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# The Faunal Assemblage from Ḥorbat Sahar

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The faunal assemblage from Ḥorbat Sahar was associated with the three periods of activity identified at the site. Two bones were attributed to the Iron Age and include a chicken femur—a rare find in this period, possibly attesting to the use of chicken in cockfighting rather than for consumption. The small late Byzantine–Early Islamic assemblage comprised domesticated livestock animals, dominated by adult cattle, supporting an economic system based mostly on livestock animals and not on hunting. The largest assemblage dates to the Crusader–Mamluk period, mainly including livestock and animals used for transportation and burden, possibly brought to the site by itinerant Christian pilgrims.

*Keywords: zooarchaeology, fauna, economy, butchering, consumption, livestock*

## Introduction

The faunal assemblage from Ḥorbat Sahar comprised 131 identifiable animal bones associated with the three periods of activity identified at the site (see Alexandre, see this volume). Most of the bones were associated with the Crusader–Mamluk-period activity (n = 101), some bones dated from the late Byzantine to Early Islamic-period occupation (n = 27), and two bones were found in a small probe together with several Iron II vessel sherds (L143; see Alexandre, this volume: Fig. 6).

The bones were analyzed using the comparative collections of the Zooarchaeology Laboratory of the Zinman Institute at the University of Haifa. They were identified at the species level based on morphological similarities in the bone ends and teeth. When identification at the species level was not possible, the bones were classified into groups according to size (large, medium-sized and small ungulates). The representation of body parts was analyzed using two methods: the first, compared the number of meat-rich and meat-poor body parts following Driesch and Boessneck (1995), and the second, employed the MAU (Minimum Animal Unit) technique to study the frequencies of skeletal elements

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by comparing the Minimum Number of Elements (MNE) of the bones of the observed specimens to a complete skeleton model (Binford 1981). Age at death was determined according to epiphyseal fusion (Silver 1969) and tooth eruption and wear (Grant 1982), and sorted into three age groups: juvenile, young-adult and adult. The distinction between horses and donkeys (*Equus caballus and Equus asinus*) was based on size difference. Cut marks were identified and cataloged according to Rixson (1989), postulating the type of tool used to cause the cut mark and the purpose of the cut mark, whether dismemberment, filleting or skinning.

## RESULTS

*The Iron Age Assemblage*

The Iron Age assemblage comprises two bones (L143): the maxillary M2/1 of a sheep (*Ovis aries*) or goat (*Capra hircus*) and the femur of a chicken (*Gallus gallus*; Fig. 1). The chicken bone is a relatively rare and unexpected find in the Iron Age; its attribution to this period may be equivocal as it was found in a small probe (*see Discussion*, below).

*The Late Byzantine–Early Islamic Assemblage*

The Byzantine–Early Islamic assemblage includes 27 identifiable animal bones from different types of loci (on the floor of a building and a courtyard in Area A, and the pathway floor and in an accumulation layer in Area B). The assemblage is too small to enable an analysis of contextual distribution.

The most common species is cattle (*Bos taurus*; n = 21; Table 1), and the other species include sheep/goat, medium-sized ungulate (sheep/goat size) and chicken, each represented

Fig. 1. Iron II chicken left femur from L143 (right), compared to modern-day chicken left femur from the comparative collection (left).

**Table 1. Species Representation in the Assemblages of the Different Periods**[i]

| Taxa | Byzantine–Early Islamic | | | | Crusader–Mamluk | | | |
|---|---|---|---|---|---|---|---|---|
| | NISP | %NISP | MNI | %MNI | NISP | %NISP | MNI | %MNI |
| Cattle | 21 | 77.8 | 2 | 40.0 | 42 | 41.6 | 4 | 36.4 |
| Sheep/goat | 3 | 11.1 | 1 | 20.0 | 16 | 15.8 | 3 | 27.3 |
| Chicken | 2 | 7.4 | 1 | 20.0 | | | | |
| Gazelle | | | | | 4 | 4.0 | 1 | 9.1 |
| Equid | | | | | 7 | 6.9 | 1 | 9.1 |
| Donkey | | | | | 1 | 1.0 | 1 | 9.1 |
| Camel | | | | | 1 | 1.0 | 1 | 9.1 |
| Large ungulate | | | | | 19 | 18.8 | | |
| Medium ungulate | 1 | 3.7 | 1 | 20.0 | 10 | 9.9 | | |
| Small ungulate | | | | | 1 | 1.0 | | |
| *Total* | *27* | | *4* | | *101* | | *11* | |

[i] NISP = Number of Identifiable Specimens; MNI = Minimum Number of Individuals.

