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**SPATIAL FLUCTUATION OF FOOD HABITS
IN BYZANTINE BEIRUT
(BEY 002, BEY 028, BEY 115)**

Tarek OUESLATI¹

ABSTRACT

The study of the multi-period site of Bey 002 (Martyr's Square, Beirut, Lebanon) has revealed that after a peak of pork consumption in the Roman period, a decrease in its frequency occurred beginning in the Byzantine period which then became accentuated in the Umayyad period. Among the other noticeable trends in meat consumption on this site, there is a decline in the sources of meat, diversity being reduced to a minimum in the Islamic period. Finally, the important role of veal in this period is to be noted. These results have stimulated new research, particularly for the Byzantine period. Thus, the animal bones from two new excavations in the city centre of Beirut were analysed. These new data indicate that the decline of pork and the increase in the consumption of veal are very much in evidence even before the Islamic period. They also reveal the selective nature of the desire for pork in the Roman period. The decline of the Empire led to a clear decrease in this meat, which became marginalised in the Byzantine period at Bey 028 and Bey 115 and in the Umayyad period at Bey 002. The components of meat consumption of the three Byzantine assemblages are homogenous and produce a relatively reliable image of the composition of meat consumption in this sector situated at the periphery of the eastern forum.

Keywords: Archaeozoology, Islamic period, Byzantine period, meat, provisioning, pig, veal, lebanon, beirut.

RÉSUMÉ

L'étude diachronique du site de Bey 002 (Place des Martyrs, Liban) a révélé, après un pic de consommation du porc à la période romaine, une baisse de sa fréquence dès la période byzantine qui s'accroît ensuite à la période omeyyade. Parmi les autres tendances notables de l'alimentation carnée sur ce site, on assiste à un déclin des sources de viande dont la diversité atteint son minimum à la période islamique. Enfin la place remarquable du veau à cette dernière période doit être soulignée. Ces résultats ont stimulé de nouvelles recherches particulièrement sur la période byzantine. Ainsi les ossements issus de deux nouvelles fouilles du centre-ville de Beyrouth ont été analysés. Ces données inédites démontrent que

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le déclin du porc et la hausse de la consommation du veau sont très bien illustrés avant même la période islamique. Elles révèlent de plus le caractère ponctuel de l'engouement pour la viande de porc à la période romaine. Le déclin de l'Empire engendre un recul net de cette viande pour aboutir à la marginalisation des suidés dès la période byzantine sur Bey 028 et Bey 115 et à la période omeyyade pour Bey 002. Les composantes de l'alimentation carnée des trois assemblages byzantins sont homogènes et livrent donc une image relativement fiable de la composition de l'alimentation carnée dans ce secteur situé à la périphérie du forum oriental.

Mots-clés : *Archéozoologie, Période byzantine, Période islamique, alimentation carnée, approvisionnement, cochon, veau, Beyrouth, Liban.*

MATERIAL AND METHODS

The bone assemblages were collected from three excavations located close to each other by the periphery of the eastern forum. The site Bey 002 was excavated by the Institut Français du Proche-Orient (IFPO) under the direction of Catherine Aubert (Aubert 1996). The two other rescue excavations were directed by Hans Curvers (Solidere). The bones were collected by hand and studied in Beirut and are now deposited at the DGA (Direction general des antiquités).

The quantification of bone remains is based on NISP and the weight of the bones. The study of skeletal element profiles follows the methods devised by Münzell (1988) and Duday (1989). The eruption and wear of the teeth in pigs, cattle and ovicaprids were recorded following Grant (1982). The small size of the assemblages of pigs and cattle restricts the study of age at death to the ovicaprids (Payne 1973).

RESULTS

Bey 028 yielded the largest sample with 3956 identified specimens (*table 1*) followed by Bey 002 (NISP = 1884, *table 2*) and Bey 115 (NISP = 759, *table 3*). These remains belong to mammals, birds, fish and molluscs. The relation between the NISP and the number of identified taxa suggests that diversity is acquired through the increase of sample size (*fig. 1*). It must be stressed here that this is not the case for the other chronological occupations of Bey 002 as the species diversity is independent of sample size and is more likely to be associated with cultural and economic factors

The components of the meat diet

Staple meats were provided by sheep/goats, cattle and pigs. The frequencies (percentage of bone weight) within this triad underline the predominance of sheep/goats and cattle (*fig. 2*). The flesh of goats and sheep contributes 49% to 59% of the meat diet whereas beef is less well represented with frequencies ranging from 38% to 50%. Finally pork is revealed as a minor component of the meat diet (1 to 6%). Within the Caprines goat is dominant with percentages of between 57 and 64%.

