (*Gazella* sp.)		1	**1**	*5.6*
Wild Mammals		**3**	**3**	*16.7*
Tot.	**2**	**16**	**18**	
Large size Mammals				
vertebrae				
ribs				
varia	1	3	**4**	
Small-Medium size Mammals				
vertebrae				
ribs				
varia		5	**5**	
Unidentifiable		14	**14**	
Tot. unident. Specimens	**1**	**22**	**23**	
Tot.	**3**	**38**	**41**	

Table 40. Area M. Total number of determined and indeterminate remains.

	MB II	MB II		
Locus	F.679	F.686		
Pottery bucket	68/1	76/1		
Sample n.	2005/43	2005/76	**MNI**	*%*
Sheep/Goat (*Ovis vel Capra*)	1	2	**3**	*33.3*
Cattle (*Bos taurus*)	1	2	**3**	*33.3*
Domestic Mammals	**2**	**4**	**6**	*66.7*
Fallow deer (*Dama mesopotamica*)		1	**1**	*11.1*
Red deer (*Cervus elaphus*)		1	**1**	*11.1*
Gazelle (*Gazella* sp.)		1	**1**	*11.1*
Wild Mammals		**3**	**3**	*33.3*
Tot.	**2**	**7**	**9**	*100*

Table 41. Area M. Minimum number of individuals for mammals.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	MNI	%	Total
Sheep/Goat (*Ovis vel Capra*)					1	33.3			1	33.3			1	33.3	3
Cattle (*Bos taurus*)									2	66.7			1	33.3	3
Fallow deer (*Dama mesopotamica*)									1						1
Red deer (*Cervus elaphus*)													1		1
Gazelle (*Gazella* sp.)									1						1

Table 42. Area M. Minimum number of individuals by age class.

Middle Bronze Age and the final Late Bronze Age. Fragments of a large stone basin were found in the *cella* of the temple. Two more basins of different shapes were unearthed in the *temenos*. The most significant discovery in this area is a basalt stela portraying a deity with the characteristic horned cap in front of a character with an embroidered robe and a stole on his shoulder, his right hand raised in prayer. The god holds a mace against his right shoulder and an axe in his left hand and wears a dagger at the waist, the attributes of the Old Syrian storm-god. It can therefore be assumed that Temple M at Tilmen was dedicated to this deity.

The materials retrieved in 2005 from Area M include 41 animal osteological remains dated to the MB II (Table 40). The sample, although too small to be statistically reliable, is of great historical interest. The percentage of remains determined to species level (43%) is quite significant thanks to their high level of conservation.

Based on the number of remains, domestic taxa clearly prevail (83.3%), with a majority of cattle (*Bos taurus*) (55.6% NR) and less sheep/goat (*Ovis* vel *Capra*) (27.8%), while domestic pig was completely absent.

Among wild mammals, deer (*Cervus elaphus*), fallow deer (*Dama mesopotamica*) and gazelle account for 5.6% each.

In the MNI, the relative abundance of domestic taxa is slightly different than in the NR (Table 41). Sheep/goat and cattle are equally represented by 3 individuals (33.3% MNI each): for sheep/goat, 1 young individual, 1 adult, and 1 individual of indeterminate age; for cattle, 2 adults and 1 individual of indeterminate age. Wild species account for 33.3% of the MNI: deer (*Cervus elaphus*), fallow deer (*Dama mesopotamica*) and gazelle account for 11.1% each (Table 42).

5. THE ANIMAL ECONOMY OF TILMEN HÖYÜK

A general assessment of the animal economy of Tilmen Höyük must necessarily start from an overall consideration of all the explored archaeological contexts (Tables 44-47, Pls. XXII-XXIV). Although further investigation is still needed, it is already possible to draw a detailed picture of the economic exploitation of animals and its evolution over time in this important urban centre.

		Sheep/Goat	Cattle	Fallow deer	Red deer	Gazelle
Horn/Antler			1			
Skull						
Upper jaw						
Upper teeth			1			
Lower jaw						
Lower teeth		3	1			
Teeth fragm.			1			
Atlas						
Axis						
Scapula			1			
Humerus	prox.					
	shaft-complete		1			
	dist.		1		1	
Radius	prox.					
	shaft-complete	1				
	dist.					
Ulna			1			
Carpals						
Metacarpus	prox.					
	shaft-complete					
	dist.					
Pelvic girdle			1			
Sacrum						
Femur	prox.					
	shaft-complete					
	dist.					1
Rotula						
Tibia	prox.					
	shaft-complete					
	dist.		1	1		
Tarsals						
Metatarsus	prox.					
	shaft-complete					
	dist.					
Metapodial unident.						
Calcaneus						
Astragalus		1				
I Phalanx						
II Phalanx						
III Phalanx						
Total		5	10	1	1	1

Table 43. Area M. Identified anatomical elements for mammals.

From a strictly quantitative perspective, faunal remains from Middle Bronze Age contexts (Table 44) are less numerous than those from the Late Bronze Age. However, they are more homogeneously distributed within the various contexts, the most significant being Areas L, G and Q. Regarding the later chronological phase of the urban centre (Table 46), the remains come almost exclusively from the area of the tower-fortress H, the remains from which alone are more abundant than those from the entire MB. This imbalance in the presence of faunal remains in the different contexts and between chronological phases raises some interpretative doubts as there are not enough elements to evaluate whether similarities and differences between the different phases are more of a chronological order or if they are linked to the specificities of the economic activities or to the sectors of society occupying the different areas excavated in Tilmen.

In general, except for the tower-fortress in Area H, which yielded almost half of the entire sample analysed, none of the contexts has yielded statistically significant assemblages when considered separately. Despite all possible interpretative limitations that may derive from combining data from different archaeological contexts, this methodological approach can be regarded as the only possibility to draw a comprehensive picture.

Only one-third of the 2158 remains from MB levels at Tilmen Höyük were identified to species (Table 44). Most indeterminable remains consisted of tiny diaphyseal splinters from which no information could be gleaned, an indication of the high degree of fragmentation of the remains from these areas. The remaining part, from which it was possible to deduce at least the size of the animal, shows a slight prevalence of remains from small-to-medium-sized animals.

The remains for which it was possible to determine the species, or at least the taxon (33% of the total), show how the animal economy of Tilmen Höyük was mainly based on the breeding of the main domestic mammals – sheep/goats, cattle and pigs (Table 44). Domestic mammals, as a whole, represent 86.5% of the taxa documented in all the examined contexts, while wild species are 13.5%. In the minimum number of individuals, one notices a slight increase in the percentage of wild species, up to about 22% (Table 45), indicating a rather significant economic importance.

Overall, the predominant taxon is sheep/goat (40.2% NR), followed by cattle (31.8% NR), and pigs (8.9% NR), with only Area G, G west and K-5 west showing a prevalence of cattle over the other species (Table 44). Dogs and equids, which were usually not exploited as food – although butchering traces have been detected on dog bones (see below) – complete the domestic faunal assemblage, with minimal percentages. In the MNI, although this method leads to slight percentage variations, the general picture does not change. Sheep/goats are still the most abundant species (31.8% MNI), followed by cattle (28.4% MNI) and pigs (11% MNI) (Table 45, Pl. XXII: 2).

Among the wild species, cervids are prevalent over other species during MB age, with fallow deer (*Dama mesopotamica*) accounting for 5.8% of the NR and 8.1% of the MNI, followed by deer (4.8% NR; 7.6% MNI). Other wild species, such as wild boar, gazelle, bear, wolf, and hare, are poorly represented and can be regarded as occasional preys – although the idea that the more dangerous animals were quarries in royal hunts or elite gifts is tempting – while small mustelids could also be intrusive (Pl. XXIV: 2). The estimate of the age at

Area	Middle Bronze Age									Total	
	L	G	G west	G east	K-5	K-5 west	E	Q	M	NR	%
Dog (*Canis familiaris*)	1	6						1		**8**	*1.2*
Equids (*Equus* sp.)	1	3		1						**5**	*0.7*
Horse (*Equus caballus*)		1				1				**2**	*0.3*
Donkey (*Equus asinus*)	1	1						22		**24**	*3.5*
Pig (*Sus domesticus*)	11	17		2	6	1		24		**61**	*8.9*
Sheep/Goat (*Ovis vel Capra*)	60	71		8	27	8	16	82	5	**277**	*40.2*
Cattle (*Bos taurus*)	29	80	2	17	19	12	4	46	10	**219**	*31.8*
Domestic Mammals	**103**	**179**	**2**	**28**	**52**	**22**	**20**	**175**	**15**	**596**	*86.5*
Hare (*Lepus europaeus*)				1						**1**	*0.15*
Wolf (*Canis* cfr. *lupus*)								2		**2**	*0.3*
Brown bear (*Ursus arctos*)	2							2		**4**	*0.6*
Marten (*Martes* sp.)		1								**1**	*0.15*
Weasel (cfr. *Mustela nivalis*)						1				**1**	*0.15*
Wild boar (*Sus scrofa*)							1			**1**	*0.1*
Cervidae						1	2	3		**6**	*0.9*
Fallow deer (*Dama mesopotamica*)	16	12			7	1		3	1	**40**	*5.8*
Red deer (*Cervus elaphus*)	11	9			7	2		3	1	**33**	*4.8*
Gazelle (*Gazella* sp.)	1						1	1	1	**4**	*0.6*
Wild Mammals	**30**	**22**			**15**	**5**	**4**	**14**	**3**	**93**	*13.5*
Bird		4			4		1			**9**	
Fish					3					**3**	
Tortoise	1			1				11		**13**	
Total n. of identified specimens	**134**	**205**	**2**	**29**	**74**	**27**	**25**	**200**	**18**	**714**	
Large size Mammals											
vertebrae	13	15		1	18	1	1	28		**77**	
ribs	11	53		3	11	3	2	50		**133**	
varia	13	39		2	6	5	1	16	4	**86**	
Small-Medium size Mammals											
vertebrae	11	17			11	2	4	12		**57**	
ribs	7	33		1	3	6	3	38		**91**	
varia	3	24			5	3	2	49	5	**91**	
Unidentifiable	74	394		3	43	5		376	14	**909**	
Total unidentified specimens	**132**	**575**		**10**	**97**	**25**	**13**	**569**	**23**	**1444**	
Total	**266**	**780**	**2**	**39**	**171**	**52**	**38**	**769**	**41**	**2156**	
Worked	3	1					1			**5**	
Burnt	2	3			3		16	57		**81**	
Butchered	7	11		1	8	1		4		**32**	
Gnawed by carnivores	6	8								**14**	
Crab								3		**3**	
Shells		3	1				1	**2**		**7**	

Table 44. Total number of determined and indeterminate remains by area for the MBA (seasons 2003-2007).

Area		Middle Bronze Age								Total	
	L	G	G west	G east	K-5	K-5 west	E	Q	M	MNI	%
Dog (*Canis familiaris*)	1	4							1	**6**	*2.5*
Equids (*Equus sp.*)	1	2		1						**4**	*1.7*
Horse (*Equus caballus*)		1				1				**2**	*0.8*
Donkey (*Equus asinus*)	1	1						1		**3**	*1.3*
Pig (*Sus domesticus*)	4	9		2	4	1		6		**26**	*11.0*
Sheep/Goat (*Ovis vel Capra*)	11	22		4	10	5	6	14	3	**75**	*31.8*
Cattle (*Bos taurus*)	6	24	1	5	8	7	2	11	3	**67**	*28.4*
Domestic Mammals	**24**	**63**	**1**	**12**	**22**	**14**	**8**	**33**	**6**	**183**	*77.5*
Squirrel (cfr. *Sciurus vulgaris*)											
Hare (*Lepus europaeus*)					1					**1**	*0.4*
Hyena (cfr. *Hyaena hyaena*)											
Wolf (*Canis* cfr. *lupus*)								2		**2**	*0.8*
Brown bear (*Ursus arctos*)	2							1		**3**	*1.3*
Marten (*Martes* sp.)		1								**1**	*0.4*
Weasel (cfr. *Mustela nivalis*)						1				**1**	*0.4*
Wild boar (*Sus scrofa*)							1			**1**	*0.4*
Cervidae						1	1	1		**3**	*1.3*
Fallow deer (*Dama mesopotamica*)	3	6			5	1		3	1	**19**	*8.1*
Red deer (*Cervus elaphus*)	4	6			4	1		2	1	**18**	*7.6*
Gazelle (*Gazella* sp.)	1						1	1	1	**4**	*1.7*
Wild Mammals	**10**	**13**			**10**	**4**	**3**	**10**	**3**	**53**	*22.5*
Total MNI	**34**	**76**	**1**	**12**	**32**	**18**	**11**	**43**	**9**	**236**	

Table 45. Minimum number of individuals for mammals by area for the MBA (seasons 2003-2007).

death of the domestic species provided important information on the exploitation of animal resources. The most represented age group among domestic species are adults, followed by young individuals, which are also frequent (Table 48). Taking into consideration only the sheep/goats survivorship curve (calculated according to Payne 1973), it is evident that more than 75% of the animals were slaughtered within 3 years of life (Pl. XXIII: 1). This evidence testifies to a major interest in the meat supply, which certainly went hand in hand with the exploitation of secondary products such as milk and wool, without forgetting other essential resources, such as manure. Pigs, which are raised only for their meat, were mainly butchered as young and sub-adults, or at any rate always before the age of 2-3 years, when they reached the peak of their meat yield.

