FAUNAL STUDIES ON BYZANTINE CITY OF THE AMORIUM

Derya Silibolatlaz-Baykara[1]

Öz

Bu çalışma, Antik Bizans Şehri olan Amoryum'dan seçilen hayvan kemiklerinin tanımlanmasını ve bu buluntuların türlerinin tespit edilmesini içermektedir. Ayrıca bu çalışmada Amoryum halkının hayvanları hangi amaçlar için kullandıkları ele alınacaktır. Öncelikle, yüzyılları belirlenmiş Amoryum arkeolojik alanından ele geçmiş olan hayvan kemiklerinin türleri belirlenmiştir. Tanımlanmış hayvan kemiklerinin hesaplanmasında NISP ve MNI kullanılmıştır. NISP her taxon içindeki tanımlanmış birey sayısı, MNI ise fauna içinde tanımlanmış türlerin minimum birey sayısı olarak tanımlanabilir. Bu bilgi ışığında kemiklerin mekânlara göre bulunma sıklıkları ve yoğunlukları tespit edilmiştir. Böylelikle Amoryum halkının diyetlerinde hangi hayvanları çoğunlukla tercih ettikleri saptanmıştır. Ayrıca, evcil ve yaban hayvan kullanımları dikkate alınarak toplumun tüketim alışkanlıkları da ele alınmıştır.

Anahtar Kelimeler: Faunal Çalışmalar, Zooarkeoloji, Bizans, Amoryum.

Abstract

In this article a portion of the animal bones recovered at the Amorium excavations are presented. The materials cover the periods from the 6th -7th centuries up to Selcuk. The animal bones were examined in order to determine their species. The identified animal bones were assessed by calculating the frequencies of the each species by NISP and MNI. NISP is defined as the number of identified specimens, per taxon. MNI is also defined as the minimum number of individual animals necessary to account for some analytical specified set of identified faunal specimens. Thus, which species were the most essential for the diet could be determined. In addition to domestic animals, the wild fauna was also studied to answer the question of which species were chosen for exploitation and whether or not wild sources were

[1] ODTÜ, Yerleşim Arkeolojisi Bölümü, Üniversiteler Mah. Dumlupınar Blv. No:1 06800 Çankaya Ankara/TÜRKİYE baykara@metu.edu.tr

of considerable portion, gathered by fishing and hunting. As a conclusion, in the shed light of this study we can assume that the Byzantine period of Amorium had rich fauna both wild and domestic species. Although usage of domestic animals is not very different from present day, to making this study is important in terms of understanding of way of life in that time periods.

Keywords: Faunal Analysis, Zooarchaeology, Byzantine, Amorium.

Introduction

Zooarchaeology refers to the study of animal remains from archaeological sites. The aim of zooarchaeology is to gain a better understanding of the relationship between humans and their environment, especially between humans and other animal populations. Zooarchaeologists have relied on combination of the natural and social science such as history and the humanities for concepts, methods and explanations (Reitz and Wing, 1999). In addition, zooarchaeology is also study of the garbage of ancient peoples' meals. Remains of animals, which were used show different purposes through the time such as; transportation and decoration or which happened to co- exist with early humans (Davis, 1987).

Firstly, we will compile a list of animal species that were utilized in Amorium during the Byzantine times. This information was obtained from the identified animal bones recovered from the Amorium excavations. This information was evaluated by calculating the frequencies of the species found and comparing the percentages of each species. In this way it could be determined which species were the most important for the diet could be understood, that is what species were preferred for exploitation and whether or not wild sources were of significant portion, gathered by fishing and hunting.

Amorium

The site of the Amorium is located in western Turkey, some where 168 km southwest of Ankara, and some 70km to the northeast of the modern provincial capital of Afyon. Part of the site is occupied by the Turkish village of Hisarköy, which lies within the administrative district of Emirdağ. The ancient city of Amorium lies in eastern Phrygia and it is best known as a typical site for the Byzantine period and, as major provincial capital, it offers answers to many of the questions asked about the history of urbanization in Asia Minor from Late antiquity to Middle Byzantine times (Lightfoot and Lightfoot , 2007).

Amorium was the capital of the Anatolikon, the largest and most powerful province of the Byzantine Empire, Amorium was probably one of the important cities in Anatolia during the 7th -9th centuries. Since the site is now largely abandoned and it is not disturbed by modern occupation, it provides excellent conditions for carrying out large scale excavations. Amorium's animal bones are well preserved and therefore suitable for an extensive study that could explain dietary habits, workshop activities, and contribute to the understanding of the areas' ecological structures. It is also hoped that this study will lead to a better understanding of the urban environment and cultural way of life in Byzantine world which is still poorly known (Lightfoot and Ivison, 1997:292).

