Ḥadashot Arkheologiyot—
Excavations and Surveys in Israel 130

JERUSALEM, THE OLD CITY: THE FAUNAL REMAINS

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INTRODUCTION

The excavation at 7 Shone Halakhot Street in the Jewish Quarter, Jerusalem (see Raphael 2018) yielded a total of 1,046 complete and fragmentary identified skeletal animal remains. The majority of these faunal remains were found in loci associated with a medieval building, first built during the Ayyubid period and used mainly during the Mamluk period (late thirteenth – early fifteenth centuries CE). Smaller bone assemblages were found in narrow grooves of a quarry dated to the Second Temple period (late second and first centuries BCE) and in Cistern 108, which was used over numerous periods. While the latter two assemblages will be briefly presented here, the faunal remains from contexts associated with the medieval building will be discussed in greater detail. Their presentation includes identification of animal species or, depending on the identification ability, only animal taxa; bone-surface modifications; a profile of skeletal parts; and demographic composition. The presentation is followed by tentative explanations for the observed patterns.

The assemblage contains the remains of a wide range of animal species, including mainly domestic livestock, as well as birds and a small amount of Pisces (fish). Only few remains of carnivores and wild ungulate were found.

METHODS

The following methods of work and research were employed:

Documentation.— All the baskets of animal bones collected (hand-picked) during excavation and provided by the excavator were examined and documented.

Recording.— Recorded bones were coded in a standard Windows Excel (2003) worksheet. Bones from loci which were poorly defined stratigraphically (e.g., surface) or mixed chronologically (as defined by the excavator) were excluded from analysis and were not recorded.

Sorting.— Animal bones from each excavation unit were separated into identified (epiphysis and teeth) and unidentified (diaphysis) fragments.

Taxonomic Identification.— Bone remains were identified using the comparative collection at the Archaeozoology Laboratory at the University of Haifa. When necessary, morphological markers aided in the differentiation of closely related species (e.g., Davis 1987: Fig. 1.8 for sheep and goat). The separation of sheep (*Ovis aries*) from goat (*Capra hircus*) was based on morphological criteria of selected bones (following Boessneck 1969; Zeder and Lapham 2002). Sheep and goat skeletal elements that could not be identified by species were lumped together in a sheep/goat category. The separation of donkey (*Equus asinus*) from horse (*Equus caballus*) was based on morphological criteria of selected teeth (following Davis 1980).

Measurements.— Selected skeletal elements, such as complete and fragmented epiphyses, were measured following von den Driesch (1976) and Davis (1996). Measurements, recorded to 0.1 mm, were made using a digital caliper (FUJI 150 stainless hardened). All the measurements were recorded in a standard Windows Excel worksheet.

Quantification.— The relative abundance of different taxa was quantified for MNE (minimum number of elements) and MNI (minimum number of individuals). These values were calculated using the assumptions described in Klein and Cruz-Uribe (1984) and Lyman (2008). NISP (number of identified specimens) was used as a basic measure for the classification of large quantities (Grayson 1984).

Mortality Profiles.— Age at death of the major culled species was analyzed on the basis of epiphyseal closure (Silver 1969). Calculating the ratio between young and old individuals was based on selective epiphysis that fused around the age of two years (Davis 1983).

Taphonomic Data.— Recorded bones were inspected for various macroscopic bone-surface modifications, such as butchery marks, weathering marks (Behrensmeyer 1978), root etching (Lyman 1994) and signs of animal activity (i.e., rodent gnawing, carnivore punctures and digestion; Lyman 1994). Butchery marks were coded according to Binford (1981) and classified into three categories, representing the three stages in the butchery sequence: removal of the skin; dismemberment of the carcass; cut marks, and filleting of meat from the bones (Binford 1981).

Evidence of Burning.— The state of burning was recorded for each of the identified elements. Four categories of burnt bone were recorded: brown, black, gray and calcined.

THE FAUNAL ASSEMBLAGE

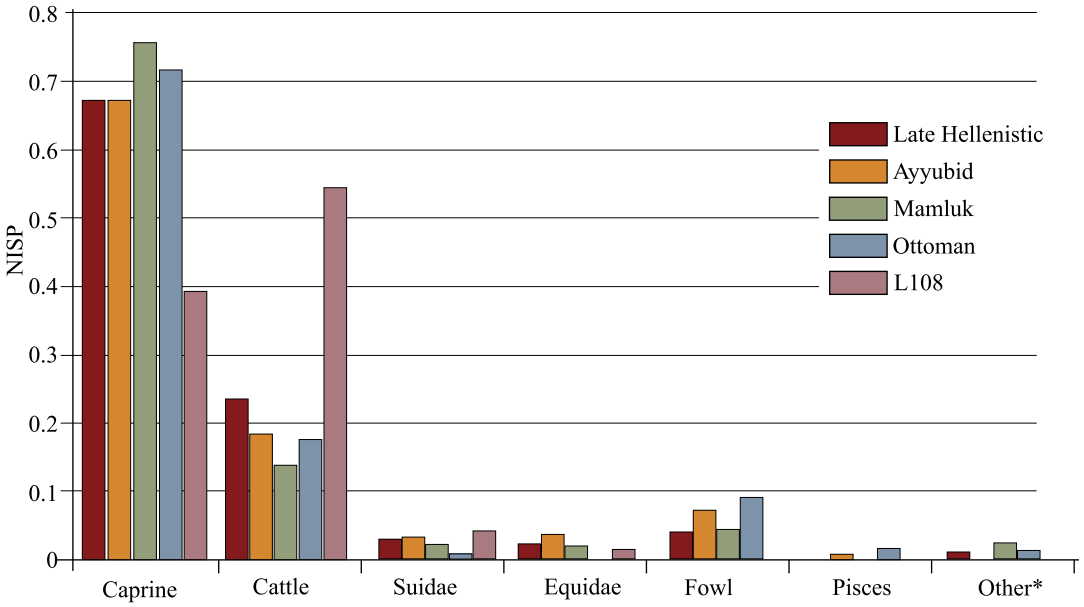
The faunal assemblage from the excavation comprised a total of 1,046 complete and fragmentary identified animal remains (Table 1; Appendix 1). For measurements of all these bones, see Appendices 2–5. The majority of these remains come from deposits dated to the Mamluk (N = 340) and the Ottoman (N = 179) periods. Small bone assemblages were retrieved from secure deposits from the Second Temple period (late Hellenistic period; late second and first centuries BCE; N = 106) and the Ayyubid period (N = 86). Animal bones were also retrieved from Cistern 108 (N = 77), which was in use over a very long period of time, from the early second century BCE through the Mamluk period, and from deposits with mixed pottery (N = 258).

The bone assemblages from all the periods represented in the excavation, as well as from Cistern 108, are dominated by caprine—sheep (*Ovis aries*) and goat (*Capra hircus*)—and cattle (*Bos taurus*) (Fig. 1). In all these assemblages, except from Cistern 108, caprine are overrepresented in comparison to cattle (Fig. 2). On the basis of taxonomically distinctive features, it was determined that sheep is more prevalent than goat in most of the loci from the Mamluk period. This pattern is reversed in most loci from the Ottoman period, where goat is more prevalent than sheep (Fig. 2).

Remains of pigs (Suidae) are quite evenly dispersed in all the assemblages recovered from the dated excavation, but they are scarce, and do not exceed three percent (Fig. 1; Tables 2–5). Despite their small numbers, it appears that all these bones derive from domestic pigs (*Sus scrofa domesticus*). The assemblage also includes the remains of donkey (*Equus asinus*; identification based on teeth morphology following Davis 1980), which are represented in small numbers (Tables 2, 6), and a single bone of a camel (*Camelus dromedarius*), from the Ottoman period (Table 5). Wild ungulates are also present in the assemblage as the remains of Mesopotamian fallow deer (*Dama mesopotamica*; Table 4). Carnivores are represented by several dog (*Canis familaris*) and cat specimens (*Felis domesticus*) (Tables 2, 4).

