ZOOARCHAEOLOGICAL ANALYSIS ON FAUNAL REMAINS FROM SALAT TEPE, SOUTH-EASTERN TURKEY

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Approval of the Graduate School of Social Sciences

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ABSTRACT

ZOOARCHAEOLOGICAL ANALYSIS ON FAUNAL REMAINS FROM SALAT TEPE, SOUTH-EASTERN TURKEY

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This dissertation is based on investigation of faunal remains from Salat Tepe, a small mound is located in Batman province, where lies within the Ilısu Dam area, at the north of the Tigris River, south-eastern Turkey. Salat Tepe is a multi-period site and studied materials were taken from Chalcolithic to Hellenistic periods have been analyzed. Mainly, this dissertation addresses how faunal remains could add to our understanding of the social and economic organization of the site. The principal domestic species (sheep, goat, pig and cattle) are spread more consistently across the periods. Besides, the domestic animals, the exploitation of wild animals especially red deer were also important, however those were not play as major role as the domesticates. In addition, this research has aimed to explore how herding decision were made, whether the analysis concentrated on the herding strategy changes or continuity in patterns of animal use over time. The animal bone evidence from Salat Tepe and other sites points to diversity in pastoral activities throughout the region and indicates that herding decisions are based on a range of variables with varying degrees of archaeological context and chronological phases. Herding strategies for Salat Tepe including the use of caprines for secondary products in the Bronze Age, while cattle role was for mainly the agricultural activities.

Resource variation at Salat Tepe showed existence of both animal husbandry and hunting activities at the site in Bronze Age. This research has shown that the site was the self-contained small agricultural settlement in Bronze Age, while Iron Age is characterized with simple dwelling houses attested with nomadic or semi-nomadic communities.

Key Words: Salat Tepe, Animal Bones, Zooarchaeology, Bronze Age, South-East Anatolia.

ÖZ

GÜNEY DOĞU ANADOLU, SALAT TEPE FAUNAL KALINTILARININ ZOOARKEOLOJİK ANALİZİ

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Bu tez çalışmasının kapsamını Salat Tepe arkeolojik yerleşiminden ele gecen faunal kalıntılar oluşturmaktadır. Küçük bir höyük olan Salat Tepe, Güneydoğu Anadolu'da, Batman il sınırında ve Ilısu Baraj projesi kapsamında yer almaktadır. Salat Tepe Kalkolitik dönemden Helenistik döneme kadar birçok evreye ev sahipliği yapmıştır. Bu doktora tez çalışmasında,2000, 2001,2004, 2005, 2006, 2007, 2008, 2009 ve 2010 yıllarını kapsayan dokuz kazı sezonundan ele gecen malzeme çalışılmıştır. Toplamda 4938 hayvan kemiği tur, cins ve aile bazında tanımlanmıştır. Bu çalışmanın esas amacı, yerleşimdeki sosyal ve ekonomik organizasyonu faunal kanıtlar kullanarak açıklamaktır. Tüm dönemlerde sıklıkla ele gecen evcil hayvanlar; koyun, keçi, domuz ve sığır olarak tespit edilmiştir. Yapılan incelemeler sonucunda, faunal yapının dönemler arasında değişiklik göstermediğini söyleyebiliriz. Evcil hayvanların yani sıra, yaban hayvanları özellikle kızıl geyik de fauna da tanımlanmıştır, ancak yaban hayvanlar evcil hayvanlar kadar besin ekonomisinde önemli yer tutmamışlardır. Ayrıca, bu çalışmada sürü hayvanlarının hangi amaçla kullanıldıkları, dönem içinde herhangi bir değişim olup olmadığı da yer almaktadır. Değişik konteks ve dönemlerden ele gecen hayvan kemikleri bölgede çeşitli amaçlarla hayvan yetiştiriciliği olduğunu işaret etmiştir. Salat Tepe'de Tunç Çağın'da koyun ve keçi, ikincil üretim için yetiştirilirken, sığırın ise çoğunlukla tarım aktivitesi için kullanıldığı gözlenmiştir. Evcil ve yaban hayvanlarının varlığı özellikle Tunç Çağın'da Salat Tepe'de farklı kaynak kullanımını işaret etmektedir. Bu araştırmada Tunç Çağın'da kendi kendine yetebilen küçük bir tarım yerleşkesi özelliği gösteren Salat Tepe, Demir Cağına gelindiğinde basit çukur evlerin varlığı ile konar-göçer veya yarı-konargöçer toplumların varlığını işaret etmektedir. Bu tez çalışması küçük yerleşimlerin faunal yapısını ve hayvan yetiştiricilik karakterlerini ortaya çıkarması açısından oldukça önem taşımaktadır.

Anahtar Kelimeler: Salat Tepe, Hayvan Kemiği, Zooarkeoloji, Tunç Çağı, Güneydoğu Anadolu.

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CHAPTER I

I.1. INTRODUCTION

The information from the Upper Tigris Region has considerably increased in last decades due to many excavations and projects linked with the rescue and other projects of the archaeological heritage. In addition, the region has been surveyed since the 1990's, and as a result of those investigations several sites are being excavated within the scope of the salvage project. Although the number of several excavations and projects is increased in this region, their contribution to the understanding of regional zooarchaeology is still limited. Salat Tepe is a multi-period site excavated since 2000, and the material used in this study comes from Salat Tepe 2000 to 2010 (except 2003 and 2004 seasons) excavation campaigns. Doing this study will provide better understanding of zooarchaeology for both Southeast of Turkey and Salat Tepe. In addition, combining the animal bone data obtained from Salat Tepe with others in the area will better enable the identification of regional differences in animal management practices, possible changes of faunal pattern, and organization of local animal economies.

The purpose of studying animal bone assemblages from Salat Tepe is to investigate the patterns of animal exploitation and changes in these exploitations through time, from Chalcolithic to Hellenistic period. The main goal of this research is to develop a detailed understanding of subsistence pattern of the site. In order to attain this goal, faunal remains from Salat Tepe were studied meticulously. Faunal remains are an essential tool that reflects ancient cultures, because faunal assemblages are the products of food gaining, consumption and disposal activities of the population living in and around the settlements. Studying the faunal remains help determine which species were the most important for the diet, and the basic aims of the animal economy. In other words, in this study what species were preferred for exploitation and whether or not wild sources were of significant portion, or if fishing and hunting were important are specified. Using the animal as a springboard, this research also answers a series of questions related to a field of human activities such as production and distribution of products, animal economies, dietary habits, hunting strategy, secondary production, and climatic/environmental conditions. These include the following questions:

1. What was the typical faunal pattern of the site, how did it change over the time?
2. What is the animal distribution within the spatial context in each period?
3. How the caprines herded and what was the main aim of this herding? Did any change occur through time?

The first question is the most general, and refers to the study of animal bone from archaeological sites and usually involves the identification and listing of animal taxa and skeletal elements that could be identified from the excavated site. Although the faunal analysis is concerned with primary research of zooarchaeology, faunal research can offer more information beyond simply taxa and elements in the form of butchery, burning, and much more.

The second question deals with the social and economic animal uses explored at Salat Tepe. Animal bones are found in large portions in the materials deposited as waste in archaeological sites. Their frequency in different contexts facilitates a large scale comparison within the site across periods. The same-period samples taken from different archaeological contexts are compared so as to examine spatial differences in the distribution of faunal remains that might show functional or social differences.

Final question addresses the animal management practices at within the site to investigate primary animal production. The understanding of the regional animal management is also helpful to figure out daily lives of the population and their food preferences and pastoral systems. The aim of the herd management such as, for milk, wool or it is also explained the animal's weather was herded only just for meat or if the secondary production choices are a changed through the time.

The Upper Tigris Region will be flooded by the lake which will be formed by the Ilısu Dam, thus, it is important to study of animal bones assemblages in order to complete missing information before the dam reservoirs would begin to fill with water. In addition, this study will represent human and animal relationships in many aspects. There are two main reasons why Salat Tepe was recognized as an ideal type site at which to carry out such an investigation. First, as Salat Tepe and its region will begin to fill with dam of water, both archaeological and zooarchaeological studying have critically important. Second, since the site is abandoned and it is not disturbed by modern occupation, it provides excellent conditions for carrying out large scale excavations. In addition, there will be contribution to imagine of past ecological structures. From the ninth millennium B.C., sedentism and initial food production developed in southeastern Anatolia. In the Upper Tigris Region, large houses contained remains of locally domesticated cereals, sheep and goat bones, and some of the earliest copper artifacts ever discovered. The location of Southeastern Anatolia was continually exposed to cultural stimuli from Mesopotamia. That contact apparently prepared the ground for the urbanization of Anatolia. The site is located 90 km to the east of Diyarbakır, and Salat Tepe associated with small farmstead which composed of houses located close to each other around open courts, in Middle Bronze Age Period. Thus, because relatively few small rural sites are reported very well, it is believed that the present study create a variation. Lastly, there are limited zooarchaeological researches doing in Southeast part of Turkey, to build up this zooarchaeologic studying will be lightened for the further researches.

I. 2. ENVIRONMENTAL BACKGROUND

I. 2.1. Geology and Geography

Southeast Anatolia is bounded to the north by the 2.000-3.000 m high Taurus and Anti-Taurus mountain chains (Özbal, 2011:175). The Euphrates and Tigris Rivers cut through these landforms, forming steep gorges in some places and broad alluvial plains in others. The Karacadağ volcanic basalt massif near Diyarbakir, which rises to a height of, 1938 m, geologically divides the two river valleys. The Diyarbakir Basin, cut diagonally northwest-southeast by the Tigris River, is bordered to the north by the Taurus Mountains and to the south by the Mardin-Midyat threshold, which rises to height of 1.200-1.300m. (Özbal, 2011:175-176). The region between the Amanus Mountains, the eastern Taurus Mountains (1576 m.) and the Turkish-Syrian border is characterized by rising and falling plateaus and wide flood plains formed by the Euphrates and Tigris Rivers (Ökse, 2011: 260). The Tigris begins in central-eastern Anatolia north of Lake Hazar. The river flows southeast from the lake for about 100 km, joining several tributaries before reaching the modem city of Diyarbakir. Just beyond Diyarbakir, the Tigris makes an abrupt turn to the east. In these upper reaches of the Tigris, before it has gathered the strength of its main tributaries (the Batman, Garzan and Bothan rivers), it flows through a broad valley known as the Upper Tigris River Valley. This valley begins a few kilometers south of Diyarbakir and stretches for about 60 km to the east until the river enters the “Tigris canyon” about 5km east of the Tigris-Batman confluence (Parker and Creekmore, 2002:19). Although the flood plain of the Tigris is still relatively limited in this area, the surrounding low-lying terraces are mantled in many locations by deep silt and clay deposits, making this valley one of the most fertile areas in the region. Sinkholes are common along this section of the river. Many of these sinkholes are still active, forming ponds and small lakes at several locations, especially on the north bank of the river. The Upper Tigris region is confined to the southeast of Anatolia and occupies two main areas: the Diyarbakir basin and the Urfa-Mardin low plateau. The entire mountain block north of Mardin (Zohary, 1973:181), which effectively cuts the valley off from the plains of north Syria some 75 km to the south (Parker and Creekmore, 2002:20), is occupied by the Zagros forest steppe (Zohary, 1973:181). On the north, the valley gives way to rolling hills, foothills and eventually mountains that make up the Taurus range in this part of Turkey (Parker and Creekmore, 2002:20).

I.2.2. Climate and Vegetation

The climate of the Near East is very diverse, caused by differences in altitude, by the distances from the sea, and particularly by land forms. High mountain ranges parallel to the coast intercept most of the precipitation carried in by rain and snow bearing winds, creating dry climatic conditions in the interior plains and plateaus. In the greater part of the area under consideration winter (autumn-spring) rainfall is predominant, total annual precipitation for the region ranges, 400 to 600 mm, and there is a marked summer dry period (Van Zeist and Bottema, 1991:19). This region also has a particularly large temperature range, January means are below freezing, July means are generally above 30°C, making this the hottest as well as one of the driest parts of the country (Dewdney, 1971: 39). The southeastern region of Anatolia consists mainly of a series of plateaus dissected by the Euphrates and Tigris river systems. Higher summer temperatures characterize the steppe lands. Steppe vegetation consists of extremely rare grasses and other herbaceous bushes that grow rapidly in spring, the period of maximum rainfall, but are quickly desiccated by the high summer temperatures (Dewdney, 1971:55).The floodplain of the Tigris and Euphrates rivers and their tributaries was naturally covered by riverine forest, in which *Populuseuphratica* was the dominant species (aquatic plant formations). Other trees and shrubs of the riverine forest included *Salix spp., Tamarix spp*., and *Platanusorientalis* (Van Zeist and Bottema, 1991:32).

I.2.3. Geomorphology of the Region

The Upper Tigris region between the modern cities of Diyarbakır and Siirt forms a geographically closed settlement area bordered by the high mountain ranges of the Taurus to the north and the Tur'Abdin (Mardin Dağları) to the south. The western border of this area is defined by the conical shaped Karacadağ Mountain, an extinct volcano, while the eastern border is defined by the mountainous region east of the Batman-Tigris confluence. Further downstream, the Tigris cuts through high terraces leaving only a small strip of floodplain on each side of the river suitable for cultivation, while the surrounding hinterland consists of eroding uplands (Fig.I.1). This region is utilized predominantly for pastoralism, as it probably was in antiquity (Bartl, 2012:175).

The geomorphology and geoarchaeology of the region has been studied in detail by Bismil and Batman (Doğan, 2005:78). The higher terrains of the Tigris River Valley between Bismil and Batman consist of an erosion terrace 40 m above the river level. A second terrace, preserved only in some patches, is located 30 m above river level. Thick alluvial fill forms a terrace 9-10 m above the river and is the location of sites such as Müslümantepe and KavuşanHöyük. Another terrace, 4-5 m above the river and composed of flood plain aggradations deposits partly buried some of the earlier settlements of the area (Kuzucuoğlu, 2002: 768). Geomorphological analysis suggests there was an accumulation of sediments due to the flooding of the Tigris River and its tributaries during a portion of the period from mid-3rd millennium BC to 1200 B.C. The areas situated on the banks of the river were therefore not suitable for habitation. After 1200 B.C. it seems that the Tigris River was in an incision period (Doğan, 2005:82).

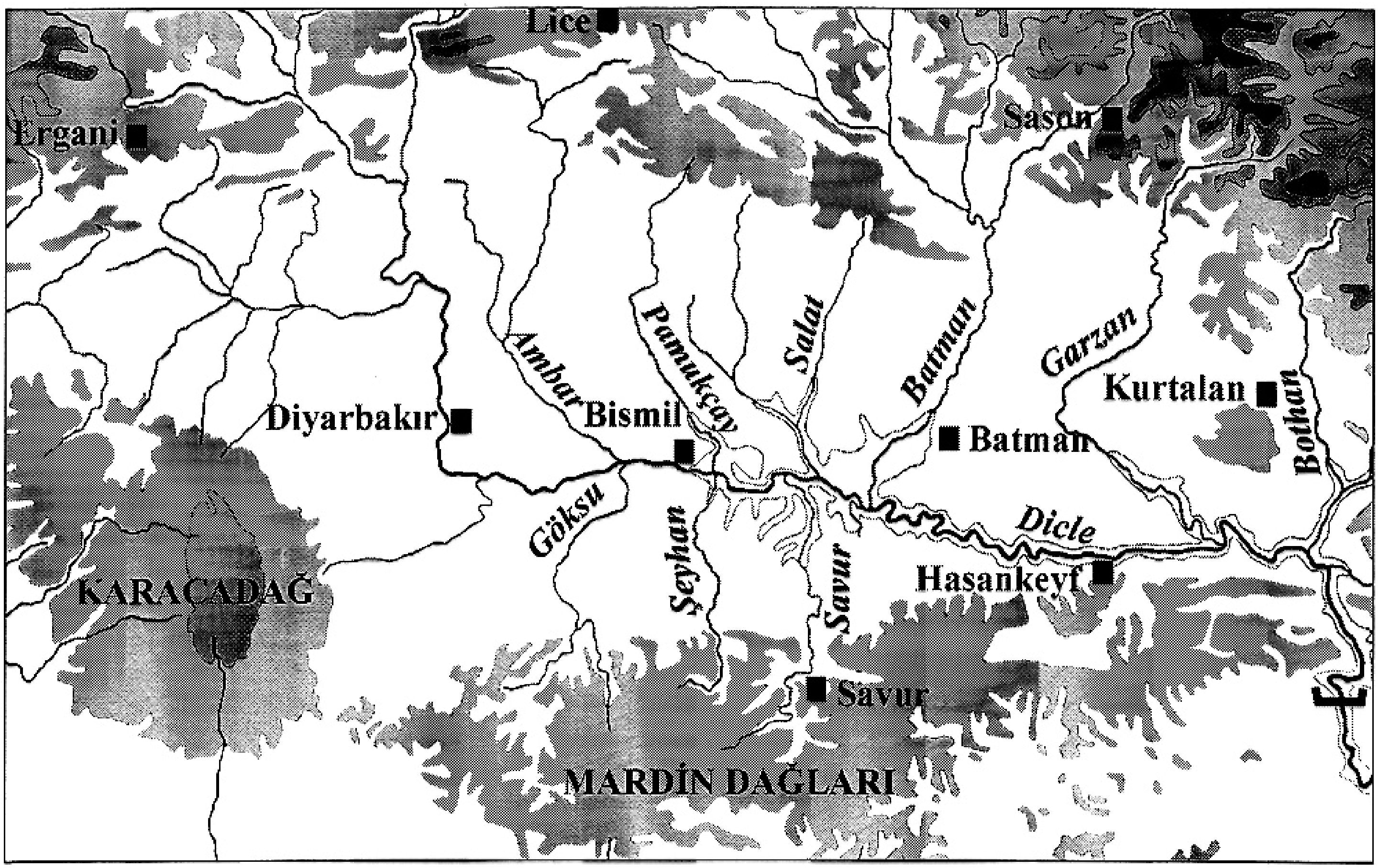


Figure I.1. Location map of Salat Tepe and environmentally mountains (Ökse, 2011b: 291).

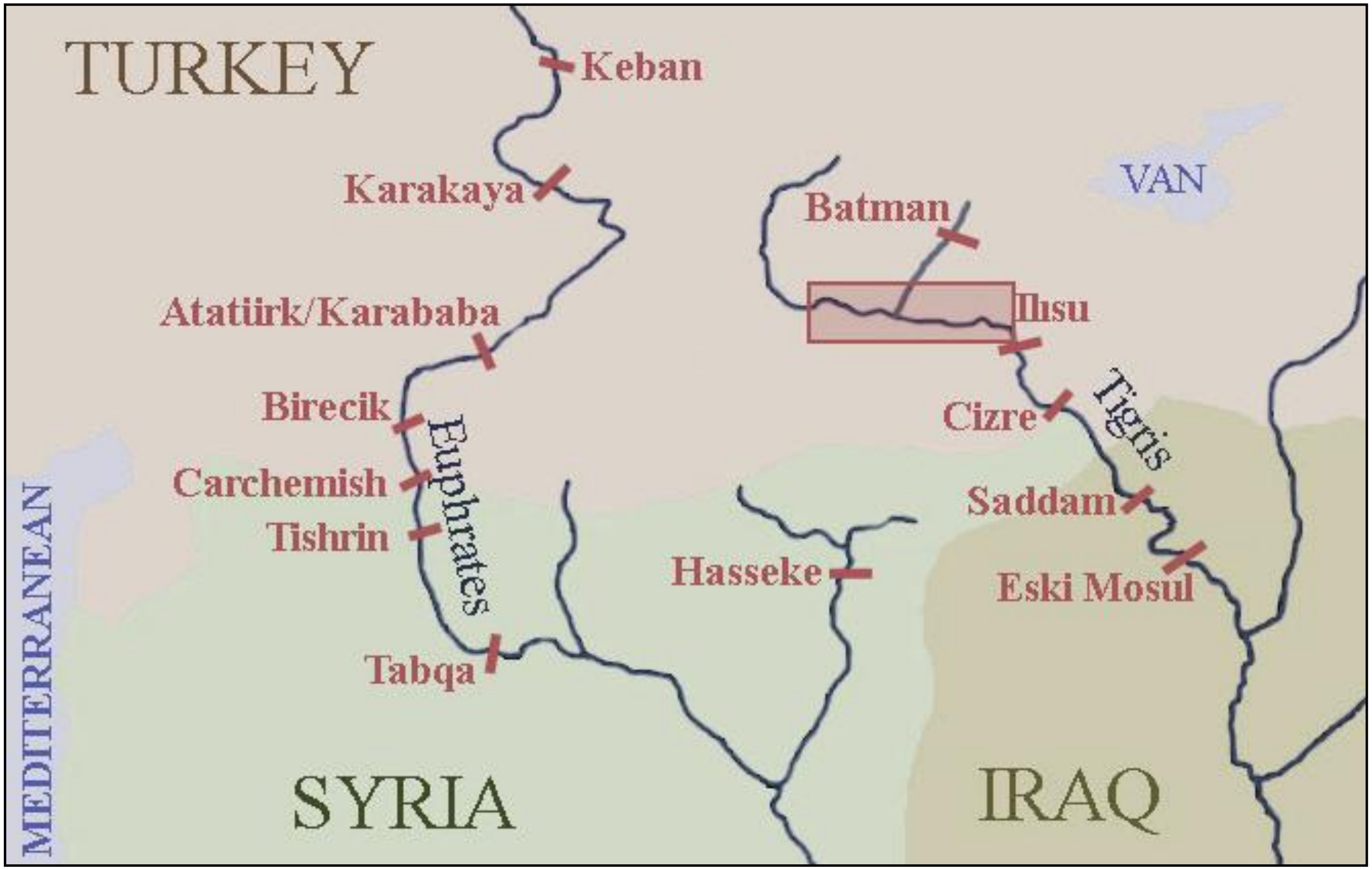


Figure I.2. Location of map of the Ilısu Dam area (Ökse's personal achieve).

Figure I.3. General Map of Turkey showing the Location of Diyarbakır

I.2.4. History of Archaeological Sites

As part of the GAP, The Ministry of Culture, the State Hydraulic Works (D.S.I.) and Middle East Technical University (METU), developed a protocol and began work began under the direction of the METU Centre for Research and Assessment of the Historic Environment (TAÇDAM) with the aim of salvaging the cultural remains in the areas to be affected by the Carchemish and Ilısu Dam project.

Since 1998 excavations have been undertaken in the Upper Tigris region in the Diyarbakır Province of southeastern Turkey as part of the archaeological salvage project to investigate numerous sites threatened by the construction of the Ilısu Dam (Fig.I.2.) (Bartl, 2012:175). Until the late 1980's, the Upper Tigris Valley was almost completely unknown archaeologically. Since then it has been subjected to a range of landscape approaches, resulting in an emerging picture of settlement and landscape in the Holocene. An initial survey begun by Algaze and collogues in 1988, in advance of the construction of the Dam at Ilısu, recorded sites from the Paleolithic to the Medieval period. Emphasis was on the future reservoir zone and collection was done mostly on the larger mounded sites. Subsequently, surveys targeted habitation sites of specific periods, including the Paleolithic, Neolithic, Bronze Age, and the Classical period. Site focused, extensive surveys of the western and northern parts of the basin have also been carried out (Ur, 2011: 848).

Until recently portions of the Upper Tigris basin were almost completely unknown in archaeological terms. No systematic archaeological research was conducted in the region until the late 1980s (Radner and Schachner, 2001: 753). Surveys conducted in the Carchemish and Ilısu Dam reservoir regions identified 250 archaeological sites that will be directly or indirectly affected by the projects. It was envisaged that the activities of the international teams involved in the project should be concentrated in this area until 2000, after which work would be conducted only on the sites in the Ilısu Dam region. The area to be flooded covers c. 37000ha. Evidence testifying to the beginning of urbanization in the region during the Uruk period and the Early Bronze Age has been encountered at a number of mounds in the Ilısu Dam region, including Ziyarettepe, Kenan Tepe, Salat Tepe, Aşağı Salat, Giricano, Müslümantepe and Kavuşan Höyük. Several sites in the Ilısu region have also yielded evidence of Middle and Late Bronze Age occupation. In addition salvage excavations were subsequently conducted at Gre Dimse, Hakemi Use, Hirbemerdon, Körtik Tepe, Türbe Höyük, Üctepe, Ziyarettepe, Yenice Yanı, Sumaki Höyük, Başur Höyük, Salat Cami Yanı (Fig. I.4.) (Ökse *et al*, 2008).

I.2.5. History of the Region

Nearly all Early Chalcolithic sites in southeast Anatolia and beyond into the Keban area, the Lake Van region, and the Cilician cost, has yielded Halaf painted pottery. Traditionally, the Halafians of northern Mesopotamia have been characterized as sedentary farmers. However, new evidence from Syrian sites like Khirbetesh-Ehenef, Damishliyya, and Umm Qseir, suggest that pastoral herding may also have been practiced and that some sixth millennium BCE inhabitants followed semi-nomadic or seasonally based pastoral lifestyles centered on animal husbandry. Constant contact and communication between semi nomadic populations and sedentary sites could provide a mechanism through which Halafian material elements and ideas became distributed across distant regions (Özbal, 2011:178).

North Mesopotamian Ubaid influences in southeast Anatolia intensify in the fifth millennium BCE. This is the most poorly investigated phase of the Chalcolithic period in this region (Özbal, 2011:183). As a result, our information on the social, political, and economic issues and daily life as well as the significant question of how Ubaid influences changed (Özbal, 2011:184).

I.2.5.1. Late Chalcolithic Period

Chalcolithic is chronologically divided into millennia, based on calibrated dates. The sixth, fifth, and four millennia BCE, respectively, roughly refer to the Early, Middle and Late Chalcolithic in which Halaf, Ubaid, and Uruk type materials are correspondingly prevalent (Özbal, 2011:175).

At the beginning of the Late Chalcolithic Period the Mesopotamian version of the Ubaid culture seems to have expanded from the Tigris basin. The Coba Ware and Flint-Scraped bowl ceramic forms are characteristic of this culture. During the Late Uruk period the village culture of Late Ubaid/Early Uruk horizon in southeastern Anatolia was gradually replaced with developed town culture. As indicated by town planning and architecture type, this is the final part of the Late Chalcolithic period described as 'early urban'. Large settlements with monumental architecture are found in Mesopotamian centers, but they are not found in the Tigris basin (Yakar, 1985:326). Starting with the second quarter of the third millennium BC, settlement activity throughout the region increased considerably. The wheel-made, light wares of the Syrian tradition retained their popularity, indicating that the indigenous population in the areas affected by the invasion co-existed with newcomers of northern origin (Yakar, 1985:327). It is important to note that numerous regions of the Near East, and in particular southeast Anatolia, were experienced one of the most unstable phases of their early history during the third and early fourth quarters of the 3rd millennium BC. This was largely due to the military campaigns of the Akkadian kings into Syria. With the coming of the new groups of predominantly sedentary people settlements increased in southeast Anatolia (Yakar, 1985:328).

I.2.5.2. Early Bronze Age

The preplanned, town-like, fortified settlements with public buildings that gradually appeared in various regions of Anatolia starting in the 2nd or 3rd centuries of the 3rd millennium B.C. were likely the outcome of local initiatives. In other words, the socioeconomic and political seeds of the early-urban phase in the settlement history of Anatolia were probably sown in the proto-urban phase of the 4th and early 3rd millennium B.C. starting in the mid-3rd millennium B.C. settlements with clearly defined administrative, residential, and industrial sectors emerged. These settlements evidence rank, wealth, and professions related to social stratification among the residents. Presumably most local rulers or ruling families would have regulated the mechanisms of political succession by establishing legitimated dynasties in this period (Yakar, 2011:69).

The 3rd millennium B.C. cultural development in this region was examined in light of the cultural and historical sequence of north Syria/Mesopotamia and the settlements influenced to the south. Those settlements located west of the river also had close contact with the expanding Mesopotamian culture (Yakar, 1985:339). The large settlement systems were based on a three-tier hierarchy (Wilkinson, 1994:488). According to this interpretation large settlements (i.e.>50 ha) fit into an intermediate category and were surrounded by secondary centers (i.e.>10 ha) connected to smaller satellites from 1to 5 ha in size. In other words, the settlements over 10 ha, the next larger settlements were probably around 5 ha while the majority of the sites clusters around 1to 5 ha. Because, the cultivable area is restricted, on account of topographical features, the hierarchical organization is not suitable for the EBA Upper Tigris area. Although in the second half of the 3rd millennium B.C. large urban centers appeared in northern Mesopotamia. No large settlement dated to the EBA has been excavated in the Upper Tigris region (Parker, 2003:529-530).

I.2.5.3. Middle Bronze Age

The Middle Bronze Age of southeastern Anatolia is defined by two different regional chronological periodization; the Middle Euphrates region and the Upper Tigris Region, including the Upper Khabur region. The Middle Euphrates region includes three periods; (MBA I-III), this includes the Khabur Region periods (Khabur phase 1-4) as indicated by the development of painted pottery (Ökse, 2010a:1).

I.2.5.4. Late Bronze Age

In southeastern Anatolia, a single horizon encompasses two historical phases: the Mitanni Kingdom (1500-1350 B.C.), followed by the Middle Assyrian, which is contemporary with the outstanding Hittite Empire (1350-1050 B.C.) (Gates, 2011:396). The Late Bronze Age landscape differed from this pattern; in the mid-third to mid-second millennium BC and is connected with irregular rainfall and increased aridity. Southeastern Anatolia subsisted on ovicaprid husbandry and on rain fed agriculture under less favored conditions than in the west, because of poorer soil, higher rates of erosion, and a climate with seasonal extremes. As a result of these changes most of the MBA centers were abandoned and were replaced by fortified settlements that controlled the circulation of people and goods in the Hittite, Mitanni and Middle Assyrian towns (Gates, 2011:403). To sustain the population on an urban and ostentatious scale required extensive farmlands and extraterritorial enterprise. Most settlements were therefore rural and the few hubs they supplied were widely spread (Gates, 2011:403). In the southeast, lower towns disappeared with the LBA. Here inhabitants chose the security of elevated places (Gates, 2011:404).

The collapse of urbanism in the Tigris region at the beginning of the Iron Age is best seen at the previously major Middle Assyrian urban centers of Üçtepe/Tidu, and Ziyarettepe/Tushan. The Middle Assyrian settlement patterns in the Upper Tigris River Valley are characterized by a large number of new villages and hamlets that were established on flat agricultural land around the banks of the river (Parker, 2003: 547). The *dunnu* system clearly indicates the Middle Assyrians presence depended on an agricultural economy (e.g. Giricano) (Matney, 2011:450). There is one more *dunnu* type settlement mentioned in the Giricano texts and at least one more existed in the vicinity of Sinamu (modern Pornak/Murattasi, c. 45km west of Giricano) according to broken obelisk. Therefore, it is likely that a significant part of the arable land in the Upper Tigris Region was organized in the *dunnu* system during the Middle Assyrian era (Schachner, 2003:156). *Dunnu* households owned properties mostly granted by the king and his family, which fortified agricultural centers. The end of the Early Iron Age in southern Turkey is best defined by reference to the historical trajectory of two imperial polities with cores outside of the region, namely, the rise of the Late Assyrian state in northern Iraq and the spread of their influence up the Tigris River Valley, and the Urartian state in eastern Turkey and its subsequent expansion in the Euphrates region (Matney, 2011:450).

I.2.5.5. Early Iron Age

For much of the Mesopotamian Iron Age, from about 900 to 600 B.C., the Assyrian empire dominated the entire region. Assyria was the first state to unite the diverse cultures of the ancient Near East into a single political unit (Parker, 2003:527). The Upper Tigris area continued to be occupied by the Middle Assyrians for a century until the collapse of the Middle Assyrian Empire. In the first half of the eleventh century BCE (Matney, 2011:447) after the Hittite collapse in the west the Middle Assyrian Empire had been centered along the Tigris in northern Iraq and extended up to the southern bank of the Tigris River south of Diyarbakir (Matney, 2011:448). The EIA in both the Upper Euphrates and Upper Tigris Rivers areas is characterized by significant changes in social organization. There was little or no settlement hierarchy in the valley during the Early Iron Age. These data suggest that during this period the Upper Tigris River Valley was home to a number of loosely integrated villages. The lack of settlement hierarchy and site clustering indicates that (Parker, 2003:530) the less develop settlement structure, seemingly a multinational mix of non-centrally organized villages, echoed the former presence of a rural culture void of any higher form of centrally (Matney, 2011:449).

I.2.5.6. Middle Iron Age

Assyrian power came back in 882 B.C., Tušhan was reestablished as an Assyrian occupational presence under Ashurnasirpal II and became the capital city of a homonymous province which was part of the Assyrian Empire up to the end of the 7th century BC (Parker, 2003:535-536). Accordingly, the MIA in the Tigris basin of southeastern Turkey saw the imposition of a string of fortified urban settlements along the southern bank of the Upper Tigris river by the Assyrian state at Ziyaret Tepe/Tushan as well as smaller satellite military outpost situated at periodic intervals between the larger urban settlements along the southern bank of the river. The former are located near the modern town of Tepe, Üçtepe/Tidu, just west of modern Bismil and Pornak/Sinabu some thirty kilometers of west of Bismil, Assyrian military control was secure, and the land along the Tigris was clearly part of the “Land of Assur" and known as the province of Tushan (Matney, 2011:452).

The Assyrian presence along the Upper Tigris, however, also appears to have included a significant demographic component away from the larger administrative and military center. It is quite possible that deportees from elsewhere may have been forcibly resettled along the Upper Tigris. In fact, the southern bank of the Tigris is dotted with small agricultural communities with strong indications of Late Assyrian material culture. Excavated examples, of such communities include Kavuşan Tepe, Hakemi Use and Müslümantepe (Matney, 2011:452).In general terms the Upper Euphrates and Tigris regions in the MIA were firmly under Assyrian control (Matney, 2011:453).Those regions included imperial infrastructure in the form of a provincial capital that served as a military center and reflected imperial architectural and material cultural styles (for example, Ziyaret Tepe, Üçtepe, Pornak, and Diyarbakır)(Parker, 2003: 541).

I.2.5.7. Late Iron Age

The transition to the LIA is marked politically by the collapse of the Urartian kingdom in the late seventh century B.C., at the hands of Assyria and the subsequent collapse of the Late Assyrian Empire after the sack of Nineveh in the 612 B.C. by the Babylonians and Medes (Matney, 2011:453).

I.2.6. Regional Zooarchaeological Studies

The Ilısu Dam project, has fully illuminated the previously little known Upper Tigris basin region. However, despite this advancement and even though more than 20 sites were excavated in the Upper Tigris region, the understanding of regional zooarchaeology remains minimal. The sites subjected to a zooarchaeological study will be mentioned below (Fig.I.2). Considering the topology of the region and Dam area, the amount of zooarchaeological data is still inadequate.

I.2.6.1. Körtik Tepe

Körtik Tepe is a small mound, approximately 0.5 hectares in area, located 14 km southwest of the city of Batman. Körtik Tepe is dated to the PPNA period, 9900 BC. Excavations began in 2000 by a team from Dicle University and directed by V. Özkaya (Arbuckle, 2006:115). In Körtik Tepe L. Atıcı is presently continuing the analysis of faunal remains. B.S. Arbuckle also completed some research on this collection in 2001. According to Arbuckle's study the most common identified taxa in this site at that period are caprines (42.2%). The sheep to goat ratio is 14:1. Because of the lack of goat mandibles, dental ageing is not clear. Overall the ageing pattern for sheep suggests that young individuals played a major role in subsistence. Caprines are followed by red deer (25%) and cattle (16.9%). Based on epiphyseal fusion young cattle were preferentially exploited. The cattle are similar in size to neighboring areas but Çayönü's cattle are slightly smaller than the Körtik Tepe samples. Pig remains were relatively rare. *Dama dama* is noted in Körtik Tepe, but due to the lack of diagnostic specimens there is not much information available. Besides mammals 11% of the sample was composed of fish and 17% by birds, as identified by Arbuckle.

I.2.6.2. Boztepe

The site of Boztepe is located some 8 km east of the modern town of Bismil in Diyarbakir province. Boztepe is a small, relatively low mound (Parker and Creekmore, 2002:21). In 1999 the site was excavated by The Upper Tigris Archaeological Research Project (UTARP) under the direction of B. Parker. According to the limited findings including, architecture remains and burials, the mound is dated to the Hellenistic Period, Iron Age and Halaf Periods. Iron Age and Halaf Period's materials were studied by Cavallo and Maliepaard. Their research material sample was very small due to poor preservation and heavy fragmentation. Halaf Period fragments totaled 160 and Iron Age fragments 120. According to Cavallo and Malepaard's study, pigs are the most common specimens for both the Iron and Halaf Period, it is suggested that ageing of the pigs showed very young or young animals were preferred in both periods. No specimens identified were older than two years in the Halaf Period. Ovicaprids (sheep) is the second group of animals in the assemblage, while the importance of ovicaprids appeared to decrease in the Iron Age. Cattle are a minor species in both periods. Because cattle bones were heavily fragmented specimens were grouped by size. So far, neither goat nor equid bones were, identified in the assemblage from Boztepe in either the Halaf Period or Iron Age (Parker and Creekmore, 2002:58).

I.2.6.3. Kenan Tepe

Kenan Tepe is a multi-period mound measuring approximately 4.5 ha in size and is 32 m high. The site is located on the north bank of the Tigris, 15 km east of the modern town of Bismil. Kenan Tepe consists of the main mound and the smaller lower town used in the Ubaid Period. In 2000 UTARP undertook the excavation under direction of B. Parker from the University of Utah. The site occupied five broad periods; Ubaid (4650 BC), Late Chalcolithic (ca. 3600 and

3500 BC), EBA transition (3000 BC), MBA (1800 BC), and EIA (1050 and 900 BC) (Parker, 2012:289-290). The Ubaid faunal assemblages studied consisted of 631 fragments of which 393 (62%) were identified. The most prevalent specimens are sheep and goat (37%), with a lesser amount of domesticated cattle (12%) and pigs (4%). The sample of wild taxa is very small, and includes red deer (*Cervus elaphus*) three turtle *(Testudo sp*.), and fish. Despite the limited representation it is assumed these wild species played an important role in the subsistence of the Ubaid Period (Parker *et al*, 2008:115-117).

R. Berthon studied 1.806 faunal remains from the Middle Bronze Age (MBA) layers of Kenan Tepe were. The faunal assemblage is composed mainly of sheep and goat (40-45%). Wild mammals are rare in Kenan Tepe. Mortality patterns for sheep and goat indicated most were slaughtered between the ages of 1-4 years. Pig represents 20-25% of the faunal assemblages; 12% of the pigs were slaughtered after the age of 42 months. According to the ageing of cattle, about 30% were killed between 36-48 months and 22 were consumed after the age 48 month (Berthon, 2009:131-132).

I.2.6.4. Ziyaret Tepe

Ziyaret Tepe is a large mounded site, approximately 34 ha in size. It consists of a high mound approximately 5 ha in area that rises 22 m above the plain, and a lower town of 29 ha in area. Since 1997 research has been conducted by a team from the University of Akron, Ohio, under the direction of T. Matney. The site's stratigraphic sequence spans from Early Bronze Age to Medieval Periods (Bartl, 2012:184). T. Greenfield studied the Late Assyrian and Medieval faunal remains from Operation A/N. She states that by domestic fauna, *Bos, Capra,* and *Ovis,* dominate the Late Assyrian Period (97.5%, n: 930). The numbers of wild species are very few (2.5%, n: 24). In this period bird exploitation focused on sub adults, followed by adults. *Sus scrofa dom.* are an exception in those juveniles is more than adults. Domestic sheep dominate the medieval period with 97.4% of the total assemblage (n: 1798). Amongst the wild animal (26%, n: 49), camels appeared. *Bos, Capra, Equus, Ovis* and *Sus* are represented similar age profile in Late Assyrian period. There is a preference for adult *Bos,* while *Canis* and *Cervus* are represented as sub-adults and adults. According to her study the frequencies of taxa from Ziyaret Tepe are similar for both the Late Assyrian and Medieval Periods. Both have high frequencies of *Ovis/Capra, Bos Taurus* and *Sus scrofa* (Matney et al., 2009:49-51).

Kavusan Höyük, Giricano, Musluman Tepe, Basur Höyük and Turbe Höyük's faunal assemblages were studied by R. Berthon as a PhD. thesis in 2011.

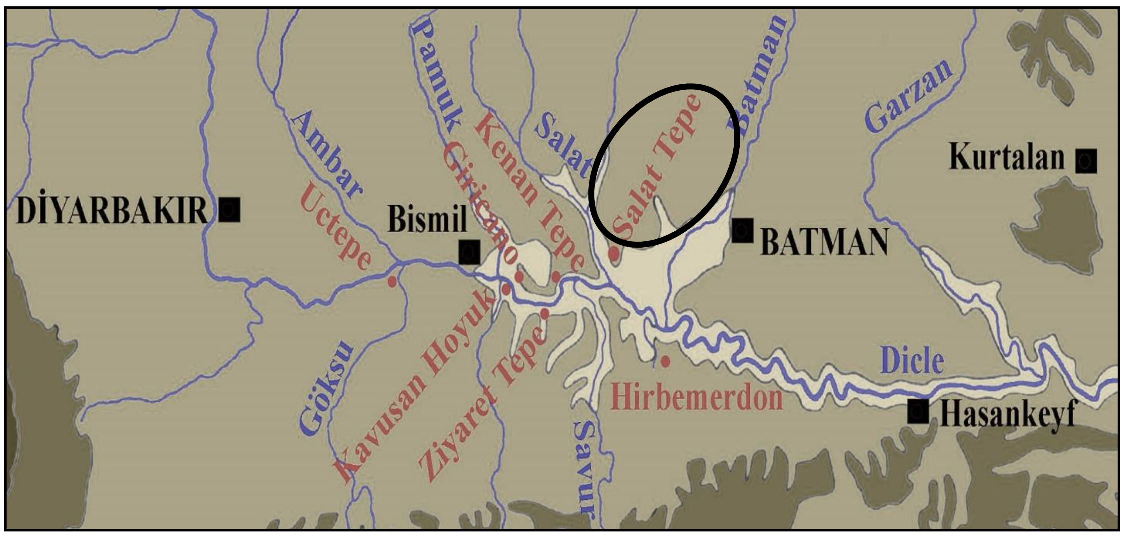


Figure I.4. Location map of the MBA sites on Upper Tigris Region in Southeastern Turkey (Ökse, 2011b: 291).

I.3. HISTORICAL BACKGROUND OF SALAT TEPE

Salat Tepe is 30 km to the west of Batman in the modern town of Yukarı Salat, ca. 90 km to the east of the provincial center of Diyarbakır and ca. 5 km to the north of the Tigris River, on the northern bank of the Salat Çayı (Ökse, 2009:165).

Figure I.5. General View of Salat Tepe (Excavation archive).

The settlement is located in a 6 m. thick alluvial terrace of Early Miocene formation, overlooking the valley and the plain. To the east of the site is Misevre Tepe (570 m high) and to the south is Ziyaret Tepe (585m high). To the north of the plain is an area known as the Molla Ali Lake Region and to the northwest the Sor Lake Region. The plain in which the mound is located is approximately 530 m. above sea-level, between longitude 40°-54'-55'' and latitude 37°-50'-51''. The mound is about 25 m high and measures about 200 m from northwest to southeast and 130 m form northeast to southwest. There is a terrace at the northwest measuring approximately 60X80 m (Fig. I.5.) (Ökse, 1999:345). Salat Tepe was one of the excavations conducted within the scope of the Salvage Project of the

Archaeological Heritage of the Ilısu Dam (Ökse, 2006: 683). G. Algaze and his team first investigated the site in 1989 while conducting survey in the region. The earliest occupation on the natural hill is dated to the Late Chalcolithic Period (Fig. I.6.) (Ökse, 2006:1). The site was excavated between 2000 and 2013 by A. Tuba Ökse of Kocaeli University.

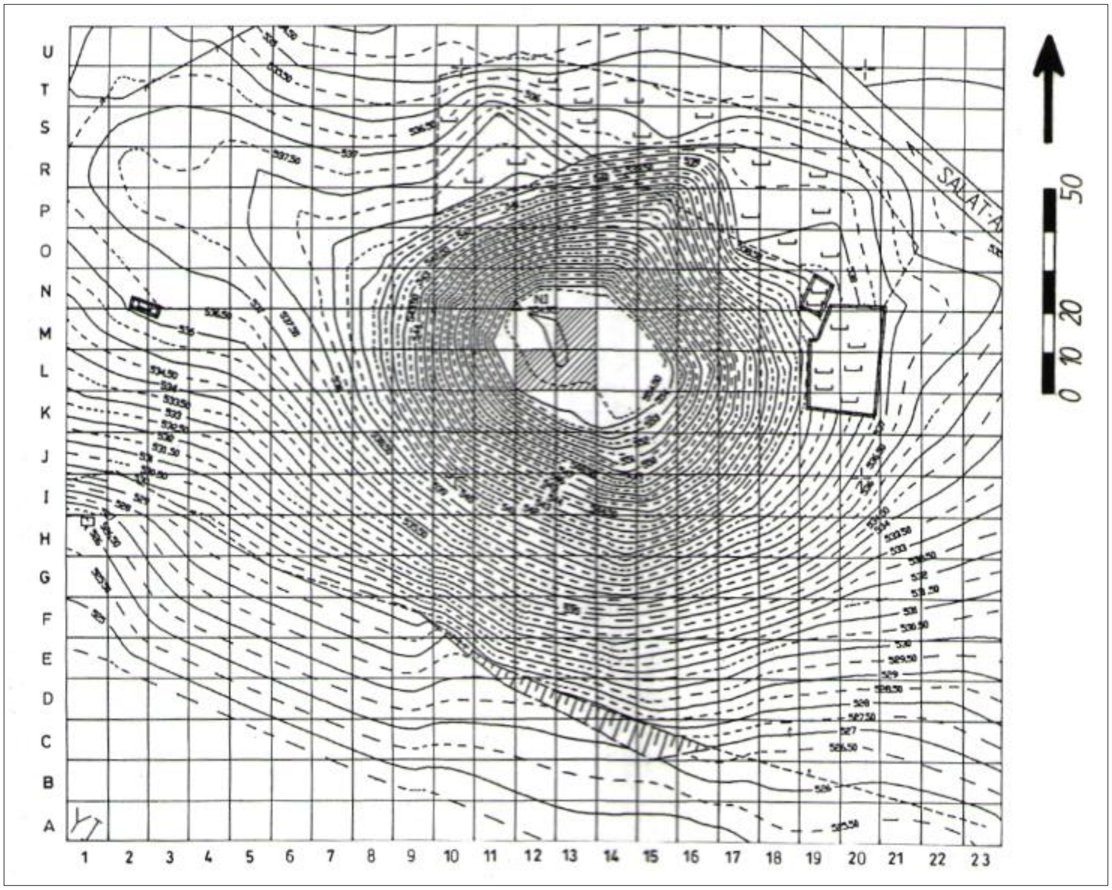


Figure I.6. Topographic Map of Salat Tepe (Excavation archive).

I.3.1. Climate

The present-day climate of the region is continental with hot and arid summers and cool and humid winters (Ökse, 2012:5). The average temperature in January is 2-5°C and 27-32°C in July (Table I.1.). Temperature extremes range from 46.2°C to12.4°C and the average rainfall is 452 mm (Ökse, 1999:345).

There has been no study of the native climatic history of the region so far. The sediments analysis from Lake Van, located some 310 km east of the study area, is an important resource for documenting the ancient environmental conditions in a regional context. According to a study of geochemical and isotopic records from the sediments of the lake aridity increased after 4000 BP and the modern climatic situation was established at about 2000 BP. Geomorphologic and petrologic data from the Euphrates Basin also indicated that drier environmental conditions set in during the 2nd Millennium B.C. In addition, new proxy records for the Holocene gathered in other parts of the Near East also indicated an increase in aridity around 4000 BP. In addition, evidence from stable carbon isotope analysis in crop plants from archaeological settlements in the region correlated with the palaeo-climatic proxies and supports the interpretation of increased aridity during the MBA. Moreover, the study of the tree-rings from Fenno-Scandinavian pines suggests atmospheric drying at 1600±50 B.C. on a global scale. The decline in the atmospheric moisture during the 2nd Millennium B.C. may have caused a difference in the rain belt. This resulted in a movement of the southern limit of the 200 mm annual rainfall isoline northwards in the Lower Khabur Region in Syria (Ökse, 2012:5).

Table I.1. General Climatic Data (Ökse *et al.,* 2012:20).

	Diyarbakır	**Şanlıurfa**	**Kirkuk**
Altitude (in m)	650	550	350
Mean annual temperature (in ºC)	15.8	18.7	21.7
Mean January temperature	2.0	5.3	8.6
Mean July temperature	30.1	31.6	34.9
Mean annual precipitation (in mm)	405.5	457.8	400.5
Month with maximum precipitation	February	January	March
Mean precipitation in wetter month	63.7	90	95.6
Mean precipitation in driest month (July)	0.4	0	0
Dry summer period	June - September	June - September	June - September

I.3.2. Modern Vegetation

The greater part of the region is drained by the Euphrates and Tigris river systems. Over most of their lengths these rivers run in gorges cut deeply into the surface. Consequently, the greater part of this region is devoted to dry farming of cereals and grazing by both cattle and sheep (Dewdney, 1971:202). In the fertile river valleys the major rained fed crops have been wheat and barley since the earliest food producing periods. In southeastern Turkey, pulses (lentil and chickpea) are also grown; and there are also orchards, vineyards, and rice fields in irrigated zones near the rivers. Dry-farming is practiced on uncultivated land and crops are rotated with pasture land (Ökse *et al*., 2012:5). Today, the region lies mainly in the Irano-Turanian phyto-geographical region and the vegetation is dominated by herbaceous communities of the steppe. On the dry high plateaus and terraces the “xerophilous deciduous steppe forest" association dominated by oak (*Quercus*L.) species is present (Ökse *et al*., 2012:6). As is typical of sites in the Tigris and Euphrates valleys, the most common wild and weedy plants are bedstraw and grasses along with a few other small plants (e.g. pheasant’s-eye). These plants could represent weeds from crop fields and species from pastoral land and other varied habitats (Ökse *et al*., 2012:9). In addition, today wild pear, pear, cherry, sour cherry, peach and apricot trees, as well as rose bushes, are grown in region. Agriculture in the region is very much dependent upon rainfall, but presently cotton is a widely cultivated crop (Ökse, 1999:346).

I.3.3. Soil and Agriculture

Rich clays and silts characterize the alluvial zones in the region. The valley bottom consists of calcareous, reddish-brown, silty-clay, which provides good arable soil. Such soils are widespread in the inter mountain areas and these valleys have been under cultivation for an extended period (Ökse *et al*., 2012:5).

I.3.4. Archaeobotanical Studies

The Upper Tigris Region had a mixed formation of xenomorphic draft-shrub lands and grassland in the Early Holocene. In eastern Anatolia the steppe forest vegetation dominated by oak (*Quercus l.*) advanced at about 6200 BP. During the last 4000-5000 years the forest elements declined in southeastern Anatolia, possibly due to the impact of the human population and more pronounced climatic aridity (Ökse *et al*., 2012:6). The archaeobotanical samples at Salat Tepe were studied by E. Oybak Dönmez, and this study indicates the range of cereals, pulses, and fruit identified are typical for Middle Bronze Age sites in the Near East (barley seems to be predominant over wheat and pulses). Similar high ratios of barley over wheat are also reported in the 2nd Millennium B.C. levels of several sites in the region and in northern and central Mesopotamia. Such examples include Giricano on the northern bank of the Tigris in the province of Diyarbakır, Mezraa Höyük (2000-1500 B.C.) on the east bank of the Euphrates, near Birecik (Şanlıurfa) in southeastern Turkey, Hadidi (2000-1550 B.C.) and Tell El-Sweyhat (2000-1900 B.C.) on the north Syrian Euphrates, at Tell-Brak in Mesopotamia, in the Balikh Basin of northern Syria, and at Khafajah in Central Mesopotamia. According to Dönmez, the crop assemblage from Salat Tepe includes grape in low quantity in one sample. It is, however, relatively abundant in the MBA contexts of Kenan Tepe located in the Upper Tigris Region. Archaeobothanical evidence also suggests that grape has been widespread in the Near East since the 3rd Millennium B.C. However, increasing aridity from the Early to the MBA must have had an effect on grape cultivation generally leading to comparatively less representation in MBA settlements (Ökse *et al*., 2012:8). The Upper Tigris lies within the natural range of wild grapes. Because the grapes of Turkey have smaller and fewer seeds, a low acidity, and are moderately sweet, they are ideal for wine production. Moreover, agricultural statistics in the Diyarbakır province from 1933 to 1950 demonstrate the high yield potential of grapes in this region, and viticulture is well established in southeastern Anatolia in the MBA (Laneri and Schwartz, 2011:350).

I.3.5. Earthquake in Middle Bronze Age

The geomorphic structure of Turkey contains many tectonically active faults and folds of recent origin which results in many earthquakes. Indeed, Turkey is one of the areas of the world most frequently and most seriously affected by tectonic activity (Dewdney, 1971:27).

Collapsed walls established during archaeological excavations show the fall of buildings during earthquakes. The Middle Bronze Age building complex at Salat Tepe is completely ruined which means that the earthquake causing the collapse of this building must have been strong (Fig. I.7.). Most of the walls have collapsed towards the north, with the exception of the northern walls of the courtyard towards the south, indicating a movement oriented to the north-south. According to Ökse, expendable items such as doorways might cause a collapse in various directions, as was the case for the wall bordering the courtyard to the west (Ökse *et al*., 2009b:279-280). The damage observed in the mud brick walls of the building at Salat Tepe shows cracks, disjunctions, deformations and a total collapse of some walls (Fig. I.8.). Although there are other faults of undefined nature in the vicinity of Diyarbakır and Batman which are in a north-south direction, it has been assumed that the earthquake most probably originated at the Bitlis Suture Zone/Narlı-Kozluk Fault. According to study of the destruction damage, this earthquake would have had a Richter magnitude of more than 6 degrees (Ökse *et al.*, 2010:469). The collapsed walls unearthed at Salat Tepe indicate an unknown major earthquake dating to the 16th Century BC. Region (Ökse *et al*., 2009b:280). According to the radiocarbon dates obtained from the building at Salat Tepe, the earthquake seems to have happened in the 17th century BC. On the ruins of the collapsed building at Salat Tepe a later building is constructed which contains similar ceramic assemblages dating to the 16th century BC (Ökse and Görmüş, 2010:470).

Figure I.7. The Plan of the Collapsed Walls at Salat Tepe (Excavation Archive)

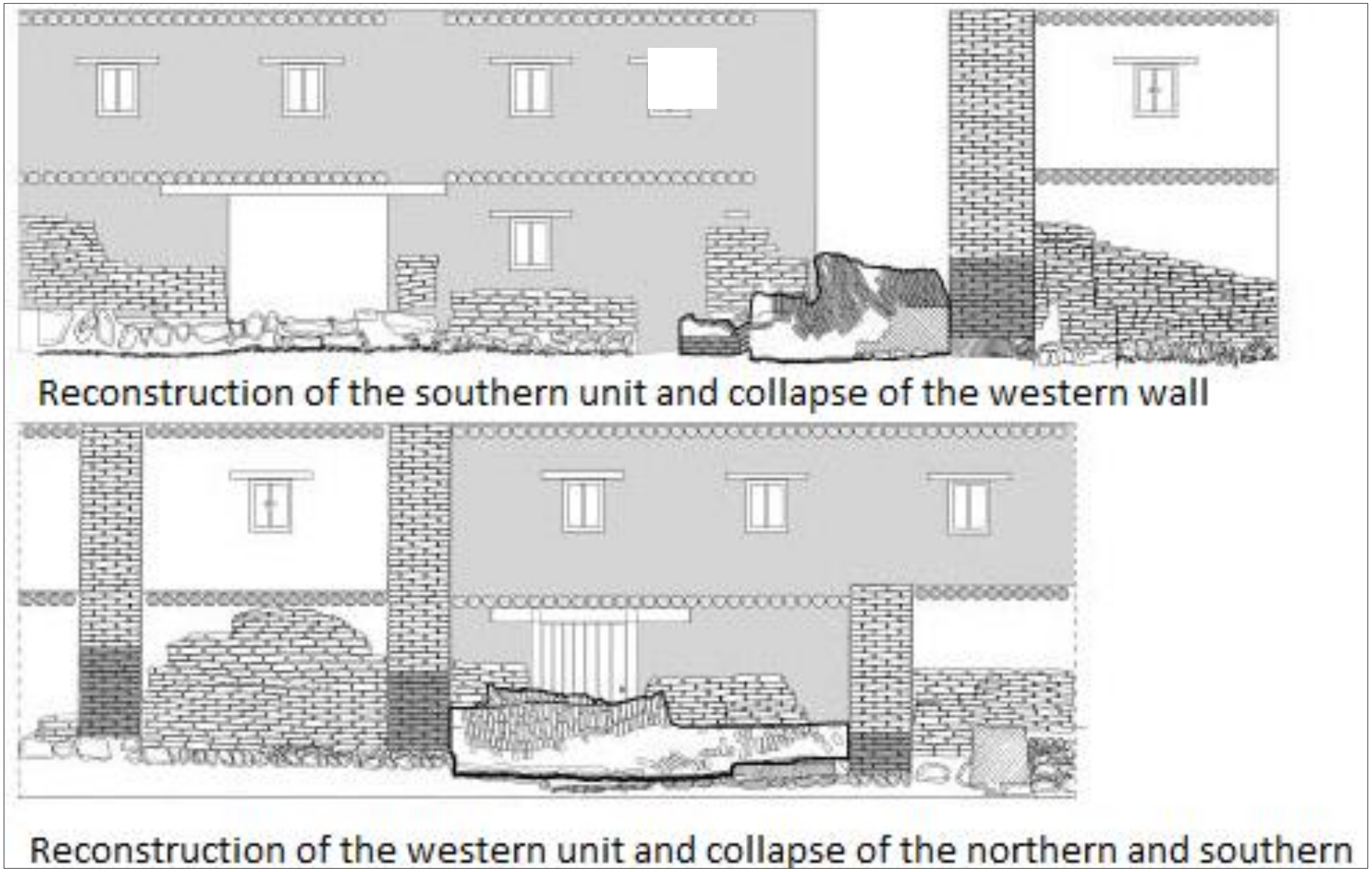


Figure I.8. The reconstruction of the Collapse of the Building at Salat Tepe (Ökse *et al.*, 2010:478)

I.3.6. Stratigraphy

Salat Tepe was occupied during five different periods (Table I.3.). The earliest settlement is dated to the Chalcolithic period the ca.20 meters high Chalcolithic settlement hill was abandoned towards the end of the 4th Millennium B.C. At the beginning of the 2nd millennium B.C. a 3 m high mud-brick terrace was built on the mound summit. On the mound summit five buildings levels dating Middle Bronze Age. These levels contain several EIA pit-houses as well as Hellenistic-Roman and Medieval granary pits (Ökse, 2010a:1). A large Middle Bronze Age mud-brick building is dated to the 18th-16th centuries B.C. was built on the pebble stone floor on this terrace (Table I.2.). Salat Tepe was defined by Tuba Ökse in terms that are akin to a *çiftlik (dunnu),* a farmstead with a series of special purpose rooms surrounding a central space, with a focus on processing, administrating and storing agricultural products in Bronze Age. The earliest phase of the building was destroyed by an earthquake, and new buildings were erected on its ruins. Salat Tepe was abandoned one more time. Early Iron Age pits, approximately 5 m in diameter and 2 m in depth, were dug on the mound summit. Some of these pits bear horse-shoe shaped hearths on their floors, which indicate that these were seasonal dwellings of nomadic tribes. Late Iron Age granary pits, 3 m in diameter and 3 m in depth, were also dug on the mound summit. These deep and wide pits certainly damaged earlier phases of architecture structure. These pits heavily damaged some earlier structures and thus the function of these buildings is not clear. The stone and pise walls associated with hearths dating to the Hellenistic and Roman Periods onwards point to a temporary usage of the hill also during the Medieval Age. The mound summits as well as its skirts have been used as a graveyard since the Medieval Age (Ökse, 2009a:78).

Table I.2. Iron Age to Medieval Ages (Excavation Archive)

BC	PERIODS	ARCHITECTURE	DATE
-	Modern Age	Graveyards, Building	-
-	Medieval	Pit, Building	-
-	Hellenistic	Pit, Building	Part
600-330	Late Iron Age	Pit	-
900-600	Middle Iron Age	Pit	New Assyrian Period
1050-900	Early Iron Age	Pit and Dwelling House	-

Table I.3. The excavation results of 2000-2010 seasons (By A. T. Ökse)

PERIOD	TRENCHES ON THE MOUND SUMMIT	SOUTHERN BANK OF THE TRENCHES
MODERN AGE	Graveyards, Temporary Housing	Graveyards
MEDIEVAL	Granary Pits	Walls remains
HELLENISTIC - ROMAN	Granary Pits, Pebble floor	-
LATE IRON AGE	Granary Pits	-
EARLY IRON AGE	Granary Pits , Pit Dwelling Houses, Stone Pavement	-
LATE BRONZE AGE	Level 1	-
MIDDLE BRONZE AGE	Level 2-5 Building Complex	Walls and Floor Remains
EARLY BRONZE AGE	-	-
LATE CHALCOLITHIC	-	Buildings, Hearths of ceramic, Storage units
LATE UBAID	-	Buildings, Hearths, Storage units
EARLY UBAID - HALAF	-	Cell and Grid Planned Buildings, Heaths, Storage Units

Table I.4. Trenches at Southern Skirt

BC	PERIODS		SALAT TEPE		ARCHITECTURE
			LEVEL	ELEVATION	
3000-3500	Late Uruk	LCP 4-5	1	548.40-544.50	The buildings with mud brick and pise walls, rectangular/circular shaped storage units
3500-4000	Early Uruk	LCP 2-3	2	544.50-541.40	Circular hearths, mud brick and pise walls, rectangular shaped storage units, ceramic hearths
4000-4500	Late Ubaid	LCP	3	541.40-535.75	Mud brick buildings with reed roof and rectangular storage units
	Ubaid 4	-	1		-
4500-5200	Early Ubaid	-	4	535.75-534.00	Pise building with grid plans, Cell planned building, rectangular storage its surrounded with mud-brick
	Ubaid 3	-	-	-	-
5200-5400	Halaf-Ubaid transition	-	5	529.20-532,92	-
	Late Halaf	-	6	528.2	-

Table I.5. Dating of Bronze Ages

BC	PERIODS		SALAT TEPE			DATE
			LEVEL	ELEVATION	ARCHITECTURE	
1000-1300	LBA II	-	-	-	Pit (Very few)	Middle Assur
1300-1400	(M.Assyrian)	Habur 4b	-	-	-	Late Mitanni
1400-1550	LBA I (Mitanni)	Habur 4a	1	553.12-552.57	Beige standard mud brick	Early Mitanni
1550-1600	MBA III	Habur 3	2	Debris	-	Hurri
1600-1650	(E.Babylon-late)	(G.Habur)	-	552.50-60	-	-
1650-1700	MBA II	-	-	Floor	-	-
1700-1750	(E.Babylon)	Habur 2	-	551.20-30	-	-
1750-1800	-	(Habur)	3 a-e	-	Sheds	Early Assur
1800-1850	MBA I	Habur 1	4a-b	551,18	Red-Wet mud brick	Hurri
1850-1900	-	(E.Habur)	-	550,2	-	-
1900-1950	-	-	5	550	-	-
1950-2000	-	-	-	548.7	-	-
2000-2150	EBA IVB	EJ V	-	-	-	-
2150-2300	EBA IVA	EJ IV	-	-	-	-
2300-2500	EBA III	EJ IIIB	-	-	-	-
2500-2600	-	EJ IIIA	-	-	-	-
2600-2700	EBA II	EJ II	-	-	-	-
2700-2800	-	EJ I	-	-	-	-
2800-3000	EBA IA	EJ 0	-	-	-	-

Table I.6. Table of the Radiocarbon Dates from Room M13/033/M, MBA Level2 (Ökse and Görmüş, 2006:189).

UCIAMS #	***SAMPLE ID***	***ʃ 13 C (‰)***	***±***	***FRACTION***	***±***	***D14C (‰)***	***±***	***14C AGE (BP)***	***±***
21682	M13/0103/A/17(5)	-22.6	0.7	0.6599	0.0017	-340.1	1.7	3340	25
21683	M13/0103/A/52(6)	-20.1	0.2	0.6594	0.0013	-340.6	1.3	3345	20
21684	M13/0103/A/51(7)	-21.9	0.7	0.6574	0.0013	-342.6	1.3	3370	20
UCIAMS #	**SAMPLE ID**	**DATES (BP)**	**DATES (BC)**						
			68.2 % probability	95.4 % probability					
21682	M13/0103/A/17(5)	3340±25	1690 BC (63.7%)1600 BC	1690 BC (95.4%) 1520 BC					
			1570 BC (4.5%) 1560 BC						
21683	M13/0103/A/52(6)	3345±20	1685 BC (68.2%) 1610 BC	1690 BC(81.5%) 1600 BC					
				1590 BC (13.9%) 1530 BC					
21684	M13/0103/A/51(7)	3370±20	1690 BC (68.2%) 1630 BC	1740 BC (95.4%) 1610 BC					

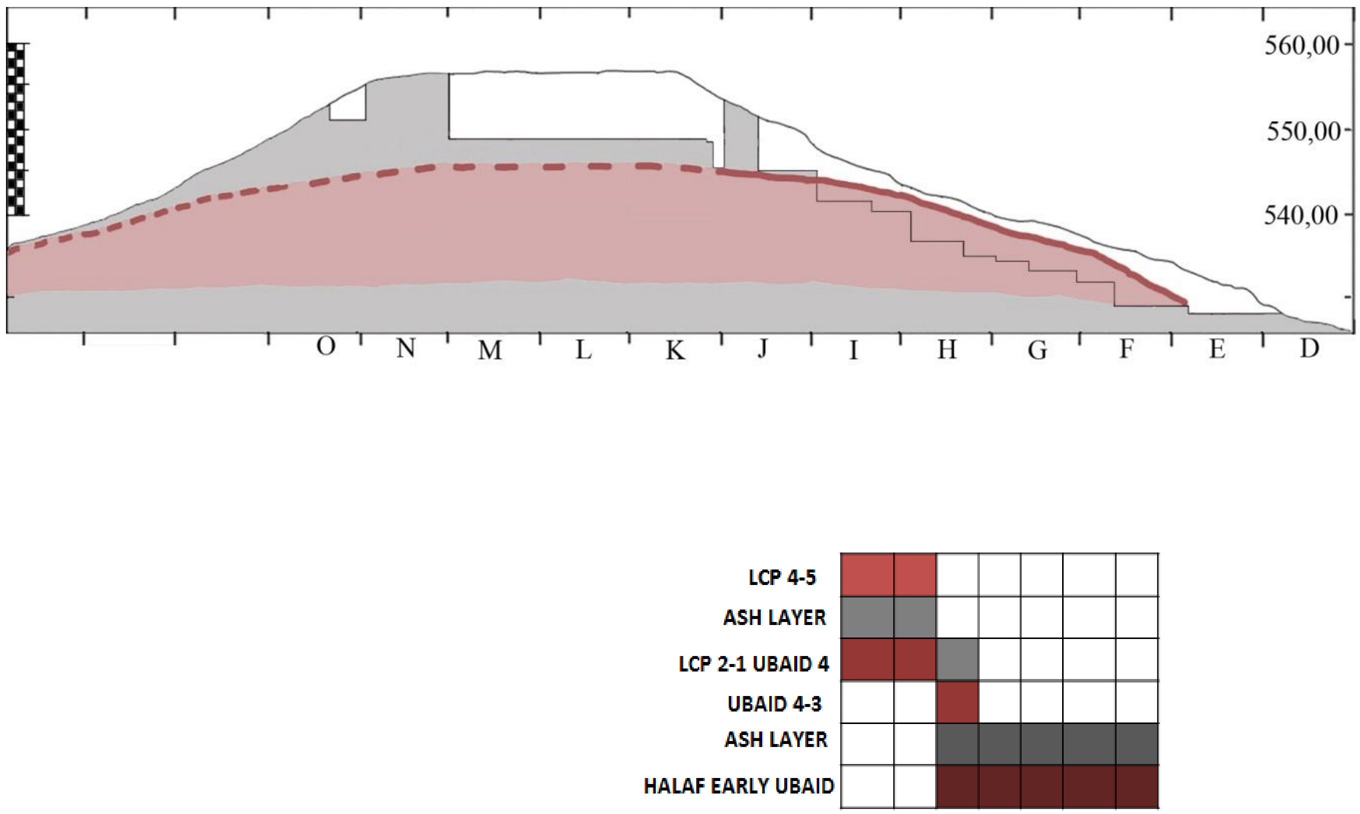


Figure I.9. Stratigraphic Sequence of Southern Skirt (Ökse’s Personal Archive).

