Índice

# Prefácio

Será à arqueologia de corte processual, e à revolução metodológica que esta impôs à prática arqueológica, que pode ser assacada grande parte da responsabilidade pelo despertar dos estudos faunísticos. Com efeito, algum determinismo tecno-ambiental que emana desta corrente de pensamento determinou a importância atribuída ao meio físico e acabou por conduzir a uma hiper valorização de todos os componentes ambientais dos sistemas sociais do passado. Assim, o paleoambiente, em todas as suas vertentes, não poderia deixar de ser avaliado com detalhe, uma vez que era ele que definia, quase exclusivamente, a história de um grupo social, cujo comportamento era, afinal, pouco mais que uma reacção adaptativa ao meio ecológico circundante.

Independentemente da perspectiva teórica que está por detrás desta corrente de pensamento poder ser criticada, até pela sua posição algo darwinista dos processos sociais, a verdade é que o contributo que deu a nível metodológico foi muito grande. E ainda que o radicalismo das propostas de análise do passado veiculadas pela «Nova Arqueologia» não tenha já grande aceitação, a verdade é que as metodologias preconizadas pelos processualistas foram adoptadas pelas correntes de pensamento de recorte pós moderno.

É, de facto, hoje inconcebível que a recolha dos dados de uma escavação se faça com base numa triagem que valoriza apenas os artefactos, ou mesmo apenas alguns deles (concretamente os melhor conservados, os maios exóticos ou os mais «museografáveis»), como aconteceu durante quase toda a primeira metade do século XX. Os elementos que permitem conhecer a cobertura vegetal do território em que o sítio escavado se implanta ou a dieta alimentar da comunidade humana que o habitou, por exemplo, são hoje considerados tão importantes como os bens importados que essa mesma comunidade consumiu ou a forma como estruturou arquitectonicamente os espaços que habitou.

Em Portugal, a recolha destes elementos no decorrer do processo arqueológico é uma prática relativamente recente. De forma sistemática, ela foi apenas iniciada no final dos anos 70 do século XX, quando as perspectivas teóricas da «Nova Arqueologia» começaram, ainda que timidamente, a penetrar num território dominado por tendências histórico-culturalistas evidentes. Mas também a presença de equipas de investigação exteriores ao território peninsular, equipas que utilizavam metodologias por cá desconhecidas, marcou a arqueologia portuguesa da segunda metade do século XX. O «projecto do Zambujal», por exemplo, deu um contributo decisivo na formação de uma geração que percebeu a urgência da sua própria actualização metodológica. E a recolha e estudo das faunas do sítio calcolítico da Estremadura teve um forte impacto na ala mais jovem da comunidade científica portuguesa. No entanto, a vontade dos processualistas lusos, e dos seus «compagnons de route», de aplicar as novas metodologias de análise esbarrava sistematicamente na inexistência, em Portugal, de especialistas vocacionados para os estudos paleo ambientais. E o recurso a investigadores estrangeiros foi então, e é aliás em parte ainda hoje, incontornável.

A inclusão de estudos faunísticos nos trabalhos publicados nos anos 80 do século passado foi ainda rara, mas devem destacar-se os que foram publicados por Victor S. Gonçalves, sobre sítios do Alto Algarve Oriental e por Carlos Tavares da Silva e Joaquina Soares, a propósito de outros localizados no Alentejo central e litoral.

Os objectivos então definidos traçaram uma linha que não permitia desvios, e o caminho que se iniciou não registou qualquer retorno. Os anos 90 assistiram ao desenvolvimento, em Portugal, dos estudos das faunas recuperadas em escavações arqueológicas, desenvolvimento que muito se deve a Telles Antunes, primeiro, e a João Luís Cardoso, depois.

Não posso deixar, no entanto, ainda de referir que, nesta matéria, à semelhança de em outras de cariz metodológico e teórico, os primeiros passos foram registados na Pré-História, e que a Arqueologia Clássica e Muçulmana, e mesmo sidérica, permaneceram, durante largos anos, exteriores a esta nova tendência. E foram justamente os dois professores anteriormente citados que, a partir dos finais da década de 80 do século XX, e sobretudo na de 90, iniciaram um processo de colmatação desta tendência, ao estudar arqueo faunas de sítios medievais (entre outros, Silves, Alcaria Longa, Mértola, Mesas do Castelinho e Castelo Velho de Alcoutim) e de outros datados da Idade do Ferro, nomeadamente Almaraz, Abul, Rocha Branca, Garvão e Santarém.

Quando, em finais da década de 90 do século passado, o Instituto Português de Arqueologia foi planeado, o seu organigrama contemplava a criação de um Centro de Investigação em Paleoecologia Humana onde os dados ambientais dos sítios arqueológicos seriam estudados. A criação do CIPA e a nova legislação produzida provocaram forte impacto na comunidade arqueológica portuguesa, que podia, por fim, dispor de um conjunto de investigadores especializados e vocacionados para este tipo de pesquisa.

Por outro lado, a mesma política conduziu à estruturação da actividade arqueológica em Planos Nacionais de Trabalhos Arqueológicos, no âmbito dos quais um projecto sobre as ocupações antigas da Alcáçova de Santarém foi aprovado.

Nesse projecto, pretendia-se analisar a ocupação humana do planalto sobranceiro ao rio Tejo, em todas as vertentes possíveis. Daí que a recuperação integral dos elementos faunísticos (entre muitos outros) encontrados no decorrer das escavações tenha norteado os trabalhos de campo. Ao nível das faunas, foi recolhido um abundantíssimo espólio que foi possível associar às diversas fases da ocupação humana definidas no sítio, concretamente a Idade do Ferro, a Época romana, e o período medieval.

A dimensão do conjunto e, sobretudo, a sua integração estratigráfica em todos os momentos da longa diacronia observada permitiam uma avaliação da evolução, ao longo de dois milénios e meio, da dieta alimentar dos habitantes do sítio, e podiam contribuir também com dados importantes sobre a própria natureza da cobertura vegetal da área envolvente.

Minuciosamente, Simon Davis, observou, contou, mediu, inventariou os ossos dos animais que há muitos anos tinham vivido em Santarém. Verificou a antiguidade dos galináceos, antiguidade que deve ser relacionada com a presença de Fenícios no vale do Tejo em momento recuado da Idade do Ferro. Tornou claro o peso da actividade cinegética durante o I milénio a.C. e percebeu que, no período muçulmano, os suínos diminuíram drasticamente, diminuição que poderá ser assacada à islamização do sítio. Muitas outras conclusões foram possíveis de retirar dos muitos milhares de ossos que Simon Davis estudou com tanto detalhe, como por exemplo o facto de ser evidente que as alterações verificadas nos restos dos ovinos decorriam de um processo intencional de melhoramento desta espécie.

Saúda-se, pois, a publicação de uma obra cuja importância excede o simples âmbito regional, uma vez que o estudo efectuado acaba por levantar questões de natureza mais vasta que importa averiguar em sítios coevos.

O estudo de Simon Davis inscreve-se, como já acima referi, num projecto que visa a publicação integral dos resultados obtidos durante as escavações arqueológicas que, conjuntamente com Catarina Viegas, dirigi na Alcáçova de Santarém. Muitos trabalhos foram já publicados, quer sobre a Idade do Ferro, quer sobre as ocupações romana e medieval. Os resultados publicados nesses trabalhos, bem como os que agora são tornados públicos, e os que estão ainda em curso, como os que dizem respeito à palinologia, carpologia e antracologia (também da responsabilidade do CIPA), serão incluídos no trabalho monográfico que está planeado.

O livro que agora se dá à estampa é um importante contributo para o estudo das ocupações antigas de Santarém. Por isso estive sempre disponível para fornecer ao Simon todas as informações contextuais e estratigráficas de que necessitou, bem como a bibliografia arqueológica sobre a evolução material e humana do planalto da Alcáçova. E a sua afabilidade tornou um prazer as muitas conversas que tivemos a propósito de Santarém e das suas faunas.

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# Introduction

Santarém, on the right bank of the Tagus River, is 78 kilometres northeast of Lisbon (see figure 1). Situated on a plateau, it commands an extensive view of the surrounding countryside. Strabo described the great fertility of this part of Lusitania and also mentioned that the Tagus is large and sufficiently deep to allow passage of ships carrying as many as 10,000 amphorae. In later times '*Santarin*' was the second Portuguese city most cited by Arabic writers, after '*al-Usbuna*' (now called Lisbon). *Santarin* was noted for its great fertility and cereal, fruit and vegetable production — thanks largely to the waters of the Tagus, which were, in the opinion of many Arabs of the time, comparable to those of the Nile (Carabaza Bravo, 1996).

Between 1994 and 2001, Ana Margarida Arruda and Catarina Viegas of the University of Lisbon excavated some 1750 m² of the Alcáçova (= the fortified enclosure) de Santarém. The hand-collected faunal remains, mostly mammal bones, from their excavation form the subject of this report. They derive from 18 levels — most dated to the Iron Age, Roman and Moslem periods. As table 1 shows, 39% of the animal bones derive from the Moslem period, 33% from the Roman period and 17% are from the Iron Age. The bones are contained in some 90 numbered crates, which will be stored in the Santarém Municipal Museum. Approximately 9000 identified bones and teeth were recorded.

**TABLE 1**

The stratigraphic sequence at Alcáçova de Santarém with dates and the period codes used in this study of the fauna.

| *Code* | *Period* | *Century* | *"Main period"* | *Fauna%* |
|---|---|---|---|---|
| CONTEMP | Contemporary | ? | 2 | + |
| MOD2 | Late Modern | ? | 2 | 1% |
| MOD1 | Modern | AD 16 – 18 | 2 | 2% |
| MED3 | late Medieval | AD 14 – 15 | 2 | 3% |
| MED2 | Medieval 2 | AD 13 | 3 | 1% |
| MED1 | Medieval 1 Moslem | AD 9 – 12 | 3 | 39% |
| R/MED | late Roman/early Med. | Mixed deposits | — | 2% |
| ROM5 | late Imperial Roman | AD 4 – 5 | 4 | 3% |
| ROM4 | Roman Imperial 3 | AD 2nd half 2 – 4/5 | 4 | 3% |
| ROM3 | Roman Imperial 2 | AD end 1 – early 2 | 4 | 4% |
| ROM2 | early Roman Imp & Imp 1 | last 1/4 1 BC – mid 1 AD | 4 | 10% |
| ROM1 | late Roman Republican | end 2 BC | 4 | 13% |
| Fe8 | Iron Age | 3 BC | 5 | 10% |
| Fe7 | Iron Age | 6 – 4 BC | 5 | 1% |
| Fe6 | Iron Age | 6 – 4 BC | 5 | + |
| Fe5 | Iron Age | 6 – 4 BC | 5 | 1% |
| Fe4 | Iron Age | 6 – 4 BC | 5 | 1% |
| Fe3 | Iron Age | 8 – 6 BC | 5 | 1% |
| Fe2 | Iron Age | 8 – 6 BC | 5 | 1% |
| Fe1 | Iron Age | 8 – 6 BC | 5 | 2% |
| Br2 | Bronze Age | 11 – 9 BC | — | + |
| Br1 | Bronze Age | 11 – 9 BC | — | — |

"Fauna %" provides a very approximate indication of the proportion of total number of recorded Santarém bones in each period. Thus there are 6% in post Islamic levels, 39% in the Moslem level, 33% in the Roman levels, and 17% in the Iron Age levels. "Code" denotes the period abbreviation used. Data within the main periods, post—Moslem, Moslem, Roman and Iron Age were, for many of the analyses, pooled. Their numerical codes are indicated under "Main period". "+" denotes the presence of very few bones. The "R/MED" material is mixed and has not been studied in detail.