The importance of domestic animals in the animal economy of Tilmen Höyük during the MB can be further analysed by breaking down the meat yield of each species. In the light of the methods described in Chapter 2 to estimate the meat yield of different taxa (Pl. XXIV: 1), the economic significance of cattle appears to be much higher than that of sheep/goats in all the examined contexts, even though the latter are the most represented species both in the number of remains and in the minimum number of individuals.

Considering now the faunal remains of the LB, it is quite evident that the vast majority comes from the area of fortress H. Among these remains, the degree of determinability is quite similar in the two chronological periods, while finds referable to small-medium

Area	Late Bronze Age							Total	
	L	G	G west	G east	K-5	H	K-3	NR	%
Dog (*Canis familiaris*)	2			1	1			**4**	*0.3*
Equids (*Equus* sp.)						5		**5**	*0.3*
Donkey (*Equus asinus*)	1					21		**22**	*1.5*
Pig (*Sus domesticus*)	3		1	4	7	103		**118**	*7.9*
Sheep/Goat (*Ovis vel Capra*)	18	1	3	42	57	749		**870**	*58.3*
Cattle (*Bos taurus*)	30	1	3	50	33	231	1	**349**	*23.4*
Domestic Mammals	**54**	**2**	**7**	**97**	**98**	**1109**	**1**	**1368**	*91.6*
Squirrel (cfr. *Sciurus vulgaris*)						1		**1**	*0.1*
Hyena (cfr. *Hyaena hyaena*)						1		**1**	*0.1*
Wolf (*Canis* cfr. *lupus*)						6		**6**	*0.4*
Brown bear (*Ursus arctos*)						1		**1**	*0.1*
Wild boar (*Sus scrofa*)					1			**1**	*0.1*
Cervidae						17		**17**	*1.1*
Fallow deer (*Dama mesopotamica*)	4	1		11	5	45		**66**	*4.4*
Red deer (*Cervus elaphus*)	3			4	5	17		**29**	*1.9*
Gazelle (*Gazella* sp.)					1	2		**3**	*0.2*
Wild Mammals	**7**	**1**		**15**	**12**	**90**		**125**	*8.4*
Birds				2		16		**18**	
Fish						1		**1**	
Tortoise						13		**13**	
Total n. of identified specimens	**61**	**3**	**7**	**114**	**110**	**1229**	**1**	**1525**	
Large size Mammals									
vertebrae	**8**			30	15	52		**105**	
ribs	**11**			20	18	86		**135**	
varia	**21**			9	22	110	1	**163**	
Small-Medium size Mammals									
vertebrae	**6**			6	11	181		**204**	
ribs	**3**			3	12	204		**222**	
varia	**48**			4	5	234	1	**292**	
Unidentifiable				22	79	219		**320**	
Total unidentified specimens	**97**			**94**	**162**	**1086**	**2**	**1441**	
Total	**158**	**3**	**7**	**208**	**272**	**2315**	**3**	**2966**	
Worked					2	4		**6**	
Pathological				1		7		**8**	
Burnt			2	1	15	101		**119**	
Butchered	3			3	14	58		**78**	
Gnawed by carnivores	1				2	10		**13**	
Crab						**21**		**21**	
Shells						**11**		**11**	

Table 46. Total number of determined and indeterminate remains by area for the LBA (seasons 2003-2007).

sized animals are more numerous. The remains for which it was possible to determine the species show how the animal economy of LB Tilmen Höyük was mainly based on the breeding of the main domestic mammals – sheep/goats, cattle and pigs (Table 46). Domestic mammals, as a whole, represent just over 90% of the taxa documented, while wild species are 8.4%. In the minimum number of individuals, the percentage of wild species increases up to about 16.8% (Table 47), indicating a rather significant economic importance during the LB period.

Overall, the predominant taxon is sheep/goat (58.3% NR), followed by cattle (23.4% NR), and pigs (7.9% NR) (Table 46). Dogs and equids complete the domestic faunal assemblage, with minimal percentages. In the MNI, although this method leads to slight percentage variations, the general picture does not change. Sheep/goats are still the most abundant species (46.3% MNI), followed by cattle (20.1% MNI) and pigs (13.4% MNI) (Table 47, Pl. XXII: 2).

Among the wild species, cervids are prevalent over other species even during the LB, with fallow deer (*Dama mesopotamica*) accounting for 4.4% of the NR and 7% of the MNI, followed by deer (1.9% NR; 4% MNI). Other wild species, such as a possible hyena, wolf, wild boar, gazelle and bear are poorly represented and can be regarded as occasional preys; while the squirrel could be intrusive.

About the estimate of the age at death of the domestic species, the most represented age group are adults, followed by young individuals, which are also frequent (Table 48). Taking into consideration only the survivorship curve of sheep/goats (Pl. XXIII: 2), it can be noticed that although the interest in meat supply continues also during the LB period, the increasing percentage of adults shows growing interest in secondary products. Pigs, which are raised only for their meat, were mainly butchered as young and sub-adults, with an even lower incidence of adults compared to MB.

Considering the percentages related to the meat yield of the main domestic species (Pl. XXIV: 1), the incidence of cattle drops slightly in favour of sheep and goats. However, as previously mentioned it is not easy to understand if the percentage variations are the result of actual transformations of the economy or derive from the specificity of the contexts investigated. Considering the two chronological phases of the MB and LB as a whole, zooarchaeological analysis, complemented by information from ancient textual sources, provides essential data for the reconstruction of the animal economy of Tilmen Höyük during the Bronze Age, even giving information about specific pastoral practices. On this matter, it must be remarked that – despite the obvious consideration that flocks and herds were fundamental resources in the complex political systems of the Bronze Age – at the moment, there is no conclusive evidence in Anatolia for large-scale pastoralism that could have involved the seasonal migration of entire communities over great distances (Hammer and Arbuckle 2017).

In this period, in Anatolia pastoral economies were based in small areas with a limited network of settlements with summer pastures available near permanent water sources. According to Hammer and Arbuckle (2019), however, the lack of evidence for large-scale pastoralism may be partly due to a research bias arising from a focus on large urban centres and a consequent failure to attempt a comprehensive and integrated analysis of potential

Area		Late Bronze Age						Total	
	L	G	G west	G east	K-5	H	K-3	**MNI**	**%**
Dog (*Canis familiaris*)	1			1	1			**3**	*1.0*
Equids (*Equus sp.*)						3		**3**	*1.0*
Horse (*Equus caballus*)									
Donkey (*Equus asinus*)	1					3		**4**	*1.3*
Pig (*Sus domesticus*)	1		1	2	4	32		**40**	*13.4*
Sheep/Goat (*Ovis vel Capra*)	2	1	2	9	11	113		**138**	*46.3*
Cattle (*Bos taurus*)	4	1	2	8	7	37	1	**60**	*20.1*
Domestic Mammals	**9**	**2**	**5**	**20**	**23**	**188**	**1**	**248**	*83.2*
Squirrel (cfr. *Sciurus vulgaris*)						1		**1**	*0.3*
Hare (*Lepus europaeus*)									
Hyena (cfr. *Hyaena hyaena*)						1		**1**	*0.3*
Wolf (*Canis* cfr. *lupus*)						3		**3**	*1.0*
Brown bear (*Ursus arctos*)						1		**1**	*0.3*
Marten (*Martes* sp.)									
Weasel (cfr. *Mustela nivalis*)									
Wild boar (*Sus scrofa*)					1			**1**	*0.3*
Cervidae						8		**8**	*2.7*
Fallow deer (*Dama mesopotamica*)	1	1		3	2	14		**21**	*7.0*
Red deer (*Cervus elaphus*)	1			2	3	6		**12**	*4.0*
Gazelle (*Gazella* sp.)					1	1		**2**	*0.7*
Wild Mammals	**2**	**1**		**5**	**7**	**35**		**50**	*16.8*
Total MNI	**11**	**3**	**5**	**25**	**30**	**223**	**1**	**298**	

Table 47. Minimum number of individuals for mammals by area for the LBA (seasons 2003-2007).

large-area systems. Nevertheless, the most accepted hypothesis still describes Bronze Age pastoralism as a largely local phenomenon centred on a network of agricultural settlements and small grazing areas around the main urban sites.

Unlike the northern regions of Mesopotamia, where large-scale sheep and goat pastoralism played a central role in structuring the local society and economy (Vila 1998), the landscape of Anatolia, being more mountainous and humid, did not require the development of a socio-economic system largely based on high pastoral mobility. Although there was a high degree of variability in the animal economies of Bronze Age Anatolia, a recent review of the available data has mainly emphasised the meat supply, stressing that cattle were the predominant species in most regions.

The frequency of cattle at sites in central and south-eastern Turkey tended to increase during the Bronze Age compared to the previous periods. It rises from an average of about 10% in the Early Neolithic up to 18% during the Late Neolithic and Chalcolithic, and then to 27% in the Bronze Age (Arbuckle 2014)[2]. These percentages, although not particularly high or, in any case, lower than that of sheep/goats, have led scholars to assume for a long time that the animal economy of this region was similar to that of northern Mesopotamia.

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[2]   As noted above, cattle at Tilmen Höyük is testified by 31.8% NR and 28.4% MNI during MB; 23.4% NR and 20.1% MNI during LB.

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
Middle Bronze Age	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	Tot.
Dog (*Canis familiaris*)					1	*14.3*			4	*57.1*			2	*28.6*	7
Equids (*Equus* sp.*)					1	*25.0*							3	*75.0*	4
Horse (*Equus caballus*)									2	*100*					2
Donkey (*Equus asinus*)									2	*66.7*			1	*33.3*	3
Pig (*Sus domesticus*)	1	*3.8*	4	*15.4*	3	*11.5*	8	*30.8*	5	*19.2*			5	*19.2*	26
Sheep/Goat (*Ovis vel Capra*)			6	*8.1*	14	*18.9*	12	*16.2*	24	*32.4*			18	*24.3*	74
Cattle (*Bos taurus*)					10	*15.4*	17	*26.2*	19	*29.2*	1	*1.5*	18	*27.7*	65

	Fetus-Newborn		Very Young		Young		Young-Adult		Adult		Senile		Indet.		
Late Bronze Age	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	MNI	*%*	Tot.
Dog (*Canis familiaris*)													3	*100.0*	3
Equids (*Equus* sp.)							1	*33.3*	1	*33.3*			1	*33.3*	**3**
Donkey (*Equus asinus*)									3	*75.0*			1	*25.0*	4
Pig (*Sus domesticus*)	2	*5.0*	8	*20.0*	15	*37.5*	8	*20.0*	2	*5.0*			5	*12.5*	40
Sheep/Goat (*Ovis vel Capra*)	7	*5.1*	12	*8.7*	24	*17.4*	31	*22.5*	58	*42.0*	2	*1.4*	4	*2.9*	138
Cattle (*Bos taurus*)	1	*1.7*	2	*3.3*	9	*15.0*	22	*36.7*	20	*33.3*			6	*10.0*	60

Table 48. Minimum number of individuals by age class (seasons 2003-2007).