Materials

A total of 2013 bone fragments were studied from 91 contexts dating from 6th to Post Byzantine centuries. They come mostly from trench XE from the Lower City Enclosure area- trench XC. The materials were generally well preserved and in a sound condition. In most cases the bones were collected manually; dry sieving was carried out only selectively. The bones were routinely washed in water every day after collection and were then left to dry in an open but shaded part of the Dig House garden.

Methods

NISP (Number of Identified Species Proportion): The number of identified species (NISP) is used as tha standard measure of taxonomic abundance within archaeological faunas. Bones from a given faunal assemblages are identified, numbers of identified specimens per taxon determined, and NISP values to examine changing taxonomic frequencies through time and across space (Grayson, 1984: 23).

Diagnostic Zones (DG): In recording, the diagnostic zone system published by Dobney and Rielly (1988) was followed. Featureless fragments were assigned to broader categories 'ox-sized', which potentially includes equids and deer fragments; 'sheep-sized' which may include roe deer, dog/canids, and young pigs; and finally, 'pig-sized', which may be included very young cattle and similarly sized animals.

Each zone was assessed individually in order to establish whether more than 50% of that zone was present on the specimen. If more than 50% of that zone is present then it may be regarded as a non- repeatable element. Thus by totaling the frequencies of each zone for element per species, a MNI estimation can be made from the zone most frequently recorded as greater than 50% complete (Dobney and Rielly, 1988).

MNI (Minimum Number of Individual): The procedure of the MNI for calculating the rate of each taxon in the sample is as follows: the specimens of the most abundant skeletal element are sorted into left and right side. The higher of the left or right side counts and this number is then considered to be the smallest (minimum) number of individual animals which could account for the sample (O'Connor, 2000).

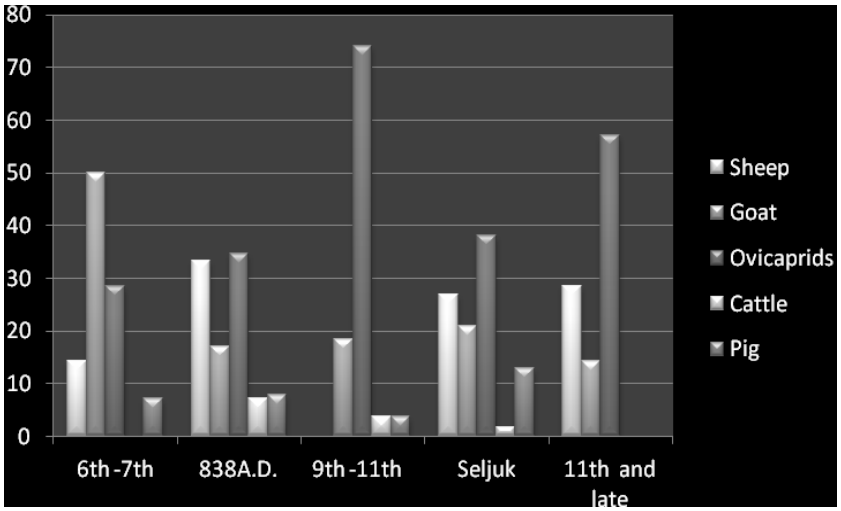
Domestic Economy of Amorium

Faunal studies in archaeology are conducted on the assumption that animal bones are sources of information about the diet, technology, economy, and environment of the ancient inhabitants of a site. The goal of most faunal studies, in addition to identifying the species present, is to interpret the relative economic importance of each species (Gilbert et al., 1977).

The study of faunal remains at Amorium began in 2007, and faunal remains for analysis were selected from materials excavated yearly between 2004 to 2007. The material was taken from seven periods, ranging from the 6^{th}-7^{th} century to post Byzantine periods. The periods 9^{th}- 11^{th} periods were evaluated. The assemblage includes, 838 identifiable bones from the site and an additional 1175 unidentifiable bone fragments. Overall, the species proportions identified in all periods were dominated by sheep/goat (*Ovis/Capra*, 41.1%), followed, by cattle (*Bos taurus*, 11.3%) and goat (*Capra hircus*, 10.3%). Remains of sheep (*Ovis aries*, 8.6%), pig (*Sus scrofa domesticus* 9.3%), dog (*Canis familiaris*, 1.7%), horse (*Equus caballus,* 3.1%), donkey (*Equus asinus*,1.7%), cat (*Felis catus*, 0.7%), wolf (*Canis lupus*, 0.5%), camel *(Camelus sp.,* 0.1%), deer (*Cervus sp.,* 0.4%), rodent *(Rodentia indet*, 2.7%), bird (*Aves*, 3.6%), fish (3.7%), tortoise (0.5%) were also identified (Table 1).