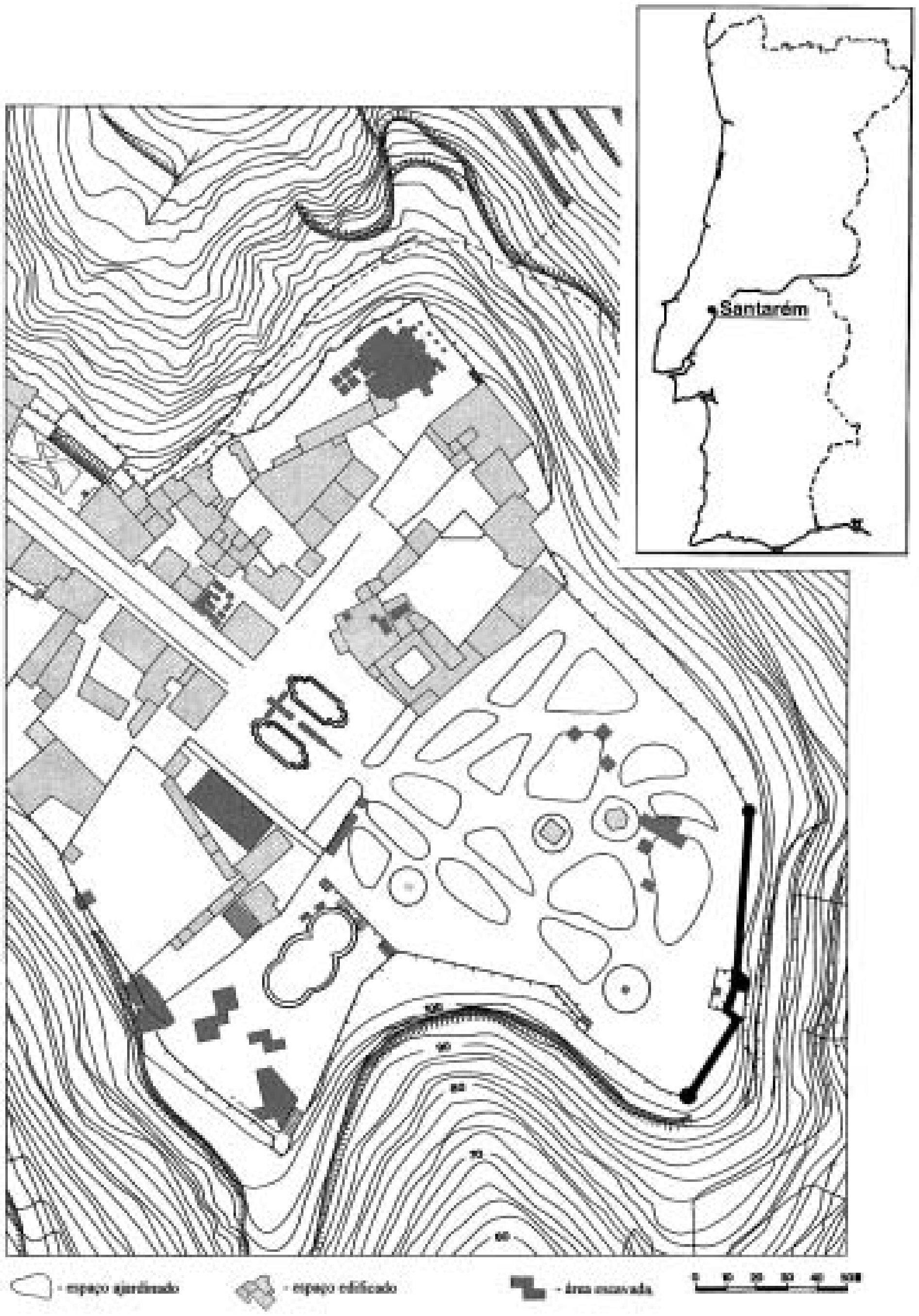


FIG. 1 – Plan of the excavations at Alcáçova de Santarém with a small-scale map of Portugal to show the site's location.

The purpose of this report is to describe these faunal remains and interpret some of the changes they show in the course of the succession at Santarém. They are important for two main reasons. First they form a large collection, perhaps one of the largest excavated to date in Portugal, which will provide a baseline of data for comparison with other Portuguese zoo-archaeological collections. Second, the bones come from a long succession of layers that spans over two thousand important years of Portuguese history encompassing the arrival and decline of Roman civilization and the later Moslem rule, and hence provide an opportunity to study the development of the fauna and man-animal relations from Iron Age through to Moslem times.

# Brief historical outline (from Arruda and Viegas, 2002)

Santarém has been a populated centre since the beginning of the first millennium BC and subsequent Roman and Moslem occupations of the town were equally intense. Today it is the capital of the Ribatejo — one of the 12 administrative regions of mainland Portugal.

**Iron Age** Santarém may have had a population as large as 1000. Phoenician navigators, who sailed into the Tagus estuary, probably visited Santarém and are thought to have had an important influence upon the region. They are, for example, often credited with the spread of the chicken in Europe (see Hehn, 1888). This was the period in which both the vine and olive began to be cultivated in Portugal.

The **Roman** occupation dates from the 2nd century BC. During the second quarter of the 1st century BC the town was extensively re-constructed — an event related to the foundation by Julius Caesar of the *Praesidium Iulium Scallabis* in 61 BC. Roman Santarém became one of the three *conventus iuridicus* of Lusitania as mentioned by Pliny, and was well linked being situated on the main road from *Olisipo* (now Lisbon) to *Bracara Augusta* (now Braga) and which linked *Olisipo* to the capital of Lusitania — *Augusta Emerita* (now Mérida; Viegas, 2001). In her study of the ceramics of Alcáçova de Santarém, Viegas (2001) describes, for example, Roman *terra sigillata* that come from places as distant as Cilicia, Italy, Carthage, France and Spain. Clearly Roman Santarém was both wealthy and well connected.

Unfortunately little is known about the late Roman, or **palaeo-Christian/Visigoth** phase of the history of Santarém, though mid 6th century AD ceramics were found but they are not associated with any structure.

Santarém acquired great importance with the **Islamic** expansion into the Tagus valley, though this importance is known more from written sources than any kind of structural remains. The most significant Islamic finds uncovered in Santarém are the silos – located in most areas excavated. These structures were generally circular and may have served to store cereals and other foods and at the end of the Moslem period were used as rubbish pits.

# Sample-size

The assemblage of faunal remains from Alcáçova de Santarém is sufficient to enable estimates to be made of the following:

a) The frequencies of different taxa in each of the 18 periods.
b) The proportions of different age groups of many of the animals slaughtered and brought to the settlement in the main periods (that is Iron Age, Roman and Moslem).
c) The representation of different parts of the skeleton of the more common animals in four periods.
d) The size and shape variation of the common animals during the 2000 years represented at Santarém.

# Methods

All bones and teeth were examined, but only certain regions of some of the bones were recorded in detail and counted. A description of the criteria applied when deciding whether or not to record a particular fragment of bone or tooth, and how they are counted, is given in Davis, (1992 and 2002). The CIPA osteological reference collection was used for identification.

## The parts of the skeleton counted

These regions are similar to Watson's (1979) "diagnostic zones". For example the medial half of the articulation of the distal tibia is counted, but none of the following parts of a tibia would be counted: the lateral half of the distal articulation, diaphysis, and proximal end. These "counted parts of the skeleton" include the mandibular cheek teeth, and articular ends/epiphyses of girdle, limb and feet bones. They are the units used to calculate the frequencies of different parts of the skeleton and proportions of young (epiphysis unfused) versus adult (epiphysis fused) animals. When other parts of the skeleton such as antlers, horn cores or maxillary teeth are the only evidence for the presence of a species, these **non-countable specimens** are recorded and their presence denoted by a "+" sign, but not included in the total counts of species found. The reasons for selecting these particular parts are as follows: a) they are relatively easy to identify to species; b) some, such as the distal metacarpal in certain species of artiodactyls, when in sufficient quantity, can provide information about the sex ratio; c) many include a separate centre of ossification, or epiphysis, which fuses to the rest of the bone at a particular age and so, in sufficient quantity, provide a ratio of juveniles to adults; d) many provide useful measurements; and e) they come from most regions of the skeleton (head, girdles, limbs and feet) and their relative abundance indicates possible preferences for different parts of the body such as non-meat-bearing versus meat-bearing parts or fore-quarters versus hind-quarters.

## Recovery

Many aspects of zoo-archaeological analysis rely upon quantitative data such as the frequencies of different parts of the skeleton — some small ones like isolated teeth and third phalanges, and some large ones like the main limb bones, and the frequencies of different species — some small species like the rabbit, some large ones like cattle. Hand recovery may result in some biases favouring the larger parts of the skeleton and the larger species of animals. It is therefore important to determine whether the proportions of smaller bones such as isolated teeth were recovered to a similar extent throughout the succession. In order to check for this, the ratio of *isolated incisors* to *first* and *second molar teeth* (both isolated and in mandibles) was determined as well as the proportions of the three phalanges of the artiodactyls – the *second* and *third* being small, and the *first* (or *proximal*) being largest.

## Recording of age-at-death

There are two osteological methods of determining the "age-at-death" of a mammal. One method considers the state of fusion of limb-bone epiphyses. The growing ends or epiphyses of long bones do not fuse to their respective shafts (diaphyses) until the end of their growing period. The state of epiphysial fusion is recorded as follows:

"F"= fused (adult),

"UE" = unfused epiphysis (juvenile), and

"UM" = unfused metaphysis (juvenile).

(The unfused metaphysis is the end of the shaft to which the epiphysis would have been attached in life.) An epiphysis is described as "fused" once spicules of bone have formed across the epiphysial plate joining diaphysis to epiphysis.

The other method considers tooth eruption and wear. Growing mammals replace their milk teeth at well-defined ages. Mandibles may therefore contain deciduous (milk) premolars ($dP_2$, $dP_3$ and $dP_4$) or their replacement teeth ($P_2$, $P_3$ and $P_4$). Like many herbivores, bovids have high crowned teeth to counteract the wear induced by their abrasive diet of grass and the inevitable sand and grit particles. Their crowns gradually wear down. As they do so, the enamel fold pattern on their occlusal (biting) surface changes. These patterns form the basis of a series of age-related "wear stages" which have been described by various investigators. Here, caprine teeth were assigned to the eruption and wear stages of Payne (1973, 1987), *Sus* and *Bos* teeth were assigned to those of Grant (1982).