Because of their large meat yield, cattle have been regarded as the most important source of primary animal products in Anatolia during the Bronze Age, leading scholars to define the local culture as a 'cattle culture' (Arbuckle 2014; Hammer and Arbuckle 2019). The idea that the importance of cattle in Bronze Age Anatolia was closely related to the birth of the complex, hierarchical social organisations of this period is entirely convincing. The correlation between the exploitation of cattle and the increase in political complexity is supported by the abundance of this species in contexts of higher political relevance. Cattle became a symbol of wealth for the elites and was eventually incorporated into cosmologies and ritual practices. Interestingly, storm gods were occasionally represented in the form of a bull (Taracha 2009). Tilmen Höyük is probably the ancient Zalwar that was conquered by the Hittite ruler Khattushili I in the second half of the 17th century BC, which is mentioned in the following passage in this king's annals: "I went to Zalbar and destroyed it. I dedicated (the statues of) its gods and three beds to the Sun goddess of Arinna. I dedicated a silver ox to the temple of the storm god and nine (statues) of its gods to the temple of the goddess Mezzulla" (Marchesi 2011).

Based on textual sources and archaeological data, links to ritual and religious spheres can be proposed, for other animal species as well as cattle, such as deer and leopards. Dogs, and particularly their puppies, also played an important ritual role in some cultures of this period. The Hittites, for example, particularly appreciated dogs for their role in hunting, resource guarding and animal husbandry, and probably also as scavengers of domestic and urban waste. As inferred from textual sources, however, only puppies played a role in rituals, mainly for prevention and purification, though they were sacrificed only in exceptional cases (Collins 1990).

So how should we interpret the dog jaw of the MB with butchering traces found at Tilmen Höyük? The cut marks on the mandibular branch near the masseteric fossa (Pls. X-XI) suggest that the jaw was intentionally disarticulated from the skull. This would hardly have been done while merely skinning the carcass; it seems instead to be evidence of the complete butchering of the animal. It thus most likely testifies to a case of cynophagy, certainly not a common practice, but one that is attested in various contexts.

According to the available studies, anthropogenic traces pointing to the consumption of dog meat are attested between south-eastern Turkey and northern Syria, and specifically at Tell Ta'yinat, where some dog remains from Iron Age levels have butchering marks (Lipovitch 2017), in the Late Bronze and Iron Age levels of Kinet Höyük (Kabatiar 2017), at Tell Mastuma (Tomè and Nishiyama 2005), and in the Early Iron Age levels of Tell Shiukh Fawqani, where a distal dog tibia shows traces of dismemberment (Vila 2005). According to E. Vila (2005), there is evidence of the use of the skin and consumption of the meat of dogs as early as the Uruk Period and throughout the Bronze Age and the Iron Age at numerous other sites in the region, e.g. Tell Sheikh Hassan, Tell Chuera, Gindaris etc. Further south, in Israel, the burial of a puppy and other dog remains with butchering traces have been found in the Iron Age levels of Tel Miqne-Ekron (Lev-Tov *et al*. 2018).

Regarding the climate and the environment, the climate at Tilmen Höyük is continental today, with hot summers and cold winters. The annual rainfall is 900 mm and the mean annual air temperature is 16 °C (Rossi Pisa *et al*. 2013). For the past, several studies have determined that until the end of the Pleistocene (10600 to 8900 yr BP), the climate was more humid, while from the mid-Holocene (8900 to 3000 yr BP) until today, conditions have become drier, with a significant increase of climatic aridity in the last 1300 years. Overall, the past climate of Tilmen Höyük was wetter and more humid than today. These climatic conditions probably facilitated the growth of several plant species and aerial crop distribution (Rossi Pisa *et al*. 2013). In this regard, the data deduced from the presence and variability of wild animals identified from Tilmen Höyük provide a significant contribution to the reconstruction of the area's environment. Although the local climatic conditions during the Bronze Age were probably not dissimilar from the present, even allowing for the above-mentioned higher humidity, anthropogenic factors such as overgrazing, agriculture and clearing practices very likely had a substantial impact on the landscape. In particular, the presence of cervids, with a high occurrence of Persian fallow deer, indicates the existence of open forested areas. Such an environment could also explain the presence of bears and wolves – although the latter live in very diversified habitats, ranging from deserts to forests. Bears nowadays live in Mediterranean belt forests in Turkey, deciduous and conifer forests in the Black Sea region and north-eastern Turkey, oak and pine forests in the interior of the Black Sea coast, and dry forests in East Anatolia.

Among equids – whose remains, as noted above, still need to be analysed in greater detail – no wild species have been identified, even if it is not possible to exclude that some were present, such as the hemione (onager or Asiatic wild ass), whose favoured habitats are desert plains, semi-deserts, oases, arid grasslands, steppes and mountainous steppes, and gazelles, which live in a variety of semiarid and desert environments.

As to animals in riverine ecological niches, little is known about them. The availability of freshwater for the sustenance of the abundant domestic animals is certain, but the few remains of fish, shells and crab (*Potamon* sp.) do not testify to particularly significant exploitation of river resources. Overall, the zooarchaeological data from this important Bronze Age urban centre provide essential insights into the economic exploitation of different animal species, the roles they played in local society, and the transformations of the local environment over time. Combined with all the other indications provided by our analysis of the data from Tilmen Höyük, this information will eventually contribute to reconstruct the history of this capital city with ever greater accuracy and in ever greater detail.

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APPENDIX

GENERAL TABLE OF OSTEOMETRIC DATA

Measurements in mm according to Driesch 1976

WH=Withers height calculated in mm according to several
authors summarized in De Grossi Mazzorin 2008

Taxon	General Chronol.	Area	Anatomical element	Measurements
Canis familiaris	MB	Area G	Mandible	20: 19.9
Canis familiaris	MB	Area G	Mandible	13: 22.0; 14: 21.6
Canis familiaris	MB	Area G	Mandible	1: 145.2; 2: 146.5; 3: 140.1; 4: 125.1; 5: 120.7; 6: 127.4; 7: 83.3; 8: 77.4; 9: 72.6; 10: 38.1; 11: 42.0; 12: 16.1; 13: 22.4; 14: 23.5; 18: 54.2; 19: 24.1; 20: 20.3
Canis familiaris	MB	Area Q	Femur	Bd: 26.2
Canis familiaris	LB	Area G east	Upper canine	21: 40.3
Equus caballus	MB	Area G	Astragalus	Gb: 61.1
Equus caballus	MB	Area K-5 west	Phalanx I	Bd: 51.9
Equus asinus	MB	Area G	Metacarpus	Bp: 35.1
Equus asinus	MB	Area Q	Metacarpus	SD: 25.9; Bd: 35.3
Equus asinus	MB	Area L	Tibia	Bd: 54.0
Equus asinus	MB	Area Q	Metatarsus	GL: 214.7; GLl: 211.6; Ll: 208.5; Bp: 38.2; SD: 23.6; Bd: 34.5 (WH 1125)
Equus asinus	MB	Area Q	Phalanx I	GL: 63.5; Bp:37.3; SD: 22.4; Bd: 30.8
Equus asinus	MB	Area Q	Phalanx I	GL: 62.5; Bp: 38.9; SD: 23.1; Bd: 31.9
Equus asinus	MB	Area Q	Phalanx I ant.	GL: 67.4; Bp: 37.1; SD: 23.5; Bd: 32.9
Equus asinus	MB	Area Q	Phalanx I post.	GL: 67.7; Bp: 37.1; SD: 23.3; Bd: 32.9
Equus asinus	MB	Area Q	Phalanx II	GL: 36.4; Bp: 35.7; SD: 33.9; Bd: 34.7
Equus asinus	MB	Area Q	Phalanx II	GL: 36.7; Bp: 36.2; SD: 33.1; Bd: 34.3
Equus asinus	MB	Area Q	Phalanx II	GL: 36.5; Bp: 35.5; SD: 31.4; Bd: 32.4
Equus asinus	LB	Area H	Metacarpus	SD: 23.0; Bd: 33.3
Equus asinus	LB	Area H	Metacarpus	Bp: 33.3; SD: 22.0
Equus asinus	LB	Area H	Tibia	Bd: 55.6
Equus asinus	LB	Area L	Tibia	Bd: 52.3
Equus asinus	LB	Area H	Metatarsus	SD: 20.6
Equus asinus	LB	Area H	Astragalus	GH: 44.8; GB: 45.0; BFd: 39.4; LmT: 44.3
Equus asinus	LB	Area H	Phalanx I	GL: 61.4; Bp: 33.1; SD: 20.2
Equus asinus	LB	Area H	Phalanx II	GL: 29.3; Bp: 33.1; SD: 27.0; Bd: 27.2
Sus domesticus	MB	Area K-5	Mandible	15b: 17.6; 15c: 20.2
Sus domesticus	MB	Area G	Pelvis	LA: 33.2
Sus domesticus	MB	Area L	Femur	Bd: 43.3
Sus domesticus	MB	Area L	Metatarsus III	LeP: 79.3; Bd: 13.0
Sus domesticus	MB	Area Q	Phalanx II	GL: 20.4; Bp: 12.2; SD: 10.2; Bd: 9.8
Sus domesticus	LB	Area H	Astragalus	GLl: 34.5; GLm: 32.3; Dl: 16.6; Dm: 16.4; Bd: 22.8 (WH 617)

Capra hircus	LB	Area G east	Bony horn	41: 11.2; 42: 31.2
Capra hircus	LB	Area H	Mandible	9: 24.2; 15c: 17.4
Capra hircus	LB	Area H	Mandible	9: 27.5; 15b: 19.3; 15c: 12.7
Capra hircus	LB	Area H	Mandible	8: 47.5
Capra hircus	LB	Area H	Mandible	8: 51.9; 15a: 37.3; 15b: 21.8
Capra hircus	LB	Area H	Mandible	8: 51.7; 15a: 37.9; 15b: 22.7
Capra hircus	LB	Area H	Mandible	8: 48.7; 15a: 35.8; 15b: 25.1
Capra hircus	LB	Area H	Metacarpus	GL: 101.1; Bp: 24.2; SD: 17.0; Bd: 27.2 (WH 581)
Capra hircus	LB	Area H	Metatarsus	GL: 103.0; Bp: 18.2; SD: 12.2; Bd: 22.1 (WH 592)
Capra hircus	LB	Area H	Phalanx III	DLS: 16.2; Ld: 29.4; MBS: 6.4

Ovis aries	LB	Area H	Mandible	7: 76.6; 8: 51.3; 9: 25.3; 15a: 34.9; 15b: 22.1; 15c: 17.4
Ovis aries	LB	Area H	Mandible	9: 24.3; 15c: 17.5
Ovis aries	LB	Area H	Mandible	9: 50.9
Ovis aries	LB	Area H	Mandible	15b: 24.0
Ovis aries	LB	Area H	Mandible	15b: 22.6
Ovis aries	LB	Area H	Mandible	8: 49.1; 15b: 21.4
Ovis aries	LB	Area H	Mandible	8: 48.3; 15a: 38.4; 15b: 24.1
Ovis aries	LB	Area H	Mandible	8: 39.9; 15a: 36.0; 15b: 22.4

Ovis vel Capra	MB	Area L	Bony horn	41: 28.5; 42: 46.1
Ovis vel Capra	MB	Area K-5	Maxilla	22: 46.3
Ovis vel Capra	MB	Area G	Mandible	9: 22.4; 15b: 23.4; 15c: 15.5
Ovis vel Capra	MB	Area G east	Mandible	15b: 29.1; 15c: 11.8
Ovis vel Capra	MB	Area K-5	Atlas	GL: 33.9
Ovis vel Capra	MB	Area K-5	Atlas	GL: 35.8
Ovis vel Capra	MB	Area G east	Axis	BFcr: 47.9; SBV: 27.7
Ovis vel Capra	MB	Area K-5	Axis	BFcr: 45.3
Ovis vel Capra	MB	Area K-5 west	Scapula	GLP: 35.7; LG: 29.0; BG: 23.4
Ovis vel Capra	MB	Area Q	Scapula	GLP: 33.1
Ovis vel Capra	MB	Area K-5	Humerus	Bd: 30.0
Ovis vel Capra	MB	Area K-5	Humerus	Bd: 32.6
Ovis vel Capra	MB	Area K-5	Humerus	Bd: 29.2
Ovis vel Capra	MB	Area G	Radius	Bp: 29.6
Ovis vel Capra	MB	Area K-5	Radius	SD:16.7; Bd: 27.9
Ovis vel Capra	MB	Area K-5	Radius	GL: 167.3; Bp: 33.1; SD: 17.5; Bd: 32.1 (WH 672 sheep - 666 goat)
Ovis vel Capra	MB	Area K-5	Metacarpus	GL: 124.8; Bp: 22.5; SD: 13.3 (WH 610 sheep - 717 goat)
Ovis vel Capra	MB	Area Q	Metacarpus	Bd: 29.5
Ovis vel Capra	MB	Area L	Pelvis	LA: 27.3
Ovis vel Capra	MB	Area G	Tibia	SD: 13.3; Bd: 25.8
Ovis vel Capra	MB	Area K-5 west	Tibia	GL: 207.3; SD: 13.9; Bd: 25.2
Ovis vel Capra	MB	Area L	Tibia	Bd: 25.2
Ovis vel Capra	MB	Area Q	Tibia	SD: 14.6; Bd: 26.4
Ovis vel Capra	MB	Area Q	Tibia	SD: 13.0; Bd: 24.5
Ovis vel Capra	MB	Area G	Metatarsus	Bd: 24.3
Ovis vel Capra	MB	Area G	Metatarsus	Bd: 26.6