Table 1. Number of Identified Specimens (NISP) and Taxa According to Period/Provenance

Period/Provenance	NISP	Taxa
Late Hellenistic	106	Goat, sheep, sheep/goat, cattle, pig (Suidae), donkey, horse/donkey (Equidae), fallow deer, dog, fowl
Ayyubid	86	Goat, sheep, sheep/goat, cattle, pig (Suidae), horse/donkey (Equidae), fowl
Mamluk	340	Goat, sheep, sheep/goat, cattle, pig (Suidae), horse/donkey (Equidae), fallow deer, cat, fowl, Pisces
Ottoman	179	Goat, sheep, sheep/goat, cattle, pig (Suidae), camel, fallow deer, fowl, raptor
Cistern 108 (used over numerous periods)	77	Goat, sheep, sheep/goat, cattle, pig (Suidae), horse/donkey (Equidae), Pisces
Mixed deposits	258	Goat, sheep, sheep/goat, cattle, pig (Suidae), horse/donkey (Equidae), dog, fowl, Pisces
Total	*1046*	



*Other includes camel, fallow deer, cat, dog and bird of prey.

Fig. 1. Distribution of major animal taxa according to stratum.

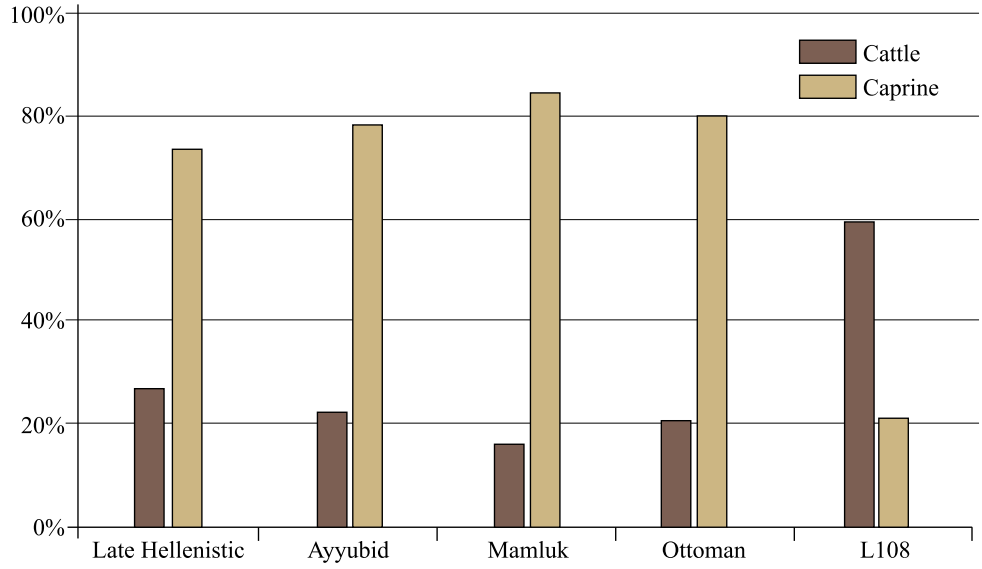


Fig. 2. The ratio between caprine and cattle according to stratum.

Table 2. Number of Identified Specimens (NISP), Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for Each Taxon from Late Hellenistic Period Loci

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus asinus*		*Equus sp.*		*Canis familiaris*		*Gallus domesticus*		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Head:																			
Horn					2	2													
Mandibular ramus							1	1											
Mandibular Teeth			1	1	9	9	3	3	1	1									
Maxillar Teeth											1*	1							
Body:																			
Atlas					1	1													
Thoracic					1	1													
Rib					4	4	4	4											
Forelimb:																			
Scapula					4	3	2	2											
Humerus					9	8											1	1	
Radius					5	4	1	1											
Ulna					3	3													
Metacarpus	4	4	1	1	4	4	4	3											
Hindlimb:																			
Pelvic Acetabulum					5	4													
Femur					6	3	1	1							1**	1	2	2	
Tibia					5	3	2	2	1	1			1	1					
Astragalus							1	1											
Metatarsus			1	1	5	5	3	2	1	1									
Tibiotarsus																	1	1	
Tarsal							1	1											

Table 2. (cont.).

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus asinus*		*Equus sp.*		*Canis familiaris*		*Gallus domesticus*		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Toes:																			
Phalanx 1	1	1																	
Phalanx 2																			
Phalanx 3							2	2											
Total NISP	*5*		*3*		*63*		*25*		*3*		*1*		*1*		*1*		*4*		*106*
Total NISP (%)	*5*		*3*		*59*		*24*		*3*		*1*		*1*		*1*		*4*		*~100*
Total MNI	*2*	*1*	*4*	*2*	*1*	*1*	*1*	*1*	*1*	*14*									
Total MNE		*5*		*3*		*54*		*23*		*3*		*1*		*1*		*1*		*4*	

* The tooth is identified as donkey (*Equus asinus*).
** Presumably dog (*Canis familiaris*).

Table 3. Number of Identified Specimens (NISP), Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for Each Taxon from Ayyubid Period Loci

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus sp.*		*Gallus domesticus*		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Head:															
Horn					3	2									
Mandibular Teeth					5	5			1	1					
Petrosum					1	1									
Body:															
Axis					1	1									
Thoracic					4	4									
Rib					5	5	2	1							
Synsacrum													1	1	
Forelimb:															
Scapula					7	6	1	1							
Coracoid															
Humerus					3	2	3	3			1	1	2	2	
Radius					6	5	3	3							
Ulna					1	1									
Metacarpus					1	1					1	1			
Hindlimb:															
Pelvic Acetabulum					2	2									
Femur					9	3			1	1			3	3	
Tibia					2	2	2	1	1	1					
Central 4th							1	1							
Metatarsus	1	1			1	1	2	2							
Toes:															
Metapod											1	1			
Phalanx 1	1	1	3	3			2	2							
Phalanx 2															
Phalanx 3															
UIDLB (shaft)					2										
Total NISP	*2*		*3*		*53*		*16*		*3*		*3*		*6*		*86*
Total NISP (%)	*2*		*3*		*62*		*19*		*3*		*3*		*7*		*~100*
Total MNI	*1*	*1*	*4*	*2*	*1*	*1*	*2*	*12*							
Total MNE		*2*		*3*		*41*		*14*		*3*		*3*		*6*	

Table 4. Number of Identified Specimens (NISP), Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for Each Taxon from Mamluk Period Loci

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus sp.*		*Dama mesopotamica*		*Felis domesticus*		*Gallus domesticus*		Pisces		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Head:																					
Horn					1	1															
Skull frag.															1	1					
Occipital					4	4															
Mandibular ramus							1	1													
Mandibular Teeth			9	9	5	5	5	5	1	1											
Petrosum					4	4															
Body:																					
Atlas					2	2															
Axis					2	2	4	4													
Cervical							1	1													
Thoracic					3	3	5	5													
Vertebrae																			1	1	
Rib					40	40	3	3	3	3											
Sternum																	2	2			
Synsacrum																	1	1			
Forelimb:																					
Scapula					12	10	1	1									1	1			
Humerus					20	14	3	2													
Radius					24	18	2	2							1	1					
Ulna					4	4	1	1													
Metacarpus	1	1	1	1	6	6	1	1					1	1							

Table 4. (cont.).