**Table 2. Cut Marks from the Late Byzantine–Early Islamic Assemblage**

| Locus | Basket | Taxon | Element | Tool | Purpose |
|---|---|---|---|---|---|
| 105 | 1030 | Cattle | I phalanx | Knife | Skinning |
| 105 | 1075 | Sheep/goat | Radius ulna | Chopper | Dismemberment |

by one to three bones (Table 1). The cattle are represented mainly by meat-poor body parts (n = 13; 62%), and the aging of 16 cattle bones indicates that 13 belong to adult individuals. Cut marks reflecting skinning and dismemberment activities were observed on two bones retrieved in an accumulation layer (L105) in the Area A building (Table 2).

*The Crusader–Mamluk Assemblage*

The animal bones attributed to the Crusader–Mamluk period were primarily found in the upper accumulation layers in the Area B building, and only a few bones were found in the surface layer overlying Area A. This assemblage, comprising 101 identifiable animal bones, exhibits a more varied species composition than the Byzantine–Early Islamic period assemblage, as can be expected from the larger sample size (Table 1). The most common species is cattle (n = 42; 41.6%), followed by the large-sized ungulates (n = 19; 18.8%), specimens that probably also belong to cattle. The next most common group is the sheep/goat (n = 16; 15.8%), followed by the medium-sized ungulates (sheep/goat-size; n = 10; 9.9%). Other species appearing in the assemblage are equids (horse or donkey), gazelles

(*Gazella gazella*) and camel (*Camelus* sp.). One bone that may represent a gazelle was counted as a small ungulate, although it could marginally be a medium-sized ungulate. Both the medium-sized ungulates and the large ungulates are represented by similar percentages of meat-rich and meat-poor body parts (Fig. 2).

Alexandre (this volume) proposed that the Crusader–Mamluk-period remains may reflect a squatter-type occupation at the site, possibly of itinerant pilgrims. To examine whether the animal use at the site supports this 'overnighters' hypothesis, the skeletal element representation of large ungulates was analyzed further using the MAU technique (Fig. 3). The tarsals (MNE = 8) and the humeri (MNE = 4) are the most represented, while most of

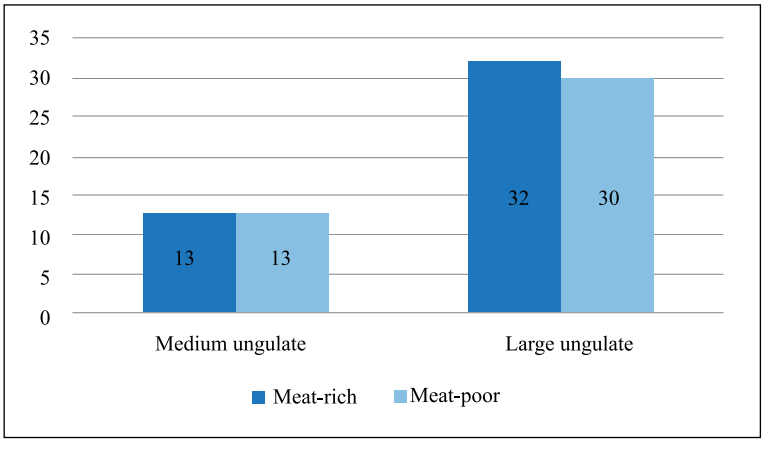


Fig. 2. Body part representation of medium-sized and large ungulates from the Crusader–Mamluk assemblage according to meat-rich versus meat-poor elements.