I.3.6.1. Chalcolithic Period

The initial period of the settlement was detected in the step trench of (2.5 m.) E-J 12. According to excavation reports virgin soil was reached on the southern skirt under ca. 5 m high wash deposits. The stratigraphic sequence points to a dense occupation during the Late Chalcolithic Period (4th mil. BC). The Ubaidian hill is ca. 20 m high. In Trench G-12, reed remains accumulated on the floor of a mud-brick building were found. The uppermost Chalcolithic level in Trench H-12 is a 2 m thick ash deposit containing mixed material (Table I.4.). Beneath this deposit, a mud-brick wall with a hard thick mud-brick floor was uncovered. This floor covers an earlier thick ash deposit overlying earlier mud-brick architecture (Fig. I.9.). Trench F-12 is characterized with thick layer of ash as well as Islamic graves. No architectural signs were found in E-F 12 trenches; only five Islamic graves were unearthed. In Trench I-12, five circular ovens were excavated and beneath these kilns, a hard floor with white surface was exposed (Ökse, 2008:683-684).

I.3.6.2. Early Bronze Age

According to the excavation history, the Early Bronze Age (EBA) was represented by only few sherds, and thus far no architectural levels have been found. The sherds were dated to Ninevite-5, the first half of the 3rd millennium B.C. Because architectural contexts have yet been connected with specific type of EBA wares, such as Metallic Ware, Grey Burnished Ware, Medium Grey Smoothed and Burnished Ware, at Salat Tepe, it is assumed that the EBA settlement or graveyard on the Ubaid hill was destroyed during the construction of the terrace and the MBA in the early 2nd millennium BC. (Ökse and Görmüş, 2006:186-187).

I.3.6.3. Middle Bronze Age

The stratigraphic sequence at Salat Tepe enables a periodization of three MBA phases; early phase covers Level 5-3, the middle phase Level 2, and the late phase Level 1(Table I.7.) (Ökse and Görmüş, 2012a:129). The five MBA buildings levels are on the mound summit and revealed through trenches K-L-11-14 and M-O-13. The levels were damaged by several EIA pit-houses, Hellenistic-Roman and Medieval granary pits (Ökse, 2010a).

Level 5 (21th-22th millennium BC): It is the lowest architectural level and was unearthed in trench L13 below the courtyard level 2. This level is dated to EBA IV (Post-Acadian) by T. Ökse. The building covered 8X10 m. (Fig I.11.e.). The rooms were filled with mud brick debris and ash layers containing animal bones, grains, grinding stones, and, of course, sherds. In order to create smooth surface for the construction of later levels, the depressions were filled with mud-bricks and mud (Ökse, 2010a). It was determined that buildings of level 5 and 4 were destroyed by fire, and due to the presence of different types of hearths and ovens, their function was domestic (Ökse and Görmüş, 2012 a:130).

Level 4 (20 th-19th millennium BC): According to Ökse this level is dated to MBA I. In level 4, the mound summit is crossed east to west by a road paved with pebbles (Fig I.11.d.). The walls were unearthed in Trench K-14. In trench L14, a thin layer of mud mortar on a stone base and a tandoor constructed on the floor and plastered with stone was unearthed. Damage detected in trenches K-L 14 was caused by pits filled ash and cooking pot shreds. Trenches K12-13 revealed a room bordered by large conglomerate blocks from the west. The room is filled with burnt debris including burned wood and ash (Ökse, 2010a).

Level 3 (18th millennium B.C): in this level; only a small portion of this level has been excavated (Fig I.11.a.) (Ökse and Görmüş, 2012a:129), (Ökse, 2010a). In trench K-12 a rectangular hearth surrounded with mud-brick was uncovered. In this place great amount of wheat was also collected from the floor. Based on these findings, it appears that this room was used as a kitchen. A pit contained pieces of terracotta figurines of pigs and cows was found in trench L-12. The eastern half of the trench M13 is plastered with mud-bricks, while the western half of the trench was damaged by several Medieval and Iron Age pits. In this trench, pieces of animal and human figurines, as well as a pebble stone idol, were found. Trench K-14 is assumed to be a ritual activity area (Ökse, 2010a).

Level 2: Level 2 is represented by a building complex with an area of ca. 1600 square meters. The building is composed of 2-3 rooms surrounding a courtyard which is dated to the 17th and early 16th centuries BC according to radiocarbon dates. Radiocarbon analysis was performed on three pieces of carbonized wood taken from Room M13/033. Two of the samples yielded ages of 1690-1520 B.C. while the third sample gave a calibrated radiocarbon age of 1740-1610 B.C. (Table I.6.) (Ökse and Görmüş, 2006:188). Seven of these 2-3 roomed units were unearthed, covering an area of 26-29 square meters (Fig. I.11.b.) (Ökse and Görmüş, 2012a:129). Central dimensions of the courtyard are ca 20X9 m. From the heights of the *in situ* protected walls and length of their collapsed upper parts it is suggested that two-stored units bordered the courtyard (Table I.8.) (Ökse, 2010a). The building complex collapsed because of an earthquake (Ökse and Görmüş, 2012a:129). This building complex is defined as a farmstead, dating to the 15th century BC, which served to maintain the agricultural economy and the production of textile and other materials. During this period, several fortified farmsteads *dimtu* appeared. Those farmsteads were composed of houses located close to each other around courts (Fig. I.10.). According to their architectural characteristics, these farmsteads were part of an administrative system, with its purpose to supply agricultural products to Upper Tigris Region (Ökse *et al*., 2009b:279).

Table I.7. Table of the Levels and Periods

LEVEL	***PERIODS***
LEVEL 1	16th-15th mill. BC = LBA = Early Mitanni Period
LEVEL 2	17th mill. BC = MBA III = Early Hittite Period
LEVEL 3	18th mill. BC = MBA III = Late Assyrian Period
LEVEL 4	20th-19th mill. BC = MBA I = Late Assyrian Period
LEVEL 5	21th-22th mill. BC = EBA IV B = After Akkadian
LEVEL 6	22th mill. BC = EBA IV A = After Akkadian

Unit 1: Unit 1 was unearthed from the southeastern part of trench M13 (Ökse, 2010a). According to the architectural features, such as pieces of stone pavements, and narrow mud-brick walls and hearths, the northern part of the building is inferred to be used as an open air working place and storage facility (Ökse and Görmüş, 2012a:132).

Unit 2: Unit 2 is bordered by the courtyard from the west (Ökse and Görmüş, 2012a:132). This unit contains two large rooms with a doorway and one narrow room (Ökse, 2010a). The total area covered by these rooms is 96 square meters. According to the archaeological material, this unit appears to be associated with cooking (Ökse and Görmüş, 2012a:132).

Unit 3: This unit is only represented by the northern half of the room because heavy erosion took place towards the steps of the slope.

Unit 4: Unit 4 is located to the west of the entrance corridor and there is no entrance from the courtyard (Ökse and Görmüş, 2012a:132). Consisting of two rooms placed to the east of the entrance (Ökse, 2010a), the unit covers total area of ca 26.4 square meter. The function of the unit is suggested to be a chamber for external storage or for personal security (Ökse and Görmüş, 2012a:132).

Unit 5: This Unit covers an area of 48 square meters (Ökse and Görmüş, 2012a:132). The entrance to the kitchen in this Unit is facilitated by a ca 2.55 m wide open gate with two steps (Ökse, 2010a). Burnt debris, fallen mud-bricks and wooden pots are found in this room, these pots were associated with the mezzanine (Ökse and Görmüş, 2012a:132).

Unit 6: The burned Unit 6 is represented in trench K14 (Ökse, 2010a). Heavily burnt bitumen traces, several shred pieces, and animal bones are detected on the floor of this unit. According to the bitumen traces it is hypothesized that pots filled with bitumen might have caused the strong fire. Therefore, it is likely that this room was used for the storage of bitumen (Ökse and Görmüş, 2012a:133).

Table I.8. Location of the Trenches in each Unit

TRENCHES	**UNITS**	
L12 / L14	-	Central Courtyard
K / L 12	-	Southern Entrance of Courtyard
M 13 (033-032)	UNIT 1	-
L11 (010-021) L12 (021-055)	UNIT 2	West Corner
K11 / K12	UNIT 3	-
K12 (011) K13 (034-030)	UNIT 4	-
K13 (032-028) K14 (050-051)	UNIT 5	-
L 14	UNIT 6	Eastern part
-	UNIT 7	Not Certain

Unit 7: This unit is located to the north of the street (Ökse and Görmüş, 2012a:133). Two rooms of unit 7 were unearthed in trench L14. In the north eastern corner of the eastern room parts of oven were found. Slag was found in the inner face of the oven. According to these findings, this room appeared to have functioned as a workshop (Ökse, 2010a).

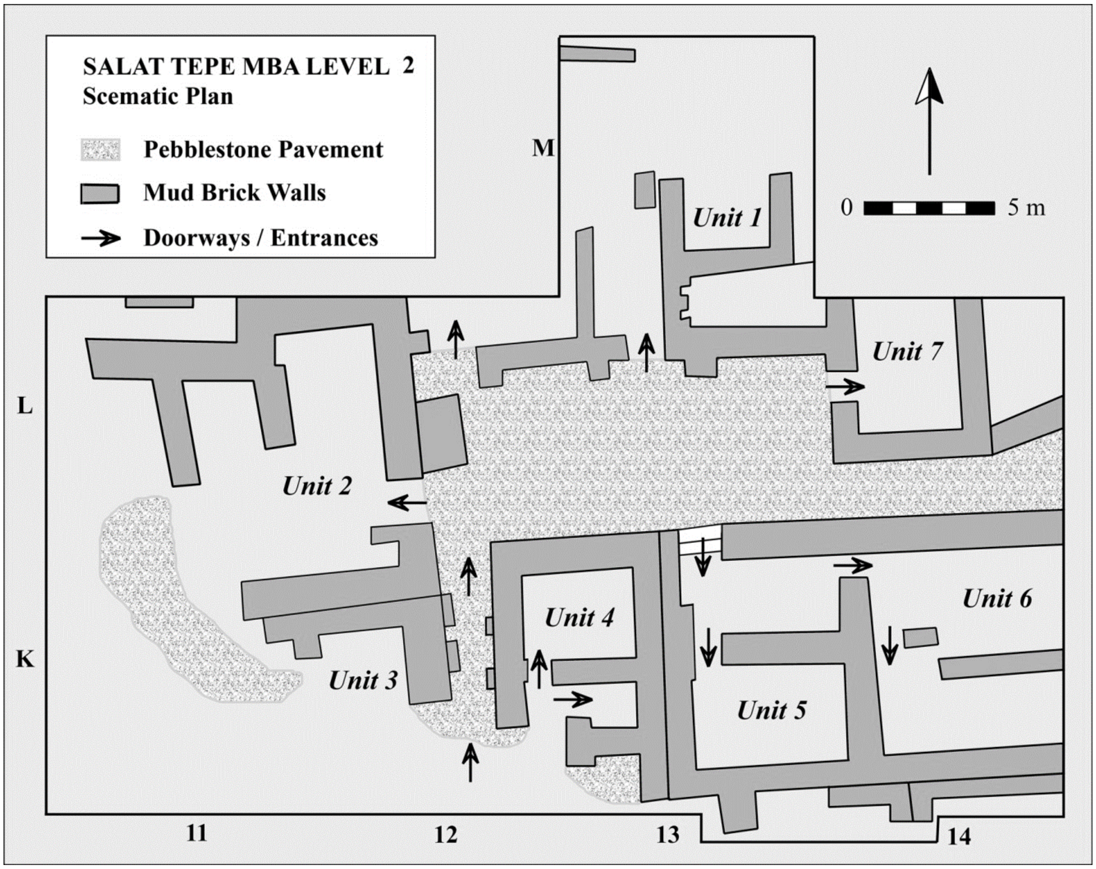


Figure I.10. Salat Tepe, plans of the building complex in Level2 (Ökse and Görmüş, 2012a:132)

Level 1: This level is represented by pieces of mud brick wall and corners of several rooms with floors of compacted clay on a thin layer of pebble stone pavement. Level 1 was built on the debris of the former building (Fig I.11.a.). It is clear that the foundation of the later occupation was constructed directly on the collapsed walls of the previous building (Level 2). This conclusion is also supported by the similar construction techniques and the same dimensions of the mud brick (Ökse and Görmüş, 2012a: 134). Interestingly, two antlers, small pits filled of animal bones, and front hooves of cattle on the pebble pavement, were found in each corner of the trench K14. On the basis of these findings, ritual activities are suggested for this trench (Ökse, 2010a).

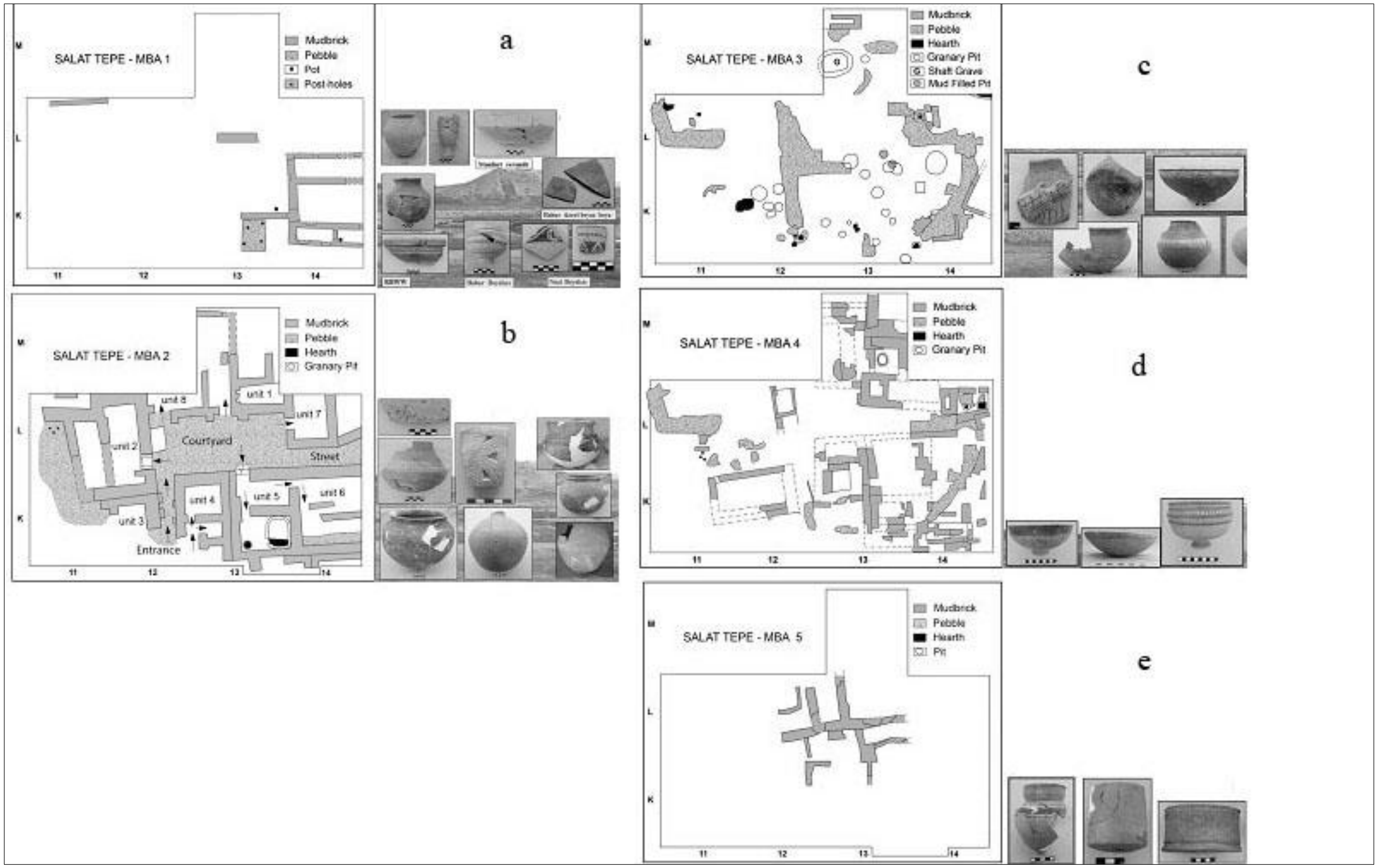


Figure I.11. a. Plan of Level 1, **b.** Plan of Level 2, **c.** Plan of Level 3, **d.** Plan of Level 4, **e.** Plan of Level 5 (Ökse, 2010a)

I.3.6.4. Early Iron Age

After the MBA occupation, round pits of ca. 5 m in diameter dating to the Early Iron Age (EIA) were erected on the mound summit. These pits were filled with ash and two of them had horse-shoe shaped hearths. Additionally, some pits were smaller, and it is suggested might have been used to store grains (Fig. I.12.) (Ökse and Görmüş, 2006:190). This period is represented in trenches K13, which contains a large pit, K14, M13, and L12. Trench M13 (M13/039/C) is located in the middle of the mound summit and contains a pit with a diameter of ca. 5 m and is 2m deep. The pit is filled with ash layers and has a horse-shoe shaped hearth on its floor. The decorated pottery found in the Iron Age levels dates to the 12nd to 10th centuries BC and comes from in the basins of the Upper Tigris (Ökse, 2008:686). A thin layer of whitened straw was found on the floor of this pit which was either used as isolation against humidity or could indicate that the pit was used to store grain after the pit had been emptied. In trench L12 (L12/049/F) similar characteristics were detected, which is a pit ca. 3m in diameter with the same shape hearth located in the pit's floor (Ökse and Görmüş, 2009:165). These kind of rounded semi-subterranean dwellings are known to be architectural remains of winter residences of nomadic groups (Yakar, 2000:407). After the collapse of well-organized and centralized Late Bronze Age settlements, small villages and isolated farm houses appeared in Anatolia. According to survey studies, several small hill-top settlements were detected during this period. It is suggested that these small settlements characteristics indicate the collapse of agricultural administrative systems and the increasingly nomadic way of life (Ökse and Görmüş, 2009:167). According to Yakar, the change from sedentary life to nomadic can be explained by attacks which forced to people leave their lands in Southeastern Anatolia towards end of the 2nd millennium BC. (Yakar, 2000:478). Climatic changes also likely played a part in the alteration of agricultural products and were related to a drought period in the Near East. Thus, agriculturalists may have changed to pastoralists for those reasons. On the basis of architectural features, the idea of increasing nomadic life is reliable, since very few sites have stone foundation and walls, but the most of the EIA sites represented same characteristics as large pits or graves.

In Upper Tigris Anatolia, simple dwelling samples are characteristic of the EIA, found at some mounds only as large pits or as graves; Kenan Tepe (Trenches B1-B2-C2-C3), Ziyaret Tepe (Area E-032), Hirbemerdon Tepe, Hakemi Use and Gre-Dimse (Ökse and Görmüş, 2009:167). However, there are no stone foundations or plasters represented in the Salat Tepe pits. According to Ökse, the function of these pits was not as dwellings but as granary pits. The thin white compact clay layer was found in all pits with hearth. This white clay layer is the remains of straw-coating, used to protect the grain from insects and other elements. Because no other architectural remains with EIA materials were found, it is assumed these pits might have been used by nomadic or semi nomadic people (Ökse and Görmüş, 2009:167-168).

I.3.6.5. Medieval and Later Periods

After the Early Iron Age, Salat Tepe was once more abandoned and the mound summit was used for digging granary pits (Ökse, 2008:687). The Medieval granary pits were 1, 5-3m deep and 2-3 m in diameter (Fig.I.12.). Some pits have Late Iron Age vessels together with Hellenistic pottery (Ökse and Görmüş, 2006:191). Seeds of wheat and barley have been found in these pits. On the edge of the pits' floor carbonized chaff remains were collected. This chaff remains attest to the air-proof function after the materials put in the pits, the mouth of pit covered with clay and sealed with chaff to avoid moisture and air (Ökse, 2008:687). Medieval granary pits were dated to 5th-6th centuries AD.

After the Medieval period the mound was not used as a settled area, however, the southern skirt of mound summit was used as graveyard (Ökse, 2008:688). Moreover, the northern skirt of the mound is still used as a graveyard today. On the mound summit there were pottery fragments and jewelry materials that date to the Late Ottoman Period (Ökse and Görmüş, 2006:192).

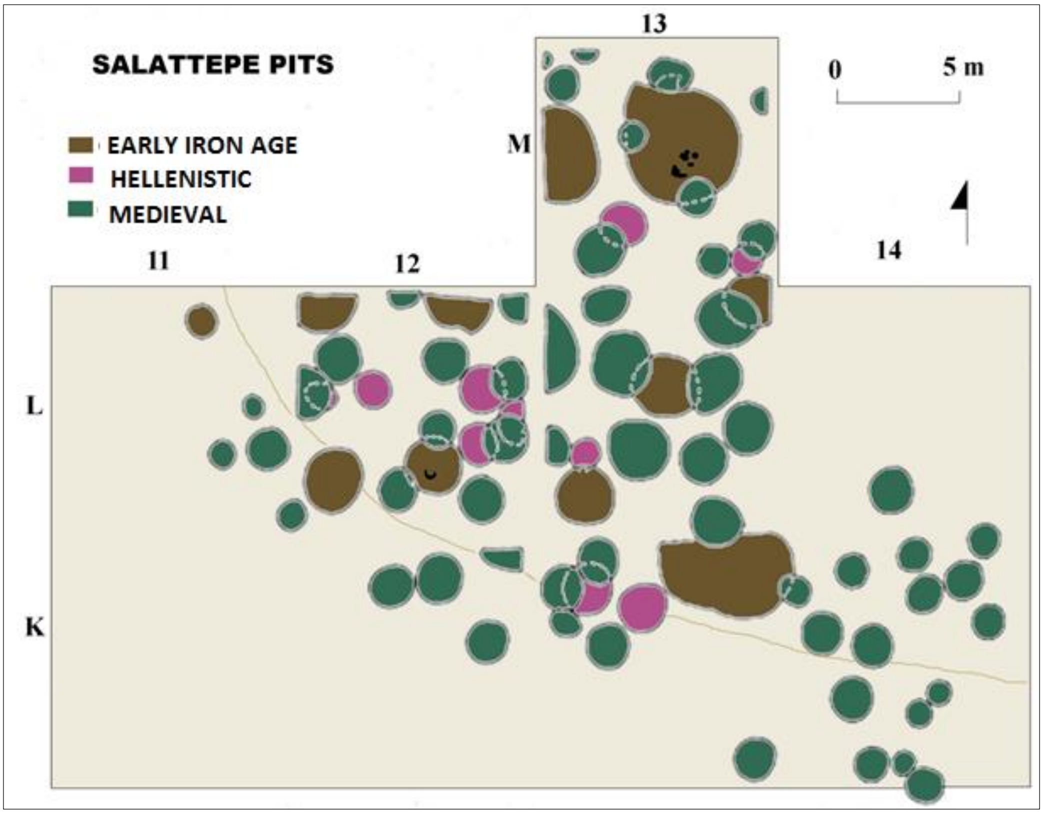


Figure I.12. The Figure show that pits from three periods (Excavation archive).

CHAPTER II

II.1. MATERIALS

The present study includes animal bones retrieved during the nine excavation campaigns between 2000 and 2010 (except 2003 and 2004 seasons). The distribution of the identified and unidentified assemblage is shown in Figures.II.1 and 2. A total numbers of 10085 animal bones were recovered. 4938 of these faunal materials were identified using several bone atlases (Boessneck, 1969, Hillson, 1986 and 1992, Schmidt, 1972, Zeder and Pilaar, 2010) and the reference collection held at the British Institute Laboratory in Ankara. The remaining 5147 bones were found to be unidentifiable. All of the materials are stored at Settlement Archaeology Departments of Environmental Archaeology Research Unit (EARU).

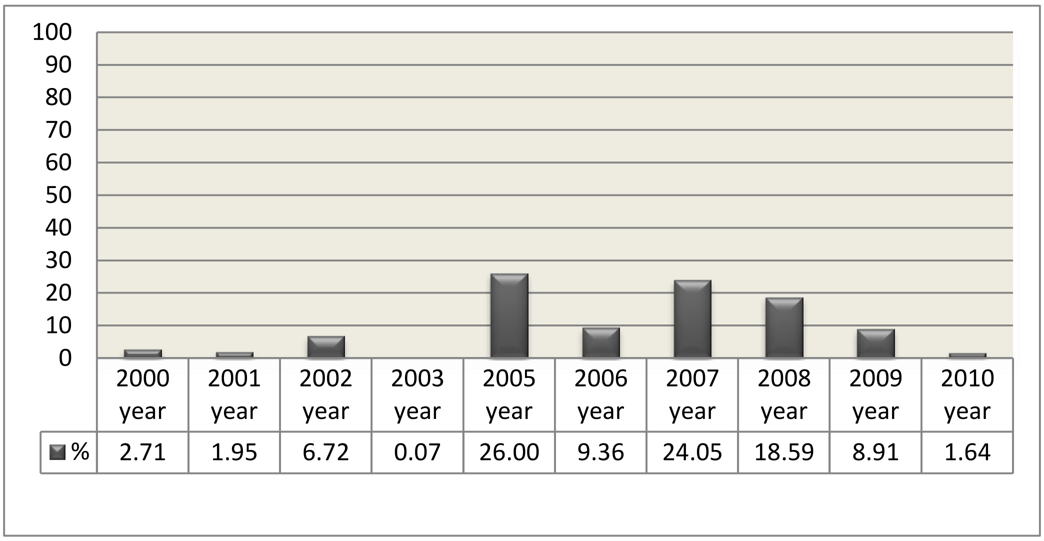


Figure II.1. The distribution of identified faunal remains for each year.

All units were carefully excavated and some contexts were dry sieved by excavators. The wet sieving process was applied in the laboratory in Ankara, using a jet of water to breaks up the sediment into slurry which can be poured through 3mm (approximately) sieve. The sieve used in wet process is large enough to accumulate micro samples, but most of the micro mammals' samples were lost during the collection in the field. After wet sieving process, the materials were left to dry in an open area of the EARU's garden. In order to preserve the integrity of the assemblages and the conclusions that could be drawn from them, only definite periods and unmixed contexts were studied. A.T. Ökse offered her help to select the materials that fit this criterion. The selected materials were labeled again and allocated into new bags.

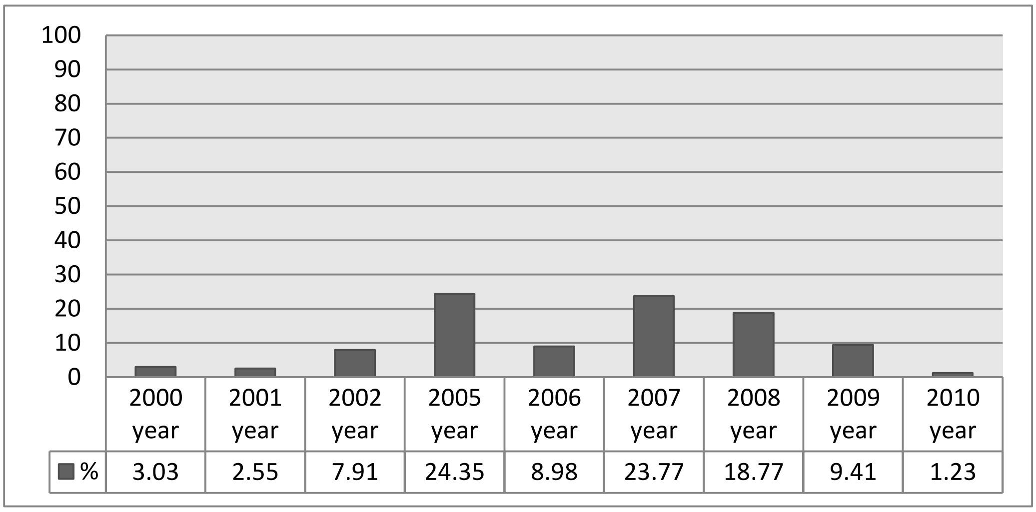


Figure II.2. The distribution of unidentified faunal remains for each year

II.2. METHODS

Due to fragmentation of the studied assemblage, it was often only possible to identify elements to the level of genus or family. Large quantities of bone fragments could only be identified to the level of class. The materials are classified into groups according to mammal size; middle-sized mammals (including sheep, goat, pig, gazelle, roe deer, dog), large mammals (including cattle, donkey, onager, red deer), and small mammals were found among the identified and the unidentified animals. Shaft fragments, vertebrae, ribs and skull fragments were counted and grouped into size categories (Table.II.1). Each skeletal fragment computed to the coding system devised by Dr. M.C. Stiner, however, this system was modified when necessary (Appendix 3). Grant (1982) developed a methodology to determine the age of death based on grouping the faunal remains into age stages. For this analysis, the diagnostic zone system published by Dobney and Rielly (1988) was followed. Besides, this system the material grouped as completeness. The intensity of burning was recorded by grouping the remains into seven categories corresponding to burn color codes as defined by M.C. Stiner (2005). Sex, measurement, skeletal parts of elements and preservation conditions, portion of teeth, and fusion stages were recorded according to Stiner's coding system. Furthermore, the presence or absence of disease was specified. However, disease was not observed in this study. While taking the bone measurements, Driesch's (1976) methodology was used. Analyzed results were directly recorded into computer. The Figures and tables were made in Excel, 2007 and Minitab 15 version.

Table II.1. Classification of unidentified bones

Grouped by Size	***Description***
Large Size Mammals	Cattle, donkey, red deer, etc.
Medium Size Mammals	Sheep, pig, gazelle, roe deer, dog, etc.
Small Size Mammals	Hare, cats, rodents, etc.

II.2.1. Ageing

Age is of great importance to studying mammal populations, from those concerned with wildlife management to archaeologists trying to understand the relationships that existed between man and animals in the past (Grant, 1978:103). The main purpose of determining the age at death of animals is to examine the age structure of the archaeological populations of different species; these mortality profiles may indicate the husbandry strategies used in the management of the living population (Hambleton, 1999:61). There are different ways to determine the age of death for animals in archaeological contexts. Epiphyseal fusions, closure of cranial sutures, tooth growth and replacement sequence, tooth wear and antler and horn development are among the characteristics which can be used to determine age (Greenfield and Arnold, 2008:836). Epiphyseal fusion is one of the most common techniques utilized to determine the age of specimens in zooarchaeology. However, Greenfield pointed out several problems associated with this method. One of the main concerns is uncertainty about wild species and breeding differentiation of between wild and domestic species. In addition, epiphyseal fusion ageing is of limited use as it can only provide age estimates for sub-adults. Another problem with this method particularly relevant to archaeologists is that juvenile bones do not preserve as well as adult fused bones. The use of epiphyseal fusion data may cause a bias toward the proportions of adults in a population (Hambleton, 1999: 61).

The second and more reliable method is tooth eruption and wear. Application of this method is relatively easy and precise. Although infant mandibles are still more fragile than those of adults, the mandibles and teeth are less affected by taphonomy, which makes them more abundant samples and easy to find. Because tooth wear stage is the most accurate measure of age at death for animals, many researchers use mandibles and their associated premolar and molar teeth for calculating kill-off patterns to create harvest profiles. The use of absolute ages of tooth eruption derived from 19th century data by Silver (1969) to age specimens. However, Payne (1984) suggests that Silver's 19th century ages for the cattle are inaccurate and that modern 20th century eruption timetables are more applicable to archaeological populations (Hambleton, 1999:61). In addition to these, there are two major systems for recording tooth eruption and wear stage, namely Payne's (1973) and Grant's (1975). Grant's wear stage method was used in this study, where applicable (Appendix 3). This system is applicable for sheep, goat, cattle and pig. Halstead (1985) adapted Payne's system for use with cattle. Hambleton (1999) has converted to Payne and Grant's techniques into a similar format (Greenfield and Arnold, 2008:837-838). Because it allows for more accurate comparison and is easy to apply, Hambleton's coding system was used in this study to evaluate the age at death data (Table.II.2).

Tooth wear and eruption for Suid were classified into ages stages; stage 0 representing newborn, stage I ; 0-12months (infant), stage II; 12-16 months (juvenile animals), stage III; 16-24 months (sub-adult), stage IV; 24-36 months (fully adult animals) and stage VI; >42 months (older animals).

Table II.2. Combined tooth wear stages table (Hambleton, 1999:64)

Payne MWS	*Grant MWS*	*Suggested Absolute Age (Payne 1973)*	*Deniz and Payne (1982)*	*Generalized Age Class*	*Sub class*
A	1-2	0-2 months	-	Infant	Neona te
B	3-7	2-6 months	-5 months	Infant	Old
C	8-18	6-12 months	3-4 months	Juvenile	-
D	19-28	1-2 years	11-30 months	Subadult	Young
E	29-33	2-3 years	24-47 months	Subadult	Old
F	34-37	3-4 years	33 months - 6 years	Adult	Young
G	38-41	4-6 years	4-7, 5 years	Adult	Young
H	42-44	6-8 years	5-9, 5 years	Adult	Middle
I	45+	8-10 years	7- 10+ years	Adult	Old/ Senile

II.2.2. Sexing

Data on the sex ratio of a herd are important for the evaluation of herding practices and population structure. Sex determination criteria are different for the different specimens. Because the development of the canine is sexually determined, pig jaws are particularly easy to sex. For ruminants, horn-cores, pelvic bones, and metapodia are used for sex determination. Two elements are used for the sex determination of sheep and goat. Generally female sheep do not have a horn-core, so the presence or absence of a horn-core indicates whether the specimen is male or female. Unfortunately, it is rare to find a whole skull in an archaeological assemblage (Davis, 1987:44). The most reliable sex determination is based on the pelvic bones. Boessneck, Muller and Teichert (1964) have described the related criteria for sheep and goat bones. Castration has an effect on sex determination, because it reduces the size of the individual, but one can still reliably determine sex based on the pelvis in these instances. Sex can also be determined using the metapodia (Uerpmann, 1973:314). They frequently survive and are easy to measure. In addition, making identification from metapodia is relatively easy at the species level (Davis, 1987:45). However, castration complicates matters, as there is therefore no adequate basis for distinguishing between male and female metapodia (Uerpmann, 1973:313-314). Although, the males have more robust metacarpals than the female, there is some overlap between the sexes (Davis, 1987:45). In other words, a single metapodial is not enough to make a certain sex determination. In this study, metapodial and canine morphology of pigs were used to determine sex.

II.2.3. Measurement

Most mammal species can be characterized simply on the basis of their size. An analysis of bone measurements can provide information for distinguishing between closely related species. The main purpose of bone measurement is simply to make a species identification but this data can also help to understand domestication. To understand the difference between wild and domestic animals, a comparative study is essential. In this study the measurement criteria provided by Von den Driesch (1976) was followed. When the preservation state allowed it, adult animals and unfused bones were measured. Small fragments were also measured by ruler for evaluating the taphonomic process. Heavily burnt materials and detected pathological bones were not measured owing to modification size and weight. In this study, all measurements are stated in mm. and most of measurements were taken by digital caliper (Mitutoya), 150 mm, the caliper precision is 0,01mm. Furthermore, large length and circumferences were measured with tape measure.

II.2.4. Biometrics

Measurement data can provide further zoological, ecological and can demonstrate changes in animal size over time, identify possible wild specimens in the assemblage, and estimate the sex composition of given herd. Measurements can also give additional information on changes in body proportions of domestic animals through time can show whether different breeds of animals were developed or introduced. In addition, such changes in size may be associated with shifts in management practices, environmental conditions. In addition, measurements data can provide better understanding on sex ratio in domestic animals. Study of changes in size and body proportions of domestic animals through time can show whether different breeds of animals were developed or introduced (Hongo, 1996:133). At a historic site Salat Tepe, where animal husbandry had already been well-established for some time, the major focus of interest is the form of sheep from goat, pig from wild boar and water buffalo from cattle. In this study, metrical analysis to evaluate changes in the size, robusticity, stature and skeletal proportions of caprines, pigs and cattle over time at Salat Tepe, was used. The measurements of depth and breadth and also length/height are taken following von den Driesch (1976). In addition to measurements from individual skeletal elements, the Log Size Index (LSI) methods were also used to analyze the distribution of size in the herd (Meadow 1981: 1999). In this method, the difference between the log of measurements from archaeological specimens and the log of measurements of standard animal or population are calculated resulting in a measure of difference in size from the standard. The values for this size index can be examined from variety of skeletal parts in order to identify to identify the nature of the relationship between skeletal proportions of archaeological population and the standard animal (Meadow, 1981, 1984: 199). Briefly, the LSI is calculated by subtracting the log of measurements from a standard animal or population from the log of measurement from archaeological specimens:

D (DIMENSION) = LOG X – LOG STANDARD (NATURAL OR BASE 10)

The resulting value shows that the differences in size from the standards, which is represented by the zero line in the diagram. Selected bone dimensions from faunal remains are plotted in relation to those from standard animal: values smaller or larger than the standard are located to the left and right of the zero line, respectively. Breadth and length size indices are plotted one by one, since these two groups of measurement data are related to either the weight or height of the animal (Meadow, 1991:90).Although the use of LSI values for constructing size has been criticized (Meadow, 1999:291, Uerpmann and Uerpmann 1994:429), it is useful for conducting metrical analysis when measurement data are limited. Because in particular, metrical analysis exhibit some degree of sexual dimorphism in both sheep and goats, and because they characterize skeletal parts that fuse at different ages (see the section on epiphyseal fusion), the metrical analysis focuses on the measurements of astragalus GLI, metacarpal Bd and radius Bd (Arbuckle, 2006:171).

A modern wild and domestic animals are used as the standard. For sheep, the standard animal used for comparison is a wild adult female sheep (*Ovis orientalis*) from western Iran, placed in the Oriental Institute of Chicago, specimen number 57951. For the goats (*Capra aegagrus*), standard measurements are derived from the averaged values of a modern wild male and female goat from Turkey, stored in the Natural History Museum of London, BMNH 653 M and 653 L2. For both sheep and goat standard individual measurements H.P. Uerpmann in 1979 publication was followed. Two different standards were used for LSI for cattle. First, standard used for cattle is a female *Bos primigenius* skeleton dating to the Boreal period from Ullerslev in Denmark (Degerbøl and Fredskild, 1970). Second was conducted using modern female wild cattle (*Bos primigenius)* skeleton from Germany. This is stored at the Tubingen University, Archaeobiology Laboratory, under specimen number 43. The measurements of female wild boar from near Elazığ, Turkey, were used as the standard following with H. Hongo's publication. This individual is located in Museum of Comparative Zoology, Harvard University, which specimen number is 51621.

II.2.5. Quantification

Quantification is an essential unit in order to evaluate the economic importance of different species to the inhabitants of the site (Uerpmann, 1973:310). The important aim of quantification is the measuring of abundance of the skeletal parts and particular taxa in a collection of faunal remains (Lyman, 1994: 97). The most commonly used quantification methods are minimum number of individuals (MNI) and number of identified species (NISP). The MNI can be described as the most commonly occurring skeletal element of a taxon in an assemblage (Lyman, 2008:38). The MNI involves deciding which bones could be from the same animal in order to indicate the smallest possible number of animals that would be represented in the assemblage (Uerpmann, 1973: 311). MNI takes into account various traits such as age, sex, or size. It is also necessary to account for all skeletal elements. In addition, it also takes into account the side of each element represented and count right and left side elements separately, to prevent double counting. Thus, MNI helps us to count each animal only one time. Though it has many advantages, MNI is still unpredictable in providing a sensible indication of the relative frequency of different species. MNI values exaggerate the importance of the rarer species and this bias increases with decreased sample size. The NISP is the number of skeletal element (bone and teeth) fragments identified to taxon they represent (Lyman, 2008:27). The taxon can be subspecies, species, genus or family (Lyman, 1994:100). The NISP is probably the simplest quantification method and it helps to create the relative proportions of different species within an assemblage by a percentage of the total NISP. Though it’s attractive for its simplicity, this method has several disadvantages in terms of the reliability of the relative proportions indicated. Because different species have different numbers of bones, the NISP count may be over- representative. In addition, more fragmented elements will be over- represented as a single element (Hambleton, 1999:34). If the two quantification methods are used together, however, they can be very powerful. The Number of Unidentified Specimens (NUSP) is also used in this study, which refers to those specimens that could not be identified to taxon or body part (Stiner, 2009: 236). A further quantification method, Minimum Numbers of Element (MNE), is used in this study. MNE is a technique used for making an estimation of the minimum number of skeletal elements which originated from identified fragments (Lyman, 2008:217). It can be also described as the minimum number of different specimens preferable to a given anatomical part used in classification (Binford, 1984: 50).

MNE was developed to understand skeletal abundances in faunal collections in 1969. MNE values were calculated by two researchers who used different techniques, Bunn (1991) and Potts (1988). The difference between these two techniques was whether or not diaphysis (shaft) fragments were included in the calculation or only articular ends of long bones (Table.II.3). In this study, proximal, distal, and shaft parts of the elements were taken into account. In addition complete skeletal elements were also included into calculation. The age, sex and side differences are not considered when MNE values are calculated. MNE is a quantitative unit and makes it possible to answer taphonomic questions about skeletal part abundances (Marean *et al.*, 2001: 334). Furthermore, when measuring taxonomic abundances, MNE makes it possible to control for specimen interdependences. Thus, if two or more specimens came from the same individuals, MNE would count that individual only once (Lyman, 2008:222). The final quantitative unit is the Minimum Animal Unit (MAU). Binford pioneered the use of MAU as a quantitative unit. The MAU is a way to standardize the MNE by taking into consideration the anatomy of the living animal. To do this, the MNE count is divided by the real/ expected MNE values. Therefore, the frequency of the element is expressed in animal units for comparative purposes (Binford, 1984:51).

STANDARDIZED MNE (=MAU) = OBSERVED MNE ÷ EXPECTED MNE

Table II.3. Groups of anatomic region for each element

Anatomical Regions	Elements
Neck	Cervical vrtb.
Axial	Rib, Thoracic vrtb. Sternal vrtb. Pelvis, Sacral vrtb. Lumbar vrtb.
Upper front limbs	Scapula, Humerus
Lower front limbs	Radius, Ulna, Metacarpals
Upper Hind	Femur
Lower Hind	Tibia, Fibula, Metatarsal
Feet	Phalanges, Calcaneum, Astragalus

II.2.6. Recording of Skeletal Elements

The system of recording skeletal element used here was based on Diagnostic Zones (DZ), followed by Dobney and Reilly (1988). According to this system, each element is divided into a greater number of smaller zones. Each zone is defined by particular anatomical description. These zones are, by definitional non-repeatable element. A zone was recorded when at least 50% of it was present. Only economically important animals, cattle, horse, pig and caprines, were adapted into this system.

II.2.7. Burning Conditions

The amounts of burning on each bone fragments from were recorded, as one of the seven burning categories, according to macroscopic appearance of the bones. These categories correspond to “burn color codes0-7”, respectively as defined by Stiner (Stiner, 2005:45).

CHAPTER III

III.1. THE FAUNAL RESULT OF SALAT TEPE ASSEMBLAGE

In this chapter the specimens recovered from the Salat Tepe are represented. This part is important to understand of the animals recovered from the site. Taxa groups are offered in the Table.III.2. Much of this chapter is devoted to a description of the represented fauna of the site. Quantification of the identified materials, skeletal element representations of the elements, ageing and sexing analysis are mentioned.

According to Table.III.2 of identified specimens; the majority of animal bones recovered from Salat Tepe derive from Ovis/Capra, pig (*Sus scrofa*) and cattle (*Bos sp.*); 32%, 16% and 16% respectively. Bones from medium size mammals (sheep/ goat size animals) are most frequent 63%, and large size mammals (cattle/equid size animals); 34% is the second common animals in the site. The small size mammals are very less represented in the fauna; 2%. It is obvious that the animal economy was basically based around sheep, goat, pig, and cattle. Whereas it is clear that sheep, goat, cattle and pig were the most important animals for the inhabitants of the site in economic terms, however, the rest of the fauna are also essential in terms of understanding social structures, hunting activities, ritual practices, and as potential environmental indicators, among the other points. When the wild animals are considered, all of the cervids and canids remains comprise 6% and 5% respectively. As for the total percentage of lagomorphs and reptile are only 0.6% and 5%.

A proportion of the unidentified animal bones are in Table.III.1. A total of 5147 bone remains were recorded as an unidentified and medium size of mammals are the most commonly represented; 71%, and large mammal size of mammals are second common animals in the fauna; 29%. The small size mammals are again the less observed in the assemblages.

The NUSP of Salat Tepe is represented in Table III.3 NUSP (Number of Unidentified Specimens) is utilized in some of the taphonomic comparisons. The fragments of the medium sized taxa are much more likely to be classified and recorded. The highest total numbers of the unidentified medium sized taxa are represented in MBA-LBA collection. The assemblages of medium sized mammals are also high in Chalcolithic period. The next most abundant mammals are the large bodied taxa in this group which are commonly represented in again MBA-LBA period. The number of large sized mammals is reasonable for Chalcolithic Period. The small body sized taxa are the less abundant for all periods. Thus, in this case may be related with the archaeological collecting style. This can be caused bias for the large samples and it makes the proportion of the large and/or medium sized of elements higher, small body sized of taxa lesser. When we look at the NUSP table, the most dominant bone group is the long bones for all periods. The long bones are the mostly recovered in MBA-LBA period. The flat bones are the third commonly observed element group for MBA-LBA period. The Table.III.3 shows that the numbers of the tooth and phalanges fragments are not large in the assemblage.

Abundance of identified animal taxa by the number of identified specimens are represented in Table. III. 4a and 4b. The main specimens at Salat Tepe are the typical assemblage of Near Eastern; sheep and goat, pig and cattle. Sheep and goat are the most frequently occurring taxa in all periods, following Ovis/Capra, the next most abundant species is pig and cattle are third. The highest numbers of element belong to Ovis/Capra in MBA-LBA period, (NISP, 30%). (Table III. 4a and 4b). Pigs are the second most commonly represented specimens in MBA-LBA period (NISP, 13%), following pigs, the next abundant ungulate taxon is cattle, represented as NISP 16%. Cattle are occurring all periods except, EIA-MIA period. While the number of the pigs and Ovis/Capra and cattle increase in later periods, those three specimens decrease in earlier periods. For the Chalcolithic period, the most commonly represented specimen is Ovis/Capra (NISP 37%), pig (NISP 21%) and cattle (NISP 14%). Although the most dominant animals are sheep and goat for all periods, pigs are the main animal for Early Iron Age period.

Table III.1. Unidentified Bones / Body size

Body Size	**N**	**%**
Large Size Mammals	1493	29
Medium Size Mammals	3641	70,7
Small Size Mammals	13	0,25
Total	5147	100

Table III.2. The Number of Taxa in the Assemblage

TAXA	N	%
Capra hircus	171	5.96
Dama mesopotamica	1	0.03
Dama dama	11	0.38
Capra aegagrus	9	0.31
Capreoulus capreoulus	3	0.1
Ovis orientalis	5	0.17
Ovis aries	208	7.24
Ovis/capra	933	32.4
Sus scrofa	36	1.25
Sus scrofa domesticus	78	2.71
Sus sp.	445	15.5
Cervus elaphus	128	4.5
Cervid indet	21	0.73
Bos taurus	5	0.17
Bos sp.	465	16
Equus caballus	32	1.11
Equus asinus	1	0.03
Equus sp.	9	0.3
Canis lupus	28	1
Canis familiaris	55	1.9
Canis aureus	1	0.03
Felis sylvestris	1	0.03

Table III.2. Cont.		
Felis domesticus	2	0.06
Meles meles	3	0.1
Mustela nivalis	3	0.1
Carnivora indet.	46	1.6
Felis sp.	1	0.03
Lagomorph indet.	2	0.1
Lepus europeus	18	0.6
Hystrix	1	0.03
Testudo graeca	68	2.4
Rodentia	6	0.2
Snake	1	0.03
Aves	66	2.3
Fish	13	0.45
Sub Total	2873	100
Large Ungulates	709	34.33
Medium Ungulates	1310	63.4
Small Ungulates	46	2.22
Sub Total	2065	100
Total	4938	100

Table III.3. Number of Unidentified Specimens (NUSP) Values for Sized Based Elements

NUSP	Mammal Size	Long Bone	Flat Bone	Tooth Indet.	Phlnx Indet.
Chalcolithic	**LM**	209	61		
	MM	753	68		
	SM	2			
Middle Chalcolithic	**LM**	7	3		
	MM	23	1		
	SM				
Early Bronze Age	**LM**	2			
	MM	3			
	SM				
Middle Bronze Age	**LM**	66	8		
	MM	191	28	1	1
	SM				
MBA-LBA	**LM**	812	144	4	
	MM	1785	231		
	SM	9			
LBA	**LM**				
Early Iron Age	**LM**	44	3		
	MM	132	11		1
Middle Iron Age	**LM**	10	1		
	MM	13	5		
EIA-MIA	**LM**	1	3		
	MM	15	61		
	SM	2			
Medieval	**LM**	81	7		
	MM	240	11		
	SM				
Hellen-Roma	**LM**	23	4		
	MM	58	9		
	SM				
Total		4481	659	5	2

Table III.4a. Number of Identified Specimens at Salat Tepe

TAXA	Chltc		MCA		EBA		MBA-LBA		MBA		LBA	
	N	%	N	%	N	%	N	%	N	%	N	%
Capra hircus	36	7,19	1	4,55			98	5,57	14	6,51	3	11,11
Dama dama	2	0,4					9	0,51				
Capra aegagrus	2	0,4					2	0,11	2	0,93		
Capreoulus cap.							1	0,06				
Ovis orientalis	1	0,2					3	0,17				
Ovis aries	41	8,18	2	9,09			130	7,39	13	6,05	1	3,7
Ovis/capra	189	37,72	17	77,27	2	66,67	533	30,32	70	32,56	8	29,63
Sus scrofa	3	0,6					30	1,71	1	0,47		
Sus scrofa dom.	27	5,39					37	2,1	3	1,4	1	3,7
Sus sp,	109	21,76	1	4,55			237	13,48	44	20,47		
Cervus elaphus	1	0,2					108	6,14	5	2,33	1	3,7
Cervid indet							13	0,74	1	0,47		
Bos taurus							5	0,28				
Bos sp,	74	14,77	1	4,55	1	33,33	287	16,33	30	13,95	12	44,44
Equus caballus							30	1,71				
Equus asinus							1	0,06				
Equus sp,							8	0,46	1	0,47		
Canis lupus							25	1,42	1	0,47		
Canis familiaris	6	1,2					33	1,88	8	3,72	1	3,7
Felis sylvestris							1	0,06				
Felis domesticus							2	0,11				
Meles meles							1	0,06				
Mustela nivalis							3	0,17				
Carnivora indet.	1	0,2					39	2,22	1	0,47		
Felis sp.							1	0,06				
Lagomorph indet.							2	0,11				
Lepus europeus							14	0,8				
Hystrix							1	0,06				
Testudo graeca							52	2,96	10	4,65		
Rodentia	1	0,2					4	0,23				
Aves	8	1,6					39	2,22	11	5,12		
Fish							9	0,51				
Total	501	100	22	100	3	100	1758	100	215	100	27	100
Large Mammals	93	22,85	3	33,33			497	40,18	26	24,76	1	100
Medium Mammals	312	76,66	5	55,56			707	57,15	77	73,33		
Small Mammals	2	0,49	1	11,11	1	100	33	2,67	2	1,9		
Total	407	100	9	100	1	100	1237	100	105	100	1	100

Table III. 4b. Number of Identified Specimens at Salat Tepe

NISP	EIA		MIA		EIA-MIA		MDVL		Hel-Rom	
TAXA	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Capra hircus	1	0.94					11	7.97	7	9.59
Dama mesopotamica							1	0.72		
Capra aegagrus			2	11.11			1	0.72		
Capreoulus capreoulus	1	0.94					1	0.72		
Ovis orientalis							1	0.72		
Ovis aries	5	4.72	1	5.56			13	9.42	2	2.74
Ovis/capra	10	9.43	10	55.56	8	66.67	63	45.65	20	27.40
Sus scrofa	1	0.94							1	1.37
Sus scrofa domesticus	9	8.49					1	0.72		
Sus sp.	30	28.30			4	33.33	7	5.07	13	17.81
Cervus elaphus	9	8.49					2	1.45	2	2.74
Cervid indet	5	4.72					1	0.72	1	1.37
Bos sp.	17	16.04	4	22.22			24	17.39	15	20.55
Equus caballus	1	0.94							1	1.37
Canis lupus									2	2.74
Canis familiaris	1	0.94							6	8.22
Canis aureus	1	0.94								
Meles meles									2	2.74
Carnivora indet.	3	2.83					2	1.45		
Lagomorph indet.							2	1.45		
Lepus europeus	1	0.94							1	1.37
Hystrix										
Testudo graeca	4	3.77					2	1.45		
Rodentia			1	5.56						
Snake	1	0.94								
Aves	2	1.89					6	4.35		
Fish	4	3.77								
Total	**106**	**100**	**18**	**100**	**12**	**100**	**138**	**100**	**73**	**100**
Large Mammals	25	31.25	8	57.14	4	13.79	42	30.66	10	22.22
Medium Mammals	55	68.75	6	42.86	21	72.41	93	67.88	34	75.56
Small Mammals					4	13.79	2	1.46	1	2.22
Total	**80**	**100**	**14**	**100**	**29**	**100**	**137**	**100**	**45**	**100**

Table III.5. The distribution of Identified Bones According to Trenches

Trenches		Chalcolithic		Bronze Age		Iron Age		Medieval		Hell-Rom	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
E	**12**	31	3,3								
F	**12**	113	12,03								
G	**12**	118	12,57	19	0,57						
H	**12**	551	58,68	10	0,3	6	2,3				
I	**12**	38	4,05	41	1,22	14	5,4			13	11
J	**12**	30	3,19	1	0,03						
K	**12**			92	2,74						
K	**13**			239	7,13			87	31,6		
K	**14**			136	4,06	3	1,2				
L	**11**			30	0,89						
L	**12**	38	4,05	376	11,21	82	31,7	27	9,8	1	0,8
L	**13**	20	2,13	971	28,96	20	7,7	55	20	37	31,4
L	**14**			1070	31,91	49	18,9	105	38,2	8	6,8
M	**6**			2	0,06			1	0,4		
M	**12**					1	0,4				
M	**13**			339	10,11	82	31,7			59	50
O	**13**			27	0,81	2	0,8				
TOTAL		939	100	3353	100	259	100	275	100	118	100

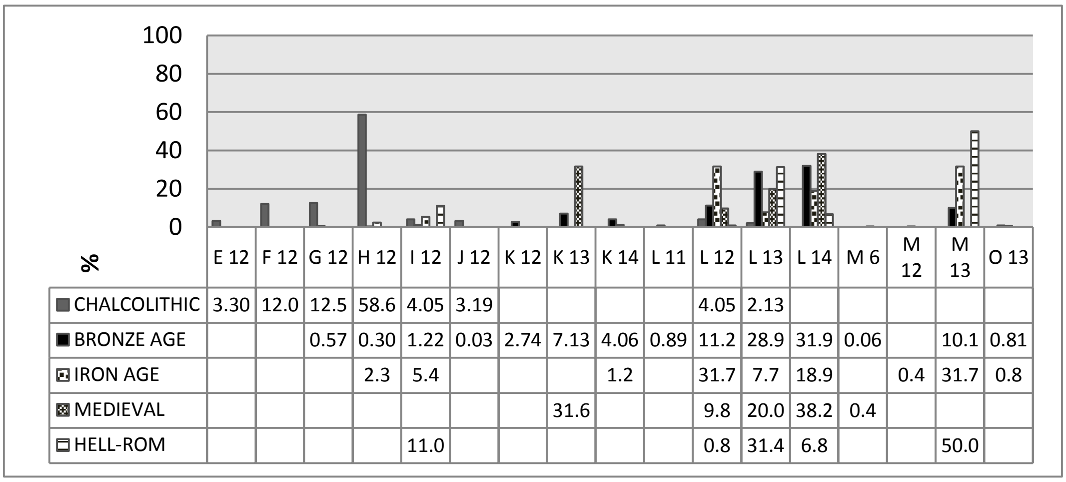
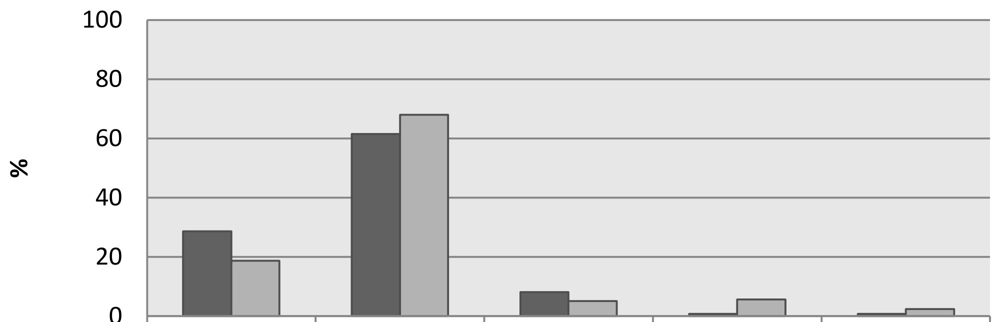


Figure III.1. The Distribution of Identified Bones According to Trenches

The distributions of identified animal remains are shown in Table.III.5. Identified assemblages are came from seventeen trenches and all are dated five periods; Chalcolithic Period, Bronze Age, Iron Age, Medieval and Hellenistic- Roman Period. Because some periods of trenches have very few numbers of bones, some periods are combined together. In order to make the numbers more sensible, Middle Chalcolithic materials are united with Chalcolithic Period. In addition, Early Bronze, Late and Middle-Late Bronze Age assemblages are comprised as Bronze Age. Animal bones from Chalcolithic Period were represented eight trenches (Fig.III.1). The most animals are recovered from H12 (59%). Following from this, G12 (13%) and F12 (12%) trenches have values. The Bronze Age is the most well represented period within all periods. Animal remains were collected from fourteen trenches for Bronze Age. Trenches L14 (32%), L13 (29%), L12 (11%), and M13 (10%) are showed the highest concentration for this period. The Iron Age materials are found from nine trenches. The area with the least amount of animal bones from Iron Age was K14 and O13 (two pieces of elements). The highest and same amounts of elements were collected from M13 and L12 (32%). The Medieval and Hellenistic-Roman Periods have five trenches. While Medieval materials mainly found in trench L14 (38%), Hellenistic-Roman period is represented by trench M 13 (50%) intensively.

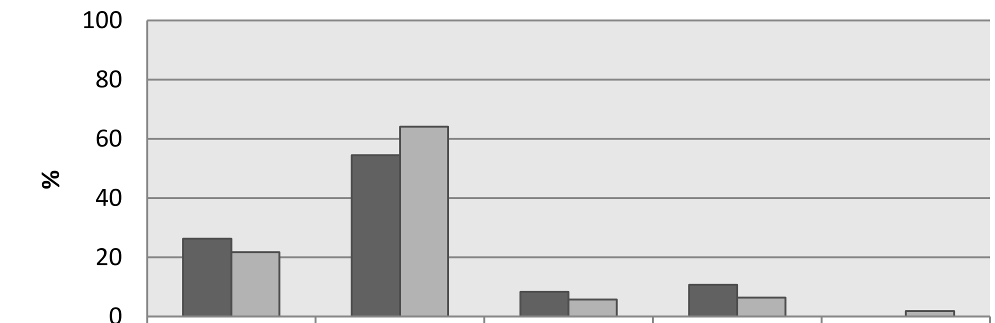
III.2. Burning

Evidence of burning on specimens was recorded as present/absent and based on color change associated with level of heat exposure (Lyman, 2008:384). Scoring of burned bones leveled according to their color black to white. These specimens were analyzed collectively as "burned bones" due to the very frequency of burning in the assemblage. Fig.III.2 and 3, show that the percentage of unburned and burned bones in each periods at the site. For the entire periods, burning 122 (3%) and unburned bones accounted for 4822 (98%) of recovered faunal remains. The Bronze Age showed the highest number of burned identified elements at 62% compared to other time periods. The lowest number of burned bones accounted for same value in Hellenistic-Roman and Medieval Periods 0.8%. Among the unidentified bones, the burned bones assemblages are represented only 167 (3%), and the number of unburned assemblage recorded as 4981 (97%). While the highest burned bones remains belong to Bronze Age 54 %, there are not any burned bones observed in Hellenistic-Roman Period. These data clearly demonstrate that burning had a low impact on the assemblage in each period.



	CHALCOLITHIC	BRONZE AGE	IRON AGE	MEDIEVAL	HELL-ROM
Burned	28.69	61.48	8.20	0.82	0.82
Unburned	18.75	67.98	5.16	5.68	2.43

Figure III.2. Percentage of Identified-Burned Bones in Assemblage



	CHALCOLITHIC	BRONZE AGE	IRON AGE	MEDIEVAL	HELL-ROM
Burned	26.35	54.49	8.38	10.78	0
Unburned	21.74	64.14	5.78	6.44	1.89

Figure III.3. Percentage of Unidentified-Burned Bones in Assemblage

III.3. Description by Taxa

III.3.1. Domestic Mammals

The remains of domestic animals dominate all faunal samples from Salat Tepe and amount to more than 85% of the total number of identified fragments (Table.III.4a and 4b). Sheep (*Ovis aries*), goat (*Capra hircus*), cattle (*Bos taurus*), and pig (*Sus domesticus*) are the major domestic species, with some horse (*Equus caballus*), ass (*Equus asinus*) and dog (*Canis familiaris*). Although the range of domestic remains the same during the Chalcolithic and Bronze Age Periods, there are changes in the number of bones each domestic taxon. Interestingly, the numbers of horse remains are dense in Bronze Age period, however there is not horse samples are observed in earlier and latter periods. For the pigs again, there is not remains recorded in EBA and MIA. Cattle disappeared in Iron Age. Dog remains show up in MBA period, following this periods, the number of dog decrease and finally any dog sample is not observed. These changes in the faunal record may reflect social or economic changes. Any new domestic specimens were not introduced for all phase, the only changes can be observed in aspect of numerical value.

III.3.1.1. Artiodactyla

III.3.1.1.1. Bovidae

III.3.1.1.1.1. *Cattle (Bos taurus)* and Bos sp.

Apart from sheep and goat bones, bones of cattle was the third most frequently recovered animal at Salat Tepe with a total of 470 sample of elements (Table.III.2). Overall, the number of cattle bones from the site represents 16% of the total assemblage. The majority (NISP: 335, 71%) of the cattle bones at Salat Tepe recovered from Bronze Age, and very little can be said about cattle use in other periods.

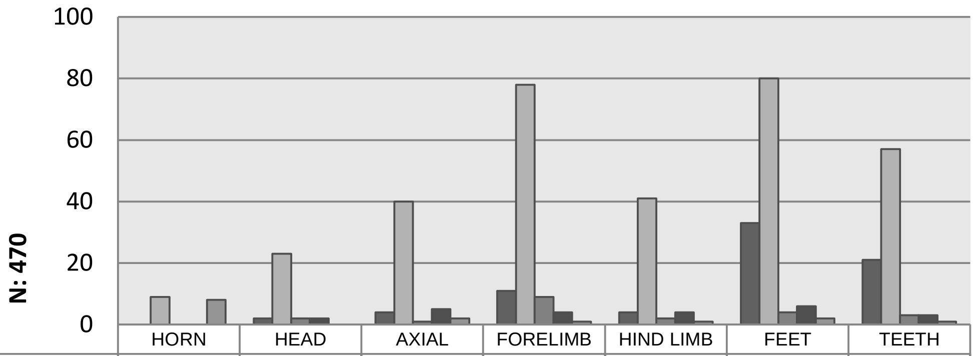
III.3.1.1.1.1.1. Bos: Skeletal Part Representation

Skeletal parts for each element were grouped according to main division of the body, and proportions of the resulting groups of skeletal parts with respect to NISP were calculated. Skeletal part frequencies for cattle at Salat Tepe are shown in Figure III.4. The element distribution reveal constant similarities if the elements are grouped by anatomical region. Elements in the forelimb (scapula, humerus, radius, ulna, carpals, metacarpal) (24%) and teeth (upper tooth, lower tooth, tooth) (18%) are generally well-represented in all phases. There are same amount of axial (here defined as atlas, axis, vertebrae, pelvis) and hind limb (femur, tibia, astragalus, tarsal) (11%) in the collection. Horn (4%) display a generally low representation in all periods. Elements of the feet (26%) show the highest representation overall. The data show that all anatomical region values are over- represented in Bronze Age (71%), and under-represented in Hellenistic-Roman Period (3%). Bronze Age shows an under-representation of horn elements (3%), and over representation of feet bones (24%) relative to the average composition of the assemblage. The data indicate that in Chalcolithic Period characterized by very high frequencies of feet (44%) and relatively low frequencies of head (3%) bones. Skeletal elements are poorly represented in Iron Age (5%), Medieval (5%) and Hellenistic-Roman (3%) Periods, since sample size from those periods are very small.