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus sp.*		*Dama mesopotamica*		*Felis domesticus*		*Gallus domesticus*		Pisces		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Hindlimb:																					
Pelvic Acetabulum					13	9	2	1							1	1	1	1			
Femur					26	11	6	4					1	1			3	3			
Tibia					37	17	3	2	1	1					2	2					
Astragalus	1	1	5	5			1	1													
Calcaneus							1	1			1	1									
Metatarsus	2	2	2	2	11	9	2	2			2	2									
Tibiotarsus																	3	3			
Tarsometatarsus																	3	3			
Toes:																					
Metapod	1	1	2	2	1	1					2	2									
Phalanx 1	5	5	8	8			1	1	1	1			1	1							
Phalanx 2	1	1					1	1			1	1									
Phalanx 3							2	2													
UIDLB (shaft)					4		1										1				
Total NISP	*11*		*27*		*219*		*47*		*6*		*6*		*3*		*5*		*15*		*1*		*340*
Total NISP (%)	*3*		*8*		*64*		*14*		*2*		*2*		*1*		*2*		*4*		*0*		*100*
Total MNI	*1*	*5*	*9*	*4*	*1*	*1*	*1*	*1*	*3*	*1*	*27*										
Total MNE		*11*		*27*		*160*		*41*		*6*		*6*		*1*		*5*		*14*		*1*	

Table 5. Number of Identified Specimens (NISP), Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for Each Taxon from Ottoman Period Loci

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Camelus dromaderia*		*Gallus domesticus*		Raptor		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Head:																	
Horn					1	1											
Occipital					5	5											
Mandibular Teeth	2	2	3	3	1	1			1	1							
Petrosum					6	6	1	1									
Body:																	
Atlas							1	1									
Axis							1	1									
Cervical																	
Thoracic					2	2	2	2									
Rib					21	21	2	2									
Sternum													1	1			
Forelimb:																	
Scapula					10	10	5	4			1	1					
Coracoid																	
Humerus					9	6	3	1									
Radius					14	7	4	3									
Ulna					3	3	1	1									
Metacarpus	1	1			2	2											
Hindlimb:																	
Pelvic Acetabulum					10	10							4	3			
Femur					11	10	5	4					4	4			
Tibia					12	10	3	3									
Astragalus							1	1									
Calcaneus	2	2			1	1											
Metatarsus	2	2			6	5	2	2									
Tibiotarsus													4	4	2	2	
Tarsometatarsus													3	3			

Table 5. (cont.).

	Capra hircus		*Ovis aries*		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Camelus dromaderia*		*Gallus domesticus*		Raptor		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Toes:																	
Metapod	1	1			2	1											
Phalanx 1			1	1													
Phalanx 2																	
Phalanx 3																	
Total NISP	*8*		*4*		*116*		*31*		*1*		*1*		*16*		*2*		*179*
Total NISP (%)	*4*		*2*		*65*		*17*		*1*		*1*		*9*		*1*		*100*
Total MNI	*1*	*1*	*5*	*2*	*1*	*1*	*2*	*1*	*14*								
Total MNE		*8*		*4*		*101*		*26*		*1*		*1*		*15*		*2*	

Bird bones are represented in all the dated assemblages (Tables 2–5; they include the remains of domestic fowl (*Gallus domesticus*) and remnants of raptors. Pisces are represented in small numbers (Tables 4, 6).

The small bone assemblage from Cistern 108 (NISP = 77; Table 6) is composed almost entirely of cattle (NISP = 42) and caprine (NISP = 30). Nevertheless, three pig bones, a single donkey bone and Pisces bones were also present.

Demography (Table 7)

The demography of the culled sheep, goat and cattle serve to shed light on the way in which livestock was exploited. Though the sample size from the Mamluk period is inadequate for a detailed demographic analysis, the age structure of both the sheep and goat populations from this period indicates that nearly two thirds of the animals were slaughtered before they reached the age of 20 months; in the case of cattle, no specimen was slaughtered prior to the age of 20 months. A similar finding was observed in the Ottoman-period loci. The high proportion of young sheep and goats suggests a husbandry system, which placed a high value on meat consumption. However, the larger proportion of mature cattle suggests a husbandry system which placed a high value on products obtained from mature live cattle, namely milk or breeding. The small bone assemblages from the Second Temple and Ayyubid periods does not allow for a similar analysis.

Human-Induced Modification (Table 8)

The meat-consumption patterns reflected in all the assemblages point to the significance of ethnic markers at the site. Cut marks (N = 33) were found on cattle, sheep, goat, pig, donkey and chicken specimens, but mostly on cattle, sheep and goat. Most cut marks were made during the process of dismembering the carcass (after Binford 1981). A small number of marks indicate filleting and skinning. In Cistern 108, 16 percent of the bones—both cattle (N = 10) and caprine (N = 2)—bore consumption signs.

In contrast, the assemblages contained only a minute number of burnt bones—a single one from the Mamluk-period deposits—providing little evidence of meat consumption at the site. This may indicate that the meat was consumed at a different place, or that the method for preparing meat did not involve roasting it over an open fire but rather cooking it in a vessel, in the form of a stew.

Post-Depositional Modification (Table 8)

The faunal remains from all the periods represented in the excavation appear to be in a good state of preservation, with little evidence of bone-surface attrition. Of the more than 300 long bone shafts examined, about 80 percent exhibited level 2 weathering out of Behrensmeyer's (1978) five weathering stages. This was evident in the low occurrence of cracking and exfoliation of bones. The good state of

Table 6. Number of Identified Specimens (NISP), Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for Each Taxon from Cistern 108

	Capra hircus		*Capra/Ovis*		*Bos taurus*		*Sus scrofa*		*Equus asinus*		Pisces		*Total*
	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	NISP	MNE	
Head:													
Horn			1	1									
Mandibular Teeth			4	4	1	1							
Maxillar Teeth							1	1					
Opercular											1	1	
Body:													
Axis			1	1									
Thoracic			2	2									
Rib			4	4	1	1							
Forelimb:													
Scapula			4	3	1	1							
Humerus			2	2	8	4							
Radius			2	1	2	1							
Ulna			1	1	1	1	1	1					
Metacarpus	1	1	1	1	3	2							
Hindlimb:													
Pelvic Acetabulum			2	2									
Femur			4	4	16	8							
Tibia			1	1	1	1	1	1					
Astragalus					2	2							
Calcaneus					1	1							
Metatarsus					2	2							
Tibiotarsus													
Tarsometatarsus													
Tarsal													
Toes:													
Metapod					1	1							
Phalanx 1					1	1			1	1			
Phalanx 2													
Phalanx 3													
UIDLB (shaft)					1								
Total NISP	*1*		*29*		*42*		*3*		*1*		*1*		*77*
Total NISP (%)	*1*		*38*		*55*		*4*		*1*		*1*		*100*
Total MNI	*1*	*2*	*4*	*1*	*1*	*1*	*10*						
Total MNE		*1*		*27*		*27*		*3*		*1*		*1*	

Table 7. Mortality Profile of Caprine and Cattle According to Period/Provenance

Period/ Provenance	Taxon	Bone fusion degree	Distal radius	Distal metapod	Distal femur	Distal tibia	Distal calcaneum	*Total*	*Total Young (%)*
Late Hellenistic	Sheep/Goat	Unfused	0	0	4	1	0	*5*	*36*
		Fused + unfused	1	7	4	2	0	*14*	
	Cattle	Unfused	0	1	0	0	0	*1*	*13*
		Fused + unfused	1	5	0	2	0	*8*	
Ayyubid	Sheep/Goat	Unfused	0	0	4	1	0	*5*	*50*
		Fused + unfused	2	2	5	1	0	*10*	
	Cattle	Unfused	0	2	0	0	0	*2*	*50*
		Fused + unfused	0	2	0	2	0	*4*	
Mamluk	Sheep/Goat	Unfused	5	5	12	8	0	*30*	*63*
		Fused + unfused	8	14	12	14	0	*48*	
	Cattle	Unfused	0	0	0	0	0	*0*	*0*
		Fused + unfused	2	2	1	2	0	*7*	
Ottoman	Sheep/Goat	Unfused	1	8	2	1	1	*13*	*50*
		Fused + unfused	5	11	2	5	3	*26*	
	Cattle	Unfused	0	0	0	0	0	*0*	*0*
		Fused + unfused	3	2	2	3	0	*10*	
Cistern 108	Sheep/Goat	Unfused	0	0	0	0	0	*0*	*0*
		Fused + unfused	1	1	0	1	0	*3*	
	Cattle	Unfused	0	1	3	0	0	*4*	*33*
		Fused + unfused	1	3	7	0	1	*12*	

Table 8. Bone Surface Modifications According to Period/Provenance

Modification	Period/Provenance				
	Late Hellenistic	Ayyubid	Mamluk	Ottoman	Cistern
Weathering* (Average)	2.6	2.6	2.4	2.5	3
Root etching (% of NISP)	3	3	6	1	5
Gnawing marks (% of NISP)	6	2	4	3	1
Cut marks (% of NISP)	6	3	3	2	16
Burnt Bones (N)	0	0	1	0	0

* Long bones shafts were examined following Behrensmeyer's (1978) five weathering stages.

preservation is also indicated by the low occurrence of bones with typical root etching (1–6 percent); similarly, only two percent bore root marks.