Ovis vel Capra	MB	Area K-5	Metatarsus	GL: 146.3; Bp: 22.4; SD: 11.7; Bd: 25.5 (WH 664 sheep - 781 goat)
Ovis vel Capra	MB	Area K-5	Metatarsus	Bp: 19.4; SD: 12.5
Ovis vel Capra	MB	Area L	Metatarsus	GL: 126.1; Bp: 20.0; SD: 10.4 (WH 572 sheep - 673 goat)
Ovis vel Capra	MB	Area L	Metatarsus	Bp: 19.5
Ovis vel Capra	MB	Area L	Metatarsus	Bd: 24.4
Ovis vel Capra	MB	Area L	Metatarsus	Bd: 25.4
Ovis vel Capra	MB	Area L	Metatarsus	Bp: 20.4
Ovis vel Capra	MB	Area L	Metatarsus	Bp: 20.2
Ovis vel Capra	MB	Area Q	Metatarsus	Bp: 19.6; SD: 11.3
Ovis vel Capra	MB	Area G	Calcaneus	GL: 51.6
Ovis vel Capra	MB	Area G	Astragalus	GLl: 27.1; GLm: 26.1; Dl: 14.2; Dm: 15.4; Bd: 17.4
Ovis vel Capra	MB	Area K-5	Astragalus	GLl: 29.3; GLm: 28.0; Dl: 17.2; Dm: 18.3; Bd: 19.7
Ovis vel Capra	MB	Area L	Astragalus	Dm: 16.0
Ovis vel Capra	MB	Area L	Astragalus	GLl:28.4; GLm: 27.3; Dl: 6.3; Dm: 6.7; Bd: 19.2
Ovis vel Capra	MB	Area L	Astragalus	GLl: 30.6; GLm: 29.3; Dl: 17.7; Dm: 18.1; Bd: 19.7
Ovis vel Capra	MB	Area M	Astragalus	GLl: 30.8; Dl: 16.2; Dm: 17.6
Ovis vel Capra	MB	Area Q	Astragalus	GLl: 28.8; GLm: 27.5; Dl: 6.1
Ovis vel Capra	MB	Area Q	Astragalus	GLl: 29.2; GLm: 27.4; Dl: 16.1; Bd: 17.3
Ovis vel Capra	MB	Area Q	Astragalus	GLl: 26.7; GLm: 25.4
Ovis vel Capra	MB	Area Q	Astragalus	GLl: 28.8; GLm: 27.5
Ovis vel Capra	MB	Area L	Phalanx I	GL: 32.4; Bp: 12.0; SD: 10.7; Bd: 11.8
Ovis vel Capra	MB	Area Q	Phalanx I	SD: 11.1; Bd. 11.8
Ovis vel Capra	MB	Area Q	Phalanx I	GLpe: 35.2; Bp: 11.1; SD: 9.2; Bd: 10.0
Ovis vel Capra	MB	Area Q	Phalanx I	Bd: 10.1
Ovis vel Capra	MB	Area Q	Phalanx I	GLpe: 31.4; Bp: 9.5; SD: 7.8; Bd: 9.7
Ovis vel Capra	MB	Area L	Phalanx II	GL: 20.5; Bp: 12.9; SD: 10.7; Bd: 9.6
Ovis vel Capra	MB	Area Q	Phalanx II	GLpe: 23.5; Bp: 10.7; SD: 8.0; Bd: 8.1
Ovis vel Capra	MB	Area Q	Phalanx II	GLpe: 23.9; Bp: 12.0; SD: 8.1; Bd: 8.8
Ovis vel Capra	MB	Area Q	Phalanx II	GL: 22.9; Bp: 11.9; SD: 9.2
Ovis vel Capra	MB	Area Q	Phalanx II	GL: 23.1; Bp: 11.1; SD: 8.7; Bd; 8.2
Ovis vel Capra	LB	Area H	Maxilla	22: 42.9
Ovis vel Capra	LB	Area H	Maxilla	22: 47.7
Ovis vel Capra	LB	Area H	Maxilla	22: 49.4
Ovis vel Capra	LB	Area H	Maxilla	22: 45.4
Ovis vel Capra	LB	Area H	Maxilla	22: 48.6
Ovis vel Capra	LB	Area H	Maxilla	23: 27.1
Ovis vel Capra	LB	Area H	Mandible	7: 73.7 8: 50.9; 9: 22.8; 15b: 22.4; 15c: 16.3
Ovis vel Capra	LB	Area H	Mandible	9: 24.2
Ovis vel Capra	LB	Area H	Mandible	8: 50.7; 15a: 38.4; 15b: 25.4
Ovis vel Capra	LB	Area H	Mandible	15b: 21.7
Ovis vel Capra	LB	Area H	Mandible	8: 49.2; 15a: 28.9; 15b: 18.0
Ovis vel Capra	LB	Area H	Mandible	9: 23.2; 15b: 21.0
Ovis vel Capra	LB	Area H	Mandible	15b: 21.6
Ovis vel Capra	LB	Area H	Mandible	9: 55.4
Ovis vel Capra	LB	Area H	Mandible	8: 49.7; 15b: 20.4

Ovis vel Capra	LB	Area H	Mandible	8: 50.5
Ovis vel Capra	LB	Area H	Mandible	8:53.0
Ovis vel Capra	LB	Area H	Mandible	8: 52.3; 15b: 26.5
Ovis vel Capra	LB	Area K-5	Mandible	9: 24.7; 15b: 22.9; 15c: 14.7
Ovis vel Capra	LB	Area H	Atlas	GB: 67.0; GL: 38.1; BFcr: 50.5; BFcd: 45.5
Ovis vel Capra	LB	Area H	Axis	BFcr: 45.8
Ovis vel Capra	LB	Area H	Axis	BFcr: 42.3
Ovis vel Capra	LB	Area H	Scapula	BG: 23.3
Ovis vel Capra	LB	Area H	Scapula	GLP: 30.3; LG: 25.6; BG: 21.4
Ovis vel Capra	LB	Area H	Scapula	GLP: 33.2; LG: 27.3; BG: 22.7
Ovis vel Capra	LB	Area H	Scapula	GLP: 31.2; LG: 25.5; BG: 20.7
Ovis vel Capra	LB	Area H	Scapula	GLP: 34.4; LG: 28.4; BG: 22.3
Ovis vel Capra	LB	Area H	Scapula	GLP: 38.0; LG: 30.7; 24.3
Ovis vel Capra	LB	Area H	Scapula	GLP: 32.0; LG: 25.4; BG: 20.8
Ovis vel Capra	LB	Area K-5	Scapula	GLP: 31.7; LG: 27.0; BG: 20.9
Ovis vel Capra	LB	Area G east	Humerus	Bd: 28.7
Ovis vel Capra	LB	Area G east	Humerus	Bd: 29.1
Ovis vel Capra	LB	Area H	Humerus	Bd: 27.3
Ovis vel Capra	LB	Area H	Humerus	Bd: 25.4
Ovis vel Capra	LB	Area H	Humerus	Bd: 29.8
Ovis vel Capra	LB	Area H	Humerus	Bd: 33.5
Ovis vel Capra	LB	Area H	Humerus	SD: 15.9; Bd: 30.6
Ovis vel Capra	LB	Area H	Humerus	Bd: 29.2
Ovis vel Capra	LB	Area H	Humerus	Bd: 29.2
Ovis vel Capra	LB	Area G east	Radius	Bp: 32.8
Ovis vel Capra	LB	Area H	Radius	Bp: 36.8
Ovis vel Capra	LB	Area H	Radius	Bd: 33.6
Ovis vel Capra	LB	Area H	Radius	GL: 153.1; Bp: 31.2; SD: 18.3; Bd: 28.8 (WH 615 sheep - 609 goat)
Ovis vel Capra	LB	Area H	Radius	Bp: 33.7
Ovis vel Capra	LB	Area H	Radius	Bp: 36.5
Ovis vel Capra	LB	Area H	Radius	Bd: 28.3
Ovis vel Capra	LB	Area H	Radius	Bd: 32.2
Ovis vel Capra	LB	Area H	Radius	GL: 150.2; Bp: 30.0; SD: 18.6; Bd: 18.7 (WH 603 sheep - 597 goat)
Ovis vel Capra	LB	Area H	Radius	Bp: 35.4
Ovis vel Capra	LB	Area H	Radius	Bd: 31.0
Ovis vel Capra	LB	Area H	Radius	Bd: 30.5
Ovis vel Capra	LB	Area H	Radius	Bp: 28.2
Ovis vel Capra	LB	Area H	Radius	Bp: 24.4
Ovis vel Capra	LB	Area K-5	Radius	Bd: 30.1
Ovis vel Capra	LB	Area K-5	Radius	GL: 140.2; Bp: 32.3; SD: 16.5; Bd: 29.6 (WH 563 sheep - 557 goat)
Ovis vel Capra	LB	Area K-5	Radius	Bp: 32.6
Ovis vel Capra	LB	Area H	Ulna	BPC: 20.0
Ovis vel Capra	LB	Area H	Ulna	BPC: 22.5
Ovis vel Capra	LB	Area H	Ulna	BPC: 19.3

Ovis vel Capra	LB	Area K-5	Ulna	LO: 37.6; SDO: 22.1
Ovis vel Capra	LB	Area H	Radius-Ulna	GL: 146.5
Ovis vel Capra	LB	Area H	Radius-Ulna	GL: 149.1
Ovis vel Capra	LB	Area H	Radius-Ulna	GL: 160.3
Ovis vel Capra	LB	Area G east	Metacarpus	Bp: 23.6; SD: 15.4
Ovis vel Capra	LB	Area H	Metacarpus	GL: 125.2; Bp: 22.3; SD: 13.5; Bd: 24.3 (WH 612 sheep - 719 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 124.8; Bp: 23.0; SD: 12.8; Bd: 24.6 (WH 610 sheep - 717 goat)
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 26.4
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 23.1
Ovis vel Capra	LB	Area H	Metacarpus	GL: 133.1; Bp: 28.0; SD: 18.3; Bd: 29.6 (WH 650 sheep - 765 goat)
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 22.5
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 27.6
Ovis vel Capra	LB	Area H	Metacarpus	Bd: 25.3
Ovis vel Capra	LB	Area H	Metacarpus	Bd: 30.1
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 24.5; SD: 13.4
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 23.9; SD: 17.3
Ovis vel Capra	LB	Area H	Metacarpus	GL: 119.5; Bp: 24.7; SD: 13.9; Bd: 25.5 (WH 584 sheep - 687 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 101.9; Bp: 24.0; SD: 17.1; Bd: 17.2 (WH 498 sheep - 585 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 105.3; Bp:23.1; SD: 15.2; Bd: 26.0 (WH 514 sheep - 605 goat)
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 22.3
Ovis vel Capra	LB	Area H	Metacarpus	GL: 127.3; Bp: 24.7; SD: 14.9; Bd: 26.0 (WH 622 sheep - 731 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 130.2; Bp: 27.2; SD: 17.1; Bd: 28.3 (WH 636 sheep - 748 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 128.9; Bp: 24.3; SD: 15.7; Bd: 26.5 (WH 630 sheep - 741 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 127.9; Bp: 24.7; SD: 15.0 (WH 625 sheep - 735 goat)
Ovis vel Capra	LB	Area H	Metacarpus	GL: 108.2; Bp: 23.1; SD: 15.1; Bd: 26.1 (WH 529 sheep - 622 goat)
Ovis vel Capra	LB	Area H	Metacarpus	Bd: 28.4
Ovis vel Capra	LB	Area H	Metacarpus	Bd: 26.7
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 25.3
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 25.0
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 23.7
Ovis vel Capra	LB	Area H	Metacarpus	Bp: 20.6
Ovis vel Capra	LB	Area K-5	Metacarpus	Bp: 24.1; SD: 15.8
Ovis vel Capra	LB	Area H	Pelvis	LA: 23.7
Ovis vel Capra	LB	Area H	Pelvis	LA: 29.4
Ovis vel Capra	LB	Area H	Pelvis	LA: 28.5
Ovis vel Capra	LB	Area H	Pelvis	LA: 32.5
Ovis vel Capra	LB	Area H	Femur	Bd: 42.4
Ovis vel Capra	LB	Area H	Femur	GL: 158.6; Bp: 44.4; SD: 16.4 (WH 559 sheep - 547 goat)