Epiphysial fusion and "milk *versus* permanent" dental data provide an estimate of the proportion of juveniles. More detailed sub-divisions into smaller age classes are provided by the different wear-stages of individual teeth. Bird bones with 'spongy' (*i.e.* incompletely ossified or growing) ends are recorded as 'juvenile'.

## Measurements

Measurements were taken with vernier callipers to the nearest 0,1 mm in the manner suggested by von den Driesch (1976) and Davis (1996, Fig. 1). Equid mandibular teeth were measured as in Davis (2002, Fig. 2). Measurements of isolated pig $M_{1/2}$s were used to assign them to their position in the jaw (see below).

## Modifications

Cut and gnaw marks as well as burns were recorded. Other post-mortem changes to bone were also noted such as acid corrosion (or 'partial digestion'), generally considered to have been caused by stomach juices.

## Treatment of records

Although the total assemblage of faunal remains from Alcáçova de Santarém is large, for many kinds of quantitative analyses subdividing the records into the 18 recognised levels results in too few observations per level. It then becomes difficult to draw conclusions about, for example, body-part representation, bone size, and age-at-death of each taxon. In order to have reasonable samples for many of the analyses, I pooled data into four "main periods" — Iron Age (coded "5"), Roman (coded "4"), Moslem (coded "3") and post Moslem (coded "2").

# Results and discussion

## Condition and recovery

**TABLE 2**
Recovery at Alcáçova de Santarém.

a)

| *"MP"* | *Cattle* P1 % | P2 % | P3 % | (n) | *Red deer* P1 % | P2 % | P3 % | (n) | *Caprine* P1 % | P2 % | P3 % | (n) | *Pig* P1 % | P2 % | P3 % | (n) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 50% | 28% | 22% | (269) | — | — | — | (22) | 73% | 17% | 9% | (115) | — | — | — | (26) |
| 4 | 42% | 36% | 21% | (245) | 57% | 31% | 12% | (51) | 81% | 15% | 4% | (123) | 56% | 26% | 18% | (96) |
| 5 | 53% | 25% | 22% | (167) | 46% | 41% | 13% | (68) | — | — | — | (31) | 60% | 16% | 24% | (45) |

b)

| *"MP"* | *Cattle* i+I | $M_1+M_2+M_{1/2}$ | % | *Caprine* i+I | $M_1+M_2+M_{1/2}$ | % | *Pig* i+I | $M_1+M_2+M_{1/2}$ | % |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 7 | 3 | | 5 | 37 | (12%) | 22 | 18 | 55%) |
| 3 | 14 | 42 | (25%) | 8 | 376 | (2%) | 21 | 35 | (38%) |
| 4 | 41 | 55 | (43%) | 32 | 183 | (15%) | 53 | 49 | (52%) |
| 5 | 28 | 62 | (31%) | 6 | 130 | (4%) | 54 | 51 | (51%) |

**a)** The relative abundances, expressed as percentages of the total count of phalanges, of first (proximal), second and third (terminal or hoof) phalanges of cattle, red deer, caprines and pigs in the different "main periods" (coded MP). Note that in general there are fewer second and third compared to first phalanges. In other words a possible recovery bias has favoured the larger phalanges. The degree of this bias appears to be similar in all four main periods. "Main periods" are as follows: 2 = Modern, 3 = Islamic, 4 = Roman and 5 = Iron Age. n = (P1 + P2 + P3) for each species in a particular "main period". Percentages are not calculated for small samples.
**b)** The numbers of milk and permanent incisor teeth (these are relatively small) compared to numbers of first and second molar teeth (larger and therefore more likely to be recovered during excavation). These are given as the numbers of incisors followed by the numbers of first and second molars (or $M_{1/2}$) followed by the proportion of incisors expressed in the "%" column as a percentage of the 'total' (where total = the number of incisors + first + second molars). Main periods are as above. Again percentages are not calculated for one sample that is small.

The Santarém bones are generally well preserved. For example numerous delicate mullet (*Liza*) opercula (the thin plate-like bone that protects the gills) were easily identifiable in the collection. Some inevitable loss during excavation has occurred. Thus note (Table 2) the very small numbers of caprine incisor teeth and caprine third phalanges compared to the numbers of molar teeth and first phalanges. Caprine incisors and third phalanges are very small and therefore easily missed during excavation. The bias is less severe for the larger cattle phalanges and pig incisors which are considerably larger than caprine incisors. While there was clearly an overall recovery bias, it is important to determine whether the degree of loss varied in different levels in order to facilitate inter-period quantitative comparisons. Was recovery better or worse in any period? For the ungulate phalanges, the ratio of the largest (the first or proximal phalanx) to the smaller (second and third) appears to have remained very approximately similar in the course of the Santarém succession. The counts of the small incisor teeth compared to the larger first and second molar teeth also appears to have remained very approximately similar in the course of the Santarém succession. There certainly does not appear to be any trend in the course of time, and it can therefore be assumed that the standard of recovery was roughly similar throughout. Given the constant recovery bias we can proceed to compare frequencies of different species or different parts of their skeletons in the different levels and assume that any differences or similarities will reflect factors other than recovery.

## TABLE 3A

Numbers and percentages of recorded bones and teeth of mammals from Alcáçova de Santarém in the 12 main levels.

| | *B* | *O* | *S* | *CEE* | *EQ* | *CAF* | *ORC* | *LE* | *FEC* | *CAC* | *VUV* | *URA* | *Others* | *Fish* | *Ostr* | *N* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MOD2** | | | | | | | | | | | | | | | | |
| Total bone | 15 | 32 | 2 | 2 | 1 | — | — | — | — | — | — | — | — | — | 7 | |
| Total teeth | 1 | 20 | 1 | — | — | — | — | — | — | — | — | — | — | | | |
| % | 22 | 70 | 4 | 3 | 1 | — | — | — | — | — | — | — | — | | | 74 |
| **MOD1** | | | | | | | | | | | | | | | | |
| Total bone | 24 | 52 | 35 | 8 | 7 | — | 19 | — | — | — | — | — | — | 1 | 71 | |
| Total teeth | 4 | 13 | 14 | — | — | — | 2 | — | — | — | — | — | — | | | |
| % | 16 | 37 | 28 | 4 | 4 | — | 12 | — | — | — | — | — | — | | | 178 |
| **MED3** | | | | | | | | | | | | | | | | |
| Total bone | 18 | 57 | 60 | 3 | 2 | 1 | 26 | — | 1 | — | — | — | — | — | 24 | |
| Total teeth | 4 | 44 | 21 | — | — | 1 | 9 | — | — | — | — | — | — | | | |
| % | 9 | 41 | 33 | 1 | 1 | 1 | 14 | — | + | — | — | — | — | | | 247 |
| **MED2** | | | | | | | | | | | | | | | | |
| Total bone | 17 | 30 | 16 | 3 | 3 | 3 | 16 | — | — | — | — | 1 | — | — | 59 | |
| Total teeth | — | 2 | 5 | — | — | — | 4 | — | — | — | 1 | — | — | | | |
| % | 17 | 32 | 21 | 3 | 3 | 3 | 20 | — | — | — | 1 | 1 | — | | | 101 |
| **MED1** | | | | | | | | | | | | | | | | |
| Total bone | 726 | 860 | 184 | 111 | 66 | 22 | 403 | 4 | 10 | 2 | — | — | (cetac) | 23 | 311 | |
| Total teeth | 82 | 686 | 71 | 8 | 12 | 3 | 88 | — | 1 | 1 | — | — | — | | | |
| % | 24 | 46 | 8 | 4 | 2 | 1 | 15 | + | + | + | — | — | — | | | 3330 |
| **ROM5** | | | | | | | | | | | | | | | | |
| Total bone | 41 | 87 | 14 | 16 | 3 | — | 20 | — | 1 | + | — | — | — | 1 | 28 | |
| Total teeth | 1 | 17 | — | — | — | — | 1 | — | — | — | — | — | — | | | |
| % | 21 | 52 | 7 | 8 | 1 | — | 10 | — | + | + | — | — | — | | | 201 |
| **ROM4** | | | | | | | | | | | | | | | | |
| Total bone | 35 | 69 | 19 | 21 | — | 3 | 33 | 2 | — | 1 | — | — | rat=1 | 3 | 77 | |
| Total teeth | 4 | 46 | 15 | 2 | 1 | — | 5 | — | — | — | — | — | — | | | |
| % | 15 | 45 | 13 | 9 | + | 1 | 15 | 1 | — | + | — | — | — | | | 256 |
| **ROM3** | | | | | | | | | | | | | | | | |
| Total bone | 42 | 61 | 50 | 33 | 3 | — | 45 | 4 | — | — | — | — | — | — | 103 | |
| Total teeth | 8 | 28 | 15 | 1 | — | — | 10 | — | — | — | — | — | — | | | |
| % | 17 | 30 | 22 | 11 | 1 | — | 18 | 2 | — | — | — | — | — | | | 301 |
| **ROM2** | | | | | | | | | | | | | | | | |
| Total bone | 171 | 212 | 95 | 71 | 3 | 1 | 80 | 3 | 2 | — | — | — | — | 15 | 113 | |
| Total teeth | 39 | 96 | 37 | 1 | 2 | — | 14 | — | 2 | — | — | — | — | | | |
| % | 25 | 37 | 16 | 9 | 1 | + | 11 | + | + | — | — | — | — | | | 829 |
| **ROM1** | | | | | | | | | | | | | | | | |
| Total bone | 279 | 303 | 158 | 64 | 13 | 2 | 60 | 3 | — | — | — | — | LYP=1 | 6 | 56 | |
| Total teeth | 50 | 186 | 47 | 12 | 4 | 1 | 13 | — | — | — | — | — | — | | | |
| % | 28 | 41 | 17 | 6 | 1 | + | 6 | + | — | — | — | — | — | | | 1197 |
| **Fe8** | | | | | | | | | | | | | | | | |
| Total bone | 262 | 186 | 115 | 73 | 4 | 2 | 24 | 1 | — | — | — | — | — | 1 | 12 | |
| Total teeth | 74 | 162 | 50 | 11 | 6 | — | 3 | — | — | — | — | — | — | | | |
| % | 35 | 36 | 17 | 9 | 1 | + | 3 | + | — | — | — | — | — | | | 973 |
| **Fe1 - 7** | | | | | | | | | | | | | | | | |
| Total bone | 101 | 156 | 82 | 105 | 7 | 3 | 38 | — | — | — | 1 | — | — | 6 | 13 | |
| Total teeth | 38 | 91 | 47 | 14 | 2 | 1 | 7 | — | — | — | — | — | MEM=1 | | | |
| % | 20 | 36 | 18 | 17 | 1 | 1 | 6 | — | — | — | + | — | — | | | 694 |

Note also that due to small sample sizes, counts for the earlier Iron Age layers (Fe1—7) are pooled. In order to compare land resource use with aquatic resources, the numbers of fish vertebrae and oyster shells are also shown. These last two items are not included in the total counts or percentages. Key: 'B' cattle, 'O' sheep and goat, 'S' pig/wild boar, 'CEE' red deer, 'EQ' equids (donkey and horse), 'CAF' dog, 'ORC' rabbit, 'LE' hare, 'FEC' cat, 'CAC' roe deer, 'VUV' fox, 'URA' bear, 'cetac' marine mammal (a single vertebra only), 'LYP' lynx, 'MEM' badger, 'Ostr' oysters (each valve was counted separately). 'Fish' gives the number of fish vertebrae. N is the total number of recorded mammal bones and teeth.

