APENDIX

Mesolithic Animal Bones From Forno da Telha, Portugal

by

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INTRODUCTION

The faunal assemblage from Forno da Telha is small, comprising only 41 identified fragments. These are listed in table 1. It can be seen that red deer is numerically predominant, amounting to over 60% of the identified fragments, followed by large bovid, pig, and roe deer. The single fragment referred to horse is an uncertain identification.

TABLE 1
Identified bones from Forno da Telha

Taxon	Red matrix	Grey matrix	TOTAL
Red deer, *Cervus elaphus*	12	14	26
Large bovid, *bos sp.*	5	0	5
Pig, *Sus scrofa*	4	1	5
Roe deer, *Capreolus capreolus*	1	2	3
Rabbit, *Oryctolagus cuniculus*	1	0	1
Horse, *Equus caballus/ferus*	?1	0	?1
TOTAL	24	17	41

All the bones listed in table 1 are labelled as coming from layer 2, the mesolithic layer. Much of the mesolithic layer consists of a shell midden, which has left distinctive traces of grey matrix on the bones and the other objects. The overlying layer, dating from the late neolithic, is not a shell midden and has left clear traces of a reddish matrix on the bones and other objects.

It was noted that some of the supposedly mesolithic bones showed traces of the red matrix (see the accompanying article by Araújo). As the excavation took place many years ago, the writer was asked to distinguish between the two matrix colours when examining the bones, and attempt to see whether the "mesolithic" specimens coloured red might in fact derive from the overlying late neolithic layer.

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BONES FROM THE RED MATRIX: MESOLITHIC OR NEOLITHIC?

The identified fragments are listed by matrix type in table 1. Attribution to matrix type was always clear, and in no case was there any doubt as to whether a bone came from the red or the grey matrix. Various aspects will be considered in an attempt to see wether the fragments from the red matrix were really of mesolithic date, or whether they could derive from the overlying late neolithic layers.

1) Taxa represented

An immediately striking aspect of the material is the absence of bones of caprines (*Ovies aries* and *Capra hircus*). Most neolithic and later faunas from the Iberian peninsula contain large proportions of these species (for a portuguese example see von den Driesch and Boessneck 1976). This evidence is not conclusive: the site might possibly have functioned as a hunting camp during the late neolithic, and in such a small sample the absence of caprines could just be due to chance. However, the absence of caprines from Forno da Telha does make it most probable that the red matrix material does *not* derive from the overlying late neolithic layer.

The presence of a possible horse bone (a fragmentary tarsal) in the red matrix material does not indicate that a post-mesolithic element must be present in the fauna. It is recently been demonstrated that some wild horses were present in Iberia during the Holocene. A horse bone from Cueva de la Cariguela in Sauthern Spain, identified by H.-P. Uerpmann, has been dated by radiocarbon accelerator to 5060±90 bc (OxA 1131), providing "evidence for the survival of wild horses in the Iberian Peninsula from the Pleistocene into the Holocene" (Hedges, Housley, Law, Perry and Goulett 1987, p.301), and the presence of horse bones has also been noted at mesolithic shell middens in the Sado Valley (Rowley-Conwy in press). It is therefore not impossible that horse should be present at Forno da Telha during the mesolithic.

2) The pig bones

Two bones of *sus scrofa* from the Forno da Telha assemblage could be measured (all measurements in this report follow the conventions of von den Driesch (1976) unless the contrary is indicated). Both clearly derive from the red matrix. The bones are: (a) a fused distal tibia with a Bd measurement of 36.3 mm; and (b) a fused distal humerus on which measurement Bd could not be taken, although two other measurements were recorded: HT measured 31.9 mm and HTC 20.4 mm (for the definition of these measurements see Payne and Bull 1988 fig. 1, and Legge and Rowley-Conwy 1988 p.124). The question is whether these bones derive from wild or domestic animals.