Ovis vel Capra	LB	Area H	Femur	Bp: 42.1
Ovis vel Capra	LB	Area H	Femur	Bp: 45.3
Ovis vel Capra	LB	Area K-5	Femur	Bp: 43.9
Ovis vel Capra	LB	Area G east	Tibia	SD: 14.7; Bd: 7.6
Ovis vel Capra	LB	Area H	Tibia	Bd: 23.4
Ovis vel Capra	LB	Area H	Tibia	Bd: 26.9
Ovis vel Capra	LB	Area H	Tibia	SD: 17.5; Bd: 29.3
Ovis vel Capra	LB	Area H	Tibia	SD: 13.5; Bd: 26.6
Ovis vel Capra	LB	Area H	Tibia	SD: 15.3; Bd: 16.2
Ovis vel Capra	LB	Area H	Tibia	Bd: 27.5
Ovis vel Capra	LB	Area H	Tibia	SD: 14.9; Bd: 26.4
Ovis vel Capra	LB	Area H	Tibia	SD: 16.3; Bd: 27.0
Ovis vel Capra	LB	Area H	Tibia	Bd: 28.8
Ovis vel Capra	LB	Area H	Tibia	Bd: 30.1
Ovis vel Capra	LB	Area H	Tibia	Bd: 28.0
Ovis vel Capra	LB	Area H	Tibia	SD: 15.2; Bd: 28.2
Ovis vel Capra	LB	Area H	Tibia	Bd: 29.0
Ovis vel Capra	LB	Area H	Tibia	BD: 24.9
Ovis vel Capra	LB	Area H	Tibia	SD: 14.4
Ovis vel Capra	LB	Area H	Tibia	Bd: 26.0
Ovis vel Capra	LB	Area H	Tibia	Bp: 46.1
Ovis vel Capra	LB	Area H	Tibia	Bd: 24.1
Ovis vel Capra	LB	Area H	Tibia	Bd: 28.2
Ovis vel Capra	LB	Area H	Tibia	Bd: 27.6
Ovis vel Capra	LB	Area H	Tibia	Bd: 31.0
Ovis vel Capra	LB	Area H	Tibia	Bd: 23.4
Ovis vel Capra	LB	Area K-5	Tibia	SD: 13.5; Bd: 25.9
Ovis vel Capra	LB	Area G east	Metatarsus	Bp: 22.8; SD: 13.9
Ovis vel Capra	LB	Area H	Metatarsus	GL: 105.9; Bp: 19.4; SD: 12.5; Bd: 22.7 (WH 480 sheep - 565 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 135.6; Bp: 20.2; SD: 11.3; Bd: 23.8 (WH 615 sheep - 724 goat)
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 27.6
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 27.7
Ovis vel Capra	LB	Area H	Metatarsus	Bp: 19.7
Ovis vel Capra	LB	Area H	Metatarsus	Bp: 24.3
Ovis vel Capra	LB	Area H	Metatarsus	Bp: 23.4
Ovis vel Capra	LB	Area H	Metatarsus	Bp: 24.4
Ovis vel Capra	LB	Area H	Metatarsus	GL: 139.2; Bp: 21.6; SD: 13.7; Bd: 25.1 (WH 631 sheep - 743 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 147.7; Bp: 20.8; SD: 12.3; Bd: 24.0 (WH 670 sheep - 788 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 147.9; Bp: 23.1; SD: 14.4; Bd: 17.2 (WH 671 sheep - 789 goat)
Ovis vel Capra	LB	Area H	Metatarsus	Bp: 20.6
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 24.2

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Ovis vel Capra	LB	Area H	Metatarsus	GL: 115.0; Bp; 19.8: SD: 13.2; Bd: 24.0 (WH 522 sheep - 614 goat)
Ovis vel Capra	LB	Area H	Metatarsus	SD: 15.1; Bd: 26.9
Ovis vel Capra	LB	Area H	Metatarsus	GL: 109.6; Bp: 21.8; SD: 14.2; Bd: 24.6 (WH 497 sheep - 585 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 142.6; Bp: 22.1; SD: 13.4 (WH 647 sheep - 761 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 136.3; Bp: 19.8; SD: 11.7; Bd: 23.0 (WH 618 sheep - 727 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 142.1; Bp: 24.0; SD: 14.2; Bd: 26.9 (WH 645 sheep - 758 goat)
Ovis vel Capra	LB	Area H	Metatarsus	SD: 15.5; Bd: 28.1
Ovis vel Capra	LB	Area H	Metatarsus	GL: 134.4; Bp: 22.0; SD: 13.1; Bd: 26.1 (WH 610 sheep - 717 goat)
Ovis vel Capra	LB	Area H	Metatarsus	GL: 140.0; Bp: 22.6; SD: 14.7; Bd: 27.1 (WH 635 sheep - 747 goat)
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 28.8
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 23.8
Ovis vel Capra	LB	Area H	Metatarsus	GL: 130.7; Bp: 21.4; SD: 12.3; Bd: 23.3 (WH 593 sheep - 697 goat)
Ovis vel Capra	LB	Area H	Metatarsus	Bd: 24.2
Ovis vel Capra	LB	Area K-5	Metatarsus	GL: 112.9; Bp: 19.8; SD: 12.3; Bd: 24.3 (WH 512 sheep - 602 goat)
Ovis vel Capra	LB	Area H	Calcaneus	GL: 63.4; GB: 24.8
Ovis vel Capra	LB	Area H	Calcaneus	GL: 64.3; GB: 22.0
Ovis vel Capra	LB	Area G east	Astragalus	GLl: 33.1; GLm: 30.2; Dl: 178.1; Dm: 17.1; Bd: 19.5
Ovis vel Capra	LB	Area H	Astragalus	GLl: 26.3; GLm: 24.8; Dl: 13.7; Dm: 15.1; Bd: 15.6
Ovis vel Capra	LB	Area H	Astragalus	GLl: 26.2; GLm: 24.5; Dl: 13.6; Dm: 14.5; Bd: 16.3
Ovis vel Capra	LB	Area H	Astragalus	GLl: 29.5; GLm: 27.5; Dl: 16.6; Dm: 17.5; Bd: 19.4
Ovis vel Capra	LB	Area H	Astragalus	GLl: 28.7; GLm: 27.4; Dl: 16.1; Dm: 15.7; Bd: 18.1
Ovis vel Capra	LB	Area H	Astragalus	GLl: 29.3; GLm: 28.0; Dl: 16.2; Dm: 17.3; Bd: 18.3
Ovis vel Capra	LB	Area H	Astragalus	GLl: 29.1; GLm: 27.3; Dl: 15.0; Dm: 17.1; Bd: 19.2
Ovis vel Capra	LB	Area H	Astragalus	GLl: 26.1; Dl: 12.7
Ovis vel Capra	LB	Area L	Astragalus	GLl: 30.9; GLm: 29.6
Ovis vel Capra	LB	Area G east	Phalanx I	GL: 36.5; Bp: 12.6; SD: 11.2; Bd: 1.1
Ovis vel Capra	LB	Area G east	Phalanx I	GL: 35.3; Bp: 11.7; SD: 9.3; Bd: 10.4
Ovis vel Capra	LB	Area H	Phalanx I	GLpe : 38.1; Bp: 14.5; SD: 14.0; Bd: 14.7
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 32.4; Bp: 12.9; SD: 10.8; Bd: 12.2
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.9; Bp: 12.9; SD: 10.7; Bd: 12.1
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.2; Bp: 12.6; SD: 10.7; Bd: 12.6
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.0; Bp: 12.5; SD: 10.8; Bd: 12.4
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.0; Bp: 11.4; SD: 8.9; Bd: 10.8
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 43.1; Bp: 16.4; SD: 11.3; Bd: 14.4
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 38.6; Bp: 13.8; SD: 11.1; Bd: 12.3
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.5; Bp: 12.6; SD: 10.4; Bd: 10.5
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.7; Bp: 11.5; SD: 9.9; Bd: 10.0
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.0; Bp: 12.1; SD: 10.5; Bd: 10.6
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 40.1; Bp: 14.5; SD: 12.1; Bd: 13.6
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 36.1; Bp: 13.7; SD: 11.9; Bd: 13.0

Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.4; Bp: 12.6; SD: 9.9; Bd: 11.0
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.9; Bp: 13.1; SD: 11.2
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.8; Bp: 13.4; SD: 10.5; Bd: 11.2
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 36.9; Bp: 14.0; SD: 10.9; Bd: 11.5
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 40.4; Bp: 14.2; SD: 11.5; Bd: 13.4
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.6; Bp: 13.4; SD: 11.3; Bd: 11.9
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.8; Bp: 13.8; SD: 12.7; Bd: 13.1
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 36.3; Bp: 14.5; SD: 12.2; Bd: 12.8
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 34.9; Bp: 12.2; SD: 10.1; Bd: 10.3
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 36.7; Bp: 13.6; SD: 11.9; Bd: 12.0
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 39.6; Bp: 15.0; SD: 12.6; Bd: 12.5
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.3; Bp: 14.0; SD: 11.3; Bd: 12.4
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 35.2; Bp: 15.2; SD: 12.1; Bd: 14.1
Ovis vel Capra	LB	Area H	Phalanx I	GLpe: 36.4; Bp: 13.0; SD: 11.5; Bd: 11.2
Ovis vel Capra	LB	Area H	Phalanx II	GL: 23.6; Bp: 12.6; SD: 9.5; Bd: 9.4
Ovis vel Capra	LB	Area H	Phalanx III	DLS: 31.4; Ld: 24.6; MBS: 7.0
Ovis vel Capra	LB	Area H	Phalanx III	DLS: 33.3; MBS: 8.4

Bos taurus	MB	Area G	Bony horn	45: 38
Bos taurus	MB	Area G	Skull	8: 50.9; 15a: 37.1; 15b: 19.5
Bos taurus	MB	Area G east	Skull	SD: 41.3
Bos taurus	MB	Area G	Mandible	7: 129.9; 8: 84.5; 9: 43.3; 15a: 64.5; 15b: 41.6; 15c: 33.7
Bos taurus	MB	Area G	Scapula	GLP: 59.7; LG: 51.9; BG: 42.5
Bos taurus	MB	Area G	Humerus	Bd: 57.1
Bos taurus	MB	Area Q	Humerus	Bd: 68.1
Bos taurus	MB	Area G	Radius	Bd: 78.5
Bos taurus	MB	Area K-5	Radius	Bd: 71.2
Bos taurus	MB	Area K-5	Radius	Bp: 64.0
Bos taurus	MB	Area Q	Radius	Bd: 75.8
Bos taurus	MB	Area G	Metacarpus	Bp: 62.2
Bos taurus	MB	Area G	Metacarpus	Bd: 53.1
Bos taurus	MB	Area G	Metacarpus	Bd: 53.5
Bos taurus	MB	Area G east	Metacarpus	Bd: 61.2
Bos taurus	MB	Area G east	Metacarpus	Bd:58.4
Bos taurus	MB	Area K-5	Metacarpus	Bp: 52.3
Bos taurus	MB	Area Q	Metacarpus	Bd: 59.0
Bos taurus	MB	Area Q	Metacarpus	Bd: 62.3
Bos taurus	MB	Area G	Femur	Bd: 67.4
Bos taurus	MB	Area G east	Tibia	Bd: 60.0
Bos taurus	MB	Area G east	Metatarsus	Bp: 58.7; SD: 32.9
Bos taurus	MB	Area G	Calcaneus	GL: 125.4; GB: 32.5
Bos taurus	MB	Area K-5	Astragalus	GLl: 64.8; GLm: 58.2; Dl: 34.6; Dm: 35.2; Bd: 42.4
Bos taurus	MB	Area K-5	Astragalus	GLl: 64.6; GLm: 59.2; Dl: 37.1; Bd: 42.7
Bos taurus	MB	Area K-5 west	Astragalus	GLl: 72.3; GLm: 69.0; Dl: 40.3; Bd: 52.9
Bos taurus	MB	Area Q	Astragalus	GLl: 70.4; GLm: 64.8; Dm: 39.1; Bd: 44.1
Bos taurus	MB	Area Q	Astragalus	GLl: 62.7; GLm: 57.9; Dl: 34.1; Dm: 33.2; Bd: 41.8

