Functionality and Economic Uses of Animals in Early Iron Age Central Iberia

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Abstract:

Discussions about herding economy during the Early Iron Age in central Iberia are still rather limited in historiographic research due to the reduced number and low representation of the faunal samples available. The use of zooarchaeological and taphonomic methodology to analyse a series of samples from recently studied sites resulted in a comprehensive summary of the use of fauna in these societies. Conclusions led to a contrasted interpretation of the functionality and use of domestic animals during the Early Iron Age in the Tajo middle valley, presenting them as more than mere food supplies.

Key words: *Animal Exploitation, Tajo Middle Valley, Zooarchaeology, Taphonomy.*

Resumen:

En este trabajo se aborda una cuestión poco documentada historiográficamente debido a que los datos sobre economía ganadera, para este momento y lugar, son escasos como consecuencia de que la mayor parte de las muestras faunísticas estudiadas son poco representativas y muy exiguas. Con nuestra investigación tratamos a través de metodologías zooarqueológicas y tafonómicas integrar sus resultados con el registro arqueológico, en relación a varios yacimientos estudiados recientemente y ponerlos en relación con los datos existentes, con el fin de ofrecer una interpretación contrastada sobre la funcionalidad y los usos de la ganadería en la Primera Edad del Hierro en el valle medio del Tajo.

Palabras clave: *Economía, Ganadería, Valle Medio del Tajo, Primera Edad del Hierro, Zooarqueología, Tafonomía.*

INTRODUCTION

Iron Age societies, particularly during the earlier period, have not been considered in the Tajo middle valley area until recently, when a larger *corpus* of bibliography has started growing regarding different social aspects (Morín *et al*. 2005; Dávila 2007; Torres 2013; Baquedano 2014).

However, these works have not enlarged on the economic strategies developed by these peoples, especially regarding animal exploitation (Yravedra and Estaca-Gómez 2014). Exceptions were the papers by Morales (1980); Miguel (1985); Chaves *et al*. (1991); Cerdeño *et al*. (1992); Miguel and Morales (1994); Liesau (1998a; 1998b); Urbina *et al*. (2005); Yravedra (2007a; 2007b; 2012); Consuegra and Díaz del Río (2007), and López and Morales (2012). These references set the basis for a discourse which stated that local populations consumed mainly ovicaprids, followed by bovids and suids. However, the data derived from a faunal study may go beyond establishing animal consumption patterns and attempt to illustrate the economic lifeways during the Iron Age in the area (Yravedra and Estaca-Gómez 2014; Estaca-Gómez 2017).

MATERIALS AND METHODS

Two kinds of data are presented and compared in this analysis. On the one hand, our revision of the faunal record from the site La Guirnalda de Quer, in Guadalajara province (Agustí 2007; Agustí *et al*. 2012) is introduced, as well as of three other sites in the Madrid area: Humanejos (Flores 2011), La Cuesta (Flores and Sanabria 2012; 2014) and Torrejón de Velasco (Morín 2008). The last two sites are in fact the same settlement but received different names during excavation; so, they are considered here as a unit identified as La Cuesta. The sample is completed with the Cerrocuquillo site (Baquedano *et al*. 2010; Torija *et al*. 2010) in Toledo (fig. 1). In total, the faunal sample studied comprises 10850 remains, 2301 coming from La Guirnalda, just 135 from Humanejos, 669 from La Cuesta and 7745 from Cerrocuquillo.

The second group of data originated in published records from the sites of Las Camas (Yravedra 2007a), Cerro San Antonio (Chaves *et al*. 1991), Ecce Homo (Morales 1980), La Capellana (Liesau 1998a), Puente Largo del Jarama (Liesau 1998a), Arroyo Culebro A (Orri and Nadal 2002) and Arroyo Culebro UAM (Liesau 1998b).

In terms of the methodology applied, the Number of Remains (NR) and the Minimal Number of Individuals (MNI) were calculated. Age discrimination allowed a more precise definition of the taxonomic profiles, which were later supplemented by skeletal profiles.