In this case, there are two possible results can be assumed, first the existence of elements from all anatomical regions; especially non meat valued of feet elements, implies that entire cattle were butchered and consumed at the site. Secondly, the high bone density of these elements may have shed light of the taphonomic process and contributed to their greater survivability in the archaeological record.

III.3.1.1.1.1.2. Bos: MAU

In this dissertation, in order to analyze relative of animal skeletal parts and elements within individual periods and entire sites, Minimum Animal Units (MAU) values were calculated, based on skeletal element grouped into nine anatomical regions which listed in Table. II.3. These anatomical regions including head, neck, axial skeleton, upper front limb, lower front limb, upper hind and lower hind, and feet. This anatomical group is also give a clue about different resources; high quality cuts of meat, lower quality cuts of meat or butchery waste that are often used differently for different purposes (Lyman, 1985) and Minimum Number of Elements (MNE).

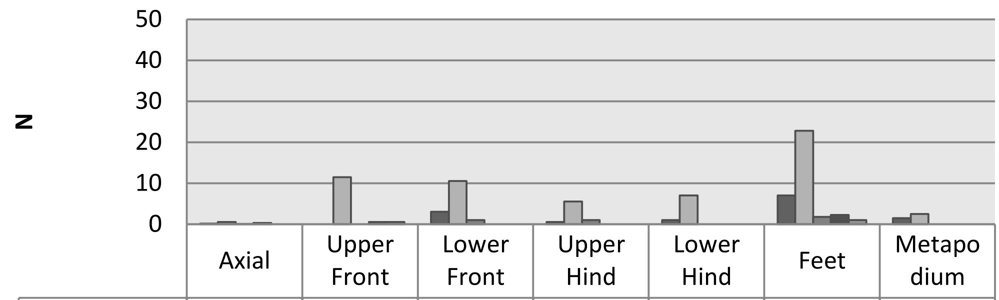


	HORN	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET	TEETH
Chalcolithic		2	4	11	4	33	21
Bronze Age	9	23	40	78	41	80	57
Iron Age		2	1	9	2	4	3
Medieval		2	5	4	4	6	3
Hel-Rom	8		2	1	1	2	1

Figure III.4. Skeletal Part Representation (NISP) (N: 470)

MAU (Standardized MNE) is a measure of the frequency with which skeletal part or element is present in the collection, apart from side of element, and standardized by the number of times that part or element is present in one complete animal. Thus, it may be allowed the comparison of the frequency of skeletal groups. In addition, MAU was calculated based on MNE values. MNE needed to account for an assemblage and in this study was calculated by taking the largest specimen count among the skeletal parts of one element. The MAU has the effect of partly correcting for fragmentation as well as concentration dependent taphonomic factors and therefore provides a more precise estimate of the relative abundance of skeletal groups compared to total assemblage. This is shown in Figure III.5 which gives MAU values for cattle, which calculated for anatomical regions on assemblage from the site of Salat Tepe. Based on MAU, the cattle feet (34.9) are the most abundant element, whereas the axial skeleton elements display low (1) representation in all periods. The MAU values for upper and lower front limb comparable, 12.5 and 14.5 respectively. When we look at the MAU values according to each period, the high amount of cattle fragments recovered in Bronze Age period 60.3. The highest skeletal group is feet (22.8) and the second robust element is upper front limb (11.5) for this period. The second well-represented period is

Chalcolithic 13.2, though again feet (7) are the best recovered element in this period, upper hind limb (0.5) are observed very less amount.



	Axial	Upper Front	Lower Front	Upper Hind	Lower Hind	Feet	Metapo dium
Chalcolithic	0.16		3	0.5	1	7	1.5
Bronze Age	0.5	11.5	10.5	5.5	7	22.8	2.5
Iron Age	0.02		1	1		1.8	
MEDIEVAL	0.3	0.5				2.3	
HELL-ROMA		0.5				1	

Figure III.5. MAU Values for Cattle

III.3.1.1.1.1.3. Bos: Age Data

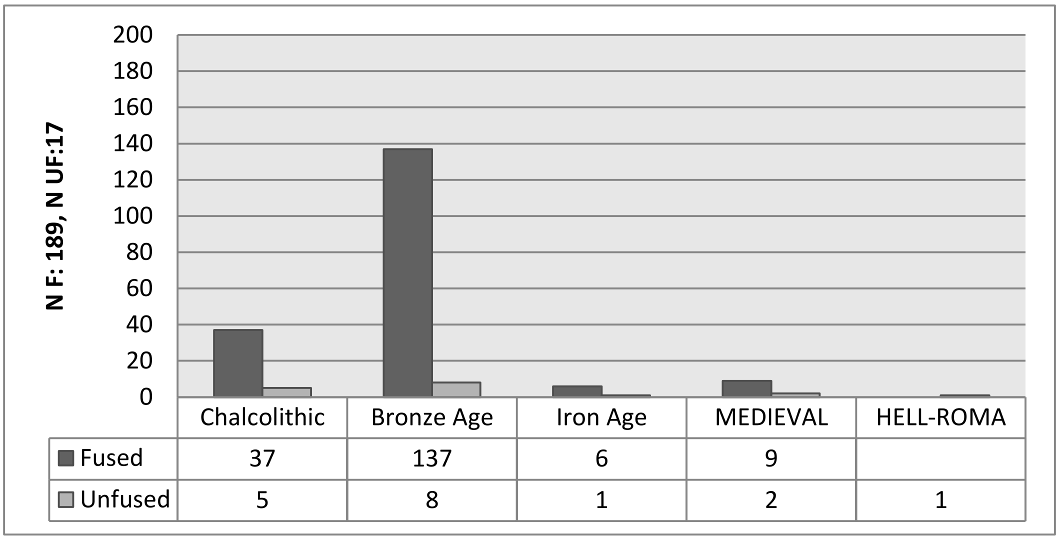
III.3.1.1.1.1.3.1. Epiphyseal Fusion

In this research, the estimated bone fusion is grouped according to the sequence of epiphyseal fusion based on which presented by Stiner. State of fusion is recorded as (1) unfused with epiphysis not attached to diaphysis, or (2) fused with epiphyses attached the diaphysis, which comprises with a visible line and specimens with no visible line. The state of epiphyseal fusion was recorded for distal and proximal ends of long bones, and for the acetabulum.

The analysis of epiphyseal fusion for cattle, follows the fusion age estimates proposed by Silver (1969), and groups them into four age class Table III.6. Due to the limited representation of young cattle assemblage, the analysis was generated based on as fused and unfused. In order to make the data reasonable, this method was followed. A total of 206 cattle bones from Salat Tepe could be used to develop a fused and unfused bone structure are shown in Figure.III.6. The cattle elements recovered, indicating was unfused bones very few number (N:17, 8%), if, any, immature cattle were killed and deposited on-site. 92% of cattle identified as fused, it is clear that the cattle are keeping until their late of ages of death. In order to improve age profiles of cattle, dental eruption and wear analysis were generated. Only, seventeen cattle elements (8%) were described as unfused for overall, so nothing definite can be said about their ages at death. The highest number of fused cattle bones are recovered at Bronze Age (89%) and fused and unfused pattern for Chalcolithic Period is generally same with Bronze Age. The data shows that very little can be said about exploitation of cattle in other periods. Epiphyseal fusion data for cattle at Salat Tepe, indicate, adults are the more preferred than young/juvenile individuals, for all periods (Fig. III.7).

Table III.6. Bos Epiphyseal Fusion Sequence and Estimated Ages (Silver 1969)

Fusion Stage	**Skeletal Element**	**Age (Months)**
I	Pelvis (Acetabulum) Scapula (Glenoid)	7-10
II	Proximal Radius Proximal First Phalanx Distal Humerus	12-20
III	Distal Tibia Distal Metopodials	24-30
IV	Proximal Humerus Proximal Ulna Proximal Femur Proximal Tibia Distal Radius Distal Femur	42-48

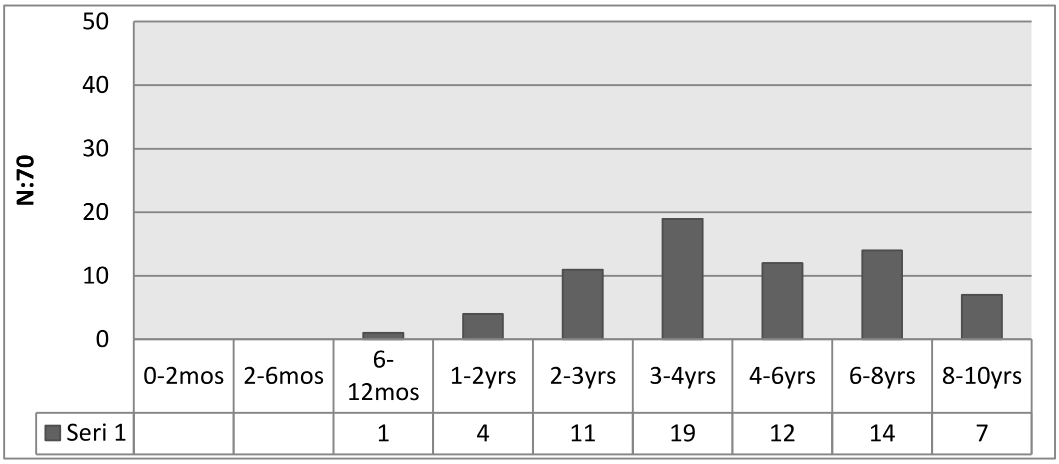


	Chalcolithic	Bronze Age	Iron Age	MEDIEVAL	HELL-ROMA
Fused	37	137	6	9	
Unfused	5	8	1	2	1

Figure III.6. Fused/Unfused Bones for Cattle (NISP)

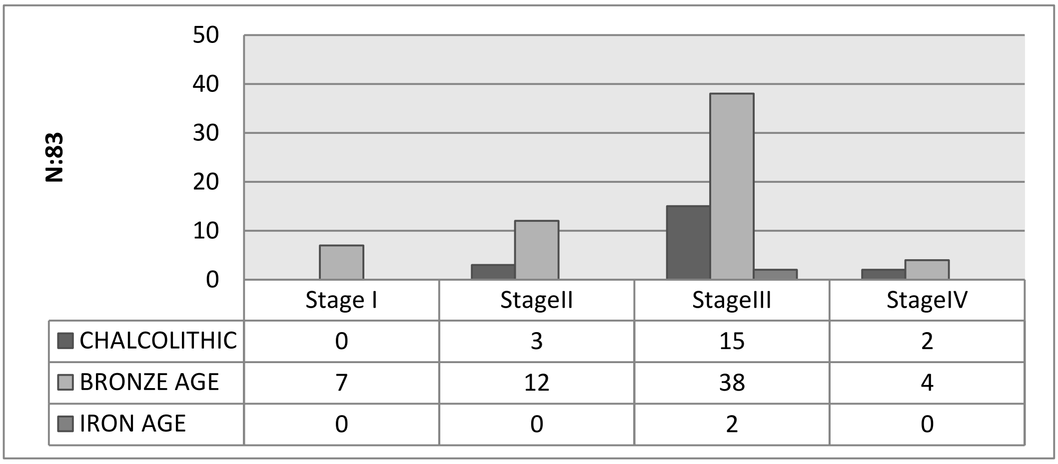
Cattle materials used for the study of tooth eruption and wear patterns include teeth in the faunal assemblages selected for detail analysis and mandibles from the area. The mandibular dp4, M_1, M_2 and M_3 used in this analysis. Isolated teeth are also added into this group. In particular, relatively few mandibles with teeth were found for cattle in the assemblage, thus it was essential to comprise isolated teeth in order to increase sample size. Cattle maxillary premolar and molar teeth were also included for the same reason, based on working statement that eruption and wear of maxillary premolars and molars roughly correspond to those of mandibular teeth. Five permanent incisors, fifteen unidentified mandible and eight tooth fragments, those were not included in the analysis although all of them classified as an adult.

Figure.III.8 shows the number of the mandibular sections and individual teeth from Salat Tepe. Those were assigned to age stage following Grant (1982). The ageing pattern is showed that there is a broad peak centered 3-4 years of age. The peak at 6-12 months which is represented relatively small in the cattle assemblages. 2-3 years animals were also slaughtered in the sub-adult age stage, after they had reached their full weight. While the two of age stage is not represented at all, which is not due to sample size but is an accurate reflection of the number of animals not killed at this age ranges. When viewed as distribution of tooth wear and eruption pattern from all periods, appear once again the strongest peaks at Bronze Age (N: 51, 66%). Besides, Chalcolithic period is represented as a twenty number of dental ageing samples (26%). Two of remains came from Iron Age, Medieval and Hellenistic-Roman Periods are also represented very few elements, three and one respectively. The result of tooth wear stages for cattle supports the result of age analysis based on epiphyseal fusion, cattle were generally kept until adulthood in most of the periods of occupation at Salat Tepe (Figure III.7). Thus, the Salat Tepe data, however, indicate that most of the cattle were killed slightly older age.



	0-2mos	2-6mos	6-12mos	1-2yrs	2-3yrs	3-4yrs	4-6yrs	6-8yrs	8-10yrs
Seri 1			1	4	11	19	12	14	7

Figure III.7. Epiphyseal Fusion Results for Cattle



	Stage I	StageII	StageIII	StageIV
CHALCOLITHIC	0	3	15	2
BRONZE AGE	7	12	38	4
IRON AGE	0	0	2	0

Figure III.8. Dental Ageing Pattern for the Cattle According to All Periods, Based on Dlp4-LP4 Dental Sequence

III.3.1.1.1.1.4. Size

In order to assess the size of the cattle found at Salat Tepe measurements of the bones were compared with two different the complete skeleton of a wild *Bos primigenius* cow published by Degerbol and Fredskild (1970) from Ullerslev and modern female wild cow from Denmark (see Appendix-2) are used as an standard animal. The mean values of the measurements are showed by a small black arrow and the standard animal used for comparison represented by 0 on the LSI scale.

Figure.III.9 shows the results of referenced from Ullerslev. The mean size of cattle, shows little variation over time (-0.09 to -0.15). The increase in the mean value through the time is explainable the presence of the single large specimens caused raising the mean value. The cattle remains are smaller than the wild standard measurements in all periods as expected. Figures III.9 and 10 suggest that relatively smaller cattle more frequent in the Bronze Age cattle fauna from Salat Tepe, while Chalcolithic remains are slightly bigger. Generally, the body size of these major domestic animals were either unchanged, or show a slight and gradual diminution through time. The distribution on LSI values for cattle in Chalcolithic Period represents that closer to standard value. The only measurements for which there were relatively large enough samples to examine the size in Bronze Age Period. The data show that in this period the distribution of measurements is fairly even across a small range of sizes. The diversity of size allocation in Bronze Age may represent males and females. Due to the small number of sample, these measurements exhibit unclear picture and it is difficult to make a reasonable comments for the former periods (Iron, Medieval and Hellenistic- Roman Periods). However, mostly it is all the specimens have LSI values well below that of the standard animal, indicating once again the presence of domestic female and male cattle.

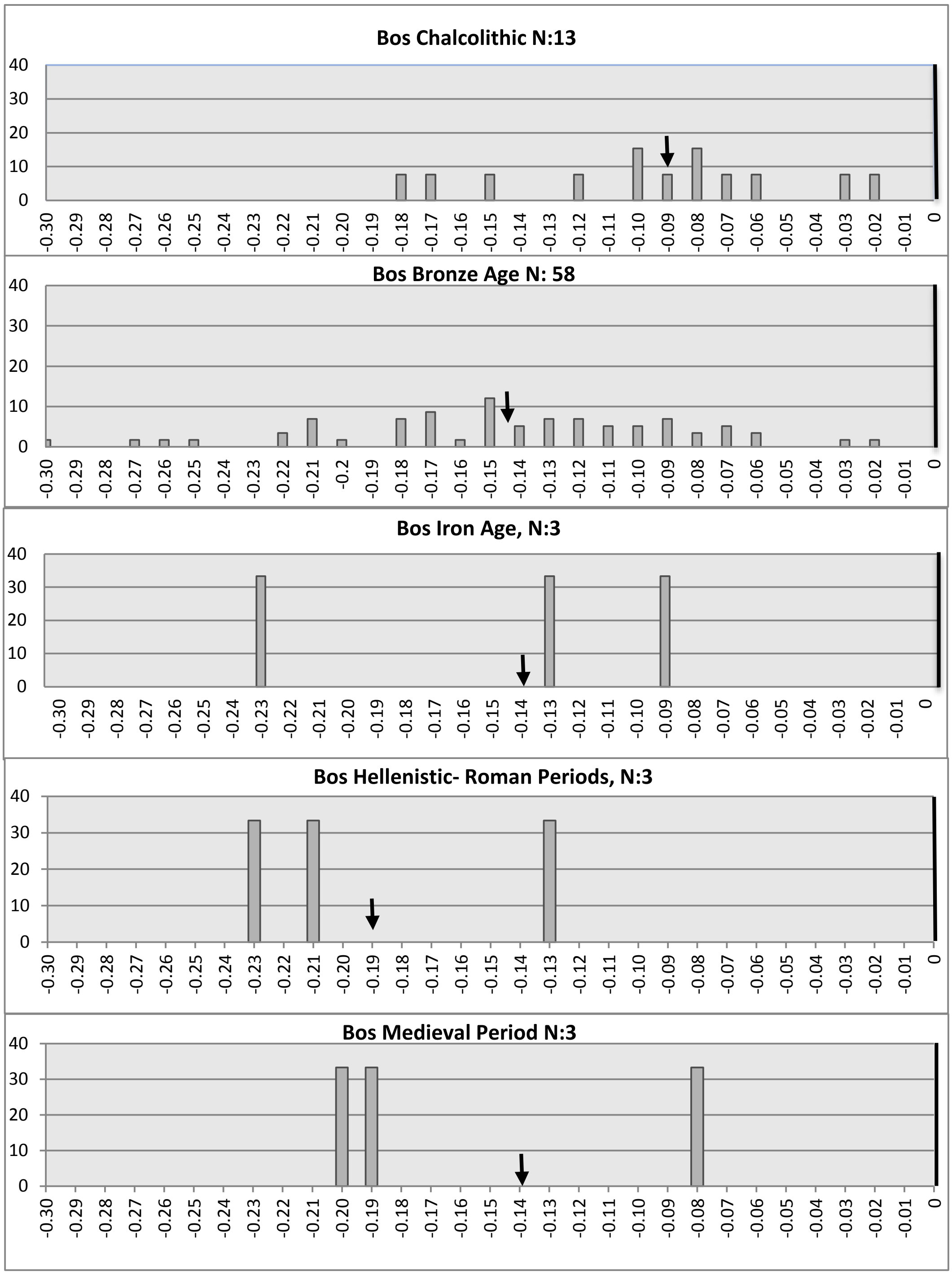


Figure III.9. Histograms Show the Size Index Distribution for Cattle from Salat Tepe. The Arrow Indicates Mean Values. *Bos Primigenius* Standard is a Cow from Ullerslev (Degerbol 1970; Grigson 1989) (For Standard Measurements See Appendix 2)

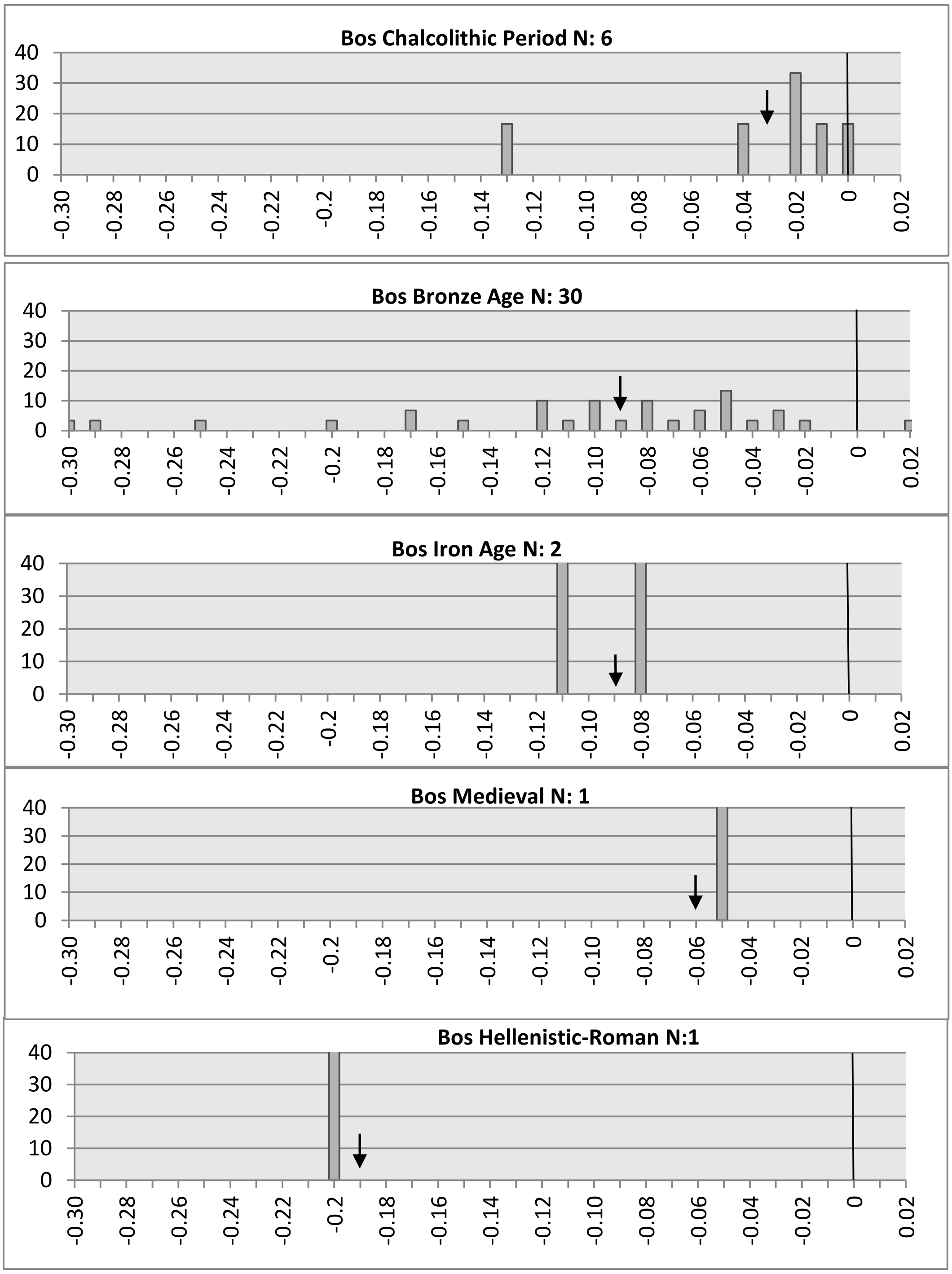


Figure III.10. Histograms Show the Size Index Distribution for Cattle from Salat Tepe. The Arrow Indicates Mean Values. *Bos Primigenius* Standard is a Cow from Germany (Individual Number is BOS 43) (For Standard Measurements See Appendix 2)

III.3.1.1.1.2. Sheep (*Ovis aries)* and Goat (*Capra hircus*)

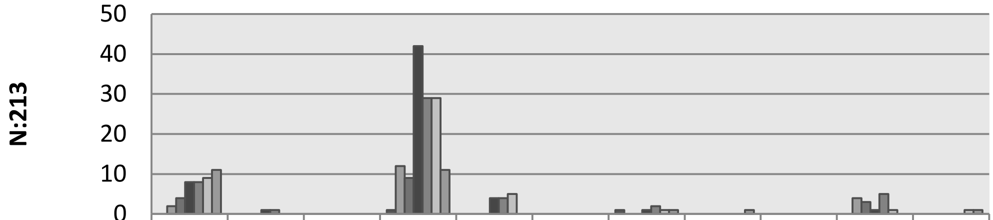
The wild goat is an endemic animal to the region, it lives the Taurus Mountains of Turkey, the mountains of Azerbaijan and Armenia. Although, very limited number of wild goat are represented in the assemblage, in the past the wild goat must have been common animal since it is very well suited with the rocky habitat (Uerpmann,1987:113). Methods for distinguishing between domestic sheep and goats deserve a special mention. Sheep and goat share same morphological features, which make it difficult to specify between these two taxa. A number of researchers have emphasized the morphological characteristics that differentiate sheep and goats, but these diagnostic criteria are not visible to eye and often display a range of variation between two species (Boessneck *et al.* 1964, Halstead and Collins 2002, Payne 1985, Uerpmann, 1994). In this research, caprine bone fragments were assigned as sheep or goat if they clearly exhibited diagnostic features that distinguish between species. Identification of sheep and goat was made following by these author's publications; Zeder and Pilaar (2010), Payne (1985), Boessneck *et al.* (1964) and Halstead and Collins (2002). Besides, comparison materials were helped to make a specification sheep and goats. In addition, caprine specimens could not be reliably attributed, were grouped as 'sheep/goat'.

As far as the ranking of animals is concerned, number of the identified species demonstrates that *Ovis/Capra* was the most commonly represented species in all phases. Sheep and goat together contribute 33% (N: 930) by count of the total identified specimens. A total of 1146 bones were identified as ovicaprids. At Salat Tepe 173 bones were identified as, *Capra hircus* (domestic goat), 7 as *Capra aegagrus* (wild goat), 208 as *Ovis aries* (domestic sheep) and 5 as *Ovis orientalis* (wild sheep). Overall proportion of ovicaprids remains is quite steady through time. The number of *Ovis* is higher than the number of *Capra* (Table III.4a). Sheep and goat became increasingly important in the Bronze Age and Chalcolithic levels, their bones make 66% and 67% respectively. This pattern continues throughout Hellenistic- Roman periods, however, Iron Age show the lower proportions of sheep and goat.

III.3.1.1.1.2.1. *Ovis/Capra*: Skeletal Part Representation

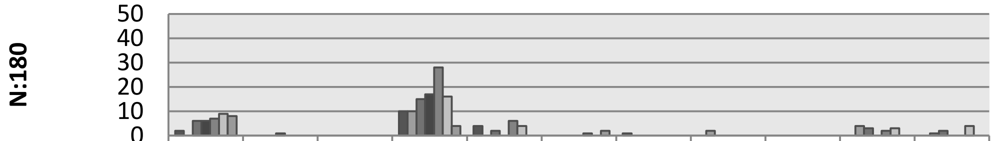
Skeletal part representation data for sheep, goat and sheep/goat are represented in those Figures.III.11, 12 and 13. As discussed earlier, it is not always possible to distinguish between sheep and goat specimens in an assemblage, since specific morphological features are essential for identification. The skeletal part frequencies of caprines are calculated separately for sheep, goat, and sheep/goat, the analysis exhibits the highest representation of skeletal parts were hind-limb for goat (24%), forelimb for sheep (27%) and teeth for sheep/goat (44%). The observation confirms the finding from Figure.III.11, which indicates that less dense skeletal parts were horn for sheep (0.9%), teeth for goat (8%), and fore-limbs for sheep/goat (7%). Whereas, head and horn elements exhibit a lowest representation for sheep and goat, these elements were very high for sheep/goat. This is primarily due to the skull is more easily fragmented, and also doing the specific identification from fragmented skull is difficult. In addition, skull fragments are included in the sheep/goat group.

Moreover, elements from each anatomical region (meat and non-meat bearing bones) are represented in the skeletal part distribution, which suggests that sheep and goat were butchered and consumed at the site. Or the high representation of hind limb, forelimb and teeth indicate that these dense elements were little affected by taphonomic process. Comparisons of anatomical regions between levels are shown in Figure.III.13. In period Bronze Age, the numbers of the elements are highly over-represented for all ovicaprids; for sheep (62%), for goat (56%) and for sheep/goat (57%), while in Iron Age exhibit highly underrepresented.



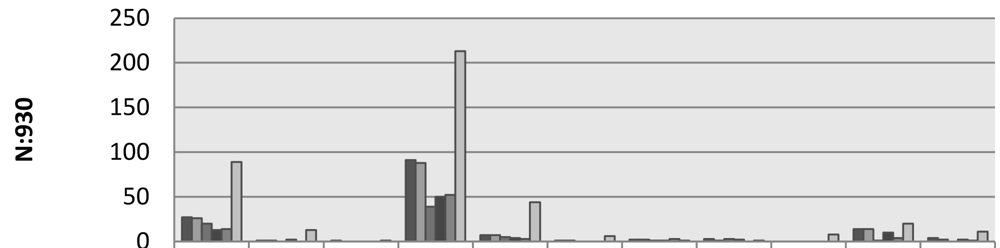
	Chltc	MCA	EBA	MBA-LBA	MBA	LBA	EIA	MIA	EIA-MIA	Mdvl	Hel-Rom
HORN				1			1				
HEAD	2			12						4	
AXIAL	4			9						3	
FORELIMB	8	1		42	4		1			1	
HIND LIMB	8	1		29	4		2			5	
FEET	9			29	5		1			1	1
TEETH	11			11			1	1			1

Figure III.11. Skeletal Part Representation for Sheep



	Chltc	MCA	EBA	MBA-LBA	MBA	LBA	EIA	MIA	EIA-MIA	Mdvl	Hel-Rom
HORN	2			10	4		1				
HEAD				10				2		4	1
AXIAL	6			15	2					3	2
FORELIMB	6	1		17							
HIND LIMB	7			28	6	1				2	
FEET	9			16	4					3	4
TEETH	8			4		2					

Figure III.12. Skeletal Part Representation for Goat



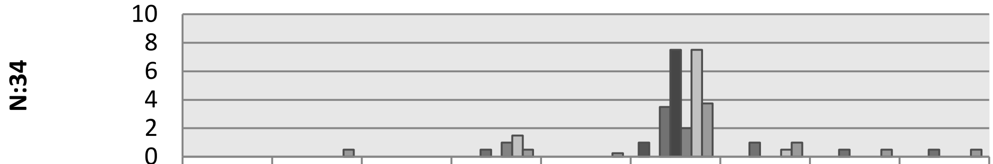
	Chltc	MCA	EBA	MBA-LBA	MBA	LBA	EIA	MIA	EIA-MIA	Mdvl	Hel-Rom
HEAD	27	1	1	91	7	1	2	3		14	4
AXIAL	26	1		88	7	1	2	1		14	2
FORELIMB	20			39	5		1	3		1	
HIND LIMB	13	2		50	4		1	2		10	2
FEET	14			52	3		3			4	1
TEETH	89	13	1	213	44	6	1	1	8	20	11

Figure III.13. Skeletal Part Representation for both Sheep and Goat

III.3.1.1.1.2.1. Ovis/Capra: Skeletal Part Representation

III.3.1.1.1.2.2. MAU for Sheep and Goat

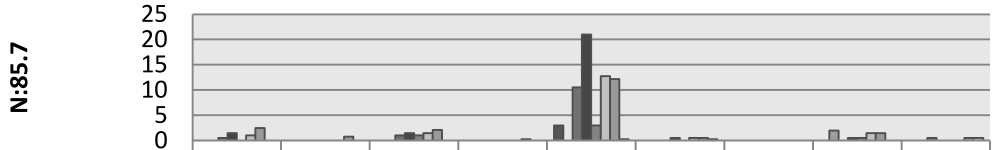
The standardized MNE values (MAU) for the anatomic regions are presented In Figures.III.14, 15 and 16. The data indicate that the group of elements for *Ovis, Capra* and *Ovis/Capra*, of the upper and front limbs are over-represented, whereas those of the axial and neck elements are under-represented in the assemblage. When we compare MAU values according to each period, the best represented period is once again Bronze Age (166), whereas skeletal element groups are less represented in Hellenistic-Roman Periods.



	CHCLTH	MCA	EBA	MBA	LBA	MBA-LBA	EIA-MIA	MEDIEVAL	HELL-ROMA
Neck						1			
Axial									
Upper Front				0.5		3.5	1	0.5	0.5
Lower Front						7.5			
Upper Hind				1		2			
Lower Hind				1.5		7.5	0.5		
Feet		0.5		0.5	0.25	3.7	1	0.5	0.5

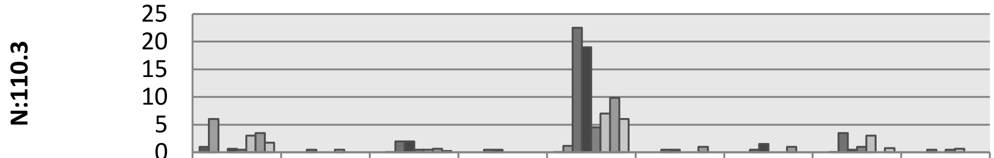
Figure III.14. MAU Values for Goat

The MAU values for Iron and Medieval Periods are 15 and 16 respectively. Based on MAU, the values of Capra are lower in overall (33.0), *Ovis/Capra* is well represented in each periods (109.8). The data indicate that the most repeatedly elements groups for *Ovis* is lower front limb (25.0), whereas this value is 9.5 for *Capra*' s lower hind limb and, lastly the highest MAU value is represented as upper front limb for *Ovis/ Capra* (30.5). The Bronze Age display different frequencies of each species, the most common element for Capra (8) and Ovis (21.5) is the lower hind limb, whereas elements of upper front limb (25) is the most commonly represented for Ovis/Capra. The MAU values indicate that the frequencies of bones of the feet high for three species in Chalcolithic Period. The anatomical groups of elements show low value in Iron Age, however, the feet and lower front limbs are relatively well-represented group in this period.



	CHCLTH	MCA	MBA	LBA	MBA-LBA	EIA	MIA	MEDIEVAL	HELL-ROMA
Neck					3				
Axial								2	
Upper Front	0.5		1		10.5				0.5
Lower Front	1.5		1.5		21	0.5		0.5	
Upper Hind			1		3			0.5	
Lower Hind	1		1.5		12.8	0.5		1.5	
Feet	2.5	0.75	2.13	0.25	12.2	0.5		1.5	0.5
Metapodium					0.25	0.25			0.5

Figure III.15. MAU Values for Sheep



	CHCLTH	MCA	MBA	LBA	MBA-LBA	EIA	MIA	MEDIEVAL	HELL-ROMA
Neck	1				0.02				
Axial	6		0.05		1.16			0.03	
Upper Front		0.5	2	0.5	22.5	0.5	0.5	3.5	0.5
Lower Front	0.66		2	0.5	19	0.5	1.5	0.5	
Upper Hind	0.5		0.5		4.5			1	0.5
Lower Hind	3	0.5	0.5		7			3	0.625
Feet	3.5		0.625		9.87	1	1		
Metapodium	1.75		0.25		6			0.75	

Figure III.16. MAU Values for Sheep/Goat

III.3.1.1.1.2.3. Age Data for Sheep and Goat

III.3.1.1.1.2.3.1. Epiphyseal Fusion

Percentages of fused and unfused for sheep, goat and sheep/goat that were recovered from each phase at Salat Tepe are presented. The pattern shows in Figure.III.17, an overall decrease in the percentage of fused and unfused elements for sheep/ goat. The percentage of fused elements (74%) is generally higher than those of unfused elements (26%). Moreover, the highest numbers of fused and unfused sheep/goat bones are recovered at Bronze Age 51% and 15% respectively. A total number of 180 bone fragments were identified as *Capra*, and 213 as *Ovis*. Fused bones for Ovis are counted as 167 (78%) and the highest numbers of fused elements were detected in Bronze Age, (N: 117, 55%) (Figure.III.18). As for the number of goats, 130 (72%) bones were grouped as fused, the well-presented period is, once again Bronze Age for fused and unfused goat elements, 47%, 19% respectively (Figure.III.19).

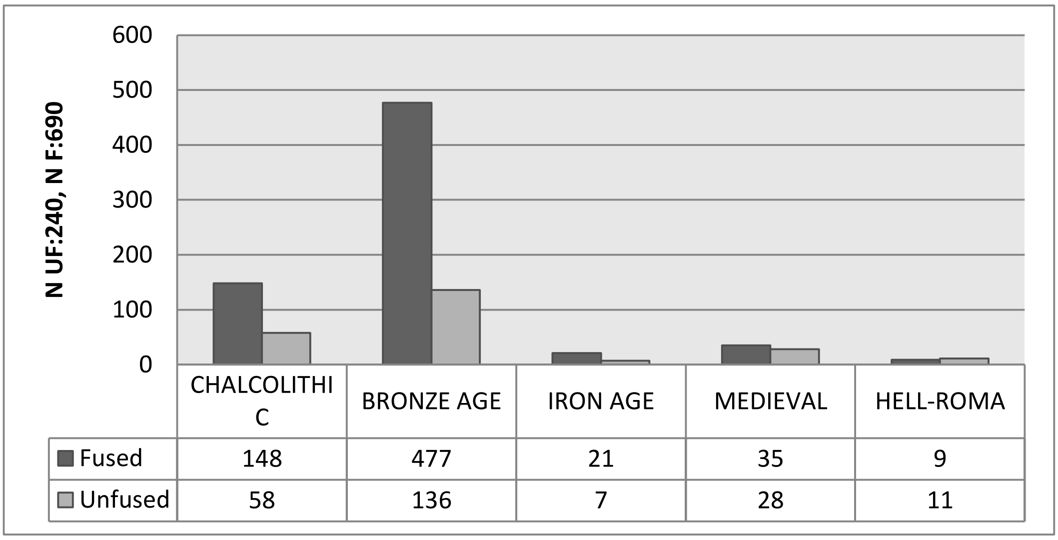


Figure III.17. The NISP Proportions of Fused/Unfused Bones for Sheep/Goat

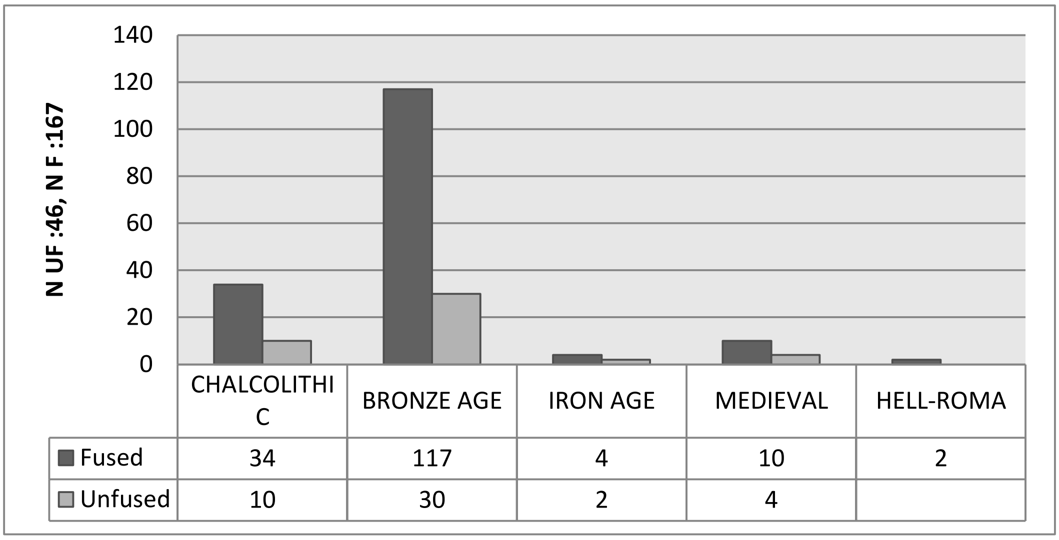


Figure III.18. The NISP proportions of Fused/Unfused Bones for Sheep

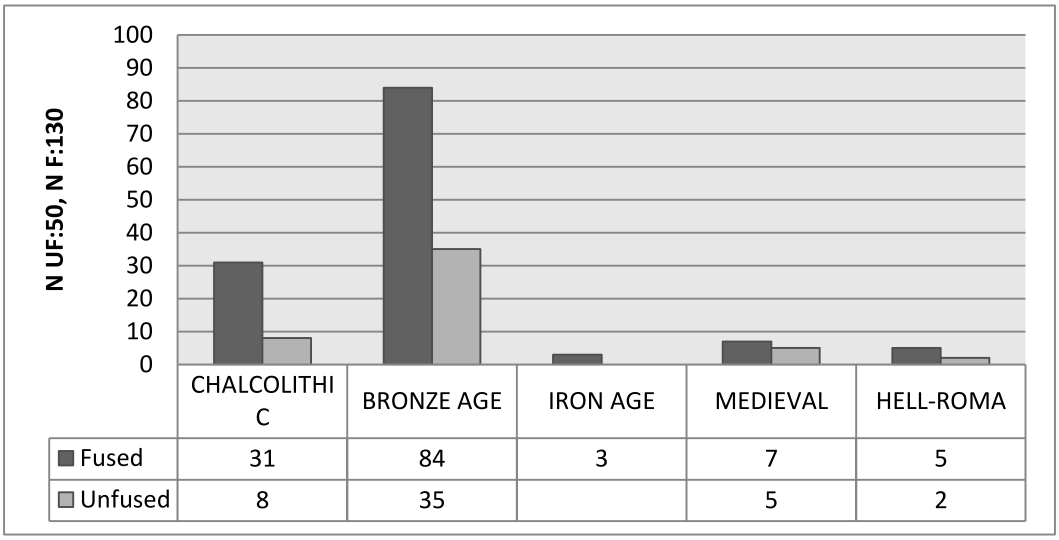


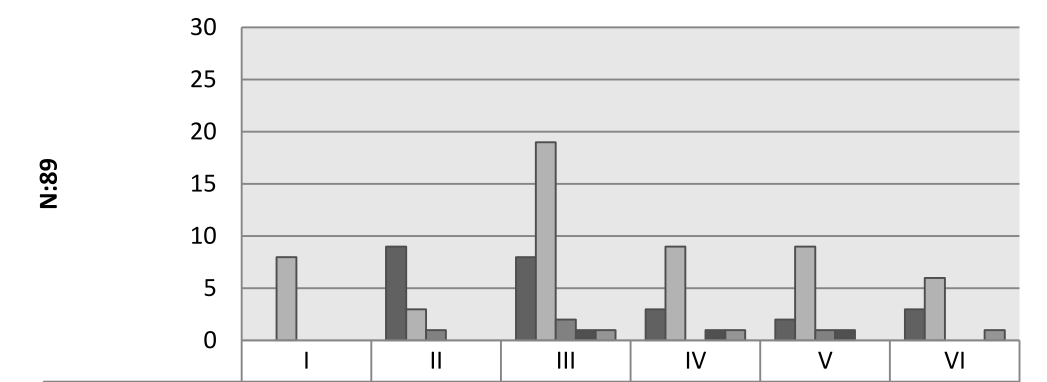
Figure III.19. The NISP proportions of Fused/Unfused Bones for Goat

The skeletal parts are parts ordered earliest to latest based on approximation by Zeder (2006) (Table.III.7). The estimated age range during which fusion takes place is showing, however, it should be remembered that a number of factors may influence the timing of epiphyseal fusion including, breeding and castration. The state of epiphyseal fusion was recorded for distal and proximal ends of long bones and for acetabulum. Because of poor preservation of diagnostic parts of elements, large numbers of sheep and goat bones are grouped as *"Ovis* or *Capra*". Thus, epiphyseal fusion data were derived for elements identified as sheep, goat and sheep/goat and included together to produce a single fusion value for all of the elements within any given age range. Distinct fusion data were created for each species as fused and unfused.

Table III.7. Relative Order of Long Bone Fusion for Ovicaprine (Zeder, 2006)

Fusion Stage	Skeletal Part	Fusion age (months)
I	Atlas prxRad	0-6
II	glScap disHum	6-12
	Pelvis	
III	prxph1 prxph2	12-18
IV	disTib disMtp	18-30
V	Calcaneum prxFem disFem disRad prxTib	30-48
VI	prxHum	>48

Figure.III.20 shows the percentage of animals' epiphyseal fusion stages, in order to evaluate this data only unfused animals bones were considered. Overall, the number of caprine unfused bones from the site represents 7% of the total assemblage. At Salat Tepe more caprine were living second and third stage (12-30 months, Juvenile), 49%, the survivorship was well represented in two periods; Bronze Age 25.8% and Chalcolithic Period; 19%. While (sub-adult) Stage V is represented 15%, adult member was 11%. Stage I (infant) is displayed the lowest percentage in all periods (9%), however, when compare group of Stages, the number of infant is not disregarded. The sheep and goat values indicate that a major kill-off took place between stages II (c.12 months) and IV (c.18 months), with survivorship values decrease for stage I, V and VI. According to, epiphyseal fusion data, it is likely that the caprines were killed at all age, however, it is seen that younger animals were more preferable.



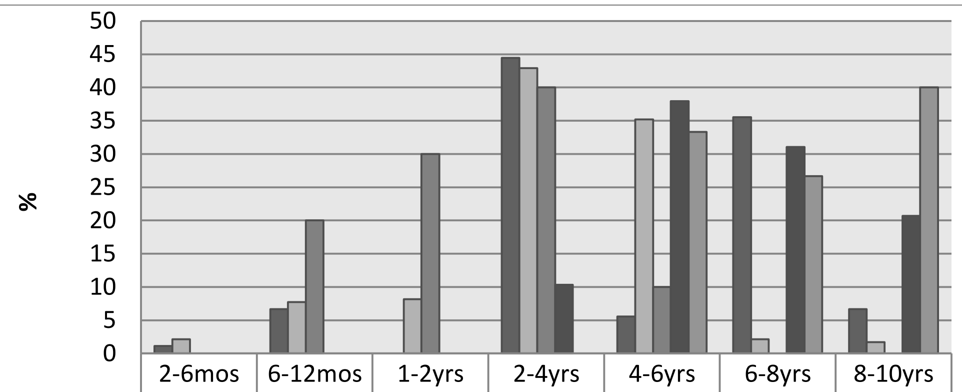
	I	II	III	IV	V	VI
CHALCOLITHIC		9	8	3	2	3
BRONZE AGE	8	3	19	9	9	6
IRON AGE		1	2		1	
MEDIEVAL			1	1	1	
HELLEN-ROMA			1	1		1

Figure III.20. Mortality data from epiphyseal for combine sheep, goat and sheep/goat from all levels of Salat Tepe

Mandibular sections and individual teeth were assigned to an age stage following Payne (1973). Survivorship data based on tooth wear are presented for combined sheep, goat and sheep/goat for Salat Tepe from mainly five periods in Figure.III.21. In each period, a substantial proportion of animals were slaughtered between 2-8 years of age; a period that includes sub-adulthood and middle adulthood. Sample sizes were not large enough in Iron Age and Hellenistic-Roman periods to show reliable kill-off patterns. In addition, the impact of preservation and recovery biases on the sample sizes remains a problem and may result in the under representation of very young animals. The pattern that there is a broad peak centered around 2-4 years of age but this differ in the size of peak at 2-6 and 8-10 which are relatively low for all periods.

Kill-off pattern for caprines based on tooth eruption and wear for Chalcolithic Period show that two peaks in the slaughter schedule, 2-4 (44 %) and 6-8 (36 %) years of age. However, relatively very few animals of 2-6 (1 %) years of age were recovered. These data show that kill-off was youngest in Bronze Age and became increasingly older through the Bronze Age teeth assemblages. The higher proportion of samples coming from animals at 2-4

(43 %) and 4-6 (35 %) years of age and the proportion of 2-6 (2 %) and older age 6-8 (2 %) years of age are very small for Bronze Age. The number of teeth sample is very small in Iron Age (N:10), however, the highest percentage at 2-4 (40%) years of age and no more of the caprines lived after 4-6 years of age. On the contrary, in Medieval and Hellenistic-Roman Periods caprines were not killed before the 2-4 years of age, the 38 % and 33 % of the animals survived into their 4-6 years of age. While, the older remains were not found in Iron Age in other words, most of the animals were slaughtered at younger age, old animals were preferred in Medieval and Hellenistic-Roman Periods. The ageing patterns in Salat Tepe suggest that the use of sheep and goats was probably a mixed strategy of exploiting milk, and meat.



	2-6mos	6-12mos	1-2yrs	2-4yrs	4-6yrs	6-8yrs	8-10yrs
Chalcolithic	1.1	6.7	0.0	44.4	5.6	35.6	6.7
Bronze Age	2.1	7.7	8.2	42.9	35.2	2.1	1.7
Iron Age	0	20	30	40	10	0	0
MEDIEVAL	0	0	0	10.3	37.9	31.0	20.7
HELL-ROMA	0	0	0	0	33.3	26.7	40

Figure III.21. Mortality Data from Teeth for Combine Sheep, Goat and Sheep/Goat from All Levels of Salat Tepe

III.3.1.1.1.2.4. Size

The breadth and depth dimensions of bones modern female and male *Capra aegagrus* and *Ovis orientalis* documented by Uerpmann and Uerpmann (1979) were used as standard. The mean of each figure is represented by a small black arrow. The position of the mean is affected by both the overall size range of the animals as well as the relative numbers of males and females in the sample. The results are shown in the Figure III.22 for sheep and Figure.III.23 for goats from Chalcolithic to Hellenistic-Roman Periods. The LSI values of measured sheep elements from four different periods, and interestingly, the analysis of metrical data suggests that the wild sheep, *O. orientalis*, was present at Salat Tepe. Nowadays, the distribution of the wild sheep is restrained to the Taurus and Zagros mountains; its presence further southwards, in the plains of Syria (Cavallo, 1996:485). The use of LSI method to show the changes of animal size, and has several restraints; one of these limiting factors is sex and age distribution within the studied sample (Zeder, 2001:67). It seems that there are still exist some larger specimens in three (except Iron Age) periods at our site.

Beginning with the sheep, the mean values for Bronze and Iron Ages located to the left of the zero line, however, in Chalcolithic and Medieval Period mean value placed to the right side of the zero line. In addition, a greater proportion of the breadth LSI values and all of the length values are smaller than the standard animal. This indicates that the specimens are predominantly domestic sheep. Sixteen specimens with LSI values slightly larger than the standard, ranging between 0.01-0.06, may indicate either small wild females or domestic males in the assemblage. Both the male and female sheep in Bronze Age were larger than those in Chalcolithic Period, and that the larger wild animals are more abundant in Bronze Age. Moreover, it might be related to changes in management practices within the domestic population resulting from an increase in the proportion of adult males. The size of sheep increases in earlier periods, however, shows sharp decrease in the following Iron Age. The drastic changing in size during those periods might be due to the small sample size. The two particularly large LSI values (ranging 0.05-0.06) recorded for sheep in Medieval Period may indicate the presence of large males. The limited number of measurable sample in the Iron and Medieval Ages so, which precludes a reasonable interpretations.

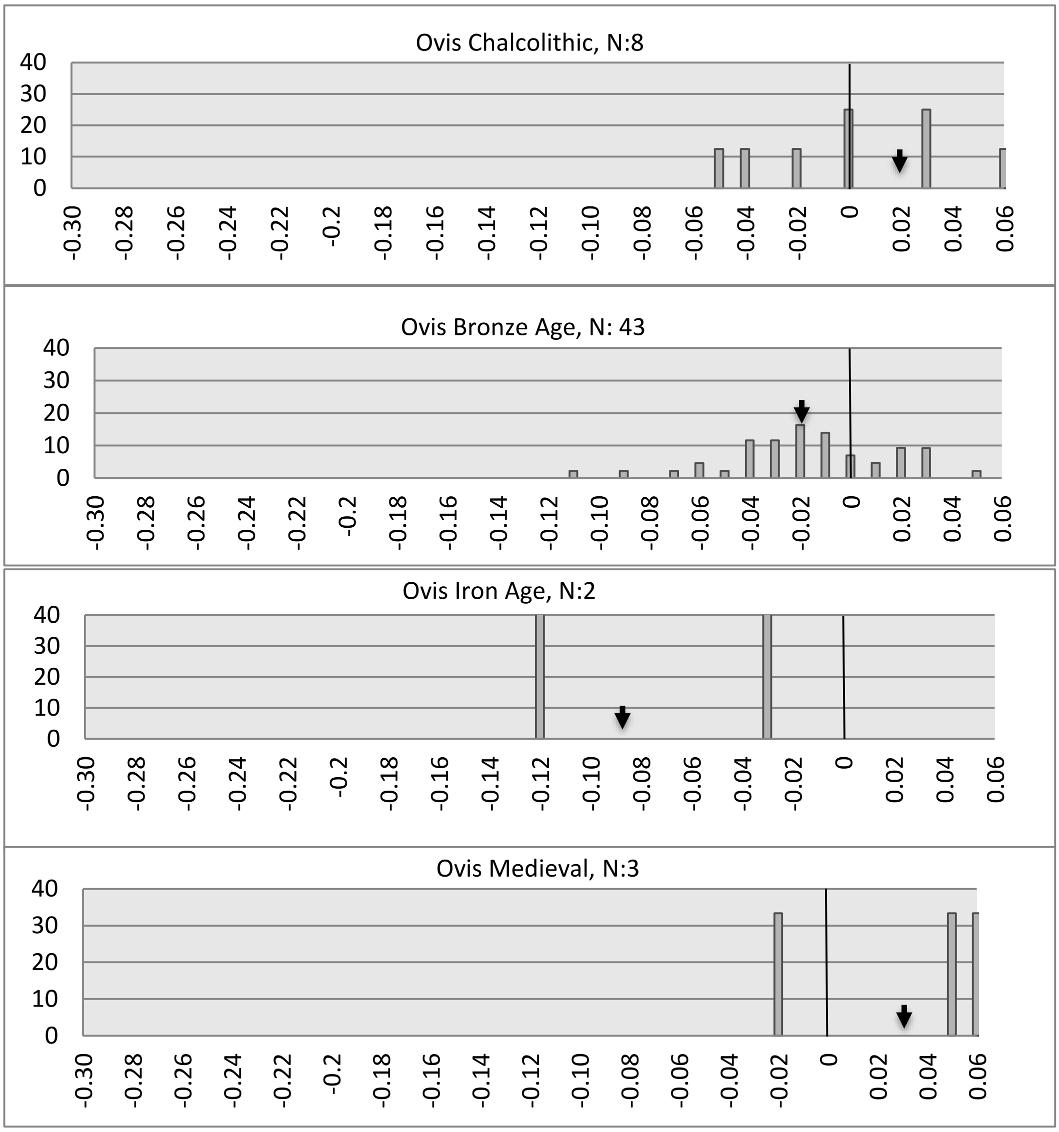


Figure III.22. Histograms show the size index distribution for Ovis from Salat Tepe. The arrow indicates mean values. *Ovis orientalis* standard is a female from Iran (Uerpmann and Uerpmann, 1994:431) (for standard measurements see Appendix-2)

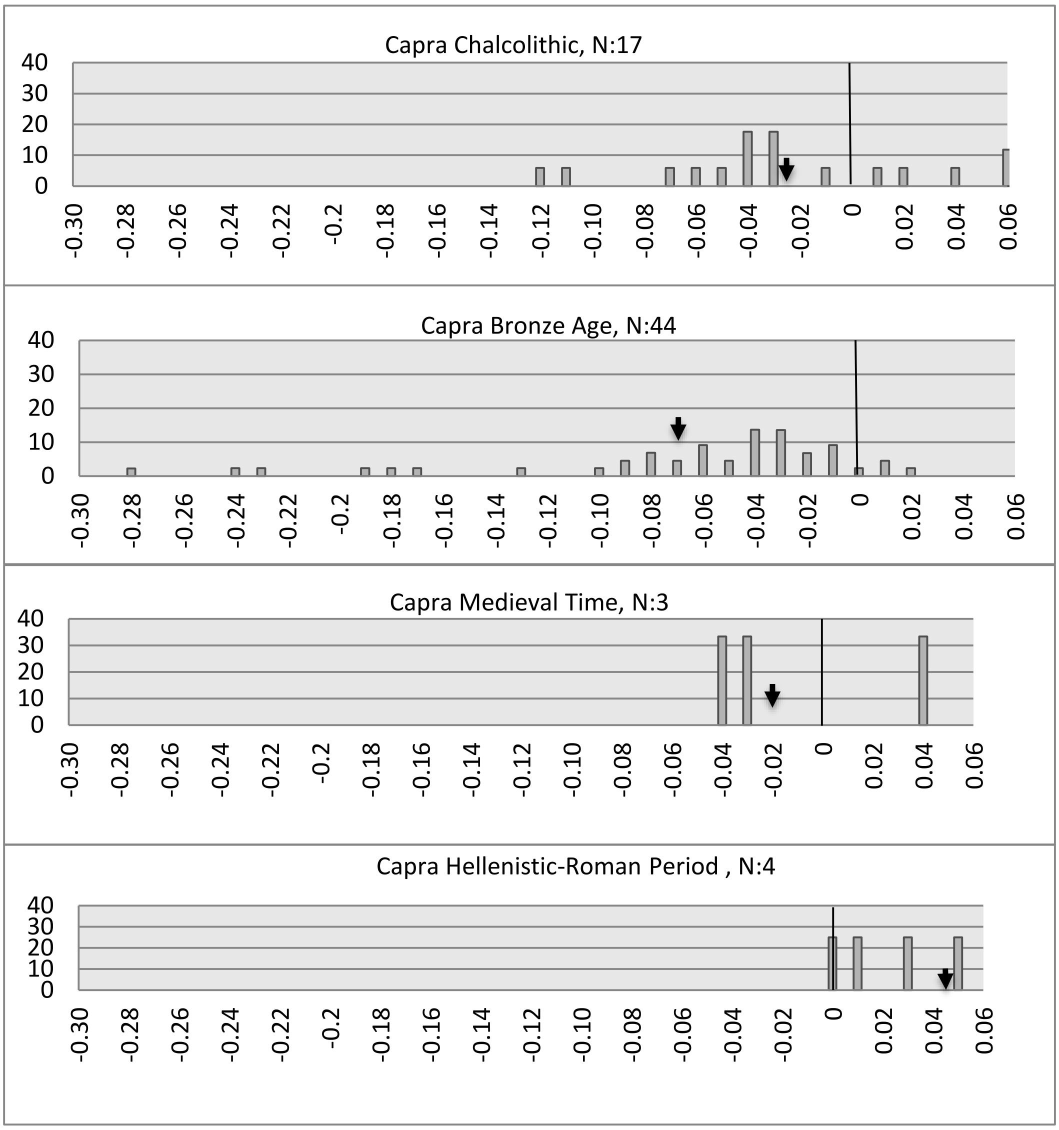


Figure III.23. Histograms show the size index distribution for Capra from Salat Tepe. The arrow indicates mean values. *Capra aegagrus* standard is the mean between male and from the Taurus Mountains (Uerpmann and Uerpmann, 1994:435) (for standard measurements see Appendix-2)

Goats exhibit more sexual dimorphism than sheep making it possible to determine the sex of an animal from metric data or at least decide the relative numbers of males and females from a collection of measurements (Zeder, 2001:72). The measurements of the goat bones included in the LSI analysis; demonstrate that size increased in Chalcolithic and Hellenistic-Roman Periods. Five specimens, with LSI values larger than the standard in Chalcolithic Period were observed. Although the sample sizes are small, the average LSI value for goats from Chalcolithic is larger than those from Bronze and Medieval Periods. The size indices show continues distribution in Bronze Ages, so they cannot be identified as wild goats. The smallest specimen in Bronze Age with an LSI value of -0.28 was found. The ranges of LSI values for goat in the Hellenistic-Roman Period are presented in Figure.III.23. Worth noting are the only large specimens (obtained 3 skeletal elements) with LSI values at 0.01, 0.03 and 0.05. These specimens are only larger than the standard animal in size and this likely represent existence of wild female goat or adult male. Overall, the interpretation should be with caution because of small sample sizes except for Bronze Age, the orientation predominantly of the left-hand side of the standard value indicates that few adult male goats were recovered from the site.

III.3.1.1.1.3. Suidae

III.3.1.1.1.3.1. Pigs (*Sus scrofa/Sus scrofa domesticus*)

Contrary to other ungulates, the wild boar has maintained mild Eurasia from the Atlantic to the Pacific coast. With distinct subspecies, *Sus scrofa* is also a member of the fauna of tropical Asia. The wild boar still one of the most common animals of the Middle East. It is mostly inhabited all over Turkey and northern and western Iran, especially in forested areas long coasts of the Black and Caspian seas (Uerpmann, 1987:41). It is common for both wild and domestic pigs to be found at sites, because pigs are economic sources of meat; they have a fast reproduction and growth cycle, they have a large number of young breed and their meat is mostly high in caloric value (Zeder, 1991:30). Zeder (1985:84-85; 1991:30-32) suggests several arguments for why large scale pig production is not more common in Near East and explained conditions where pigs would be raised. A primary problem with raising pigs in a relatively arid environment, pigs must be permanently supplied with water. Another problem with raising pigs is that they cannot digest cellulose-rich pasture plant, thus they must be need intensive care from herders than sheep and goats require (Zeder, 1991:32). Researches show that in the Near East, urban households generally raise pigs on a small scale provide supplementary meat for the family. While, pigs are commonly found at larger, urban settlements, they are less frequently found at neighboring rural sites. According to Zeder, pigs are rarely found in public or temple areas, they are commonly associated with household refuse (Zeder, 1985:85). Zeder (1991:31-32) also pointed that pig management related with the political situation of the country was in change and little central power was instituted. Moreover, large scale pig management would needed higher degree of specialization and organization for production of pigs. Furthermore, pigs are secondly most important animals in Salat Tepe. A total of 559 (20%) animal bones were identified as pig from the site. While 36 (7%), number of pig remains identified as *Sus scrofa*, 78 (13%) of bone fragments grouped as *Sus domesticus*. The number of wild boar indicates that, they were occasionally hunted in the region and consumed at Salat Tepe especially in the Bronze Age.

Bronze Age (63%) was characterized by a relatively high proportion of pigs compared to other periods at Salat Tepe. As for the sample, after Bronze Age, the proportions of pig assemblage are declined. This ratio is the lesser for medieval period (1.4%) within all periods (Figure III.24).

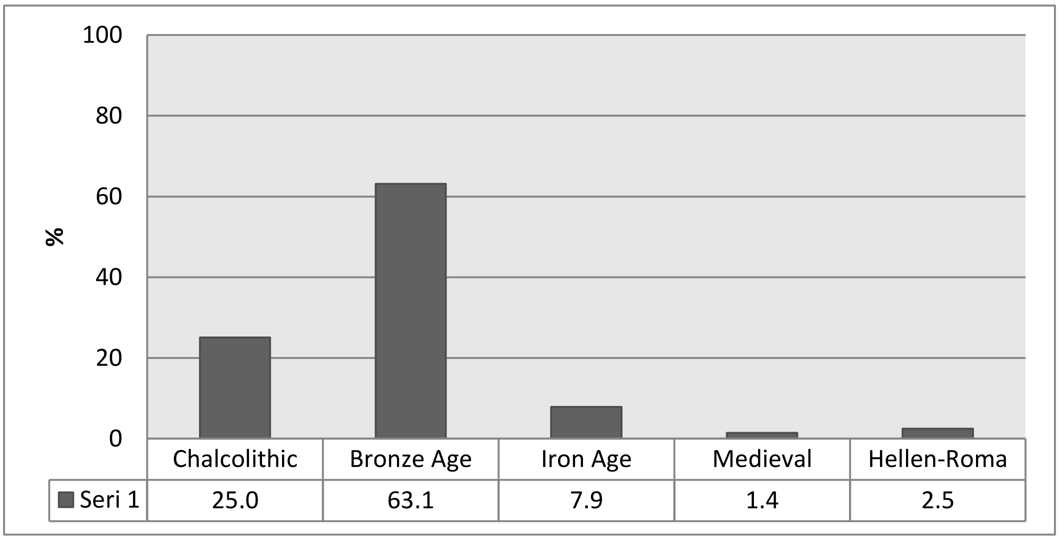
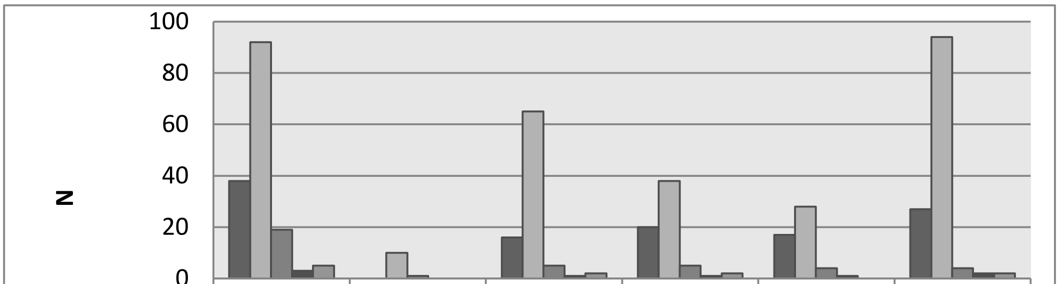


Figure III.24. The proportion of pigs for all periods (NISP)

III.3.1.1.1.3.1.1. Pigs Skeletal Part Representation

Skeletal part representation for pigs presented in Figure III.25. A total of 502 bone remains of pig were recorded for developing skeletal part representation. In terms of specific elements, the head and teeth are the highest representation of skeletal parts, 31% (N: 157) and 26% (N: 129) respectively, with other elements being less well represented in the whole collections. There is also a tendency for forelimb (17.7%) and hind limb (13%) bones to be relatively more abundant than feet and axial bones. The ratio of feet elements (10%) in each level demonstrate low value, the result from the recovery condition, which concluded that differential loss of the phalanges due to recovery bias was highest for this anatomical group. Based on anatomical region axial (atlas, axis, vertebra and pelvis) parts are poorly represented in all levels. The highest proportion of elements belong to head fragments, this situation can be explained fragmentation. There is an over representation of skull bones. This could be partially attributed to the fact that *Sus* teeth and skull fragments are both robust and highly identifiable, but is a very high percentage. It indicated differential access to both limb meat and cranium and a potential culinary preference for suid brain and tongue. For pigs, elements from each anatomical region are observed in the skeletal part distribution, which proposes that pigs were butchered and consumed at the site.

Most of skeletal elements of pig, from Bronze Age contexts (65%) are either head (28%) or teeth (29%) elements. The less represented elements are feet (8%) and axial (3%) bones in this level. Almost all parts of skeletal elements are well represented in Chalcolithic period, except axial bones. The axial elements group was not observed in this period. On the whole, forelimb elements exhibit a higher representation than do hind limb elements, with the exception of the Chalcolithic Period.