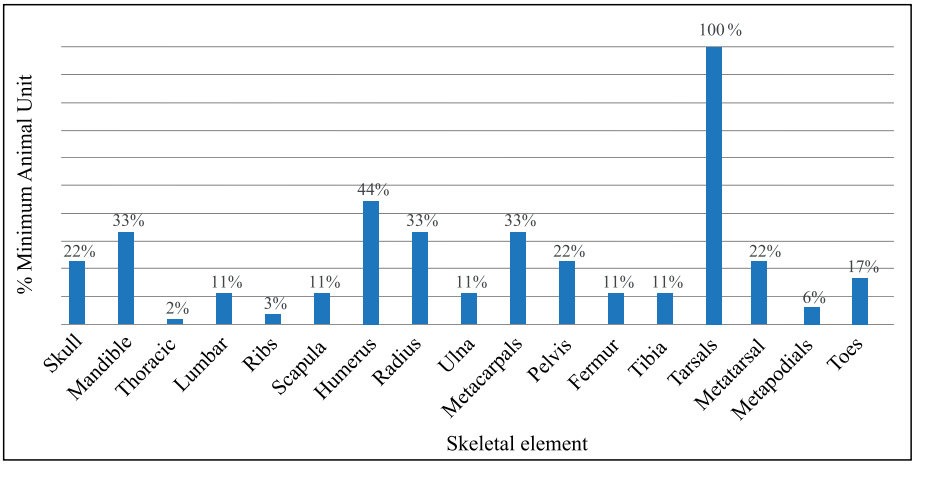


Fig. 3. Skeletal element representation of large ungulates from the Crusader–Mamluk assemblage (n = 62).

the other body parts are fairly equally represented by a low MNE of between 1 and 3. The over-representation of tarsals could be the result of preservation issues, causing the less dense bones to be poorly preserved and therefore, under-represented in comparison. Since the number is calculated using the MAU index (whereby the different bone frequencies of the observed specimens are compared to their frequencies in a complete skeleton), this observation is not the result of the tarsals being numerous in the skeleton. Hence, a clear conclusion regarding the butchery strategy employed by the site's inhabitants could not be drawn. Nevertheless, it does seem that for the majority of the skeletal elements, the cattle skeleton is represented in a more or less balanced way, meaning that it is likely that cattle were brought to the site as complete animals and then butchered and consumed on-site.

Age could be reconstructed from 29 cattle bones, revealing that almost a third of the bones (32.1%; Fig. 4) represent juveniles and young adults.

Cut marks appearing on cattle, large ungulates, sheep/goats, small ungulates and donkey bones (n = 9; 8.9%) were identified. Most were indicative of dismemberment, with five examples coming from L127 (Table 3). Locus 127 was an accumulation layer delimited by a flimsy partition or installation wall set up in the Crusader–Mamluk period inside the late Byzantine–Early Islamic building (W127; see Alexandre, this volume). The bones suggest that this area may have been used for butchering or food preparation. Burning marks were observed on two bones from L142.

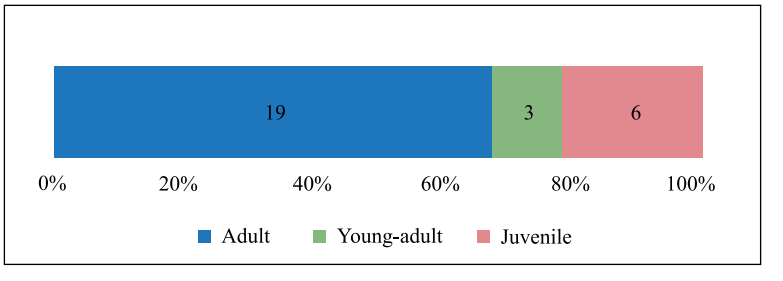


Fig. 4. Crusader–Mamluk cattle ages according to bone fusion and tooth eruption and erosion, divided into three age groups