The taxonomic identification followed Lavocat (1966), Pales and Lambert (1971), Schmid (1972), Martín and Blázquez (1983) and Hilson (1992). More specifically, Boessneck (1969), Payne (1985), Prummel and Frisch (1986) and Fernández (2001) were used to differentiate between *Ovis aries* and *Capra hircus*, whereas *Bos taurus* bones were classified according to Prummel (1988). Finally, Payne (1988) paper facilitated the distinction between boar and domestic pig. Bibliography was consulted for comparison with the reference collection. It should be noted that the NR included the complete sample, both identified and indeterminate remains. In the case of MNI, fragments were ascribed to the most frequent anatomical remain, discriminating between left and right elements (Brain 1969). The MNI was estimated in two ways: each stratigraphic unit was regarded independently and later integrated in the total MNI of the whole assemblage.

Age patters were established by teeth characterisation, considering tooth wear and the eruption of permanent pieces as well as the presence of deciduous ones. Bone ossification levels and epiphysis fusion were also considered. The different age groups were divided into infant, juvenile and adult. Age estimations considered the data by Pérez Ripoll (1988) and Couturier (1962) for ovicaprids; and Mariezkurrena (1983), Brown and Chapman (1991a; 1991b) and Guadelli (1998) for equids.

Regarding the sexing of the animals, the fragmentation of the remains and the absence of complete pelvises has not allowed us to make a direct determination of the sex or the species, only in the case of deer antlers it was possible to make some direct identification. However, through the biometrics of the epiphyses of long bones following (Driesch 1976) some assumptions have been made, as in the case of the discrimination between ox and cow in some sites such as La Guirnalda de Quer (Estaca-Gómez 2017).

Lastly, the anatomical representation of remains was analysed, describing the skeletal part of the bone fragment. Indeterminate bones were ascribed to the axial category, either as spongy (if they were spongy tissues from an epiphysis or other compact bone) or diaphysis fragments. The methodology used aimed to identify the elements most severely affected by fracture. Furthermore,

bones were grouped in three different sections: cranial (including lower jaw); axial (vertebrae, ribs, scapulae and pelvis, following Yravedra 2006); and appendicular, subdivided into upper (humeri, femora, tibiae and radii, ulnae) and lower elements (metapodials and compact bones).

FAUNAL CHARACTERISATION IN THE EARLY IRON AGE

It has been traditionally assumed that Early Iron Age societies in the area had a mixed economy based on agriculture and cattle herding. Although broad descriptions of the local economic development have been published, specific faunal studies were limited to the presentation of a small number of samples. Compared to the total amount of known sites, only 24% of the locations with Early Iron Age chronology have incorporated some heterogeneous information about faunal remains (Estaca-Gómez 2017).

Consequently, there is a large variability in the data provided. Virtually all sites specify the NR while other variables are proportionally reduced. For instance, information regarding MNI and age patterns is rather frequent except for Ecce Homo, Puente Largo del Jarama and La Capellana; but aspects such as skeletal profiles are present in a dramatically reduced number of sites and taxonomic information to define seasonality is almost non-existent (fig. 2).

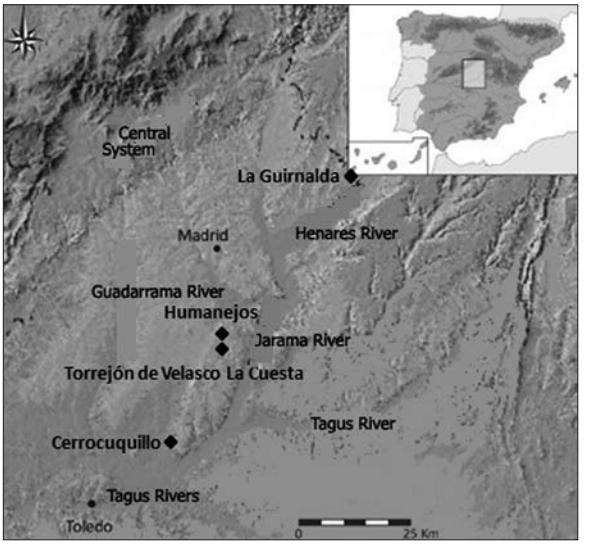

Fig. 1: Geographical location of the sites studied (Author).