Bos taurus	MB	Area G	Phalanx I	GLpe: 58.6; Bp: 28.4; SD: 25.1; Bd: 27.5
Bos taurus	MB	Area G	Phalanx I	GLpe: 59.8; Bp: 31.5; SD: 23.8; Bd: 28.5
Bos taurus	MB	Area G	Phalanx I	Glpe: 64.7; Bp: 30.0; SD: 23.7; Bd: 26.4
Bos taurus	MB	Area K-5	Phalanx I	GLpe: 55.4; Bp: 26.6; SD: 22.9; Bd: 25.4
Bos taurus	MB	Area L	Phalanx I	GLpe: 51.4; Bp: 26.0; SD: 23.5; Bd: 25.5
Bos taurus	MB	Area Q	Phalanx I	GLpe: 58.4; Bp: 26.3; Bd: 25.0
Bos taurus	MB	Area Q	Phalanx I	Bp: 26.7
Bos taurus	MB	Area Q	Phalanx I	Bp: 26.8; SD: 23.3
Bos taurus	MB	Area K-5 west	Phalanx II	GL: 43.6; Bp: 30.2; SD: 24.5; Bd: 22.9
Bos taurus	MB	Area Q	Phalanx II	GL: 38.9; Bp: 27.4; SD: 22.3; Bd: 21.9
Bos taurus	MB	Area Q	Phalanx II	GL: 40.5; 30.3; SD: 25.2; Bd: 23.7
Bos taurus	MB	Area Q	Phalanx II	Bd: 23.2
Bos taurus	MB	Area G	Phalanx III	DLS: 68.5; Ld: 56.9; MBS: 21.3
Bos taurus	LB	Area G east	Bony horn	45: 37.7; 46: 44.2
Bos taurus	LB	Area H	Mandible	7: 147.3; 8: 93.1; 9: 57.2; 15b: 47.0; 15c: 35.1
Bos taurus	LB	Area H	Scapula	GLP: 74.9; LG: 63.4; BG: 51.4
Bos taurus	LB	Area H	Humerus	Bd: 66.9
Bos taurus	LB	Area G east	Radius	Bd: 66.4
Bos taurus	LB	Area H	Radius	Bp:75.4
Bos taurus	LB	Area H	Radius	Bd: 64.5
Bos taurus	LB	Area H	Radius	Bp: 84.3
Bos taurus	LB	Area H	Radius	Bd: 71.5
Bos taurus	LB	Area L	Radius	Bp: 84.9
Bos taurus	LB	Area G east	Metacarpus	SD: 28.9; Bd: 50.2
Bos taurus	LB	Area H	Metacarpus	Bd: 59.3
Bos taurus	LB	Area H	Metacarpus	Bp: 53.7
Bos taurus	LB	Area H	Metacarpus	Bd: 63.9
Bos taurus	LB	Area H	Metacarpus	Bp: 57.0
Bos taurus	LB	Area H	Metacarpus	Bp: 52.1
Bos taurus	LB	Area H	Tibia	Bd: 61.4
Bos taurus	LB	Area L	Tibia	Bd: 68.8
Bos taurus	LB	Area L	Tibia	Bd: 53.1
Bos taurus	LB	Area H	Metatarsus	Bd: 54.9
Bos taurus	LB	Area K-5	Metatarsus	Bd: 63.5
Bos taurus	LB	Area H	Calcaneus	GB: 45.9
Bos taurus	LB	Area G east	Astragalus	GLl: 63.8; Dl:35.2;
Bos taurus	LB	Area H	Astragalus	Bd: 39.6
Bos taurus	LB	Area H	Astragalus	GLl: 60.7; GLm: 54.8; Dl: 33.7; Dm: 35.1; Bd: 39.4
Bos taurus	LB	Area H	Astragalus	GLm: 63.3; Dm: 39.6
Bos taurus	LB	Area H	Astragalus	GLm: 59.6; Dm: 36.8
Bos taurus	LB	Area G east	Phalanx I	GLpe: 60.9; Bp: 28.1; SD: 25.1; Bd: 27.0
Bos taurus	LB	Area G east	Phalanx I	Bp: 35.3
Bos taurus	LB	Area G east	Phalanx I	SD: 27.2; Bd: 29.1
Bos taurus	LB	Area G east	Phalanx I	SD: 24.4; Bd: 24.6
Bos taurus	LB	Area G east	Phalanx I	GLpe: 55.4; Bp: 23.2; SD: 19.0; Bd: 22.1

Bos taurus	LB	Area G east	Phalanx I	GLpe: 61.1; Bp: 26.5; SD: 23.3; Bd: 25.7
Bos taurus	LB	Area H	Phalanx I	GLpe: 61.9; Bp: 26.7; SD: 23.2; Bd: 24.7
Bos taurus	LB	Area H	Phalanx I	GLpe: 57.3; Bp: 27.8; SD: 24.5; Bd: 28.1
Bos taurus	LB	Area H	Phalanx I	GLpe: 61.6; Bp: 33.8; SD: 29.8; Bd: 31.5
Bos taurus	LB	Area H	Phalanx I	SD: 28.5; Bd: 29.6
Bos taurus	LB	Area H	Phalanx I	GLpe: 54.7; Bp: 27.8; SD: 22.1; Bd: 23.9
Bos taurus	LB	Area H	Phalanx I	Bd: 24.5
Bos taurus	LB	Area H	Phalanx I	GLpe: 54.2; Bp: 24.5; SD: 19.7; Bd: 22.0
Bos taurus	LB	Area H	Phalanx I	GLpe: 58.8; Bp: 33.1; SD: 28.8; Bd: 31.6
Bos taurus	LB	Area H	Phalanx I	GLpe: 59.3; Bp: 30.1: SD: 24.7; Bd: 28.2
Bos taurus	LB	Area K-5	Phalanx I	GLpe: 61.7; Bp: 28.7; SD: 25.5; Bd: 27.2
Bos taurus	LB	Area K-5	Phalanx I	GLpe: 62.9; Bp: 25.7; SD: 22.2; Bd: 24.5
Bos taurus	LB	Area G east	Phalanx II	GL: 36.6; Bp: 30.6; SD: 26.2; Bd: 24.8
Bos taurus	LB	Area G east	Phalanx II	GL: 37.8; Bp: 25.6; SD: 20.8; Bd: 19.1
Bos taurus	LB	Area G east	Phalanx II	GL: 40.1; Bp: 5.1; SD: 21.2; Bd: 19.7
Bos taurus	LB	Area G east	Phalanx II	GL: 42.0; Bp: 27.8; 20.8; Bd: 21.6
Bos taurus	LB	Area G west	Phalanx II	GL: 36.1; Bp: 26.8; SD: 22.3; Bd: 22.4
Bos taurus	LB	Area H	Phalanx II	GL: 42.1; Bp: 27.6; SD: 21.1; Bd: 22.8
Bos taurus	LB	Area H	Phalanx II	GL: 38.8; Bp: 29.6; SD: 24.1; Bd: 26.2
Bos taurus	LB	Area H	Phalanx II	GL:43.1; Bp: 31.0; SD: 26.1; Bd: 26.8
Bos taurus	LB	Area H	Phalanx II	GL: 43.6; Bp: 31.9; SD: 26.7; Bd: 25.0
Bos taurus	LB	Area G east	Phalanx III	DLS: 56.0; Ld: 45.1
Bos taurus	LB	Area H	Phalanx III	DLS: 61.1; Ld: 47.7; MBS: 22.1
Bos taurus	LB	Area H	Phalanx III	DLS: 68.8; Ld: 55.4; MBS: 21.7
Bos taurus	LB	Area K-5	Phalanx III	LDS: 61.3; Ld: 47.4; MBS: 22.5
Bos taurus	LB	Area K-5	Phalanx III	MBS: 20.0
Bos taurus	LB	Area L	Phalanx III	DLS: 50.5; Ld: 29.1; MBS: 14.8

Canis cfr. lupus	MB	Area Q	Astragalus	GLl: 30.9; GLm: 27.1; Bd: 11.1
Canis cfr. lupus	LB	Area H	Metacarpus III	GL: 92.5; Bd:12.9
Canis cfr. lupus	LB	Area H	Metacarpus III	GL: 89.4; Bd: 11.2
Canis cfr. lupus	LB	Area H	Phalanx I	GL: 29.7; Bp: 12.2; SD: 8.0; Bd: 10.2

Mustelidae	MB	Area K-5 west	Femur	GL: 29.6

Dama mesopotamica	MB	Area G	Mandible	15b: 25.1; 15c: 19.8
Dama mesopotamica	MB	Area L	Scapula	GLP: 55.1; LG: 41.4; BG: 38.6
Dama mesopotamica	MB	Area G	Humerus	Bd: 34.1
Dama mesopotamica	MB	Area L	Humerus	Bd: 46.4
Dama mesopotamica	MB	Area K-5 west	Radius	Bp: 39.0
Dama mesopotamica	MB	Area L	Radius	Bd: 38.5
Dama mesopotamica	MB	Area L	Metacarpus	Bp: 34.8; SD: 20.8
Dama mesopotamica	MB	Area L	Metacarpus	Bd: 36.0
Dama mesopotamica	MB	Area L	Pelvis	LA: 46.1
Dama mesopotamica	MB	Area G	Tibia	Bd: 39.8
Dama mesopotamica	MB	Area G	Tibia	Bd: 41.6
Dama mesopotamica	MB	Area K-5	Tibia	Bd: 40.0

Dama mesopotamica	MB	Area M	Tibia	Bd: 36.1
Dama mesopotamica	MB	Area G	Calcaneus	GL: 94.5
Dama mesopotamica	MB	Area K-5	Calcaneus	GL: 101.2; GB: 28.5
Dama mesopotamica	MB	Area G	Astragalus	GLl: 47.3; GLm: 4.0; Dl: 26.1; Dm: 28.8; Bd: 30.5
Dama mesopotamica	MB	Area Q	Astragalus	GLl: 47.7; GLm: 46.5; Dl: 27.7; Dm: 25.9; Bd: 29.5
Dama mesopotamica	LB	Area H	Scapula	GLP: 4.5; LG: 37.6; BG: 31.4
Dama mesopotamica	LB	Area H	Scapula	GLP: 54.3; LG: 41.5; BG: 39.2
Dama mesopotamica	LB	Area H	Humerus	Bd: 49.3
Dama mesopotamica	LB	Area G east	Radius	Bd: 30.2
Dama mesopotamica	LB	Area H	Radius	Bp: 47.6
Dama mesopotamica	LB	Area H	Metacarpus	Bp: 34.8
Dama mesopotamica	LB	Area H	Metacarpus	Bp: 30.6
Dama mesopotamica	LB	Area H	Metacarpus	Bd: 32.8
Dama mesopotamica	LB	Area L	Metacarpus	Bd: 36.9
Dama mesopotamica	LB	Area H	Tibia	Bd: 29.6
Dama mesopotamica	LB	Area G east	Calcaneus	GL: 100.0; GB: 34.1
Dama mesopotamica	LB	Area K-5	Calcaneus	GB: 31.3
Dama mesopotamica	LB	Area G east	Astragalus	GLl: 44.8; GLm: 42.5; Dl: 25.6; Dm: 24.9; Bd: 28.6
Dama mesopotamica	LB	Area G east	Astragalus	GLl: 48.0; Dl: 26.5
Dama mesopotamica	LB	Area K-5	Astragalus	GLl: 43.0; GLm: 42.4; Dl: 25.5; Dm: 24.9; Bd: 29.0
Dama mesopotamica	LB	Area K-5	Cubo-navicular	GB: 36.6
Dama mesopotamica	LB	Area G east	Phalanx I	GLpe: 50.4; Bp: 20.3; SD: 13.8; Bd: 12.1
Dama mesopotamica	LB	Area H	Phalanx I	GLpe : 48.0; Bp: 12.1; SD: 12.3; Bd: 15.2
Dama mesopotamica	LB	Area L	Phalanx I	GL: 53.3; Bp: 18.2; SD: 13.0; Bd: 17.4
Dama mesopotamica	LB	Area H	Phalanx III	DLS: 44.2; Ld: 38.6; MBS: 20.2