The distal tibia is plotted in fig.1, and is compared to bones from Zambujal where both wild and domestic pigs are present (data from von den Driesch and Boessneck 1976). The dividing line between wild and domestic pigs is problematic (ibid., p. 57-61), and it has been suggested that there was some metrical overlap between wild and domestic animals at Zambujal rather than a clear separation (Rowley-Conwy in press). However, fig.1 shows that the Forno da Telha specimen falls well beyond the probable domestic range at Zambujal and lies in the centre of those believed to be wild. It therefore almost certainly comes from a wild individual.

The distal humerus is more problamatic, because von den Driesch and Boessneck (1976) only present measurement Bd for this element, and this could not be taken on the Forno da Telha specimen. The author has measured the distal humeri from the mesolithic shell middens in the Muge Valley, however, and the results do permit a tentative conclusion to be drawn. Fig.2 compares measurements Bd and HT for these specimens. If the relationship between these two measurements was the same for the Forno da Telha specimen, fig.2 suggests that a bone with an HT of 31.9 mm would probably have a Bd of between 42 and 47 mm. If this is valid, fig.3 shows that the Forno da Telha specimen would probably fall around the junction between the wild and domestic specimens from Zambujal. It cannot therefore be demonstrated to come from a domestic animal.

A proximal metacarpal from the red matrix could not be measured but appeared visually to be very large. The only pig bone from the grey matrix was a proximal metatarsal, whiich appeared similarly large. Both these are believed to come from wild animals. The fifth pig bone was a fairly small calcaneum (red matrix). However, the rear end was missing, so the state of fusion could not be determined. It is therefore possible that the small size of this specimen could result from the animal being young.

None of the pig bones therefore definitely indicate the presence of domestic animals at Forno da Telha.

3) The large bovids

The only measurable large bovid bone is a distal metatarsal (red matrix) with a Bd measurement of 64.1 mm. Fig. 4 plots this measurement, comparing it once again with those from Zambujal (von den Driesch and Boessneck 1976). As with pigs at this site, there may be a problem with the status of individuals lying close to the suggested wild/domestic boundary. Fig. 4 therefore also plots aurochs measurements taken by the author on the mesolithic assemblages from the Muge shell middens. If the comparison is valid, fig.4 indicates that some of the largest "domestic" animals from Zambujal could in fact be wild aurochs. At all events, the Forno da Telha specimen falls in the overlap zone, and it is thus not clear whether it comes from a wild or a domestic animal.

The other large bovid bones from Forno da Telha were all teeth, more or less fragmentary. No indication could be gained as to the wild or domestic status of these animals.

THE DEER BONES

Some bones of red deer were measurable. These measurements are presented in table 2. The sizes all fall within the ranges from Zambujal (von den Driesch and Boessneck 1976, table 38).

TABLE 2

Measurements of bones of red deer (Cervus elaphus) from Forno da Telha. Colour designations refer to the matrix adhering to the bone (see text)

Calcaneum (red)	GL 98.1		
Astragalus (red)	GL1 49.7	Bd (31.7)	Dm 27.4
Astragalus (grey)	GL1 48.4	Bd 29.5	Dm 26.3
Astragalus (grey)	GL1 45.2	Bd 27.8	Dm 25.7
Proximal Radius (grey)	Bp 52.4		
Scapula (grey)	BG 38.3		
Distal metatarsal (red)	Bd 40.6		

A single calcaneum of roe deer (*Capreolus capreolus*) had a GL measurement of 60.7 mm. This falls close to the single specimen from Zambujal (von den Driesch and Boessneck 1976, table 35).

None of the deer bones offered any information as to season of death. There is therefore no indication as to the season(s) in which the site was occupied.

CONCLUSIONS

None of the measurable bones from the red matrix material could be proven to have come from a domestic animal. Caprines were totally absent. These two pieces of information suggest but do not prove that all the material considered is indeed of mesolithic date. If so, the small Forno da

Telha assemblage appears to be typical of what is known from other Portuguese mesolithic sites, such as the middens in the Sado Valley (Rowley-Conwy in press) and the Muge Valley (Rowley-Conwy in preparation).

BIBLIOGRAPHY

Driesch A. von den 1976, A *Guide to the Measurement of Animal Bones from Archaeological Sites* (Peabody Museum Bulletin 1), Cambridge (Mass.), Peabody Museum of Archaeology and Ethnology.