**Table 3. Cut Marks from the Crusader–Mamluk Assemblage**

| Locus | Basket | Taxon | Element | Tool | Function |
|---|---|---|---|---|---|
| 116 | 1103 | Donkey | Radius | Knife | Filleting |
| 122 | 1123 | Cattle | Humerus | Cleaver | Dismemberment |
| 127 | 1151 | Cattle | Metacarpal | Cleaver | Dismemberment |
| 127 | 1185 | Cattle | Pelvis | Cleaver | Dismemberment |
| 127 | 1151 | Large ungulate | Rib | Cleaver | Dismemberment |
| 127 | 1151 | Sheep/goat | Metacarpal | Knife | Skinning |
| 127 | 1151 | Small ungulate | Rib | Knife | Dismemberment |
| 138 | 1206 | Large ungulate | Rib | Knife | Dismemberment |
| 142 | 1298 | Cattle | Astragalus | Cleaver | Dismemberment |

## DISCUSSION AND CONCLUSIONS

The small faunal assemblages from Ḥorbat Sahar differ in the three periods. The two animal bones attributed to the Iron Age include a chicken femur, a rather rare find in this period. Evidence of chickens first appeared in the Southern Levant in MB II layers at Shillo (Hellwing, Sade and Kishon 1993:310), and chickens are present in very small numbers in subsequent periods, including in Iron II (Spiciarich 2020). It has been shown that chickens were not an important source of food in the Southern Levant before the Hellenistic period (Perry-Gal et al. 2015). The scarcity of chicken remains before the Hellenistic period has led to the conclusion that their primary role may have been entertainment in cockfighting (Perry-Gal et al. 2015:4).

A few observations can be made on the small late Byzantine–Early Islamic assemblage. The assemblage comprises domesticated livestock animals, and adult cattle dominate it. The skeletal representation shows that most cattle bones represent meat-poor body parts. A few cut marks were observed. These findings may support an economic system based mostly on livestock animals and not on hunting, with an emphasis on the cattle being used for work and culled in adulthood.

The largest and most diverse assemblage dates to the Crusader–Mamluk period. Mainly, livestock (cattle, sheep/goat) are present, as well as one specimen that could have originated in game species (gazelle) and animals used for transportation and burden (equids, camel). The most common animals are the large ungulates, including cattle and cattle-size specimens (60.4%), and the second most common are the medium-sized ungulates, including sheep/goat and sheep/goat size (25.7%).

The distinction between the meat-rich and the meat-poor body parts has shown an equal amount of both kinds of body parts among the large and medium-sized ungulates. The skeletal frequency analysis of the large ungulates reveals a fairly balanced representation of most body parts. Although the small sample size (large ungulates: n = 62; medium ungulates: n = 26) must be taken into account, these observations could support the understanding that the animals were brought to the site, butchered and consumed there, and that butchery waste was subsequently discarded at the site of consumption. The presence of cut marks on 8.9% of the bones also supports this understanding. The cattle demography shows that almost a third of the specimens were juveniles and young adults. This could indicate a preference for culling the cattle at a young age as a meat source, rather than using them for work. The other working species (equids and camel) may have been employed as animals of burden and transport, while the cattle were seen as more of a meat source.

As was noted above, Alexandre (this volume) proposed that the Crusader–Mamluk-period remains, reflect a squatter-type occupation at the site, possibly of itinerant western Christian pilgrims. Although small, the Crusader–Mamluk-period bone assemblage does seem to support this ‘overnighters’ hypothesis. The travelers brought the livestock and working animals that were used mainly for food and work. When possible, the people might have hunted gazelles, but the game animals were not common, as in other Mamluk

assemblages, for example, at Ḥorbat ‘Ofrat (Marom 2019) and Nazareth (Marom 2020). The livestock animals culled were mainly cattle and sheep/goat, but a cut mark, indicative of filleting, was also discovered on a donkey bone, suggesting it was also consumed. The cut marks indicate that all butchery stages were performed on-site.

The cattle were culled at both younger and older ages, consistent with a rural producer economy that obtains meat from juveniles before marketing age and from old breeding stock as part of a generalized production strategy (Payne 1973). A similar pattern was found in the Mamluk faunal assemblage from Nazareth (Marom 2020) where both sheep/goat and cattle of all ages were culled. This observation may not necessarily support the ‘squatters’ hypothesis,’ but further study is needed to understand squatters’ economy and animal exploitation patterns fully.

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