Cervus elaphus	MB	Area K-5	Humerus	Bd: 52.1
Cervus elaphus	MB	Area L	Tibia	Bd: 41.4
Cervus elaphus	MB	Area Q	Metatarsus	Bp: 34.1
Cervus elaphus	MB	Area L	Calcaneus	GB: 38.6
Cervus elaphus	MB	Area K-5	Astragalus	GLl: 56.0; 54.3; Dl: 30.9
Cervus elaphus	MB	Area K-5	Phalanx I	Bd: 16.3
Cervus elaphus	LB	Area H	Humerus	Bp: 54.7
Cervus elaphus	LB	Area K-5	Radius	Bp: 47.6
Cervus elaphus	LB	Area G east	Metacarpus	Bd: 37.1
Cervus elaphus	LB	Area H	Femur	Bd: 57.3
Cervus elaphus	LB	Area G east	Tibia	SD: 19.9; Bd: 40.3
Cervus elaphus	LB	Area G east	Phalanx III	DLS: 75.8; Ld: 57.2; MBS: 22.6
Cervus elaphus	LB	Area H	Phalanx III	DLS: 54.1; Ld: 50.6; MBS: 14.5

Gazella sp.	MB	Area L	Phalanx I	GL: 49.1; Bp: 11.4; SD: 8.5; Bd: 10.0
Gazella sp.	LB	Area K-5	Bony horn	41: 31.4; 42: 22.3

Pl. I
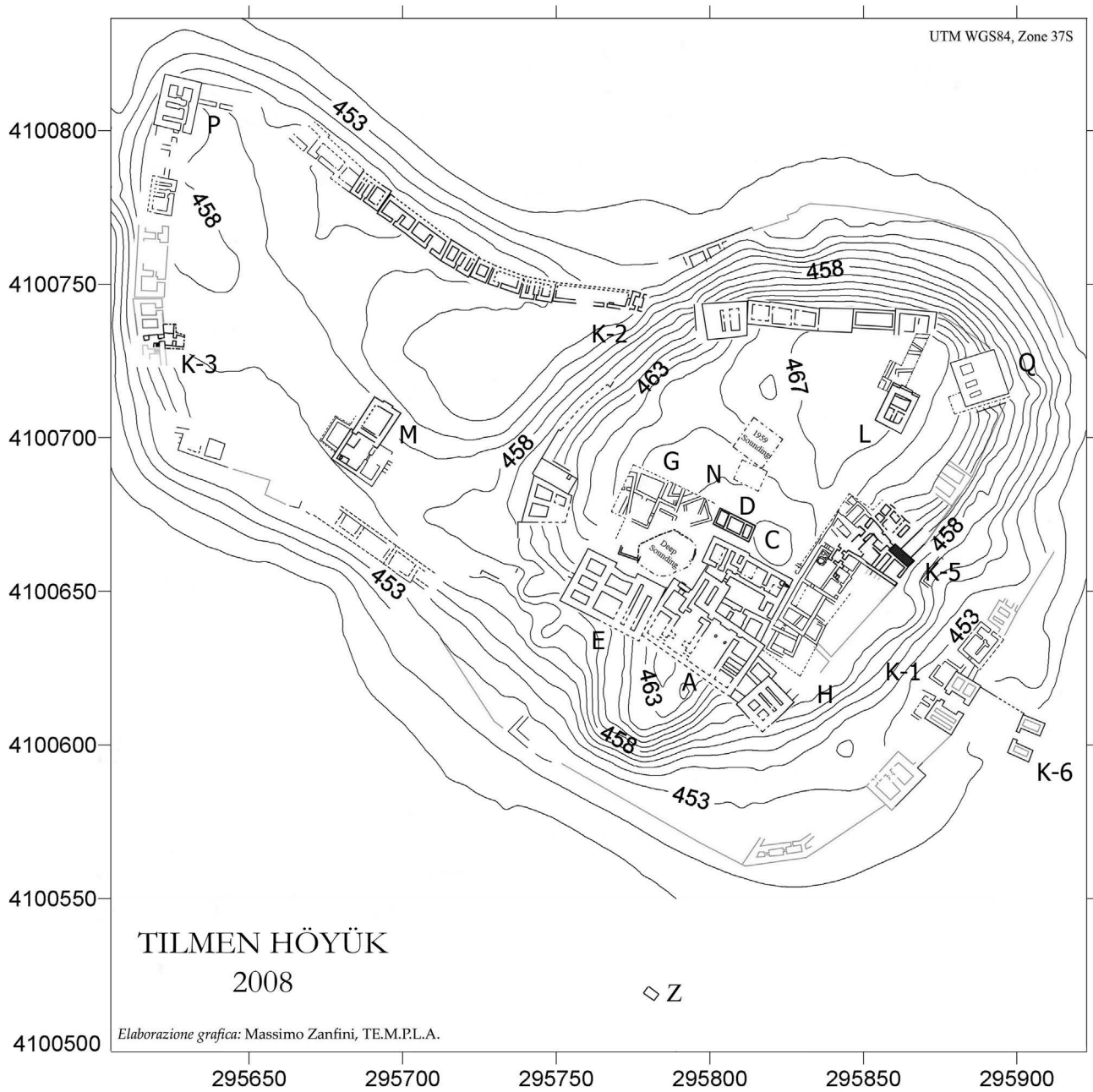
Topographic map of Tilmen Höyük with indication of the excavation areas and the second millennium BC monuments.

Pl. II

1   Temple M (Middle Bronze Age) in the lower city.

2   Basalt stele from the temple in Area M depicting a high official in a praying attitude in front of the Storm God.

Pl. III

1   View of the northern casemates (Middle Bronze Age II) from the acropolis.

2   Aerial view of the northern casemates.

Pl. IV

Fortress H (Middle Bronze Age II and Late Bronze Age I) in the south-eastern corner of the acropolis.

Pl. V

Residence K-5 on the eastern flank of the acropolis (Middle Bronze Age II).

Pl. VI

Area K-5, Sample 57. Sheep and goat epistropheus with butchering traces due to detachment of the skull.

Pl. VII

1   Area H, Sample 24. Thoracic vertebrae of a small-to-medium-size mammal with deep cutting traces due to butchering.

2   2 Area K-5, Sample 84. Diaphysis of a fallow deer metatarsus with butchering traces.

Pl. VIII

Area L, Sample 39. Portion of a deer antler with traces of burning.

Pl. IX

1   Area L, Sample 8. Right jaw of a bear.

2   Area G, Sample 106. A sheep/goat's right proximal femur with carnivore gnawing traces on the head.

Pl. X

Area G, Sample 106. Dog left lower jaw with butchering traces in correspondence of the masseteric fossa and traces of carnivore gnawing on the mandibular branch (entire view and detail).

Pl. XI

Area G, Sample 143. Left hemimandible of a dog with butchering traces in correspondence of the masseteric fossa (general view and detail).

Pl. XII

Area G East, Sample 34. Left hemimandible of a bovine with alveolus tissue remodelling in correspondence of M2-M3, probably due to an inflammatory process (general view and detail).

Pl. XIII

Area K-5, Sample 87. Gazelle horn core with traces of working to make it into a tool on its base.

Pl. XIV

1   Area H, Sample 21. Left distal humerus of *Canis* cfr. *lupus* (probably a wolf due to its large size) with carnivore gnawing traces.

2   Area H, Sample 21. Skull portion of a male cervid with antler attachment.

Pl. XV

1   Area H, Sample 24. Tortoise hypoplastron with a morphology compatible with *Testudo graeca*.

2   Area H, Sample 43. Tortoise bones and plastron.

Pl. XVI

Area H, Sample 24. Left hemimandible of a sheep (*Ovis aries*) with alveolus tissue remodelling in correspondence of the premolars due to inflammatory processes (general view and detail).

Pl. XVII

Area H, Sample 23. Pig femur with a displaced fracture and misaligned welding of the affected bone segments (medial and frontal views).

Pl. XVIII

Area H, Sample 23. Remains of the skull and mandible of very young pigs.

Pl. XIX

Area H, Sample 23. Left lower hemimandible of a young pig about 12 months old (side and top views).

Pl. XX

Area H, Sample 24a. Antler of a Persian fallow deer (*Dama mesopotamica*).

Pl. XXI

Area Q, Sample 132. Bear metacarpals showing a sort of 'vitrification' probably due to exposure to high temperature.