## TABLE 3B

Percentages of recorded bones and teeth of animals from Alcáçova de Santarém in the five principal periods only.

| | B | O | S | CEE | EQ | CAF | ORC | LE | FEC | CAC | VUV | ALR | GNP | Fish | Ostr | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MED1 | 24 | 46 | 8 | 4 | 2 | 1 | 15 | + | + | + | — | (0.3) | (5.0) | (0.7) | (9.3) | 3330 |
| ROM2 | 25 | 37 | 16 | 9 | 1 | + | 11 | + | + | — | — | (0.8) | (3.9) | (1.9) | (14.1) | 829 |
| ROM1 | 28 | 41 | 17 | 6 | 1 | + | 6 | + | — | — | — | (0.2) | (2.2) | (0.5) | (4.7) | 1197 |
| Fe8 | 35 | 36 | 17 | 9 | 1 | + | 3 | + | — | — | — | (0) | (0.2) | (0.1) | (1.2) | 973 |
| Fe1-7 | 20 | 36 | 18 | 17 | 1 | 1 | 6 | — | — | — | + | (0.1) | (0.3) | (0.9) | (1.9) | 694 |

These are the periods in which more than 500 mammal bones and teeth were recorded. See also table 3a and that table for an explanation of the abbreviations. ALR = partridge, GNP = probable chicken. N is the total number of recorded mammal bones and teeth. The fish, oyster, partridge and chicken columns give the relative quantities of these animals compared to the mammals and are expressed as (x/total) x 100, where 'x' is the count of fish vertebrae, or oyster shells, or partridge bones, or chicken bones and 'total' is the total number of mammal bones and teeth. For counts of these bird bones see table 4. By eliminating the smaller collections, certain faunal changes become clearer. For example note the high percentage of cattle in Iron Age 8, the reduced amount of pig in the Moslem period, reduction of red deer in the course of the succession, the great abundance of rabbit in Roman 2 and especially Moslem periods, the importance of oysters in both Roman and Moslem periods and the increased importance of the chicken especially in the Moslem period.

## TABLE 4

Numbers of bird bones recorded at Alcáçova de Santarém.

| Taxon | Fe1-7 | Fe8 | ROM1 | ROM2 | ROM3 | ROM4 | ROM5 | MED1 | MED2 | MED3 | MOD1 | MOD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pelecanus crispus* | | | | | | | | 1 | | | | |
| *Cygnus sp* | | | | 1 | | | | | | | | |
| *Anser* cf *anser* | | 1 | 1 | | | | | | | 1 | 1 | |
| *Anas* cf *platyrrhynchos* | | | | | | | | 1 | | 1 | 1 | |
| *Milvus* cf *milvus* | | | | | | | | 2 | | | | |
| *Accipiter gentilis* | | | | | | | | | | | 1 | |
| *Alectoris* cf *rufa* | 1 | | 2 | 6 | 7 | 3 | | 9 | | 1 | 1 | 1 |
| cf *Gallus* | 2 | 2 | 26 | 31 | 16 | 7 | 11 | 168 | 5 | 14 | 11 | 3 |
| *Rallidae* | | | | | | | | 2 | | | | |
| *Grus grus* | | | | | | | | 1 | | | 1 | |
| *Otis tarda* | | | | | | | | 3 | | | | |
| *Tetrax tetrax* | | | 1 | 2 | 1 | | | 3 | | | | |
| *Columba* cf *palumbus* | | | 1 | 2 | 1 | 1 | | 2 | | 1 | | |
| cf *Streptopelia turtur* | | | 1 | | | | | | | | | |
| *Turdus merula* | | | | | | | | 1 | | | | |
| **Total** | 3 | 3 | 32 | 42 | 25 | 11 | 11 | 193 | 5 | 18 | 16 | 4 |

## TABLE 5

A preliminary study of the fish remains from Alcáçova de Santarém. Counts of the fish jaw bones, osteoderms, opercula and vertebrae.

| | Iron Age | Roman | Moslem | Modern |
|---|---|---|---|---|
| Barbel (*Barbus*) jaw bones | 1 | 4 | 1 | — |
| Sea bream (*Sparus*) jaw bones | 1 | 6 | 3 | 1 |
| Sea bream (*Pagrus*) jaw bones | 1 | 1 | — | 2 |
| Sturgeon (*Acipenser*) osteoderms | 4 | 9 | 11 | 5 |
| Mullet (*Liza*) opercula | 1 | 10 | 65 | — |
| Fish vertebrae | 7 | 25 | 23 | 2 |

**TABLE 6**

Caprine (sheep and goat) bones and teeth from Alcáçova de Santarém.

| Period | $dP_4$ G:Sh | MC G:Sh | MT G:Sh | AS G:Sh | HU G:Sh | CA G:Sh | average % Goat ($^{Goat}/_{Sheep + Goat}$) x 100 |
|---|---|---|---|---|---|---|---|
| MED3-MOD1 | 4:4 | 0:5,5 | 0:4 | 2:2 | 1:5 | 0:4 | 22% |
| MED1 | 12:56 | 12:18,5 | 4:35 | 3:29 | 18:45 | 12:36 | 22% |
| ROM3-5 | 4:15 | 2,5:4,5 | 1:3 | 1:6 | 2:11 | 0:7 | 18% |
| ROM2 | 4:5 | 2,5:3 | 1:6,5 | 1:9 | 1:3 | 2:16 | 21% |
| ROM1 | 2:10 | 1:3,5 | 1,5:10 | 3:13 | 0:12 | 2:8 | 14% |
| Fe8 | 0:5 | 3,5:0,5 | 0:3 | 0:3 | 4:16 | 1:9 | 19% |
| Fe1-7 | 2:15 | 7,5:3,5 | 0:4,5 | 2:9 | 1:11 | 2:4 | 24% |

The numbers and percentages of goats (G) and sheep (Sh). The numbers of deciduous fourth premolars ($dP_4$), metacarpals (MC), metatarsals (MT), astragali (AS), humeri (HU) and calcanea (CA) are given as x : y, where x = number of goat teeth or bones and y = number of sheep teeth or bones.

## Identification and species found (Appendix 1 and Tables 3-6)

Like many if not most archaeological assemblages of animal bones from post-Neolithic sites in the Iberian peninsula, the dominant species represented are cattle, sheep, goat, pig, red deer, equids and rabbit. Remains of other species were found in smaller numbers. Some belong to groups of closely related and morphologically similar species and therefore presented a problem of identification to species level. In some cases identification is limited to (for example) sheep/goat, galliform or horse/donkey. At least 15 bird taxa could be identified. The presence of waterfowl like ducks and geese is hardly surprising given the site's closeness to the Tagus River. The apparent wider spectrum of species in the Moslem period may be in part due to the larger size of the sample of animal remains recovered from this period as well as the possible presence at that time of people of high status – perhaps the Moslem military commanders of the region. This could explain the presence of birds like the bustard and the crane.

### *Caprines*

Most caprine (sheep and goat) bones are difficult to identify to species and are referred to as 'caprines'. Deciduous cheek teeth ($dP_3$ and $dP_4$), metacarpals, calcanea, astragali and metatarsals, however, are relatively easy to identify (see for example the criteria described by Boessneck, 1969; Payne, 1969, 1985). These are the bones and teeth that were regularly recorded as sheep or goat. Of the caprine bones that could be identified to species, a majority belonged to sheep. For example in figure 2 note that of the 49 plots of caprine metacarpal DEM (similar to 'W.Troch' of Payne) versus WCM (= 'W.Cond' of Payne) only 12, *i.e.* approximately 25%, were goat. These proportions of goat (20 – 25%) and sheep (75 – 80%) do not appear to have changed much in the course of the succession at Santarém (Table 6). The predominance of sheep over goats after the Neolithic appears to vary from site to site in Iberia, although in most cases sheep outnumber goats (Table 7). A consideration of some of the more easily identified bones at Santarém like the metapodials and astragali indicates that this ratio may be as high as 5 or 6 to 1. Clearly it is difficult to obtain an accurate estimate of the ratio of sheep to goats. It is worth wondering why sheep are generally more common than goats. Perhaps sheep wool (few breeds of goats possess wool) was important, perhaps too the richer milk of sheep was appreciated. Goats "are wanton and scatter widely, while sheep, on the contrary, huddle together and crowd into the same space" thus making them easier to control as Marcus Terentius Varro, the Roman writer on agriculture noted (book II, chapter III, 9 see Hooper, 1935, p. 348).

The presence of ibex (a kind of wild goat) could not be determined as the differences between wild and domestic goat remains are very slight.