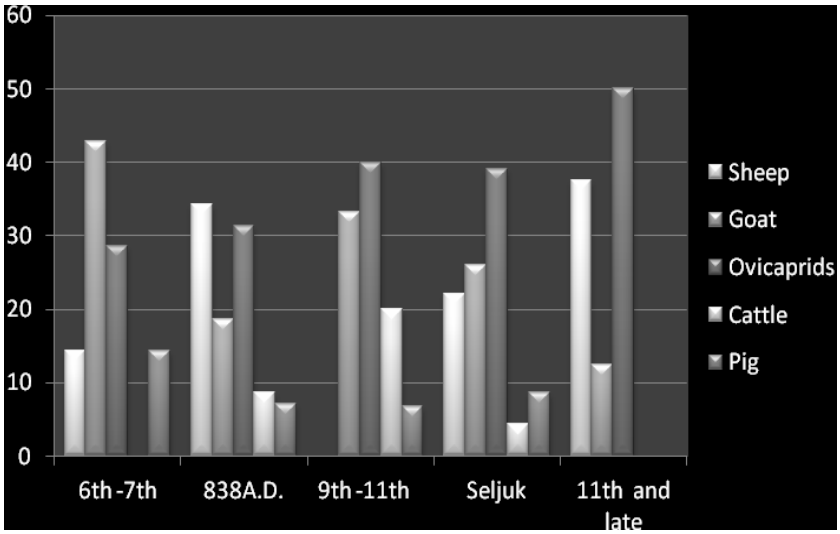
During the 6^{th} -7^{th} century, the sheep NISP is 14.3% and MNI is 14.3% of the assemblage, for the goats NISP is 50% and MNI is 42.9%, Ovicapra NISP 8.3%, MNI 28.6%, and pig NISP is 2.1% and MNI 14.3% (Graph 1-2). The faunal assemblages in the 6^{th} -7^{th} century is characterized by more an emphasis on goat. The proportion of goat shows about 42.9% by MNI and 50% by NISP of identified species in 6^{th} -7^{th} century. Surprisingly, cattle are not found in this period (Table 2).

Graph1: Species Proportions of NISP



In the assemblages, from A.D. 838, the proportion of the sheep is NISP 33.3% and MNI 34.3%, goat NISP is 17.0 % and MNI 18.6%, Ovicapra NISP is 34.6% and MNI 31.4%, cattle NISP is 7.2% and MNI 8.6% and pig NISP is 7.8% and MNI 7.1%. The most common animals in this period are both sheep and ovicapra group. While the proportions of the sheep, ovicapra, cattle and pig are increasing, the goat's proportion decreases when we compare the 6^{th}-7^{th} century with 838 AD.

Graph2: Species Proportions of MNI



FAUNA	LATIN NAME	N	%
HERBIVOROUS			
I.DOMESTIC UNGULATES	*Bos taurus*	95	11,3
	Ovis aries	72	8.6
	Capra hircus	86	10.3
	Ovicapra	344	41.1
	Equus caballus	26	3.1
	Equus asinus	14	1.7
	Sus scrofa domesticus	78	9,3
II. CARNIVOROUS	*Canis familiaris*	14	1,7
	Canis lupus	4	0,5
	Felis catus	6	0,7
III. WILD UNGULATES	*Cervus sp.*	3	0,4
	Camelus sp.	1	0,1
IV. RODENTS	*Rodentia indet*	23	2,7
	Lepus europeus	7	0,8
V. BIRDS	*Aves*	30	3,6
VI. FISHES		31	3,7
VII. TURTLES		4	0,5
Total		838	100

In the 9th-11th century materials; goat NISP is 18.5% and MNI 33,3%, Ovicapra NISP 74,1% and MNI is 40%, cattle NISP is 3,7% and MNI is 20%, pig NISP is 3,7% and MNI 6,7%. The characteristic species of this period is again Ovicapra. When we compare with the proportions of the A.D. 838 assemblage; there is not very striking changes for goat, cattle and pig. On the other hand, there is an increase for the Ovicapra's proportion. On the contrary, compared with the 6th -7th century sheep, goat and Ovicapra proportions are decreased, but cattle and pigs' proportions increased.