In taxonomic terms, NR estimations in available databases indicate that ovicaprids were the main species, except in the case of Las Camas. They were followed by bovids and pigs. The fourth most important species were equids, with generalised frequencies lower than 10%. Dogs were scarcely represented. The same scheme is reproduced in MNI calculations, where ovicaprids represented about 40% of the individuals documented in each site, bovids were below 20% of MNI except for Las Camas,

SITE	NR	MNI-Age	Skeletal profiles	Seasonality	Taphonomy
Ecce Homo	X				
Cerro San Antonio	X	X			
La Capellana	X				
Puente Largo del Jarama	X				
Arroyo Culebro UAM	X	X			
Arroyo Culebro A	X	X	X		x
Las Camas	X	X	X	X	x
La Guirnalda	X	X	X	X	x
Torrejón de Velasco	X	X	X	X	x
La Cuesta	X	X	X	X	x
Cerrocuquillo	X	X	X	X	x
Humanejos	X	X	X	X	x

Fig. 2: Sites analysed in this paper.

	Las Camas A		Las Camas B		Cerro San Antonio		Ecce Homo		La Capellana		Puente Largo Jarama	
Species	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**
Bos taurus	938	40.0	269	44.6	38	17.2	11	19	31	16	5	36
Equus caballus	259	11.1	32	5.3	3	1.3	1	2	5	3	1	7.1
Equus asinus												
Equus sp.												
Cervus elaphus	57	2.4	35	5.8	10	4.5	9	15.3	1	0.4		
Ovis aries	176	7.5	24	4.0	7	3.1	3	5.1				
Capra hircus	117	5.0	25	4.1	3	1.3						
Ovis / Capra	494	21.1	182	30.2	117	53.1	25	42.4	129	66	7	50
C. capreolus	1											
Sus domesticus	85	3.6	23	3.8	24	11			25	13		
Sus scrofa	17	0.7	3	0.5								
Sus sp.	179	7.6					7	11.9				
Canis familiaris	13	0.6	4	0.7	1	0.4	3	5.1	1	0.4		
Canis lupus	1											
	Arroyo Culebro A		**Arroyo Culebro UAM**		**La Guirnalda**		**Humanejos**		**La Cuesta**		**Cerrocuquillo**	
Species	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**
Bos taurus	43	28.7	35	23	***437***	***30.6***	***30***	***23.3***	***177***	***41.4***	***367***	***14.1***
Equus caballus	15	10.0	5	3.3	***110***	***7.7***	***32***	***24.8***	***37***	***8.6***	***25***	***1.0***
Equus asinus					***40***	***2.8***			***1***	***0.2***	***5***	***0.2***
Equus sp.												
Cervus elaphus	1	0.7	2	1.3	***100***	***7.0***			***3***	***0.7***	***30***	***1.2***
Ovis aries			7	4.5	***98***	***6.9***	***8***	***6.2***	***29***	***6.8***	***617***	***23.7***
Capra hircus	2	1.3	5	3.3	***84***	***5.9***			***16***	***3.7***	***37***	***1.4***
Ovis / Capra	64	42.7	83	54.2	***404***	***28.3***	***27***	***20.9***	***100***	***23.4***	***1298***	***49.9***
C. capreolus			1	0.7	***2***	***0.1***			***2***	***0.5***		
Sus domesticus	25	16.7	12	8								
Sus scrofa					***4***	***0.3***					***3***	***0.1***
Sus sp.					***123***	***8.6***	***10***	***7.8***	***52***	***12.1***	***187***	***7.2***
Canis familiaris			2	1.3	***21***	***1.5***			***10***	***2.3***	***32***	***1.2***

Fig. 3: Number of remains (NR) in published sites and the ones presented here (italic bold) for the Early Iron Age.

suids did not reach 15% and horses constitute less than 10%. On the other hand, wild animals were better represented in MNI than in NR (figs. 3-4).

Consequently, it could be argued that during the Early Iron Age an animal herding economy developed, focusing on sheep flocks. It may reflect more intensive mobility patterns than in the Late Iron Age, when taxa diversified and included bovids and suids.