Driesch A. von den and Boessneck J. 1976, *Die Fauna vom Castro do Zambujal, in* "Studien uber fruhe Tierknochenfunde von der Iberischen Halbinsel" 5, ed. A. von den Driesch and J. Boessneck, 4-129, Munich: Institut fur Palaeoanatomie, Domestikations-forschung und Geschichte der Tiermedizin der Universitat Munchen.

Hedges, R.E.M., Housley R.A., Law, I.A., Perry, C. and Gowlett, J.A.J., 1987, *Radiocarbon dates from the Oxford AMS system: Archaeometry datelist 6,* "Archaeometry" 29, 289-306.

Legge A.J. and Rowley-Conwy P., 1988, *Star Carr Revisited. A Re-analysis of the Large Mammals,* London: Birkbeck College, Centre for Extra-Mural Studies.

Payne, S. and Bull, G., 1988, *Components of variation in measurement of pig bones and teeth, and the use of measurements to distinguish wild from domestic pig remains,* "Archaeozoologia" II (1.2), 27-66.

Rowley-Conwy P., in press, *Animal bones from the mesolithic shell middens in the Sado Valley, Portugal.* To appear in The Sado Valley Mesolithic Project (Os Concheiros Mesolíticos do Vale do Sado), ed. J. Morais Arnaud, Lisbon, Monografias do Museu Nacional de Arqueologia e Etnologia.

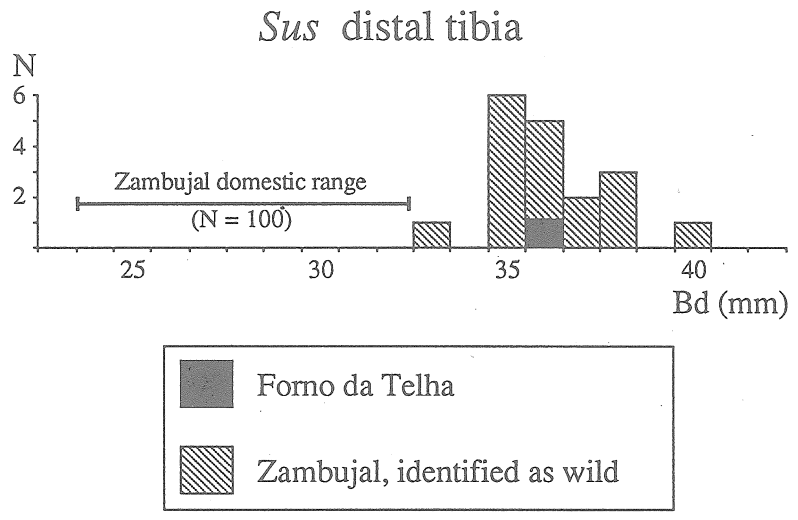

Fig. 1 — Histogram of *Sus Scrofa* distal tibia measurement Bd. Zambujal specimens identified as wild from von den Driesch and Boessneck (1976, table 22), range of those identified as domestic from ibid. (table 23)