Pl. XXII
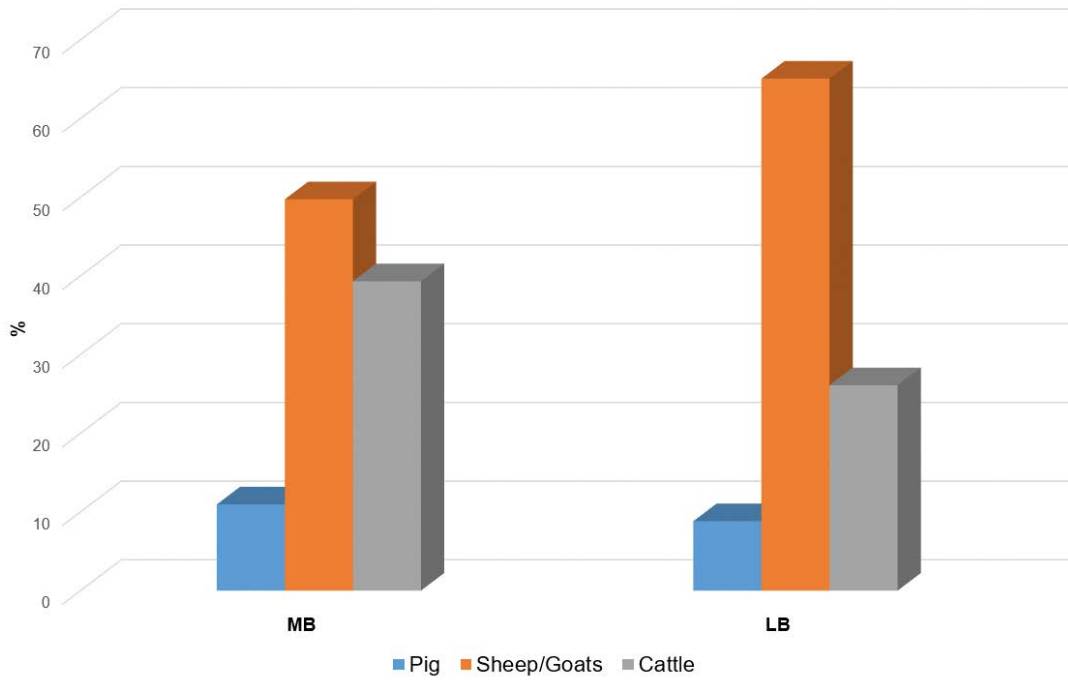
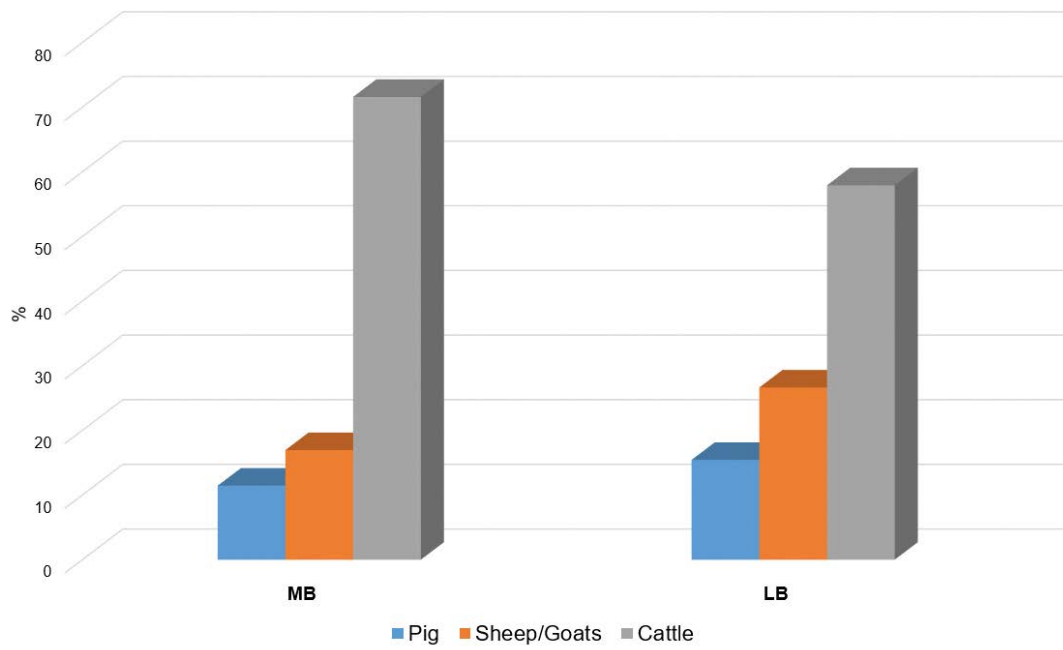1   NR percentages of the main domestic mammals during the Middle and Late Bronze Age.
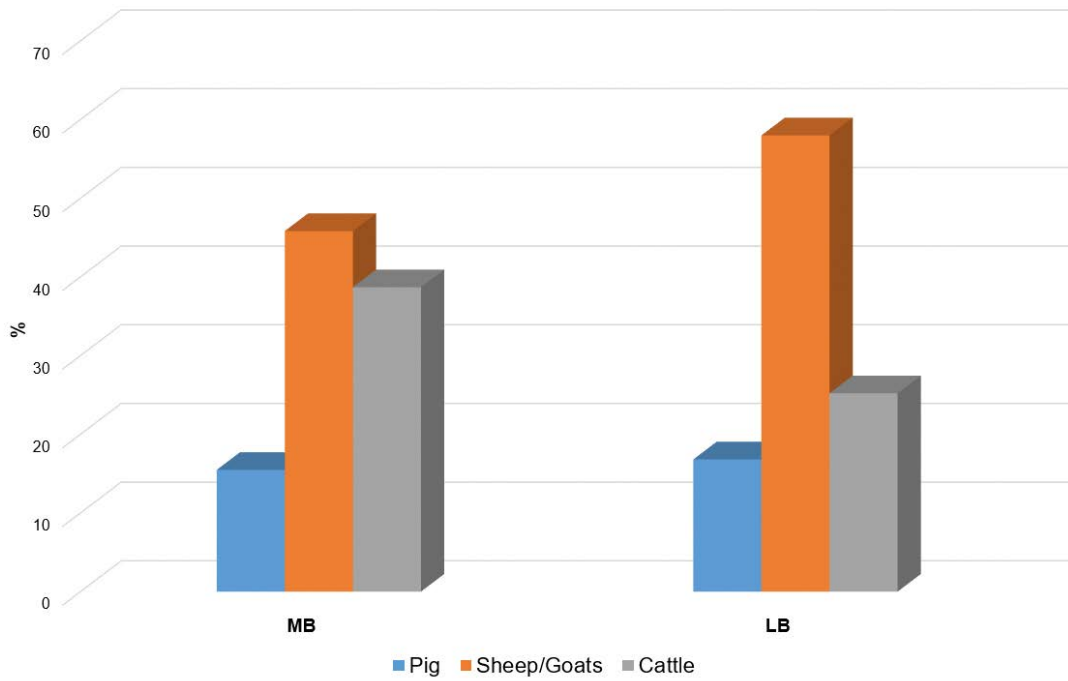
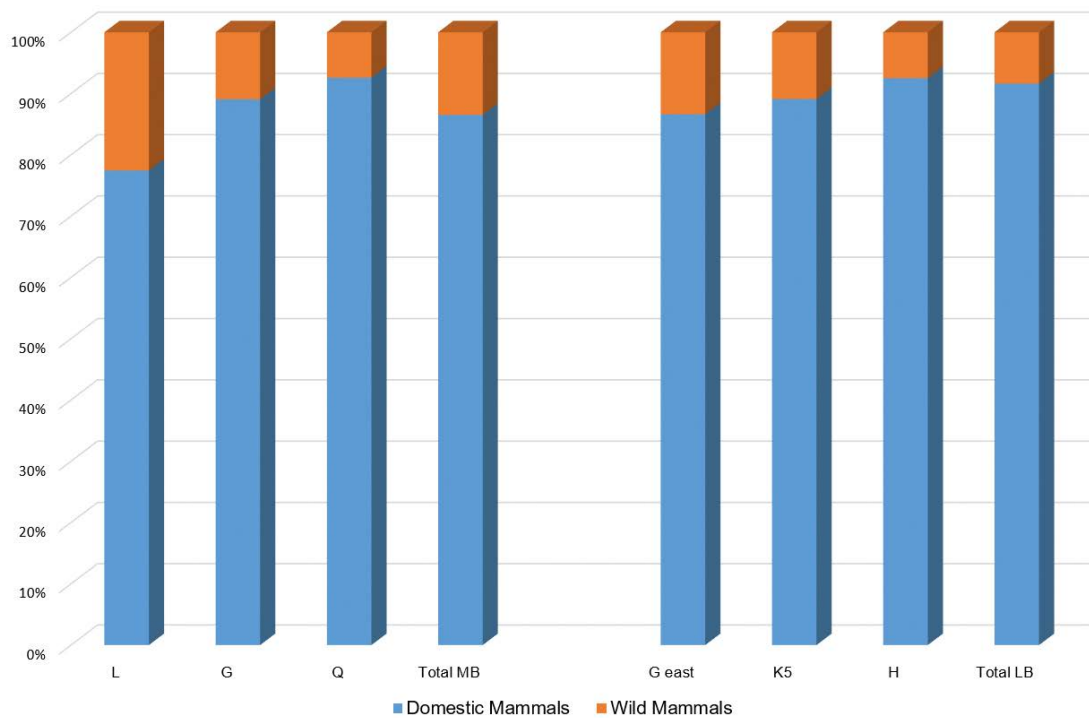2   MNI percentages of the main domestic mammals during the Middle and Late Bronze Age.

Pl. XXIII
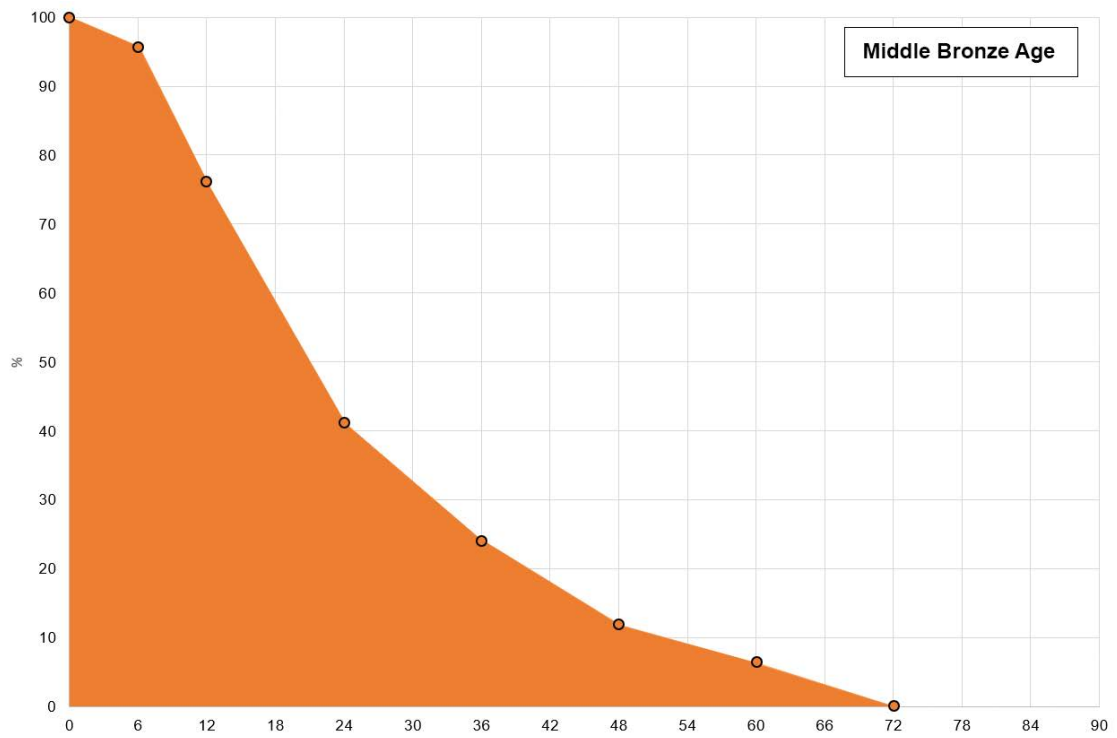
1   Sheep/goats survivorship curve for the Middle Bronze Age.
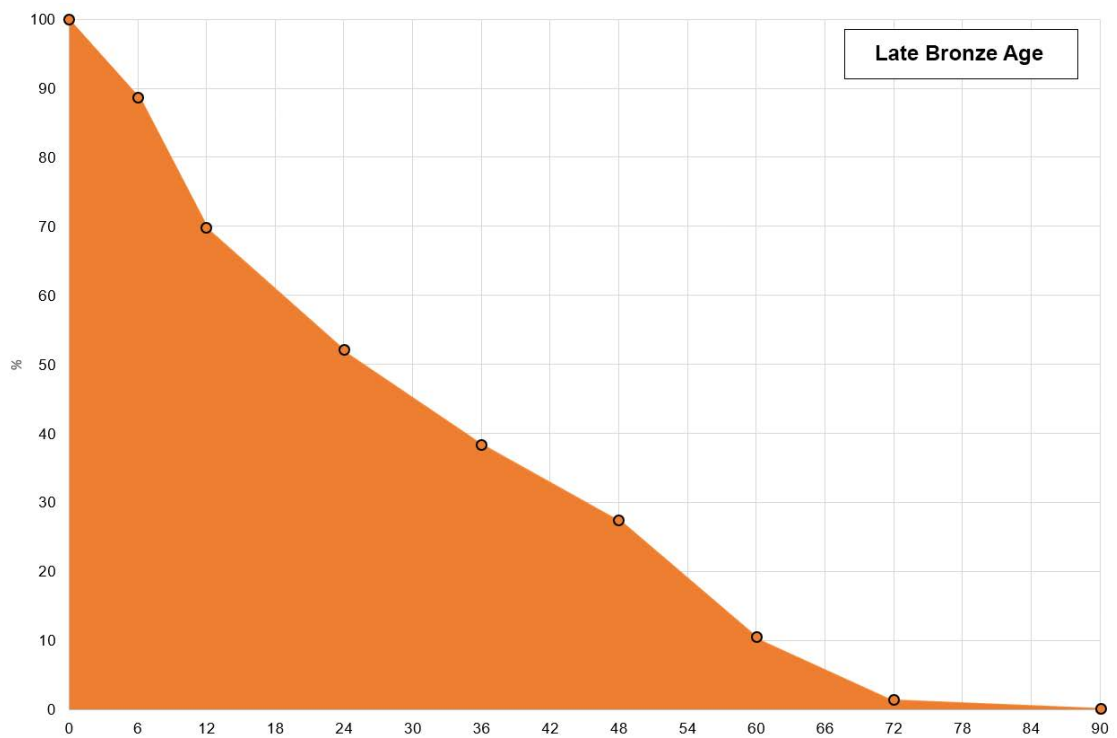
2   Sheep/goats survivorship curve for the Late Bronze Age.

Pl. XXIV

1   Meat yield percentages of the main domestic mammals during the Middle and Late Bronze Age.

2   NR of the domestic and wild mammals in selected areas and by chronological phases provided to estimate the importance of hunting.