Table 2: MNI and NISP Calculation for All Periods

Species	6th -7th				838A.D.				9th-11th				Seljuk				10th-11th			
	NISP		MNI		NISP		MNI		NISP		MNI		NISP		MNI		NISP		MNI	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Ovis aries	2	14,3	1	14,3	51	33,3	24	34,3	-	-	-		15	27	5	22	4	28,6	3	37,5
Capra hircus	7	50	3	42,9	26	17	13	18,6	5	18,5	5	33,3	12	21	6	26	2	14,3	1	12,5
Ovicapra	4	28,6	2	28,6	53	34,6	22	31,4	20	74,1	6	40	21	38	9	39	8	57,1	4	50
Bos taurus	-	-	-	-	11	7,2	6	8,6	1	3,7	3	20	1	1,8	1	4,3	-	-	-	-
Sus scrofa domesticus	1	7,1	1	14,3	12	7,8	5	7,1	1	3,7	1	6,7	7	13	2	8,7	-	-	-	-
Total	14	100	7	100	153	100	70	100	27	100	15	100	56	100	23	100	14	100	8	100

During the Seljuk period; sheep NISP is 27% and MNI is 22%, goat NISP is 12 and MNI is 26%, Ovicapra NISP is 38% and MNI is 39%, cattle NISP is 1.8% and MNI is 4.3%, and finally pig NISP is 13% and MNI is 8.7%. Compared to the preceding period, while in the 10th -11th century assemblage there were not any cattle and pig, the numbers of those animal bones existed during the Seljuk period. The existence in the numbers of sheep and pig bones in particular are immediately apparent.

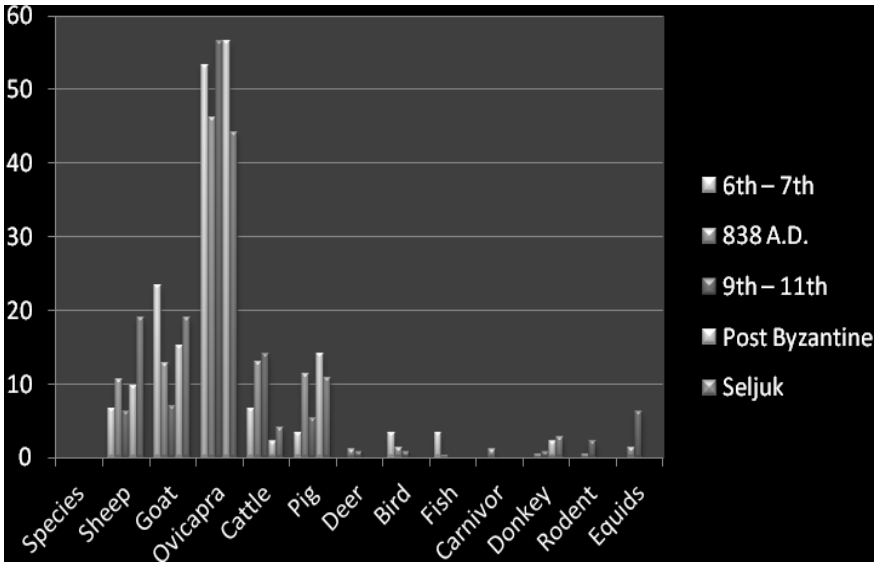
Finally, when we examine the assemblage from the 10th -11th century, the proportions of sheep NISP is 28.6% and MNI is 37.5%, goat NISP14.3 is % and MNI is 12.5%, and Ovicapra NIPS is 57.1% and MNI is 50%. In this period again cattle and pig vanished. The number of cattle, sheep and pig is fluctuating in last three periods.

Amorium Fauna

The majority of the remains come from domestic species, whether these are food or working animals. Bones of domesticates are dominant throughout the occupation of the site and comprise 85,3% of the total numbers of identified fragments (Graph 3). Sheep, goat and cattle are the most common species in the sample in 838 A.D. Deer and wolves are relatively common among the wild taxa. According to Amorium's faunal table Ovicapra is the most common domestic, for all periods (Table 3). Domestic animals are kept for many purposes, in most small-scale pastoral economies. Sheep and goat can provide milk, wool, horns, skins, and meat. Those highest numbers can indicate that Ancient Byzantine city of Amorium's inhabitants not only consumed sheep and goat. Sheep and goat remains can found throughout all the time periods. Sheep and goat meat, wool and other secondary products are also economically important. The second most common remains are cattle. Cattle probably became important

in 838 A.D. for traction and the contribution of cattle meat to the diet became greater. Because the cattle could not be raised at the backyard of the house, (not like pigs or chicken), they needed more area for grazing.

