'Atiqot 100, 2020

Faunal Remains from the Magen Avraham Compound, Yafo (Jaffa)

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Introduction

The excavation in the Magen Avraham Compound, Yafo, uncovered a small assemblage of faunal remains dating to the Byzantine–Early Islamic and Ottoman periods. The animal bones were deposited in an area that used to be part of the agricultural periphery of the town (see Arbel and Rauchberger, this volume).

Methods

The bones were washed with tap water and dried in the shade to remove adhering sediments and dust before analysis. The skeletal elements to which the specimens belonged were identified where possible for the long bone shafts, ribs, vertebra and cranial fragments. The preserved part of each long bone, proximal epiphysis, proximal shaft, mid-shaft, distal shaft or distal epiphysis, was noted, and its percentage of completeness in relation to the complete element was estimated (Klein and Cruz-Uribe 1984). For other skeletal elements, the presence of diagnostic zones was noted (Dobney and Rielly 1988). The minimum number of elements (MNE) was not calculated due to the small sample size.

The bones were identified to the biological taxon or, where this was not possible, assigned to a size class, using the comparative collection of the Laboratory of Archaeozoology at the University of Haifa. The large-sized mammals comprise cattle, donkey and horse and the medium-sized mammals comprise sheep, goat and pig. Morphologically-similar sheep and goats were distinguished following the criteria published by Zeder and Lapham (2010). The identification of equids as either a donkey or a horse relied on the morphological criteria published by Johnstone (2004).

Data was collected on bone measurements (Driesch 1976) and the state of tooth wear (Grant 1982) and epiphyseal fusion. The location of butchery marks and the tool type causing the marks were noted (Rixson 1989), along with observations on the degree of weathering (Behrensmeyer 1978), carnivore gnawing (Binford 1981), burning and fracture morphology (Villa and Mahieu 1991). The terminology used in this report follows the glossary in Lyman (2008:309–311).

THE FINDS

The Byzantine–Early Islamic Periods (Strata VI–V)

Seven bones from these periods could be identified to biological taxon (Table 1), comprising caprines (sheep, *Ovis aries*, or goat, *Capra hircus*; NISP = 1), cattle (*Bos taurus*; NISP = 1), pig (*Sus scrofa*; NISP = 1), equid (*Equus* sp.; NISP = 3; a maxillary molar was identified as a donkey, *E. asinus*, and a maxillary premolar as a horse, *E. caballus*) and camel (*Camelus dromedarius*; NISP = 1). This small assemblage provides sparse data on skeletal element representation (Table 2) and bone measurements (Table 3). The camel and cattle epiphyses are fused, indicating that the animals died as adults.

Fracture morphology was noted on three bones; in two, fracture was consistent with the breakage of the bone while fresh. Evidence for carnivore damage, likely by dogs, includes the survival of more than half of the original circumference of the bones, showing the "cylindrical" morphology of fresh bone breakage, and the presence of a bone that was extensively gnawed and digested. These observations indicate that at least some of the bone fragments were left exposed to the elements for some time before burial.

The Ottoman Period (Strata III–II)

These bones were retrieved from accumulations underlying and overlying an agricultural footpath, leading in the direction of Yafo. Of the fourteen bones that could be identified to taxon, seven belonged to caprines, one of which was identified as a goat. The other specimens consist of three cattle bones, three equid bones, one of which is probably a donkey, and a single dog bone.

Little can be said regarding the skeletal element distribution (Table 2), except that most parts of the body are represented for the caprines. A cattle phalanx and an equid radius have fused epiphyses, indicating an adult age at death. Two caprine mandibles could be assigned to Payne's (1973) Wear Stages I and H, indicating that the animals probably died in late adulthood, at an age of 6–10 years at death.

Table 1. Taxonomic Frequencies in Samples according to Periods

Period / Taxon	Byzantine–Early Islamic		Late Ottoman	
	NISP[i]	%NISP	NISP	%NISP
Caprine	1	14	7	50.0
Cattle	1	14	3	21.5
Pig	1	14		
Equid	3	42	3	21.5
Camel	1	14		
Dog			1	7.0
Total	*7*	*98*	*14*	*100.0*
Medium-sized mammal	2		4	
Large-sized mammal	2		3	

[i] NISP = number of identified specimens.

Table 2. Counts of Skeletal Elements, according to Taxon and Period

Taxon \ Period	Skeletal element	Byzantine–Early Islamic	Late Ottoman
Goat	Metatarsus		1
Caprine	Femur		1
	Mandible		1
	Mandible (M1/2)		1
	Mandible (M3)		1
	Tibia		1
	Ulna		1
	Vertebra, atlas	1	
Cattle	Metacarpus		1
	Phalanx 1		1
	Phalanx 2		1
	Radius	1	
Pig	Scapula	1	
Horse	Maxilla (P)	1	
Donkey	Maxilla (M)	1	
	Radius		1
Equid	Humerus	1	
	Metacarpus III		1
	Tarsal, astragalus		1
Camel	Phalanx 1	1	
Dog	Humerus		1
Medium-sized mammal	Femur	1	
	Humerus		1
	Rib	1	2
	Tibia		1
Large-sized mammal	Femur	1	
	Mandible	1	
	Rib		3

Table 3. Bone Measurements (following Driesch 1976)

Locus	Taxon	Element	Fusion	Measurements (mm)
215	Goat	Metatarsus	dF	Bd = 27.1; BFd = 27.3; Dd = 16.4
215	Caprine	Tibia	dU	Bd = 27
212	Cattle	Phalanx 2	F	Bp = 31.4; Bd = 26.2
214	Dog	Humerus	pF/dF	Bd = 31.4; Dp = 39.1; GL = 162.9
200	Donkey	Radius	dF	GLl = 242; BFd = 39; Bd = 48.6
223	Equid	Tarsal, astragalus		GB = 50.2; GH = 49.9; BFd = 44
214	Equid	Metacarpus III	dF	Bd = 48

Evidence of weathering was observed on two out of six bones, of which the cortex is flaking. This modification is typical of Stage 2 weathering, indicating that the bones were exposed aboveground for several months before burial (Behrensmeyer 1978). The fracture morphology of two out of three bones is consistent with their breakage while still fresh. As in the Byzantine–Early Islamic-period sample, dog scavenging is indicated by the preservation of more than half of the original bone circumference in three out of five bone fractures, including those with "cylindrical" fracture morphology. A single cut mark on the distal humerus shaft of a medium-sized mammal indicates the action of defleshing in the butchery process.

CONCLUSIONS

The small faunal assemblage from the Magen Avraham Compound, located in the agricultural hinterland of ancient Yafo, consists mainly of caprine, cattle and equid remains; the latter appearing to be relatively frequent, especially in the Byzantine–Early Islamic periods. The bones show evidence of the impact of different modifying agents, including their exposure to sub-aerial weathering for a substantial period of time before burial. Carnivore damage, likely by dogs, is evidenced by the "cylindrical" appearance of many of the bone shaft fractures.

The conspicuous presence of a relatively high number of equid remains suggests that the assemblage represents the disposal of whole animal carcasses outside the city rather than urban kitchen waste. Some of the remains were not immediately buried and remained exposed to carnivore scavenging. These observations, although based on a very small number of bones, are consistent with the peripheral location of the excavated area in relation to the town.

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