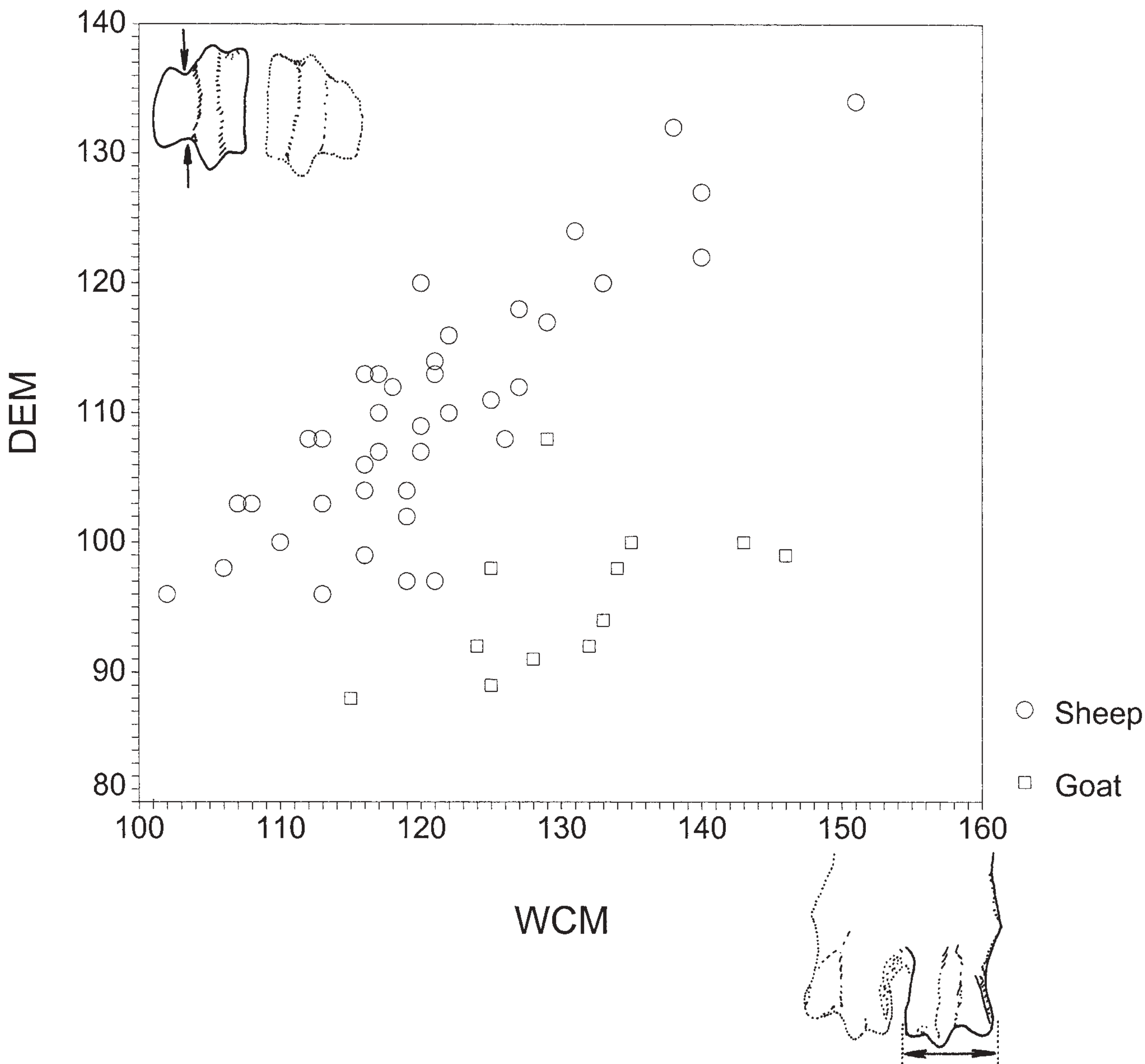


FIG. 2 – Identification of the sheep and goats. Scatter plot of medial condyle width (WCM) against trochlea depth (DEM) measurements in tenths of a millimetre for the caprine metacarpals (after Payne, 1969) from all periods at Alcáçova de Santarém. Most of the metacarpals are identified as sheep.

**TABLE 7**
Approximate ratios of sheep to goats from some larger archaeological assemblages in Iberia.

| *Site* | *Region* | *Period* | *Sheep : Goat* | *Author* |
|---|---|---|---|---|
| Cast. de Albarracín 1 | Teruel | Moslem | 9,7 : 1 | Moreno García, 2001 |
| Cast. de Albarracín 2 | Teruel | Moslem | 5,2 : 1 | Moreno García, 2001 |
| Alcáçova de Mértola | Alentejo | Moslem | 1,75 : 1 | Telles Antunes, 1996 |
| Silves-biblioteca | Algarve | Moslem | 1,3 : 1 | Davis unpublished |
| Sto. Domingo | Galicia | Roman (Imp.) | 13 : 1 | Altuna and Mariezkurrena, 1996 |
| Tomar | Extremadura | Roman | 0,6 : 1 | Davis, 2004 |
| Cerro Macareno | Seville | Ibero-Roman | 1,3 : 1 | Amberger, 1985 |
| Toscanos | Málaga | Phoenician | 0,6 : 1 | Uerpmann and Uerpmann, 1973 |
| Cerro Macareno | Seville | Phoenician | 3,3 : 1 | Amberger, 1985 |
| Castro Marim | Algarve | Iron Age | 0,7 : 1 | Davis et al. (in prep.) |
| Cerro de la Virgen | Granada | Bronze | 2,5 : 1 | Driesch, 1972 |
| Cerro del Real | Granada | Bronze | 2,9 : 1 | Driesch, 1972 |
| Castellón Alto | Granada | Bronze | 2,2 : 1 | Milz, 1986 |
| Terrera del Reloj | Granada | Bronze | 1,5 : 1 | Milz, 1986 |
| Valencina de la Concepción | Seville | Chalcolithic | 4,7 : 1 | Hain, 1982 |
| Zambujal 1+2 | Estremadura | Chalcolithic | 2,6 : 1 | Driesch and Boessneck, 1976 |

## Bos – *cattle/aurochs*

The dominant animal in terms of absolute size is undoubtedly *Bos*. Iberia was once inhabited by the Aurochs, the wild ancestor of cattle. This animal was still present in the Chalcolithic at Zambujal (Driesch and Boessneck, 1976) and Monte da Tumba (Antunes, 1987). In Extremadura (Spain) Castaños found it in the Bronze Age of Cueva del Conejar (Castaños, 1991), but found no evidence for aurochs in the Iron Age or Roman period in that region. Driesch and Boessneck (1976) also noted the continuing presence of aurochs at Zambujal in the Bronze Age. However, contrary to what Castaños suggests, Estévez and Saña (1999) mention some sparse evidence for aurochs in the Iron Age in the Salamanca area, Spanish Extremadura and the valley of the Guadalquivir. They even suggest that this animal may have lingered on in Spain in Roman times. Cardoso (2002) too notes a "presença vestigial" of aurochs in the Iron Age deposits of the Sé (Cathedral) of Lisbon. Hence we have to consider the possible presence of both wild and domestic forms of *Bos* at Santarém.

How can we identify the presence of aurochs in an archaeological assemblage? This animal was considerably larger than its domestic relative. For samples containing bones of both, their measurements may plot out to form two separate peaks — the small being the domestic and the large the wild. None of the plots for Santarém *Bos* show this kind of bimodality (see Fig. 3).

Driesch and Boessneck (1976) have produced a useful synthesis of measurements of aurochs and cattle bones from Holocene sites in Portugal. It includes a scatter diagram of astragalus 'greatest lateral length' versus 'distal width', which shows two clearly distinct clusters. Specimens with widths less than 48 mm are, they suggest, domestic cattle, and specimens larger than this are aurochs. The *Bos* astragali widths from Santarém are all below this threshold measurement. Fig. 3 shows plots of astragalus length. Note the separate peak of

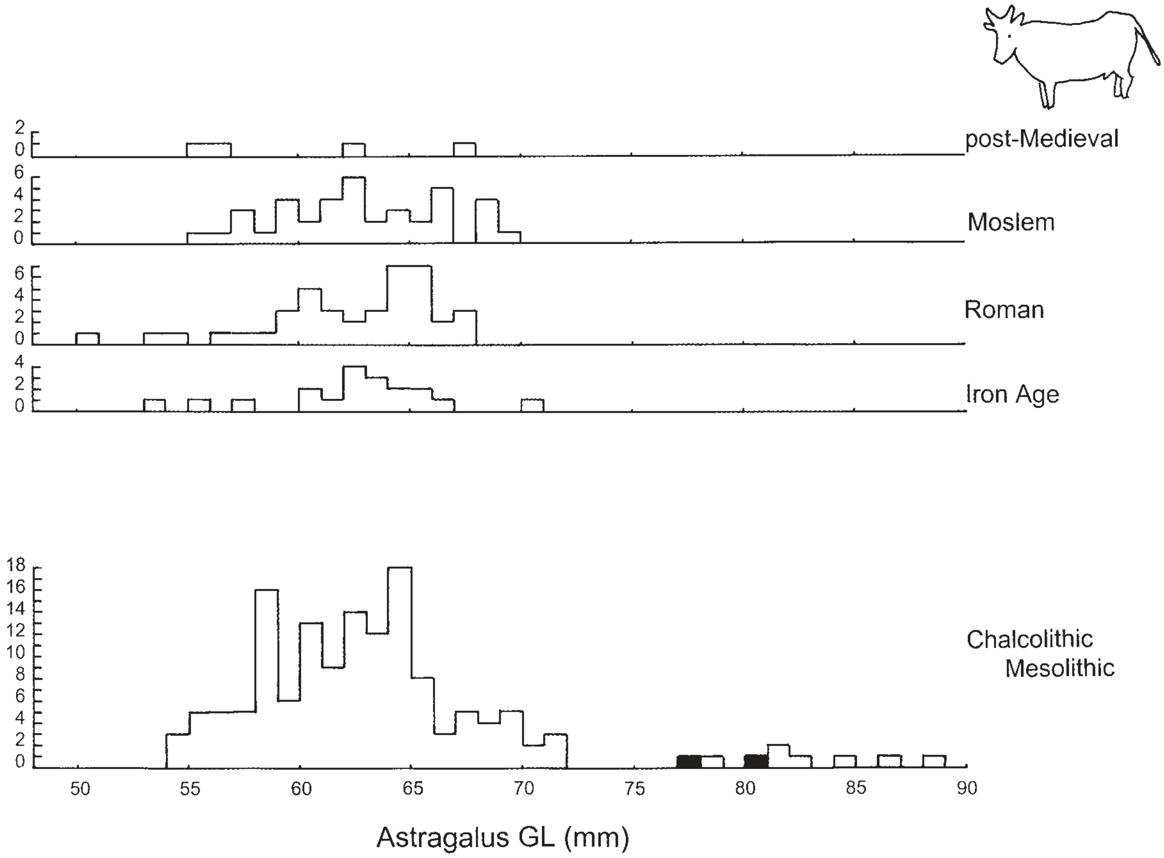


FIG. 3 – Cattle size. Astragalus greatest lateral length in millimetres from the four main periods at Alcáçova de Santarém. The vertical axis shows numbers of specimens. Each box represents an individual specimen. Below are cattle and aurochs from the Chalcolithic (Zambujal; from Driesch and Boessneck, 1976). Two astragali from the Mesolithic (Cabeço do Pez) are shown in black. Driesch and Boessneck identify the astragali of length greater than 75 mm as aurochsen. The aurochs was absent from the Santarém succession and there does not appear to have been any change in the size of cattle between Chalcolithic and Medieval times.

very large *Bos* astragali from Zambujal on the right hand side of the graph, which Driesch and Boessneck (1976) interpret as having belonged to aurochs. (Note also the two large specimens from Mesolithic Cabeço do Pez.) No *Bos* astragali at Santarém attain this size. Measurements of other bones and teeth also failed to reveal the possible presence of any large outliers, and it is here assumed that the aurochs was absent from the Santarém region even as early as the Iron Age. Just when aurochs disappeared from Portugal is unclear. With firm evidence for aurochs in the Chalcolithic of Portugal, and only weak evidence from subsequent periods, it seems quite likely that this animal became extinct at the end of the Chalcolithic or during the Bronze Age.