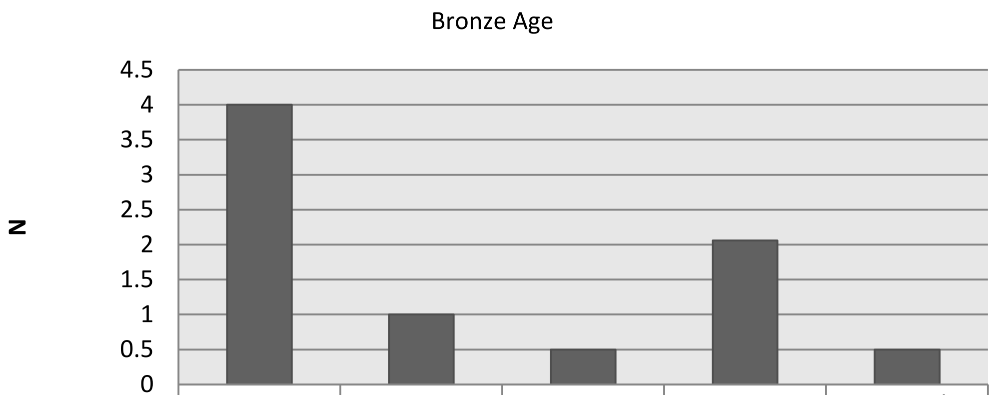


	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET	TEETH
Chalcolithic	38		16	20	17	27
Bronze Age	92	10	65	38	28	94
Iron Age	19	1	5	5	4	4
Medieval	3		1	1	1	2
Hellen-Roma	5		2	2		2

Figure III.25. NISP representation of skeletal elements for Pigs in all periods

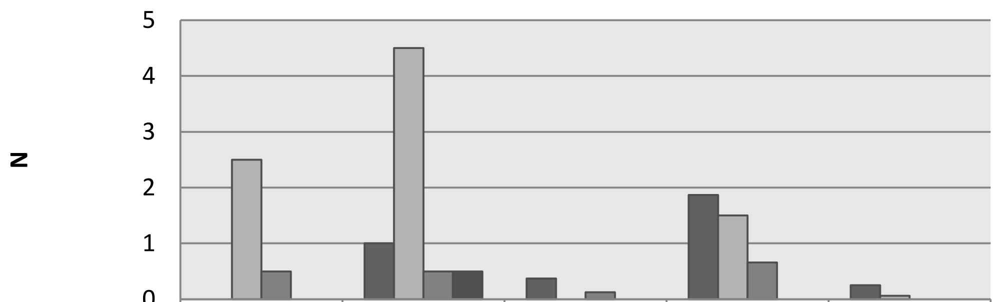
III.3.1.1.1.3.1.2. MAU for Pig

In Figures.III.26, 27 and 28 the standardized MNE values for the anatomical regions is presented for *Sus scrofa, Sus domesticus and Sus sp.* These data indicates that the elements of feet for *Sus scrofa* 2.3, *for Sus domesticus* 6.5 and for *Sus sp*. 16 are over represented, whereas those of the axial skeleton for Sus sp., 0.1 and feet for *Sus domesticus* 6.5 and *Sus scrofa* 0.5, are under-represented. When we focus on overall patterning of MAU values, the Bronze Age 45.5 exhibits the highest representation of skeletal parts. In terms of specific elements, axial skeleton and feet bones are poorly represented in all levels. In contrast, upper front-limbs are very well represented in all phase, especially the value of this elements in Bronze Age 11.5, is reasonably higher than other levels. In Bronze Age metapodium are strongly under-presented for three species. Chalcolithic Period is consisted with 12.4 total number of each specimens of elements. In this period include higher proportion of upper front limb elements (4), but lower proportions of metapodials (0.8). Wild pigs are not found at site during Chalcolithic Period. In fact, when pigs were utilized in the region during both Iron and Medieval Periods they were domestic, and wild boar played little role in the life of the population living at sites. Relative to the composition of the total assemblage, Medieval and Hellenistic-Roman Periods include lower proportion of elements, 1.3 and 2.1 respectively.



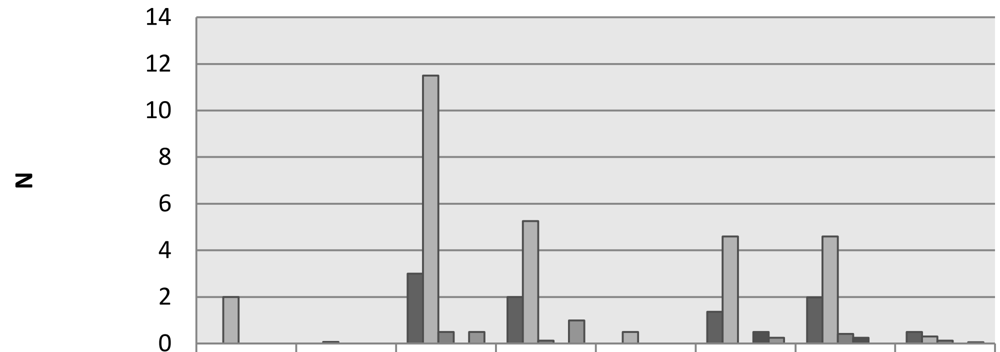
	Upper Front	Lower Front	Lower Hind	Feet	Metapodiu m
Bronze Age	4	1	0.5	2.1	0.5

Figure III.26. MAU Value for *Sus scrofa*



	Upper Front	Lower Front	Lower Hind	Feet	Metapodium
Chalcolithic		1	0.4	1.9	0.3
Bronze Age	2.5	4.5		1.5	0.1
Iron Age	0.5	0.5	0.1	0.7	
Medieval		0.5			

Figure III.27. MAU value for *Sus scrofa domesticus*



	Neck	Axial	Upper Front	Lower Front	Upper Hind	Lower Hind	Feet	Metap odium
Chalcolithic			3	2		1.4	2.0	0.5
Bronze Age	2	0.1	11.5	5.3	0.5	4.6	4.6	0.3
Iron Age			0.5	0.13			0.4	0.1
Medieval						0.5	0.25	
Hellen-Roma			0.5	1		0.3		0.1

Figure III.28. MAU Value for *Sus sp*

III.3.1.1.1.3.1.3. Age Data for Pig

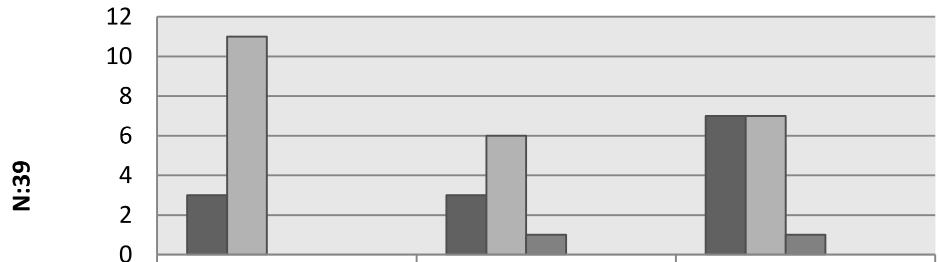
III.3.1.1.1.3.1.3.1. Epiphyseal Fusion

The approximate age at death of pigs are determined from the eruption and wear of teeth (Grant, 1982) and survivorship data is evaluated from state of epiphyseal fusion (Silver, 1969). Epiphyseal fusion data were developed for elements identified as *Sus scrofa, Sus domesticus* and *Sus sp*. and added together to produce a single fusion value for all of elements. Figure III.29 shows that the epiphyseal fusion data from the sample of pig bones where fusion could be recorded (N: 39), using data for domestic pigs from Silver (1969). The estimated age range divided into three stages, according to skeletal elements. Stage I (< 1 years) corresponds infant and juvenile, Stage II (< 2 years) sub-adult, and Stage III (< 3.5 years) adulthood. Table.III.8 demonstrate the skeletal parts applied for each group. The pattern presented in Figure.III.29 shown an overall elements centered Chalcolithic, Bronze and Iron Ages, unfused samples are not observed for the other periods. Separate fusion data were produced for Salat Tepe Chalcolithic period, 23%, of specimens survived Stage I (< 1 years) and Stage II (< 2 years), and 54%

survived the Stage III (< 3.5 years). In Bronze Age, the higher percentage survived of Stage I, 46%, but lower percentage survived of Stage II and Stage III, 25% and 29% respectively. One distal and one proximal tibia, were recovered from Iron Age to show an age profile based on epiphyseal fusion. There is little clear evidence in this period, to represent kill-off pattern for pig in Iron Age. However, those elements were staged as II and III for Iron Age.

Table III.8. Sequence of epiphyseal fusion for pig

Stage I (< 1 years)	Stage II (< 2 years)	Stage III (< 3.5 years)
Pelvis (acetabulum)	Distal Metapodials	Distal Radius
Distal Humerus	Distal Tibia	Prox./Dist. Ulna
Proximal Radius	Calcaneum	Prox./Dist. Femur
Proximal Phalanx 2	-	Proximal Tibia

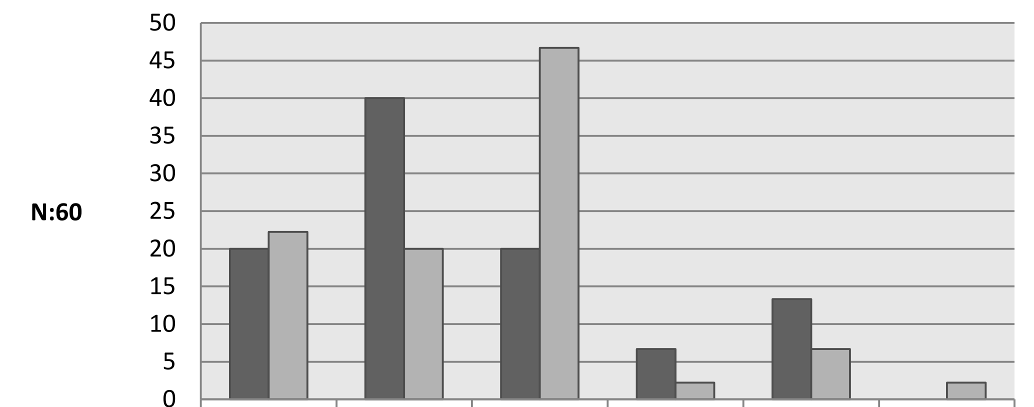


	Stage I	Stage II	Stage III
CHALCOLITHIC	3	3	7
BRONZE AGE	11	6	7
IRON AGE	0	1	1
MEDIEVAL	0	0	0
HELLEN-ROMA	0	0	0

Figure III.29. Long bone and pelvis (acetabulum) fusion for pig

Although sample sizes are small, species specific survivorship generated from epiphyseal fusion indicate that in Chalcolithic, Bronze and Iron Age pig's kill-off was focused on both adult (39%) and young/juvenile (36%). Survivorship drops slightly from 26% for sub-adults.

The ageing data suggest that half of pigs were killed before the end of their first year of life while the rest were killed around third year of life, however sample size must be viewed with caution. Tooth eruption and wear data could be evaluated for two periods; Chalcolithic and Bronze Age. There is only one dP4 recovered from Hellenistic-Roman Period, this is aged as juvenile. In Chalcolithic period, the majority of animals were slaughtered in younger age, 40% (0-12 months/infant). Survivorship data for pig indicate that consistently younger kill-off in subsequent wear stages. Mortality data in Figure III.30 shows that a much higher proportion of pig were killed in 12-16 months (sub-adult) (47%) in Bronze Age, whereas, the majority of animals were killed during their the earliest stages (40%) in Chalcolithic Period. Kill-off is pointed out relatively early in our materials for Bronze and Chalcolithic Periods. About 60% animals are grouped as an infant in two periods. Because pigs commonly offer a high calorie of meat, those high amounts of new born samples might be related with ritualistic activity. A much smaller percentage of animals, survived well into adult age. This mortality pattern suggests that animals were killed before reaching full maturity.



	New born	0-12 months	12-16 months	16-24 months	24-36 months	>36 months
Chalcolithic	20	40	20	7	13	
Bronze Age	22.2	20.0	46.7	2.2	6.7	2.2

Figure III.30. Show the distribution of tooth wear stages for pigs from Salat Tepe

III.3.1.1.1.3.1.4. Size

Measurements of the pig remains from Salat Tepe were compared to those of ‘standard animals’, using the ‘log size index’ method. The measurements of a female wild boar from Elazığ (Turkey) have been used as the standard (Appendix-2).

This modern female *Sus scrofa* is located in the Zoology Museum of Harvard University, and measurements published by H. Hongo (1998, 2000). Log measurements from Salat Tepe compared to the wild boar standard are shown in Figure.III.31. Too few number of measurable pig bones recovered (N: 17). Due to the limited number of bones measured, a detailed size profile cannot be constructed. However, it is clear that most specimens fall to the left of the zero line, which indicates the predominance of domestic pigs in the sample. There are few large specimens among the samples from our site. The single largest specimens with an LSI value 0.12 in Chalcolithic Period, may represent either a domestic male or wild female boar. The smallest specimen occur in Bronze age LSI value -0.25. Therefore, the large individuals present in the samples in all periods, it is possible that wild boar were occasionally hunted at the site and consumed, but there is no evidence of their existence in the faunal remains found. Unlike other major domestic animals, the size of pigs elements approximately the same throughout the periods, except for an increase in Chalcolithic Period.

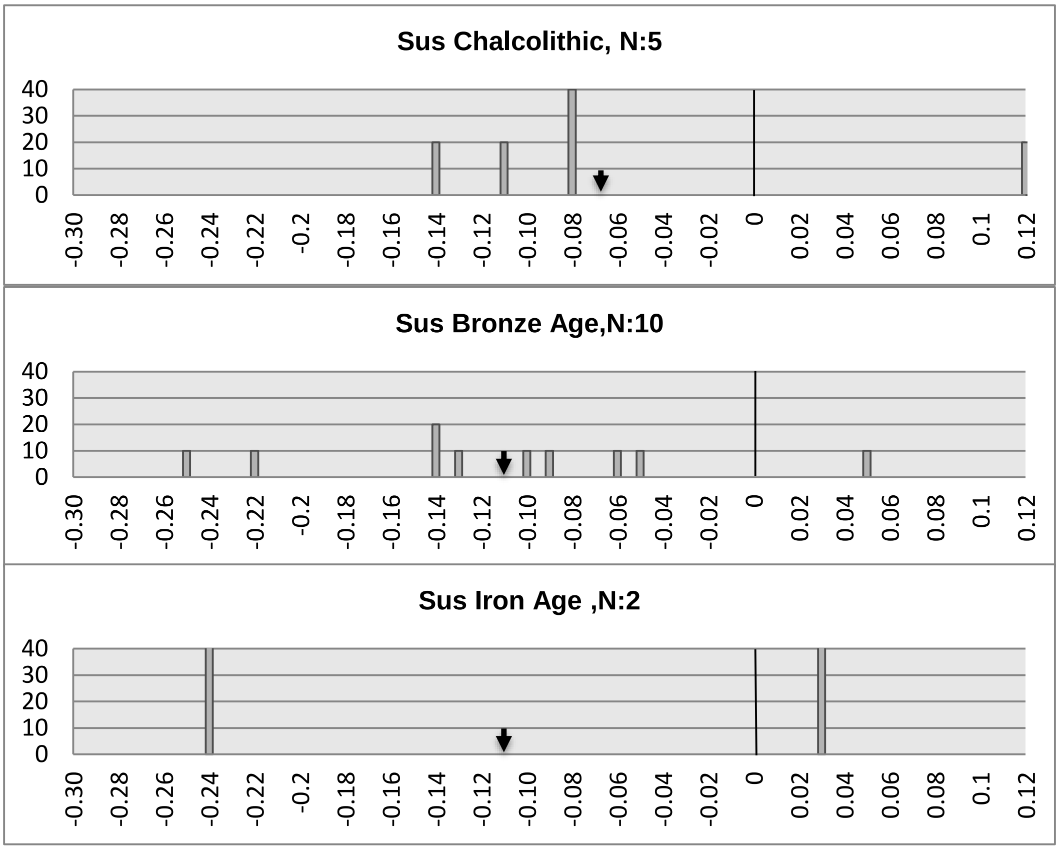


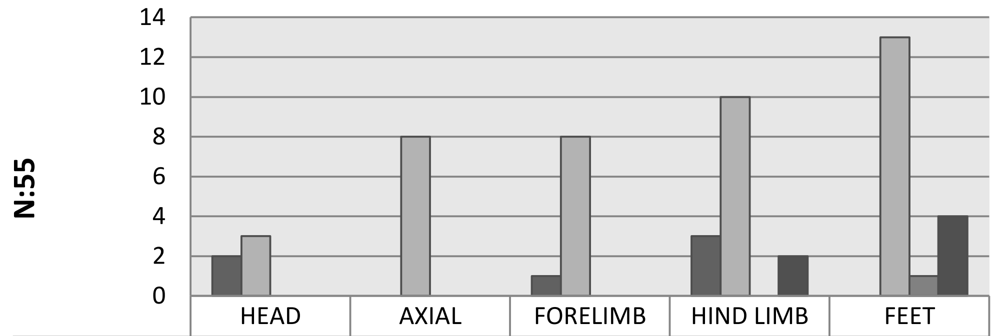
Figure III.31. Histogram is showing the Distribution of LSI Values for Pigs from Salat Tepe. The Arrow Indicates the Location of The Mean Value. The Measurements of a Wild Pig from Elazığ are used as the Standard (Hongo, 1998 and 2000).

III.3.2 Domestic Mammals

III.3.2.1. Dog (*Canis familiaris*)

III.3.2.1.1. *Canis familiaris* Skeletal Representation

A total of 55 bones have been identified as dog (*C. familiaris*), represent only 2 percent of total NISP. Most of the dog remains from site, are feet fragments (33%) (Figure.III.32). Hind limbs (27%) are also often found. The skeletal part representation figure III.39, indicates that forelimb (16%), head (9%) and axial (15%) skeletal elements show low value within whole dog collection. All anatomic region of skeletal elements were represented, except teeth samples. There is no individual teeth evidence observed in the assemblage. Each of skeletal elements are very well-represented in Bronze Age (76%). Elements in the head (7%) exhibit a fairly low representation in this period, however feet (31%) and hind limb (24%) reveal a high representation overall. Only six skeletal elements were recovered from both Chalcolithic and Hellenistic-Roman Periods. While the number of hind limb (N: 3) samples high in Chalcolithic, feet (N: 4) demonstrate slightly higher occurrence into Hellenistic-Roman Periods. A single distal metacarpal was recovered from the Iron Age.



	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET
Chalcolithic	2		1	3	
Bronze Age	3	8	8	10	13
Iron Age					1
Hellen-Roma				2	4

Figure III.32. Skeletal elements distribution for *Canis familiaris*

III.3.2.1.2. Age Data for *Canis familiaris*

A total of seven mandible fragments and maxillary teeth remains were recovered from Salat Tepe. There are three maxillary teeth were identified as two (one is left/one is right) M^1, and one left P^4. Two right mandibles and two left mandible were observed in the assemblages, the number of mandible derive from two individuals. According to the dental sequence on the mandibles, the dogs were adult when they died as there were only permanent teeth observed. Table.III.9 shows the epiphyseal fusion data from the small sample of dog bones where fusion could be recorded (N: 48). Bronze Age exhibit a sharp increase in survivorship both fused and unfused elements. The

Bronze Age has a considerably larger sample of fusion data compared to the other periods so, survivorship was clustered around this period. Only fused elements were observed in other periods (Figure.III.33).

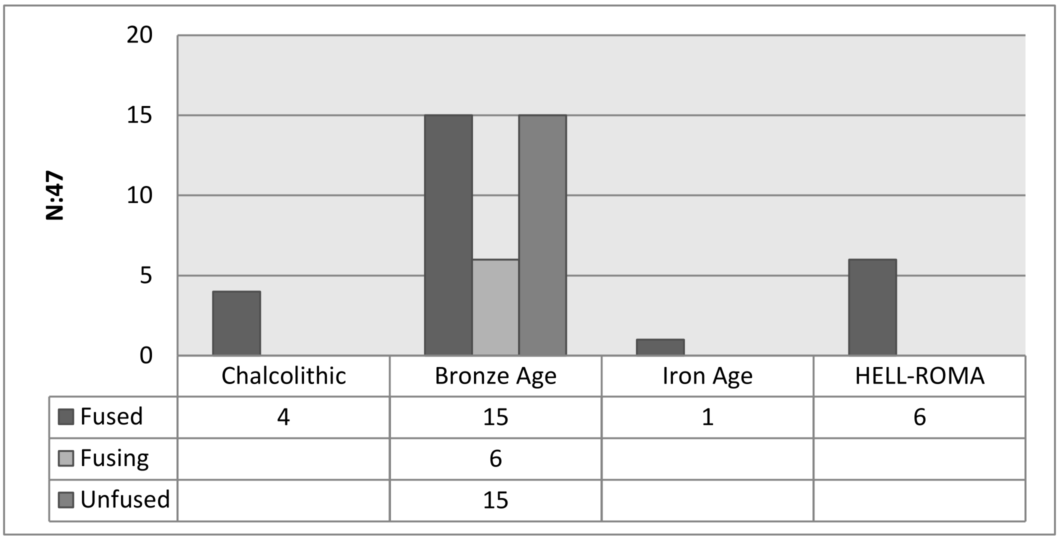


Figure III.33. Distribution of Fused/Unfused and Fusing Dog Bones for Each Period

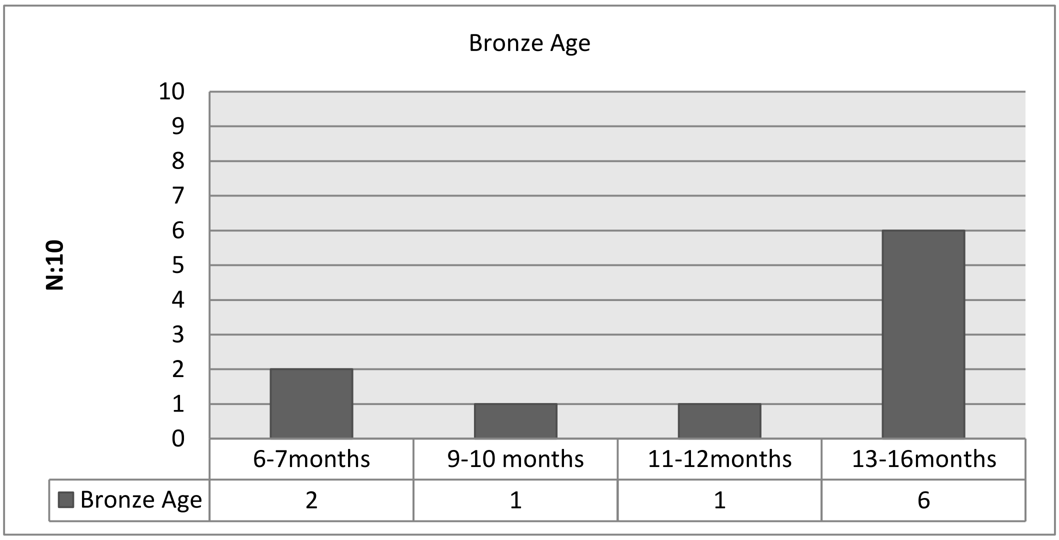


Figure III.34. Dog Epiphyseal Fusion Sequence (NISP)

The dog skeleton is well represented by the major phalanges, several vertebrae and long bones. The dog was an over 18 months of age at the time its death as all limb bones were fully fused (Silver,1969).Very few elements were unfused in limb bones and great majority animals appear to have lived over 18 month of age (Figure.III.34). The fusion stage of post cranial elements indicate that, the number of fused elements (N: 28) are twice as unfused samples (N: 14). Six elements associated with fusing stage. The most frequently encountered elements were phalanges (N: 12) in this assemblage. Ten post-cranial (except pelvis and axial skeletons) unfused bones can be grouped, according to fusion stage given in Silver (1969), and all of unfused elements were found in Bronze Age. 60 % of dogs survived to be over 16 months of age and 20 % of dogs survived to beyond 6-7 months and 10 % suggests that the dogs died when it was approximately 9-12 months. Based on epiphyseal fusion and tooth samples, the Salat Tepe data, indicate that the most of the animals were assumed as an adult. However, the amount of very young animals cannot be disregarded.

Table III.9. The epiphyseal fusion data from dog's post cranial elements.

Elements	Unfused	Fusing	Fused
Axis			1
Sacral Vert.	1		1
Caudal Vert.			2
Scapula	2		
Humerus	2		1
Radius	1		1
Ulna	1		1
Femur	1	1	
Tibia	1	1	1
Fibula			1
Pelvis	2		1
Astragalus		1	2
Calcaneum	3		1
Metatarsal			2
Metacarpal			4
Phalanges		3	9
Total	14	6	28

III.3.3. Wild Mammals

III.3.3.1.Cervidae

Historic examples of the attribution of social and/or religious significance to deer include: Medieval Britain where the king owned the deer in his forests and consumption of the animal was restricted. Thus, as a wild, hunted animal deer have the potential to act as significant of social or economic difference (Rackham, 1986:125).

III.3.3.1.1. *Red Deer (Cervus elaphus)*

The prehistoric remains of red deer are found at most sites in Turkey and in western and northern Iran. It is reported that red deer did not occur in the lowlands along riverine forest of Mesopotamia. Little is known about the size of the red deer from sites on the Euphrates (Uerpmann, 1987:64). A total number of 128 (5 %) red deer remains have been recovered from Salat Tepe. 21 further fragments were identified as Cervid but could not be assigned to a more specific level. Those samples were that overlapped with the large red deer (*Cervus elaphus*), so they are added into red deer group. Most of the red deer remains were recovered from Bronze Age (86%). For the other periods, the percentage value of deer is relatively small (Figure.III.35).

III.3.3.1.1.1. Red deer Skeletal Representation

Skeletal part frequencies for deer at Salat Tepe are presented in Figure.III.36. The skeletal elements were again grouped by anatomical regions. These data exhibit that forelimb (N: 41, 29%) are the most common skeletal elements recovered in the assemblage, followed by feet (N: 32, 23%), hind limb (N: 23, 16%), horn (N: 17, 12%) and teeth (N: 16, 11%). Head (N: 10, 7%) elements are highly under-represented compare to other anatomical group of elements. Elements in axial (N: 4, 3%) group exhibit a fairly low representation. The most of the red deer elements were found in Bronze Age (89%). The forelimb elements are very well represented, whereas the axial skeleton are generally under-presented in this period. Large, sometimes complete red deer antlers are found in Iron and Bronze Age periods. Although there are no worked antler samples recovered in assemblages, the existence of phalanges and horn/antler pointed out possible trade activity. The values of skeletal elements very low for the other periods, while only one calcaneum has been identified in Chalcolithic period, Hellenistic-Roman and Medieval periods are represented only two samples deer bones for each of them. These data indicate that there are differences in skeletal part composition within periods, characterized by low frequencies of axial and head bones elements, and high frequencies of forelimb and feet bones. Although, sample sizes are very small (except Bronze Age), those periods are showed different element distribution. The slightly higher representation of foot remains may be a result of butchery practices, or may be the result of the deposit having been sealed in pit giving dogs little time to remove elements from the archaeological record.

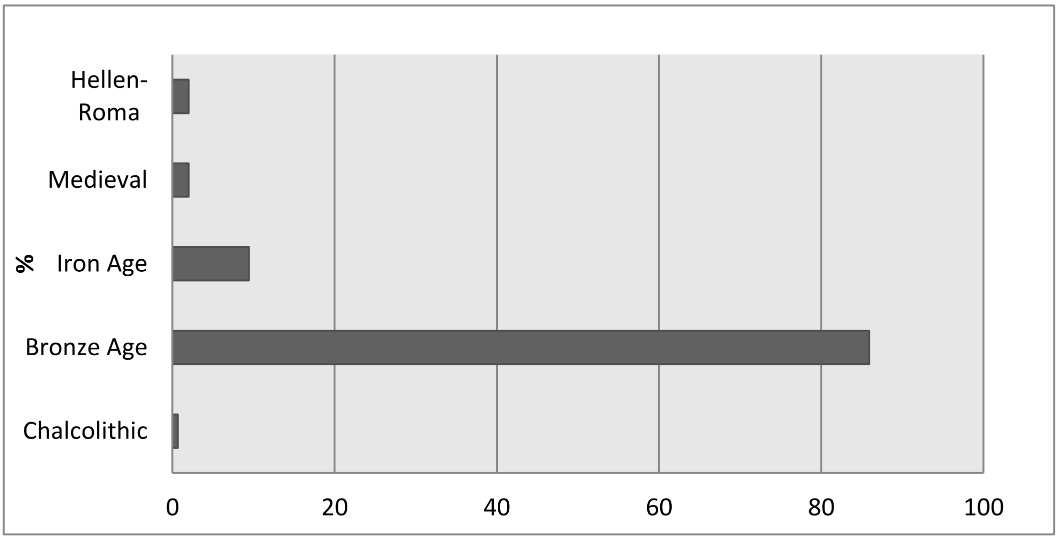
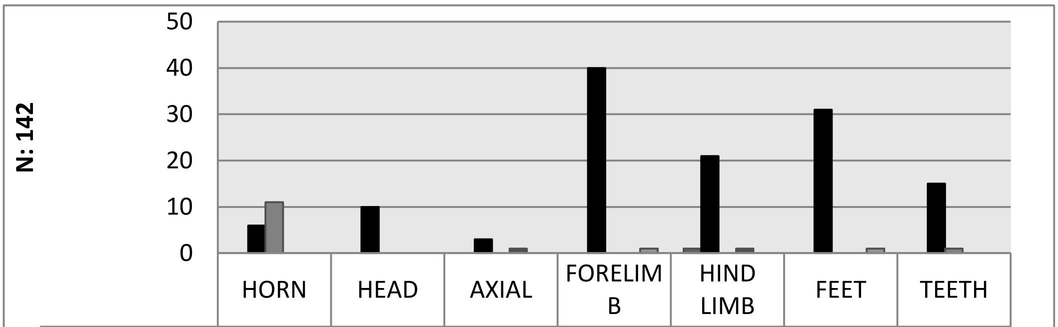


Figure III.35. Percentage of Cervid Bones for All Periods

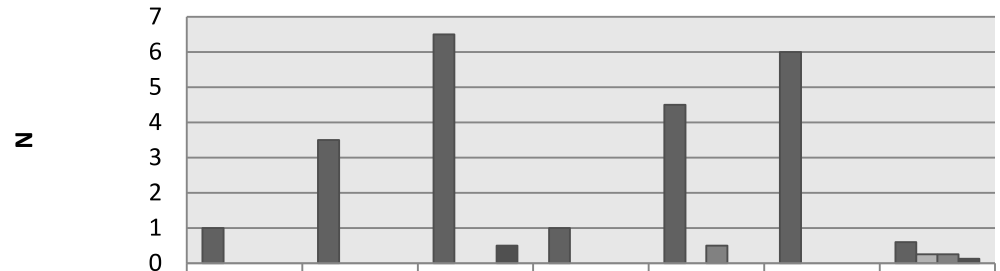


	HORN	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET	TEETH
Chalcolithic					1		
Bronze Age	6	10	3	40	21	31	15
Iron Age	11						1
Medieval			1		1		
Hellen-Roma				1		1	

Figure III.36. NISP Representation of Skeletal Elements for Red Deer in All Periods

III.2.3.1.1.2. MAU for Red deer

The MAU values of cervids for the entire Salat Tepe assemblages are presented in Figure.III.37. As mentioned in previous chapter, skeletal elements were grouped into seven anatomical regions and standardized based on the expected frequency of skeletal elements in a complete carcass. The data indicate that the elements lower front limbs (7) and feet (6) are over-represented, whereas axial skeleton (1), upper hind (1) and metapodium (1.2) are under-represented in all periods. In support of these findings, previous skeletal representation study from the Bronze Age demonstrates the also higher occurrence of red deer bone remains. Bronze Age occurred with 23.1 total number of each anatomical elements. In this period consist higher proportion of lower front limb elements (6.5) but metapodium (0.6) represented poorly. In addition, all anatomical regions are fairly small represented for the rest of periods. These data might propose that red deer were more frequently hunted in Bronze Age period.



	Axial	Upper Front	Lower Front	Upper Hind	Lower Hind	Feet	Metapod ium
Bronze Age	1	3.5	6.5	1	4.5	6.0	0.6
Iron Age							0.3
MEDIEVAL					0.5		0.3
HELL-ROMA			0.5				0.13

Figure III.37. Standardized regional anatomical values for Red deer

III.3.3.1.1.3. Age Data for Red deer

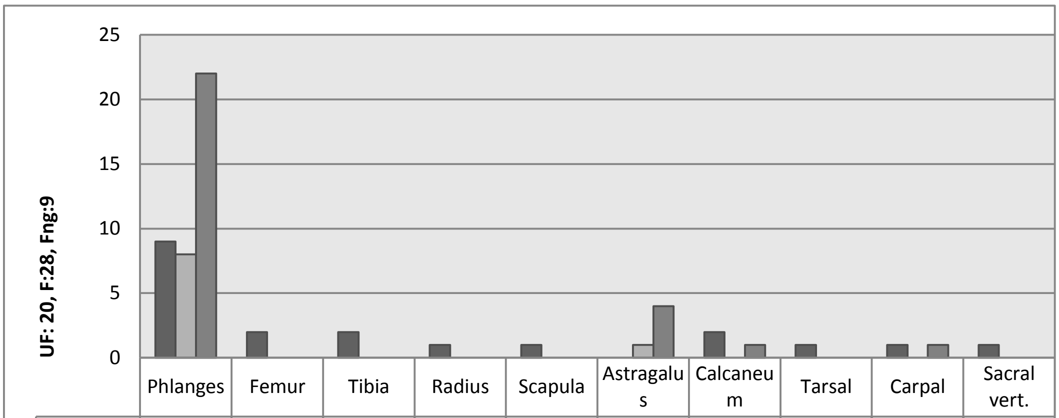
III.3.3.1.1.3.1. Epiphyseal Fusion

Epiphyses were divided into "fused" and "unfused" categories. If the line is no longer visible on bone surface by naked eye, a bone is placed into fused category. Unfused group consists of epiphysis not attached to diaphysis. In addition, in this study, bones in the stages of fusing, which is an epiphysis is no longer disconnected from diaphysis but fusion line still visible, is grouped as "fused but line still visible". Those group of bones represents young or sub-adult animals. Fusion statements were applied for those elements; pelvis, scapula, humerus, radius, ulna, tibia, calcaneum, metapodium, tarsal/metatarsal, carpal/ metacarpal, first, second and third phalanges. Percentages of, unfused, fused and fusing elements for *Cervus elaphus* and *Cervid sp*. that were recovered from each period at Salat Tepe are presented in Table III.10. The patterns exhibited in figure III.38, shows an overall, decrease in the percentage of unfused elements (45%), which indicates that deer were slaughtered very young in Salat Tepe assemblages. Thus, this suggests that unfused elements are over-represented in assemblages. Furthermore, more or less a similar pattern is observed between fused (28%) and fusing elements (27%). In addition, 50 nearly complete cervid skeletal elements found at Salat Tepe. While nine of elements are recorded as fusing, 2 elements are unfused, and 28 of elements are grouped as fused bones. The distribution of fusion statements for complete skeletal elements of red deer are showed in table.III.9. Once again, the most abundant red deer elements were found in Bronze Age. In this period, epiphyseal fusion pattern showed similarity with the general fusion structure, in other words, the unfused elements (44%) are the most dominant, whereas group of fused and fusing (28%) elements showed similar and lower percentage values. In the shed light of that information, it may be assumed that juvenile or sub-adult red deer were more frequently hunted at the site.

Table III.10. The Fusion Stage Distribution of Complete Skeletal Elements (NISP)

Elements	Unfused	Fusing	Fused
Phalanges	9	8	22
Femur	2		
Tibia	2		
Radius	1		
Scapula	1		
Astragalus		1	4
Calcaneum	2		1
Tarsal	1		
Carpal	1		1
Sacral vert.	1		

As four right, and two left, a total of six mandibles provided dental ageing data from Bronze Age. This mortality pattern suggests that one mandible was recorded as an adult and five mandibles were grouped as juvenile/young. Besides, sixteen mandibular molars, were recovered, and four of defined as M_1, two of M_2, two of M_3 and four teeth fragments were identified as molar. There are four premolar teeth were found, two P_2, one P_3 and one P_4. As a result, the general picture of red deer showed that young individuals were mostly hunted.



	Phlanges	Femur	Tibia	Radius	Scapula	Astragalus	Calcaneum	Tarsal	Carpal	Sacral vert.
Unfused	9	2	2	1	1		2	1	1	1
Fusing	8					1				
Fused	22					4	1		1	

Figure III.38. Fusion states for Red deer at Salat Tepe

III.3.3.1.2. Deer at Salat Tepe

One of the deer specimens has been identified at Salat Tepe: fallow deer (*Dama mesopotamica*), represented by one left distal part of tibia. Eleven *Dama dama* bones were found at site: 5 mandibular teeth; P_2, three incisive, M_1, one left and one right part of mandibles, right side proximal part of ulna, 1^{st} phalanx, right side M^2, and left side of maxilla fragments. The right side proximal part of ulna was unfused, it suggest that the fallow deer young individual. In addition, two of deciduous P_4 fallow deer found on mandibles. Although, too few fallow deer bones were recovered from site, it may be assumed that recovering unfused elements and dP_4 teeth indicate young or juvenile animals were preferred to hunt.

Another deer specimen is known to have lived in this region in the past: the small roe deer (*Capreolus capreolus*). A total of three bones were identified as roe deer at Salat Tepe. One left half of mandible, one complete 3^{rd} phalanx and left half of pelvis elements were recovered from the site. Left part of mandible was recorded as very young. Because insufficient numbers of elements were found, this is not possible to develop an age profile based on dental eruption and wear.

III.3.4. Perissodactyla

III.3.4.1. Equidae

III.3.4.1.1. Horse (*Equus caballus*) and Donkey (*Equus asinus*)

Eqiuds represent only 2 percent of total NISP. It is difficult to evaluate the importance of these animals to the daily lives of the inhabitants of Salat Tepe based on their NISPs in anything other than very general terms as they may have died outside of the settlement. A total of 42 bones were recovered from Salat Tepe, of the 32 remains are identified as *E. caballus*, only one is assigned to *E. asinus* and nine are not identified as family level, but were identified species as *Equid sp.*. Five fragments of equid were recovered from secure contexts at Salat Tepe. One upper toot in Trench K-14/151, one astragalus and second phalanges in Trench L11/41 and one radius fragments were found in Trench M13/72 all trenches were described as a pit.

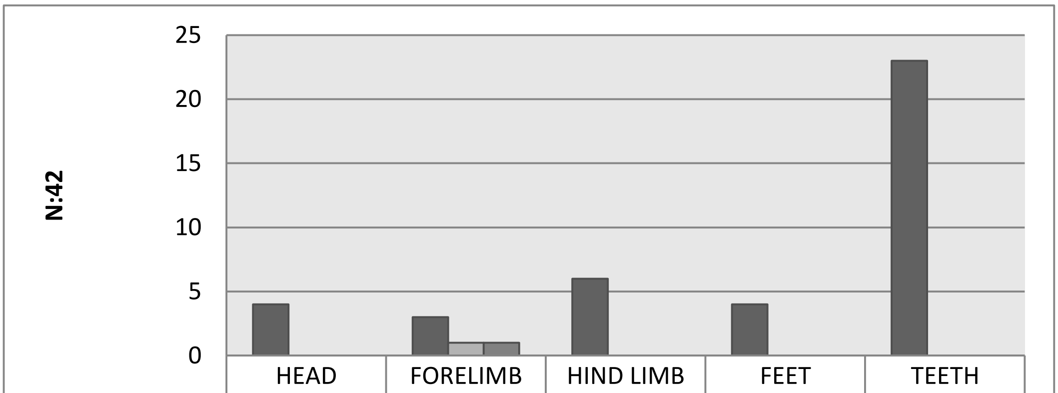
III.3.4.1.1.1. Skeletal Representation of Equids

Very few equid post-cranial remains were found in site. Forelimb and hind limb groups include; proximal scapula, proximal radius and proximal femur, distal radius, distal metacarpal, one complete metacarpal and one complete astragalus all of which were identified. There are four phalanges were observed in assemblages, two 2nd phalanges, one 1st phalanx, and one 3rd phalanx. The most interesting group of equid remains recovered at Salat Tepe was group of 17 mandibular and 6 maxillary teeth representing five animals. All of teeth have been identified as *E. caballus* based on their morphology. Although all of teeth were recovered individually, it appears, based on position, side and size, which 10 belonged to a single individual representing a complete set of lower cheek teeth. Six maxillary teeth recovered and five of were identified as *E. caballus*. In addition, one maxillary deciduous premolar was also identified as *Equus sp*. Besides, one astragalus sample was also identified as *E. asinus* in Bronze Age. The equid bones at Salat Tepe were observed from Bronze, Iron and Hellenistic-Roman Periods, however, as shown in the figure III.39, the majority (40) of equid remains were found in

Bronze Age. The number of equid bones so very little for Iron and Hellenistic-Roman Periods, there is nothing much to be said about equid use for these periods.

III.3.4.1.1.2. MAU for *Equus caballus*

In figure.III.40 standardized anatomical region values are presented for *E. caballus* by periods. Because the number of equid bones very small for *E. asinus* (N: 1), MAU value was calculated only for *E. caballus*. While Bronze Age is exhibited by all anatomical region, Iron and Hellenistic-Roman Periods are showed single element group; only lower front limb. The lower front limb group is generally well-represented in all periods, which is 0.5 for Iron and Hellenistic-Roman Periods, for Bronze Age this number is 1. The MAU data clearly indicate that using *E. caballus* in Bronze Age differs from other periods. The frequency of elements shows very little variation throughout the Bronze Age assemblages. This figure shows an under-representation of lower hind limb elements, and over representation of feet relative to the average composition of the small size of assemblage.



	HEAD	FORELIMB	HIND LIMB	FEET	TEETH
Bronze Age	4	3	6	4	23
Iron Age		1			
Hellen-Roma		1			

Figure III.39. The Number of Skeletal Parts of Equid in All Periods at Salat Tepe

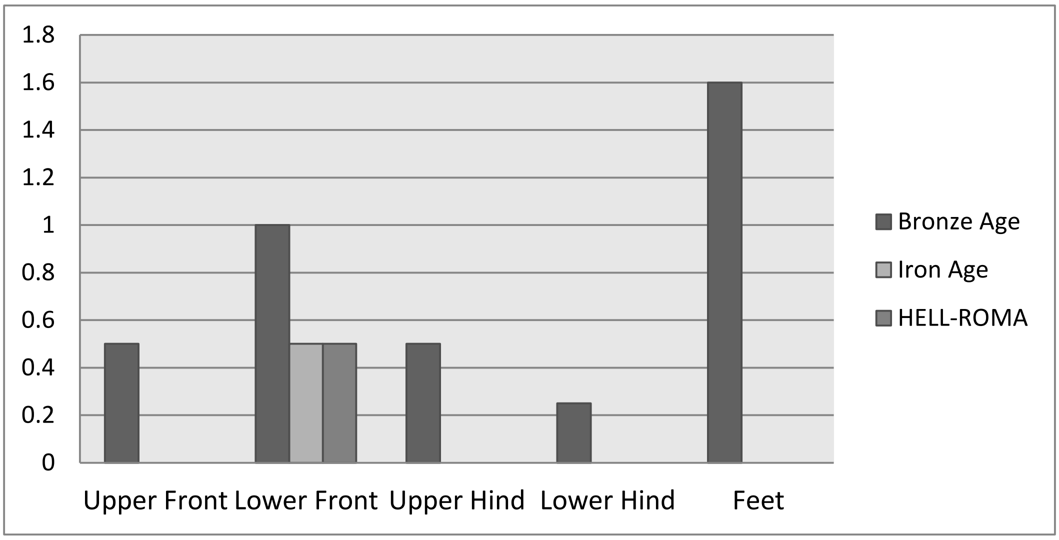


Figure III.40. MAU Values for *E. caballus*

III.3.4.1.1.3. Age Data for Equids

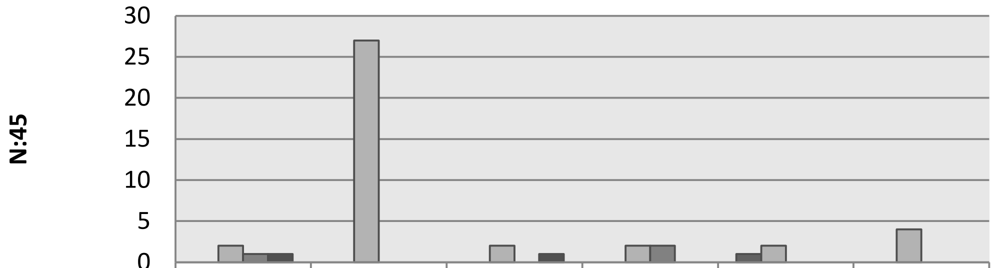
With very few equid bones recovered it is not possible to develop a detailed age profile, however a general picture can be generated. Fifteen post-cranial bones and seventeen mandibular teeth, six maxillary teeth were recovered. Only one 2nd phalanx was unfused and the most majority of skeletal elements were fused. The unfused phalanx indicates that might be at least 9-15 months old (Silver, 1969). One deciduous maxillary premolar sample was recorded. The general picture of equids being kept into adulthood makes sense considering that the main purpose of these animals was as pack animal rather than as food animals.

III.3.5. Wild Mammals

III.3.5.1. Canidae

A total of 130 fragments of Canidae bone were recovered from Salat Tepe; one right calcaneum from *Canis aureus*, 28 from wolf (*C. lupus*), 55 from dog (*C. familiaris*) and 46 bones were found in assemblages, but they were not confidently identified as family level, they grouped as Canivora indet. A single jackal (*Canis aureus*) complete right calcaneum was recovered from Early Iron Age. The calcaneum came from adult individual, more than 13-16 months of age at death (Silver, 1969) as it was fully fused. Most of the wolf (*C. lupus*), remains were found in Bronze Age, Trench L12/193 in Unit 2. This unit is associated with cooking. The dog remains commonly represented in L12/57 (L12/57/12 pit) and fewer K14/147 both contexts are defined as storage pit.

Relative to the composition of total assemblage, Bronze Age include the highest number of elements (N: 39, 87%). The data clearly demonstrate that axial elements (atlas, axis, vertebra, rib, pelvis) (N: 27) are over-represented, and other anatomical region values are somewhat under-represented in the assemblage (Figure.II.41). The bones of extremities are notably under-represented in Salat Tepe bone collection, despite relatively high values and those of the axial skeletons over-represented.

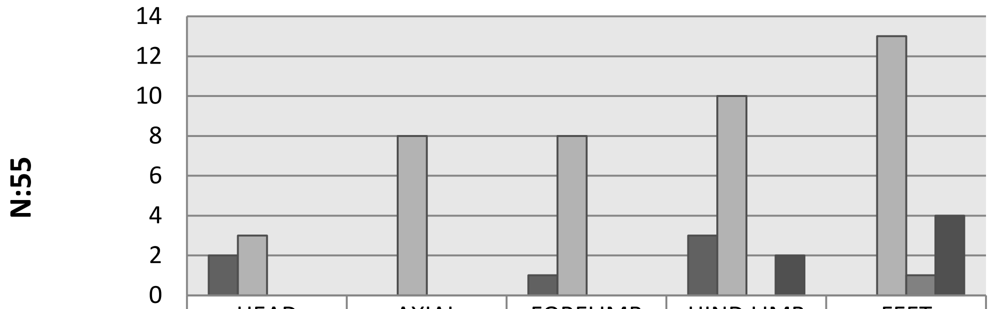


	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET	TEETH
Chalcolithic					1	
Bronze Age	2	27	2	2	2	4
Iron Age	1			2		
Medieval	1		1			

Figure III.41. Skeletal Elements Distribution for *Carnivora Indet*

III.3.5.2. Wolf *(Canis lupus)* Skeletal Representation

A total of 28 fragments of Canidae bone were identified as wolf (*C. lupus*) from Salat Tepe. The proportion of wolves by NISP remains around 2% for Bronze Age and 3% for Hellenistic-Roman Period. A single wolf baculum bone (penis bone) was the only remains recovered from Hellenistic-Roman Period. All the wolf skeletal elements are found from Bronze Age (N: 27). The figure.III.42 shows that the distribution of skeletal parts for wolf, hind limb bones (44%) are the most frequently represented elements in this period. The axial and forelimb (11%) both anatomical regions appear evenly represented, feet elements (22%) are represented slightly higher than those. The data indicate that the frequency of bones of the head (4%) and teeth (7%) are notably under-represented in the assemblage.



	HEAD	AXIAL	FORELIMB	HIND LIMB	FEET
Chalcolithic	2		1	3	
Bronze Age	3	8	8	10	13
Iron Age					1
Hellen-Roma				2	4

Figure III.42. NISP Representation of Skeletal Elements for Wolf

III.3.5.2.1. Age Data for *Canis lupus*

Two left mandibular M_1 were recovered from the site, as too few teeth were available, a detailed dental ageing profile cannot be constructed. Twenty five post-cranial (except baculum bone) were recovered and grouped according to fusion stages. Only two wolf elements were unfused, those are one left humerus distal and one tibia distal part. In addition, the great majority of elements are grouped as fused (92%). It is difficult to develop ageing pattern for wolves, but it may be supposed based on the number of fused element, the wolves have lived until adulthood. The high frequency of fused elements may indicate a bias in the preservation/ recovery of unfused specimens.

III.3.4.3. Felidae

III.3.5.3.1. Felids at Salat Tepe

A total four cat (*Felis sylvestris*) bones were found from the Bronze Age at Salat Tepe. The right humerus was identified as *Felis sylvestris tristrami* (wild cat). The element of wild cat was recovered in Trench L12/77 (L12/77/38P) pit. Since its distal part was not fused yet, the animal was definitely young individual. Two bones have been attributed to the domestic cats (*Felis sylvestris catus*). Two of domestic cat remains were found in Trench L13/70 (L13/70/33P), from pit. One complete left scapula and one left distal humerus fragments were recovered. One scaphoid bone has been recovered from the site. It is unclear whether the bone derives from a wild or domestic cat. No cat remains were recovered from other periods at Salat Tepe. All bones are fused for domestic cat, it may be associated with adult individual cat.

III.3.5.4. Mustelidae

III.3.5.4.1. *Weasel (Mustela nivalis) and Badger (Meles meles)*

The weasel and baggers are carnivores and they are member of Mustelidae family. The proportion of weasel by total NISP remains at less than 1%, a total of three weasel bones were found from Bronze Age in Trench L13/91. One left half and right half of mandibles and half of weasel skull were observed in assemblage. A total of three bones have been identified as badger (*Meles meles*). The percentages of badger represent 3% for Hellenistic Roman Period, and less than 1% for Bronze Age. Only one right pelvis fragment was recorded in Bronze Age at Salat Tepe. Tow badger bone remains were found in Hellenistic Roman Period, which are described as one phalange shaft fragment and one left humerus distal epiphyses. No deciduous teeth or unfused bones were found, thus these results show that hare was lived until adulthood.

III.3.5.5. Lagomorpha

III.3.5.5.1. *Hare (Lepus capensis europeus)*

Twenty bone fragments of hare were found in the site, eighteen of bone elements were identified as hare (*Lepus capensis*). The quantity of hare by total NISP bones less than 1%. Two fragments were assigned to *Lagomorph indet*. as, cannot defined as family level. Only one Lagomorph indet. radius bone was found close to tandoor remains (L14/20). One nearly complete left humerus and one proximal part of radius were identified as *Lagomorph indet*. from Bronze Age. A total of eighteen bone remains of *Lepus capensis* were recovered. Most of the hare remains were found while deepen in field (L13/75). In addition, one carpal remain was observed in the well-hole (Trench M13/204) (Table.III.11). Tibia and pelvis are the most common remains overall and side of elements are described as two left and two rights. Three of distal epiphyses and one proximal part of tibia were found. There are three pelvis remains were observed. Two of pelvis remains were grouped as one left and one right, another pelvis fragment was not securely categorized. Most of the skeletal elements were complete in this assemblage those complete bones are; calcaneum, phalanges, carpals, ulna, vertebra. This could be somewhat attributed to the fact that limb elements (except ulna and vertebra) are both strong and better preserved. There were nearly complete femur, and proximal part of scapula represented. The skeletal parts of frequencies for hare are represented very well in Bronze Age.

III.3.5.5.1. Age Data for Hare

Eighteen bones could be used to determine the kill-off pattern for *Lepus capensis* at Salat Tepe. Fused elements are presented in significant numbers, while unfused bones are likely present as well (Table.III.12). Five unfused bones (left tibia proximal, right femur), and also left calcaneum that is not completely fused, all unfused bones were recovered in the Bronze Age. The ratio of fused and unfused bone elements indicate that the Salat Tepe hare population was generally adult.

Table III.11. Skeletal Element Distribution for *Lepus capensis*

Elements	Bronze		Iron		Medieval		Hellenistic-Roman	
	N	%	N	%	N	%	N	%
Vertebra	1	7,1	-	-	-	-	-	-
Scapula prox.	-	-	1	100	-	-	-	-
Ulna	-	-	-	-	1	50	-	-
Pelvis	3	21,4	-	-	1	50	-	-
Femur	2	14,3	-	-	-	-	-	-
Tibia	3	21,4	-	-	-	-	1	100
Calcaneum	2	14,3	-	-	-	-	-	-
Carpal	2	14,3	-	-	-	-	-	-
Phalanges	1	7,1	-	-	-	-	-	-
Total	14	100	1	100	2	100	1	100

Table III.12. The Number of Fused and Unfused Elements for *Lepus capensis*

Elements	Fused	Unfused
Vertebra	1	-
Scapula prox.	1	-
Ulna	1	-
Pelvis	3	-
Femur	-	2
Tibia	2	2
Calcaneum	2	1
Carpal	2	-
Phalanges	1	-
Total	13	5

III.3.5.6. Reptiles

III.3.5.6.1. Tortoise *(Testudo gracea)*

For the entire site tortoise bones were counted for sixty-eight 2 % of all recovered faunal remains. Most of the tortoise elements were found from the Bronze Age. Nearly all of the remains were identified as *Testudo gracea,* however, one was identified with the help of Dr. Berthon, as *Rafetus* *euphraticus* (Euphrates soft-shelled turtle) from single carapace fragment, which is known from the Tigris and Euphrates drainages in southern Turkey, Syria, Iraq, and Iran. Although this species are well known in this region, however, this is also uncommon in archaeological assemblages.

The Table.III.13 shows that the distributions of skeletal parts for tortoise, carapace (89%) are the most frequently represented elements in Bronze Age period. In addition small numbers of post cranial skeleton elements were observed in the assemblage. One pair of pelvis (one left and one right part) bones of tortoise (*Testudo gracea)* was found in Bronze Age. A distal humerus, pelvis and scapula of tortoise are fused, thus originating from adult individuals. Most of the tortoise bone remains were found in Trenches L13-14 and few of elements were collected from different trenches. Six remains of tortoise were recovered from storage pit (K14/147/48P). Although trenches L13 and L14 are represented high number of tortoise remains, the bones collected from only one secure context in trench L13/60 (L13/60/31P) which was described as an ash pit. Eleven tortoise bone remains on floor (L14/111), one bone from pit (Trench L14/47/27P), three of elements on stone pavement, and interestingly one carapace, were collected in ritual place (L14/128; antler deposit).However, while this species is known to use burrows made by other animals for hibernation during winter, occasionally dying, and is found in the region today, there is nothing indicate that the tortoise found at Salat Tepe are possible.

Table III.13. The number of skeletal elements for tortoise (NISP)

Elements	**Bronze Age**		**Iron Age**		**Medieval**	
	N	**%**	**N**	**%**	**N**	**%**
Scapula	1	1,6				
Humerus	2	3,2				
Femur	2	3,2	1	25		
Tibia		0			1	50
Pelvis	2	3,2				
Carapace	55	89	3	75	1	50
Total	62	100	4	100	2	100

III.3.5.7. Snake

A total of twenty-eight vertebra bones from single animal were recovered from Salat Tepe, though none could be identified to species level. The snake bones found from the Bronze Age, however, do not provide enough evidence to say connected with population or settlement. All of snake vertebra bones were found in a pit (M13/181/31P).

III.3.5.8. Fish

A total of thirteen fish bones were recovered from the site. Only a few pieces of flat bones fragments, three jaw bones and eight vertebra have been found to date. Most of the bone fragments were observed from the Bronze Age and only four fish vertebra bones dated as Iron Age. Those of Iron Age fish vertebra materials were collected in storage pit (M13/181/31P). In addition two vertebra bones were observed in ritual place (L14/128), and three bones were found in pit (L14/133/63). As it is understood from the number of fish elements, that fishing was not very essential for the inhabitants. Bones of fish are encountered, but they were not further identified.

III.3.5.9. Birds

A total of 66 bird remains were recovered from Salat Tepe, and not all of those could be identified to family level or greater. The proportion of birds by NISP remains 2.4% from overall. Specimens of kestrel from humerus and gallus were identified from tibia bones in Chalcolithic Period (Figure.III.43). The frequency of skeletal elements change through the time periods, the majority of bird elements were found from Bronze Age (76%) (Table.III.14). Sixteen bird remains were found in storage pit (L13/70/33P) and fourteen fragments were collected inside of the room (K12/41- L11/41). The data show that humerus (24%) are the most common skeletal part encountered in the assemblage, followed by long bones (18%) of birds and tarsometatarsal (15%). Only three unfused bones were found at site, two of metatarsal bones from Bronze Age and one long bone fragments from Medieval. The data of fused and unfused specimens show clearly, kill-off focused exclusively on older birds than younger (Table.III.15).

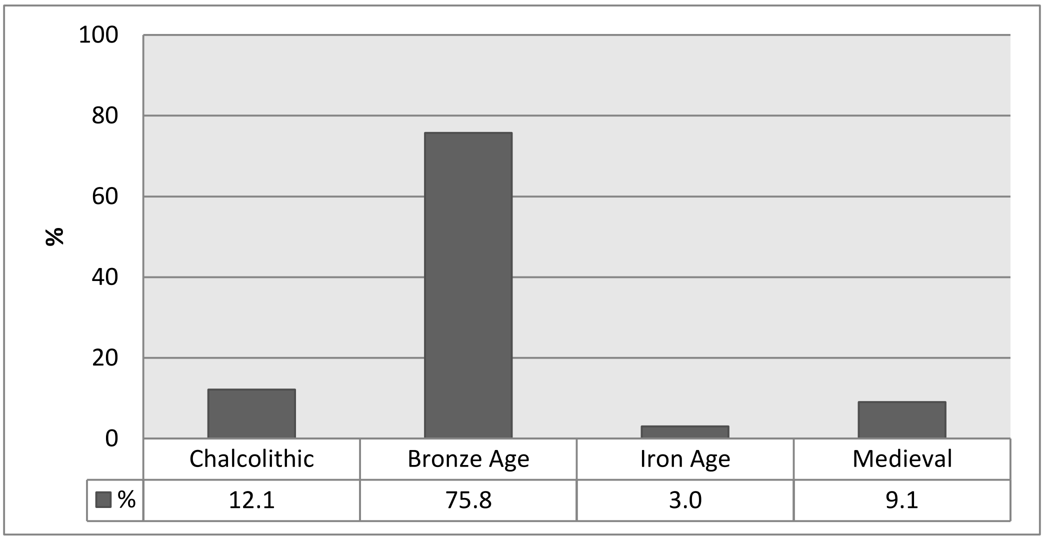


Figure III.43. The proportion of distribution for bird bones through periods

Table III.14. The number of the skeletal elements for birds

Elements	Chalcolithic		Bronze Age		Iron Age		Medieval	
	N	%	N	%	N	%	N	%
Skull	1	13	-	-	-	-	-	-
Mandible	2	25	-	-	-	-	-	-
Clavicula	-	-	1	2	-	-	1	17
Coracoid	-	-	2	4	-	-	-	-
Rib	-	-	3	6	-	-	-	-
Humerus	2	25	12	24	1	50	1	17
Radius	-	-	4	8	-	-	1	17
Ulna	-	-	3	6	-	-	-	-
Femur	1	13	1	2	-	-	-	-
Tibia	2	25	6	12	-	-	-	-
Tarsometatarsal	-	-	9	18	-	-	1	17
Long bones	-	-	9	18	1	50	2	33
Total	**8**	**100**	**50**	**100**	**2**	-	**6**	**100**

Table III.15. Age bone fuse from skeletal elements for birds

Elements	**Fused**	**Unfused**
Clavicula	2	-
Coracoid	2	-
Humerus	8	-
Radius	3	-
Ulna	1	-
Femur	1	-
Tibia	4	-
Tarsometatarsal	3	2
Long bones	-	1
Total	24	3

III.3.5.10. Rodentia

A total of seven bones were found at Salat Tepe and one left side mandibular M_2 has been attributed as porcupine (*Hystrix*) and it was recovered from Bronze Age. One mandibular M_2 teeth was collected from secure context and described as storage pit (L14/141). Identification of rodent is based on comparison the modern comparative collections of British Archaeology Laboratory at Ankara. Six of bone elements were grouped as Rodent, the four bones recovered are left mandible fragment, complete fused ulna, incisive, and flat bone fragments (likely skull fragment) in the Bronze Age. Rodent is represented only one flat bone fragment in Iron Age and one long bone fragments found in Chalcolithic Period. To develop ageing pattern for rodent difficult, since no information uncovered.

CHAPTER IV

IV.I. Animal Distribution of Salat Tepe

In this chapter animal bone distribution analysis of the faunal remains at Salat Tepe is presented. The animal bone distribution of site undertaken in this chapter investigates whether patterns of species or body part deposition are noticeable across the site. If the population of a particular area of a site had special contact to either animal types or body parts, due to social or economic distinction, it may be expected that this will be reflected in the deposition of their waste.

The aim of the animal distribution of the site is not only an attempt to interpret individual building or room function, but it also explores the possibility of patterned on refuse disposal. It has been argued that the faunal remains recovered on or near surface represent occupational units from those locations. If waste disposal is not homogenous within a units this may be result of preferential access of spatially separated groups to animals or body parts. On the other hand, it may be the consequence of a common waste disposal practice shared by inhabitants in a number of areas of the site who have equal access to animals and body parts but who dispose of the remains in a structured style where certain animals or body parts are deposited in one location and other deposited elsewhere. In this cases the pattern of faunal remains found within the units can be used to help show activities occurring within them.

The anatomical distribution of bone parts was analyzed for cattle, pig, sheep/goat, and large/medium size ungulates for each chronological periods at Salat Tepe. A total of fifteen trenches were excavated in the site, six trenches were dated Chalcolithic Period.

IV.2. Southern Slope

Chalcolithic period of Salat Tepe is represented six trenches (E-J/12) and those trenches are located on the southern slope. The first trench H/12 was explored to create spatial distribution of animal bones at Salat Tepe. H/12, ash piles were excavated in 2001 by a sounding 2.5 X 2.5 m in the northern section revealing a mud brick structure was exposed under an ash ca. 2m thick (Ökse and Alp, 2011a: 765). The trench H/12 is characterized with the hard mud brick floor (55 cm thick) form of the foundation of the building and ash pile (Fig.IV.1). The faunal samples were collected from those contexts. A total of 146 animal bone remains were found in this trench from twelve different contexts (same feature). The skeletal parts were grouped by anatomical regions. The teeth are well-represented in all contexts, except medium mammals in the ash layer pile (Table IV.2**.**). Elements in the horn and deer species are not represented in this trench. Interestingly, for the entire ash layer feature, burning accounted for only three pig feet in H12/76. The data clearly demonstrates that burning had a low impact on the assemblage in each contexts. It may be related with subsequently accumulation of animal bones in this place. Only 18 teeth remains provide to create ageing structure. Four right M_2 were recorded, based on these teeth remains derive from four sheep/goat individuals. According to dental eruption on the mandibular teeth of the sheep/goat shows that juvenile and adult animals were commonly represented in this assemblage. From nine molar and two deciduous teeth indicate juvenile animals, two teeth grouped as sub-adult and seven teeth designate adult animals. Sheep and goat epiphyseal fusion data were calculated based on only eleven unfused post-cranial elements. One of unfused proximal radius was placed Stage I (Infant) (Table IV.1.). Five skeletal elements were aged as juvenile and finally four of elements were aged as adult. Furthermore, the number of young animals are very few, so it is clear that the majority of adult sheep/goats being deposited at Salat Tepe in Chalcolithic Period.

Table IV.1. Epiphyseal ageing data for ovicaprine from H12 Ash Layer.

	prx Radius	glScap	First phlnx	dis Femur	Calcaneum
Stage I (6-2months)	1				
Stage II (12-18 months)		3			
Stage III (18-30 months)			2		
Stage V (30-48months)				2	2

Figure IV.1. The building at H12 in Chalcolithic Period (Ökse, 2009a:80).

Second, represented feature is the mud brick floor (Table IV.3.). This feature was observed in five contexts, a total 274 bone remains were also recovered. The head and axial skeletal bones are the most common group of element for overall. The medium sized axial bones are very well represented. Once again there is not deer remains were found. Epiphyseal data were derived for sheep/goat is represented by twenty-six unfused bones in context H/12/44. Twenty-two unfused vertebra and four unfused rib elements were recorded. It suggests that young sheep/ goat were killed at young age, thus the animals were slaughtered before fully mature. It is likely that based on lack of butchery waste, all stages of food processing did not happen at a site. It might have been related with food preparation waste consistently being deposited in this place. Beside those features, nine pig teeth elements were found from grave (H12/121/34G). In addition to this two Ovis/ Capra were recovered into storage pit (H12/91/29P) (For the location of trenches see Appendix-1).

Table IV.2. The skeletal elements distribution in H12 Ash Layer Pile

Specimens	N	Elements	36	57	68	71	76	103	125	133	137	144	147	163
Sheep Goat	64	Forelimb		10	4							2	2	1
		Hind limb		5				2	2					1
		Teeth		4	7	12		2				2	3	5
pig	31	Head		6								2	7	
		Forelimb												1
		Hind limb											2	
		Feet					3							
		Teeth	1		4	4							1	
cattle	25	Head			3									
		Axial						2						
		Forelimb			4	3								
		Feet		6							1			
		Teeth		4				2						
MM	26	Head	1									2		
		Axial	5							1			6	2
		Forelimb		4							3	1		
		Hind limb								1				

The trench G/12, was disturbed by the walls, those ash layer and floor covered by ash earth. A very few bone remains were observed in secure loci in this trench. Caprines feet elements were detected inside mud brick building. Three species were found in the plastered pit (G12/63/50P). Three baby caprine and pig feet remains were found in this pit. Only four bones were defined inside of the pit (F12/37/12P), and a total of nine, cattle, caprines, and pig elements were found inside the grid planned building (Fig. IV.2.).