FUNCTIONALITY AND USES OF DOCUMENTED FAUNA

FOOD CONSUMPTION

Faunal remains reflect the many roles played by animals in daily life during the Early Iron Age. It has traditionally been assumed that in food-producing societies

	Las Camas A		Las Camas B		Cerro San Antonio		Ecce Homo		La Capellana		Puente Largo Jarama	
Species	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**
Bos taurus	17	19.1	**5**	14.3	2	8.7						
Equus caballus	7	7.9	2	5.7	1	4.3						
Equus asinus												
Equus sp.												
Cervus elaphus	4	4.5	1	2.9	1	4.3						
Ovis aries	15	16.9	4	11.4	3	13.0						
Capra hircus	11	12.4	3	8.6	2	8.7						
Ovis / Capra	15	16.9	14	40.0	7	30.4						
C. capreolus	1	1.1				0.0						
Sus domesticus	7	7.9	2	5.7	3	13.0						
Sus scrofa	3	3.4	1	2.9								
Sus sp.	4	4.5										
	Arroyo Culebro A		**Arroyo Culebro UAM**		**La Guirnalda**		**Humanejos**		**La Cuesta**		**Cerrocuquillo**	
Species	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**	**MNI**	**%**
Bos taurus	21	26.3	2	11.8	***15***	***21.7***	***1***	***16.7***	***6***	***18.2***	*7*	***11.9***
Equus caballus	10	12.5	1	5.9	***3***	***4.3***	***1***	***16.7***	***2***	***6.1***	***1***	***1.7***
Equus asinus					***5***	***7.2***			***1***	***3.0***	***1***	***1.7***
Equus sp.												
Cervus elaphus	1	1.3	1	5.9	***2***	***2.9***	***1***	***16.7***	***2***	***6.1***	***1***	***1.7***
Ovis aries			1	5.9	***9***	***13.0***	***1***	***16.7***	***5***	***15.2***	***20***	***33.9***
Capra hircus	2	2.5	3	17.6	***10***	***14.5***			***4***	***12.1***	***6***	***10.2***
Ovis / Capra	31	38.8	1	5.9	***11***	***15.9***	***1***	***16.7***	***5***	***15.2***	***16***	***27.1***
C. capreolus			1	5.9	***2***	***2.9***			***1***	***3.0***		
Sus domesticus	15	18.8										
Sus scrofa					***2***	***2.9***					***1***	***1.7***
Sus sp.			2	11.8	***4***	***5.8***	***1***	***16.7***	***5***	***15.2***	***5***	***8.5***

Fig. 4: Minimal number of individuals (MNI) in published sites and the ones presented here (italic bold) for the Early Iron Age.

domestic animals were mainly regarded as foodstuff (Iborra 1999). However, revisions by Liesau and Blasco (1999), Collard *et al*. (2010), and Vidal and Maicas (2010), among others, indicated that animals were not just used as a food resource, as evidenced in a varied archaeological record since prehistoric times.

Even if the nutritious value of animals is the focus, some considerations should be made. Firstly, it is quite different to consume an adult than a juvenile or infant specimen, as their meat may have had different economic, social or even ritual-religious connotations.

A high percentage of the individuals were slaughtered when adult or senile, probably after exploiting the products they could offered in their lifetime. In fact, during this period 30% of ovicaprids remains were from infant and juvenile individuals. In the case of cows, they yielded values lower than 20% for these two age groups. Suid non-adults represented more than 40% of the sample in the five sites with MNI values. According to these data, herding practices can be seen as diversified: animals were not just kept for meat production; they were also important for other products

(Sherratt 1981) such as wool or milk, in a similar way to modern cattle management (Cambero 1999). Moreover, most of the young individuals documented were slaughtered in the autumn.

An analysis of the anatomical representation of animal parts was proposed to evaluate meat processing for human consumption. Although the results were not definitive, the skeletal profiles of the sites where this variable was considered broadly indicated that all the anatomical parts were present. It suggests that in most cases both slaughtering and consumption took place inside the settlement or in the nearby area. In addition, the classification of fauna according to activity areas (i.e. industrial, domestic, disposal area) in the sites studied may be indicating the differential consumption of species and parts. A particularly relevant detail was detected in the way bones were disposed of, because not all remains seemed to have ended up in garbage areas. During the Early Iron Age there was an equilibrated distribution of remains in the three areas mentioned (fig. 5), indicating that not all the remains consumed were dropped in the disposal area, but they were also discarded in the domestic and industrial sections. It should be noted that some of the activity areas were not identified in all the sites considered, resulting in variations in the percentages; however, the existence of bone remains in domestic and productive areas was unquestionable.