Graph 3: Faunal Analysis Graph Percentage



Pigs are represented in high numbers and they would seem to have made a large contribution to the diet of the inhabitants for the 838 A.D. and Seljuk periods. Pigs can either be raised in the backyard, or they may also be hunted from the forest. However, there are not wild pigs in the assemblage so the Amorium inhabitants bred stock. The faunal assemblage of the Seljuk period is also characterized by a marked decrease of pig. Pigs were intensively exploited for their meat. The ethnic and religious affiliations of the population in Amorium during the Seljuk period are still unknown, and the presence of pig might indicate that the process of Islamization was a gradual one or that a Christian population was present at the site (Hongo H., 1997). Donkey and horse bones are also found at Amorium. Both donkeys and horses were used for transport. While horses were used for long distance travel, the donkeys were used for shorter trips, and carried heavier loads than horses. The dogs and cats were likely kept as pets. The dogs could also be kept as a working animal such as for guarding and hunting. The bones of wild animals that would not have been consumed were also recovered; this is the case of wolf. This might have been killed for its fur, but such predator would also have been hunted because wolf was considered a hazard to domestic animals.

Table 3: Faunal Analysis Table

	6th – 7th		838 A.D.		9th – 11 th		Post Byzantine		Seljuk	
Species	N	%	N	%	N	%	N	%	N	%
Sheep	2	6,7	47	11	8	6,2	9	9,8	28	19,0
Goat	7	23,3	56	12,7	9	7,0	14	15,2	28	19,0
Ovicapra	16	53,3	203	46,1	73	56,6	52	56,5	65	44,2
Cattle	2	6,7	57	13,0	18	14,0	2	2,2	6	4,1
Pig	1	3,3	50	11,4	7	5,4	13	14,1	16	10,9
Deer	0	-	5	1,1	1	0,8	0	-	-	-
Bird	1	3,3	6	1,4	1	0,8	0	-	-	-
Fish	1	3,3	1	0,2	0	0,0	0	-	-	-
Carnivor	0	-	5	1,1	0	0,0	0	-	-	-
Donkey	0	-	2	0,5	1	0,8	2	2,2	4	2,7
Rodent	0	-	2	0,5	3	2,3	0	-	-	-
Equids	0	-	6	1,4	8	6,2	0	-	-	-
Total	30	100	440	0	129	100	92	100	147	100

Hunting appears to have played a very minor role in the accumulation of Amorium fauna, but the assemblage is diverse enough to include the occasional remains of birds, deer, fish, and rabbits. These animals would have provided an occasional variation to the diet rather than a regular supply of meat. The most commonly collected wild fauna is fish followed by hares which are represented by only a few remains. Nevertheless, the small size of those animals may have caused it's under-representation in the assemblages. It is likely that fish, hares as well as birds were exploited more frequently than the record indicates. In addition, fish remains found in the church courtyard area may reflect religious exercise. When we take into consideration Byzantine religious activities and the location of the fish remains, the large numbers of fish bones can be readily associated with religious practices. Wolf, deer, rabbit, and pig prefer a landscape that still retained some woodland cover. Nevertheless, none of these species requires thick forests.

Table 4: Amorium Fauna: Unidentified Species

Size of Species	**N**	**%**
Ox Size (OS)	223	19
Sheep Size (SS)	848	72,2
Pig Size (PS)	56	4,8
Bird Size (BS)	48	4,1
Total	1175	100

There are few archaeological sites, similar dating with zooarchaeological reports published and geographically close to Amorium. The most notable study to date is that of ancient Sagalassos. In Hellenistic times, the bulk of the meat supply in this city comes from the slaughter of domestic animals, namely, cattle, pig, sheep and goat. The ovicaprine remains are the most abundant (41.1%), followed by cattle (35.2%) and finally pig (22.9%). The ratio of sheep and goat displayed that goat herding was much more widespread than sheep keeping. In addition a diversity of wild species has been recorded from this site. Amongst them, hare and deer were obviously hunted for their meat (De Cupere B., 2001). The most important similarities in two sites are the predominance of goat over sheep in Sagalassos as well as in Amorium. The high frequency of cattle bones and the low percentage of sheep and goat remains differentiated from Pessinus Byzantine layers from Amorium. Among the domestic mammals findings from Pessinus cattle are the most frequent (61%), while sheep and goat (21%), and pig (18%) are less represented. Like Amorium hunting was not very important for the food supply (Devreker, 2003). The remains of actual composition of the flocks kept in Amorium and everyday meals of the different strata of society are still questionable. A larger amount of data collected from the area should be studied before make a general and specific conclusion raised here.

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