Additional bone-surface modification is evident in several cases of gnawing, chewing, digesting and tooth punctures by carnivores (N = 14). These are most probably the result of dogs' scavenging activity. This further reinforces the low weathering profile of the bones, as it suggests that most of the bones were not left exposed for long periods of time, and hence were not accessible to dogs.

Anatomical Representation (Figs. 3–7)

The bone assemblages from the various periods allow a thorough analysis of anatomical representation. Some variation is evident in the representation of caprine and cattle anatomical units. Nearly all elements are represented to some degree in each of the assemblages; cattle head parts are missing only in the Ayyubid-period assemblage, and cattle toe bones are missing only in the assemblages from the Ottoman-period and from Cistern 108. However, certain parts are present in higher proportions. The lower limbs (metapodia) of both caprine and cattle are overrepresented, whereas toes are underrepresented in the Second Temple-period assemblage. This may be evidence of a bone industry that exploited the straight metapodial bones (Ayalon 2003; Raban-Gerstel et al. 2011). In contrast, the high frequency of long bones—upper and middle limbs—in the deposits from the other periods and from Cistern 108 can be associated with refuse from primary butchery. In summary, the presence of cut marks from all butchery stages along with the representation of all skeletal parts may suggest that slaughtering and processing of sheep, goat and cattle was carried out in the vicinity of site.

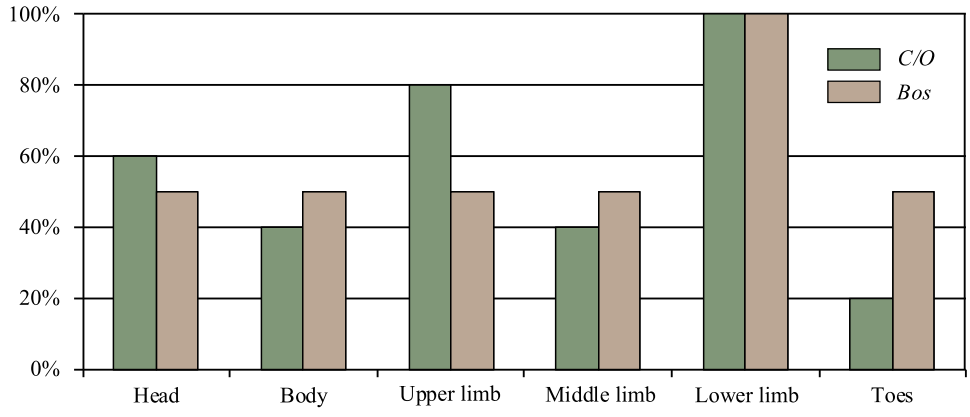


Fig. 3. Skeletal part distribution of sheep/goat (*C/O*) and cattle (*Bos*) in the Second Temple period assemblage.

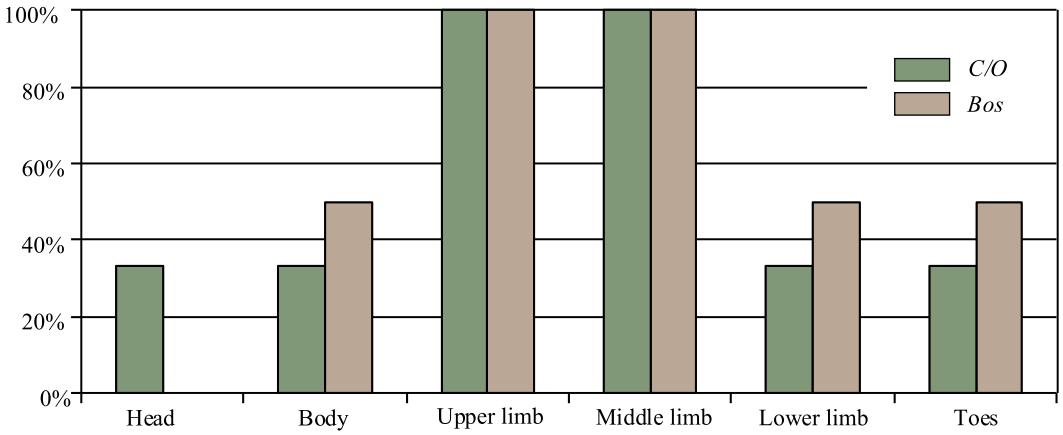


Fig. 4. Skeletal part distribution of sheep/goat (*C/O*) and cattle (*Bos*) in the Ayyubid period assemblage.

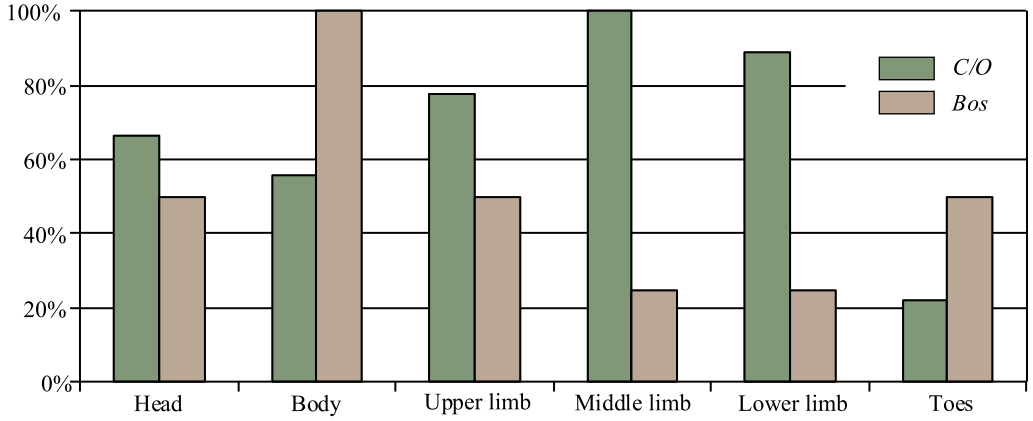


Fig. 5. Skeletal part distribution of sheep/goat (*C/O*) and cattle (*Bos*) in the Mamluk period assemblage.