In the diachronic development at Bey 002, an increase in the consumption of sheep is associated with the post-Roman periods (*fig. 3*). The decline of pork consumption also begins in the Byzantine period, and this tendency becomes more marked in the Umayyad period (*fig. 4*).

The proportion of domestic fowl is 3.3% for Bey 002, 3.1% for Bey 028 and 1% for Bey 115. The earlier levels of Bey 002 provided a larger proportion of remains of this group, with frequencies of 6.2% for the Hellenistic-Roman period, 5.8% for the Imperial Roman levels and finally 7.3% for the Late Roman occupation.

Evidence for horse meat consumption is present for the three sites and camel is present and was eaten at Bey 028 and Bey 115. Fish remains are scarce because of the lack of sieving during recovery. Marine and freshwater fish are present. The identified taxa from Bey 002 comprise 12 remains of tuna (*Thunnus thynnus*), 3 of serranidae, 2 of catfish (*Clarias gariepinus*) and single specimens of Sparidae, Mugillidae and shark. Bey 028 has produced only two pectoral spines of catfish (*Clarias gariepinus*). This qualitative information from fish identification indicates that both freshwater and marine fish were caught and consumed. Other sites such as Yanouh (Oueslati, Van Neer 2004; Oueslati 2005) have also produced catfish and cichlid remains which lead us to suppose that these freshwater fish were fished and traded. However, it must be mentioned here that within other chronological samples from Bey 002, African catfish of the genus *Bagrus* were identified thus suggesting trade in salted and dried fish, possibly from the Nile. The literature suggests that the trade of salted fish in Egypt is well documented for the Roman (Van Neer, Depraetere 2005) and Coptic periods (6th and 7th c., Van Neer *et al.* 2006). Thus the status of *Clarias gariepinus* from Beirut remains uncertain, as it could either have been traded from the Nile or caught in local rivers.

Marine invertebrata are represented by nine taxa including crab, Veneridae, Mytilidae, Glycymerididae, Muricidae, Cerithidae, Patellidae, Trochidae and Cymatiidae. Unionidae are the only freshwater bivalves. The numerous cut marks on this pearly shell suggest the possible exploitation of mother-of-pearl.

Bey 028	NR	%NR	Weight
<i>Bos primigenius</i> f. <i>taurus</i> (adult)	468	11,8	15 283
<i>Bos primigenius</i> f. <i>taurus</i> (veal)	121	3,1	1695
Total cattle	589		16 978
<i>Sus scrofa</i> cf. f. <i>domesticus</i>	77	2,0	983
<i>Ovis/Capra</i>	2967	75,0	26 738
<i>Gallus gallus</i> f. <i>domesticus</i>	112	2,8	187
<i>Anser anser</i> cf. f. <i>domesticus</i>	2	0,1	6
<i>Gazella</i> sp.	3	0,1	13
<i>Lepus</i> sp.	3	0,1	7
<i>Sus scrofa</i>	3	0,1	73
<i>Equus</i> sp.	44	1,1	3184
<i>Camelus</i> sp.	8	0,2	1027
<i>Canis lupus</i> f. <i>familiaris</i>	51	1,3	369
<i>Felis silvestris</i> f. <i>catus</i>	4	0,1	5
Wild carnivora	7	0,2	30
<i>Rattus rattus</i>	3	0,1	1
Rodent undetermined	2	0,1	0
Turtle undetermined	1	0,0	0
Fish undetermined	3	0,1	1
<i>Clarias gariepinus</i>	2	0,1	6
Chondrichthyes	2	0,1	10
Cardiidae	1	0,0	0
Muricidae	1	0,0	0
Human bones	71	1,8	1653
NISP	3956	85,5	51 271,25
Unidentified	669	14,5	3543
Total	4625	100,0	54 814,25

Table 1—Species list from Bey 028 assemblage.