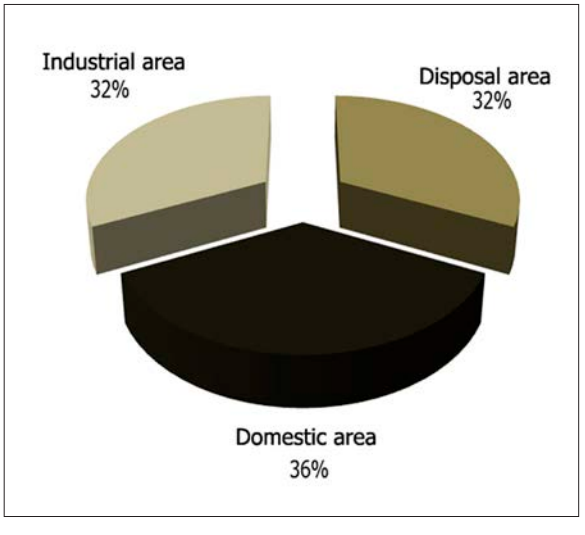

Fig. 5: Comparison of the three areas documented in the Early Iron Age sites considered.

Taphonomic studies provided information about processing marks on typical domestic animals – ovicaprids, bovids and suids – as well as less frequent taxa such as horse and dog (Yravedra 2007a, b, c, d; 2009a, b; Estaca-Gómez and Yravedra 2010; 2011a, b). Processing marks were found among specimens of all ages.

This fact reinforces the idea that all the species present were processed for meat once they were no longer useful for wool, milk, workforce, etc. It was clearly indicated in the marks related to meat extraction: skinning, disarticulation, evisceration and butchering.

Cut marks were identified in most of the sites where these data were available and they appeared on the same anatomical parts, particularly long bone epiphyses. Furthermore, bone breaking marks indicative of legs butchering were recorded. Evisceration and disarticulation marks indicated that Early Iron Age populations did not only butcher animals for immediate consumption and cooking – a practice evidenced in the cream-coloured dehydrated bones in the sample – but also for their short- and medium-time preservation. Although it is not possible to prove this treatment from the faunal remains, basic preservation methods could have been rather frequent at the time, such as meat drying to prevent the action of microorganisms.

Meat could have been treated by the combination of either heat and smoke or dry and cold air, as well as by the use of antiseptic products such as firewood smoke or salt (Torres 2007: 51). Salt would have been also fundamental for other kinds of animal product treatments, such as cheese-making or skin processing (Valiente *et al*. 2014). A further meat preservation method used at the time was embedding it in fat or lard, attested in a Late Iron Age deposit found at Las Ruedas necropolis in Pintia (Sanz *et al*. 2003: 152; Juan and Matalama 2003: 314-316).

CRAFTING ACTIVITIES

Iron Age populations did not just resort to meat preservation processes; they must have also spent some time in crafting activities in which living animals were actively involved, such as textile production using their wool or hair. Female mammals would be frequently milked to obtain dairy products as well. In some other activities, animals had to be butchered, their skin was tanned and the bones, horns and antlers used to make bone instruments.

In these sedentary populations, milk must have been an important product consumed either raw or processed in dairy products, an aspect not usually mentioned in contemporaneous research (Sherrat 1981). We agree with other authors (Liesau and Blasco 1999; Torres and Sagardoy 2004; Torres 2007) that this absence could be due to the organic nature of many of the tools probably used for dairy processing, frequently made of wood, leather and similar materials which rarely survive in the archaeological record.

Similarly, it is well-known that the identification of casein in pottery containers is still ambiguous even in vessels which are known to have contained milk (i.e. the so-called cheese strainers). Milk from cows, sheep and goats should have been quickly processed due to its short lifespan when raw. Once fermented, however, it is a medium-lasting foodstuff in the case of yogurt, curd, ricotta-cheese, etc., and long-lasting product in the form of hard cheese and butter. These by-products could have been stored and transported rather easily, resulting in a useful protein source while preserving the animal alive.