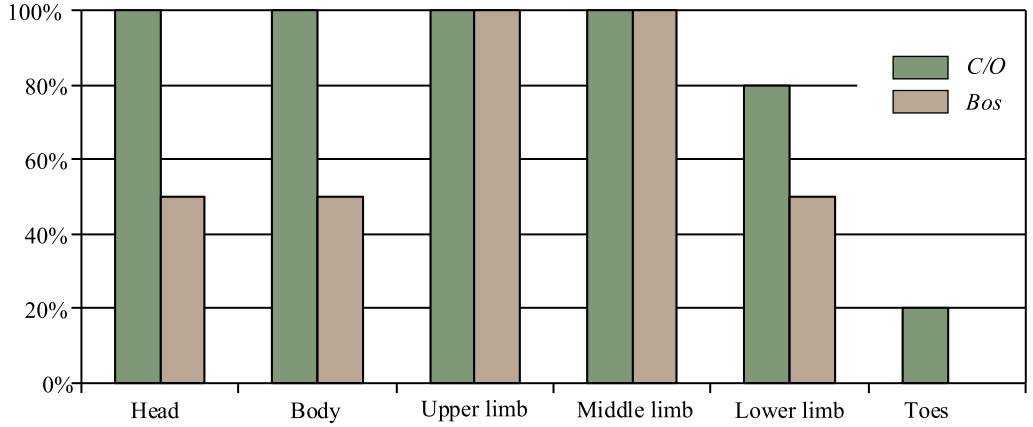


Fig. 6. Skeletal part distribution of sheep/goat (*C/O*) and cattle (*Bos*) in the Ottoman period assemblage.

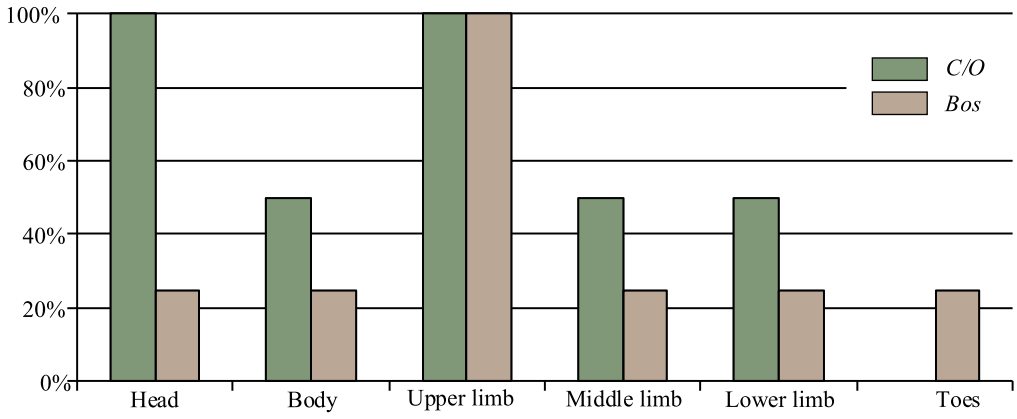


Fig. 7. Skeletal part distribution of sheep/goat (*C/O*) and cattle (*Bos*) in the Cistern 108.

CONCLUSIONS

The bone assemblage unearthed in the excavation is dominated by bone fragments resulting from primary butchery activities. The taxa consist of major livestock resources, composed primarily of sheep and goat and to a lesser extent of cattle; the opposite pattern was observed in Cistern 108. Similar frequencies of sheep and goat were found in assemblages in Israel that date from the late second and first centuries BCE (e.g., Hellwing and Feig 1989; Fisher 2005; Bar-Oz 2009), the Ayyubid period (Horwitz and Dahan 1996; Bar-Oz and Raban-Gerstel 2015), the Mamluk period (Horwitz, Tchernov and Dar 1990; Raban-Gerstel and Bar-Oz 2006a) and the Ottoman period (Raban-Gerstel and Bar-Oz 2006b). The high number of cattle bones in Cistern 108, especially of femur bones, may indicate that the cistern was used as a dump for the remains from butchery activity.

Several features of the faunal assemblage from the excavation stand out: the dominance of kosher/ḥalal animals (sheep/goat and cattle); the small number of pig bones (N = 16), some of which bear consumption marks; and the presence among the consumption debris of horse/donkey bones (N = 12), of which at least one bears filleting butchery marks. These features are found in faunal assemblages from nearby Jewish sites from the Second Temple period, such as Ḥorbat Rimmon (Horwitz 1998), the city dump in Jerusalem (Bouchnick, Bar-Oz and Reich 2004; 2007), Qumran (Bouchnick 2016) and Ḥorbat Burnaṭ (Bouchnick, Bar-Oz and Reich 2006; Bouchnick and Bar-Oz 2007), as well as at sites from the Islamic periods in Israel, such as Tel Jemmeh (Wapnish and Hesse 1988) and Yoqne'am (Horwitz and Dahan 1996).

The bones' state of preservation, in particularly the low occurrence of weathering, indicates that the bones were buried shortly after consumption. This may explain the relatively low incidence of carnivore ravaging. The presence of cut marks from all butchery stages and the patterns of skeletal-part representation tentatively suggest that slaughtering and processing of sheep, goat and cattle were carried out in the vicinity of site.

APPENDIX 1. ANIMAL REMAINS ACCORDING TO LOCI

Period/ Provenance	Area	Locus	Basket	Identified Bones	Unidentified bones	*Capra hircus*	*Ovis aries*	Caprine	*Bos taurus*	*Sus scrofa*	*Equus sp.*	*Camelus dromaderia*	*Dama mesopotamica*	*Canis familiaris*	*Felis domesticus*	*Gallus domesticus*	*Coulmba livia*	*Alectoris chukar*	Raptor	Pisces	Caprine size	Cattle size	*Gallus* size	*Total*
Ottoman	A	100	1001	69	0	3		53	11							2								*69*
		101	1009	60	0	4	1	31	20	1			1						2					*60*
		115	1106	7	0			6								1								*7*
			1115	38	0		3	25								10								*38*
			1123	5	0	1		1								3								*5*
Mamluk	A	102	1008	2	0			2																*2*
		103	1015	86	0	3	7	52	16		2		2		3	1								*86*
			1032	87	0	4	8	57	8	4	3		1		2									*87*
		104	1026	7	0		2	3	1							1								*7*
		105	1028	9	0			7	2			1												*9*
		113	1064	35	0	3	2	22	7							1								*35*
	B	116	1073	31	0		3	18	1							8				1				*31*
			1090	16	0		1	14	1															*16*
		120	1104	14	0		1	7	6															*14*
			1119	32	0	1	3	24	1							3								*32*
Ayyubid	B	121	1125	22	0		1	13	6							2								*22*
			1128	15	0			11	2							2								*15*
			1145	6	0			6																*6*
		126	1147	16	0	1	2	10			3													*16*
			1168	27	0	1		13	8	3						2								*27*
Late Hellenistic	B	129	1252	6	0			5	1															*6*
			1258	6	0			3	3															*6*
			1289	1	0	1					1													*1*
	B	129	1207	2	0	1			1															*2*
	B	133	1266	4	0			3	1															*4*
			1246	1	0				1															*1*
			1257	2	0			1	1															*2*
		132	1228	23	0			15	5	3														*23*
			1236	22	0		2	15	4					1										*22*
			1246	6	0			5								1								*6*
		134	1275	19	0	4		10	4							1								*19*
			1279	14	0		1	6	4		1					2								*14*
	C	135	1298	13	8	1		7	2	2	1										5	2	1	*21*

APPENDIX 1. (cont.)