Bey 002	NR	%NR	Weight
<i>Bos primigenius</i> f. <i>taurus</i> (adult)	335	18,1	4478
<i>Bos primigenius</i> f. <i>taurus</i> (veal)	54	2,9	1432
Total cattle	389		5910
<i>Sus scrofa</i> cf. f. <i>domesticus</i>	99	5,3	744
<i>Ovis/Capra</i>	1210	65,3	6554,5
<i>Gallus gallus</i> f. <i>domesticus</i>	55	3	72
<i>Anser anser</i> cf. f. <i>domesticus</i>	1		
Cervids undetermined	1		
<i>Equus</i> sp.	12		
<i>Canis lupus</i> f. <i>familiaris</i>	4		
<i>Felis silvestris</i> f. <i>catus</i>	2		
<i>Rattus rattus</i>	2		
Chondrichthyes	1		
<i>Thunnus thynnus</i>	12		
Serranidae	3		
Mugillidae	1		
Sparidae	1		
<i>Clarias gariepinus</i>	2		
Fish unidentified	15		
Crab	2		
<i>Unio</i> sp.	5		
<i>Mytilus galloprovincialis</i>	3		
<i>Ruditapes decussatus</i>	3		
<i>Glycymeris glycymeris</i>	4		
<i>Monodonta turbinata</i>	1		
<i>Patella</i> sp.	10		
<i>Charonia tritonis</i>	2		
Muricidae	14		
Certhiidae	1		
Marine bivalve	3		
Marine Gastropoda	7		
Terrestrial Gastropoda	4		
Unachieved or broken bone artefacts	1		
Human bones	14		
NISP	1884	72,2	13563,5
Unidentified	725	27,8	1265
Total	2609	100	14828,5

Table 2—Species list from Bey 002 assemblage.

Bey 115	NR	%NR	Weight	Weight %
<i>Bos primigenius</i> f. <i>taurus</i> (adult)	143	18,8	4795	43,9
<i>Bos primigenius</i> f. <i>taurus</i> (veal)	57	7,5	535	4,9
Total cattle	200		5330	
<i>Sus scrofa</i> cf. f. <i>domesticus</i>	11	1,5	98	0,9
<i>Ovis/Capra</i>	532	70,1	5192	47,6
<i>Gallus gallus</i> f. <i>domesticus</i>	8	1,1	10	0,1
<i>Equus</i> sp.	3	0,4	250	2,3
<i>Camelus</i> sp.	1	0,1	32	0,3
<i>Felis silvestris</i> f. <i>catus</i>	1	0,1	4	0,0
Carnivora undetermined	2	0,3	2	0,0
Turtle undetermined	1	0,1	0	0,0
NISP	759	92	10918	97,2
Unidentified	66	8	320	2,9
Total	825	100	11238	100

Table 3—Species list from Bey 115 assemblage.