Another fundamental activity at the time must have been textile production, traditionally considered a female task (Torres 2005; 2011; Bonet and Vives-Ferrándiz 2011). Textiles could have been made from plant fibres, mainly flax and cotton, as found in Early Iron Age levels at Cerrocuquillo (Baquedano *et al*. 2010). However, the most common raw material for fabrics was probably the wool from adult sheep. This use of the wool could justify the mortality patterns identified, where a high percentage of slaughtered sheep were adults, indicating the importance of the living animal.

In order to obtain the fibre, sheep first had to be sheared, probably using lithic flakes or knives in early times (Mallía-Guest 2012), a time-demanding activity. The use of shears during the Late Iron Age, present at Llano de la Horca (Ruiz Zapatero *et. al*. 2012: 340) and Dehesa de la Oliva (Cuadrado 1991), would have significantly improved shearing conditions.

This raw material would have been later cleaned by combing and carding. Natural teazles could have been initially used, such as a dry thistle, to later incorporate a metal comb like the one found at Llano de la Horca (Ruiz Zapatero *et al*. 2012).

The process would produce fibre to be spun using a spindle, a light wood, bone or cane rod some 20 to 30 cm long. The best example documented so far dates from the Late Iron Age, a spindle found at Cerro Redondo which still had a string of wool attached (Blasco and Alonso 1985). At one end of the rod, a truncated or bitroncoconical spindle whorl normally made of pottery, bone or wood was positioned. In the sites considered in this analysis, only one bitroncoconical spindle whorl from Cerrocuquillo was documented in the Early Iron Age levels. Furthermore, a bone spindle whorl was found at La Guirnalda in Late Iron Age levels. Spindle whorls facilitated the rotation of the fibre and reduced oscillation in quick rotations. In addition to their weight, they favoured skein production to be used in the loom (Castro 1980: 144; see also Marín-Aguilera in this volume).

It is rather common to find spindle whorl assemblages in domestic contexts. Although the sites considered here did not yield these objects for earlier times, the situation changed during the Late Iron Age, where they were found both in domestic locations (i.e. the collapse of a dwelling at La Guirnalda) or spread around many areas, such as Sector II at La Gavia III. They were also located in crafting sectors at La Cuesta, a situation closely similar to the significant concentration reported for Fuente de la Mora (Leganés, Madrid) and identified as a specialised working area (Vega *et al*. 2009).

Other elements to be considered in this activity are the truncated conical and rectangular loom weights used to stretched the threads in vertical warp-weighted looms. Due to their wood composition, looms are not frequent in archaeological records but can be deduced from the holes in some habitation floors, or the concentration of loom weights in certain domestic areas, as in the case of La Guirnalda, area 1 (UE 23018). In this UE, loom weights were found *in situ*, as also happened at La Gavia III, Sector II for the later period. Loom weights were also found in the Early Iron Age industrial area at Cerrocuquillo. Therefore, textile-related activities and, by extension, wool production seem to have been a frequent activity in faunal management in the sites studied.

Although wool was probably the main raw material for clothing, the use of animal skin and leather, either domestic or wild, cannot be discounted. They could have been transformed or manufactured and included the original hairy coat or not. They may have been tanned and used not only for clothing and shoes but also for furniture, containers, belts, cuirasses, helmets, horse harnesses, etc. (Cuadrado 1991; Liesau and Blasco 1999; Torres 2005: 108).

Fig. 6: Cow phalange with skinning marks from Las Camas (Photograph by José Yravedra).

It should be considered that, when an animal is hunted or slaughtered, both its meat and skin should be immediately processed to avoid rotting and keep the leather flexible and strong. Hence, it is necessary to skin the animal, as evidenced in all the sites analysed. Skinning marks were frequently found on bones such as cow and horse phalanges at La Guirnalda, Cerrocuquillo and Las Camas (fig. 6).

The skin has to be later cleaned by using scrapers and abrasive materials such as ashes to eliminate all fat and lard. It must later be introduced in a solution with tannin, a treatment which could last for about six months (Torres 2005: 109). A treatment with animal urine can be incorporated to obtain greater flexibility. Last, the skin is ready to be decorated applying either mineral and plant pigments or blood, either as colorant or thickener (Vidal and Maicas 2010).