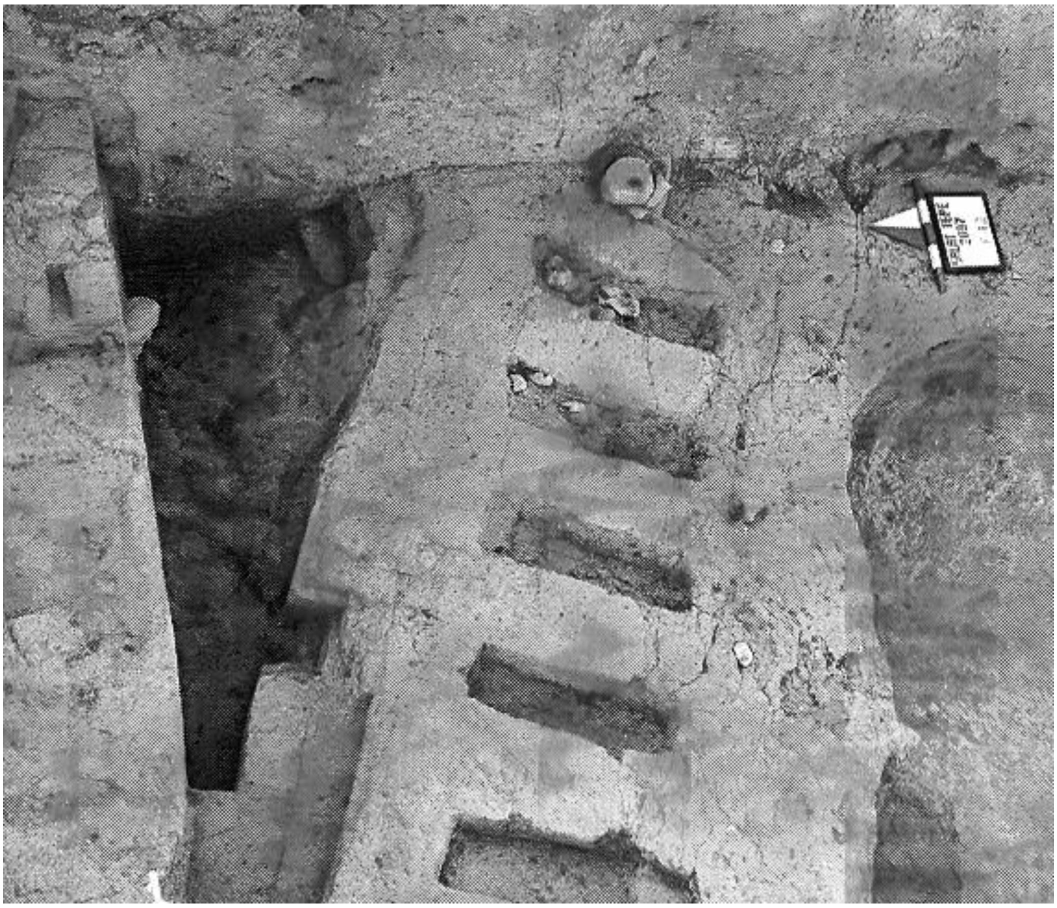


Figure IV. 2. Trench F12, Grid planned building (Ökse, 2011b:297).

Table IV.3. The skeletal elements distribution in H12 Mud-brick Floor

Specimens	N	Elements	H12/43	H12/44	H12/45	H12/65	H12/66
Sheep/Goat	62	Head	8	3			
		Axial	1				15
		Forelimb		4		7	
		Hind limb	3			2	
		Feet		3			
		Teeth		3		7	6
Pig	43	Head	1	11	11		6
		Axial				5	
		Feet				6	
		Teeth		3			
Cattle	49	Horn				16	
		Forelimb				2	
		Hind limb		10			
		Feet	3	15			
		Teeth		3			
Medium mammals	115	Axial	7	108			
Large mammals	5	Axial	5				

The Trench I/12 were characterized with hearths, pits, ash pile, and mud brick debris. Most of the animal bones were come from unsecure loci. Only five bones were found from oven 20F in I/12/61. Three sheep/goat, one *C. familiaris* teeth, and one pig phalanx were recovered from this oven. The burned elements were not observed. A total of thirteen bone remains were found from four different granary pits. I/12/73 (23P) was contained eight bone remains, six of caprine vertebra and two large mammals' ribs. Two pig feet from I/12/77 (24P), one caprine and one cattle astragalus, and one pig mandibular teeth were found inside of I/12/64 (22P). Lastly, four caprine ribs and one pig phalanx bones were found in the pit (I/12/95/05P).

In Trench J12 south is an area of the mud brick platform and five beads one of bead is made of bone, were collected from the sediment around the kiln base and ash pit exposed under the mixed sediment layer under the platform (Ökse and Alp, 2011a:766). The limited numbers of animal bones were recovered from this trench. Only nine bones were found in mud-brick wall area J/12/11W. One burned cattle metapodium is observed and grouped as fully carbonized. Except this burned element, other findings from this trench were regular. A total of five animal bones were detected from kiln (J/12/20), three infant bones were detected and those are belong to three different species; ovicaprine pelvis, pig right radius and cattle right scapula elements. Most of the materials were come from surface cleaning or mixed contexts. In 2000, trenches L12-13 at the summit of the mound were opened. There were 22 large circular pits uncovered in trenches L12-13. There wheat, barley, and legumes were identified from soil samples from the pits. According to Ökse (2011), these granaries were usually opened on the summit of the mound where would be less affected by rain. Their mouths were narrow as to be air proof and it was sealed with chaff (Fig. IV.3.). These pits resemble the granaries which have been and are still being used throughout the ages in Anatolia. Trenches L/12/05 and L13/15 were dated to Chalcolithic period. A total of 58 bone remains were collected from those trenches, however, unfortunately neither of bones came from pits or clear contexts.

A few animal bones were recovered inside the house in Chalcolithic period. The southern section of the mud brick building have been disturbed by a small landslide caused by rain and erosion (Ökse, and Alp, 2011a: 766). Most of the animal bones were observed from ash layer, floor and pit. In addition, the mud brick building on the south side of the mound was allocated by granary pits and late period graves. Although, the building thick-walled, it points to the existence of a significant building, because of destruction certain architecture could not be ascertained. Skeletal part distribution indicate that all parts of the skeleton are present in Chalcolithic contexts indicating access to complete carcasses. The frequency of caprines and pigs in this period and for each period are high, indicating abundant access to those animals. Most contexts in the southern slope represent adult caprines, indicating that was provisioned with animals for secondary products and not only for meat.

Figure IV.3. Granary pits from trench L/12 (Ökse and Alp, 2011a:788).

IV.3. The Summit of the Mound

The excavation was carried out on the mound summit in nine trenches K-L 11-14 and M13. According to excavation on the mound summit showed five periods in six trenches; Early and Middle Bronze Age, Early Iron Age, Hellenistic -Roman Periods and Medieval. The Early Bronze Age is represented by only ceramic materials so, no architectural levels have been found in this period. Only six animal bone remains were collected in trench I/12/89 dated to EBA period. These contexts were mixed and not give certain information.

Most of the animal bones were recovered from Middle Bronze Age. MBA levels represented mainly by monumental building complexes on the summits of earlier hills (Fig. I. 10.) (Ökse and Görmüş, 2012a:130). In addition, five building levels on the mound summit dated to MBA. Level 5-3 is the lowest and only small part of this level has been recovered (Fig.I.11.). This levels were characterized well- preserved 1, 5-2 meters mud-brick walls and this building were destroyed by fire. A number of granary pits belong to these levels those were contained large amount of barley, wheat and lentils. Because different forms of ovens were found in these levels, it is suggested that the function of building was related with domestic activities. Level 2 is presented by a building complex widening to an area of ca. 1600 square meters. The building composed 2-3 roomed units encircling a courtyard, according to radiocarbon dates, this unit are dated to the 17th and early 16th centuries BC. Seven of these 2-3 roomed units are opened, covering an area of 26-96 square meters. This building complexes were collapsed because of earthquake. Level 1 were recovered on those collapsed walls, and based on ceramic analysis this level was dated to the 16th century B.C. Ökse suggests that the function of these building was for farming activity which was an administrative system of the agricultural economy by means farmstead called *dimtu.* A six contemporary sites within the region showed same building system those are; Uctepe, Ziyarettepe, Giricano, Kenantepe, Kavusan Hoyuk, and Hirbemerdon. The cuneiform archieves of Nuzi and Alalakh represent agricultural based administrative system. Excavated farmstead areas are compiled of parallel building complexes with similar dimensions (Ökse and Görmüş, 2012a:129). The research showed that, from the mound, the cultivated land of ca. 1200 ha along the stream at Salat Tepe. In terms of, off-site sherd distributions, ca. 100-200 persons lived per hectare in second millennium BC. Thus, ca. 1, 5 hectares can be the house for ca. 300 adults and adolescents as worker in the Middle Bronze Age settlement at Salat Tepe. Therefore, it is assumed that a farmer family was consisted of ca. six members on average, the inhabitants at Salat Tepe might have been composed at the most of ca. 50 families (Ökse and Görmüş, 2012a:130).

The collapsed walls belonging to the building complex were registered in all trenches on the mound summit. The mound summit building complexes were collapsed because of earthquake during Middle Bronze Age. In trench K12, two rooms of the MBA Level 2 and the entrance corridor leading to courtyard were excavated (Fig.IV.6). Three pebble idols in K/12/40 (2006) were discovered from mud-brick building foundation, and it is suggested that the function of building was for ritual purposes. According to Ökse, those remains were associated with foundation rituals, the idea makes it stronger with the finding pebble stone idols from this context (Fig. IV.5). In addition, the feet bones of cattle or large ruminants were collected under the mud-brick floor to the southern section of trench K/12/18 in 2002 (Fig.IV.4) (Ökse and Alp, 2011a:770). In this research, a total of twenty-two animal bone remains were studied in this context K/12/40 in 2006. Thirteen ovicaprine bone remains were found as six of ribs, two of vertebra fragments, one mandible, skull fragment, distal tibia, pelvis fragment, and proximal part of ulna. Except feet, the presence of elements from all anatomical regions suggest that the entire ovicaprine were scarified at the building. Four pig bone remains were represented as three skull with occipital part and one left mandibular $M_{2,}$ based on those remains pig is aged as juvenile. Two cattle bones were recovered from this ritual building, there are one proximal part of the 3^{rd} phalanx and mandibular right side of teeth fragments. Finally, one rib belongs to large ungulate and two ribs belong to small mammals were found. The burned elements were not observed within this context. Besides, a total of thirty bones were found from two rooms in K12/41 and K12/43. A total of ten birds tibia and humerus elements are found in Room 41. Seven (six ribs and one vertebra) medium sized mammals elements found in Room 41 and four (skull fragments, vertebrae and astragalus) from Room 43 have been recovered. Three unfused of rib elements were observed in Room 41. Two cattle bones were recovered in Room 41; 2^{nd} phalanx and vertebra. Finally, three small mammals rib (one is unfused) elements were found inside of the room. In Room 43 three ovicaprine feet and one carnivore mandibular teeth were found. Based on remains of diverse hearths, and cooking pots findings from K/12, the function of this room was assumed as kitchen.

Figure IV.4. Cattle foot as offering in trench K12/18 MBA Level-2 (Ökse and Alp, 2011a:789).

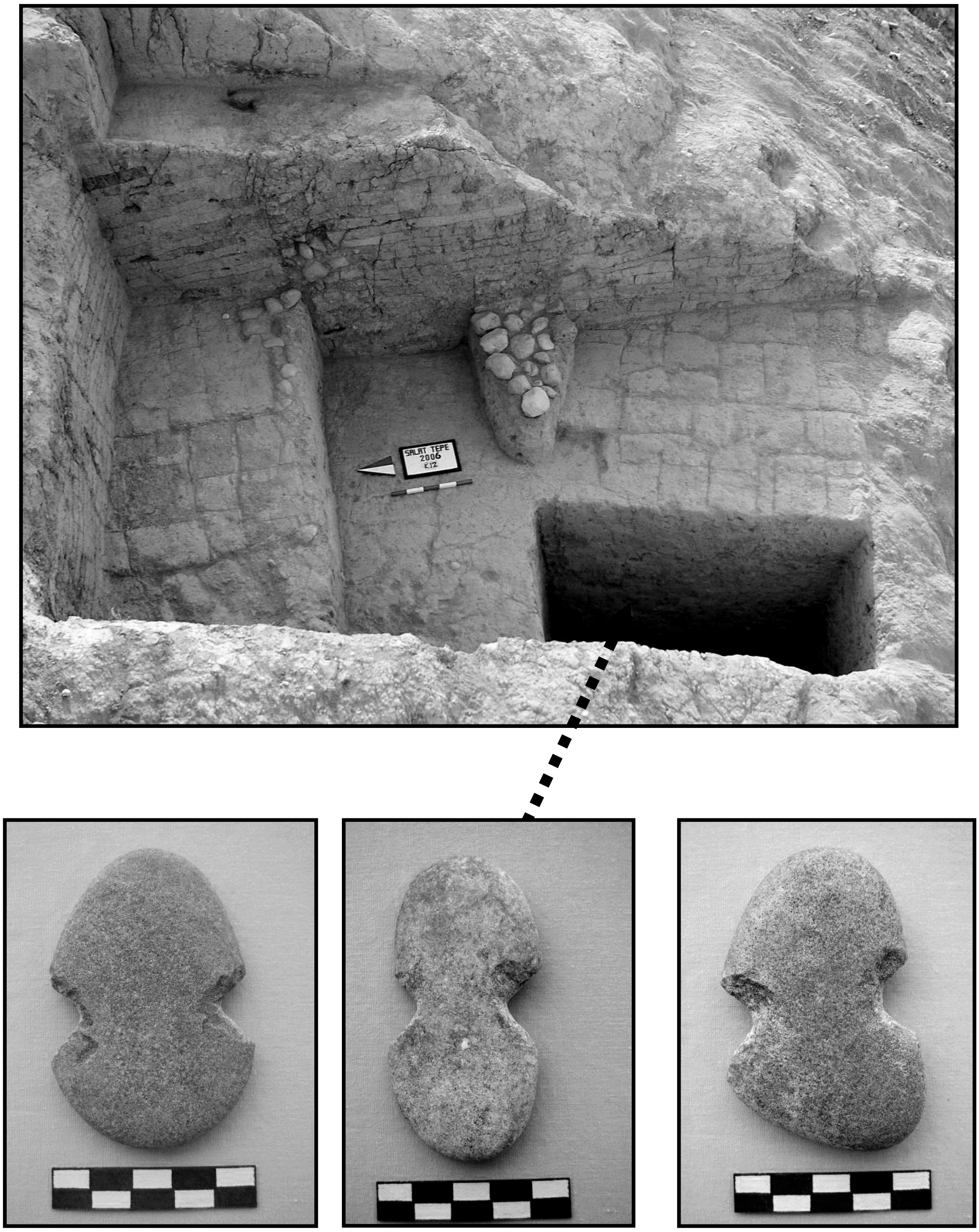


Figure IV.5. Pebble Idols under foundations from K/12/40 MBA Level-2 (Excavation archive).

Most of the animal bones were recovered from pit in trench K/13 besides, animal bones were also collected in room and hearths. A total of 52 bones were recovered from five pits in trench K/13 (11P, 28P, 37P, 38P, 43P).

There were various specimens elements were recovered from inside of those pits. The distribution of elements and specimens within pits are shown in Figure IV.6 and IV.7. The relatively high number of elements were recovered from Pit 37. Heads are relatively under-represented in this collection. This concentration of meat rich elements of the forelimb and axial skeleton and under- representation of butchery waste (like feet and teeth) suggests that some carcasses were processed in off site locations. Finally, age data indicate that the most commonly represented age group is adulthood. Only five specimens of elements belong to young/juvenile age group. Two pigs (57P, 77P), two domestic goat (77P) and one ovicaprine (57P) were observed.

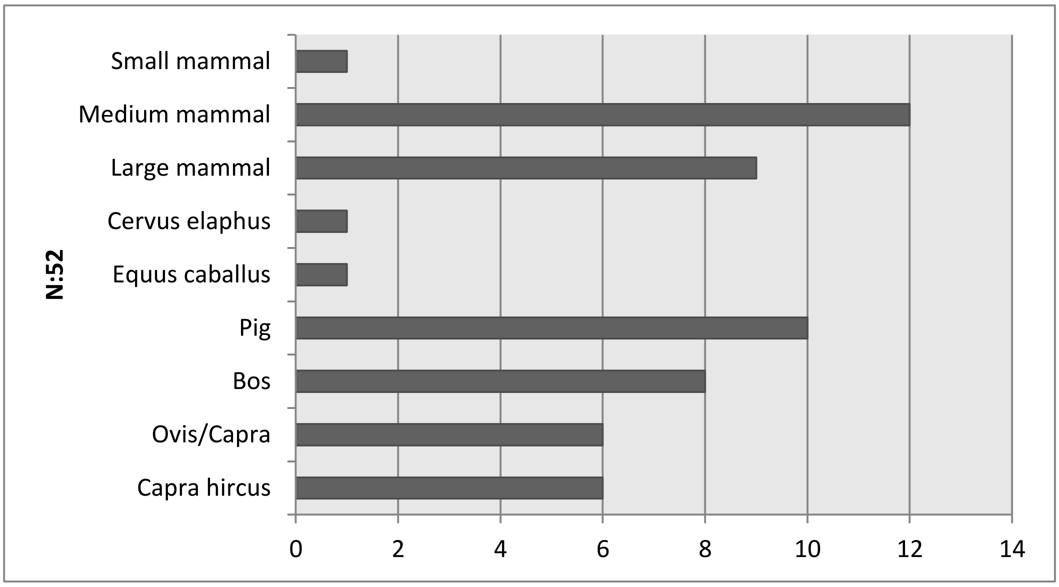


Figure IV.6. The number of the specimens within pits in trench K/13

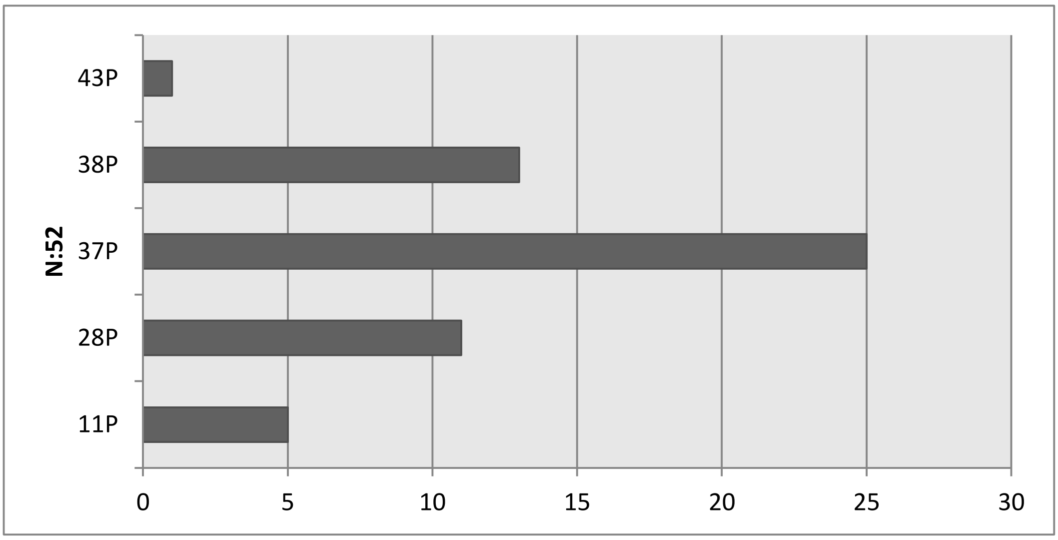


Figure IV.7. The number of the elements within pits in trench K/13

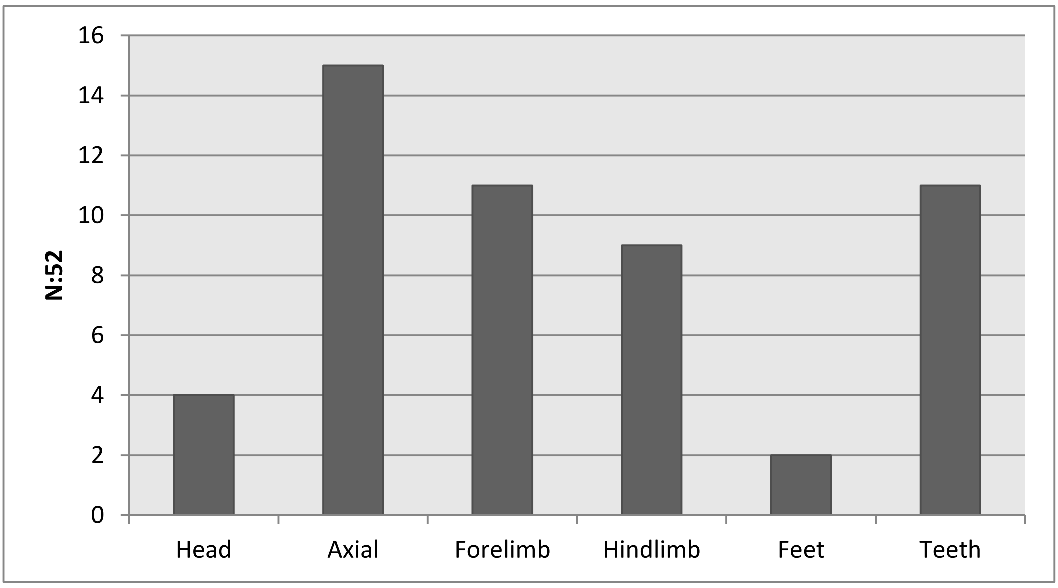


Figure IV.8. Distribution of skeletal parts across the pits

In level 2 from unit 4 the Room 34 contains a total of 17 bone remains, cattle are strongly associated with this room (Fig. IV.6). Besides, domestic goat and sheep, pig and dog are also represented animals in this context. In addition, only one highly burned pig 2nd phalanx element was observed. The limited evidence makes it difficult to identify function of this room. Another is room 98, it contains a total of ten bone remains. The medium size mammals, cattle and domestic sheep and goat are represented inside of the Room 98. Age data indicate that all are represented animals in adulthood group. Most of the skeletal elements are burned in this room. Another feature is in this trench is foundation of mud-brick building. From the foundation 119 only six bone remains have been yielded, those; sheep, goat, and medium size mammals. All animals are adult and burned elements were not recorded. Finally, two small pits were found on the building foundation in trench K/13. The pit 51 and 53 contains seventeen bone remains, *Cervus elaphus*, goat, sheep and pig are the commonly represented in those pits. In addition one *E. asinus* astragalus were found in pit 51. While the number of the feet are the higher for deer and cattle, the heads are major element for sheep and goat. All parts of the skeletal elements were recovered from inside of foundation and small pits.

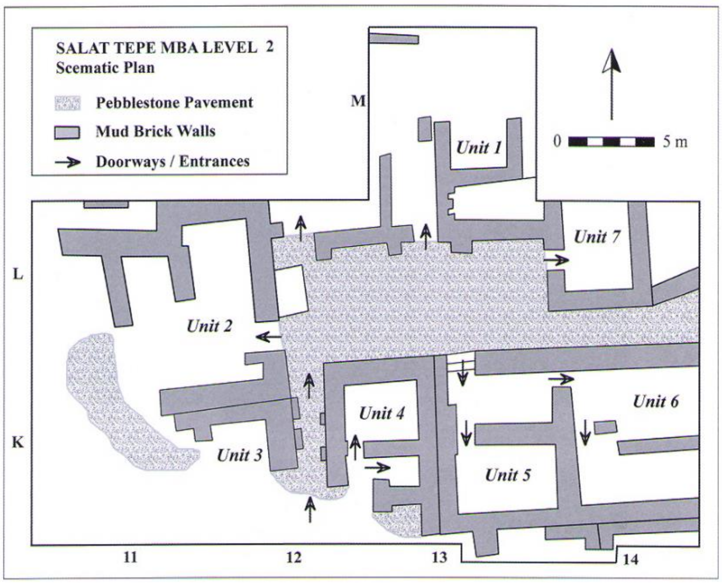


Figure IV.9. Plans of building complex in Level 2 (Ökse, 2012a:132).

In trench K/14 a total of 123 bones were recovered from six pits dated Middle Bronze Age. The Figure IV.10 shows that Pit 48, Pit 81 and Pit 82 are consisted of approximately the same number of skeletal elements. The lower number of skeletal elements were collected from pit 78 (K/14/151). One capra horn, one equid deciduous premolar tooth, two large mammal's ribs and one axis and one vertebra fragments belong to medium mammals, are found in this context. In addition, pieces of terracotta bull figurines were recovered from this pit. The Figure IV.11 shows the distribution of skeletal elements for commonly represented animals. Variations in the frequencies of skeletal parts indicate that all parts of carcasses were not always practiced, consumed, and deposited in the same place. While teeth are well-represented for ovicaprines, due to the high rate of preservation of this element in the rest of the assemblage, horns are relatively under-represented. The rate of the meat rich elements of axial skeleton and forelimb slightly high, butchery waste indicates that some carcasses were processed inside of the site and deposited into pits. Additionally, four cervid feet, six tortoise bones (forelimb bones and carapace), one equid maxillary teeth were recovered. Eight carnivore bones were collected from Pit 147 and 165. The carnivora are represented with head, feet and teeth elements. The age composition of all animals show that most of the bones are fused and only ten ovicaprine (five forelimbs and five feet bones), one cattle tibia and one pig humerus bones were recorded as an unfused.

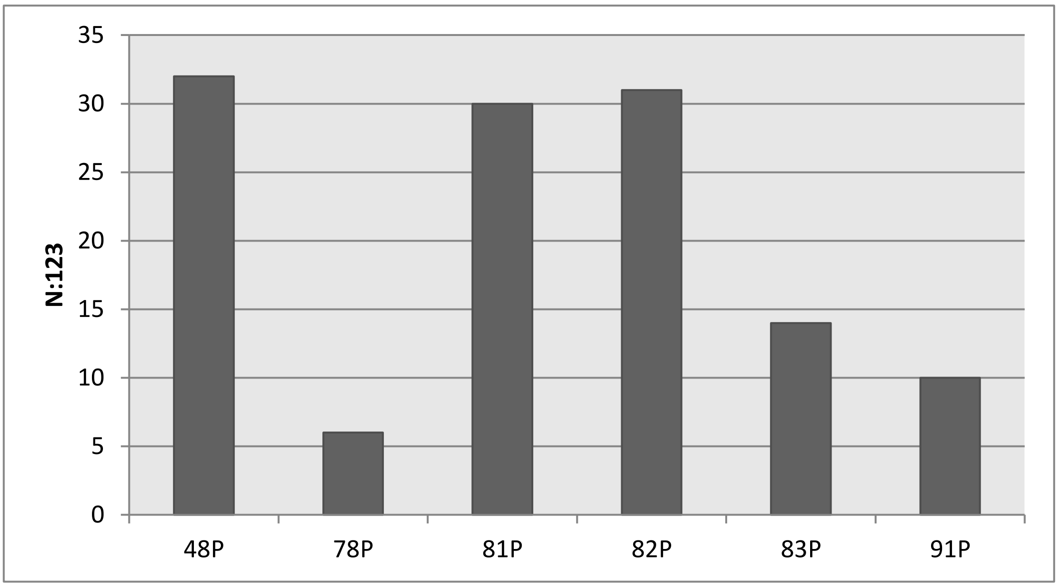
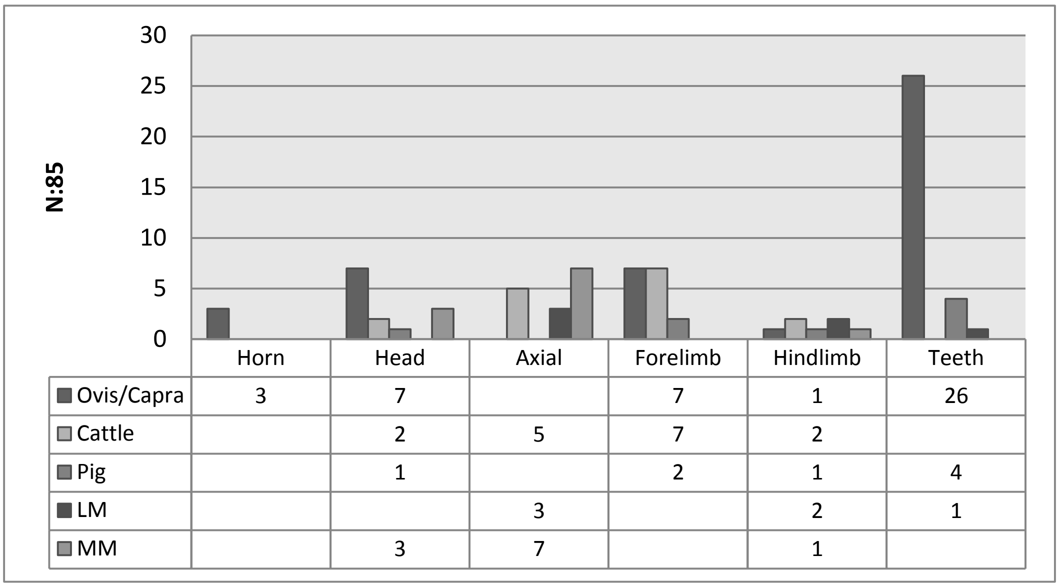


Figure IV.10. The distribution of elements across the pits K/14



	Horn	Head	Axial	Forelimb	Hindlimb	Teeth
Ovis/Capra	3	7		7	1	26
Cattle		2	5	7	2	
Pig		1		2	1	4
LM			3		2	1
MM		3	7		1	

Figure IV.11. The skeletal elements distribution for all pits K/14

A total of 20 animal bone remains were recovered from large Room 10 (L/11/41) in Middle Bronze Age from Leve1. There were varied specimens were collected from Room 10, besides commonly found domestic ungulates, birds, and horse skeletal elements were observed in this room. The axial skeletal bones and forelimbs exhibit relatively higher concentrations than others. Once again only adult age group is represented in this trench (L/11/41). Room L11/10 large sherds related to the several pithio and cooking pots were collected. This might indicate resembling kitchen area. The northern walls of Room 10 had fallen down towards the north since earthquake during Middle Bronze Age (Ökse et al., 2009b:278).

The animal bones were collected in trench L/12, which consists of narrow and large rooms, pavement floor, and granaries. The narrow room/magazine L12/151-188 (Room 56) is represented 28 animal bone remains. The high number of cattle and large size ungulate in these contexts are accompanied by very low proportions of pigs and sheep and goat in the case of narrow room. In addition, the forelimbs parts and axial skeleton elements are represented in a higher number than others. Furthermore, a few number of wild animal remains were collected in this room. A total of four wild animal bones were recovered; only one *cervid* mandibular tooth and one phalanx and one maxillary tooth relating to carnivore and one calcaneum belongs to hare. A total of 41 animal bones were recovered from large room's floor (L/12/134-146-186) (Room 55). While 34 bone remains are related to domestic animals and seven are belong to wild animals. The skeletal elements distribution for these contexts, is represented in Figure IV.12. Looking at the animal distribution patterning from these contexts, sheep and goats are dominant and the feet elements were recovered commonly. Head and axial skeletal elements are also importantly represented. Cattle are recovered less frequently from this room. Additionally, within the wild animals fox is represented five hind limb bones, only one carapace and rodent mandibular tooth was observed.

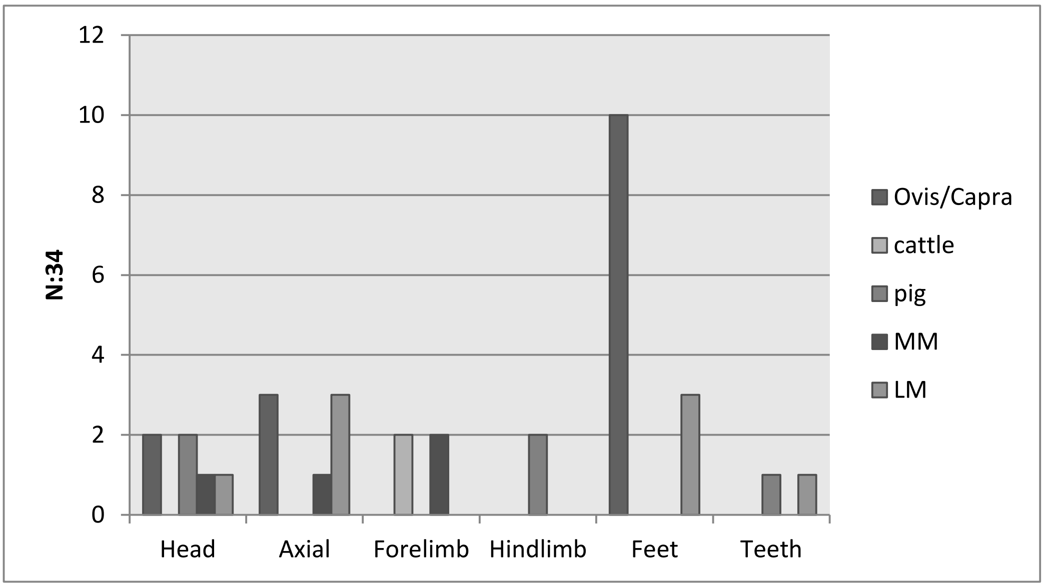


Figure IV.12. The skeletal element distribution for contexts of large room's floor

A total of 17 animal remains were found from granaries. Two features (L/12/77/38G and 80/33G) are associated with granaries in MBA. Middle size ungulates and axial skeletal elements are associated with these granaries. Besides, only one cervid third phalanx and interestingly right side of humerus is regarding to wild cat are occurred. A total of 32 were recovered from L12/203. Medium size of mammals' vertebra elements are dominant for this context. In addition, very young ovicapra elements were found, those elements consisted of forelimbs and hind limbs. Furthermore, L12/203 represented with the existence of unfused small mammal remains and one 2nd phalanx of equid.

During the excavation, there was terracotta pig and bull figurines were obtained from this context (Figure. IV.13). Finally, pit 32 (L/12/193) contains of 57 wolf bone remains (*Canis lupus*). It is believed that wolf bone remains from L/12/193 all derive from single individual. According to skeletal distribution of wolf, all parts of skeleton are present except teeth elements in the pit assemblage, axial skeletal elements are over represented and forelimbs are under-represented. Since, the absence of dental evidence, it is not possible to develop dental ageing pattern. According to epiphyseal fusion data suggest that the animal was 13 and 16 months of age at the time its death as all long bones were unfused or fusing process. (Silver, 1969). As the remains of this young wolf were nearly complete recovered it is possible that the animal was intentionally buried into the pit. None of the *Canis lupus* bones found at Salat Tepe showed evidence of butchery marks, nor were wolf bones found together with other food waste, suggesting that animals were not consumed at the site. The wild animal remains pointed that the hunting activities present in the site, the idea of presence of young wolf can be related with hunting adult animals and take the puppy as a plaything for the children.

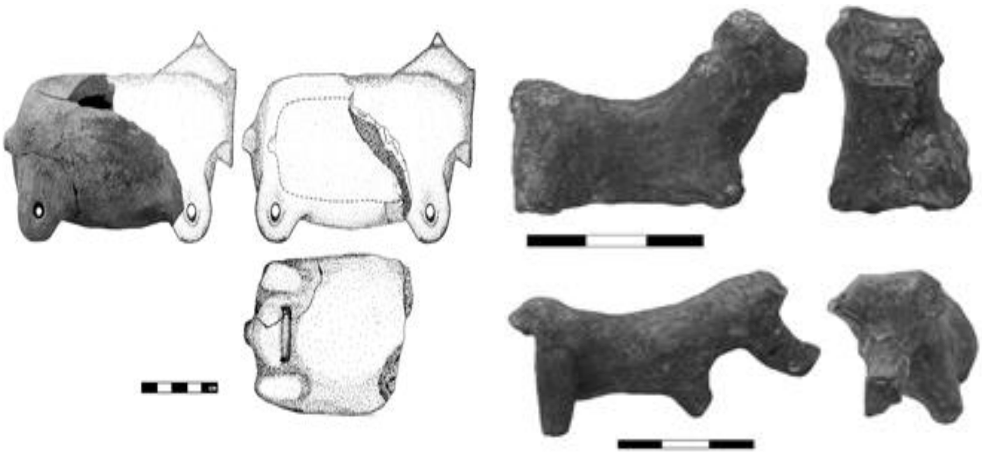
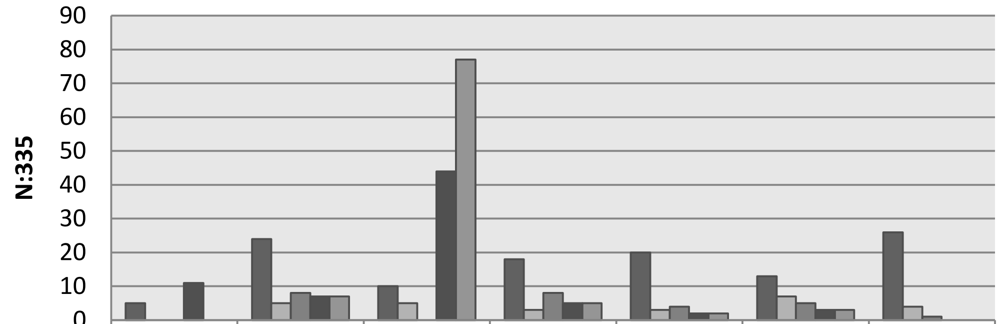


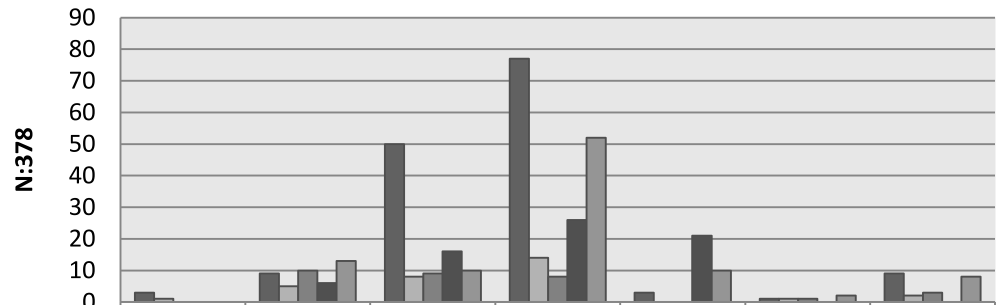
Figure IV.13. Terracotta bull and pig figurines from L12/203 (Excavation archives).

Most of the animal bones were collected from either inside of rooms or storage pits in trench L/13 in MBA Level 2 and Level 5 (Fig. IV.14). A total of 378 bone remains were recovered from seven storage pits. In addition, there were 47 bones were found from inside of four rooms. While the skeletal part frequencies of caprines are calculated separately for sheep, goat and sheep/goat, analysis of the data focuses on the overall patterning of caprines in a single skeletal part distribution. The number of specimens from pits are presented in Figure IV.15. Based on the number of elements, the Pit 33 exhibits the highest representation of animal bone remains relative to others (N: 177) (Figure IV.15). Ovis/Capra (N: 116) are the most commonly encountered animals in those pits. Skeletal part representation data is shown in Figure IV.14. Skeletal elements distribution, based on anatomical region show that the horn elements are poorly represented for all animals. In contrast axial skeleton elements are very well represented form medium and large sized ungulates (N: 136). Heads are second well represented anatomical group in this collection (N: 51). The number of meat-rich elements (axial skeletons) which are two to three times high than meat-poor elements. The Pit 31and 33 have very high meat- rich values, Pit 42 and 23 has high meat-poor, indicating that all stages of food processing from butchery through consumption to eventual consistently disposal of the bones took place in the vicinity of site. Little evidence of burning was preserved on the faunal material from MBA pits in trench L/13. Only 22 burned/ fully carbonized elements were recorded in Pit 31 (L/13/73/31P). The highest number of burned elements belong to medium mammals and ovicaprine, besides pig bones and one *C. elaphus* complete mandible are also defined in this group. Besides domestic ungulates, one tibia proximal of horse (*E. Caballus)*, sacral vertebra of dog (*C. familiaris)*, left scapula and humerus of cat (*Felis domesticus*) and nineteen bird’s bones fragments were recovered from L/13/70/33P. In addition a total of nine *C. elaphus* bones fragments were found from Pit 31(4 bones), Pit 34 (3 bones) and Pit 42 (2 bones).



	Horn	Head	Axial	Forelimb	Hindlimb	Feet	Teeth
O/C	5	24	10	18	20	13	26
Cattle		5	5	3	3	7	4
Pig		8		8	4	5	1
LM	11	7	44	5	2	3	
MM		7	77	5	2	3	

Figure IV. 14. The number of skeletal elements from storage pits



	16 P	23P	31P	33P	34P	41P	42P
O/C	3	9	50	77	3	1	9
Cattle	1	5	8	14		1	2
Pig		10	9	8		1	3
LM		6	16	26	21		
MM		13	10	52	10	2	8

Figure IV.15. The number of species according to pits

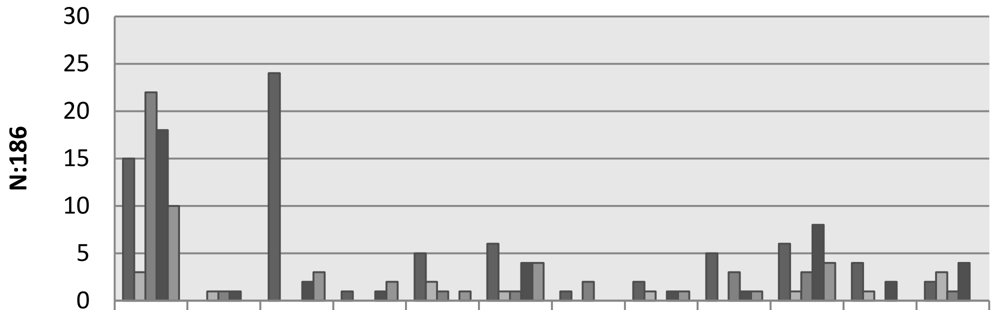
Figure IV.16. General view from Trenches L12 – L13 (Ökse, 2010:476).

A total of 47 animal bones were found into four rooms. The number of the each specimens of skeletal elements are separated for Rooms (Table.IV.4). Based on a skeletal elements while teeth are very well best represented for ovicaprines, elements in axial skeletons exhibit a high representation for medium sized ungulates. In addition, other group of anatomical regions are revealed a fairly low number. According to ageing data for ovicaprines in Room 63 (L/13/214/63R), the animals were slaughtered between 2 and 4 years of age; a period that includes sub-adulthood. This ageing pattern suggest that animals, were killed for meat before reaching full maturity. Tooth wear data for sheep/goat from Room 73 (L/13/237/73R), indicate that age at death 6-8 years of older age which is associated with bodily maturity the animal reaches maximum meat weight. Since the limited quantity of bones recovered from Rooms do not provide enough evidence to make an assumption for function of these places.

Table IV.4. The number of the elements from L/13 Rooms

Specimens	**N**	**Elements**	**L13/63**	**L13/73**	**L13/64**	**L13/50**
O/C	22	Forelimb				1
		Teeth	11	10		
Pig	3	Feet		1		
		Hind limb		1		1
Cattle	1	Teeth		1		
LM	2	Axial				2
MM	19	Axial				11
		Head			6	
		Forelimb		2		

Although most of the bones were recovered in Trench L/14 (1070 bones), the low number of secured contexts are recorded and are probably not acquired much information about trench L/14 in MBA. Nevertheless, once again, most of the bones were found inside of storage pits. A total of 186 bones of domestic mammals were found from secure loci in trench L/14 storage pits. The majority of the bones come from Pit 8 (68 elements) (L/14/133-139-145-209) (Figure IV.17). Ovicaprine bones were found more frequently than other species. In addition, inside of Pit 8 consists of, three feet bones of *C. elaphus*, one carpal bones of *E. caballus,* and vertebra fragments of Carnivora.



	8P	27P	43P	52P	61P	63P	66P	69P	75P	79P	83P	86P
O/C	15		24	1	5	6	1	2	5	6	4	2
Cattle	3	1			2	1		1		1	1	3
Pig	22	1			1	1	2		3	3		1
LM	18	1	2	1		4		1	1	8	2	4
MM	10		3	2	1	4		1	1	4		

Figure IV.17. The number of specimens to Pits in L/14

The Room 85 (L/14/ 197) consists of only six bones, which have been assigned to *Dama dama*. A complete fallow deer mandible, left maxilla and teeth fragments have been assigned in this room. The fact that fallow deer were found in Salat Tepe is an indicator that the surrounding landscape was likely more lush than it is today. Presently, the countryside around Salat Tepe does not support any type of deer. The difficulty, as Boessneck and Von den Driesch (1995:111) point out, is not one of the climate change but rather one of the environmental change. Deforestation of the landscape, along with increased agricultural activity and hunting by humans has extinguished the deer population. The very small numbers of fallow deer found at Salat Tepe may be evidence of small-scale (family or individual), planned hunting tour, opportunistic kills, or trade activity. Anyhow, fallow deer were not significant portion of Salat Tepe's food economy. A very few animal bones were collected inside of the hearth L/14/12. Only three ovicaprine bones, four large ungulates and six medium ungulates ribs remains were assigned with this hearth.

A total of 35 of *C. elaphus* bones were recovered from Pit 52 in trench (L/14/192). The frequency of skeletal parts for red deer are presented in Figure IV.18. Among anatomical regions, feet and forelimbs are highly represented and teeth and the red deer in Pit 52 exhibit concentration of axial skeleton and teeth lower frequencies. All parts of the red deer skeletal elements were recovered from inside of pit with the exception of antler. According to the number of skeletal elements, at least two red deer individual were found from this context. The ageing data set is simply small to construct a rigorous ageing profile, however general picture can be created. Fourteen post-cranial bones were recovered and grouped as unfused. Because very few equid teeth were found in a complete state, it is not possible to generate detailed dental age profile. Based on fused and unfused post cranial elements ratio, it might be suggested one of red deer individual associated young animal. Thus, red deer elements recovered were unfused and fused indicating that young and adult red deer were hunted and deposited on-site. In the case of red deer exploitation, based on the number of butchery waste elements, it is assumed that the hunters brought back to the settlement the entire carcass. Although antler is valuable raw material, those were found very less in the assemblage. The absence of cranial skeleton and antler, related with antler was not a local resource for Salat Tepe people.

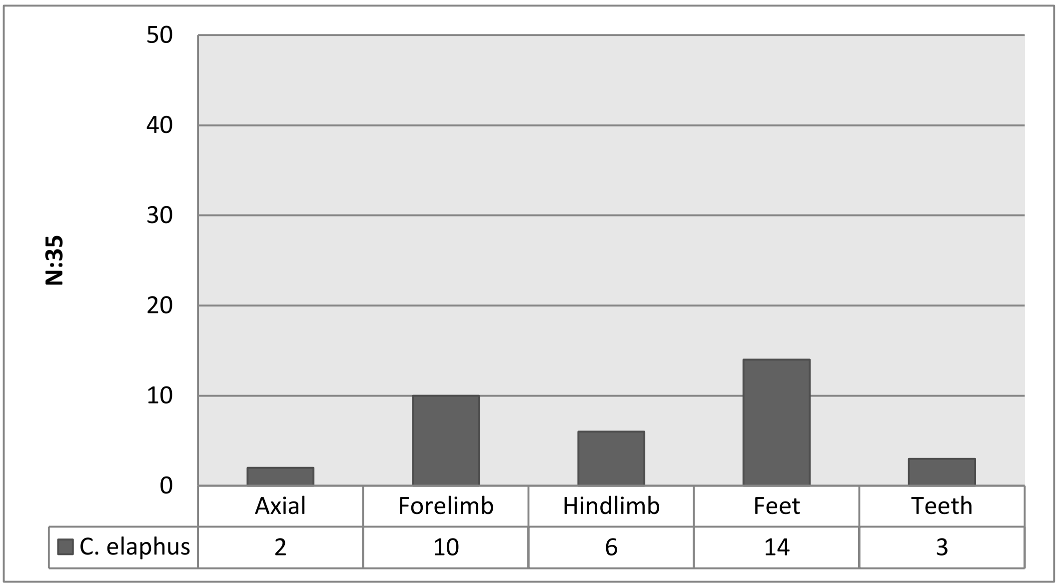


Figure IV.18. The distribution of skeletal elements of red deer

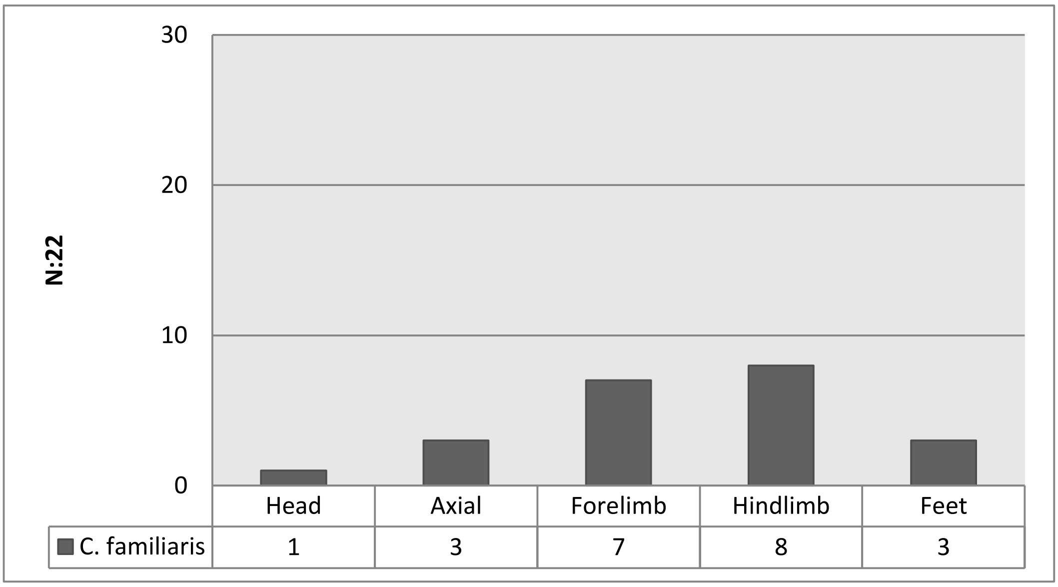


Figure IV.19. The distribution of skeletal elements of *C. familiaris*

The frequencies of skeletal parts for dog are presented in Figure IV.19. The dog remains (22 fragments) come from a single individual recovered from Pit 27 (L/14/57). Very little of head were recovered and the teeth are missing but apart from that the skeleton is relatively well represented by major hind limb and forelimb elements. The dog was young age at death time as all of its limb bones were unfused or fusing stage. Epiphyseal data suggest that the animal died when it was approximately 8 months old. Since the dental remains were not found, the dental ageing cannot be created for dog. Although, the all skeletal remains of this young dog were found, it is difficult to say that the animal was intentionally placed into the pit, it is more likely, however, that the animal was killed and settled accidentally.

Unit 1 Level 2 the MBA in trench M13 was represented by two rooms disturbed by large pits. Room M13/33 was in the northernmost profile of trench L/13 and in trench M/13, and Room M/13/32 was to the north of M/13/33 (Ökse and Görmüş, 2006:181). Very little of the bone remains were found from rooms. Room 33 consists of only eight bones and Room 32 is represented by only two ribs of large ungulate. The excavation reports showed that the Room 33 was burned and eleven loom weights were uncovered on the room floor (Fig.IV.20). In Room 32 two coves in the inner surface of the wall and the pit on the floor and several carbonized wood remains scattered on the compact floor, indicated the existence of weaving loom (Ökse and Görmüş, 2006:182). According to, the C^{14} analyses on the burned pieces of the weaving loom date this late phase to the 17^{th} and early 16^{th} centuries BC. (Ökse et al., 2009b:277). A total of 29 animal bones were deposited from site 48. Only economically important species found in this place, and as for the skeletal elements distribution horn, head and teeth elements are dominant in this group of bones. M/13/103/35P represented with a total of 21 bone elements. Beside, most commonly found bovids, tortoise carapace (10 fragments) elements were dominant in this context. One *Canis familiaris* fused astragalus was also found. What is more, a piece of bronze figurines were also recovered from this context (Fig. IV.21b). Based on skeletal elements hind limbs are the most repeated part for the animals, obtained. A total of ten skeletal remains were recovered from M13/145. This place is associated with foundation ritual, with the evidence of terracotta bird figurine (Fig. IV.21a). Besides, only economically essential species were obtained from here, medium sized mammals are the major for M13/145. However, because the number of the materials are very limited, it is difficult to make more detailed statements. Finally, in MBA place 54 (M13) contains a total of 23 animal bones, wild boar (*Sus scrofa*) are associated with this place. Based on the skeletal element distribution for wild boar, three scapula (2 right and 1 left) indicate that two individual wild boar subsisted in the site. No wild boar teeth elements were recovered so, it is not possible to generate dental ageing profile. Although, very few (six bone remains) post cranial with applicable epiphyseal fusion, the epiphyseal fusion ageing data, very general it appears that all of the boars deposited at site were from skeletally immature individuals. (Silver, 1969). Two humerus and one ulna unfused elements showed an age profile based on epiphyseal, those elements were aged from humerus >1 year old and ulna < 3.5 years old. Thus, it is suggesting that while one individual boar were hunted in adulthood, other individual was hunted during infant or juvenile.

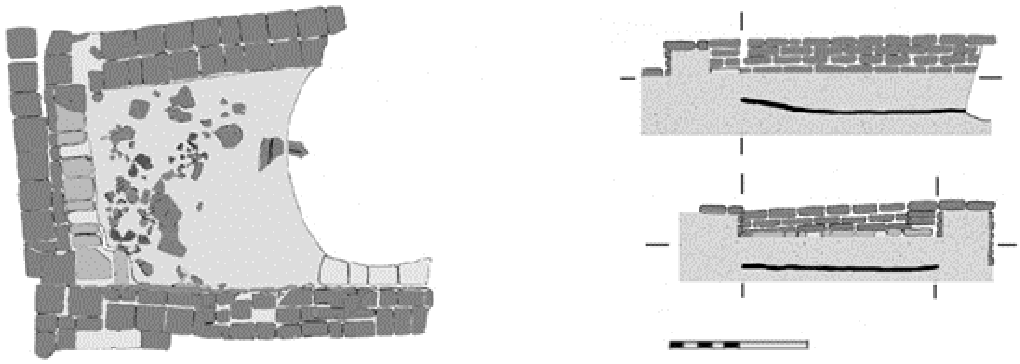


Figure IV.20. Room M13/033, and view from section (Excavation archive).

a

b

Figure IV.21. a. Terracotta bird figurine (M13/145), **b.** Pieces of bronze figurines (M13/103) (Excavation archive).

Early Iron Age is characterized with large pits at Salat Tepe. The pits contain ash layers and a horse-shoe shaped hearth was constructed on its floor (Fig. IV.22). A similar character is attested in Eastern Anatolia, is represented by simple dwellings and at some mounds, only by large pits or graves. Surveys in several regions of Anatolia showed that various small hill-top sites with EIA material. This characteristic is interpreted as the collapse of agricultural administrative system and increasing nomadic life. Although sedentary population have lived at few sites with stone foundation and surrounding walls, most of the sites show a very low quality architectural features (Ökse and Görmüş, 2009: 165). According to ethnographic literature those changing patterns of nomadism and sedentism within single community, are often influenced by social economic, and political factors (Piro, 2009: 270). The EIA pits at Salat Tepe stone foundation or plaster were not observed. All pits at Salat Tepe have hearths and thin white layer is the residue of straw-coating saving from harm (Fig. IV. 23 and 24). Similar pit-hearths are still in use in recent time in the Diyarbakir- Batman region. The pit dwellings had few internal features but contained heaths, grinding stones, and bones artifacts– an extensive parallel to pits of this type at Salat Tepe. Furthermore, the adaptability of portable hearths, were found at Sos Hoyuk into dwelling houses, allow them to be used year-round, both outdoors for cooking in the warmer months and indoors for cooking and heating in cold weather (Piro, 2009:271). Several nomadic tribes migrate between the Upper Tigris region and the mountainous regions of the Van basin since recent times. During the winter time the migration routes pass the vicinity of Salat Tepe. Because, any architectural features were not observed in EIA, these evidences might have been attested with nomadic or semi- nomadic communities at Salat Tepe (Ökse and Görmüş, 2009: 168).

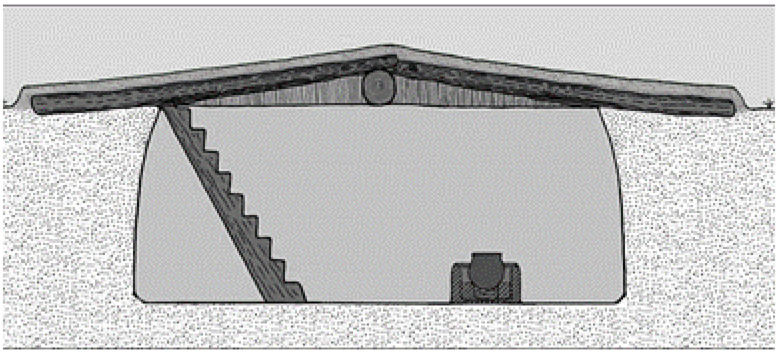


Figure IV.22. The illustration of Iron Age pit dwelling house (Ökse's personal archive).

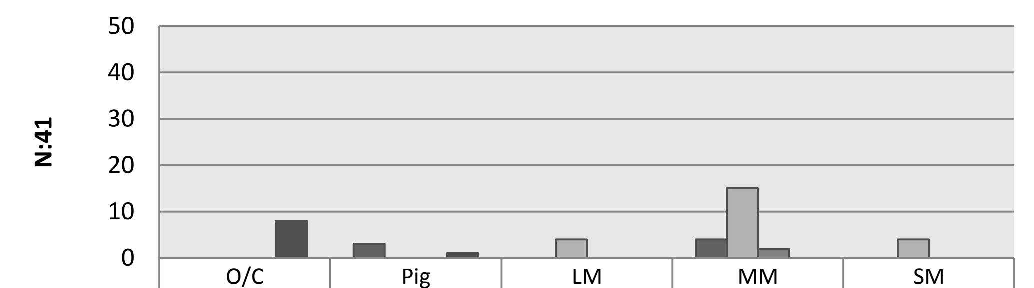
The EIA in trench M13 was represented three pits. A total of 38 bone remains were presented from three pits; 27P, 31P and 77P. Most of the bones recovered from other domestic animals, very few wild mammals, reptiles and fish remains also collected from inside of the pits. The majority of animal bones found from Pit 31. This pit consists of twenty-one bone remains and those bones belong to varied of species. Beside domestic animals, four vertebra fragments of fish, two tortoise carapace, one cervid right upper molar teeth, and set of vertebra of snake were found in this pit (The snake's vertebra skeletons were collected from M13/181/31P). Because this animal are hibernated during the winter, generally dying, so its occurrence may not have cultural implications. Although, to generate particularly ageing structure is difficult, however epiphyseal fusion data indicate that all of the bones were fused. A total of thirteen bone remains of domestic animals were found and the vertebra is the main skeletal element for this group. Due to the small number of animal bone remains recovered from pit 31, a detailed information cannot be constructed. A very few bones were found from other pits, while only six sheep/goat ribs were found from pit 27, pit 77 contains only eleven bone remains, comprised six pigs and five sheep/goat remains. The skeletal part composition indicate that pit 77 is characterized by axial skeletons. However, it is not possibly give more information about those pits, due to the scant of animal bone remains.

Figure IV.23. The pits in trench M/13 (Ökse and Görmüş, 2009:172).

Figure IV.24. The hearth of the Pit in trench M/13 (Ökse and Görmüş, 2009:172).

A total of 31 bone remains were recovered from two EIA pits in trench L/14. Deer (*C. elaphus*) antler was the only element recovered from L/14/63/ 28P. Thirteen antler remains were recovered from pit 28 and some of the antlers were too fragmented. It is tempting to suggest that the existence of only deer antler is a reflection of cultic tradition and that they were considered suitable as sacred animals. Based on accumulation of only antler bones, the deer were not simply considered together as 'wild meat'. In addition, as a considered to founding only meat-poor bones, the assumption of ritual activities was very reasonable. Moreover, the hearths which was constructed pit's floor, may have had ritual or sacred significance in the household, as suggested by anthropomorphic and animal stylistic features on hearth decoration and associated figurines (Piro, 2009:271). A total of eighteen bone remains were found from other pit 36 in trench L/14 (L/14/60). The trench L/14/60/36 P was assigned with ash layer and the remains of whitened straw on the floor of pit. Mostly large and medium size ungulates were found and skeletal rib elements were highly detected in this assemblage. Moreover, one carnivora left mandible fragment were recovered, due to the lack of dental remains, it is no possible to produce ageing profile for carnivora. One tibia distal epiphysis of domestic pig was recorded as unfused. Based on epiphyseal fusion tibia distal was staged as Stage II which indicate sub-adult animal.

The archaeological materials of EIA were collected from pits in trench L/12. A total of 48 animal bone fragments were recovered from three pits are secured features. A very few an overall of seven bones, were collected from both pit 53 and pit 43 (L/12/137-76 respectively). The axial skeletal parts frequently represented and regularly found domestic animals sheep/goat, cattle and pigs were defined in these pits. Furthermore, the pit L12/63 is represented with 41 animal bone remains. Looking at the animal distribution patterning form this pit medium sized ungulates were dominant and axial skeleton elements were represented frequently (23) (Fig. IV.25). L/12/63 contains of two medium sized mammals of foetal humerus elements, represented as forelimbs in the Figure IV.25. No more foetal skeletal elements were recovered, so it is extremely difficult to explain the existence of those foetal elements. Eight of sheep/goat teeth elements derive from a single ovicaprine. A very few, four mandibular teeth were recorded for sheep/goat and only two M_1 (left and right) teeth can be used for deciding dental ageing. According to the dental eruption on the mandibular molar teeth the ovicaprine was at least 6-8 years old (adulthood) when it died as the first molar had erupted.



	O/C	Pig	LM	MM	SM
Head		3		4	
Axial			4	15	4
Forelimb				2	
Teeth	8	1			

Figure IV.25. The animals and elements distribution from EIA L/12/63

In sum, the relative abundance of the main domesticates at the site during the EIA period may be interpreted, in part, as a based approach to husbandry practices, together with hunting. Unfortunately, the small size of faunal assemblage precluded a comparison between occupation levels, which makes it impossible to reflect accurately the nature of herding economy at the site in the EIA period and may incomprehensible interactions between more mobile and more sedentary populations within the community. Because the absence of settlement plan for the site during the EIA period, it is not possible to analyze the faunal remains by building phase but only pits. Thus, the faunal assemblage from EIA Salat Tepe was too small to provide detailed information about pastoral activities, herding strategies, and the degree of mobility at the site.

The Medieval Age is mostly represented by the granary pits (Fig. IV.27). In addition, medieval dwellings also exist, however the reason of very fragmented of stone walls on the mound summit and destroyed this area by the granary pits, which makes it impossible to understand planning of reconstruction (Fig. IV.26). The research showed that the remains of stone walls without mud-brick debris as well as many hearths and kiln represents temporary shelter on the mound summit. The pottery were dated to the 5th and 6th centuries AD. (Ökse, 2008: 687). A total of 144 animal bone remains were recovered from granary pits in three trenches. Trench K/13 consists a higher number of animal remains within the other trenches. The granary pit 11 (K/13/87-91-91) contains a total of 87 bone remains, cattle are strongly associated with this room. The skeletal part composition indicate that the granary pit is characterized by axial skeletons. For caprines, elements from each anatomical region with the exception of teeth and horns, meat and non-meat bearing bones are represented in the skeletal distribution, which suggest that sheep and goat were butchered at the site. Moreover, it is possible that the feet and horn elements were intentionally removed from the site. In addition, the slightly greater representation of forelimb over hind limb elements may indicate that meat bearing elements were preferred. However, this emphasis on forelimb to hind limb elements may simply be an effect of small sample size. The existence of the high meat-rich elements indicate it may have served as a refuse disposal area for remains of both butchery and food preparation. Because of the small number of dental remains recovered from the Pit 11, a detailed dental age profile cannot be constructed. While only seven sheep and goat bones were recorded as unfused, based on unfused pelvis and scapula elements, the animals were slaughtered at 6-12 months at age. It is suggested from epiphyseal fusion data young sheep/ goat were also consumed. A few number of cattle bones were recovered from Pit 11. Axial skeletons are the most frequently represented skeletal element for cattle. The epiphyseal fusion data showed that all of the post-cranial skeletons are fully fused for cattle. It is possible the cattle were kept after until adulthood. The late ages at death are in keeping with strategy of using cattle primarily for their draught capabilities (Wapish and Hesse, 1991: 34) rather than as source of meat or even milk. However, because the small number of cattle remains were found, it will be rigorous to make a strong assumption for cattle. Only axial skeletal elements are represented for large size ungulates. According to skeletal elements indicate that the animals were slaughtered and butchered away from the site and only the most useful parts were transported back to the site itself (Arbuckle and Makarewicz, 2009: 677). Interestingly, both medium and large sized mammals are represented mostly with ribs. The accumulation mostly rib elements may suggest deliberately selected of body part of animal. Besides, one proximal tarsal and one distal metapodia bones of *Cervus elaphus* were recovered from pit 11. In addition, one carnivora proximal ulna, one carapace and one complete tibia of tortoise, and four bird bone fragments were presented in this pit.

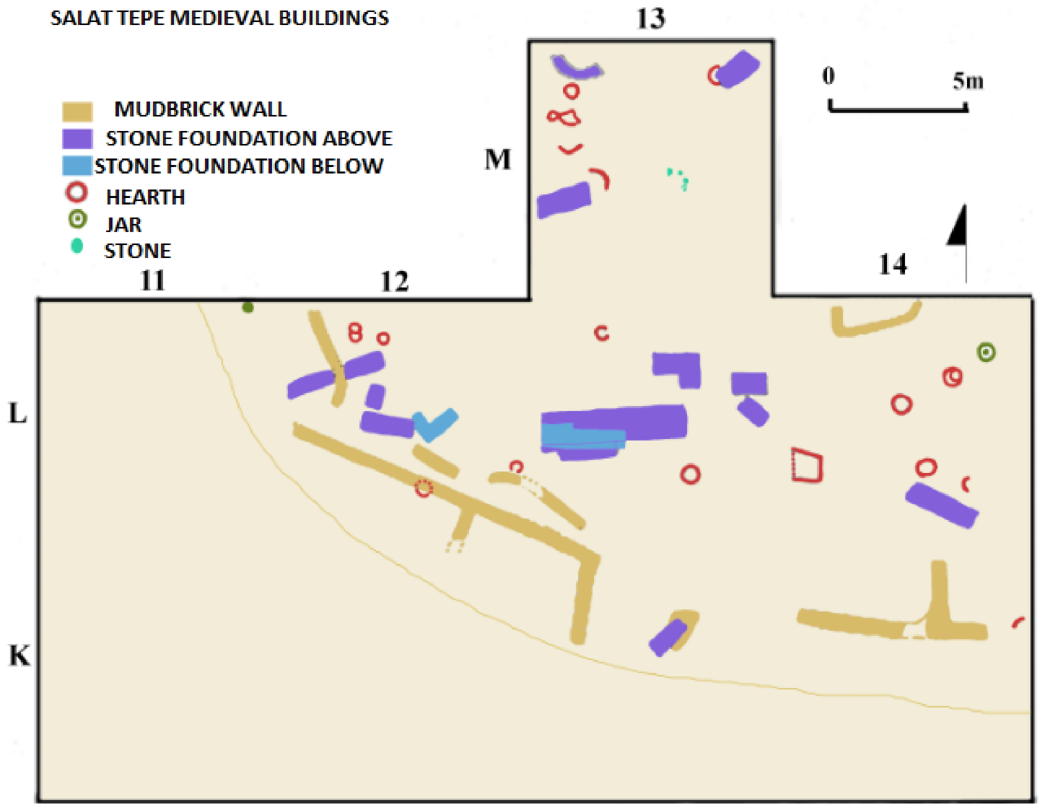


Figure. IV.26. Plans of Medieval building (Excavation archive).