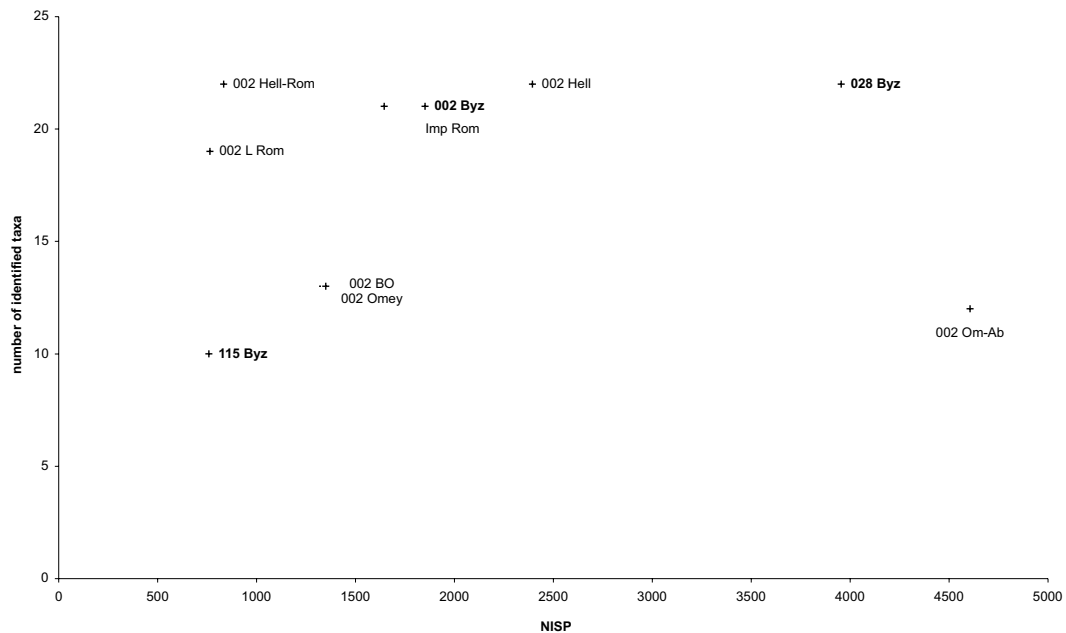


Fig. 1—Correlation between NISP and the number of identified taxa within the assemblages of Bey 002, Bey 028 and Bey 115.

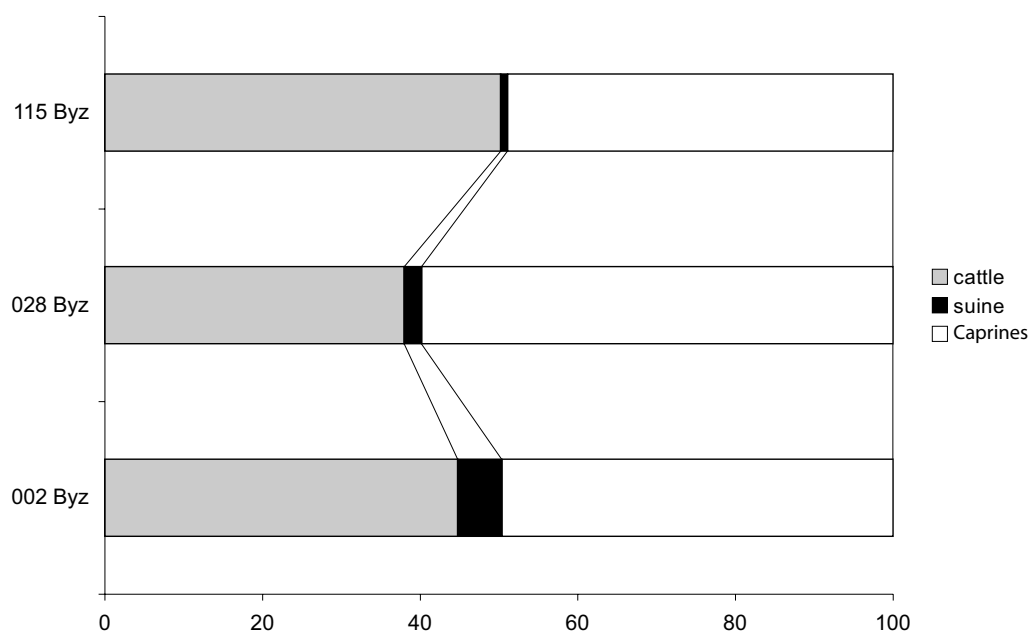


Fig. 2—Relative frequencies of the three main species within the three Byzantine assemblages.