## *Cervids*

Numerous large cervid bones and teeth are identified as *Cervus elaphus*, the red deer, once an important component of the Iberian large mammal fauna. This animal was the principal prey of the nobility in medieval Portugal and Europe (Costa, 1963, II, p. 69). The abundance of this woodland animal may reflect the local vegetation. A few bones of a small cervid are identified as *Capreolus capreolus*, the roe deer, which is still quite common in northern

Portugal, and was common in both the north and centre of the country (Costa, 1963, II, p. 99). Roe deer too is a woodland animal and its presence must also reflect the wooded environment. Cardoso (2002) has even recorded remains of this animal in a 15th/16th century well deposit at Silves in the south, and suggested that it still inhabited the Monchique region of Algarve in medieval times. Since neither red nor roe deer can be domesticated they are evidence for hunting by the earlier inhabitants of Santarém. Fragments of red deer antlers as well as bones (see below) were also found that were sawn or cut — perhaps waste from an antler and bone industry for making utensils.

## *Equids*

Equid bones and teeth are generally difficult to identify to species level — ass/donkey and horse being rather similar. However, mandibular molar teeth are relatively easy to separate by the shape of the enamel folds when viewed on the tooth occlusal surface. The lingual (internal) fold tends to be 'V' shaped in donkey and 'U' shaped in horse and in the small extinct equid, *Equus hydruntinus*, the buccal (external) fold penetrates between the flexids often touching the lingual fold as in present day zebras (see for example Davis, 1980). Both horse and donkey teeth could be identified at Santarém with certainty (Fig. 4), and both species were present throughout the succession although looking at the teeth alone (where identity is more certain) it is likely that there were more horses than donkeys. However, since the majority of equid remains could not be identified to species, the conclusion that horses were preferred must be treated with caution. Given the scarcity of securely identified equid bones and teeth it is not possible to discern any biometric variation in the course of time. The possible presence of the mule, whose bones and teeth may have both donkey and horse characters, could not be determined (both Columella


FIG. 4 – Distinction between ass and horse. Mandibular teeth in occlusal view to show the pattern of enamel folds. Above: Four equid teeth (UE 335 1999; Iron Age 8) identified as *Equus asinus,* the ass or donkey. The fourth premolar $P_4$ and first and second molars ($M_1$ and $M_2$) join and are clearly from the same mandible. The $P_2$ was found in the same locality, but in the absence of $P_3$ cannot be assigned with certainty to the same mandible. Note the 'V' shaped lingual (internal) folds and the absence of any penetration between the flexids by the buccal (external) fold. Below: The posterior part of an equid mandible with first, second and third molar teeth (UE 247 1999; Moslem layer) identified as *Equus caballus*, the horse. Note the 'U' shaped lingual (internal) folds and the partial penetration of the flexids by the buccal (external) fold in both $M_2$ and $M_3$.

and Varro, for example, discuss the breeding of mules; see Forster and Heffner, 1997; Hooper, 1935). Some equid bones had cut and chop marks (see below) and it is interesting that all such marks appear on bones from Moslem (n = 11) and Modern 1 (n = 5) periods.

The earliest known remains of donkey in Iberia are dated to the Iron Age. Some examples include the Phoenician sites of Rocha Branca (Silves, Algarve; Cardoso, 2000), Toscanos and Cerro de la Tortuga (Málaga, Andalusia; Uerpmann and Uerpmann, 1973). Altuna and Mariezkurrena (1986) identify donkey from the Celtiberian level at La Hoya, (Laguardia, Álava), in the Basque region of Spain and suggest that the donkey was spread rapidly across the Iberian peninsula at this time. Hence the donkey remains identified here at Santarém may well be, like those from Rocha Branca, amongst the earliest in Portugal. As for horse, remains of horses are well known in the Upper Pleistocene (Cardoso, 1993a). We do not yet know if the horse became extinct in Portugal to be subsequently re-introduced as a domesticated animal, as probably occurred in other parts of Europe. According to Driesch (1972) horse bones became abundant during the Campaniform (also known as Bell beaker or Late Chalcolithic times) in Iberia. It is assumed that the Santarém horses belonged to domesticated animals.

## Sus – *pig/wild boar*

*Sus* remains are quite frequent throughout the Santarém succession but, as Cardoso (2000) points out, it is difficult to distinguish between bones of the pig from its wild relative the wild boar as many of their measurements overlap. At Santarém also it has proven difficult to determine whether both pig and wild boar are present or whether pig alone is present. Wild boars are still common throughout Portugal. In general wild boar bones and teeth are considerably larger than those of pig. And it is this size difference which most zoo-archaeologists use to discriminate between wild and domestic *Sus* (see for example Bull and Payne, 1982). Fig. 5, however, indicates, as Rowley-Conwy (1995) also observes, that in Portugal the difference is only very slight — the Iberian wild boar is rather small. Note that the Mesolithic presumed wild *Sus* bones are only slightly larger than those of domestic pigs. One bone that may provide some discrimination between wild and domestic *Sus* is the astragalus. The Mesolithic astragali are significantly longer than astragali from the Chalcolithic site of Penedo do Lexim ($t = 6{,}5$, $p < 0.005$) as well as the medieval pigs from England. Closer inspection of the *Sus* bone measurements from the four main periods at Santarém shows that the majority are similar in size to domestic pig. However, some, especially in the Moslem period, fall within the range of the Mesolithic specimens and are therefore likely to have belonged to wild boar. A somewhat speculative clue as to the identity of certain *Sus* lower third molars — especially in the Moslem level — is provided by considering the shape of this tooth. Fig. 6 combines both size (length of $M_3$) and a shape index ($M_3$ - width of anterior pillar divided by the width of the central pillar). This index is actually measuring how "parallel" the lingual and buccal sides of the crown of this tooth are when viewed from above. Figure 6a shows two quite different populations of *Sus*, one is a large collection of pigs from the medieval and post-medieval layers at Launceston Castle in England (Albarella and Davis, 1996) and the other is a large collection of modern wild boars from Israel and Syria (housed in the Universities of Tel Aviv and Jerusalem). The distributions of the plots indicate that besides being considerably longer (most > 35 mm) the wild *Sus* $M_3$s tend to have parallel sides. In other words the widths of the two

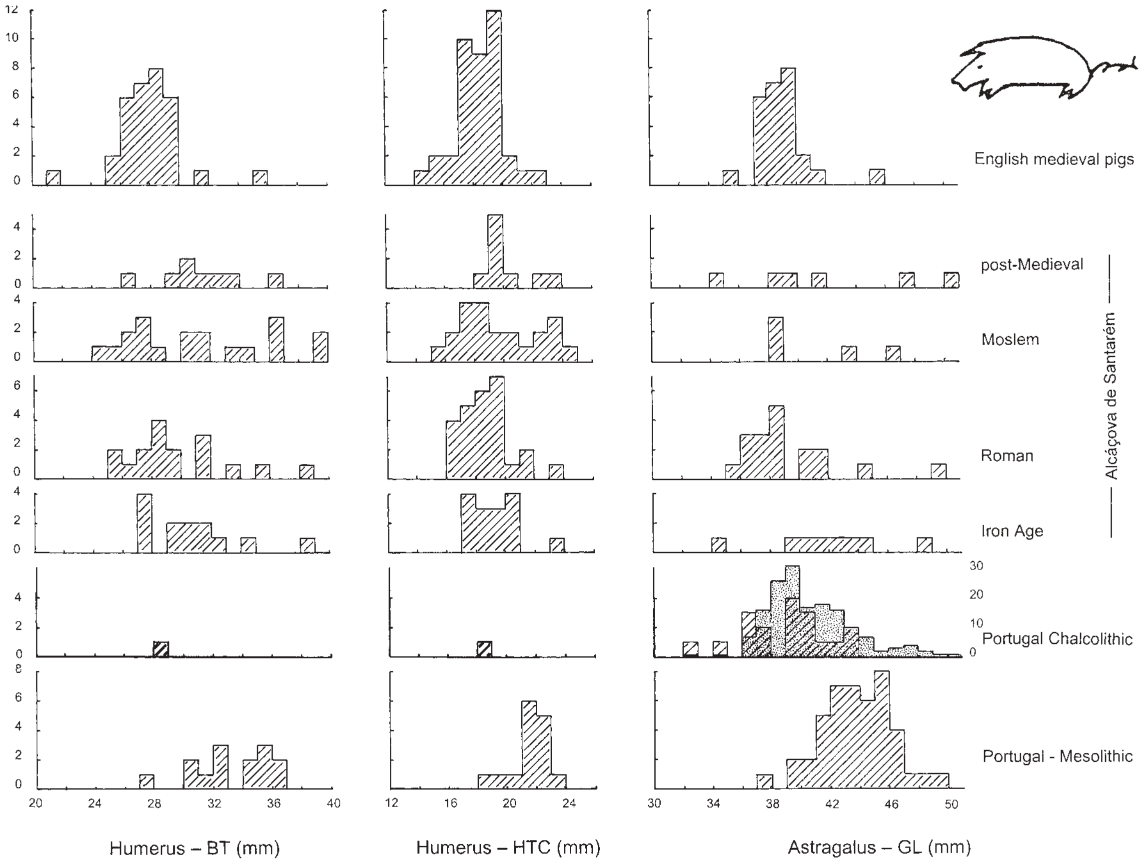


FIG. 5 – Distinction between wild and domestic *Sus* (*i.e.* wild boar and pig) using size. Plots of the humerus 'width of trochlea' (BT), 'minimum trochlea diameter' (HTC) and astragalus 'greatest lateral length' (GL) in the four main periods at Alcáçova de Santarém compared with data from the Mesolithic sites of Cabeço do Pez, Cabeço da Arruda, Moita do Sebastião and Poças de São Bento, and a small sample of Chalcolithic *Sus* from Penedo do Lexim (data from M. Moreno García, in prep.) and a larger sample of astragali from Zambujal (shown stippled with its scale to the right; from Driesch and Boessneck, 1976). Above, for comparison, is a large sample of medieval pigs from Launceston Castle in Cornwall, England (Albarella and Davis, 1996). A box represents each individual specimen. Note the smaller size of these domestic pigs compared to the Mesolithic presumed wild boar. The majority of the Santarém and Chalcolithic specimens appear to have belonged to pigs rather than wild boar. However note the wide spread of measurements in some of the levels at Santarém suggesting the possibility of a mixture of both pigs and wild boar – especially in the Moslem period.

pillars are similar with a 1:1 ratio (Wa/Wb = 1). However the domestic pig $M_3$s generally plot out somewhat to the right *i.e.* their anterior pillar is slightly larger than the central pillar giving them (in occlusal view) a slightly tri-angular appearance. This is probably due to insufficient space in a smaller mandible in the young animal causing antero-posterior compression of the growing crown. Perhaps the different sets of genes controlling bone size and tooth size had been subject to different selective pressures in the course of time. This may in turn have led to an imbalance between tooth and bone (mandibular ramus) size, leaving the dental genes in a more "archaic" state. If we accept this line of reasoning, then we can make the same plot for the Santarém tooth measurements as in Fig. 6a — and note how in figure 6b many of the Moslem period *Sus* $M_3$s resemble those of the wild boar — *i.e.*, both longer and with shape indexes around 1. This corroborates the suggestion made above that many of the Moslem period *Sus* remains derive from wild boars. The general picture however is unclear and we need more biometric data for Portuguese *Sus* teeth and bones. For the time being I suggest that both wild and domestic *Sus* were present at Santarém.