The extraction of both tendons and viscera were clearly evidenced on the bones, either by disarticulation marks for tendon extraction – particularly on long bones (fig. 7) – or by the evisceration marks in the inner part of ribs. Examples of tendon extraction were found in all the sites analysed. They could have been used as a strong and flexible string for clothing, tool tying, etc. Marks typical of viscera extraction were also documented in some of the sites studied. During evisceration, both the stomach

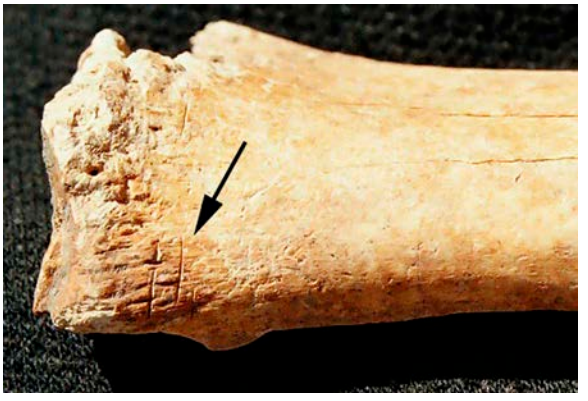

Fig. 7: Cow radius with dismemberment marks from Las Camas (Photograph by José Yravedra).

and the bowels were extracted – as well as other edible parts such as the liver, the kidney, etc. – which may be used as containers for liquids. The meat would have been cured or dried (Stewart 1984).

Bone tools have usually been regarded as the main non-edible animal remains. We have not focused on this material here, but some notes may be included. In the sites studied, bone material culture was mainly limited to pointed and bevel elements as well as spatulae. As noted by Vidal and Maicas (2010), many of the bones broken for marrow extraction could have been later used to manufacture bone tools, particularly in the case of long specimens.

Horns and antlers were also used as raw material. As with bone industry, this material is not analysed here. In short, their use is evidenced in the cut marks on a bovid horn at La Cuesta, and a similar alteration at La Guirnalda, which also presented two marked deer antlers.

Lastly, the identification of bone as fuel should be mentioned, as bone flakes could have compensated for scarcity of firewood in hearths (Yravedra *et al*. 2005; Vidal and Estaca-Gómez 2014). However, evidence of this use was not clear, since the cases studied yielded just a few charred bones which were not suficient to draw any conclusions; however, this possibility should not be discounted. Dung may have been used as fuel as well, due to its low combustion and constant temperature, a clear advantage for time-demanding cooking such as soups or stews (Vidal and Maicas 2010). Marrow grease has been widely used throughout history as an element for lighting, foodstuff and medicine, and could be traced by the fracture patterns of long bones typical of marrow extraction.

CONCLUSIONS

This paper was intended to provide a broad analysis of Early Iron Age fauna in a little known area. It has not only focused on zooarchaeology but also on the implications animals had in contemporaneous populations in the Tajo middle valley. The analysis indicates that the dominant taxa in the area in terms of NR and MNI for this chronological period were ovicaprids, followed by bovids, suids and equids. Furthermore, the distribution of faunal remains in the different activity *loci* (i.e. industrial, domestic and disposal areas) does not differ.

The intention here was to set a correlation between faunal remains and the material record recovered in each settlement to define the uses and functionality of animals in social activities. It showed that the abundance of adult individuals could have been associated to the exploitation of living animals for the production of dairy products, wool, hair and other secondary products, reflected in the material evidence such as teazles, loom weights, spindle whorls, etc. Furthermore, the presence of a few infantile and juvenile individuals may be related to the necessary reduction of offspring for sheep and cow milk exploitation. According to this evidence, it can be interpreted that the sites were interested in the production of wool, milk, workforce and secondary products as main resources.

Further studies are needed in the future to define the spatial distribution of bone accumulations at different sites such as settlements and necropoleis, among others. Furthermore, they should consider in-site distributional analysis to define, for instance, animal pens or possible symbolic-religious deposition of fauna. This broader picture would allow a better understanding of the use and functionality of animals in the Early Iron Age.

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