Period/ Provenance	Area	Locus	Basket	Identified Bones	Unidentified bones	*Capra hircus*	*Ovis aries*	Caprine	*Bos taurus*	*Sus scrofa*	*Equus sp.*	*Camelus dromaderia*	*Dama mesopotamica*	*Canis familiaris*	*Felis domesticus*	*Gallus domesticus*	*Coulmba livia*	*Alectoris chukar*	Raptor	Pisces	Caprine size	Cattle size	*Gallus* size	*Total*
Unclean	A	108	1061	3	0			1	1		1													*3*
			1095	7	0			4	3	1														*8*
			1102	18	0			5	12											1				*18*
			1112	14	0			1	13															*14*
			1150	3	0	1		2																*3*
			1175	16	0			12	2	2														*16*
			1184	2	0			1	1															*2*
			1190	6	0			1	5															*6*
			1281	1	0				1															*1*
			1303	4	2			1	3												1	1		*6*
	B	112	1059	15	0		1	10	1							2				1				*15*
			1068	66	0	3	3	53	4							3								*66*
		122	1130	45	0		1	34	6							4								*45*
		127	1173	14	0			11	3															*14*
			1187	36	0	3	1	19	8	2				1		2								*36*
			1182	39	0	1	2	24	7	5														*39*
	C	128	1206	28	0	1		20	7															*28*
			1296	15	0			4	1		10													*15*
Total				*1036*	*10*	*37*	*45*	*648*	*195*	*23*	*22*	*1*	*4*	*2*	*5*	*51*	*0*	*0*	*2*	*3*	*6*	*3*	*1*	*1046*

APPENDIX 2. CATTLE: BONE MEASUREMENTS

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
Hindlimb	Femur					**F/UF**	**B/UB**	**Bp**	**Bd**		
		103	1015	257	Mamluk	0	0		79.86		
		105	1028	573	Mamluk	0	0	109.39			
	Tibia					**F/UF**	**B/UB**	**Bd**			
		128	1206	62	Unclean	0	0	61.61			
		134	1279	414	Late Hellenistic	0	0	65.97			
		122	1130	652	Unclean	0	0	54.36			
		126	1168	701	Ayyubid	0	0	64.29			
		100	1001	720	Ottoman	0	0	53.51			
		101	1009	826	Ottoman	0	0	55.02			
		101	1009	856	Ottoman	0	0	58.57			
		113	1064	916	Mamluk	0	0	51.17			
	Astragalus						**B/UB**	**Bd**	**GLI**	**GLm**	**Dm**
		127	1187	96	Unclean		0		58.85	54.46	33.26
		100	1001	736	Ottoman		0	35.04	55.07	51.51	31.33
		108	1190	793	Cistern 108		0	39.01	61.35	57.72	35.27
		108	1112	902	Cistern 108		0	43.45	62.64	57.64	36.93
		103	1032	963	Mamluk		0	37.79	62.16	56.87	34.85
Forelimb	Scapula					**F/UF**	**B/UB**	**GLP**	**LG**	**BG**	
		127	1182	126	Unclean	0	0	69.9	58.81	48.58	
		126	1168	699	Ayyubid	0	0	88.51	75.6	62.5	
	Humerus					**F/UF**	**B/UB**	**Bd**	**BT**	**HDH**	
		127	1173	42	Unclean	0	0	71.15	68.23	33.14	
		128	1206	58	Unclean	0	0			32.05	
		127	1187	93	Unclean	0	0	89.34	82.21	43.37	
		108	1061	643	Cistern 108	0	0	76.96	72.31	39.17	
		108	1102	888	Cistern 108	0	0	71.79	63.94	29.69	
	Radius Metacarpus					**F/UF**	**B/UB**	**Bp**	**Bd**	**BFd**	**GL**
		132	1236	429	Late Hellenistic	0	0		75.72	71.77	
		120	1104	519	Mamluk	0	0		67.36	55.9	
		126	1168	698	Ayyubid	0	0	80.68			72.65
		100	1001	738	Ottoman	0	0		74.62	73.89	
		108	1175	807	Cistern 108	0	0		64.39	55.64	
		101	1009	852	Ottoman	0	0		73.59	67.59	
		101	1009	829	Ottoman	0	0		59.43	57.44	
		103	1032	958	Mamluk	0	0		73.15	64.75	
						F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
		129	1207	19	Late Hellenistic	0	0	59.8			
		127	1187	90	Unclean	0	0	54.61			
		127	1187	95	Unclean	0	0	44.96			
		127	1182	120	Unclean	0	0	44.84			
		121	1125	365	Ayyubid	0	0		51.4		

APPENDIX 2. (cont.)

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
		121	1125	366	Ayyubid	0	0		50.64		
		132	1236	427	Late Hellenistic	0,0	0	43.02	46.43	220.49	25.12
		132	1236	428	Late Hellenistic	0,0	0	58.52	54.13	217.06	33.71
		132	1228	450	Late Hellenistic	0	0		61.89		
		129	1258	585	Late Hellenistic	0	0		66.55		
		100	1001	719	Ottoman	0	0		50.62		
		100	1001	761	Ottoman	0	0		59.32		
		108	1190	794	Cistern 108	0	0	43.88			
		108	1095	799	Cistern 108	0	0	56.38			
		108	1112	901	Cistern 108	0	0		61.21		
		113	1064	917	Mamluk	0	0	47.89			
Toes						**F/UF**	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
	Phalanx 1	121	1125	361	Ayyubid	0	0	25.95	24.39	49	21.56
		121	1125	362	Ayyubid	0	0	24.3	24.47	55.88	20.65
		105	1028	574	Mamluk	0	0	26.43	24.68	54.28	22.79
		108	1175	808	Cistern 108	0	0	26.74	26.56	54.55	24.56
	Phalanx 2	103	1032	959	Mamluk	0	0	25.51	21.95	39.07	20.53
							B/UB	**DLS**	**LD**	**MBS**	
	Phalanx 3	129	1252	40	Late Hellenistic		0	72.22	55.93	24.19	
		127	1182	124	Unclean		0	81.49	69.77	24.58	
		134	1279	417	Late Hellenistic		0	65.65	50.96	18.72	
		116	1090	480	Mamluk		0	72.72	60.96	18.73	
		103	1032	960	Mamluk		0	73.79	56.05	23.55	

APPENDIX 3. CAPRINE: BONE MEASUREMENTS

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
Hindlimb	Femur					**F/UF**	**B/UB**	**Bp**	**Bd**		
		127	1187	115	Unclean	0	0		37.06		
		127	1182	149	Unclean	0	0	41.8			
		112	1068	210	Unclean	0	0		39.1		
		132	1228	464	Late Hellenistic	0	0	45.67			
		116	1090	493	Mamluk	0	0	38.24			
		115	1115	612	Ottoman	0	0	46.34			
		100	1001	745	Ottoman	0	0	46.75			
		100	1001	754	Ottoman	0	0	43.12			
		101	1009	838	Ottoman	0	0	41.05			
		108	1095	803	Cistern 108	0	0	45.88			
		113	1064	939	Mamluk	0	0	41.15			
		103	1032	997	Mamluk	0	0	46.96			
	Tibia					**F/UF**	**B/UB**	**Bp**	**Bd**		
		127	1173	53	Unclean	0	0	47.52			
		128	1206	82	Unclean	0	0		30.49		
		128	1206	83	Unclean	0	0		29.75		
		127	1187	112	Unclean	0	0	46.24			
		127	1182	146	Unclean	0	0	39.27			
		127	1182	147	Unclean	0	0		30.23		
		112	1068	222	Unclean	0	0		29.92		
		112	1068	223	Unclean	0	0		30.58		
		112	1068	232	Unclean	0	0		31.1		
		103	1015	316	Mamluk	0	0		30.45		
		103	1015	317	Mamluk	0	0		30.27		
		132	1236	442	Late Hellenistic	0	0		29.81		
		120	1119	559	Mamluk	0	0		32.25		
		120	1119	560	Mamluk	0	0		28.52		
		104	1026	568	Mamluk	0	0		30.47		
		126	1168	710	Ayyubid	0	0	47.54			
		100	1001	725	Ottoman	0	0		31.7		
		100	1001	726	Ottoman	0	0	40.31			
		100	1001	773	Ottoman	0	0		26.02		
		100	1001	781	Ottoman	0	0		31.79		
		108	1175	816	Cistern 108	0	0		29.07		
		101	1009	836	Ottoman	0	0		29.38		
		113	1064	946	Mamluk	0	0	45.64			
		103	1032	1010	Mamluk	0	0		30.03		
	Astragalus						**B/UB**	**Bd**	**GLI**	**GLm**	**Dm**
		116	1073	176	Mamluk		0	20.38	32.08	30.7	19.14
		103	1015	299	Mamluk		0	22.14	34.79	33.65	0.75
		120	1119	549	Mamluk		0	23	34.92	32.11	21.13

APPENDIX 3. (cont.)