Figure IV.27. Medieval granary pits (Excavation archive).

Another granary pit in Medieval is Pit 32 in trench L12/136-158, which consists of 25 animal bones, and sheep/goat are the most commonly recovered animals in this pit. A total of twelve ovicaprine bones were detected and the mandibular teeth elements show fairly higher representation than post-skeletal elements. An overall twelve ovicaprine bone elements were found. Eight from ovicaprine mandibular teeth elements all derive from single individual. According to dental eruption on the mandibular teeth of M1, M_2 and M_3 the ovicaprine was at least six years old when it died. Because only one right fused tibia distal part was recovered, it is not possible to develop specific epiphyseal fusion data for this ovicaprine. Medium size mammals represented with eight bone fragments; four ribs, two humerus one ulna and one astragalus. In addition, two rib of large mammal and two canine teeth of pig were detected. Because, the number of the animal bones were very less, it is difficult to associate the occurrence of those elements with the archaeological context.

Finally, a total of 32 animal bones were recovered from granary pit 33 in trench L13/76-115-118. The animal distribution is represented in Figure IV.28. Sheep/goat are the most represented animals in all assemblage. Pig remains were not recovered in this trench. The absence of this animal can be related with environmental or socio economic changes. However, because limited number of element were recovered, it will not be accurate to making an assumption particularly. The majority of animal bones were recovered from trench L/13/76. Skeletal part representation data for ovicaprines, cattle and large and medium size ungulates are presented in Figure IV.29. Based on anatomical region, the axial skeletons exhibit the highest representation to other groups. On the whole, hind limb elements exhibit higher representation than do forelimb elements. The main conclusion for ovicaprines can be drawn from the skeletal part representation data, is the animals were butchered and consumed at the site. Axial skeletons are also well represented for large and medium size ungulates. However, the higher number of meat-rich elements may be associated that specifically preferred body parts. In addition, very little of the feet a teeth were recovered and no head or horn skeletal elements were found. Besides, one bird long bone fragments and one complete left ulna of hare were also found from L/13/76/33P. Since, only two teeth fragments were found, there is no way to generate dental ageing pattern. According to epiphyseal fusion data, eight ovicaprine post cranial bones were recorded as an unfused. The epiphyseal fusion data based on tibia and femur the animal grouped into (sub-adult) Stage V, which means the sheep/goat were killed before fully mature age. However, the limited evidence makes it difficult to understand using of animals.

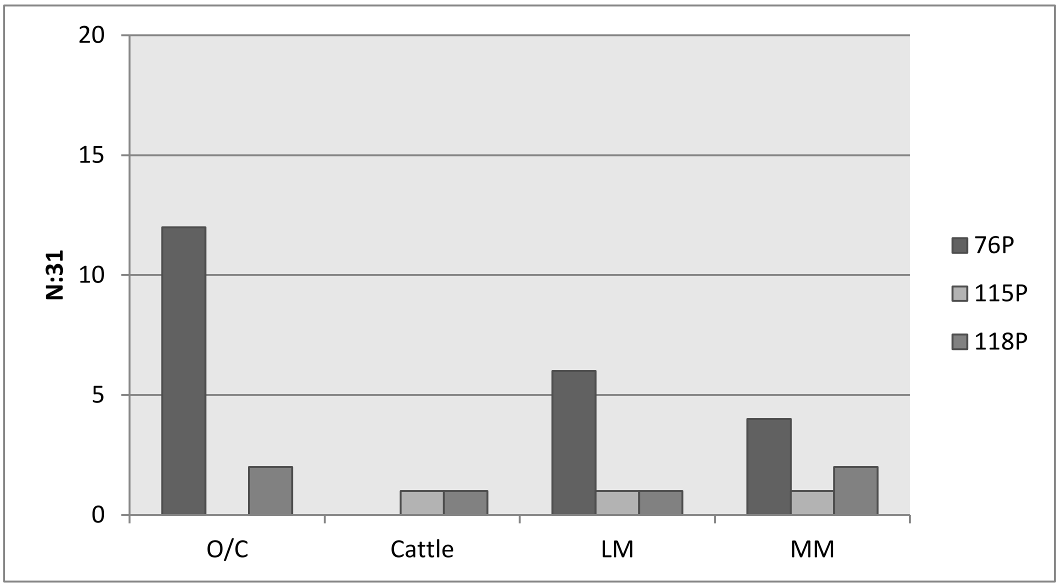
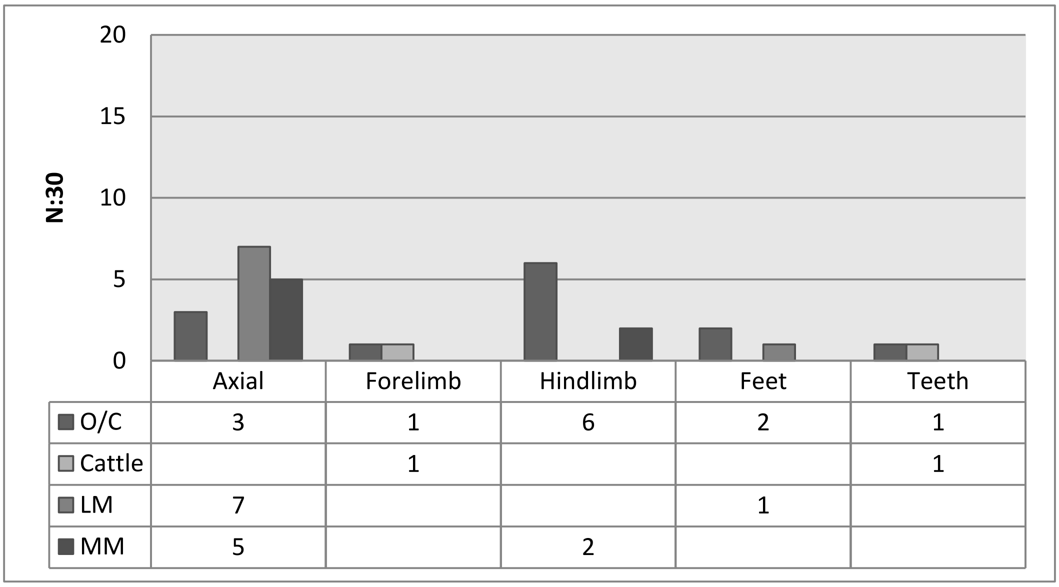


Figure IV.28. The animal distribution according to pits



	Axial	Forelimb	Hindlimb	Feet	Teeth
O/C	3	1	6	2	1
Cattle		1			1
LM	7			1	
MM	5		2		

Figure IV.29. Skeletal element representation from pit 33

CHAPTER V

V.1 DISCUSSION

V.1.1. FAUNAL DISCUSSION

Faunal analysis is essential to the understanding of both local and regional dietary strategies in Southeast Anatolia from Salat Tepe spanning a Chalcolithic to Hellenistic-Roman periods and contributes to interpretation of human-animal interaction within those periods. It is clear that of the site is not relied on wild animals to provide them with food, rather they were dependent on domestic animals, particularly sheep, goat, pigs and cattle. Herds of sheep and goats are a major source of subsistence in the Middle East at present and have been since their domestication more than 10.000 years ago in the foothills or mountains of southwest Asia (Redding, 1984:223). The number of faunal remains show difference in Iron Age and Hellenistic-Roma Period (Figure.V.3). There is obviously decreasing in the number of major domestic animals. Faunal remains from Salat Tepe do not reveal a drastic change in animal husbandry practices in Bronze Age. Most of the changes observed through time are gradual in nature and probably resulting from changes within framework of a local pastoral economy from Bronze Age to Iron Age. Furthermore, sheep and goat completely dominant the animal economy in terms of numbers of animals for each periods in the Salat Tepe. The number of bone remains abruptly increased in Bronze Age period in the site. Changes in the range of taxa and in the relative proportions of the bones of domestic animals from Bronze Age to other periods are excessive. As noted above, overwhelming evidence shows that the ovicaprids are the most dominant animal during all periods at the site, followed by pigs and cattle (see Chapter 3). The assemblage from Bronze Age is marked by a relatively high proportion and wide range of both wild and domestic animals. However, caprines and cattle are found in equal numbers in Late Bronze Age but in the subsequent Middle Bronze Age period pig decrease in importance, in favor of cattle. For all of sites, used for comparison, the number of pigs are more than cattle excluding Turbe Höyük's samples. Various reasons may account for this equivalence pattern. Pigs are primarily a single resource domesticate; they provide only meat. In addition, pigs have high meat yields, their meat has the highest values of fats and calories, they have the largest number of young per birth, and they reach harvestable age faster than any bovid (Stein, 1998:181). The morphological and the morphometric analysis of the faunal remains of equid at the site indicate that *Equus asinus* and *Equus caballus* are both present at the site. It has already been known that other equid species were exploited within the Euphrates valley area (Uerpmann, 1987:135). Equids had substantial economical role in products distribution, transportation and exchange. Although small number of equids in present in the site, still it can be assumed that the settlement was included in carriage activities using horse and donkey as pack animal in MBA-LBA at Salat Tepe.

When we compared the examination of the faunal remains with other sites situated in the Ilısu Dam Region and its vicinity (Fig.V.1), we can see that the animal economy and dietary strategies concentrated on herding sheep and goat, while pig came in the third place and cattle fourth. A high number of ovicaprids were observed in other sites in all periods. The proportional representation of food supplier mammals is more or less similar between the MBA and LBA periods. Pig stay in second position in both MBA and LBA, however, increase noticeably during MBA, except from MBA and LBA Turbe Höyük, Salat Tepe- LBA and Tilbeşar-Transition (EBA-MBA) periods. Its high meat yield status maybe allowed a control on secondary products from sheep, goat and cattle. Faunal remains from Hirbermerdon Tepe in the MBA, Giricano Tepe in the LBA and Salat Tepe in the MBA-LBA show different subsistence economy in this region, and those settlements comprise evidence of high of wild taxa. This may reflect some major economic and social alterations. In addition, it may also show the beginning of a settlement organization, with on the other hand, relatively large and permanently occupied agricultural settlements of long duration, or conversely small, short term sites largely relying on hunting (Cavallo, 1996:503). The hunting of different animals is directly related with geographical conditions and the most accessible species, for Salat Tepe, hunting seems to rely less on specific animals, like small game (fish, bird, etc.), but comprises a more large herbivores. The faunal analysis indicates that the existence of deer hunting. According to Berthon, there is a connection between the location of a site in the alluvial plain and the significance of red deer hunting. It can be associated with the evidence from Müslümantepe in the LBA, Giricano in the LBA, Hirbemerdon in the MBA and Salat Tepe in the MBA-LBA had a specified hunting activity on deer. Berthon suggested that, all of the sites are hilly lands, arid, and eroded today, however, which could have been more convenient for agricultural activities and hunting in the past time (Berthon, 2011:176). As it is known Giricano in the Middle-Assyrian period and Salat Tepe in the MBA was a *dunnu* (farmstead); (see Chapter I) controlled by king and his family, which fortified agricultural centers. The hunting was important for *dunnu* economy (Berthon, 2011:182). According to studying of the skeletal elements for red deer show high number of cranial and extremities (tarsal bones, metapodia and phalanges) and it is associated with possible special purpose of deer hunting at Giricano. In the shed light of skeletal remains of red deer, this pattern is explained by the existence of leather industry (Berthon, 2011:182). In Bronze Age Salat Tepe, the majority of the skeletal elements consist of forelimbs, feet and hind limbs respectively. However, it is difficult to make an assumption use of skin. In order to make statement about whether deer was hunted for special purpose or not, there is not enough evidence detected in Salat Tepe.

In Iron Age subsistence economy mainly based on ovicaprids for Tilbeşar Höyük and Kavusan Höyük, however, pig is the most dominant animal in Salat Tepe (Figure.V.2). In addition to the advantages of pig, mentioned above, according to Zeder's study, pigs were and an essential indicator of lower status residential areas. Pigs seem to play a more important role during times of weaker political integration and reduction of central control (Zeder, 1991:30). The number of pigs are more than bovids in Salat Tepe during the Iron and Middle Bronze Ages. Hongo suggested that; faunal remains, do indicate some deterioration of the agro-pastoral environment and decentralization of the economic basis in the earlier phase of the Iron Age. It is submitted that was large centers or the capitals that were the primary military targets at times conflict with small villages or towns suffering damages which is common phenomenon at many medium or small site in Anatolia in the Early Iron Age (Hongo,2003:266). Together with other archaeological evidence in Iron Age, it can be assumed that possible corruption could be occurred which influenced the general population and economic or political status in Salat Tepe.

After the Iron Age, Salat Tepe was once more abandoned and the mound summit was used for digging granary pits (Ökse, 2008:687). Although the Medieval Period represented with small amount of animal bones, the comparison between other sites will be helpful to understand the medieval period faunal system (Figure.V.4). In the Medieval Period, subsistence economy mainly based on domesticated caprines for Tilbeşar Höyük and Salat Tepe. At these sites evidence exists for slight hunting activity. However Giritille's faunal assemblage different than other sites in terms of animal preference, pigs were the most frequently slaughtered animals throughout the Giritille medieval sequence (45%) (Stein, 1998:193). Stein defined this excessive rate of pig consumption as a "fast food" for inhabitants of Giritille with diet based on meat. While, equid remains are represented in the Medieval assemblage from Giritille and Tilbeşar Höyük, equids bones are not obtained at Salat Tepe.

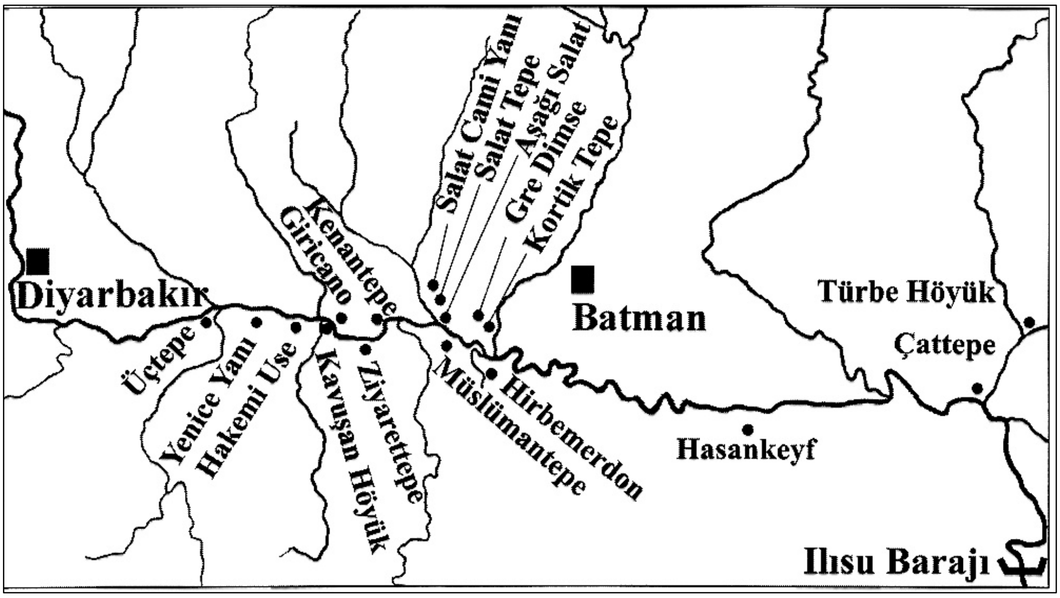


Figure V.1. Location of Salat Tepe and Other Archaeological Sites Located Its Vicinity (Ökse, 2011b:291)

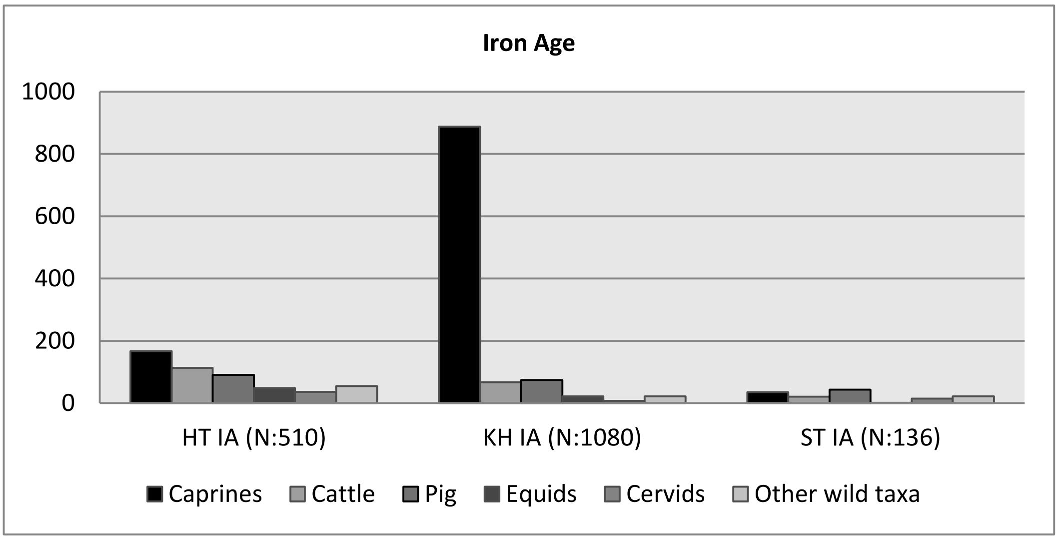


Figure V.2. Proportions of the Animals from Iron Age Sites (Hirbemerdon Tepe, Kavuşan Höyük and Salat Tepe).

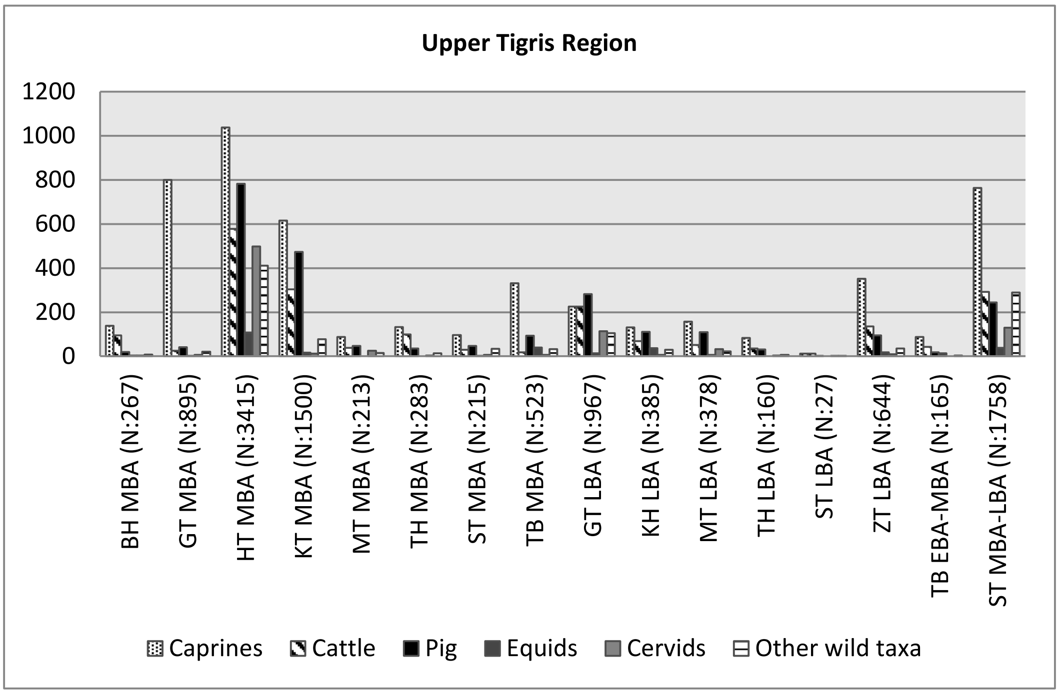


Figure V.3. Proportion of the Animals from Different Bronze Age Sites in Southeastern Anatolia

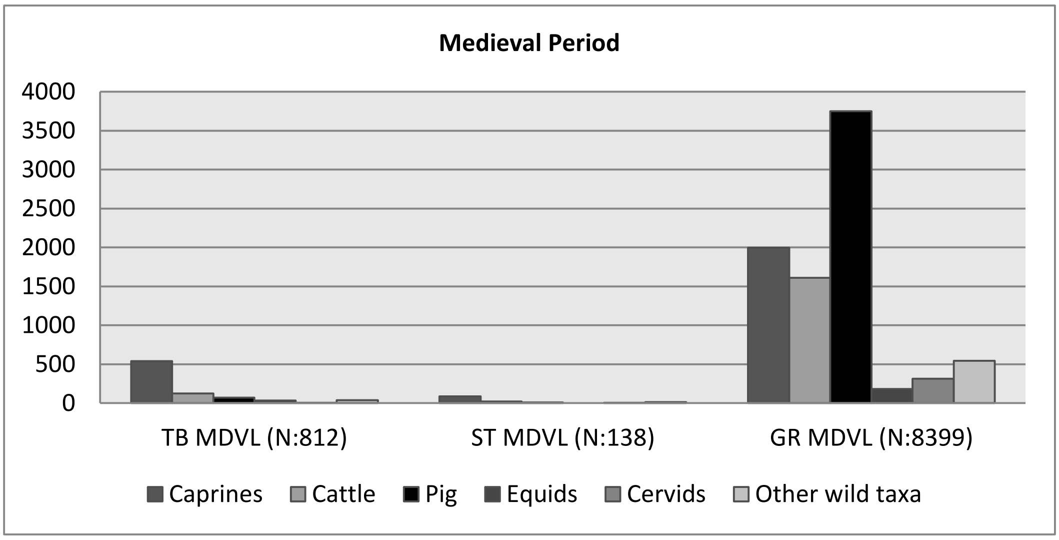


Figure V.4. Proportions of the Animals from Medieval Age Sites (Tilbeşar, Salat Tepe, and Giritille).

The overall Salat Tepe animal economy is mixed with several layers of production strategies. Pigs are used for meat, sheep and goat principally herded for wool, dairy and culled for meat. Cattle are used for draught, dairy and meat.

Many archaeological projects conducted in the Northern Mesopotamia region and examining this area is important in terms of understanding animal exploitation. There are very few number of MBA sites' animal economies was reconstructed in Upper Mesopotamia. The studied settlements mostly dated to EBA and LBA. The beginning of the Late Bronze Age parallels to the development of the new political powers in Middle East. The Mitanni empire established in Upper Khabur plains and extended far beyond that region between 1500-1200 B.C. (Omar, 2010:98). The faunal picture remains highly consistent for sheep and goat evaluated sites in North Syria. Sheep and goats are always primary herd animal animals in Near East (Zeder, 1988:9). Unlike Salat Tepe (MBA), equids are mostly the next common animals in both Early and Middle Bronze Ages. However, a comparison of the different periods within the Bronze Age shows gradual changes over time in relative abundance of different species. The previous faunal studies show the environment changes has played essential role on the frequencies of livestock species. Third Millennium B.C. (EBA) settlements in northern Mesopotamia and Upper Euphrates region displayed two distinct animal exploitation patterns in terms of environmental alteration. The inhabitants of Euphrates Valley sites in northern Syria practiced a subsistence strategy much different than their neighbors to the north. Although located on or near the Euphrates, the inhabitants of southerly sites were constrained by the arid climate and steppe environment (Weber, 1997:142). Because the northern urban sites which are in areas receiving higher rain depended on sheep/goat, apart from consuming large number of cattle, pigs and equid. On the other hand, different animal distribution was observed in Middle Euphrates and Khabur valley; intensive exploitation of sheep/goat herds, cattle had a minor role and pig was rarely reported. In addition, the proportions of equid show similarity as some domestic animals (Zeder, 1998:58). Similar faunal assemblage pattern are represented in Um-el Marra, Tell-Bderi Tell-Brak, Tell-el Leilan, Tell Seh

Hamad, and Tel es-Sweyhat. While the pattern of pig exploitation was very scarce during EBA, which increased in LBA especially in Northern Mesopotamia. Pig exploitation may follow a moisture gradient. In the mid third millennium, domestic pig is abundant in the Euphrates valley of southern Turkey and almost non- existent to the South in the more arid, Syrian steppe (Weber, 2001:350). Pigs are not as well adapted to arid environments as caprines or cattle, they need appropriate water access and wallow (Zeder, 1998:64). However, Zeder attested that not only environmental factors responsible for degeneration in pig utilization, but indication of more specialized pastoral economy; large scale animal production and distribution (Zeder,1998:64). The excessive number of the equid is also noteworthy, hunting onager was popular in EBA through MBA, but the proportion of onager slightly decrease in LBA. However, equid had a substantial importance of wild animal source in the economy of the settlements in this region. Generally, the proportion of onager falls dramatically EBA through LBA. The declination of onager population explained by Zeder with the over-hunting; excessively consumption (Zeder, 1998:62). A cut marks were observed on few equid bones in MBA Kenan Tepe, chop marks were observed one donkey's talus at MBA Hirbemerdon Tepe, and again cut marks were detected on few number of donkey's tibia in Neo-Assyrian Kavuşan Höyük (Berthon, 2011:76). However, the equid bones are scarcely represented, and the cut marks are not observed so, equid remains cannot be attributed to onager hunting practices in Bronze Age Salat Tepe. In addition, Schwartz suggested that onager may have been hunted for their hides and other products, such as: sinew, and bones. Hides were economically important products, and focus on their production would probably be highly profitable (Schwartz *et al*., 2000:437). General view of faunal assemblage in LBA, indicates occurrence of another shift in exploitation. Cattle increase in significance, and sheep and goat again outnumber. The number of gazelle still large, so, this implies the existence of steppe. Although horse and donkey are relatively more abundant among equid remains, onager exploited less intensively. The faunal evidence suggests that the faunal composition rather same in southeast Anatolia and Northern Syria especially in terms of proportion of cattle. However, the number of pig still lower than SE Anatolia's pig sample.

Consequently, the faunal remains from Southeast Anatolia and Northern Syria different than each other in terms of the proportion of pig consumption and wild onager hunting activities in Bronze Age. While pigs are one of the main food provider in Anatolia for all periods which evaluated, neither the reason primarily environmental changes nor cultural selection pigs were not part of pastoral economy for a long time (3rd mil. B.C., EBA until LBA) in Northern Syria. However, the faunal power of sheep/goat always similar for all sites mentioned above. The importance of sheep and goat is always consistent through different periods in different regions.

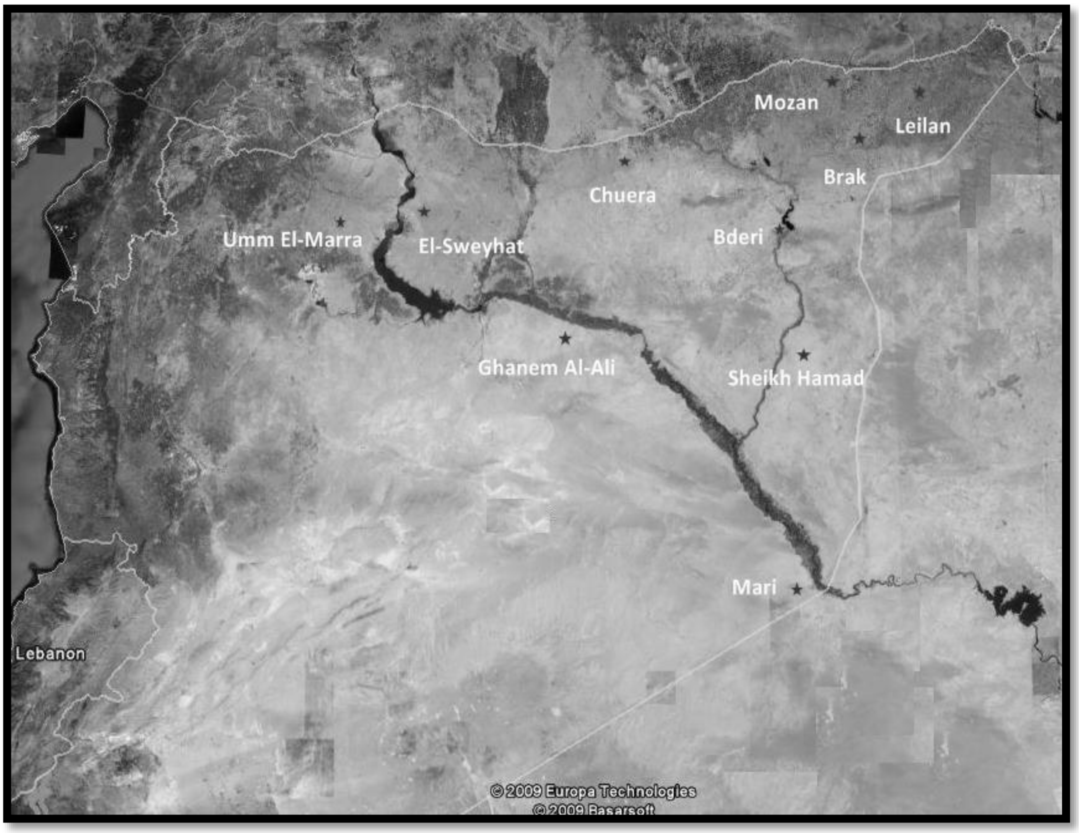


Figure. V.5. The Map Showing Archaeological Sites in North-Eastern Syria, Mentioned in the Text.

V.1.2. BIOMETRIC COMPARISON

Measurements of bones are useful in distinguishing between closely related species and between their wild and domestic forms. In addition, measurements can tell us about size and shape, and for large samples it is possible to determine the sex ratio of the animals from which the bones are derived. For sequences of archaeological assemblages, size changes can tell us about environmental change and economic differences such as the beginning of domestication and livestock improvement (Davis, 1996:593).

Figure V.6a. Size Index Distribution for Sheep from Eight Sites, Arrow Indicates the Mean

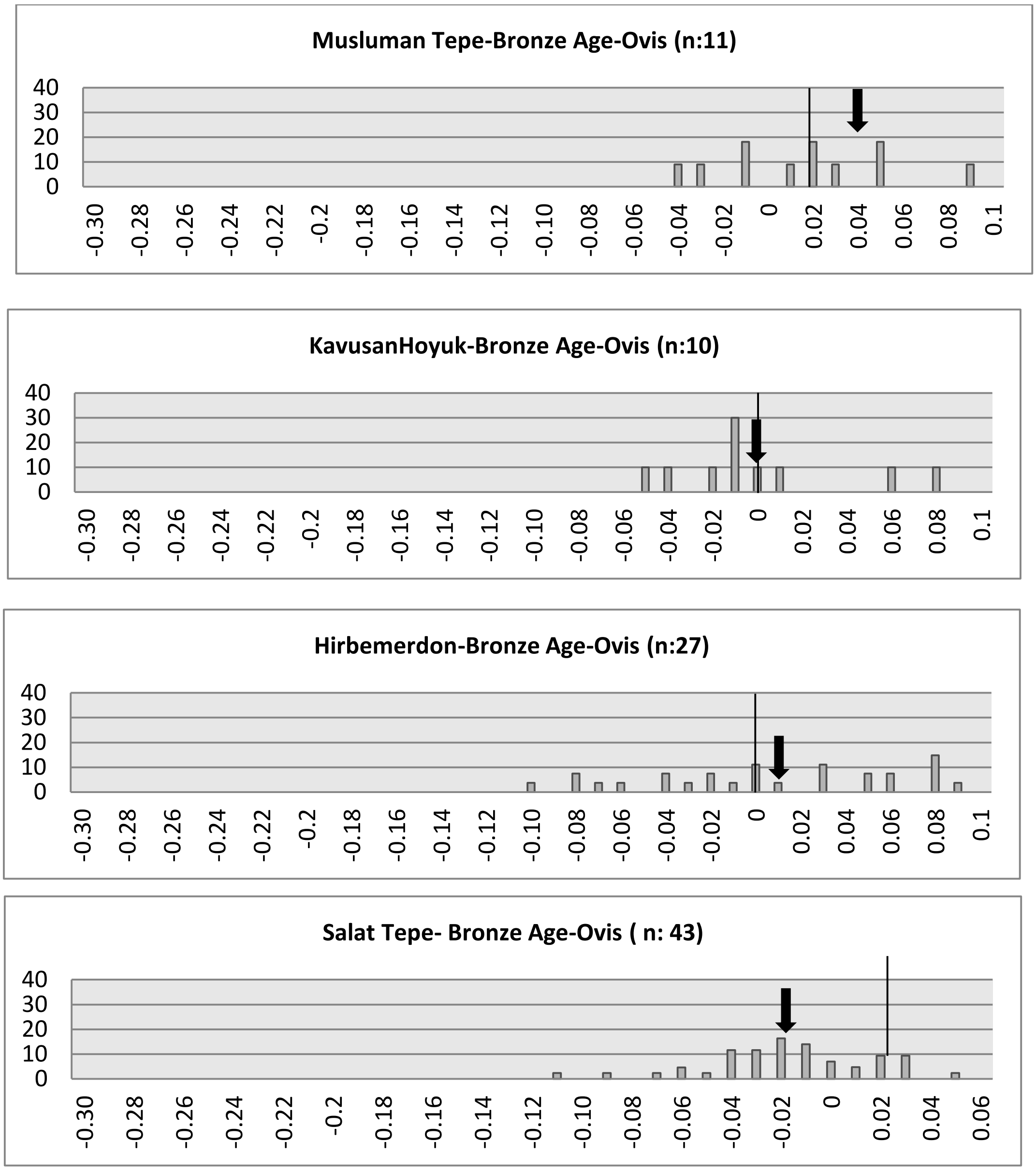


Figure V.6b. Size Index Distribution for Sheep from Eight Sites, Arrow Indicates the Mean

Figure V.6. depicts the size of all of the sheep measurements recorded from different sites when compared to the measurements of the standard animal. As sheep and goat are sexually dimorphic, with the females being smaller than the males, females generally placed the left side of the Figure while males are shown on the right side of the Figure (Popkin, 2009:131). The mean of each Figure is represented by a black arrow. The position of the mean is affected by both the overall size range of the animals as well as the relative numbers of males and females in the sample. As shown in the figures, size index distribution for sheep remains basically the same during Bronze Age. There is some decrease in the size of sheep in Türbe Höyük. This change is indicated by an increase median value from -0.02 in Salat Tepe and Kenan Tepe to 0.03 in Türbe Höyük. Too few measurements were available from Basur Höyük and Giricano Tepe for analysis. It appears that, the range of the size distribution for sheep in Salat Tepe and Kenan Tepe shows similar pattern, as the median values are the same for both sites (median value-0.02). Mean values for both distributions are left of the zero line, and most proportion of the LSI values are smaller than the standard animal. This indicates that the specimens in both sites represented in Bronze Age log ratio diagrams predominantly domestic sheep. In addition, comparing the size of sheep from that region with the finds from Salat Tepe reveals that the Kenan Tepe and Salat Tepe were the smallest in size than the other sites' sample. Even though, sheep are less dimorphic than goats, it may be assumed that more male specimens were occurred in faunal assemblage of Türbe Höyük and Müslüman Tepe. Overall, the LSI for sheep from the eight sites examined follows the roughly same pattern. Although sample sizes for sheep are small, LSI values indicate that except in Hirbemerdon Tepe and Salat Tepe, the mean values are above the standard animal, indicate the presence of a large sheep specimens particularly in Türbe Höyük. In terms of the sex composition of the herd, the female and male domestic specimens might be represented. Furthermore, the mean values between 0.03-0.01 may indicate the presence of small wild females or domestic males in the assemblage.

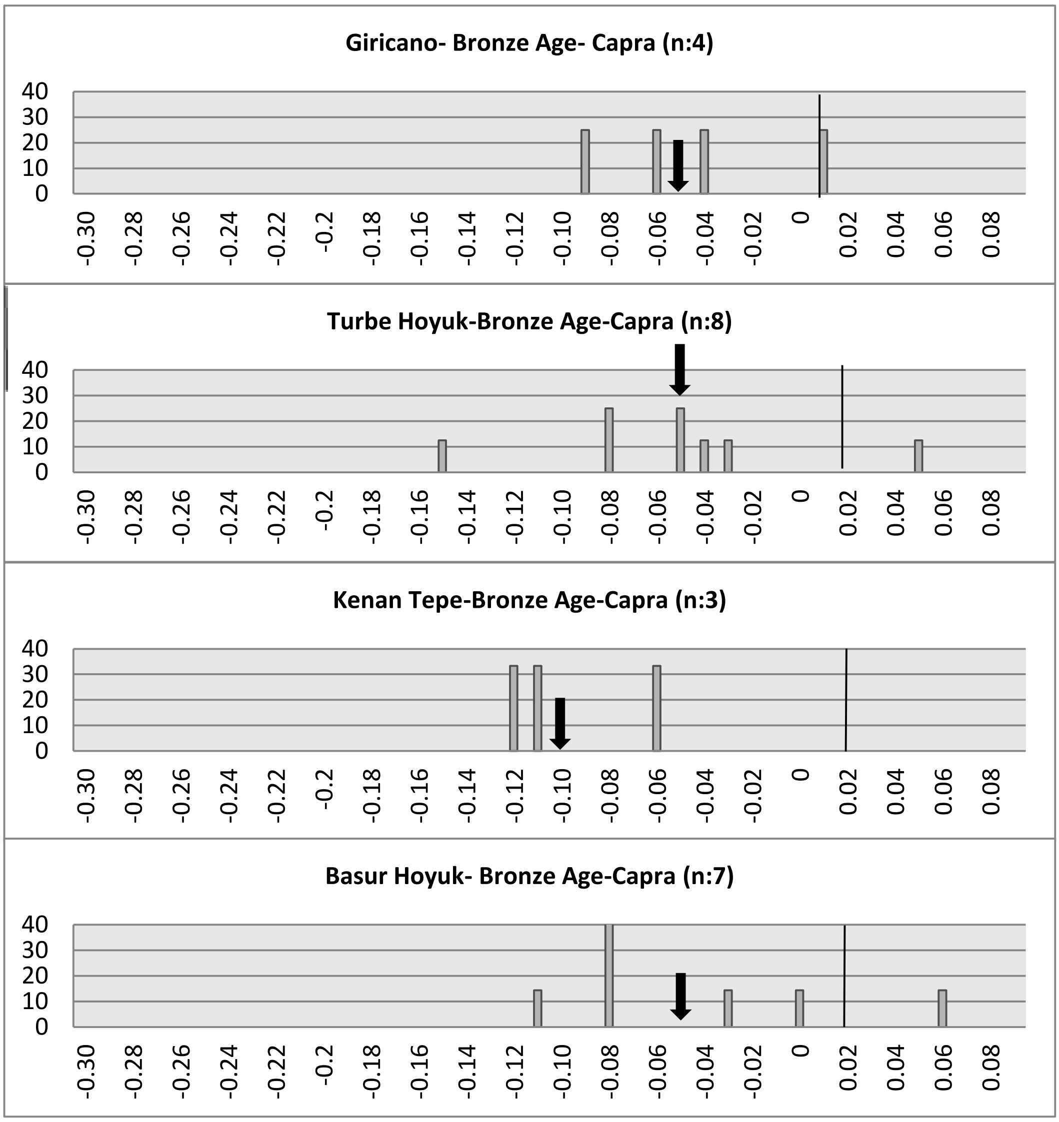


Figure V.7a. Size Index Distribution for Goat from Eight Sites, Arrow Indicates the Mean

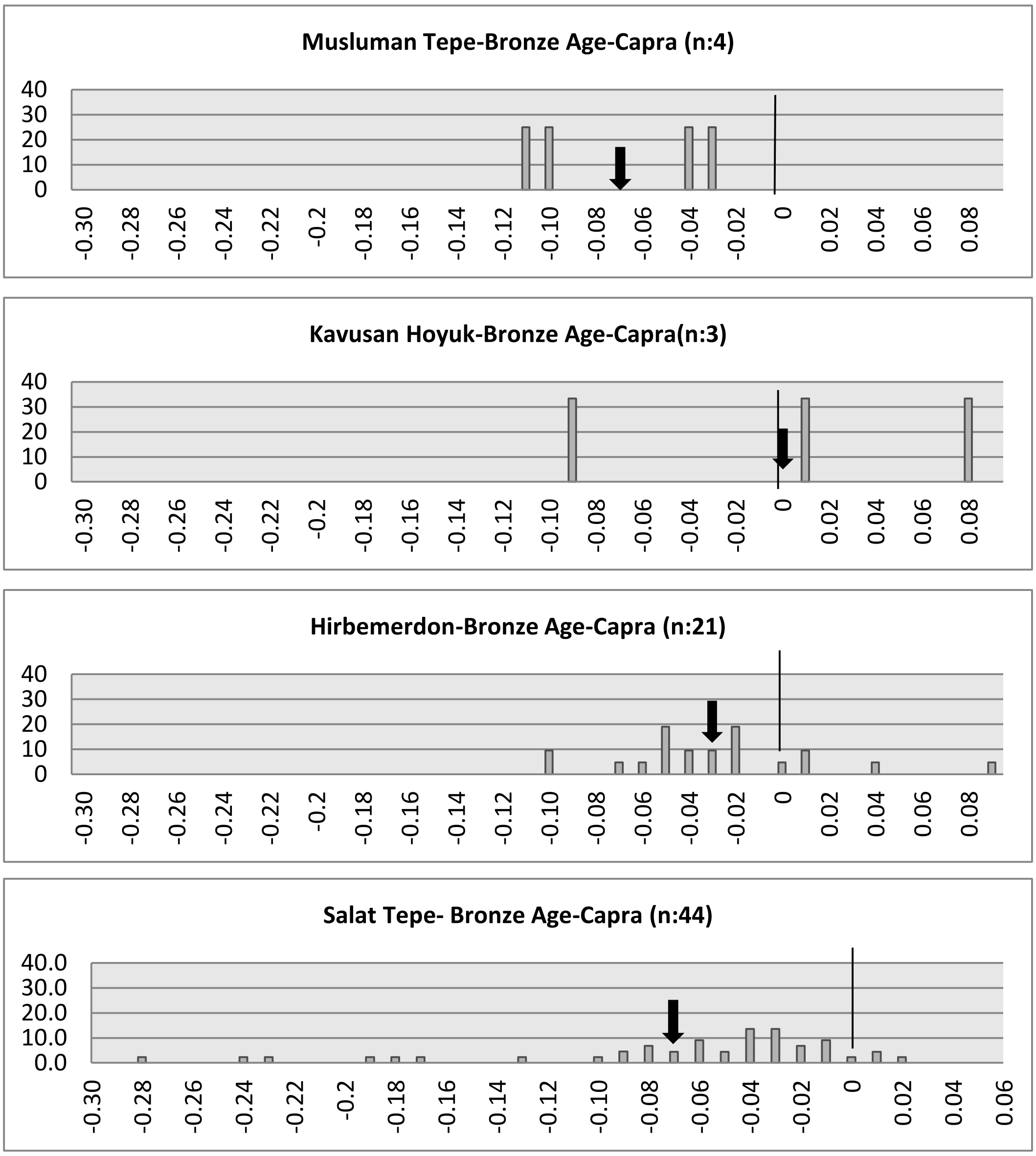


Figure V.7b. Size Index Distribution for Goat from Eight Sites, Arrow Indicates the Mean

The size index distribution for goat show a similar pattern and any alteration is not observed between the eight sites (Figure.V.7). A larger specimen that appears from Kavuşan Höyük (size index value 0.08) is probably large female or male goat. All other specimens in eight Bronze Age sites have mean values below the standard value. The distribution of LSI values indicates the presence of very few large specimens while the vast majority clusters well below the standard value. LSI values for goats indicate that the means for Salat Tepe and Müslüman Tepe are similar but smaller than those from Giricano Tepe, Türbe Höyük, and Basur Höyük. The majority of specimens appear clustered between -0.05 and -0.07, which points to a concentration of small-sized specimens in the combined Bronze Age sites. Furthermore, the mean values are to the left of the zero. This proposes that the majority of specimens on the Bronze Age fall within the range of domestic female goat size. The mean value from Kenan Tepe is smaller overall than its counterparts. When we compare LSI and mean values for sheep and goats, commonly goats are much smaller than sheep. Two possible explanations for the size difference are breed change and breeding programed. Goats show more sexual dimorphism than sheep making it possible to determine the sex of animal from metric data or roughly control the relative numbers of males and females from sample collection of measurement. However, due to the small number of sample obtained and the size indices show a continuous distribution, it is unclear what their full size range was. Comparative to other sites it appears that female goats at Salat Tepe have much more than the others, since there is an evidence for the very small specimens seen at Salat Tepe (size index value -0.28). Overall, the strong clustered of the left side of all the figures indicates that few adult male goats were recovered from any of sites.

The LSI distributions of pigs show similar patterns throughout sites (Figure.V.8). The pig remains from all sites reflect domesticated status. The mean size of pigs shows little fluctuation over the sites (-0.11 and -0.15). Although sample sizes of pig are small, LSI values indicate that all of the mean values have smaller than standard values in each site. The distribution of LSI values indicates the presence of a very few relatively larger specimens while the vast majority specimens consisted of small size. In Türbe Höyük has particularly larger sample of LSI values exhibits a larger mean compared to other sites. (Significant at the LSI 0.09 and mean value is -0.04). The paucity of measurements available from pigs, except at Kenan Tepe and Hirbemerdon Tepe, limits the interpretation of decisive size distribution but generally the females appear to have similar mean values range but smaller size average to those from Kavuşan Höyük and Müslüman Tepe (mean value respectively -0.15 and -0.13). Two particularly large LSI values recorded for pigs at Türbe Höyük and Hirbemerdon Tepe (0.09 and 0.08 respectively) may represent wild animals or domestic male. Overall, it is clear that all mean values fall to the left of the zero line, which again indicates the predominance of domestic pigs in the sample. Furthermore, overall size range of specimens appears relatively constant between sites. Although it is noticed that female specimens mostly represented in all sites, slightly both domestic males and female are observed in the distribution. However, it is unclear where the boundary lies between these two groups.

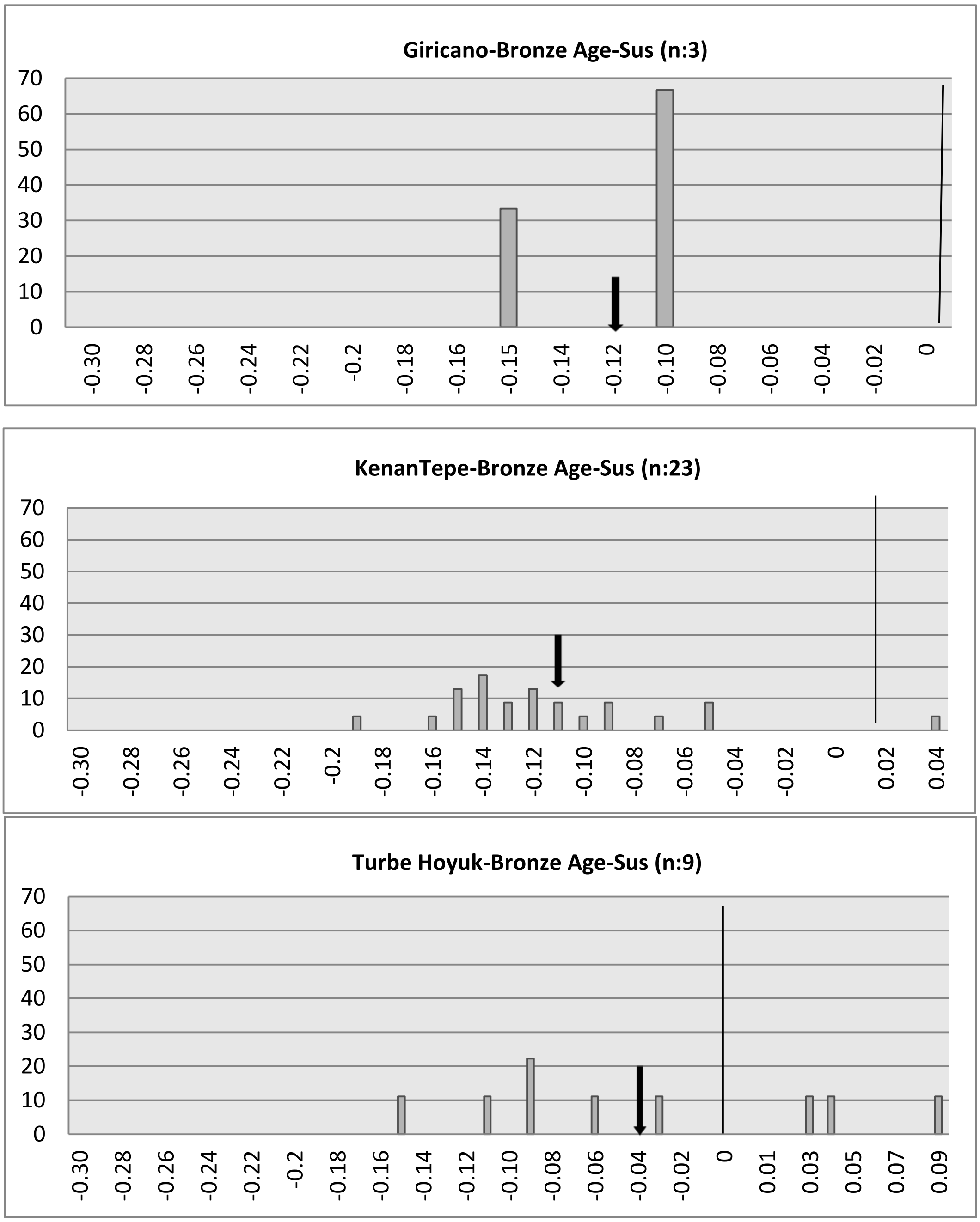


Figure V.8. Size Index Distribution for Pig from Eight Sites, Arrow Indicates the Mean

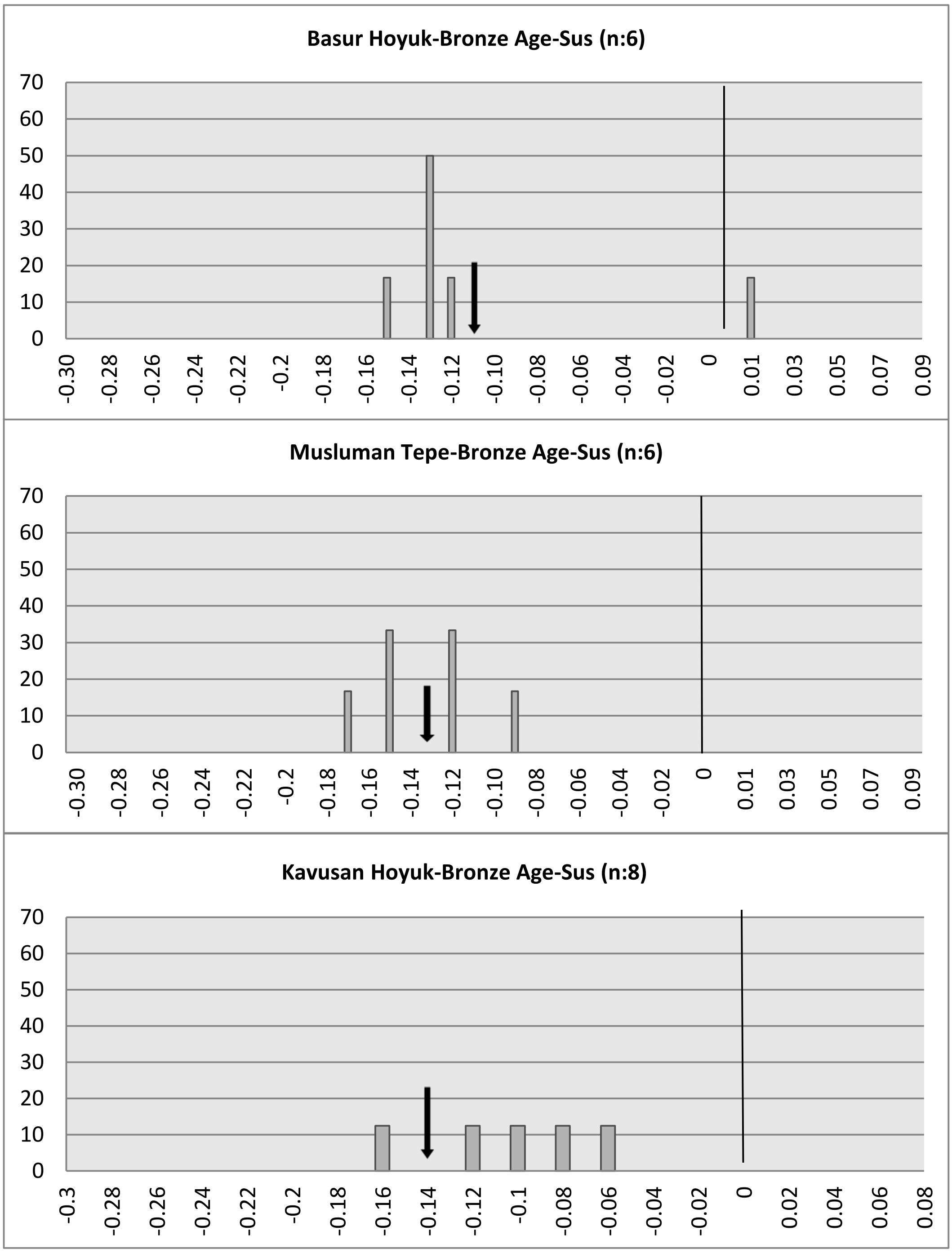


Figure V.8. contiuned

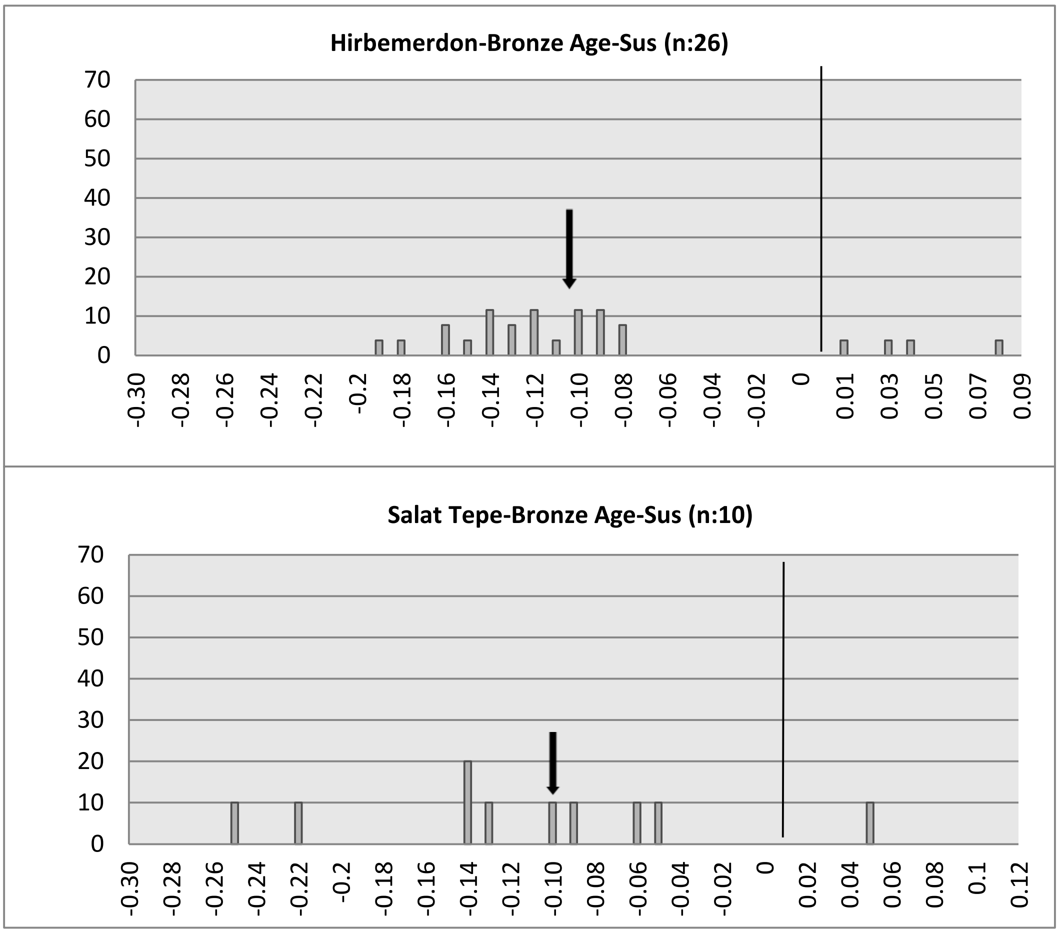


Figure V.8. continued

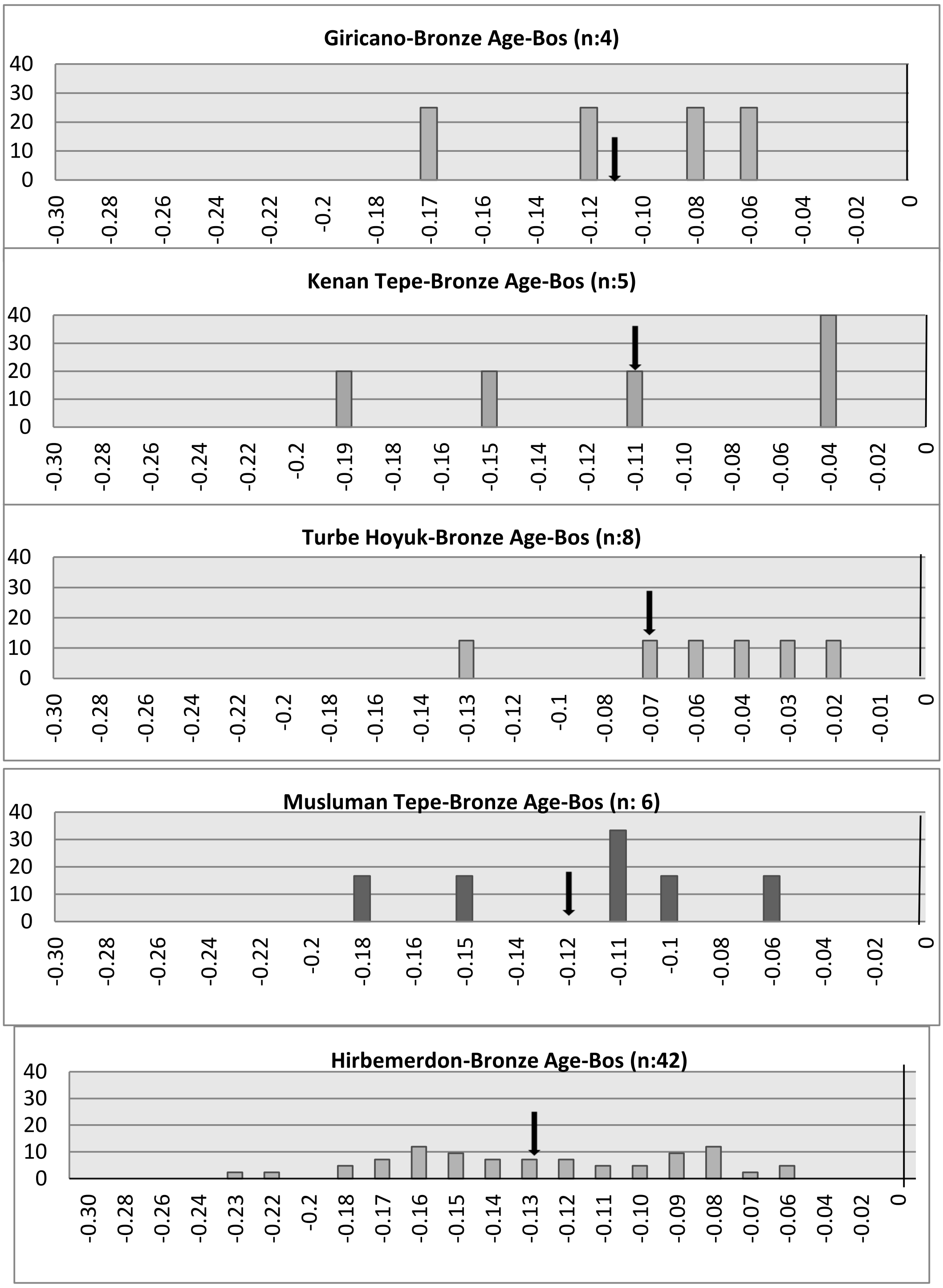


Figure V.9. Size Index Distribution for Cattle from Eight Sites, arrow indicates the mean.

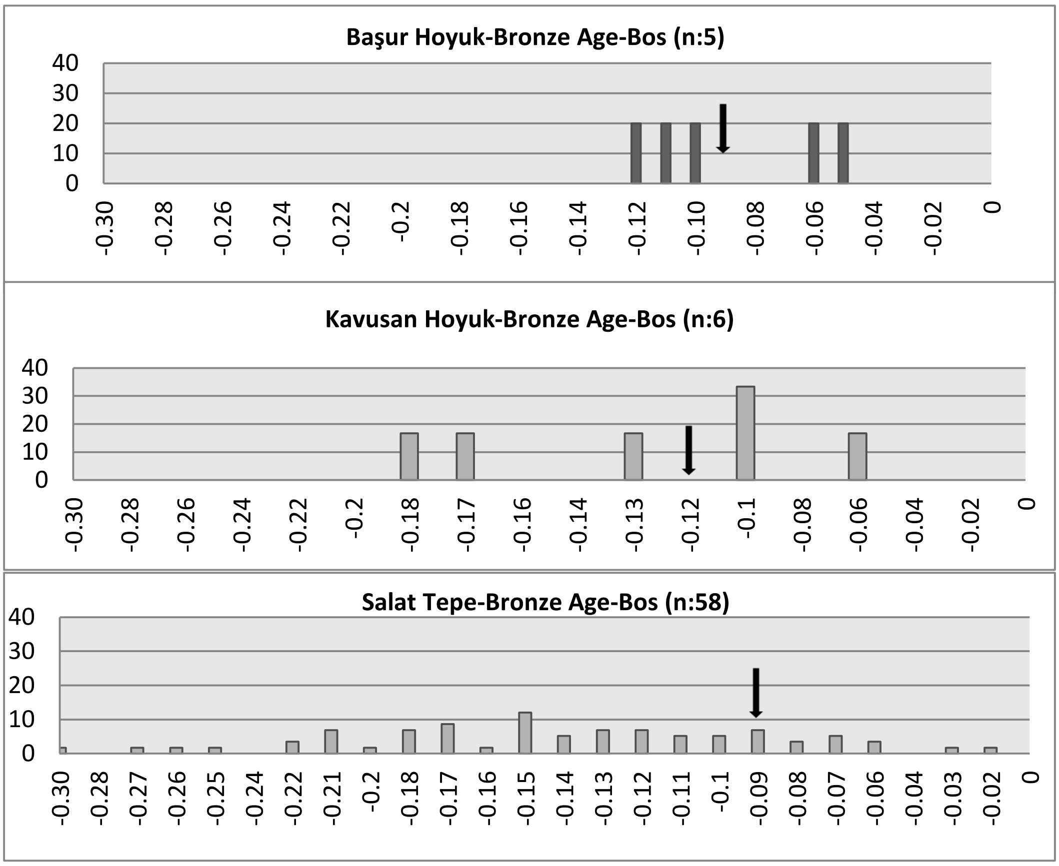


Figure V.9. continued

The distribution of size indices of cattle from Bronze Age of eight sites are shown in Figure.V.9. The cattle measurements in overall are clustered with very small specimens. All specimens have LSI values well below that of the zero, which definitely represent domestic cattle. The distribution of LSI values shows a predominance of small specimens with relatively very few large specimens. The majority of specimens' mean values fall between -0.11 and -0.15. The single specimen with an LSI value of -0.53 is observed at Hirbemerdon Tepe, very small individual is isolated from the rest of the sample, may strongly indicate and the presence of female cattle. According to Hongo, large cattle individuals possibly represent oxen for traction and bulls for breeding and small cows for milking. The relatively large individual were reported in Türbe Höyük mean value; -0.02. This very few relatively larger individual and high number of small specimens may possibly represent the secondary production was essential in Bronze Age at Upper Tigris region. LSI values for cattle indicate that the means for Giricano Tepe and Kenan Tepe are very similar to the mean from Müslüman Tepe and Kavuşan Höyük but relatively larger than those from Salat Tepe and Hirbemerdon Tepe. The mean values from Türbe Höyük and Basur Höyük are relatively larger than that other sites and also one relatively larger individual from Türbe Höyük indicating the presence of larger, domestic male in Türbe assemblage. Overall, the accumulation of the LSI values strongly of the left side of all of the sites indicates that few adult male cattle were found from any of sites. In addition, for the further analysis is hampered by the limited number of measurements for except Salat Tepe and Hirbemerdon Tepe.

V.1.3. Kill-off Pattern and Herding Management

It is important to understand identification of whether herding strategies depended on the production of meat, milk wool/hair, or a combination of these, in order to understand the organization of the economy and the productive potential of ancient herds (Arbuckle, 2006:176). Animal management practices and animal product distribution strategies recommended Rosen (1986), Redding (1981), Sasson (2005) and Zeder (1985, 1988, 1991). In addition the analysis of herd management strategies is based to a large extent on the age and sex composition of the kill-off profiles and ratio of sheep to goat according to models derived from Payne (1973) and Redding (1981 and 1984). Payne's models show ideal patterns of kill-off, within a closed system, for three distinct production goals including meat, wool, and milk. "If meat production is the aim, most of the young males are killed when they reach the optimal point in weight-gain" (Payne; 1973:281). It is estimated consumption age would have between 18-30 months (aged 2-3 years). The estimated consumption age for the female is generally five or more years, it is unlikely to be killed until their fertility begins.