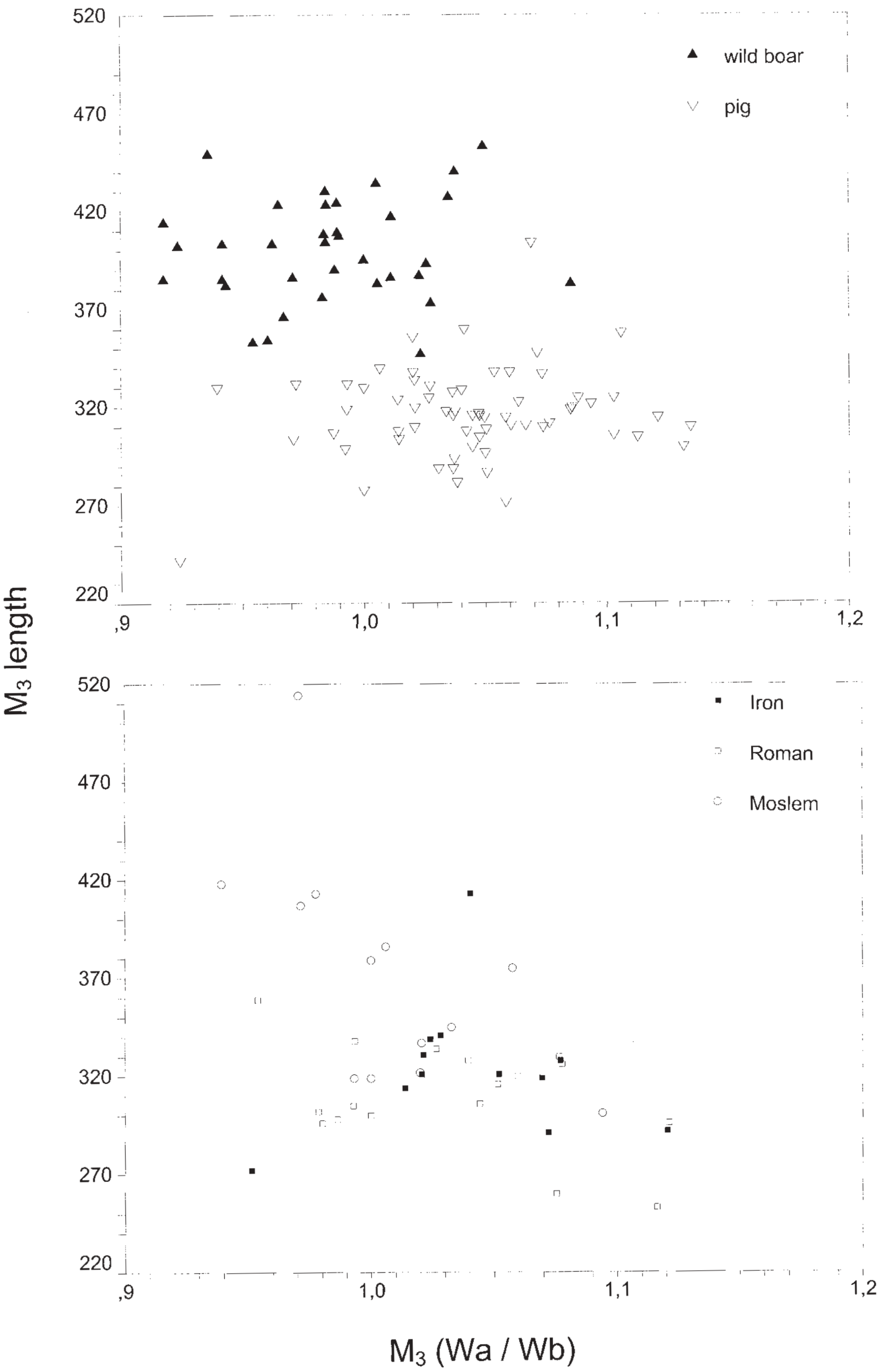


FIG. 6 – Distinction between wild and domestic *Sus* (*i.e.* wild boar and pig) lower third molar teeth considering both size and shape of this tooth. The $M_3$ length in tenths of a millimetre is plotted against an index of $M_3$ width of the anterior pillar (Wa) divided by the width of the central pillar (Wb). The resulting plots are therefore size (length $M_3$) versus shape (Wa/Wb or the degree to which the tooth is parallel sided when viewed occlusally). In other words $M_3$s with more or less parallel sides or where Wa approximately = Wb have a shape index of around 1,0 while "compressed" teeth with triangular outlines have index values slightly > 1,0. The crown widths are measured in the manner described by Payne and Bull (1988). Above:*Sus* English Medieval and post-Medieval pigs (domestic) from Launceston Castle (Albarella and Davis, 1996) and modern wild boars from Syria and Israel (specimens in the Zoology Museum, Tel Aviv University and Zoology department of the Hebrew University, Jerusalem). Note that besides being larger, the wild boar $M_3$s have parallel sides with Wa approximately = Wb. However, the pigs are not only smaller but are tri-angular in shape when viewed occlusally with Wa > Wb. Below: The same plot as above for *Sus* $M_3$s from Alcaçova de Santarém. Note there is a tendency for many of the *Sus* in the Moslem period, unlike most of the Iron Age and Roman ones, to be both large and have values of Wa/Wb around 1,0 – *i.e.* by analogy with the above graph, they are more likely to have belonged to wild boars.

*Canis – dog/wolf*

As with the wild boar/pig, wolf teeth and bones are generally larger than those of its domesticated relative — the dog. Again, size is the usual method used to distinguish between them. Wolves are still present in the north of Portugal and it is probable that their disappearance from the central part of the country occurred only in recent times. The Santarém *Canis* remains fall within the range of variation of modern dogs. Modern wolf carnassial teeth are clearly much larger than the Roman and Moslem period *Canis* carnassials from Alcáçova de Santarém (Fig. 7).

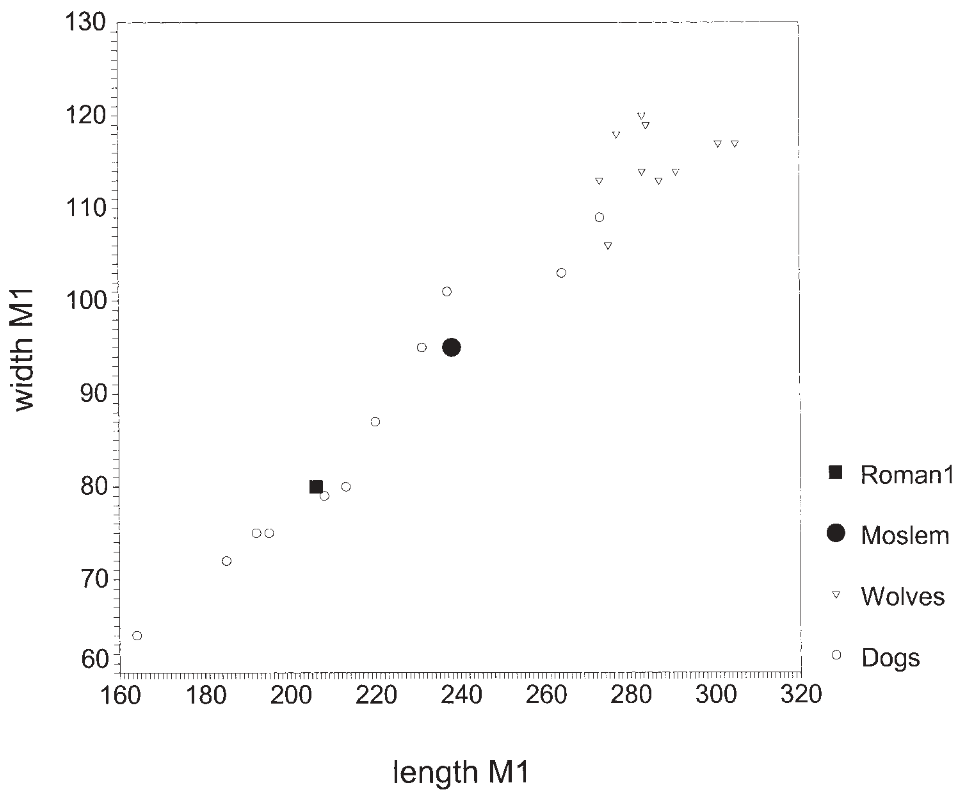


FIG. 7 – Distinction between wolf and dog. Plots of the carnassial ($M_1$) antero-posterior crown length *versus* the crown width in tenths of a millimetre. Note that wolves are generally larger than dogs (modern Portuguese specimens in the CIPA reference collection). The two carnassials from Roman and Moslem Alcáçova de Santarém are identified as dogs.

*Felids*

Cats are osteologically rather similar to one another. Apart from its great size, a lion skeleton is little different from that of a domestic cat. Indeed, most Old World cats have the same number of chromosomes (Kitchener, 1991). Again, as with wolf-dog and boar-pig separation, zoo-archaeologists rely on size differences in order to distinguish between the various felids. The majority of the felid teeth and bones from Alcáçova de Santarém are small and referred to here as cat, probably domestic cat, though the possible presence of wildcat cannot entirely be excluded. A large astragalus bearing cut marks (1999, UE – 375 from Roman 1; Fig. 8) is identified as lynx. Lynx still survives in neighbouring Spain and elsewhere in parts of Europe. The species found in Spain, and until recently in Portugal, is *Lynx pardinus*.


FIG. 8 – Astragalus of a lynx (1999 UE 375, Roman 1). There are two fine cut (?skinning) marks on the dorsal articular surface (the trochlea that articulates with the tibia).

FIG. 9 – Fifth metatarsal of a bear (2001 UE 76, Medieval2 – 13th century). There is a fine cut (?skinning) mark across the distal articular surface.

*Bear*

A fifth metatarsal of a bear comes from a Medieval 2 level (2001, UE – 76, 13th century AD; Fig. 9) and represents the only find of bear at Santarém. The specimen is well ossified and areas of muscle attachment are rather prominent — a feature of the bones of old animals. Moreover there are two very small cut marks across the distal articulation, probably skinning marks. Did this bone belong to an animal hunted in the environs of Santarém and brought back for its skin or was it a tamed individual? The presence of bear is well known in medieval Portugal. For example a document dated 1412 prohibits the hunting of bear in the region between the Tagus, Guadiana and Estremadura (Neves, 1980, p. 201). Although now extinct in Portugal, this animal survives to the north in the Asturias of Spain as well as in the Pyrenees.