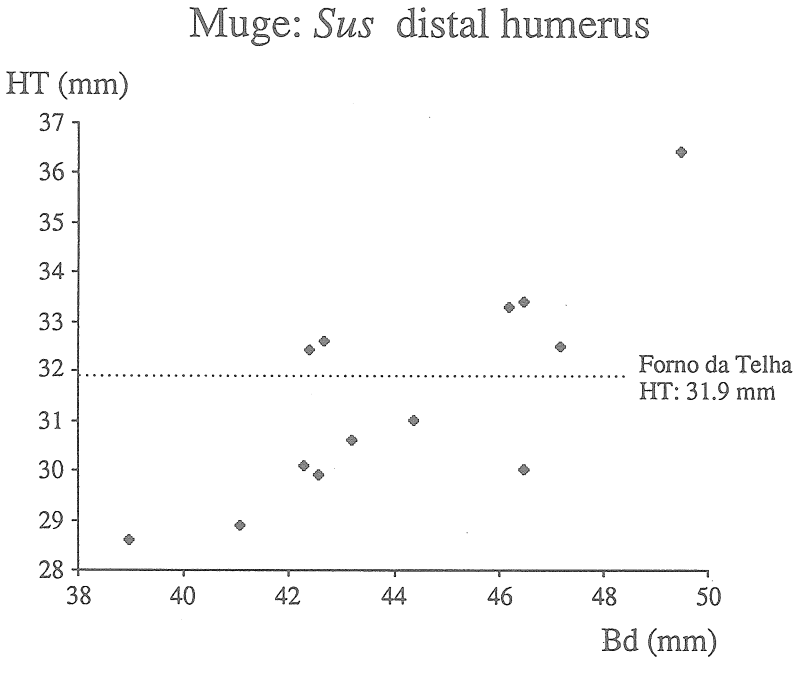

Fig. 2 — Measurements of *Sus scrofa* distal humerus from the Muge shell middens, measured by the author. The HT measurement of a single specimen from Forno da Telha is indicated.

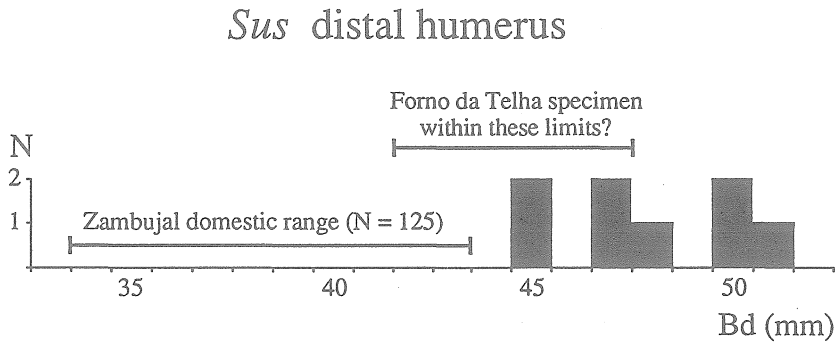

Fig. 3 — Distal humerus measurement Bd of *Sus scrofa*. Zambujal specimens identified as wild (histogram) from von den Driesch and Boessneck (1976, table 22), range of those identified as domestic from ibid. (table 23).

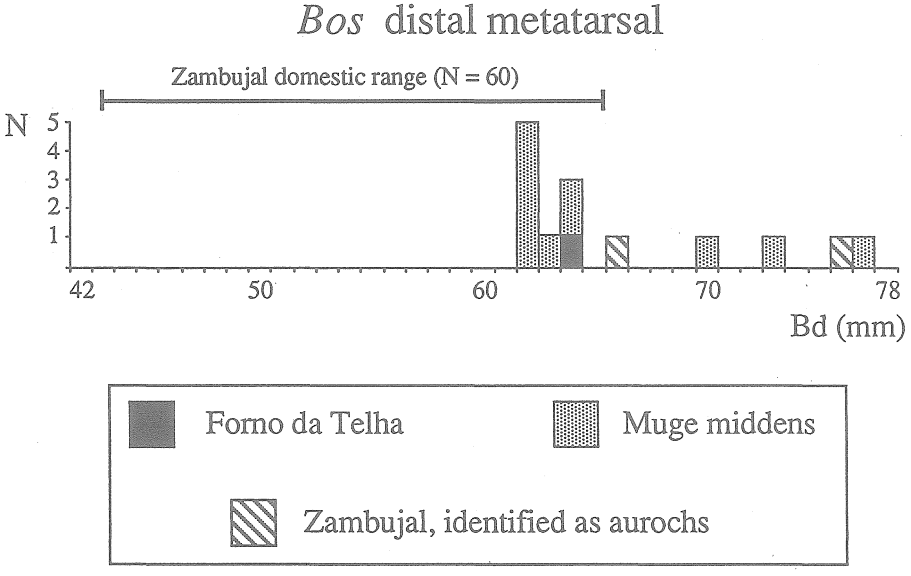

Fig. 4 — Distal metartasal measurement Bd of *Bos*. Zambujal specimens identified as wild from von den Driesch and Boessneck (1976, table 11), range of those identified as domestic from ibid. (table 12).