Kill-off pattern for sheep and goats were investigated using the state of epiphyseal fusion of long bones. In general, Age Stage I, corresponds to infantile (fusion between 6-12 months). Stage II –III- IV to juvenile to sub-adult (12- 30 months), Stage V adult (30-48 months), and Stage VI adult (very old) (>48) (based on Silver, 1969). When sheep and goats are studied separately, the results are problematic due to the small number of sample and since large numbers of sheep and goat bones are classified as Ovis/Capra, so the evaluation of kill-off pattern will be undifferentiated total of two species. The kill-off pattern for Salat Tepe seems to have more Stage II-III (12-30 months) juvenile animals in the assemblage. Overall, the juvenile animals were more preferred in 49%, sub-adults 15% and adult sheep and goats are 11%. The number of the infant animals are displayed lowest percentage (9%) in this collection. Sheep and goat exploitation pattern shows same strategy at Salat Tepe and Müslüman Tepe. Young or juvenile caprines were slaughtered, therefore it seems that animals kept for meat in Müslüman Tepe. In the meat model, the adult animals are expected to be female. In addition, it would be expected that reproductive female would survive into old age, where they can continue to supply milk, wool, and other secondary products. In addition, if milk is the focus of production it is assumed that herders will kill excess young males at an even younger age in order to increase the milk available for human consumption. If the wool production had been a primary economic focus, then one would expect to see a heavier emphasis older animals. Under this system, the pastoral production area would be supposed to keep the youngest animals. In the wool model, in contrast to the meat and milk models, the adult population comprises of both adult and female and males since both are effective fiber producers (Arbuckle, 2006:179). Different kill-off pattern from single settlements was observed in contemporary sample at MBA Kenan Tepe and Hirbemerdon Tepe. In other words, the mixed age consumption strategies in same site represent different kill-off pattern at the same site; while caprines were slaughtered for meat at part of the same site, other part show different purpose of use. A different pattern than Salat Tepe has been recorded in Türbe Höyük and Basur Höyük, where adult animals were preferred mostly. Herding sheep and goats for purpose other than meat, for wool/hair and perhaps also for milk became more important for those sites.

Cattle is considered one of the most important domesticates in many economies. Demand for multitude of products (meat, milk, hide, draught power) from this animal, made cattle a basic element of stock keeping in may prehistoric communities (Bartosiewicz, 2005:156). Cattle is the third largest component of the Salat Tepe assemblage, with 470 specimens forming 16 percent of identified fragments. Yet again because sex could not be determined for cattle, reconstruction of cattle herding strategies at Salat Tepe relied on age data from epiphyseal fusion and tooth eruption. The analysis of epiphyseal fusion for cattle, follows the fusion age estimates proposed by Silver (1969), and groups them into four age class (see chapter III). Epiphyseal fusion data from 206 postcranial bone fragments provide age information for cattle. At Salat Tepe, adult cattle form an important component of the studied assemblage. The ageing data show very low mortality among juveniles. According to dental ageing, roughly 30 percent of cattle lived beyond 36 months of age. 30 percent of cattle surviving 6-10 years old. In fact, more than 70 percent of the cattle seem to have survived well into adulthood, past the age of four years even more old cattle are represented in the Salat Tepe assemblage. The ageing data from eight different sites at vicinity of Salat Tepe shows similarity. In most assemblages, cattle were not consumed younger than 3 years old. However, in the Kavusan Höyük assemblage 65 percentage of the cattle were slaughtered older than 4 years old. There is again mixed age structure is observed in Hirbemerdon Tepe, while only old animals were slaughtered in Piazza, younger animal were slaughtered in other MBA contexts at same site.

The only exception is the assemblage from Giricano Tepe where the remains belong to around 2 years old. The data can be evaluated into three models of culling patterns. Cattle are being raised to produce meat, dairy products, or traction. If meat production is the aim, one would expect the young adult males are killed in 3-4 years old. As mentioned above the Salat Tepe cattle show no evidence for a major culling of young adults. In addition, in contrast with meat production, if the dairy production is the aim, it is expected that the juvenile males are slaughtered (Stein, 1998:207). It seems that exploiting live cattle for secondary products was at least as important as slaughtering animals for food. Production strategies using cattle for traction castrate males retain the as draft animals for plowing and transport (Stein, 1998:207). The most of the cattle bones in all studied periods at Salat Tepe, originate from mature animals that may have been slaughtered at the end of their productive lives. The survivorship pattern associated with the use of adult oxen for traction. In addition, a cattle production strategy relating with the use of cattle for traction which associated with dense agricultural activity, and also cattle were important for the plow land cultivation at Salat Tepe.

Pig is considered as a key species of crucial importance in meat consumption especially in the Near East (Bartosiewicz, 2005:156). In other words, pigs have high meat yields, their meats has the highest values of fats and calories on any Near Eastern domesticates. Moreover, they have the largest number of young per birth, and they reach harvestable age faster than any bovid (Zeder, 1991:30). Thus, as long as these domesticates were able to weather the environmental impact of increased human settlement, one might expect the consumption of cattle and pigs to increase in order to compensate for the loss of meat from wild animals (Zeder, 1998:62). Pigs are secondly most important animals in Salat Tepe, it may be assumed that the natural setting of Salat Tepe was well suited for the pigs. This is an indication of humid and possibly forested habitat that could be exploited by pig keeping in the floodplain area. The role of pigs as a climatic indicators, pigs are not as well as adapted as caprines or cattle, they need appropriate access to water. However, they can manage to survive if kept close to water sources like river, thereby with their high rates of fecundity and large meat yields, in that case pigs become provider of valuable resources in order to get over challenging times. A total of 559 pig bones were recovered from the site and epiphyseal fusion data from 39 postcranial bone fragments provide age information for pig. The creation of epiphyseal fusion stage followed by Silver (1969). The estimated age ranges were classified into three groups. Stage I (<1 years) represents infant and juvenile, Stage II (< 2 years) sub-adult and Stage III (< 3.5 years) adulthood. The fusion percentages suggest that kill-off pattern of pigs was concentrated on both adult and (39%), infant/juvenile (36%), and for sub-adults were represented as 26 percentage. When the kill-off pattern of pig compared with vicinity of Salat Tepe's sites, the pattern shows similarity. The result of analysis represent that pigs were mainly killed before 2 years old in Kenan Tepe. Young piglets were kept six first month at Giricano Tepe and Hirbemerdon Tepe. In Kavuşan Höyük pigs were slaughtered between 6 mounts to 1 year in Late Bronze Age. However, the exploitation of pigs at Hirbemerdon Tepe and Kavuşan Höyük in Iron Age, turned to more adult animals, 1 to 3 years old. The pig mortality profiles can be readily explained in terms of a husbandry strategy aimed at meat production. The pig mortality data at Salat Tepe indicate that a small number of adult individuals kept as breeding stock. The productive life of pigs extends only up to an age of two to three years, that is the point when their growth their maximum meat weight. According to Hambleton, the animals are killed upon reaching adult, or almost adult size in order to that the highest weight of meat is yielded (Hambleton, 1999:72). Although the majority of the pigs being killed before the end of their third year, herds would have been maintainable as pig produce large piglets and may start breeding in their first year.

CHAPTER VI

VI.1. CONCLUSION

This part investigates trends in the relative abundance of species, from the Chalcolithic to Hellenistic-Roman periods at Salat Tepe. Kill-off pattern particularly ageing results presented in this part has provided information that the herding management strategies.

Most of the analysis has concentrated on sheep, goat, pig and cattle remains as these were the most observed animals found from the site, and they were also the most important animals in the local food economy. Although wild species were also represented in the assemblage, it is clear that the site's food economies not relied on wild animals. However, the number of red deer is noteworthy, that wild species were hunted primarily for meat as additional benefit. The faunal evidence for hunting is suggested by the presence of boar, deer, fish and birds in the Salat Tepe. Still, these species are poorly represented relative to domestic livestock, which provided a consistent and stable food supply. Besides, those different taxa were occurred in the assemblage. Equids, cats, dogs, hares, turtles, snakes, fish, birds and rodents are found. The number and variety of canids is substantial, however, none of the dog bones show evidence of butchery marks or burning traces, offering that dogs were not consumed at the site. It is considered the dogs were kept as a pet or guard for domesticates.

The subsistence economy of Salat Tepe mostly depended on major domesticates, sheep, goat pig, and cattle. The general kill-off pattern of the site suggesting for sheep and goats were slaughtered for mainly meat would indicate that secondary products were not a major focus of the pastoral economy. Combined caprines based on fusion and tooth wear data also indicate that clear evidence for management strategies intensively targeted young of juvenile caprines for consumption. However, because different periods represent different dental ageing profile, it is suggested that the use of sheep and goat was probably a mixed strategy of exploiting milk and meat. Pigs are secondly most important animals in Salat Tepe (n: 559). Although the small number of sample can be used for epiphyseal and dental ageing, kill-off pattern was focused on both adults and young/juveniles. In addition, dental data suggests that during Chalcolithic and Bronze Age periods pigs were slaughtered the earliest age stages. This mortality based on tooth eruption indicates that animals, were killed before reaching fully maturity. The primary role of cattle at Salat Tepe was to act as drawing the plough and for the agricultural activities in the surrounding fields. They would definitely, also have been used for their secondary products (milk, meat, dung, marrow, hide). The result of tooth wear stages and epiphyseal fusion pattern for cattle were also support this assumption. Thus, those data indicate that the cattle were kept until adulthood and killed slightly older age.

The available measurements data and LSI values for each Salat Tepe periods represent that generally all specimens are domestic as it is expected, while only handful of specimens might be considered as wild or male. The LSI pattern for sheep the mean values located left to the zero except in Chalcolithic and Medieval Periods. Thus, the log size distribution for sheep may show possible wild sheep, which would fall to the right of the zero line. Although due to the small samples of metrical data exist, it may be assumed the presence of both female and male sheep in the assemblage. Metrical data for goats show that the size increased in Chalcolithic Period. In addition, again with most specimens falling within the domestic goats' size group. The tendency predominantly of the left hand side of the standard value, so, which may show that more female goats occur than the male. Although this case does not match with the meat models, it must be keep in mind that interpretation is created by based on limited number of samples. LSI values for cattle indicate that all specimens represent domestic cattle, all values well below the standard value. The distribution of LSI values of cattle signify much more female animals than males cattle occurred in the assemblage. As for the measurement data for pig show dissimilarity with the other domesticates animal in the assemblage. The size of pig elements constant throughout the periods, large animals exist in the sample in each periods, especially single very large animal was found in Chalcolithic Period and it is associated with wild boar. In accordance with LSI values of pig, beside domestic pig herding, wild boar were hunted at Salat Tepe.

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APPENDICES

APPENDIX-1

List of Abbreviations

Chlcthc- Chalcolithic
EBA- Early Bronze Age
MBA- Middle Bronze Age
MBA-LBA- Middle Bronze Age-Late Bronze Age
LBA- Late Bronze Age
EIA- Early Iron Age
MIA-Middle Iron Age
LIA- Late Iron Age
MDVL- Medieval
Hel-Rom- Hellenistic-Roma
Rad- Radius
Hum-Humerus
Tib-Tibia
Mtp- Metapodium
Fem- Femur
Prx- Proximal
Dis- Distal
LM- Large Mammal
MM- Medium Mammal
SM- Small Mammal
Indet- Indeterminate
Sac vert- Sacral vertebra
Caud vert- Caudal vertebra
O/C- Ovis/Capra
BH- Başur Hoyuk
ST- Salat Tepe
HT- Hirbemerdon Tepe
GT- Giricano Tepe
KT- Kenan Tepe
MT- Müslüman Tepe
TB- Tilbeşar
KH- Kavuşan Hoyuk
TH- Türbe Hoyuk
ZT- Ziyaret Tepe

Figures and Tables

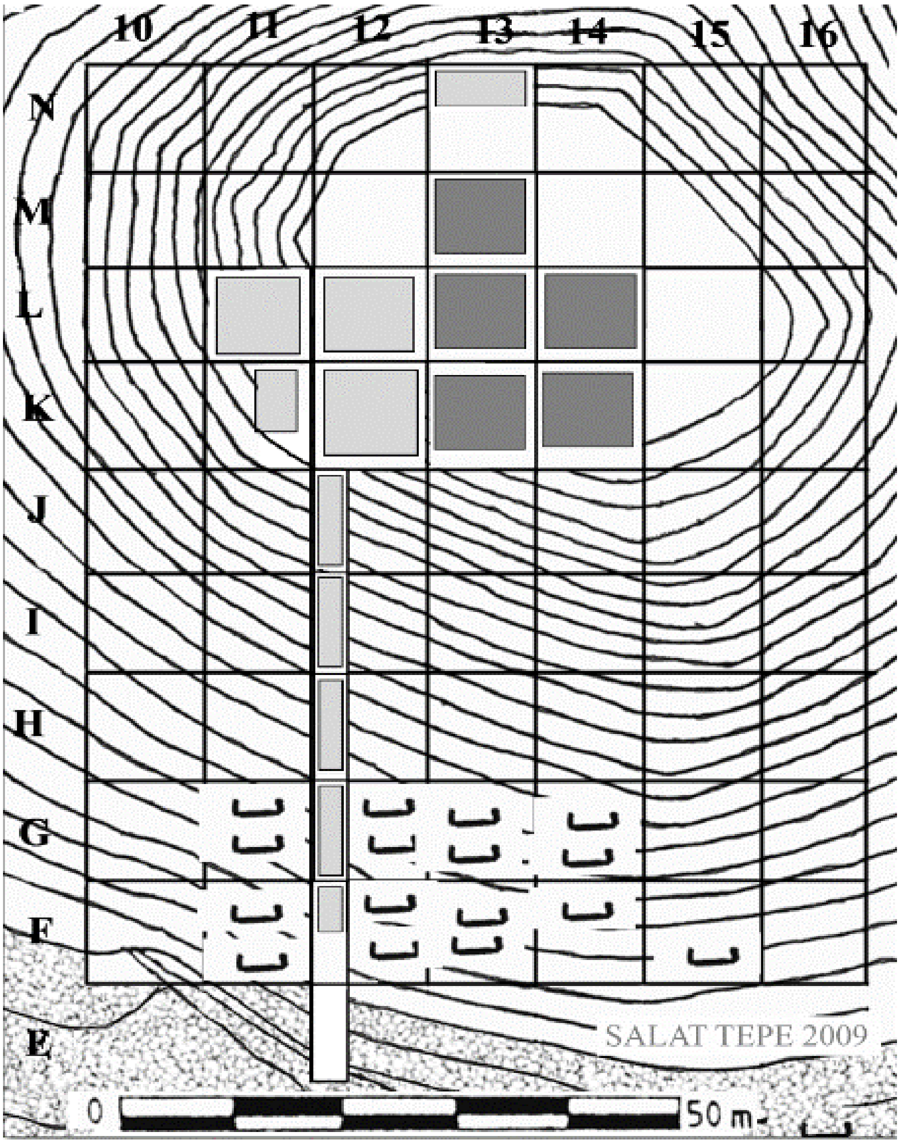

Figure I.1. Open Trenches at Salat Tepe in 2009

Table I.1. The Chronology of the Southeast Anatolia

	Chronologies	Euphrates Part	Tigris Part		Mesopotamia
Aceramic NeolithicA					
Aceramic NeolithicB				MÖ 8000-6800	
Early Neolithic			Early Neolithic	MÖ 6800-6500	Early Neolithic
Middle Neolithic			Early Hassuna	MÖ 6500-6100	Early Hassuna
Late Neolithic I			Hassuna-Samarra	MÖ 6100-5800/5900	Hassuna-Samarra Period
Late Neolithic II			Early Halaf	MÖ 5900/5800-5600	Early Halaf Period
Early CHLCTHC I			Middle Halaf	MÖ 5600-5400	Middle Halaf Period
Early CHLCTHC II			Late Halaf - Lateiş	MÖ 5400-5200	Late Halaf Period
Middle CHLCTHC	Ubeyd 3		Early Ubeyd	MÖ 5200-4500	Early Ubeyd Period
Late CHLCTHC 1	Ubeyd 4		Late Ubeyd	MÖ 4500-4000	Late Ubeyd Period
Late CHLCTHC 2-3			Early Uruk	MÖ 4000-3500	Early Uruk Period
Late CHLCTHC 4-5			Late Uruk	MÖ 3500-3000	Late Uruk Period
Early Bronze AgeI	ETG 1-2 (EJZ 0) EME 1	PSW	Ninive V (boya + çizi)	MÖ 3100-2850	Cemdetnasr-Erhanedanlar I
Early Bronze AgeII	ETG 3-4a (EJZ 1-2) EME 2	PSW	Ninive V (çizi + oyma)	MÖ 2850-2650	Erhanedanlar II
Early Bronze AgeIII	ETG 4b-6 (EJZ 3-4a) EME 3-4	PSW + Spiral Burnished	Post-Ninive - Metalik	MÖ 2650-2300/2400	Erhanedanlar IIIa-b
Early Bronze AgeIV	ETG 7-8 (EJZ 4b-c) EME 5	Spiral Burnished	Metalik - DROB	MÖ 2400/2300-2100	Akkad Period
Early Bronze AgeV	ETG 9 (EJZ 5) EME 6	Spiral Burnished	DROB	MÖ 2100-2000/1900	III Ur-
Middle Bronze AgeI	Habur 1	Hurririan	Hurri-E. Assur (RBWW)	MÖ 2000/1900-1800	İsin-Larsa/Old Assur
Middle Bronze AgeII	Habur 2	Hurri-ATKÇ	Hurri (RBWW + Habur)	MÖ 1800-1650	Old Babylon/Old Assur
Middle Bronze AgeIII	Habur 3	Hurri-Early Hititte	Hurri-Mitanni (RBWW+H)	MÖ 1650-1550	Old Babylon
Late Bronze AgeI	Habur 4a	Mitanni Period	Mitanni Period (H+Nuzi)	MÖ 1550-1350	Hurri-Mitanni
Late Bronze AgeII-a	Habur 4b	Hittite Empire	Middle Assur Period	MÖ 1350-1200	Middle Assur
Late Bronze AgeII-b		Late Hittite Period	Middle Assur Period	MÖ 1200-1050	Middle Assur
Early Iron Age		Late Hittite Period	Nomadic Societies	MÖ 1050-900	New Assur
Middle Iron AgeI		Late Hitit-Arami Period	Nomadic Societies	MÖ 900-700	New Assur imp.
Middle Iron AgeII		New Assurrian	New Assur Period	MÖ 700-600	New Assur imp.
Late Iron AgeI		New Babylon-Med Period	New Babylon-Med Period	MÖ 600-550	New Babylon-Med
Late Iron AgeII		Persian Period	Persian Period	MÖ 550-330	Pers Period
Hellenistic Period				MÖ 330-30	Hellenistik dönem

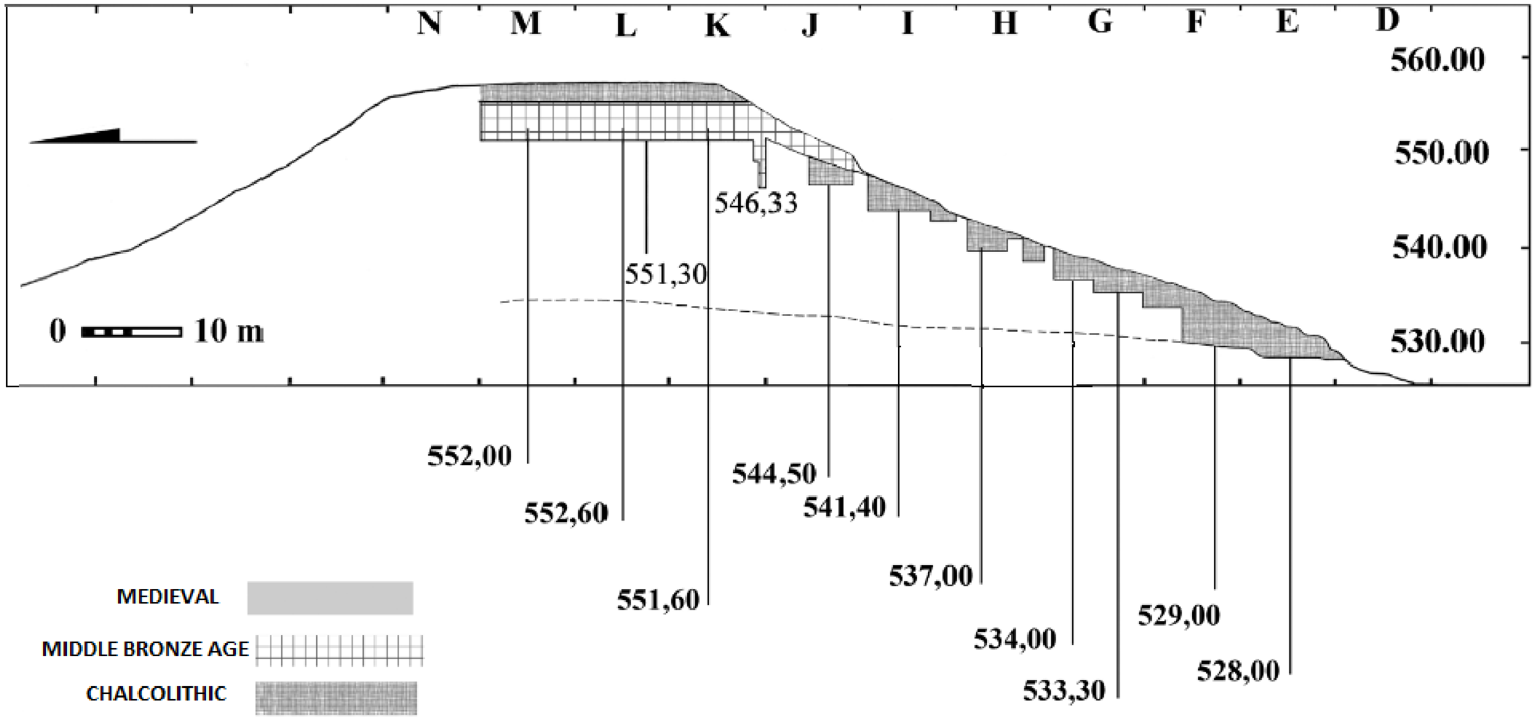

Figure I.2. North-East Section (M-E 12) of Salat Tepe.

Figure I.3. Showing the location of the trenches on the Southern Slope

APPENDIX-2

MEASUREMENTS

List of Abbreviations

Measurements (in mm) taken from von den Driesch (1976).

B - Breadth
Bd - Breadth of the distal end
BC - Breadth of Caput
BFcd - Breadth of the caudal articular surface
BFcr - Breadth of the cranial articular surface
BFd - Breadth of the facies articularis distalis
BFp - Breadth of the facies articularis proximalis
BG - Breadth of the glenoid cavity
BLF - Breadth of the lateral facet of
Astragalus
Bp - Breadth of the proximal end
Bpacd - Breadth across the processus articulates caudales
BPC - Breadth across the coronoid process
BT - Breadth of the trochlea
BTP - Breadh of trochlea patellare
D - Depth
DC - Depth of the caput femoris
Dcan - Diameter of the vertebral canal, (caudal)
Dd - Depth of the distal end
DD - Smallest depth of the diaphysis
DFa - Depth of the distal articular surface
DFp - Depth of the proximal articular surface
DHA - Diagonal height
Dl - Depth of the lateral side
DLS - Diagonal length of the sole
DM - Depth of the medial side
Dp - Depth of the proximal end
DPA - Depth across the processus anconaeus
E - Estimated
GB - Greatest breadth
GD - Greatest depth
GH - Greatest height
GL - Greatest length
GLC - Greatest length from caput

GLl - Greatest length of the lateral half
GLm - Greatest length of the medial half
GLP - Greatest length of the processus anticularis
GLpe - Greatest length of the peripheral half
H - Height
HP - Height in the region of the extensor process
HS - Height along the spine
j - Juvenile
L - Length
LA - Length of the acetabulum including the lip
LAPa - Length of the arch including the processus articulares caudales
LAR - Length of the acetabulum on the rim
LCDe - Length of the corpus including the dens
LCR - Length of cheecktooth row
LD - Length of the dorsal surface
LDi - Length of the diastema
LG - Length of glenoid cavity
LHR - Length of the horizontal ramus
LM - Length of the molar row
R - Length of the molar row
LO - Length of olecranon
Loe - Length without epiphyses
LPR - Length of the Premolar row
LS - Length of the symphsis
SBV - Smallest breadth of the vertebra
sd - Standard deviation
SD - Smallest breadth of the diaphysis
SDO - Smallest depth of the olecranon
SHD - Smallest height of the diastemas
SLC - Smallest length of the collum scapulae

Figures and Tables

Table II.1. Measurements of modern *Sus scrofa* bones that are used as standard for LSI graph, from Elazig (Turkey), the measurements were published by H. Hongo in 1998, 2000.

Measurements of Modern *Sus scrofa*									
Scap.	SLC 26.5	GLP 39.4	LG 32.5	BG 27.5	HS 228.1	DHA 229.6	Ld 127.9	SBC 12.7	
Hum.	Bd 45.9	BT 37.5	SD 17.8	Bp 58.5	Dp 74.9	GLC 207.2	GL 232.3	Dd 46.2	
Radius	BFp 34.2	DFp 22.7	SD 19.0	Bd 39.2	BFd 33.0	DFd 21.0	GL 177.0		
Ulna	BPC 25.3	DPA 42.4	SDO 11.5	SDO 32.2	GL 240.9	LPA 29.9	LO 72.4		
MCII	BFd 12.5	DFd 16.5	GL 64.5						
MC III	Bp 20.7	SD 14.6	BFd 19.1	DFd 19.7	GL 86.8				
MC IV	Bp 19.1	SD 14.6	BFd 17.7	DFd 19.4	GL 87.8				
MC V	BFd 13.7	DFd 17.6	GL 63.8						
Femur	GL 251.4	GLC 250.2	SD 21	Bp 66.8	Dp 37.8	DC 29.8	Bd 53.2	BTP 26.7	Dd 64.4
Tibia	GL 231.3	SD 20.6	Bp 56.7	Dp 57.4	Bd 33.5	Dd 30.6	BFd 25.4		
Astr.	GLI 47.5	GLM 43.6	LA 38.7	DI 25	Bd 27.6	Bp 24			
Calc.	GL 95.4	GB 26.8	GDI 34.1	SDtc 22	Ltc 63.5	Ld 37.6			
MT II	BFd 11.4	DFd 16.2	GL 69						
MT III	Bp 17.9	SD 13.3	BFd 18.4	DFd 20.3	GL 97.2				
MT IV	Bp 17.5	SD 14.3	BFd 18.5	DFd 21.3	GL 105.4				
MT V	BFd 11.7	DFd 17	GL 73.6						

Measurements of Modern *Sus scrofa*									
Scapula	SLC 26.5	GLP 39.4	LG 32.5	BG 27.5	HS 228.1	DHA 229.6	Ld 127.9	SBC 12.7	
Humerus	Bd 45.9	BT 37.5	SD 17.8	Bp 58.5	Dp 74.9	GLC 207.2	GL 232.3	Dd 46.2	
Radius	BFp 34.2	DFp 22.7	SD 19.0	Bd 39.2	BFd 33.0	DFd 21.0	GL 177.0		
Ulna	BPC 25.3	DPA 42.4	SDO 11.5	SDO 32.2	GL 240.9	LPA 29.9	LO 72.4		
MC II	BFd 12.5	DFd 16.5	GL 64.5						
MCl III	Bp 20.7	SD 14.6	BFd 19.1	DFd 19.7	GL 86.8				
Metacarpal IV	Bp 19.1	SD 14.6	BFd 17.7	DFd 19.4	GL 87.8				
MCIV	BFd 13.7	DFd 17.6	GL 63.8						
Femur	GL 251.4	GLC 250.2	SD 21	Bp 66.8	Dp 37.8	DC 29.8	Bd 53.2	BTP 26.7	Dd 64.4
Tibia	GL 231.3	SD 20.6	Bp 56.7	Dp 57.4	Bd 33.5	Dd 30.6	BFd 25.4		
Astr	GLI 47.5	GLM 43.6	LA 38.7	DI 25	Bd 27.6	Bp 24			
Calc	GL 95.4	GB 26.8	GDI 34.1	SDtc 22	Ltc 63.5	Ld 37.6			
MTl II	BFd 11.4	DFd 16.2	GL 69						
MTl III	Bp 17.9	SD 13.3	BFd 18.4	DFd 20.3	GL 97.2				
MT IV	Bp 17.5	SD 14.3	BFd 18.5	DFd 21.3	GL 105.4				
MT V	BFd 11.7	DFd 17	GL 73.6						

Table II.2. Measurements of modern female *Ovis orientalis* from Iran and skeleton were published by H.-P. Uerpmann (1979), stored in the Oriental Institute of Chicago under number # 57951 and *Capra aegagrus* skeletons were published by H.-P. Uerpmann (1979), stored in the British Museum in London under number # 653 M and 653 L2, those bones are used as a standard for LSI graphs.

Measurements of Modern *Ovis orientalis*		
Scapula	SLC 19.5	BG 22.0
Humerus	BT 29.5	
Radius	Bp 33.5	Bd 31.0
Ulna	BPC 19.0	DPA 27.5
Metacarpus	Bp 25.0	Bd 26.5
Femur	DC 26.5	
Tibia	Bd 26.5	
Astragalus	GLI 31.3	BC 19.6
Calcaneus	GL 64.0	
Metatarsus	Bp 22.5	Dp 26.0

Measurements of Modern *Capra aegagrus*		
Scapula	BG 24.7	
Humerus	BT 34.2	
Radius	Bp 35.5	Bd 33.2
Ulna	BPC 25.9	DPA 29.5
Metacarpus	Bp 27.3	Bd 30.5
Femur	DC 23.0	
Tibia	Dd 21.7	
Astragalus	GLI 32.0	BC 20.8
Calcaneus	GL 65.5	
Metatarsus	Bp 23.0	Bd 28.5
Phalanges	GLlpe 40.4	

Table II.3. Measurements of *Bos primigenius* from the Danish site of Ullerslev (Degerbol 1970, and Grigson 1989), used as a standard for LSI graphs.

Measurements of *Bos primigenius*		
M3	L 48.8	
Humerus	Bp 89.0	Bd 97.0
Radius	Bp 100.0	
Metacarpal	Bp 74.0	Bd 73.0
Tibia	Bd 78.0	
Calcaneum	GL 165.0	
Astragalus	GLI 83.0	
Navicula-cuboid	GB 67.0	
Metatarsal	Bp 62.0	Bd 68.0
Ph 1 anterior	Bp 39.0	
Ph1 posterior	Bp 35.5	
Ph 2 anterior	Bp 36.0	
Ph 2 posterior	Bp 34.0	

Table.II.4. Measurements of *Bos primigenius* from Germany, is stored at Tubingen University, Archaeobiology Laboratory under specimen number # 43 and bones are used as a standard for LSI graphs.

Measurements of Modern *Bos primigenius*								
Scapula	GLP 84.6	SLC 67.8	LG 69.1	BG 59.1				
Humerus	Bp 117.4	Bd 92.9	BT 82.2	Dp 115.2				
Radius	Bp 92.2	BFp 84.8	Bd 81.6	BFd 72.6				
Ulna	BPC 54.6	DPA 76.1	SDO 57.4	LO 112.0				
Metacarpal	Bp 68.9	Dp 41.5	Bd 64.6	Dd 36.8				
Femur	Bp 142.2	DC 54.1	Bd 110.2	BTP 43.1				
Tibia	Bd 72.4	Dd 53.1	Bp 116.5					
Astragalus	GLl 77.4	GLm 70.6	Dl 44.0	DM 44.5	BC 49.6	BLF 24.1		
Calcaneum	GL 150.1	GB 60.7	GT 46.5	LFd 39.0				
Metatarsal	Bp 58.3	Dp 52.9	Bd 61.7	Dd 36.0				
Ph 1 anterior	Bp 35.2	Dp 36.9	Bd 30.5	Dd 23.8	SD 29.6	DD 22.2	GL 67.0	Glpe 58.7
Ph1 posterior	Bp 33.6	Dp 37.8	Bd 30.0	Dd 22.9	SD 27.3	DD 20.7	GL 68.9	Glpe 59.8
Ph 2 anterior	Bp 33.1	Dp 34.5	Bd 26.0	Dd 32.3	SD 26.2	DD 26.7	GL 43.3	
Ph2 posterior	Bp 32.3	Dp 34.4	Bd 28.4	Dd 30.1	SD 25.6	DD 24.8	GL 45.0	
Ph 3	GL 81.5	Ld 57.0	Bp 38.5	LF 23.8				

Table II.5. Measurements of *Ovis aries* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL	GB	GLP	Ld	GC	DLS
CHLCTHC	Ovis aries	Astragalus	19.6		31.3					
CHLCTHC	Ovis aries	Astragalus	21							
MBA	Ovis aries	Astragalus								
MBA	Ovis aries	Astragalus								
MBA	Ovis aries	Astragalus	18.1		29.1					
MBA-LBA	Ovis aries	Astragalus	20.2	22.5	32.7					
MBA-LBA	Ovis aries	Astragalus	17							
MBA-LBA	Ovis aries	Astragalus	20.4							
MBA-LBA	Ovis aries	Astragalus	16.7	18.2	27.6					
MBA-LBA	Ovis aries	Astragalus	19.2	19	28.8					
MBA-LBA	Ovis aries	Astragalus	18.6	19.8	31					
MBA-LBA	Ovis aries	Astragalus	19.5	19.6	29.4					
MBA-LBA	Ovis aries	Astragalus	20.1	20.7	29.7					
MBA-LBA	Ovis aries	Astragalus	19.8	20.5	31.3					
MBA-LBA	Ovis aries	Astragalus	18.8	8.6	31.9					
CHLCTHC	Ovis aries	Astragalus	19.4	20.4						
CHLCTHC	Ovis aries	Calcaneum			61.3					
MBA	Ovis aries	Calcaneum			58.1					
MBA-LBA	Ovis aries	Calcaneum			60.1					
MBA-LBA	Ovis aries	Calcaneum			54.8					
MBA-LBA	Ovis aries	Calcaneum			59.8					
CHLCTHC	Ovis aries	Centrotarsal								
CHLCTHC	Ovis aries	Centrotarsal		22.6						
MBA-LBA	Ovis aries	Centrotarsal				25.1				
CHLCTHC	Ovis aries	Centrotarsal			23.1					
EIA	Ovis aries	Femur	38.7							
MEDIEVAL	Ovis aries	Femur	36.5							
CHLCTHC	Ovis aries	First phlnx	11.7	13.1	38.6					
CHLCTHC	Ovis aries	First phlnx	13.4	14.7	37.3					
CHLCTHC	Ovis aries	First phlnx	11.8							
CHLCTHC	Ovis aries	First phlnx	13.8							
CHLCTHC	Ovis aries	First phlnx	12.5		36					
EIA	Ovis aries	First phlnx	10.8	11.2	35					
MBA	Ovis aries	First phlnx	11.8							
MBA	Ovis aries	First phlnx	10.2	11	32.7					
MBA-LBA	Ovis aries	First phlnx	11.2	12.5	35.7					
MBA-LBA	Ovis aries	First phlnx	12.4	13.9	44.3					
MBA-LBA	Ovis aries	First phlnx	12.1	12.9	39.3					
MBA-LBA	Ovis aries	First phlnx	12.2							
MBA-LBA	Ovis aries	First phlnx	12.5							

Table II. 5. Cont.										
MBA-LBA	Ovis aries	First phlnx	12.6							
MBA-LBA	Ovis aries	First phlnx	10	10.3					33.2	
MBA-LBA	Ovis aries	First phlnx	10.5							
MBA-LBA	Ovis aries	First phlnx	12.5	13.9	42.4					
MBA-LBA	Ovis aries	First phlnx	9.9	11.1	33.9					
MBA-LBA	Ovis aries	First phlnx	12.6							
MBA-LBA	Ovis aries	First phlnx	12.7	13.1	35.7					
MBA-LBA	Ovis aries	First phlnx	13.2	14.4	39.3					
MDVL	Ovis aries	First phlnx	10.9	11.8	35.1					
MBA	Ovis aries	Humerus								
MBA-LBA	Ovis aries	Humerus	31.2							
MBA-LBA	Ovis aries	Humerus	31.1							
MBA-LBA	Ovis aries	Humerus		17.7						
MBA-LBA	Ovis aries	Humerus	26.8							
MBA-LBA	Ovis aries	Humerus								
MBA-LBA	Ovis aries	Humerus	33.2							
MBA-LBA	Ovis aries	Humerus	26.5							
MBA-LBA	Ovis aries	Humerus								
CHLCTHC	Ovis aries	Metacarpal	28.7							
MBA	Ovis aries	Metacarpal	25.7							
MBA	Ovis aries	Metacarpal		24						
MBA-LBA	Ovis aries	Metacarpal	28.2	26.6	135.5					
MBA-LBA	Ovis aries	Metacarpal	25.5							
MBA-LBA	Ovis aries	Metacarpal		20.1						
MBA-LBA	Ovis aries	Metacarpal	25.6							
MBA-LBA	Ovis aries	Metacarpal	25.9							
EIA	Ovis aries	Metatarsal		17						
MBA-LBA	Ovis aries	Metatarsal	24.4							
MBA-LBA	Ovis aries	Metatarsal		20.7						
MBA-LBA	Ovis aries	Metatarsal		20.8						
MBA-LBA	Ovis aries	Metatarsal	22.1		123.5					
MBA-LBA	Ovis aries	Metatarsal	24.6							
CHLCTHC	Ovis aries	Radius		30.9						
EIA	Ovis aries	Radius	28.9							
MBA	Ovis aries	Radius	29.5							
MBA-LBA	Ovis aries	Radius		33.7						
MBA-LBA	Ovis aries	Radius		31.1						
MBA-LBA	Ovis aries	Radius	30.4							
MBA-LBA	Ovis aries	Radius		35.8						
MBA-LBA	Ovis aries	Radius		33.9						
MBA-LBA	Ovis aries	Radius		33.2						
MBA-LBA	Ovis aries	Radius		30.3						
MBA-LBA	Ovis aries	Radius		32.6						
MBA-LBA	Ovis aries	Radius	33.2							

Table II. 5. Cont.										
MBA-LBA	Ovis aries	Radius		26						
MBA-LBA	Ovis aries	Radius	33.5							
MDVL	Ovis aries	Radius	29.7							
MBA-LBA	Ovis aries	Scapula			31.4					
MBA-LBA	Ovis aries	Scapula					42.3			
MBA-LBA	Ovis aries	Scapula					27.4			
CHLCTHC	Ovis aries	Second phlnx	9.3	12.5	23.1					
CHLCTHC	Ovis aries	Second phlnx	10.6	12.9	21.5					
MBA	Ovis aries	Second phlnx	9.1	11.8	22.8					
MBA-LBA	Ovis aries	Second phlnx	10.3	12.9	26.6					
MBA-LBA	Ovis aries	Second phlnx	10	11.1						
MBA-LBA	Ovis aries	Second phlnx	8.1	9.6	22.8					
MBA-LBA	Ovis aries	Second phlnx		10.8						
MBA-LBA	Ovis aries	Second phlnx	8.8	11.5	19.7					
MBA-LBA	Ovis aries	Second phlnx	10							
MBA-LBA	Ovis aries	Second phlnx	11.1							
MBA-LBA	Ovis aries	Second phlnx	10.3	12.1	25					
CHLCTHC	Ovis aries	Third phlnx						22.3		
MBA	Ovis aries	Third phlnx						17.9		
MBA	Ovis aries	Third phlnx						17.2		
MBA-LBA	Ovis aries	Third phlnx								29.2
CHLCTHC	Ovis aries	Tibia	30.1							
CHLCTHC	Ovis aries	Tibia	23.5							
MBA-LBA	Ovis aries	Tibia	27.3							
MBA-LBA	Ovis aries	Tibia	25.3							
MBA-LBA	Ovis aries	Tibia								
MBA-LBA	Ovis aries	Tibia								
MBA-LBA	Ovis aries	Tibia								
MBA-LBA	Ovis aries	Tibia								
MDVL	Ovis aries	Tibia	30.5							
MDVL	Ovis aries	Tibia	29.4							

Table. II.6. Measurements of *Capra hircus* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL
CHLCTHC	*Capra hircus*	Astragalus	18.2	18.8	28.6
CHLCTHC	*Capra hircus*	Astragalus	18.9	19.3	31.2
LBA	*Capra hircus*	Astragalus	18.1	17.4	
MBA-LBA	*Capra hircus*	Astragalus	17.1	15.8	
MBA-LBA	*Capra hircus*	Astragalus	17.8	18.6	29.6
MBA-LBA	*Capra hircus*	Calcaneum			57.9
MBA-LBA	*Capra hircus*	Calcaneum			64.7
MEDIEVAL	*Capra hircus*	Calcaneum			61.6
CHLCTHC	*Capra hircus*	Centrotarsal			GB 23.9
MBA-LBA	*Capra hircus*	Femur		33.4	
MBA-LBA	*Capra hircus*	Femur	36.9		
MBA-LBA	*Capra hircus*	Femur		42.7	
MBA-LBA	*Capra hircus*	Femur	44.3		
CHLCTHC	*Capra hircus*	First phlnx	13.4	14.7	44.1
CHLCTHC	*Capra hircus*	First phlnx		12.5	
CHLCTHC	*Capra hircus*	First phlnx	10.3	11.3	36.8
CHLCTHC	*Capra hircus*	First phlnx	12.7	14.2	38.1
CHLCTHC	*Capra hircus*	First phlnx		13.2	
CHLCTHC	*Capra hircus*	First phlnx	12.6	13.3	39.1
CHLCTHC	*Capra hircus*	First phlnx	12.2	13	41.3
CHLCTHC	*Capra hircus*	First phlnx		13.8	
CHLCTHC	*Capra hircus*	First phlnx	10.8	11.7	31.3
HELL-ROM	*Capra hircus*	First phlnx	11.9	12.4	43.7
HELL-ROM	*Capra hircus*	First phlnx	12.6	13.6	45.1
HELL-ROM	*Capra hircus*	First phlnx	12	12.9	40.2
MBA	*Capra hircus*	First phlnx	11.5	12.5	39.3
MBA	*Capra hircus*	First phlnx	12.2	12.9	37
MBA-LBA	*Capra hircus*	First phlnx	12.1		
MBA-LBA	*Capra hircus*	First phlnx	12.4	12.8	38.4
MBA-LBA	*Capra hircus*	First phlnx	11	11.3	36.9
MBA-LBA	*Capra hircus*	First phlnx	11.3	12.5	37.9
MBA-LBA	*Capra hircus*	First phlnx	11.1	12.2	38.2
MBA-LBA	*Capra hircus*	First phlnx	14	14.3	41.4
MBA-LBA	*Capra hircus*	First phlnx	13.6	14.2	42.2
MEDIEVAL	*Capra hircus*	First phlnx	15	15.6	43.9
MEDIEVAL	*Capra hircus*	First phlnx	11.3	11.6	36.9
CHLCTHC	*Capra hircus*	Humerus	39.1		
CHLCTHC	*Capra hircus*	Humerus	31.4		
HELL-ROM	*Capra hircus*	Humerus	34.9		
MBA-LBA	*Capra hircus*	Humerus	28.2		

Table II. 6. Cont.					
MBA-LBA	*Capra hircus*	Humerus	34.4		
MBA-LBA	*Capra hircus*	Humerus	29.1		
MBA-LBA	*Capra hircus*	Humerus	32.9		
MBA-LBA	*Capra hircus*	Humerus	31.8		
CHLCTHC	*Capra hircus*	Metacarpal	26.7		
CHLCTHC	*Capra hircus*	Metacarpal	28.2		
CHLCTHC	*Capra hircus*	Metacarpal	26.2		
CHLCTHC	*Capra hircus*	Metacarpal		25.1	
MBA-LBA	*Capra hircus*	Metacarpal	26.9	25.9	
MBA-LBA	*Capra hircus*	Metacarpal	27.2	26.2	
MBA-LBA	*Capra hircus*	Metacarpal		25	
MBA-LBA	*Capra hircus*	Metacarpal	28.1		
MBA-LBA	*Capra hircus*	Metacarpal		23.7	
MBA-LBA	*Capra hircus*	Metacarpal		25.6	
CHLCTHC	*Capra hircus*	Metatarsal		21	
CHLCTHC	*Capra hircus*	Metatarsal		24.1	
CHLCTHC	*Capra hircus*	Metatarsal	21.7		
MBA-LBA	*Capra hircus*	Metatarsal		22.6	
MBA-LBA	*Capra hircus*	Metatarsal		23.4	
MBA-LBA	*Capra hircus*	Metatarsal		22.6	
MBA-LBA	*Capra hircus*	Metatarsal		21.6	
MBA-LBA	*Capra hircus*	Metatarsal		21.5	
MBA-LBA	*Capra hircus*	Radius	28.9		
MBA-LBA	*Capra hircus*	Radius		26.4	
MBA-LBA	*Capra hircus*	Radius	27.3		
MBA-LBA	*Capra hircus*	Radius	27.4	31.2	150.5
MBA-LBA	*Capra hircus*	Radius		32.5	
MBA-LBA	*Capra hircus*	Radius		30.7	
MBA-LBA	*Capra hircus*	Radius		28	
MBA-LBA	*Capra hircus*	Radius	27.8		
CHLCTHC	*Capra hircus*	Scapula	GLP 37.8		
HELL-ROM	*Capra hircus*	Second phlnx	11	13.7	
MBA	*Capra hircus*	Second phlnx	9.7	11.8	23.7
MBA	*Capra hircus*	Second phlnx	9.6	11.5	23.2
MBA-LBA	*Capra hircus*	Second phlnx	10.2	13.1	21.1
MBA-LBA	*Capra hircus*	Second phlnx	10.6	12.4	26.2
MBA-LBA	*Capra hircus*	Second phlnx	10.9	12.1	27.3
MBA-LBA	*Capra hircus*	Second phlnx	10.5	14.2	27
MBA-LBA	*Capra hircus*	Second phlnx		13.8	
MBA-LBA	*Capra hircus*	Third phlnx		38.8	
MBA-LBA	*Capra hircus*	Third phlnx			32.9
CHLCTHC	*Capra hircus*	Tibia	25.5		
CHLCTHC	*Capra hircus*	Tibia	25.5		
MBA	*Capra hircus*	Tibia	27.4		

Table II. 6. Cont.					
MBA	*Capra hircus*	Tibia	29.8		
MBA	*Capra hircus*	Tibia	31.7		
MBA	*Capra hircus*	Tibia	27.9		
MBA-LBA	*Capra hircus*	Tibia	26.9		
MBA-LBA	*Capra hircus*	Tibia	30.3		
MBA-LBA	*Capra hircus*	Tibia	26.7		
MBA-LBA	*Capra hircus*	Tibia	30.3		
MBA-LBA	*Capra hircus*	Tibia	29.2		
MEDIEVAL	*Capra hircus*	Tibia	30.7		

Table.II.7. Measurements of *Bos taurus* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL	GB	GLl	GLm	Ld
MBA	*Bos taurus*	Astragalus	38.7		Dm 33.1		61	55.8	
MBA-LBA	*Bos taurus*	Astragalus	46.9				69.3	63,6	
MBA-LBA	*Bos taurus*	Astragalus	41.7						
MBA-LBA	*Bos taurus*	Astragalus		42					
MBA-LBA	*Bos taurus*	Astragalus	38.7				60.8	56.6	
MBA-LBA	*Bos taurus*	Astragalus	40.9						
MBA-LBA	*Bos taurus*	Astragalus	38.1	36.7	61				
MBA-LBA	*Bos taurus*	Astragalus	39.2	41.5	64.5				
MBA-LBA	*Bos taurus*	Astragalus	35.6	36.4	57.6				
MBA-LBA	*Bos taurus*	Astragalus	40	39.1	62.8				
MEDIEVAL	*Bos taurus*	Astragalus	39.2	40.5	65.2				
MEDIEVAL	*Bos taurus*	Astragalus	45.6				68.8	62.6	
MBA-LBA	*Bos taurus*	Calcaneum			133.2				
MBA-LBA	*Bos taurus*	Calcaneum			122.3				
MBA-LBA	*Bos taurus*	Calcaneum			108.1				
CHLCTHC	*Bos taurus*	Centrotarsal				58			
LBA	*Bos taurus*	Centrotarsal				53.9			
MBA-LBA	*Bos taurus*	Centrotarsal				49.6			
MBA-LBA	*Bos taurus*	Centrotarsal				52.7			
MBA-LBA	*Bos taurus*	Centrotarsal				57.2			
MBA-LBA	*Bos taurus*	Cubo-Nav				49.8			
MBA-LBA	*Bos taurus*	Cubo-Nav				33.9			
CHLCTHC	*Bos taurus*	First phlnx	29	31.5	61.1				
CHLCTHC	*Bos taurus*	First phlnx							
CHLCTHC	*Bos taurus*	First phlnx	21.4	23.9	58.1				
CHLCTHC	*Bos taurus*	First phlnx	25.5						
CHLCTHC	*Bos taurus*	First phlnx		30.6					
CHLCTHC	*Bos taurus*	First phlnx	28	29.7	58.7				
CHLCTHC	*Bos taurus*	First phlnx	24.6	28.6	60.7				
CHLCTHC	*Bos taurus*	First phlnx		27.3					
CHLCTHC	*Bos taurus*	First phlnx		37.9					
CHLCTHC	*Bos taurus*	First phlnx		29.7	65.5				
EBA	*Bos taurus*	First phlnx		34.2					
EIA	*Bos taurus*	First phlnx	28.9	29	69.7				
EIA	*Bos taurus*	First phlnx	20.6	21.1	57				
LBA	*Bos taurus*	First phlnx	25.2	28.5	55.3				
MBA-LBA	*Bos taurus*	First phlnx	25.7	26.4	66.7				
MBA-LBA	*Bos taurus*	First phlnx	23.5	24.9					
MBA-LBA	*Bos taurus*	First phlnx	21.5						
MBA-LBA	*Bos taurus*	First phlnx	27.2						

Table II.7 cont.									
MBA-LBA	*Bos taurus*	First phlnx	23	23.4					
MBA-LBA	*Bos taurus*	First phlnx	22.1	25.1	56.6				
MBA-LBA	*Bos taurus*	First phlnx		24.7					
MBA-LBA	*Bos taurus*	First phlnx	22.7	24.9					
MBA-LBA	*Bos taurus*	First phlnx		24.4					
MBA-LBA	*Bos taurus*	First phlnx	22.3	20.9	58.7				
MBA-LBA	*Bos taurus*	First phlnx							
MBA-LBA	*Bos taurus*	First phlnx	31.6						
MBA-LBA	*Bos taurus*	First phlnx		31.2					
MBA-LBA	*Bos taurus*	First phlnx		27.7					
MBA-LBA	*Bos taurus*	First phlnx	25.3	27.8					
MBA-LBA	*Bos taurus*	First phlnx	28.8	32.2	65.4				
MBA-LBA	*Bos taurus*	First phlnx	26.6	28.2	65				
MBA-LBA	*Bos taurus*	First phlnx	25.4	27.8	61.4				
MBA-LBA	*Bos taurus*	First phlnx	25.4	27.1					
MBA-LBA	*Bos taurus*	First phlnx	24.3	25	53.3				
MBA-LBA	*Bos taurus*	First phlnx	23.2	25.5	48.2				
MBA-LBA	*Bos taurus*	First phlnx		22.8					
MEDIEVAL	*Bos taurus*	First phlnx							
MEDIEVAL	*Bos taurus*	First phlnx	20.8	22.7	53.8				
MEDIEVAL	*Bos taurus*	First phlnx		23.3					
MIA	*Bos taurus*	First phlnx	29.7						
MBA-LBA	*Bos taurus*	Humerus	77.8						
MBA-LBA	*Bos taurus*	Humerus	59.1						
MBA-LBA	*Bos taurus*	Humerus	52.5						
CHLCTHC	*Bos taurus*	Metacarpal	59.3						
CHLCTHC	*Bos taurus*	Metacarpal		68.6					
EIA	*Bos taurus*	Metacarpal	53.9						
MBA	*Bos taurus*	Metacarpal		52.7					
MBA-LBA	*Bos taurus*	Metacarpal	62.3						
MBA-LBA	*Bos taurus*	Metacarpal		61.3					
MBA-LBA	*Bos taurus*	Metacarpal		57.6					
MBA-LBA	*Bos taurus*	Metacarpal		64.9					
MBA-LBA	*Bos taurus*	Metacarpal				46.3			
MBA-LBA	*Bos taurus*	Metacarpal		52.1					
MBA-LBA	*Bos taurus*	Metacarpal				35.3			
CHLCTHC	*Bos taurus*	Metatarsal	60.9						
MBA-LBA	*Bos taurus*	Metatarsal	64.2						
MBA-LBA	*Bos taurus*	Metatarsal	53.2						
MBA-LBA	*Bos taurus*	Metatarsal		41.3					
CHLCTHC	*Bos taurus*	Radius		68					
LBA	*Bos taurus*	Radius		55.3					
MBA-LBA	*Bos taurus*	Radius		79.9	BFp 74.4				
MBA-LBA	*Bos taurus*	Radius		76.7	BFp 71.6				

Table II.7. cont.

MBA-LBA	*Bos taurus*	Radius		82.2					
MBA-LBA	*Bos taurus*	Radius	69.3	62					
MIA	*Bos taurus*	Radius	64						
CHLCTHC	*Bos taurus*	Second phlnx		30.6					
CHLCTHC	*Bos taurus*	Second phlnx	26.6						
CHLCTHC	*Bos taurus*	Second phlnx	23.7	30	42.7				
CHLCTHC	*Bos taurus*	Second phlnx	Ld 60.5						
CHLCTHC	*Bos taurus*	Second phlnx	24.4	30.1	41.2				
CHLCTHC	*Bos taurus*	Second phlnx	21.8	27.9	41.6				
CHLCTHC	*Bos taurus*	Second phlnx	23.3	28.8	42.3				
CHLCTHC	*Bos taurus*	Second phlnx	23.2	28.3	40.1				
CHLCTHC	*Bos taurus*	Second phlnx	21.6	27.6	39.2				
CHLCTHC	*Bos taurus*	Second phlnx	27.2	32.4	43.2				
EIA	*Bos taurus*	Second phlnx	21.2						
HELL-ROM	*Bos taurus*	Second phlnx	22	26.1	41.9				
HELL-ROM	*Bos taurus*	Second phlnx	18.4	21.7	43				
LBA	*Bos taurus*	Second phlnx	24	29.8	37.4				
MBA	*Bos taurus*	Second phlnx	18.8	21.8	46.6				
MBA	*Bos taurus*	Second phlnx		21					
MBA	*Bos taurus*	Second phlnx	28.3						
MBA-LBA	*Bos taurus*	Second phlnx	21.2						
MBA-LBA	*Bos taurus*	Second phlnx	22	24.5	46.6				
MBA-LBA	*Bos taurus*	Second phlnx		24.9					
MBA-LBA	*Bos taurus*	Second phlnx	20.5						
MBA-LBA	*Bos taurus*	Second phlnx	21.8	27.4	38.3				
MBA-LBA	*Bos taurus*	Second phlnx	23.8	28.5	39.1				
MBA-LBA	*Bos taurus*	Second phlnx	21.4	23.7	48.5				
MBA-LBA	*Bos taurus*	Second phlnx	21.9	25.5	43.3				
MBA-LBA	*Bos taurus*	Second phlnx	21.1	24.5	42.8				
MBA-LBA	*Bos taurus*	Second phlnx		28.5					
MBA-LBA	*Bos taurus*	Second phlnx	26.6	27.7	44.5				
MEDIEVAL	*Bos taurus*	Second phlnx	20.7		43.3				
MEDIEVAL	*Bos taurus*	Second phlnx	20.9	23.5	42.9				
CHLCTHC	*Bos taurus*	Third phlnx							55.7
CHLCTHC	*Bos taurus*	Third phlnx							53.9
CHLCTHC	*Bos taurus*	Third phlnx							55
MBA-LBA	*Bos taurus*	Third phlnx							49.7
HELL-ROM	*Bos taurus*	Tibia	45.7						
MBA	*Bos taurus*	Tibia	65.7						
MBA-LBA	*Bos taurus*	Tibia		59.3					
MBA-LBA	*Bos taurus*	Tibia		58					
MBA-LBA	*Bos taurus*	Tibia	55.4						
MBA-LBA	*Bos taurus*	Tibia	48.6						

Table.II.8. Measurements of *Sus domesticus* and *Sus scrofa* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL
CHLCTHC	*Sus domesticus*	Astragalus		15.9	31.2
CHLCTHC	*Sus domesticus*	Astragalus	17.1		
CHLCTHC	*Sus domesticus*	Astragalus			31.7
CHLCTHC	*Sus domesticus*	Astragalus	19.1	23	38.3
CHLCTHC	*Sus scrofa*	Astragalus	20.5		
CHLCTHC	*Sus domesticus*	First phlnx	14	15.5	30.3
CHLCTHC	*Sus domesticus*	First phlnx	7.2	9.7	19.5
CHLCTHC	*Sus domesticus*	First phlnx		15.6	
CHLCTHC	*Sus domesticus*	Metacarpal		14.8	
CHLCTHC	*Sus domesticus*	Metacarpal		15	
CHLCTHC	*Sus domesticus*	Metatarsal		19.5	
CHLCTHC	*Sus domesticus*	Metatarsal		23.5	
CHLCTHC	*Sus scrofa*	Metatarsal		24.5	
CHLCTHC	*Sus domesticus*	Radius		26.2	
CHLCTHC	*Sus domesticus*	Radius		23.4	
CHLCTHC	*Sus domesticus*	Second phlnx		8.6	
CHLCTHC	*Sus domesticus*	Second phlnx	8.6	12.4	24.4
CHLCTHC	*Sus domesticus*	Second phlnx	12.2	14.7	21.1
CHLCTHC	*Sus domesticus*	Second phlnx	8.3	11.4	21.7
CHLCTHC	*Sus domesticus*	Second phlnx	13.1	16.1	22.7
CHLCTHC	*Sus domesticus*	Tibia	27.8		
CHLCTHC	*Sus domesticus*	Ulna	SDO 26.7		
EIA	*Sus domesticus*	Astragalus	13.9	15.5	26.5
EIA	*Sus domesticus*	Calcaneum	21.9	18	
EIA	*Sus domesticus*	Calcaneum	22.3		
EIA	*Sus domesticus*	First phlnx	7.4	9.9	21.6
EIA	*Sus domesticus*	Metacarpal		18.6	
EIA	*Sus domesticus*	Metatarsal		21.3	
EIA	*Sus domesticus*	Second phlnx	10.9	12.3	19.2
HELL-ROM	*Sus domesticus*	Astragalus			34
HELL-ROM	*Sus scrofa*	Astragalus			51.1
MBA	*Sus domesticus*	Metatarsal	15.3	19	67.8
MBA	*Sus domesticus*	Second phlnx	11.8		
MBA-LBA	*Sus domesticus*	Astragalus	19.8	17.9	
MBA-LBA	*Sus domesticus*	Astragalus	20.7	25.1	41.1
MBA-LBA	*Sus domesticus*	First phlnx	12.3	14.8	29.2
MBA-LBA	*Sus domesticus*	First phlnx	13	14	28.4
MBA-LBA	*Sus domesticus*	First phlnx		15.9	
MBA-LBA	*Sus domesticus*	First phlnx	13.1		
MBA-LBA	*Sus domesticus*	First phlnx	8.1	11.2	21.5

Table II.8 Cont.					
MBA-LBA	*Sus domesticus*	First phlnx	13.9	15.9	30.1
MBA-LBA	*Sus domesticus*	First phlnx	13.9		
MBA-LBA	*Sus domesticus*	First phlnx	10.5	12.2	29.7
MBA-LBA	*Sus domesticus*	First phlnx		16.2	
MBA-LBA	*Sus scrofa*	First phlnx	12.5		
MBA-LBA	*Sus scrofa*	First phlnx	13.5	15	
MBA-LBA	*Sus scrofa*	First phlnx	14.3		
MBA-LBA	*Sus domesticus*	Humerus	27.9		
MBA-LBA	*Sus domesticus*	Humerus	33.1		
MBA-LBA	*Sus domesticus*	Metacarpal		11.7	
MBA-LBA	*Sus domesticus*	Metacarpal		16.5	
MBA-LBA	*Sus scrofa*	Metacarpal		15	
MBA-LBA	*Sus domesticus*	Metatarsal		20.1	
MBA-LBA	*Sus domesticus*	Metatarsal		13.9	
MBA-LBA	*Sus domesticus*	Metatarsal	12.7	19.6	
MBA-LBA	*Sus domesticus*	Metatarsal		14.2	65.8
MBA-LBA	*Sus domesticus*	Metatarsal		13.3	
MBA-LBA	*Sus domesticus*	Radius		25.3	
MBA-LBA	*Sus domesticus*	Radius		23.8	
MBA-LBA	*Sus domesticus*	Radius		25.6	
MBA-LBA	*Sus domesticus*	Second phlnx	14	14.9	
MBA-LBA	*Sus domesticus*	Second phlnx	13.5	16	
MBA-LBA	*Sus domesticus*	Second phlnx	13	14.8	21.6
MBA-LBA	*Sus domesticus*	Second phlnx	11	12.6	17.2
MBA-LBA	*Sus domesticus*	Second phlnx	11.4	13.7	18.7
MBA-LBA	*Sus domesticus*	Second phlnx	12.2	13.6	
MBA-LBA	*Sus scrofa*	Second phlnx	9.3		
MBA-LBA	*Sus scrofa*	Second phlnx	11.4	14.2	21.4
MBA-LBA	*Sus domesticus*	Third phlnx	Ld 25.8		
MBA-LBA	*Sus domesticus*	Third phlnx	Ld 24.9		
MBA-LBA	*Sus domesticus*	Tibia	29.4		
MEDIEVAL	*Sus domesticus*	First phlnx	13.7		
MEDIEVAL	*Sus domesticus*	Radius		30.7	

Table.II.9. Measurements of *Caprinae* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL
CHLCTHC	*Caprinae*	Carpal		26.5	
CHLCTHC	*Caprinae*	Tibia	30.5		
CHLCTHC	*Caprinae*	Carpal		23.9	
CHLCTHC	*Caprinae*	Second Phlnx	9	12.5	22.6
CHLCTHC	*Caprinae*	Radius		33.5	
CHLCTHC	*Caprinae*	Carpal		26.2	
EIA	*Caprinae*	First Phlnx		14.8	
HELL-ROM	*Caprinae*	Tibia	31.2		
MBA	*Caprinae*	Astragalus	19.1	19.6	
MBA-LBA	*Caprinae*	Second Phlnx	6.4		
MBA-LBA	*Caprinae*	Astragalus	16.9		
MBA-LBA	*Caprinae*	Astragalus	18.1	17.5	28
MBA-LBA	*Caprinae*	Humerus	27.5		
MBA-LBA	*Caprinae*	Astragalus	17.5	18.5	27.3
MBA-LBA	*Caprinae*	First Phlnx		11.5	
MBA-LBA	*Caprinae*	First Phlnx	12.6		
MBA-LBA	*Caprinae*	First Phlnx	9.7		
MBA-LBA	*Caprinae*	Tibia	23.7	GC 30.1	
MBA-LBA	*Caprinae*	Carpal		23.5	
MBA-LBA	*Caprinae*	First Phlnx	12.6		
MBA-LBA	*Caprinae*	Carpal		25.7	
MBA-LBA	*Caprinae*	First Phlnx			
MBA-LBA	*Caprinae*	First Phlnx	15.2		
MBA-LBA	*Caprinae*	Radius		29.7	
MBA-LBA	*Caprinae*	Astragalus		17.9	
MBA-LBA	*Caprinae*	First Phlnx	7.9		
MBA-LBA	*Caprinae*	Astragalus	14.4	14.6	23.5
MBA-LBA	*Caprinae*	Tibia	29.9		
MBA-LBA	*Caprinae*	Astragalus		16.5	
MBA-LBA	*Caprinae*	Radius		33.1	
MBA-LBA	*Caprinae*	Metatarsal		21.6	
MBA-LBA	*Caprinae*	Radius		34.6	
MBA-LBA	*Caprinae*	First Phlnx		14.6	
MCA	*Caprinae*	Tibia		34.7	
MEDIEVAL	*Caprinae*	Tibia	28.2		
MEDIEVAL	*Caprinae*	Metatarsal		24.5	
MIA	*Caprinae*	Metatarsal		21.4	
MIA	*Caprinae*	Metatarsal		21.2	
MIA	*Caprinae*	Carpal		24.1	

Table. II.10. Measurements of *Canis familiaris, Canis lupus, and Canis aureus* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL
CHLCTHC	*Canis familiaris*	Metatarsal	7.9	13.2	
CHLCTHC	*Canis familiaris*	Calcaneum			30.4
CHLCTHC	*Canis familiaris*	Metatarsal	9.4	12.9	61.5
EIA	Canis aureus	Calcaneum			42.1
EIA	*Canis familiaris*	Metapodium	7.9		
HELL-ROM	*Canis familiaris*	Phlnx indet.	6.6	8.2	
HELL-ROM	*Canis familiaris*	Phlnx indet.	6.5	7.9	
HELL-ROM	*Canis familiaris*	Phlnx indet.	6.9	9	
HELL-ROM	*Canis familiaris*	Phlnx indet.	6.1	7.7	
HELL-ROM	*Canis lupus*	Ulna	SDO 22.7		
HELL-ROM	*Canis lupus*	Metapodium	7.9		
HELL-ROM	*Canis familiaris*	Tibia	23.6		
LBA	*Canis familiaris*	Metapodium		10.2	
MBA	*Canis familiaris*	Phlnx indet.	4.1	7.6	23.4
MBA-LBA	*Canis familiaris*	Astragalus	GLI 26.4		
MBA-LBA	*Canis lupus*	Metatarsal		14.8	
MBA-LBA	*Canis lupus*	Calcaneum			51.5
MBA-LBA	*Canis lupus*	Metatarsal	8.6		
MBA-LBA	*Canis lupus*	Metapodium	9.3	13.7	
MBA-LBA	*Canis lupus*	Tibia	25.3		
MBA-LBA	*Canis lupus*	Metatarsal	8.3	11.6	
MBA-LBA	*Canis lupus*	Phlnx indet.	8	9.4	30.5
MBA-LBA	*Canis lupus*	Phlnx indet.	9	8.4	
MBA-LBA	*Canis lupus*	Calcaneum			53.5
MBA-LBA	*Canis familiaris*	Metapodium	7.4		
MBA-LBA	*Canis familiaris*	Metapodium	7.7	9.3	47.7
MBA-LBA	*Canis lupus*	Phlnx indet.	7.7	10	24.1
MBA-LBA	*Canis familiaris*	Phlnx indet.	8.2	9.1	18.8
MBA-LBA	*Canis lupus*	Metatarsal	8.5	14.5	92.8
MBA-LBA	*Canis lupus*	Metatarsal	8	12.7	71.8
MBA-LBA	*Canis lupus*	Metatarsal	9	12.6	84.1
MBA-LBA	*Canis lupus*	Carpal	9.8	11.3	60.6
MBA-LBA	*Canis familiaris*	Radius	22.9		
MBA-LBA	*Canis familiaris*	Phlnx indet.	3.6	4.1	13.3
MBA-LBA	*Canis lupus*	Humerus	11		
MBA-LBA	*Canis familiaris*	Astragalus			16.9

Table II.11. Measurements of *Cervus elaphus, Dama dama, Dama mesopotamica, and Capreoulus capreoulus* from Salat Tepe

PERIODS	TAXA	ELEMENT	Bd	Bp	GL	GB	Ld
MBA	*Cervus elaphus*	Astragalus	38.7	38.2			
MBA-LBA	*Cervus elaphus*	Astragalus	36.9		59.1		
MBA-LBA	*Cervus elaphus*	Astragalus		26.7	42.7		
MBA-LBA	*Cervus elaphus*	Astragalus	34.2	33.7	52.6		
MBA-LBA	*Cervus elaphus*	Astragalus	34	32.8	52.5		
CHLCTHC	*Cervus elaphus*	Calcaneum			103.8		
MBA-LBA	*Cervus elaphus*	Calcaneum	BL 119.8				
MBA	*Cervus elaphus*	Carpal	45.4	42.2			
MBA-LBA	*Cervus elaphus*	Carpal	30				
MBA-LBA	*Cervus elaphus*	Carpal	30.8				
MBA-LBA	*Cervus elaphus*	Carpal		37.5			
MBA-LBA	*Cervus elaphus*	Carpal		38.8			
MBA-LBA	*Cervus elaphus*	Carpal		38.8			
MBA-LBA	*Cervus elaphus*	Centrotarsal				48.6	
MBA-LBA	*Cervus elaphus*	Centrotarsal				33.6	
MBA-LBA	*Cervus elaphus*	Centrotarsal				33.6	
MBA	*Cervus elaphus*	First phlnx	22	21.3	57.8		
MBA-LBA	*Cervus elaphus*	First phlnx	21.4	22.4	57.5		
MBA-LBA	*Cervus elaphus*	First phlnx	22.3	24.8	64.5		
MBA-LBA	*Cervus elaphus*	First phlnx	14.6	16.7	48.5		
MBA-LBA	*Cervus elaphus*	First phlnx	14.8				
MBA-LBA	*Cervus elaphus*	First phlnx	14.6	15.8	46.7		
MBA-LBA	*Cervus elaphus*	First phlnx	14.5	17	50.8		
MBA-LBA	*Cervus elaphus*	First phlnx	15	16.4	49.5		
MBA-LBA	*Cervus elaphus*	First phlnx	19.6	20.7	55.4		
MBA-LBA	*Cervus elaphus*	First phlnx	16.8				
MBA-LBA	*Cervus elaphus*	First phlnx	16.8				
MBA-LBA	*Dama dama*	First phlnx	15.6	17.7	50.2		
MBA-LBA	*Cervus elaphus*	Lunate				34.1	
MBA-LBA	*Cervus elaphus*	Radius		56.6			
HELL-ROM	*Cervus elaphus*	Second phlnx		23.3	42.8		
MBA	*Cervus elaphus*	Second phlnx	19.6	22.9	44.8		
MBA-LBA	*Cervus elaphus*	Second phlnx	19.6	23.5	44.1		
MBA-LBA	*Cervus elaphus*	Second phlnx	12.8	15.5	34.2		
MBA-LBA	*Cervus elaphus*	Second phlnx	13.3	15.3	34.9		
MBA-LBA	*Cervus elaphus*	Second phlnx	13.3	15.6	35.3		
MBA-LBA	*Cervus elaphus*	Second phlnx	13.1	15.5	36.4		
MBA-LBA	*Cervus elaphus*	Second phlnx	19.3	23.7	49.8		
MBA-LBA	*Cervus elaphus*	Second phlnx	14.2				
MBA-LBA	*Cervus elaphus*	Second phlnx	14.3				
MBA-LBA	*Cervus elaphus*	Second phlnx	15.1				

Table II.11cont.							
MBA-LBA	*Cervus elaphus*	Second phlnx	14.5				
MBA-LBA	*Cervus elaphus*	Second phlnx	15.4				
MBA	*Cervus elaphus*	Tarsal	43.7				
MBA-LBA	*Cervus elaphus*	Tarsal		34.4			
MBA-LBA	*Cervus elaphus*	Tarsal		35.1			
MEDIEVAL	*Capreoulus capreoulus*	Third phlnx					34.8
MBA-LBA	*Cervus elaphus*	Third phlnx					34.4
MBA-LBA	*Cervus elaphus*	Third phlnx					33.7
MBA-LBA	*Cervus elaphus*	Third phlnx					33.9
MBA-LBA	*Cervus elaphus*	Third phlnx					34.1
MBA-LBA	*Cervus elaphus*	Third phlnx					51.2
MBA-LBA	*Cervus elaphus*	Third phlnx					33.4
MBA-LBA	*Cervus elaphus*	Third phlnx					33.7
MBA-LBA	*Cervus elaphus*	Tibia	53.2				
MBA-LBA	*Cervus elaphus*	Tibia		62.5			
MBA-LBA	*Cervus elaphus*	Tibia		61.7			
MBA-LBA	*Cervus elaphus*	Tibia	35.4				
MBA-LBA	*Cervus elaphus*	Tibia	36.4				
MEDIEVAL	*Dama mesopotamica*	Tibia	31.2				
CHLCTHC	*Dama dama*	Ulna	LO 42.2				

APPENDIX- 3

Coding Protocol

The coding system devised by Dr. M.C. Stiner.