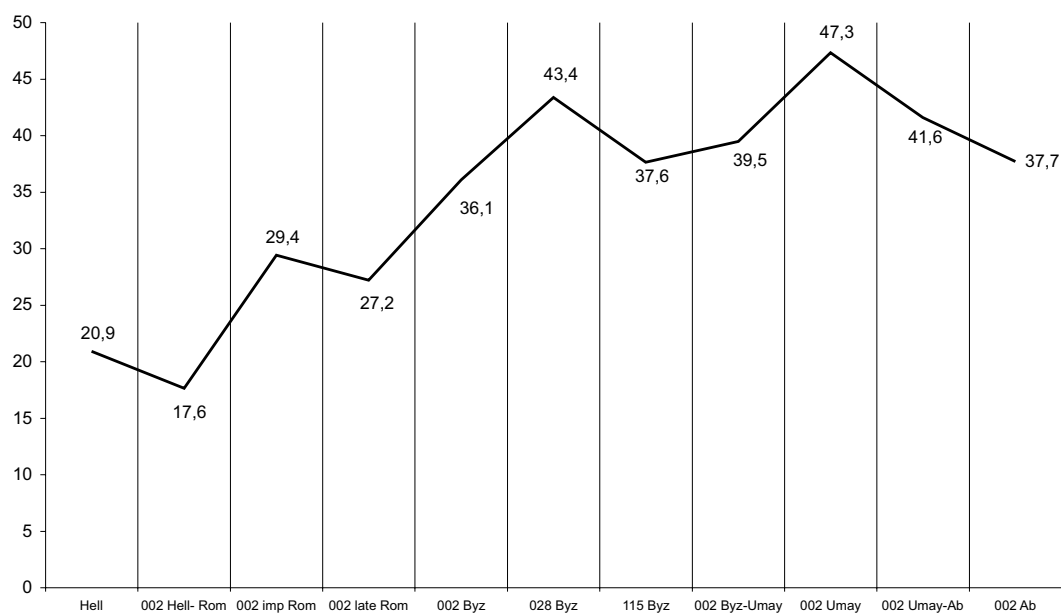


Fig. 3—Evolution of the frequency of sheep in relation to goat throughout occupation.

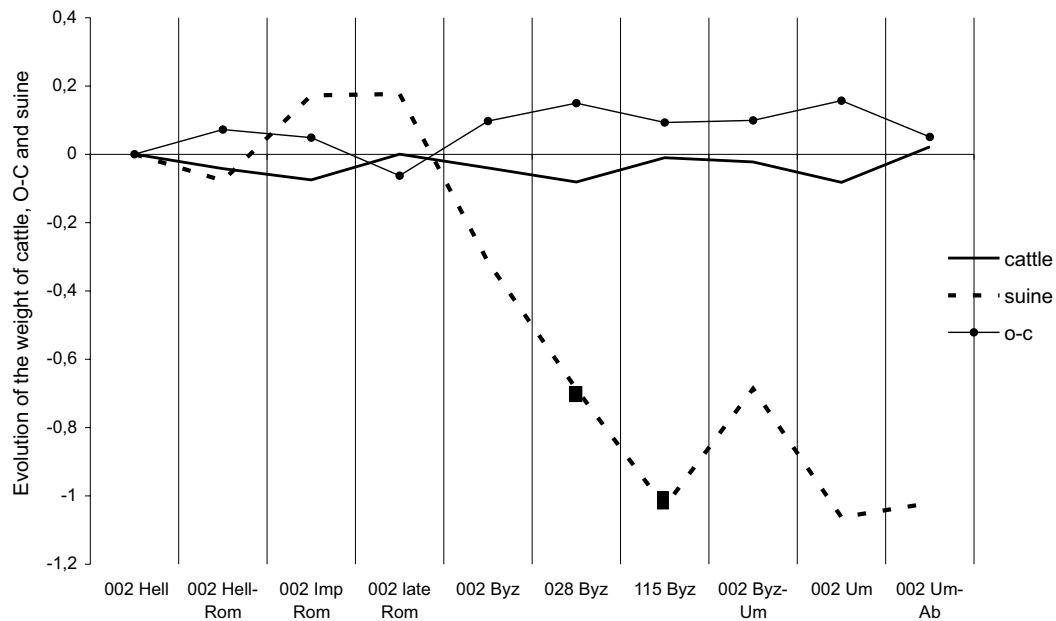


Fig. 4—Diachronic evolution of the proportions of cattle, swine and Caprines (O-C) throughout the occupation (Hell : Hellenistic, Hell-Rom: Hellenistic-Roman, Imp Rom: Imperial Roman, Byz: Byzantine, Byz-Um: Byzantine-Umayyad, Um: Umayyad, Um-Ab: Umayyad-Abbasid).

Provisionment of the sites

The study of meat provisionment is based on the age at slaughter of the sheep/goats, the evolution of the proportion of veal within our assemblages and the butchering patterns for sheep and goat.

The age at slaughter of Caprines

The scarcity of data for cattle and pigs limits the study of age at death to sheep and goats. The survival curve for Bey 002 (fig. 5) underlines the high proportion of young animals killed between birth and the age of two months (nearly 35%). Only a few animals were slaughtered between two and six months. Then the age classes 6-12 months and 1-2 years make up another 35% of our sample. If we include with these age classes the specimens from animals 3-4 years in age we observe that 90% of the consumed sheep/goats correspond to very young to mature individuals, whereas the other 10% comprises animals 5 to 9 years old. The curve from the data of Bey 028 shows the absence of young animals less than six months old and that 80% of the sample comes from individuals aged 6 months to 4 years. The age classes 4-6 years and 6-8 years make up close to 14% of the assemblage.