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
		103	1032	980	Mamluk		0	20.81	32.12	29.87	18.12
						F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
		127	1187	98	Unclean	0,0	0	25.24	28.51	156.7	15.82
		127	1187	99	Unclean	0,0	0	21.27	25.93	145.71	13.19
		127	1187	100	Unclean	0,0	0	23.78	27.6	141.19	13.12
		127	1187	101	Unclean	0	0	23.78			
		127	1187	102	Unclean	0	0	22.05			
		127	1182	144	Unclean	0,0	0	21.4	26.44	133.94	12.41
		127	1182	145	Unclean	0,0	0	23.18	27.12	149.38	13.79
		112	1059	338	Unclean	0	0	19.34			
		132	1246	389	Late Hellenistic	0	0	21.13			
		134	1275	405	Late Hellenistic	0	0	22.37			
		132	1236	445	Late Hellenistic	0	0	22.75			
	Metatarsus	132	1236	446	Late Hellenistic	0,0	0	22.25	25.84	142.08	13.24
		132	1228	468	Late Hellenistic	0	0	21.93			
		132	1228	469	Late Hellenistic	0,0	0	24.98			
		116	1073	511	Mamluk	0	0	23.83			
		120	1104	524	Mamluk	0	0		24.85		
		100	1001	782	Ottoman	0	0	21.06	24.93	120.64	12.23
		126	1168	711	Ayyubid	0,0	0	21.17	25.1		12.83
		126	1168	712	Ayyubid	0,0	0	23.64	26.48	143.43	13.65
		101	1009	869	Ottoman	0,0	0	20.72	23.41	132.99	13.11
		103	1032	989	Mamluk	0	0		24.27		
		103	1032	992	Mamluk	0	0		24.91		
		103	1032	993	Mamluk	0	0		26		
		103	1032	994	Mamluk	0,0	0	21.18	25.55	124.57	13.08
						F/UF	**B/UB**	**GLP**	**LG**	**BG**	
		127	1187	119	Unclean	0	0	39.82	31.79	22.97	
		112	1068	220	Unclean	0	0	28.73	21.7	20.54	
		112	1068	221	Unclean	0	0	36.28	25.11	22.09	
		103	1015	298	Mamluk	0	0	36.47	28.63	22.55	
		121	1128	355	Ayyubid	0	0	31.3	24.52	22.44	
		121	1125	376	Ayyubid	0	0		26.76	23.26	
Forelimb	Scapula	121	1145	500	Ayyubid	0	0	34.73	28.01	21.99	
		120	1104	526	Mamluk	0	0	38.12	32.7	23.81	
		120	1119	546	Mamluk	0	0	38.75	32.35	26.2	
		115	1115	621	Ayyubid	0	0	39.11	32.49	24.63	
		115	1115	624	Ayyubid	0	0	36.9	28.32	23.9	
		115	1115	625	Ayyubid	0	0	31.16	25.66	22.03	
		122	1130	689	Unclean	0	0	37.78	30.46		
		126	1168	713	Ayyubid	0	0	38.8	32.34	23.52	
		126	1168	714	Ayyubid	0	0	38.85	34.22	23.92	

APPENDIX 3. (cont.)

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
		126	1168	715	Ayyubid	0	0	38.2	32.26	25.63	
		100	1001	744	Ottoman	0	0	37.3	30.81	23.46	
		102	1008	756	Mamluk	0	0	38.78	32.28	26.8	
		100	1001	785	Ottoman	0	0	38.37	30.84	23.84	
		108	1175	820	Cistern 108	0	0	36.83	31.83	21.16	
		101	1009	843	Ottoman	0	0	42.15	36.34	26.63	
		101	1009	844	Ottoman	0	0	39.15	31.11	25.88	
		103	1032	1016	Mamluk	0	0	34.43	28.65	23.83	
						F/UF	**B/UB**	**Bp**	**Bd**	**BT**	**HDH**
	Humerus	127	1173	54	Unclean	0	0		35.55	31.71	16.02
		128	1206	75	Unclean	0	0		31.69	30.93	14.9
		127	1187	118	Unclean	0	0		33.69	32.87	17.67
		127	1182	154	Unclean	0	0	55.71			
		127	1182	155	Unclean	0	0		40.5	39.95	22.83
		116	1073	173	Mamluk	0	0		37.98	36.31	18.88
		103	1015	296	Mamluk	0	0		35.11	34.43	16.6
		112	1059	342	Unclean	0	0		32.41	32.05	15.76
		134	1275	406	Late Hellenistic	0	0		34.15	33.14	17.62
		134	1275	407	Late Hellenistic	0	0		35.82	34.9	17.45
		134	1279	422	Late Hellenistic	0	0		33.94	32.62	18.06
		132	1236	437	Late Hellenistic	0	0		33.9	31.45	16.3
		132	1228	463	Late Hellenistic	0	0		33.65	31.7	15.68
		100	1001	767	Ottoman	0	0	52.33			
		108	1095	804	Cistern 108	0	0		34.4	32.14	17.84
		108	1175	817	Cistern 108	0	0		33.22	32.68	15.85
		101	1009	878	Ottoman	0	0		37.81	34.32	18.68
		103	1032	1021	Mamluk	0	0		34.2	32.75	16.68
		103	1032	1022	Mamluk	0	0		33.19	31.92	16.44
						F/UF	**B/UB**	**Bp**	**Bd**	**BFd**	**GL**
	Radius	127	1173	55	Unclean	0,1	0	39.7		35.64	
		127	1182	152	Unclean	0	0	45.12		38.01	
		112	1068	238	Unclean	0	0	30.63			
		112	1068	239	Unclean	0	0	30.27			
		112	1068	240	Unclean	0	0	31.98			
		112	1068	241	Unclean	0,0	0		30.05	25.94	
		112	1068	242	Unclean	0	0	32.87	30.28	26.82	153.95
		121	1128	354	Ayyubid	0	0		31.16	25.97	
		134	1279	421	Late Hellenistic	0	0	36.71			
		132	1236	438	Late Hellenistic	0	0	34.29			
		132	1236	439	Late Hellenistic	0	0		34.04	28.79	
		132	1228	458	Late Hellenistic	0	0	34.16			
		115	1106	473	Ottoman	0	0		30.9	27.19	

APPENDIX 3. (cont.)

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
		116	1073	512	Mamluk	0	0	37.14			
		116	1073	513	Mamluk	0	0	37.16			
		120	1104	525	Mamluk	0	0		34.11	27.53	
		120	1119	543	Mamluk	0	0	31.62			
		126	1168	716	Ayyubid	0	0		31.88	27.04	
		126	1168	717	Ayyubid	0	0	36.91			
		101	1009	874	Ottoman	0	0	34.61			
		103	1032	1024	Mamluk	0	0	35.9			
		103	1032	1025	Mamluk	0	0	32.56			
		103	1032	1026	Mamluk	0	0	31.33			
		103	1032	1028	Mamluk	0,0	0		31.27	26.84	
						F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
		129	1207	20	Late Hellenistic	0,0	0	26.06	30.15	130.57	14.11
		128	1206	74	Unclean	0,1	0	29.67			
		127	1187	97	Unclean	0,0	0	28.77	23.85	134.49	17.4
		127	1182	150	Unclean	0,0	0	25.51	28.67	129.4	14.86
		127	1182	151	Unclean	0	0	24.83			
		112	1068	200	Unclean	0	0		29.48		
		112	1059	341	Unclean	0	0	27.11			
		121	1125	377	Ayyubid	0	0	25.18			
		134	1275	408	Late Hellenistic	0	0		28.98		
	Metacarpus	134	1275	409	Late Hellenistic	0	0		32.87		
		134	1275	410	Late Hellenistic	0,0	0	26.2	28.43	121.26	15.98
		134	1279	420	Late Hellenistic	0	0	27.54			
		132	1236	440	Late Hellenistic	0,0	0	26.51	27.63	143.47	16.02
		108	1150	478	Cistern 108	0,0	0	22.4	24.54	103.8	14.44
		104	1026	569	Mamluk	0	0	24.43			
		129	1258	584	Late Hellenistic	0	0	24.21			
		122	1130	687	Unclean	0	0	26.74			
		100	1001	788	Ottoman	0,0	0	25.48	28.16	114.15	15.23
		113	1064	933	Mamluk	0,0	0	25.84	28.73	132.8	15.34
		103	1032	1014	Mamluk	0	0		29.94		
						F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
		116	1073	177	Mamluk	0	0	15.18	13.78	43.66	12.36
		112	1068	201	Unclean	0	0	13.87	13.38	42.66	11.34
		112	1068	202	Unclean	0	0	14.93	13.63	45.05	12.74
Toes	Phalanx 1	112	1068	203	Unclean	0	0	15.16	14.65	43.49	12.64
		103	1015	302	Mamluk	0	0	14.25	13.46	37.96	11.24
		103	1015	303	Mamluk	0	0	12.92	11.24	38.7	10.65
		103	1032	987	Mamluk	0	0	13.70	12.96	42.82	11.25
		121	1125	367	Mamluk	0	0	14.77	13.91	39.14	12.39
		116	1090	488	Ayyubid	0	0	13.17	13.11	39.75	11.05