TAXA

1.*Capreoulus capreoulus*

2.*Cervus elaphus*

3.*Dama mesopotamica*

4.*Dama dama*

5.*Cervid Indet*

6.*Dama/Capra*

7.*Capra aegagrus*

8.*Capra hircus*

9.*Ovis orientalis*

10.*Ovis aries*

11.*Ovis/Capra*

12.*Gazella gazelle*

13.*Bos primigenius*

14.*Bos taurus*

15.*Bos Sp.*

16.*Camelus dromedarius*

17.*Sus scrofa*

18. *Sus scrofa domesticus*

19.*Equus caballus*

20.*Equus asinus*

21. *Equus mulus*

22.*Equus Sp.*

23.*Ursus Sp.*

24.*Vulpes vulpes*

25.*Canis lupus*

26.*Canis familiaris*

27.*Canis aureus*

28.*Panthera pardus*

29.*Panthera leo*

30.*Lynx lynx*

31.*Felis sylvestris*

32.*Felis domesticus*

33.*Castor fiber*

34.*Martes foina*

35.*Martes martes*

36.*Meles meles*

37. *Mustela nivalis*

38.*Carnivora Indet.*

39.*Lepus capensis*

40.*Testudo gracea*

41.*Rodentia*

42.Aves

43.Reptilia

44.Fish

45.*Large Mammal*

46.Medium Mammal

47.Small Mammal

48. *Sus sp.*

49.Lagomorf

50.Lepus euroopus (hare)

51. Hystrix

52. Felis sp.

53. Snake

ELEMENT

1. Metapodia
2. Long bone
3. Flat bone
4. carpal/tarsal

HORN/ANTLER

8. Horn core

9. Antler

63. Horn fragment

65. Turtle crust

HEAD

10.1/2 skull with antler

11. Skull (1/2)

12. Mandible (1/2)

13. Complete mandib.

14. Skull with occipital

15. Skull with orbit

57. Maxilla 1/2

58. Maxilla fragment

59. Mandible fragment

60. Premaxillare

71. Hyoid

63. Horn fragment

NECK

16. Atlas

17. Axis

18. Cervical vert.

AXIAL

19. Vertebra unknown

20. Thoracic vert.

21. Lumbar vert

22. Sacral vert.

23. Caudal vert.

24. Sternal vert.

25. Rib

26. Pelvis (1/2)

64. Pelvis fragment

UPPER FRONT LIMBS

27. Scapula

28. Humerus

29. Coracoid (bird)

69. Clavicula

LOWER FRONT LIMBS

30. Radius

31. Ulna

32. Carpal

33. Metacarpal

34. Cuneiform

35. Magnum

36. Lunate

37. Scaphoid

38. Unciform

39. Centotarsal

66. Fibula

67. Tarso metatarsal

68. Pyramidal

70. Pisiform

72. Baculum (penis bone)

UPPER HIND LIMBS

40. Femur

LOWER HIND LIMBS

41. Tibia

42. Patella

43. Astragalus

44. Calcaneum

45. Tarsal

46. Metatarsal

47. naviculocuboid

48.ext+mid cuneiform

49. lateral malleous

FEET

50. sesamoid

51. first phlx

52. second phlx

53. third phlx

61.4 phlnx

62. phlnx indent.

TEETH

54. Upper tooth

55. Lower tooth

56. Tooth

SIDE

0: Indent

1: Left

2: right

GEN. CODES

1. Complete
2. Nearly complete
3. without root (for tooth)
4. Long bone fragment
5. Flat bone fragment
6. Fragment
7. Skull fragment

BURNING

0. Not burned
1. Less than half carbonized
2. More than half carbonized
3. Fully carbonized (black)
4. Less than half calcined
5. More than half calcined
6. Fully than half calcined (white)
7. Darked by mineral staining

AGEBONEFUS

0. No data
1. Unfused
2. Partly fused
3. Fused, line still visible
4. Fully fused
5. Very porous tissue, young
6. Fetus or neonate
7. Young juvenile
8. Antler, shed base
9. Antler, unshed base

SEX

0. Indent
1. Male
2. Female

PORTION BONE

TEETH

1. Incisive
2. I1
3. I2
4. I3
5. C
6. PreM
7. P1
8. P2
9. P3
10. P4
11. Molar
12. M1
13. M2
14. M3

DECIDIOUS TEETH

15. Dincisive
16. di1
17. di2
18. di3
19. dc
20. dpremlr
21. dp1
22. dp2
23. dp3
24. dp4

Vertebra

25. epiphysis
26. body

27.spinous process

28.anterior process (one side only)

29.posterior (one side only)

30.dorsal spine (throcal vert.)

31.1/2 vertebra, side

Limbbones

32. prox. epiphysis

33.prox. epiphysis frag.

34.prox<1/2

35.prox.1/2

36.prox.>1/2

37.dist.>1/2

38.dist.1/2

39.dist<1/2

40.dist epiph frag

41.dist. epiphy

42.shaft>1/2

43.shaft<1/2

44.shaft frag.

45.full

Diseases

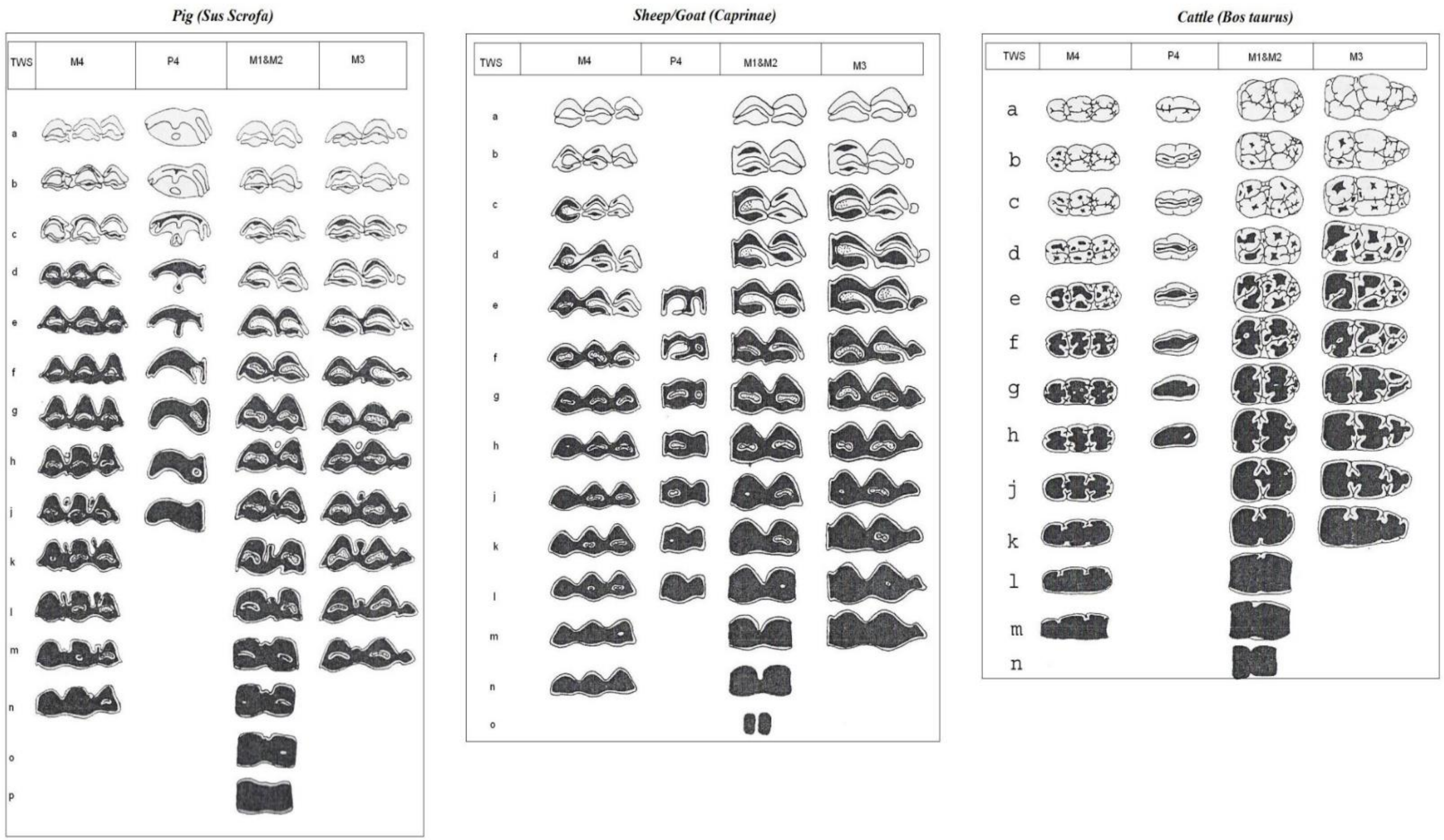

Figure III.1. Mandibular tooth wear stages for pig, sheep/goat and cattle (Grant, 1982:92-94).

APPENDIX 4

Figure IV.1. Capra burned, metacarpal

Figure IV.2. Equid metapodium and first phalanx.

ST 03 M13/103 MBA

Figure IV.3. *C. elaphus* mandible

ST 05 L13/74 MBA

Figure IV.4. Modified deer antler

ST 07 L14/133

Figure IV.5. Bone tool

ST 07 L14/111 MBA

Figure IV.6. Burned turtle shell

Figure IV.7. Burned cattle vertebra

Figure IV.8. Deer antler

Figure IV. 9. Cattle atlas and axis with cut marks.

Figure IV. 10. Baby carnivore

Figure IV. 11. Snake vertebra and ribs

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2001-2005: Anthropology Department, Ankara University, Faculty of Languages, History and Geography (DTCF), B.A.

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Awards and Scholarships

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Symposiums

1. **D. Silibolatlaz**, Pişkin, E., 2008, Amorium-Bizans Şehri Hayvan Kemik Çalışmaları, III. Ulusal Biyolojik Antropoloji Sempozyumu, Ankara.

2. H. Yılmaz, İ. Baykara, **D. Baykara**, T. Gültekin, 2009, Çömelme Faseti Anomalisine Bağlı Olarak Doğu Anadolu Demir Çağ Toplumların Günlük Aktiviteleri. 5. Uluslararası Van Gölü ve Çevresi Sempozyumu, Van.

3. **Silibolatlaz Baykara, D.,** Tuna, N., 2012, Animal Economy at Ancient Burgaz, North-East of Turkey, In the Archaic and Classical Periods, The 18th Congress of the European Anthropological Association, Ankara.

4. **Baykara, D.,** 2013, Antik Datca-Burgaz Kazilarindan Ele Gecen Hayvan Kemiklerinin Analizi, V. Ulusal Biyolojik Antropoloji Sempozyumu, Ankara.

List of Publications

1. H. Yılmaz, İ. Baykara, D**. Baykara,** 2009, “Kalecik (VAN) İnsanlarının Ağız ve Diş Sağlığı”, 25. Arkeometri Sonuçları Toplantısı, s: 15-31, Denizli.

2. İ. Baykara, H. Yılmaz, **D. Baykara,** 2009, “Peroneal Tüberkülün Anatomisi, Fonksiyonu ve Görülme Sıklığı: Van-Karagündüz Toplumu Üzerine Bir Çalışma”, 25. Arkeometri Sonuçları Toplantısı, s.1-13, Denizli.

3. Pişkin, E, **Baykara, D.,** 2011, Zooarchaeological Studies at Burgaz: A Preliminary Report, 27. Arkeometri Sonuçları Toplantısı, Malatya.

4. Güleç E., Özer İ., Açıkkol A., Pehlevan C., Erkman A.C., Baykara İ., Şahin S., **Baykara-Silibolatlaz, D.,** 2011, 2010 Yılı Üçağızlı Mağarası Kazısı, 33. Kazı Sonuçları Toplantısı, Malatya.

5. **Silibolatlaz-Baykara, D.,** 2012, Faunal Studies on Byzantine City of The Amorium, Dil ve Tarih Coğrafya Fakültesi Dergisi, Cilt: 52, Sayı: 1, Ankara.

6. **Baykara, D.,** Zehra Satar, 2012, 2011 Yılı Salat Tepe Kazısı'ndan Ele Geçen Hayvan Kemiklerinin İncelenmesi, 28. Arkeometri Sonuçları Toplantısı, Çorum.

7. **Silibolatlaz Baykara, D.,** Satar Z., 2012, Anadolu Zooarkeoloji Çalışmaları, Eds (E. Güleç, İ. Özer, M. Sağır, B. K. Özer) A.Ü-DTCF 75. Kuruluş Yıldönümü Anı Kitabı: Biyolojik Antropoloji, 47-71, DTCF Yayınları Ankara.

Selected Archaeological Field Experience:

1. 2007 Tell Açana Excavation, Researcher.
2. 2007 Amorium Church Excavation, Zooarchaeologist.
3. 2008-2013 Üçağızlı Mağarası Excavation, Zooarchaeologist.
4. 2009-2013 Oylum Höyük Excavation, Zooarchaeologist.
5. 2009-2013 Datça-Burgaz Excavation, Zooarchaeologist.
6. 2012 Salat Tepe Rescue Excavation, Zooarchaeologist

TURKISH SUMMARY/TÜRKÇE ÖZET

"Zooarchaeological Analysis on Faunal Remains from Salat Tepe, South-EasternTurkey / Güneydoğu Anadolu, Salat Tepe Faunal Kalıntılarının Zooarkeolojik Analizi" başlıklı çalışmanın temel veri kaynağını Salat Tepe arkeolojik alanından, dokuz kazı sezonundan toplanan hayvan kemikleri oluşturmaktadır. Salat Tepe Dicle Nehrinin yukarı havzasında, Ilısu barajı dolum alanında, Bismil'in yaklaşık 14km. Doğusunda, Yukarı Salat beldesinde yer alır. Tepe ilk kez 1989 ve 1998-199 yıllarında Algaze tarafından yüzey araştırması esnasında belirlenmiştir. 2000 yılından 2013 yılına kadar kurtarma kazıları A. T. Ökse tarafından sürdürülmüştür. 2013 yılında Ilısu kurtarma kazısı kapsamındaki kazı çalışmaları sonlandırılmıştır. Kazılar tepe üzerinde dokuz açmada ve güney yamaçta 2,5 m. Genişlikte basamaklı açmalarda sürdürülmüştür. Salat Tepe beş farklı dönemde kullanılmıştır. En erken yerleşim Kalkolitik döneme tarihlenmiştir. Bu dönem güney yamaçtaki 3m genişlikteki basamaklı açmada tespit edilmiştir. Kalkolitik dönem, yaklaşık 50-60 metre boyutlardaki tepe üzeri 3 m. yükseklikte bir teras dolgu ile düzleştirilmiştir. Güney yamaçta J12 açmasında Kalkolitik höyüğün en üstyapı katına ait tabana ulaşılmış, I12 açmasının kuzey basamağında ocaklardan oluşan iki yapı katı, H12 açmasında üç, G12 açmasında iki, F12 açmasının kuzey basamağında bir yapı katı açığa çıkarılmıştır. Tepe üzerindeki açmalarda ise Orta Tunç çağından Helenistik-Roma dönemlerine rastlanmıştır. Tepe üzerindeki Orta Tunç Çağı yapılaşması iki mimari tabakadan oluşmuştur ve beş evreden oluşmaktadır. Erken Orta Tunç Çağı tabakası anıtsal bir yapı kompleksi ile temsil edilmektedir. Bu yapının depremle yıkılmasından hemen sonra Geç Orta Tunç Çağı tabakası derin Erken Demir Çağı çukurları ve 3 m. derinlikteki Ortaçağ tahıl ambarlarınca tahrip edilmiş yapı parçalarından oluşur. Orta Tunç yapı kompleksi merkezi bir avlu çevresine dizilmiş 2-3 odalı birimlerden ve yapının kuzey kesiminde bulunan ambarlar ve ocak alanından oluşmuştur. Yapının anıtsallığı ve tepe üzerindeki konumu ile yapımı için kullanılan malzeme ve işgücü ile benzeri yapıların bölgede Hirbemerdon, Ziyaret tepe, Kavuşan Hoyuk, Giricano, Kenan Tepe ve Üç Tepe'de de bulunması ve aşağı yukarı benzeri yüzölçümlerine sahip olması, bu tür yapıların bir tarım idare sisteminin parçası olduğunu belirlemiştir. Demir Çağı çapları ortalama 3-5 m. arasında değişen çukurlarla karakterizedir. M13 ve L12 açmalardaki büyük küllü çukurların diplerinde ocakların bulunması, Erken Demir Çağ'da kullanılan çukur evlerle ilişkilendirilmiştir. Bu çukurların beyaz hasır tabanları ve birisinin taban üzerinde bir ocak bulunması, bunların toprağa gömülü hasır üst yapılı geçici barınaklar olabileceğini düşündürmüştür. Bu veriler ışığında günlük yasam bu dönemde çoğunlukla açık alanlarda ve küçük çukur evlerde geçtiğini göstermektedir. Tunç Çağından sonra gözlenen bu basit çukur evler, konargöçer veya yarı konargöçer toplumların varlığıyla ilişkilendirilebilir. Demir Çağındaki bu durum tarımsal yönetimdeki olası bir bozulma ile ya da mevsimsel değişikliklerle açıklanabilir. Ortaçağ'a ait ocak ve çukurların bozduğu taş döşeme, taş duvar temelleri ve ocak kalıntıları tepe izlerinde iki yapı katı oluşturmaktadır. Ortaçağ erzak çukurlarının varlığı ile karakterizedir. Bu çukurlarda buğday, arpa ve baklagil tohumları, L13 açmasındaki bir çukurun kenarında karbonlaşmış saman kalıntıları ele geçmiştir. Anadolu'da halen kullanılan erzak çukurları genellikle yağmurdan en az etkilenecek tepe üstelerine açılmaktadır. Çukurların içine konulan malzemenin hava ile temasının engellenmesi için ağızları dar kazılmakta ve kenarları samanla beslenmektedir. Çukurlara ürün yerleştirildikten sonra ağızları kil ile kapatılarak içine nem ve hava girişi engellenmekte, böylece çukurun içerisinde kalan oksijen tükeninceye kadar küf ve çeşitli haşerelerden oluşan faunanın tahıl üzerinde yapacağı tahribat en aza indirgenmektedir.

Yukarı Dicle bölgesinde geçtiğimiz on sene içinde arkeolojik miras projeleri kapsamında yapılan kurtarma kazılarının sayısı artmıştır. Bölgede yapılan kazı sayısının artmasına rağmen zooarkeolojik çalışmalar oldukça kısıtlıdır. Yapılan bu tez çalışmasıyla hem Salat Tepe yerleşiminin hem de bölgenin zooarkeolojisinin daha iyi anlaşılması hedeflenmektedir. Çalışmanın başlıca amacı, hayvan faunasını tanımlamak, dönemsel değişimleri ele almak ve bölgesel hayvan ekonomisini incelemektir. Bunun yanı sıra, dönem insanlarının başlıca hayvan tüketimini, olası avcılık aktivitelerini ve hayvansal üretimin amacını belirlemek bu çalışmanın amaçları arasında yer almaktadır. Salat Tepe'nin zooarkeolojik çalışmalarının iki önemli sebebi vardır, bunlardan ilki; höyük Ilısu baraj projesi kapsamında kurtarma kazısı olduğundan yakın gelecekte bu arkeolojik alan sular altında kalacaktır. İkincisi ise; höyük modern yerleşimler tarafından tahribata uğramadığından dolayı geçmiş dönem ekolojisi ve insan yaşamı hakkında essiz bilgiler sağlamaktadır.

Yapılan bu tez çalışmasında toplamda 10085 hayvan kemiği güvenli kontekstlerden ele geçmiştir. Bunlardan 4938 tanesi tür, cins ve aile bazında tanımlanabilmiştir. 5147 tanesi ise ancak boyutlarına göre gruplandırılmıştır. Kırılma durumlarından dolayı tanımlanamayan malzemeler büyük, orta ve küçük boyutlular olmak üzere üç ana grupta incelenmişlerdir. Kodlama sistemi Stiner'a göre yapılmıştır. Ele gecen malzemenin yaşlandırması (diş ve epifiz kaynaşmasına göre), yanma durumları, kesim izleri, cinsiyet tahmini ve uzun kemiklerin ölçümü gibi teknikler uygulanmıştır. Yaşlandırma geçmiş dönem insanlarının hayvansal kullanımını anlamak açısından oldukça önem taşımaktadır. Bu teknik diş yaşlandırması ve epifiz kaynaşması olmak üzere iki ana grupta incelenmiştir. Epifiz yaşlandırmasında Silver'in tekniği kullanılırken diş yaşlandırması için farklı tür hayvanlara farklı teknikler kullanılmış, Payne ve

Grant'in diş yaşlandırma teknikleri takip edilmiştir. Bu çalışma kapsamında, uzun kemikler korunma durumları imkân verdikçe Von den Driesch tekniği izlenerek ölçülmüşlerdir. Logaritmik ölçümler indeksi (LSI) ise, koyun, keçi, domuz ve sığıra uygulanmıştır. Standart logaritmik değerler ve bu çalışma kapsamında alınan ölçümler karşılaştırılarak logaritmik ölçüm diyagramları oluşturulmuştur. Hayvanlarda boyut analizi özellikle evcilleştirmeyi ve yaban hayvanlarının varlığını anlamamız açısından oldukça önemlidir. Ayrıca cinsiyete bağlı boyut farklılığı göz önüne alındığında logaritmik ölçümler faunadaki hayvanların cinsiyetleri hakkında da bilgi vermektedir. Bu tez çalışmasında tanımlanmış birey sayısı (NISP) ve minimum element sayısı (MNE) hesaplama teknikleri de kullanılmıştır. Yukarıda bahsedilen tüm teknikler her bir türe uygulanmıştır. Yapılan faunal analizler sonucunda, faunada en çok koyun/keçi, evcil domuz ve sığır tespit edilmiştir. Buna ek olarak faunada özellikle Orta Tunç Çağın'da kızıl geyiklerin varlığı dikkat çekmektedir. Bu da bize hayvancılığın yanı sıra avcılık aktivitelerinin devam ettiğini göstermektedir. Ancak yaban hayvanları hayvan ekonomisi için evcil hayvanlar kadar önemli rol oynamamaktadır. Çalışma kapsamındaki malzeme çoğunlukla Orta Tunç döneminden ele geçmiştir. Dönemler arasında faunal karşılaştırma yapıldığında koyun/keçi, domuz ve sığırın her dönem önemli oldukları gözlenmiştir, ancak hem malzeme sayısı hem de tür içindeki çeşitlilik göze alındığında Orta Tunç Çağı dikkat çekicidir. Tunç Döneminde faunadaki çeşitlilik fazlayken Demir Çağına geçildiğinde malzeme sayısı ve çeşitliliği oldukça azalmıştır. Bu toplumdaki ekonomik, politik veya iklimsel olarak bir değişimin varlığını göstermektedir. Bu değişim arkeolojik verilerle de desteklenmektedir. Demir Çağın'da ortaya çıkan küçük yerleşimler ve basit çukur evler, fakirleşmeyi ve idari otoritenin sarsıldığının işareti olmalıdır. Hayvancılık ise yerleşik tarım toplumlarının başlıca kaynağı olduğu düşünüldüğünde Demir Çağın'daki bu değişimin faunaya da yansıması şaşırtıcı değildir.

Bu özet kısmında, faunada başlıca temsil edilen koyun, keçi, domuz ve sığırın analiz sonuçlarından bahsedilecektir. Sığır faunada üçüncü sırada temsil edilmektedir. Sığır için epifiz yaşlandırmasına bakıldığında, kaynaşmamış kemiklerin çok az olduğu gözlenir. Diş yaşlandırmasına bakıldığında da yetişkin sığırların sıklıkla tercih edildiği anlaşılmıştır. Sığırların 3 yaşından sonra tüketildiği gözlenmiştir, bu durumda sığırın etinden ziyade tarla sürme gibi tarımsal aktiviteler ya da yük hayvanı olarak kullanıldığını akla getirmiştir. Diğer bir yandan sığır ve ineğin ikincil ürünlerinden (sütünden, derisinden gibi) de faydalanılmıştır; ancak genel değerlendirmeye bakıldığında yetişkin hayvan tüketimi bize sığırın tarımsal aktiviteler için daha çok tercih edildiğini göstermiştir. Logaritmik boyut indeksine bakıldığında tüm ölçümlerin standart değerden küçük olduğu, yani ele gecen tüm sığır örneklerinin beklendiği gibi evcilleştiği saptanmıştır. Faunada en çok temsil edilen hayvan koyun ve keçi olmaktadır (n: 930). Yaşlandırma metotları göz önüne alındığında her yaş grubundan hayvanın tercih edildiği gözlenmiştir. Farklı peridolarda ise farklı yaş gruplarına rastlamak mümkündür. Boyut değişimine bakıldığında ise çoğunlukla verilerin standart değerden küçük olduğu, yani faunada evcil hayvanların çoğunlukta olduğu gözlenmiş olmasına rağmen, hem koyun hem de keçi için faunada büyük bireylerin varlığı mevcuttur. Bu standart değerden daha büyük hayvanlar, dişi bir yaban ya da iri bir erkek bireyle ilişkilendirilebiliriz. Domuz ise faunada ikinci sırada temsil edilmektedir (n: 559). Yaşlandırma sonuçlarına bakıldığında domuz, Kalkolitik, Tunç ve Demir Çağlarında hem yetişkin hem de genç bireylerin varlığı ile temsil edilmektedir. Ancak diş yaşlandırma sonuçları dikkate alındığında, her dönemde genellikle genç yetişkin hayvanların daha çok tercih edildiği saptanmıştır. Bu verilere bakıldığında domuzun ilk yılının sonunda, yani tam olgunlaşmadan tüketildiği görülmüştür. Boyutlara bakıldığında, ölçüm alınan malzeme azlığından dolayı detaylı olarak logaritmik boyut indeksi oluşturulamasa da genellikle faunada evcil domuzların varlığı gözlenmiştir. Ancak az sayıda olsa bile yabani domuzun varlığından da söz edilebilinmektedir.

Yaban hayvanlarından bahsedecek olursak, kızıl geyikler özellikle Orta Tunç dönemi faunasında mevcutturlar. Yaşlandırma sonuçlarına bakıldığında avlanan kızıl geyiklerin özellikle genç yaştaki bireylerden oluştuğu gözlenmektedir. Geyik boynuzlarının çok önemli bir ticari değere sahip olduğu bilinmektedir. Ilısu bölgesinde bulunan arkeolojik alanlarda yapılan zooarkeolojik çalışmalar, geyik boynuz işlemeciliğinin varlığını göstermiş olsa bile Salat Tepe'de boynuz işlemeciliğine dair bir kanıt ele geçmemiştir.

Az sayıda olsa da faunada atın varlığı gözlenmektedir. Yaşlandırma sonuçlarına bakıldığında atların erişkinliğe ulaştıktan sonra öldükleri söylenebilir. Böylece atlar, tahmin edildiği üzere yük hayvanı ya da ulaşım aracı olarak kullanıldıklarını varsaymak yanlış olmaz. Köpekgiller faunada temsil edilen hayvanlar arasındadır. Bu gruba çakkallar, kurtlar ve evcil köpekler dâhil olmaktadır. Bir bireye ait olduğu düşünülen genç kurt iskeleti dikkat çekicidir. Bu genç kurdun varlığı avcılık aktivitesi ile açıklanabilir. Yetişkin kurdun avlanması ile bu yavrukurdun çocuklara oyun amaçlı yerleşime getirildiği düşünülmektedir. Faunada daha birçok yaban hayvanı temsil edilmiştir, bunlardan son olarak kaplumbağa kalıntılarına yine özellikle Tunç Döneminde rastlanmaktadır. Kaplumbağalar geçmiş dönem insanları için yalnızca bir yiyecek olmadığını çeşitli kaynaklardan bilmekteyiz. Kaplumbağaların dinsel/manevi bir değerleri vardır. Bir yeri ya da kişiyi kötülüklere karşı koruduğuna inanılmıştır. Ancak diğer bir yandan kaplumbağalar kış uykusuna yatan hayvanlar oldukları için, hayvanın sonradan o kontekse gelip gelmediğini söylemek oldukça zordur. Özetle kaplumbağalar için bir yorum yapmak doğru değildir. Ancak bir kaplumbağa kabuğu sadece o bölgede yaşayan ve yumşak kabuklu su kaplumbağası olarak bilinen *Rafetuseuphraticus* olarak tanımlanmıştır.

Mekânsal analiz yalnızca odaların ne amaçlı kullanıldıklarını değil aynı zamanda olası atık yerlerini anlamamız açısından oldukça önemlidir. Bu çalışmada güvenli kontekslerden ele gecen hayvanlar incelenmiş ve bu kontekslerin hangi amaçla kullanıldıklarını anlamak açısından hayvan iskeletleri kullanılarak mekânsal analiz çalışması yapılmıştır. Bu çalışmada mekânsal analiz bölümü, açmaların kronolojik sırasına göre ele alınacaktır. Güney yamaçta Kalkolitik döneme tarihlenen altı açma bulunmaktadır (E-J/12). Kalkolitik dönem stratigrafisi ele alındığında konteksler kerpiç tabanlardan ve kül katmanından oluşmaktadır. H/12 açması sert kerpiç taban ile karakterizedir. Bu açmadan aynı konteksten toplamda 146 kemik bulunmuştur; iskelet element analizine göre orta boy hayvan grubuna ait dişler çoğunluğu oluşturmaktadır. Ayrıca yanmış kül katmanında çok az sayıda, sadece üç domuz ayak kemiğinde, yanık izine rastlanmıştır. Ele geçen diğer kemiklerde yanık izine rastlanmaması bu kemiklerin sonradan bu kontekse taşındığı ihtimalini düşündürmektedir. Yine kerpiç tabandan ele gecen 274 kemiğin çoğunluğu koyun/keçiye aittir. Bu kemiklerin iskelete elementi dağılımına bakıldığında axial kemiklerin çoğunlukta olduğu ve yaşlandırmaya bakıldığında ise bu hayvanların tam olgunluğa erişmeden tüketildikleri belirlenmiştir. Bu duruma göre sadece bir grup iskelet elementinin varlığı bize, koyun/keçinin o mekânda kesilmediğini başka bir yerde kesilip o kontekse getirildiğini işaret temektedir. Çok az sayıda kemik Kalkolitik döneme tarihlenen bina içlerinden ele geçmiştir. Kemiklerin çoğunluğu çukurlardan, kül katmanlarından ve tabanlardan ele geçmiştir. Kalkolitik dönem kontekslerinde ele gecen çoğu hayvan kemiği koyun/keçi olarak sınıflandırılmıştır. Bunların çoğunluğu ise yetişkin hayvanlara aittir ve bu yetişkin hayvanların varlığı bu dönemde hayvanların yalnızca etleri için değil ikincil ürünlerinin de kullanıldığını işaret etmektedir.

Tepe üzerinde ise dokuz açma bulunmaktadır K-L-11-14 ve M-13. Yapılan kazı sonuçlarında bu açmalarda beş farklı döneme rastlanmıştır; Erken ve Orta Tunç, Erken Demir Çağı, Helenistik- Roma ve Ortaçağ Dönemleri. Erken Tunç döneminde sadece seramik kalıntılar bulunmuştur. Bu döneme ait herhangi bir mimari kalıntıya rastlanmamıştır. Daha önce de bahsedildiği gibi ele geçen hayvan kemiklerinin çoğunluğu Orta Tunç dönemine aittir. Bu dönemde beş bina seviyesi tespit edilmiştir. Seviye 5-3 en alt seviyedir ve kalın kerpiç duvarları ile karakterizedir, bu seviye yanarak yıkılmıştır. Seviye 2 ise en geniş bina kompleksine sahiptir. Orta Tunç seviye 2 ye ait bina kompleksi 2-3 odadan oluşan ve bir avluya bakan bir binadan oluşur, ayrıca bu bina beş farklı birimden meydana gelmiştir. Yapılan C_{14} testleri sonucunda, bu bina M.Ö. 17. ve erken 16. yüzyıla tarihlendirilmektedir. Bu bina kompleksi Orta Tunç döneminde meydana gelen çok şiddetli bir deprem sonucu yıkılmıştır. Seviye 1 ise yıkılmış duvarlardan oluşmaktadır. Seramik buluntularına göre bu seviye 16. yüzyıla tarihlenmiştir. Okse'ye göre bu bina kompleksinin işlevi tarım ekonomisi ile alakalı olmalıydı. Benzer bina mimarisine çevredeki altı arkeolojik alanda da rastlanmıştır; Uctepe, Ziyaret tepe, Giricano, Kenan tepe, Kavuşan Höyük ve Hirbemerdon Tepe. Bu yapının idari tarım sistemi için önemli rol oynadığı ve büyük bir çiftlik evi olduğu düşünülmektedir. Araştırmalara göre bu yapı, zengin toprak sahibine ve ailesine (ağa) ve ona hizmet eden ve çiftçilikle uğraşan halkın varlığını göstermektedir.

2. Seviye Orta Tunç Donemi, açma K/12 de kerpiç yapı temelinde bulunan çakıl taşı idol dikkat çekicidir. Ökse'ye göre bu buluntu ritüel amaçlı olup depremle

yıkılan bina için temeline konmuştur, ritüelin anlamı ise depremden korunma amaçlı olmalıdır. Açma K/13 beş büyük çukurla temsil edilmektedir. Bu çukurlardan çoğunlukla koyun/keçi, domuz ve sığır iskeletleri ele geçmiştir. Yaş analizine bakıldığında bu hayvanların çoğunluğunun yetişkin bireylere ait oldukları gözlenmiştir. En çok malzeme bu dönem için L/13 açmasından ele geçmiştir. Yedi çukurdan toplamda 378 kemik bulunmuştur. Bir kez daha koyun/keçi en fazla bulunan hayvan grubu olmuştur. Evcil hayvanların yanı sıra geyik, at, kopek ve kedi de bu çukurlardan ele gecen hayvanlar arasındadır. 85 numaralı odadan (L/14/197) alageyik iskeleti ele geçmiştir. Salat Tepe'de bulunan geyiklerin varlığı geçmiş dönem çevresel koşullarının anlaşılması açısından oldukça önemlidir. Bu buluntular ışığında Salat Tepe ve bu bölgenin geçmişte daha zengin doğal kaynaklara ve ormanlara sahip olduğunu söylersek yanılmış olmayız. Günümüz koşulları burada bu hayvanların yaşaması için elverişli değildir. Bu çevresel değişimi iklimsel ya da tarım arazisi yaratmak amacı ile aşırı ağaç kesimi ile açıklayabiliriz. Az sayıda olsa bile kızıl ve ala geyiklerin varlığı Orta Tunç döneminde avcılık yapıldığını ve bu hayvanların etinden faydalanıldığını göstermektedir. Ele gecen faunal veriler doğrultusunda avcılık hayvanlarının bölgesel hayvan ekonomisinde önemli rol oynamadıkları ortaya çıkmıştır.

Açma M/13 iki büyük oda ile karakterizedir (Oda 32 ve 33), oda 32 de çok az sayıda hayvan kemiği ele geçmiştir. Oda 32 ise yangınla tahrip olmuştur. Karbonize olmuş tahta kalıntılarından yapılan C_{14} tarihlemesine göre M.Ö. 16. y.y. tarihlendirilmiştir. Bu odadan yanık halde ağırlık tezgâhı ve çeşitli dokuma ağırlıkları ele geçmiştir. Hayvan kalıntılarına bakıldığında ise bu odadan sadece ekonomik anlamda önemli olan hayvan kalıntılarına rastlanmıştır. Bu grubun yanı sıra kaplumbağa kabukları da ele geçmiştir.

Demir Çağı'na gelindiğinde, tepe üzerinde çok sayıda derin ve geniş çukurların varlığından bahsedebiliriz. Bu çukurların bazılarının tabanlarında at nalı seklinde ocakların bulunması bu çukurların çukur ev olduklarını işaret etmektedir. Benzer şekilde çukur ev örnekleri Doğu Anadolu'da da görülmektedir. Bu küçük ve basit yapılaşmalar merkezi otoritenin çöküşüne ve tarım sisteminde bozulma olduğunu işaret temektedir. Etnografik çalışmalar yakın dönemlere kadar konargöçer toplumların yukarı Dicle'den Van'a göç ettiklerini göstermiştir. Kış dönemlerinde göç yolu Salat Tepe'den geçmekteydi. Demir Çağın'a ait mimari kalıntı olmadığından dolayı konargöçer topluluklara ait kanıt bulunmamaktadır. Demir Çağın'da hayvan kemik malzemeleri sadece çukurlardan gelmiştir. L14/63/28 C no'lu açmada bulunan çukurdan ele gecen on üç adet geyik boynuzu dikkat çekicidir. Bu kalıntıların et bakımından fakir olduğu düşünülürse bu alanda bulunan boynuzların ritüel amaçlı oldukları söylenebilir. Genel olarak Demir Çağı için bir yandan hayvancılık diğer yandan da avcılık aktivelerinin devam ettiği söylenebilir. Ancak Demir çağından ele geçen malzeme sayısının diğer dönemlere göre az olduğunu da göz önünde bulundurmakta fayda vardır.

Orta Çağ'da çoğunlukla tahıl ambarları tespit edilmiştir. Ayrıca bu dönemde aşırı tahribata uğramış bir ortaçağ duvarı bulunmaktadır, ancak duvar tahıl ambarlar çukurları yüzünden çok tahrip olduğu için yapının mimarisinin anlaşılması imkânsızdır. Yapılan kazı çalışmaları sonucu Ortaçağ'da çok sayıda tahıl ambarı çukur ve ocak kalıntıları ele geçmiştir. Bu kalıntılardan yola çıkılarak tepe üzeri Ortaçağ döneminde geçici yerleşimlere ev sahipliği yaptığı söylenebilir.

Bu çalışmada tartışma kısmı üç ana başlık altında incelenmiştir. Birinci olarak Faunal karşılaştırmadan bahsedilecektir. Faunal analiz çalışmasına baktığımızda türler bazında dönemlerde farklılaşmaya rastlanmamaktadır. Koyun ve keçi her dönemin en popüler hayvanı olmuştur, Tunç Döneminde ise yaban hayvanlarının çeşitliliği ve sayısal olarak artması dikkat çekmektedir. Ayrıca Tunç Döneminde domuz sayısında hızlı artış gözlenmiştir. Domuz çok iyi bir et kaynağıdır, bunun yanı sıra diğer bovidlere kıyasla hızlı bir şekilde ürer ve büyürler. Demir Çağında ise hayvan sayısında ciddi bir azalma olmuştur. Bu durumu yönetimdeki bozulmanın hayvansal ekonomiye yansıması ile açıklayabiliriz. Ilısu Baraj alanındaki diğer arkeolojik alanlarla faunal karşılaştırma yapıldığında, hayvan ekonomisi ve diyet stratejisi benzerlik göstererek koyun/keçi, domuz ve sığır üzerinde yoğunlaşmaktadır. Faunal kalıntılara bakıldığında Orta Tunç'tan Geç Tunç'a geçiş döneminde Türbe Hoyuk, Salat Tepe ve Tilbeşar'da geçim ekonomisini oluşturan hayvanlarda farklılık gözlenmiştir. Yaban hayvanlarının sayısında artış bulunmaktadır. Avcılıktaki bu artışın sebebi üç varsayımla açıklanabilir. Birincisi, sosyal ve ekonomik bir değişimin varlığı, ikincisi; nispeten büyük, uzun sureli ve yerleşik tarım toplumunun varlığına, üçüncüsü ise; kısa süreli, küçük ve genel olarak avcılıkla geçinen toplumların varlığına işaret etmektedir. Salat Tepe'de yapılan avcılık genellikle büyük boy herbivorlarin (özellikle kızıl geyik) tüketimi seklinde gözlenmektedir, ancak az sayıda kuş ve balıkçılık aktivitesi de mevcuttur. Bilindiği gibi Orta Tunç döneminde Giricano ve Salat Tepe'de kral ve ailesi tarafından yönetilen tarım merkezleri mevcuttu. Bu tarım yönetimlerinin ekonomisi için avcılık oldukça önem taşımaktaydı. Giricano'da ele gecen kızıl geyiklerin iskelet analizine bakıldığında kafatası ve ayak kemiklerinde yoğunluk olduğu görülmektedir. Bu durum geyik avcılığının özel bir amaçla yapılmış olma olasılığını akla getirmektedir. Berthon'un çalışmasına göre bu durum deri ticaretinin varlığını işaret temektedir. Salat Tepe içinse böyle bir varsayımda bulunmak için ele gecen kanıtlar yetersizdir.

Demir çağına bakıldığında geçim ekonomisi Tilbeşar ve Kavuşan Höyükte koyun/keçiye dayanmaktadır; ancak Salat Tepe'de bu dönemde domuz baskın olarak temsil edilmektedir. Domuzun çok önemli bir et kaynağı olmasının yanı sıra toplumdaki sosyal değişimi betimlemesi açısından da dikkat çekicidir. Zeder'in yaptığı çalışmaya göre, domuzun varlığı alt sınıf veya fakir toplumların yerleşimini göstermektedir. Aynı zamanda domuzun sıklıkla bulunması siyasal bütünleşmenin zayıflığını ve merkezi kontroldeki zayıflamayı işaret temektedir. Demir Çağında Salat Tepe'de domuz sayısı küçükbaş hayvanlardan fazladır. Hongo'nun çalışmasına göre bu durum tarım toplumlarının ve merkezi otoritenin çöküşünü göstermektedir. Arkeolojik kalıntılarda, mimarinin olmaması, basit çukur evlerin varlığı, Salat Tepe'de Demir Çağın'da popülasyonun genelini etkileyen siyasi ve ekonomik çöküşün varlığını göstermektedir.

Demir Çağından sonra Salat Tepe yerleşimi bir kez daha terk edilmiştir ve tepe üzerinde tahıl çukurları ortaya çıkmıştır. Ortaçağdan ele gecen hayvan kemiği sayısı az olsa da bu dönemin faunal yapısını anlamak için yeterlidir. Çevredeki alanlarla karşılaştırıldığında geçim ekonomisi Tilbeşar ve Salat Tepe'de temel geçim ekonomisi başlıca küçükbaş hayvancılığa bağlı iken, Gritille'de domuz en çok tüketilen hayvan olmuştur. Stein'in domuzun aşırı tüketimini Giritille halkı için domuz 'fast food' gibidir demiştir.

Kuzey Suriye'de birçok arkeolojik kazı çalışması yapılmaktadır. Bu bölgenin hayvan tüketimini anlamak açısından oldukça önemlidir. Yukarı Mezopotamya'da Orta Tunç dönemine ait çalışmalar oldukça azdır, ancak Erken ve Geç Tunç dönemi ait çalışmalar oldukça fazladır. Orta Doğu'da Geç Tunç Çağın'da yeni siyasal yapılaşmalar ortaya çıkmıştır. Mitanni İmparatorluğu yukarı Habur'da M.O.1500-1200 kurulmuştur. Kuzey Suriye'nin faunal yapısına bakıldığında küçükbaş hayvanlar her dönemde ilk sırada yer almıştır. Ancak M.Ö.

3. y.y.’da Yukarı Dicle ile Kuzey Suriye’nin faunal yapısında farklılaşma gözlenmiştir. Bu durum iklimsel/çevresel değişimle ya da kültürel farklılaşma ile açıklanabilir. Yukarı Dicle bölgesinde temel tüketim hayvanları koyun/keçi, sığır ve domuz iken Kuzey Suriye’de domuz çok az hatta hiç tüketilmemiştir. Domuzun yerine bu bölgede sıklıkla yaban eşeği avcılığı gözlenmiştir. Benzer faunal yapıya, Um-el Marra, Tell-BderiTell-Brak, Tell-el Leilan, TellSehHamad, and Tel es-Sweyhat’da rastlanmıştır. M.Ö. 3. bin yılda Anadolu’da domuz tüketimi oldukça fazla iken Kuzey Suriye’de oldukça azdır. Bu durum Anadolu’nun nemli ve ormanlık alanlarının domuz yetiştiriciliğine uygun olup Kuzey Suriye’nin kurak topraklarının domuz için uygun olmaması ile ya da kültürel bir seçim ile ilişkili olabilir. Küçükbaş hayvanlardan farklı olarak domuz için belli bir su kaynağının olması gerekmektedir. Kuzey Suriye’de yaban atı/eşeği avcılığının ana geçim kaynağı olduğunu görmekteyiz. Kenan Tepe, Kavuşan Hoyuk ve Hirbemerdon’da çok az sayıda olsa da eşek kemikleri üzerinde kesim izlerine rastlanmıştır; ancak bu durum yaban eşeği avcılığı ile ilişkilendirilmemiştir. Schwartz yabani hayvan avcılığının çok yoğun olmasını, bu hayvanların derilerinin, kemiklerinin ve tendonlarinin o dönem için yüksek ekonomik değerde olması ile açıklamıştır. Ancak Kuzey Suriye ile Yukarı Dicle bölgesinin faunal yapısında yaban eşeği avcılığı ve domuz tüketimi açısından farklılaşma gözlenirken, diğer küçükbaş hayvanların tüketimi aşağı yukarı aynıdır.

Tartışma kısmının ikinci başlığı ise biyometrik karşılaştırmadır. Boyut farklılıkları ile birbirine yakın türlerin yaban ve evcil formlarını ayırt edebiliriz. Ayrıca daha önce de bahsedildiği gibi boyut aynı tur içindeki cinsiyet farkını da göstermektedir. Bu çalışmada, koyun, keçi, domuz ve sığır için ayrı logaritmik boyut indeks hesaplaması yapılmıştır ve bu değerler Ilısu Baraj bölgesindeki yedi arkeolojik alanda ele geçen ölçüm değerleri ile karşılaştırılmıştır. Koyun ve keçi cinsiyet olarak dimorfiktir, yani dişi koyun ve keçiler erkeklerden daha küçüktür. Bu durumda logaritmik boyut grafiğinde dişi koyun ve keçiler sıfır değerinin sol tarafında yer almalıdırlar. Koyunun logaritmik değerleri standart değerle karşılaştırıldığında Tunç Döneminde Türbe Höyükte boyut olarak bir artış gözlenmiştir. Bu artış ortalama değerin de yükselmesine sebep olmuştur. Koyunun boyut değerlendirmesi için Başur Höyük’ ten ve Giricano Tepe’den oldukça az ölçüm elde edilmiştir. Grafikler değerlendirildiğinde Salat Tepe ve Kenan Tepe’de koyunun boyut açısından benzerlik gösterdiğini görmekteyiz. Tunç Döneminde koyunların boyutlarına bakıldığında değerlerin genelde sıfırdan daha küçük yani çoğunlukla evcilleşmiş koyunların varlığından söz edilir. Diğer alanlarla karşılaştırıldığında boyut olarak en küçük koyunlar Salat Tepe ve Kenan Tepe’de gözlenmiştir. Türbe Hoyuk ve Müslüman Tepe’de erkek bireylerin daha fazla olduğu söylenebilir. LSI değerlerine bakıldığında boyut dağılımı bu sekiz alanda benzerlik göstermektedir. Ancak az sayıda olsa ya yabani dişi ya da evcil erkek bireylerden bahsedilebiliriz. Özellikle iri koyun türüne Türbe Höyük’te rastlamaktayız.

Keçi için boyut dağılımına bakıldığında, Ilısu Baraj alanında bulunan sekiz arkeolojik alandan alınan ölçüm değerleri arasında fazla bir değişim olmadığı görülmüştür. Boyut olarak en yüksek değere Kavuşan Höyükte rastlamaktayız. Bu büyük birey, yüksek olasılıkla dişi yaban keçisini ya da iri bir erkek keçinin varlığını işaret etmektedir. Bu bölgede boyut olarak iri keçilerin varlığı gözlense bile, faunada çoğunlukla evcil keçiler bulunmaktadır ve bunlar boyut olarak standart değerden küçük ölçümlere sahiptirler. Büyüklük bakımından Salat Tepe’deki keçiler Müslüman Tepe’dekilerle benzerlik gösterirken, Giricano, Türbe Höyük ve Başur Höyükteki keçilerden daha küçüktür. En küçük keçiye Kenan Tepe’de rastlamaktadır. Aynı dönemde ve bölgede farklı boyuttaki keçilere rastlanması, küçükbaş hayvan yetiştiriciliğindeki farklılaşmayı göstermektedir. Bölgedeki keçiler karşılaştırıldığında dişi keçi sayısı en çok Salat Tepe'de olduğu belirlenmiştir. Genel olarak ise bölgede iri erkek keçi sayısı az sayıda görülmüştür.

Domuz için LSI değerleri karşılaştırıldığında yine bölgesel olarak çok büyük değişim gözlenmemiştir. Bir kez daha bölgede evcil hayvanların varlığı yaban türlere göre daha baskın olarak gözlenmiştir. Evcil domuzlar faunada baskın olarak temsil edilmelerine rağmen faunada birkaç yaban domuzu tespit edilmiştir. Nispeten daha büyük domuz örneğine Türbe Höyükte rastlanmıştır. Ancak en büyük iki ölçüm değeri Türbe Höyükte ve Hirbemerdon Tepe'den ele geçmiştir. Bu değerler büyük olasılıkla yaban domuzunun ya da iri bir erkek domuzun varlığını göstermektedir. Genel olarak domuz için, neredeyse tüm ölçüm değerleri sıfırın sol tarafına düşmektedir, bu durumda; faunada evcil türlerin baskınlığını bir kez daha görmüş oluyoruz.

Sığırın LSI dağılımına bakıldığında, bölgede genel olarak küçük boyutlu sığırların varlığından söz edilebiliriz. Dağılımda çok az sayıda büyük ölçümlere rastlanmıştır. Hirbemerdon Tepe'den ele geçen bir ölçüm oldukça küçük ve dikkat çekicidir. -0.53 değeri ile temsil edilen bu küçük değeri dişi bir sığırın varlığı ile ilişkilendirebiliriz. Bu değerlere bakarak dişi sığırların bölgede çoğunlukla temsil edildiği ortaya çıkmıştır. Hongo'ya göre büyük boy sığırlar yük hayvanı olarak kullanılmaktadır veya bu hayvanlar üreme için kullanılan boğalar olmalıdırlar. Küçük boy sığırların ise çoğunlukla ikincil üretim için (süt ve deri gibi) kullanıldıkları varsayılmıştır. Bu karşılaştırma grubunda bölgede nispeten daha büyük boyutta sığırın varlığına Türbe Höyükte rastlamaktayız. Genel olarak sığırın LSI değerlerinin çoğunlukla sıfır değerinin sol tarafında yer aldığını görmekteyiz, bir kez daha bu durum bölgesel faunada evcil sığırların baskın olarak gözlendiğini işaret temektedir.

Hayvanların etleri için mi, sütleri/yünleri için mi, yoksa her ikisi için mi yetiştirildiklerini anlamak hayvan ekonomisini anlamak açısından oldukça önem taşımaktadır. Hayvan yetiştiriciliği ve ürün dağılımını anlamak için Rosen (1986), Redding (1981) ve Zeder (1985,1988 ve 1991) çeşitli kuramlar ileri sürmüşlerdir. Küçükbaş hayvan yetiştiriciliğinin ne amaçla uygulandığını anlamak çoğunlukla koyun/keçi oranına ve yaş dağılımına bakılarak anlaşılmaktadır. Payne koyun ve keçilerde et, yün veya süt amaçlı kesimin anlaşılması için üç varsayım ortaya atmıştır. Eğer yetiştiricilikteki amaç yalnızca et elde etmek ise çoğunlukla genç erkek bireyler en uygun kiloya ulaştıklarında kesilirler. Olası kesim yaşı 18 ile 30 ay (2-3 yaş) arasında olmaktadır. Olası kesim yaşı dişiler için bir yıl daha uzundur, dişiler genellikle beş yaşı veya sonrasında kesilirler. Koyun ve keçiyi ayrı ayrı çalışmak Salat Tepe için uygun olmadığından dolayı eldeki malzeme Ovis/Capra başlığı altında toplanmıştır. Ovis/Capra için ölüm yaşı incelendiğinde genç yetişkin hayvanların sıklıkla tercih edildiği anlaşılmıştır. Salat Tepe ve Müslüman Tepe buna benzer bir yaş dağılımı sergilemektedir. Bu durumda bu iki yer için et tüketiminin önemli olduğunu varsayabiliriz. Ete bağlı üretim modelinde kesilen yetişkin hayvanların dişi olması beklenmektedir. Buna bağlı olarak yetişkin dişiler süt, yün ve diğer ikincil ürünlerin üretimi için yetişkinliğe kadar hayatta kalırlar.

Eğer üretim süt amaçlı ise üreticinin çoğunlukla genç erkek bireyleri kesim için tercih etmesi beklenir. Bunun sebebi insanlar için süt veren dişilerin süt miktarını artırmak olmalıdır. Eğer amaç yün üretimi ise geç yaşta hayvan kesimi söz konusudur, yani bu durumda yetişkin hatta yaşlı hayvanların faunada çoklukla temsil edilmeleri beklenmektedir. Et ve süt üretim modellerinin aksine yün modelinde yetişkinler yünleri en iyi kaliteye maksimum ürün alma durumuna gelinceye kadar kesilmezler. Tunç Çağında Kenan Tepe ve Hirbemerdon Tepe'de aynı yerde farklı kesim stratejilerinin uygulandığı gözlenmiştir. Diğer bir deyişle aynı alanda karışık üretim metodunun varlığı saptanmıştır. Salat Tepe, Türbe Höyük ve Başur Höyükte farklı bir yapı tespit edilmiştir. Bu alanlar için yün üretiminden ziyade et ve süt üreticiliğinin tercih edildiğini söyleyebiliriz.

Çoğu ekonomide evcil sığır oldukça önemli bir yer tutmaktadır. Sığırın etinden, sütünden ve derisinden faydalanılmasının yanı sıra onların yük hayvanı olarak kullanılması da antik çağlarda yaşayan toplumlar için sığırın önemli bir rol oynamasına neden olmuştur. Salat Tepe faunasında sığır üçüncü sırada temsil edilmektedir. Bu çalışmada sığırların cinsiyetleri genellikle belirlenemediği için sığır yetiştiriciliği yaş dağılımına bakılarak yapılmıştır. Bu yaş dağılımını diş ve epifizlerin kaynaşma dönemlerine göre olan yaşlandırma teknikleri kullanılarak yapılmıştır. Salat Tep sığırlarının yaş dağılımına baktığımızda faunanın yetişkin bireylerin oluştuğunu görmekteyiz. Diş yaşlandırmasına bakıldığında sığırların 4 yaş ve sonrasında tüketildiği belirlenmiştir. Özellikle Kavuşan Höyükteki sığır tüketimi 4 yaş ve sonrasını kapsamaktadır. Giricano Tepe'ye baktığımızda sığırların iki yaş civarında tüketildiği görülmüştür. Esas amaç sığırın eti ise genç erkek bireylerin 3-4 yaş döneminde kesildiklerini görmekteyiz. Salat Tepe'deki sığırlar en üretken çağlarının son dönemlerinde kesilmişlerdir. Bu, Salat Tepe'deki sığır üreticiliğinin esas hedefinin, onların yük hayvanı olarak kullanıldığını göstermektedir. Bunun yanı sıra, bu bölgede özellikle Salat Tepe'de tarım aktivitesinin Tunç Çağında yoğun olduğu düşünülürse sığırın tarla sürmek ve ürün taşımak gibi ihtiyaçlar için kullanıldığını söylemek yanlış olmaz. Ayrıca yine yaş dağılımına baktığımızda yetişkin hayvanlar çoğunlukta olsa bile genç bireyler de vardır. Bu durum göz önüne alındığında sığır Salat Tepe halkı için sadece yük hayvanı değil aynı zamanda ikincil ürünlerinden de faydalanılan eşsiz bir geçim kaynağıdır.

Domuz her dönemde çok önemli bir et kaynağı olarak bilinmektedir. Aynı zamanda domuz Orta Doğu'da evcilleşmiştir ve eti yüksek miktarda kalori ve yağ içermektedir. Domuz diğer bovidlere kıyasla çok sayıda yavrulama gerçekleştirir; bu yüzden üreme hızı oldukça fazladır. Böylece çevresel koşulların etkisi ile koyun, keçi veya sığır tüketiminin üretiminden fazla olduğu durumlarda domuz kurtarıcı rol oynamaktadır. Salat Tepe faunasında domuz ikinci sırada yer almaktadır. Salat Tepe'nin geçmiş çevresel koşullarının domuz üreticiliği için oldukça uygun olduğunu söylemek yanlış olmaz. Çünkü domuz yaşamak için diğer küçükbaş hayvanlara kıyasa daha fazla suya ve ormanlık alana ihtiyaç duyar. Böylece domuzun varlığı bize geçmiş dönem çevresel koşullarının durumu hakkında da bilgi vermektedir. Bu çalışmada domuz için epifiz kaynaşma durumu Silver'a göre yapılmıştır. Salat Tepe'de ele geçen domuz kalıntılarının epifiz yaş dağılımına bakıldığında hayvanların çoğunlukla genç erişkin dönemlerinde kesildikleri gözlenmiştir. Salat Tepe ve çevredeki yerleşim alanları karşılaştırıldığında benzer yaş dağılımına rastlanmıştır. Domuzlar Kenan Tepe'de iki yaşından önce öldürülürken, Giricano ve Hirbemerdon' da durum farklıdır. Burada domuzlar çoğunlukla 6 aylık ile bir yaş dönemlerinde kesilmişlerdir. Domuz tüketim yaşı et tüketimini yansıtmaktadır. Salat Tepe için az sayıda yetişkin domuzun üretim için tutulduğu diğer genç bireylerin tüketildiği görülmüştür. Domuzun en verimli dönemleri 2 ile 3 yaşları arasıdır. Bu dönemde hayvan et bakımından en uygun kiloya ulaşmaktadır. Birçok domuz üç yaşından önce kesilmiş olsa bile, domuz sürüleri bebek domuzların sayesinde varlıklarına devam etmişlerdir.

Bu çalışmanın sonucu olarak şunları söyleyebiliriz: Çalışmayı oluşturan başlıca malzeme grubu evcil hayvanlardan oluşmaktadır. Bu evcil hayvanlar faunada temsil edilme sıklıklarına göre koyun, keçi, domuz ve sığır olmaktadır.

Bu hayvanlar bölgesel besin ekonomisinde de oldukça önemli rol oynamaktadırlar. Önceden de belirtildiği gibi faunada evcil hayvanların yanı sıra yaban hayvanları da mevcuttur, ancak bu hayvanların besin ekonomisine katkıları oldukça sınırlıdır. Durum böyle olmasına rağmen özellikle Tunç Çağında yaban hayvanlarından kızıl geyik avcılığının önemli olduğunu görmekteyiz. Kızıl geyik avcılığının temel besin ekonomisine katkıda bulunduğunu varsayabiliriz. Faunal çalışmalar sonucunda bölgede yaban domuzu ve kuş avcılığından ve balıkçılık aktivitesinin varlığını görmekteyiz. Bu hayvanların yanında faunada at, kedi, köpek, tavşan, kaplumbağa, yılan ve kemirgenlere rastlanmaktadır. Bunlara ek olarak çok çeşitli canlı türleri ele geçmiştir. Bölgede köpek kemikleri üzerinde kasaplık izlerine rastlanan örnekler vardır, ancak Salat Tepe'de köpeklerin besin olarak tüketildiklerine dair kasaplık veya yanık izine rastlanmamıştır. Salat Tepe'de bulunan köpekleri koruma amaçlı ya da evcil hayvan olarak tuttuklarını söyleyebiliriz.

Salat Tepe'nin kırsal geçim ekonomisinin hangi hayvansal ürüne bağlı olduğunu anlamak amacı ile yapılan çalışmada, koyun/ keçi tüketiminin genç bireylerde yoğunlaştığını söyleyebiliriz. Ancak farklı dönem hayvanları farklı yaş dağılımına sahip olduğundan karışık bir strateji izlendiğini varsayabiliriz. Yani koyun ve keçilerin hem ikincil ürünlerinden hem de etlerinden faydalanılmıştır. Domuz için özellikle Kalkolitik ve Tunç Çağlarında genç bireylerin tercih edildiği gözlenmiştir. Diş yaşlanmasına bakıldığında çoğunlukla domuzların tam erişkinliğe varmadan kesildikleri tespit edilmiştir. Sığırlar genellikle yetişkin olduktan sonra kesilmişlerdir. Tarla sürmek ve ağır tarım işlerinde kullanmak sığır yetiştiriciliğinin en önemli sebebi olsa bile, sığırın ikincil ürünlerinden de faydalanıldığını söylemek yanlış olmaz.

Tüm hayvan türleri için elde edilen ölçüm değerlerine bakıldığında LSI analizi faunanın evcil hayvanlardan oluştuğunu görmekteyiz. Koyun ve keçi için Kalkolitik ve Ortaçağ hariç tüm değerler standart değerden küçüktür ancak bu iki dönemde yaban hayvanlarının varlığından veya iri erkek bireylerin söz edebiliriz. Keçi için aynı durum söz konusudur ancak boyut dağılım grafikleri dişi keçilerin erkek keçilerden daha fazla bulunduğunu göstermiştir. Sığır için ölçüm değerlerine bakıldığında faunada evcil küçük boy dişi sığırların çoğunlukla temsil edildiklerini görmekteyiz. Sığırdan farklı olarak domuzun boyut dağılımı faunada evcil hayvanların yanında yaban domuzu ya da iri bir erkeğin varlığını göstermektedir. Sonuç olarak Salat Tepe, özellikle Tunç Çağında kendi kendine yetebilecek üretime sahip, hem hayvancılığın hem de tarımın yapıldığı bir yerdi. Aynı zamanda tarımın yerel bir yönetime bağlı ve sistemli/kontrollü bir üretim stratejisine sahip olduğunu varsayabiliriz. Orta Tunç döneminde meydana gelen şiddetli depremle Salat Tepe'nin sosyal ve ekonomik yapısında köklü bir değişim olduğunu Demir Çağında ortaya çıkan basit çukur evlerin varlığı ile görebiliriz.