The comparison of the two sites highlights some similarities with the predominance of young to mature individuals. Bey 028 is characterised by the absence of very young animals and a higher proportion of the reformed ones. If we take into account Payne's (1973) and Stein's (1987) models, the profiles of Bey 002 and Bey 028 are similar to a combination of the Stein consumers' model and the Payne milk production profile. The outcome of this analysis suggests that the sheep/goats consumed on these sites come from breeding sites specialised in the provisionment of the city. The production of milk in the country is very likely and the older animals are probably associated with the shearing of wool.

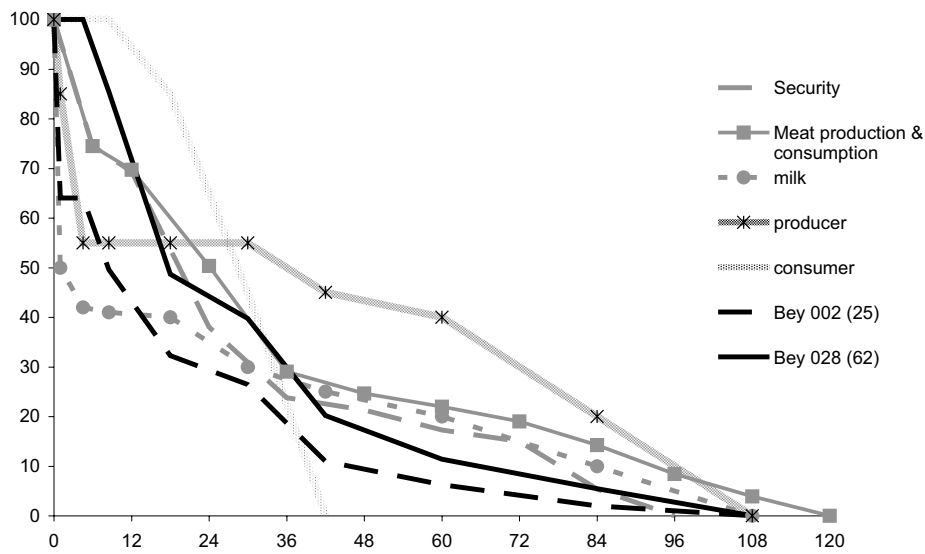


Fig. 5—Caprine data for the Byzantine assemblages in Beirut compared with expected survivorship patterns for dairy production, meat production, herd security, producer sites, consumer sites and local meat production/consumption sites.

The proportion of veal

The use of the term veal is restricted to meat from cattle of animals less than one year old. The age determination of young cattle is based on the eruption and wear of the deciduous teeth, the length of bones and the stage of fusion of the scapula and the pelvis (the glenoid cavity and the acetabulum fuse at 7-10 months). The proportions of veal in relation to cattle remains are 13.9% for Bey 002, 20.5% for Bey 028 and 28.5% for Bey 115. If we consider the long-term evolution of the proportion of veal at Bey 002 (fig. 6)

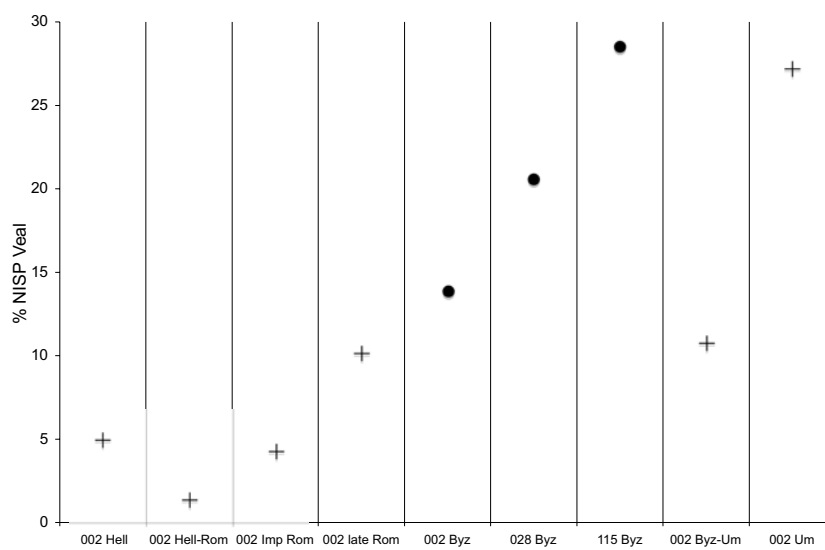


Fig. 6—Evolution of the frequency of veal throughout occupation (Hell : Hellenistic, Hell-Rom: Hellenistic-Roman, Imp Rom: Imperial Roman, Byz: Byzantine, Byz-Um: Byzantine-Umayyad, Um: Umayyad, Um-Ab: Umayyad-Abbasid).