APPENDIX 3. (cont.)

Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)					
		120	1119	548	Mamluk	0	0	14.96	12.88	42.77	11.22
		115	1115	605	Mamluk	0	0	15.08	14.55	43.22	12.95
		126	1147	640	Ottoman	0	0	13.67	12.75	42.63	10.16
		126	1147	641	Ayyubid	0	0	14.23	13.76	38.88	10.57
		126	1147	642	Ayyubid	0	0	13.81	14.1	40.96	12.67
		122	1130	690	Cistern 108	0	0	14.33	14.32	42.05	12.95
		113	1064	928	Unclean	0	0	14.38	14.02	42.31	12.54
		103	1032	985	Mamluk	0	0	17.14	15.75	44.54	14.47
		103	1032	986	Mamluk	0	0	13.75	14.06	39.01	12.22
	Phalanx 2	103	1015	304	Mamluk	0	0	12.63	10.73	27.06	9.050

APPENDIX 4. BONE MEASUREMENTS OF VARIOUS SPECIES

Species	Bone	Part	Locus	Basket	Period/ Provenance	Index No.	Measurements (mm)					
							F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
Canis familiaris	Hindlimb	Femur	132	1236	Late Hellenistic	425	0,0	0	24.67	20.89	92.93	8.86
							F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
Sus scrofa	Hindlimb	Tibia	103	1032	Mamluk	1005	0	0		30.15		
Felis domesticus	Hindlimb	Tibia	103	1015	Mamluk	248	0,0	0	18.05	13.55	109.45	
Felis domesticus	Hindlimb	Tibia	103	1032	Mamluk	948	0,0	0	18.73	14.94	110.08	7.5
Equus sp.	Hindlimb	Tibia	134	1279	Late Hellenistic	413	0	0		53.38		
							F/UF	B/UB	Bp	Bd	GL	SD
Sus scrofa	Hindlimb	Metatarsus 3	127	1187	Unclean	86	0,0	0	21.17	22.8	105.92	
Sus scrofa	Hindlimb	Metatarsus 3	132	1228	Late Hellenistic	447	0	0	17.59			
Equus sp.	Hindlimb	Metatarsus 3	103	1032	Mamluk	954	0,0	0	37.48	33.13	224.36	21.81
							F/UF	**B/UB**	**Bd**	**BT**	**HDH**	
Sus scrofa	Forelimb	Humerus	127	1182	Unclean	127	0	0	35.65	30.66	19.34	
							F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
Dama mesopotamica	Forelimb	Metacarpus	103	1015	Mamluk	244	0	0	33.91			
Equus sp.	Forelimb	Metacarpus	126	1147	Ayyubid	628	0,0	0	51.42	53.14	226.14	35.81
							F/UF	**B/UB**	**Bp**	**Bd**	**GL**	**SD**
Dama mesopotamica	Toes	Phalanx 1	103	1015	Mamluk	245	0	0	16.1	16.74	44.38	13.08
Equus sp.	Toes	Phalanx 1	108	1061	Cistern 108	644	0	0	39.96	34.06	69.74	24.14

APPENDIX 5. AVES: BONE MEASUREMENTS

Species	Bone	Part	Locus	Basket	Index No.	Period/ Provenance	Measurements (mm)						
							F/UF	**B/UB**	**Bp**	**Bd**	**Dd**	**GL**	
			127	1187	87	Unclean	0,0	0	16.11	13.97	12.48	71.11	
			116	1073	163	Mamluk	0,0	0	15.4	13.14	11.84		
			116	1073	164	Mamluk	0,0	0	15.98	13.27	11.01	66.8	
			115	1123	324	Ottoman	0,0	0	14.07	13.03	10.78	64.1	
			115	1123	325	Ottoman	0,0	0	14.36	12.25	9.42	65.07	
		Femur	121	1128	346	Ayyubid	0	0		11.37	12.28		
			132	1246	386	Late Hellenistic	0,0	0	14.14	12.74	10.66	72.43	
			134	1279	411	Late Hellenistic	0,0	0	16.53	15.32		79.21	
			115	1115	593	Ottoman	0,0	0	13.95	13.21	10.52	69.95	
Gallus domesticus	Hindlimb		115	1115	594	Ottoman	0	0	16.28				
			126	1168	694	Ayyubid	0,0	0	14.66	13.79	11.07	72.73	
							F/UF	**B/UB**	**Bp**	**Dip**	**Bd**	**Dd**	**GL**
			116	1073	165	Mamluk	0,0	0		16.66		9.97	93.3
			134	1279	412	Late Hellenistic	0	0			10.74	11.88	
			115	1115	595	Ottoman	0	0			10.23	10.99	
		Tibiotarsus	115	1115	596	Ottoman	0,0	0	19.15		11.16	11.97	103.23
			115	1115	597	Ottoman	0,0	0	17.58		10.56	11.06	102.19
			122	1130	646	Unclean	0,0	0	17.5		9.74	10.05	89.72
			122	1130	647	Unclean	0	0			11.02	11.56	
			100	1001	763	Ottoman	0,0	0					145.48
			113	1064	913	Mamluk	0,0	0	21.76		12.27	13.43	119.62
Raptor	Hindlimb	Tibiotarsus	101	1009	822	Ottoman	0,0	0	17.27		9.72	9.97	92.8
			101	1009	845	Ottoman	0	0			16.99	16.77	
	Hindlimb	Tarsometatarsus					**F/UF**	**B/UB**	**Bp**	**Bd**	**GL**	**SC**	
			116	1073	503	Mamluk	0,0	0	12.75	12.13	67.71	6.68	
	Forelimb	Scapula					**F/UF**	**B/UB**	**Dip**				
Gallus domesticus			104	1026	566	Mamluk	0	0	10.3				
		Humerus					**F/UF**	**B/UB**	**Bp**	**Bd**	**SC**		
			121	1128	347	Ayyubid	0	0	34.03		12.07		
			122	1130	648	Unclean	0	0		15.35			
			122	1130	649	Unclean	0	0		12.28			

NOTES

[1] The Land of Israel Studies Department, Kinneret collage on the Sea of Galilee, Israel. I would like to thank Kate Raphael for the cooperation in analyzing the faunal assemblage and Dafnah Strauss for editing the article.

[2] The complete research protocol and dataset for each of the identified zooarchaeological specimens is stored in the Israel Antiquity Authority Archives or may be acquired from the author. The bone assemblage is stored at the IAA.

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