we note that there is a steady increase in the consumption of veal through time. This reaches its highest level within the Byzantine and Umayyad assemblages.

Skeletal element profiles and butchering patterns of Caprines

The examination of skeletal element profiles, in comparison to the composition of a whole carcass (fig. 7), indicates that mandibles, forelimbs, hind limbs and feet are overrepresented. The selection of these parts of the skeleton may be explained by taphonomy (Lyman 1994). In fact the differential preservation of bones according to their density is compatible with the abundance of mandibles and feet and the scarcity of vertebrae and ribs. Moreover the modified general utility index of sheep (Brain 1981) indicates that parts of the skeleton with a low utility index such as feet and skulls may be abandoned on primary butchering areas whereas meaty parts such as pelvis, limbs, scapulae and mandibles are more likely to reach consumer sites. If we take into account these taphonomical processes it may be suggested that the trade in certain parts with joints is specialised and that no butchering took place on the site. The shoulders and legs of sheep and goats must have constituted the bulk of the consumed meat.

The butchering marks observed on the surface of the bones suggest that the tools were robust and that speed in the cutting up of the carcasses was more important than the sharpness of the blade. This is illustrated by the cutting through of articulations and the use of innovative techniques. If we also take into account the standardised cutting pattern, it becomes likely that the butchering was undertaken by a highly specialised craftsman with a considerable turnover of meat.

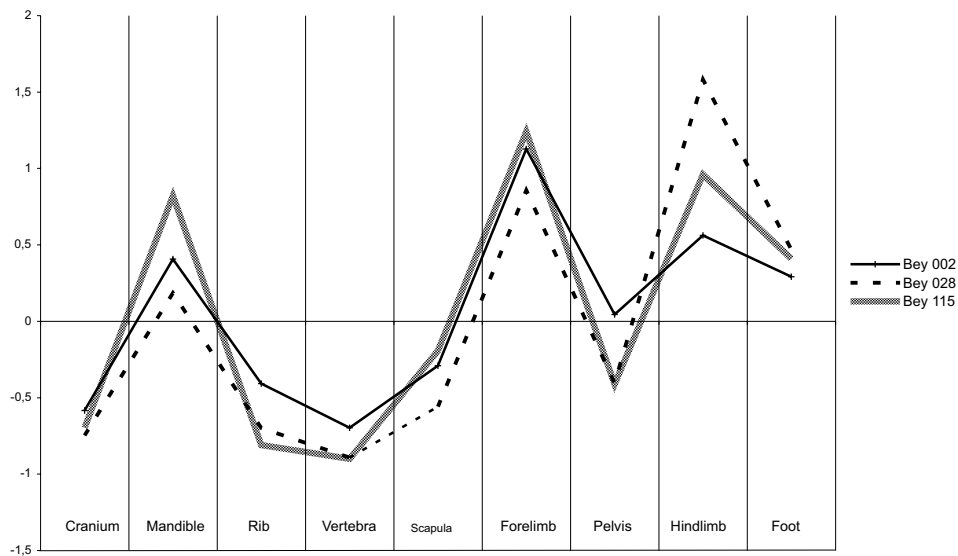


Fig. 7—Skeletal element profiles for the three Byzantine assemblages.

The size of Caprines

Only Bey 002 and Bey 028 have sufficient metrical data for the Byzantine period. Figure 8 illustrates the marked decline in the size of the distal width of metatarsals of sheep and goats from the Hellenistic occupation to the following cultural layers. This tendency is probably associated with the long-term decline in the size of domestic stock which had taken place since the Neolithic period. The absence of zootechnical efforts in the improvement of animals which is observed in other provinces of the Roman Empire is note worthy.

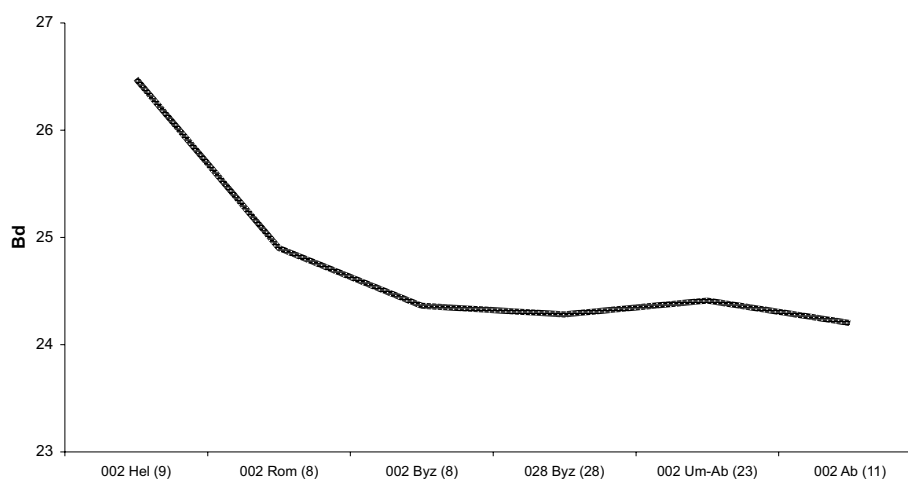


Fig. 8—Evolution of the distal width of the metatarsal of Caprines throughout occupation.

DISCUSSION

The study of these three synchronic Byzantine assemblages from Beirut suggests a relative homogeneity in the proportions of the various taxa consumed in this part of the city. Among the results of the study of Bey 002, the decrease in pork and the increase in the proportion of veal were the noticeable trends in the diachronic evolution of the meat diet. The processes behind the decrease of pork consumption in the Byzantine period are difficult to assess. If at Bey 002, this change was interpreted as a precursor for the Umayyad period with the advent of the Islamic phase, the new data from Bey 115 and Bey 028 negate this hypothesis as they produced even less pig remains than the contemporary levels of Bey 002. Therefore, the end of the Roman Empire is more likely to be a factor in the decline of the valued pork. It seems that the increase in pigs was favoured by a Roman influence that faded afterwards in the Byzantine period. At the regional scale, only a few contexts are available for comparison. Within Lebanon, the Umayyad levels of the mountainous site of Yanouh in which the Christian cult was practiced, we also observe a decrease in pork consumption (Oueslati, Van Neer 2004; Oueslati in press). Similarly at Sumaqa (Horwitz 1999) the Romano-Byzantine period is also characterised by a low proportion of pigs which is interpreted as a consequence of the self-sufficient rural status of the occupation. This type of site is in contrast to cities with higher populations such as that of Caesarea that brought in most of its meat, including a high proportion of pork, in the markets. Another explanation based on ethnic status was also advanced by the author.

The data from Yanouh and Beirut suggest that neither food taboos nor the economic status of these agglomerations explain of the decline of pork consumption. Therefore it must be considered that in the development of economic strategies, breeding must have favoured certain species depending on the preferences of the consumers, such as the demand for pork in the Roman period, and the need for different specialised secondary products of herding such as wool and milk, as suggested by the slaughtering curves for the Byzantine assemblages of Beirut. The importance of socio-cultural and economic factors may be added to Vila's conclusions for the complex evolution of pig breeding from the end of the Neolithic to the Iron Age on the regional scale (Vila 2006a, p. 145, 2006b, p. 219 and 221).

The same reasoning applies to the increase of veal consumption which exceeds 5% in the later Roman period and reaches 28% at Bey 115. It must be stressed that the place of veal in the meat diet is in itself surprising, as such levels were reached in Western Europe only in the modern period (Audoin-Rouzeau 1997). Therefore a large veal production must have been associated with a change in the patterns of breeding with a focus on the production of meat. This suggests a large population within the city and an increase in the need for meat that could have been associated with the high status of this city in the Byzantine period. In this perspective, it is surprising to note that the few metrical data available for the sequence ranging from the Hellenistic to the Umayyad phases reveals a decline in size among the sheep/goats. If larger samples are consistent with these results, it would be tempting to analyse over a longer period the development of the stature of domestic mammals to learn when and under what conditions zootechnical improvements were introduced into the area.

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