### *Cetacea*

A vertebra with unfused centra (therefore juvenile) from the Moslem period (Camada 1 Silo 3) is identified as cetacean — probably a dolphin (Fig. 10). Along with the oysters, other marine molluscs and fish, it indicates that marine animals were exploited. However, since the Tagus estuary is saline and was undoubtedly less polluted in antiquity, some of these marine resources may not have come from quite so far away as the sea.

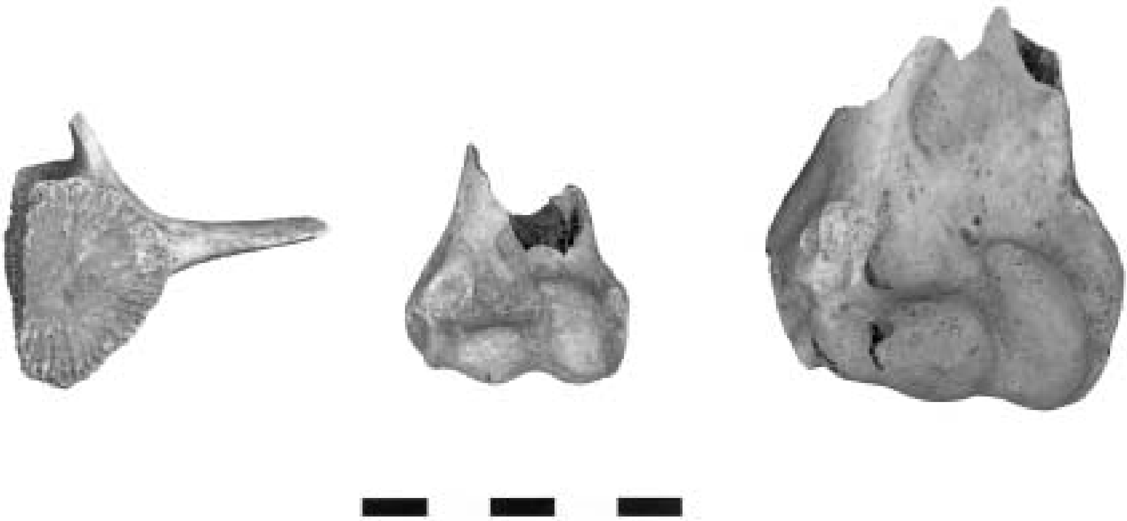

FIG. 10 – Three rare species found at Alcáçova de Santarém, from left to right: a vertebra fragment probably from a dolphin (Silo 3, Camada 1; Moslem); distal humerus of a swan (1999 UE 162, Roman 2) and distal humerus of a pelican (1999 UE 210, Moslem).

### *Rabbit*

As is generally the case in Iberia, rabbit bones were found throughout the Santarém succession. Small and medium size predators that frequent human settlements (*e.g.* cats) often catch rabbits. The question therefore is do the Santarém rabbits derive from this kind of hunting activity or are they human food refuse? The presence of cut marks (generally requiring a microscope to see them) indicates that indeed the ancient inhabitants of Santarém must have hunted these rabbits. Subsequent scavenging — especially by cats — seems very likely given the presence of tooth marks probably inflicted by cats on several rabbit bones.

### *Chicken*

The most common bird at Santarém, ten times more frequent than partridge, belongs to the *Gallus/Numida/Phasianus* (*i.e.* chicken/guinea fowl/pheasant) group of closely related galliformes. Most bones of these three birds are difficult to identify to species (see for example MacDonald, 1992), although a number of tarso-metatarsals lack a posterior continuous keel and have an attached spur — typical of the chicken. No definite guinea fowl, a North African bird, which Varro refers to as '*Gallinae Africanae*' (Hooper, 1935, p. 480) that the Romans brought to Europe (Mongin and Plouzeau, 1984), could be identified (for example the Roman cookery writer, Apicius, mentions *pullum numidicum*). Similarly, no definite pheasant, also introduced into Europe by the Romans (Blank, 1984), could be identified via the criteria described by Cohen and Serjeantson (1986) and MacDonald (1992). It is assumed that all the fowl-like bones belonged to chicken.

### *Pelican*

A very large distal humerus of a bird with a cut mark on it from the Moslem level (1999 UE 210; Fig. 10) is identified as pelican. Two species of pelican inhabit SE Europe and the Near East today — the White pelican, *Pelecanus onocrotalus* and the Dalmatian pelican *Pelecanus crispus*. The former is smaller than the latter. The Santarém specimen, with a distal width (Bd) of 56,8 mm, may be too large to belong to a white pelican (the CIPA reference collection white pelican humerus Bd measures 46,5 mm). The Santarém specimen is therefore identified tentatively as Dalmatian pelican. Pelicans are not commonly found on archaeological sites in NW Europe. Driesch (1982) found two pelican bones (not identified to species) from the Copper Age site of Valencina de la Concepción (Seville). A number of pelican bones are reported from sites in Europe, for example in Roman Netherlands and in Iron Age Britain, and all belong to the Dalmatian species (Serjeantson, pers. comm.). Pliny the Elder (Rackham, 1983, p. 377) described the pelican as an "insatiable creature" and tells us that pelicans "come to us from the extreme north of Gaul". Today the Dalmatian pelican, as its name suggests, is found in the Balkans, Danube delta-Black Sea region, although vagrants have been reported as far west as Spain (Peterson et al., 1965). Clearly its range in earlier times extended to north and Western Europe. Serjeantson also suggests that in Britain, where there are no historic records for breeding pelicans, this bird became extinct in Roman times probably as a consequence of disturbances caused by drainage schemes and increased pressure on the land and waterways (see Clason and Prummel, 1979; Evans and Serjeantson, 1988). The Santarém find therefore probably represents a late (*i.e.* 12th century AD) survival of this bird in the westernmost part of its former distribution (Fig. 11), although the possibility that it came from a mascot should be considered too.

### *Swan*

Another large distal fragment of bird humerus from a Roman high Imperial /Imperial 1 level, *i.e.* last quarter of the 1st century BC to mid 1st century AD (1999 UE-162; Fig. 10) is identified as swan. Today there are three species of swans in Europe, Mute swan, *Cygnus olor*, Whooper swan, *C. cygnus* and Bewick's swan, *C. columbianus*. All three are found in France, and mute swan extends to the Spanish border (Fig. 11; Svensson et al., 1999). Unfortunately the morphology of the distal humerus of all three species is rather similar, though the Santarém specimen matches very closely our reference collection specimen of *C. cygnus*. In terms of size too, the Santarém specimen is nearer to this species (see Table 8). Strabo wrote that some Iberian lakes were notably rich in birds such as swans (Lassere, 1966). Wild swans are no longer found in Portugal. Perhaps we have here another sad testimony to man's persecution of a species of large bird.

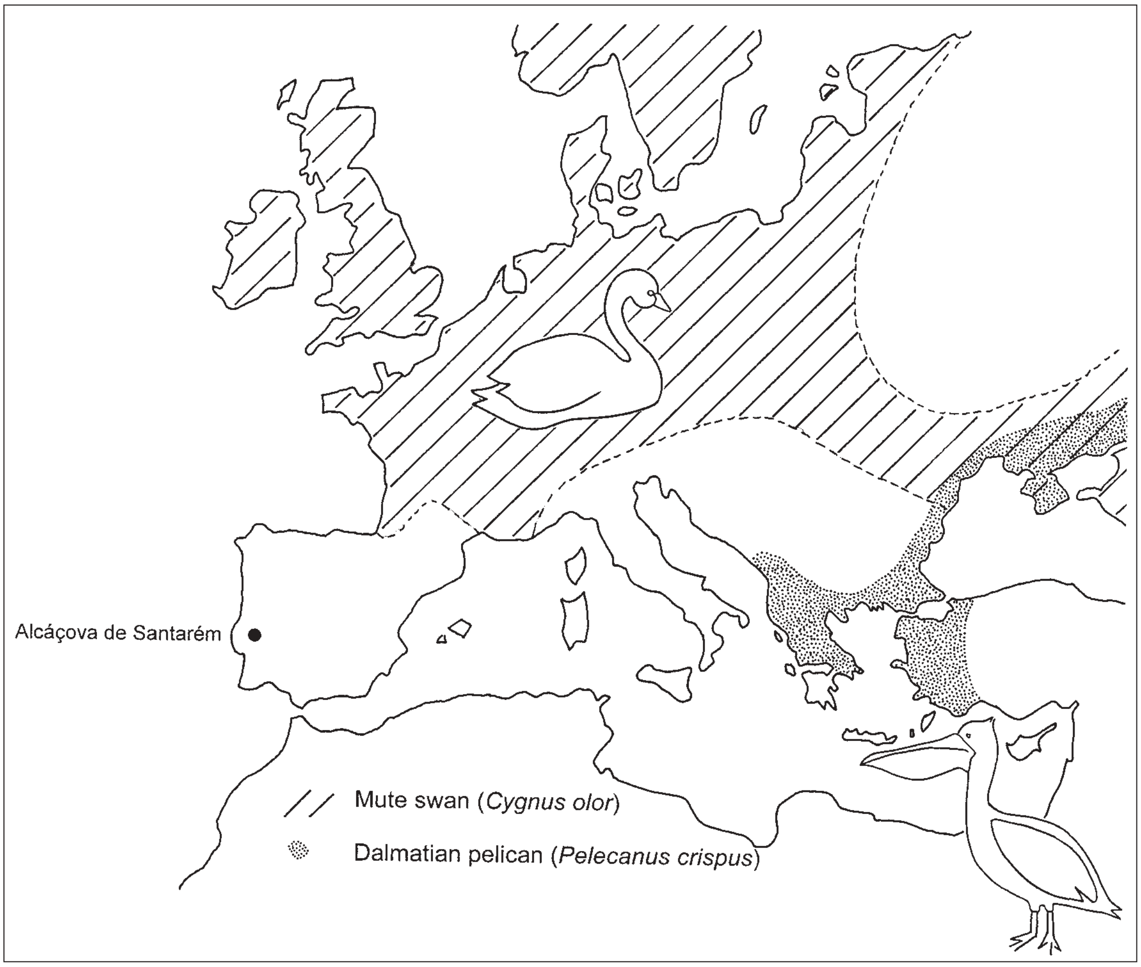


FIG. 11 – Present day distributions of the Mute swan and Dalmatian pelican.

**TABLE 8**

Metric comparison of the Roman swan (*Cygnus*) distal humerus width with three modern specimens in the "CIPA Reference Collection".

| *Identification* | *Bd (mm)* |
|---|---|
| C. *columbianus* male | 32,3 |
| C. *cygnus* male | 37,6 |
| C. *olor* ?male | 39,2 |
| *Cygnus sp* (Alcáçova de Santarém; UE 162) | 36,2 |

The specimen from Alcáçova de Santarém, 1999 UE 162, is from the Roman 2 level (last quarter of the first century BC – mid first century AD).

## *Other birds*

After chicken, the most common bird represented in most periods is partridge (*Alectoris*), probably the red-legged partridge (*A. rufa*). Its abundance appears to correlate with the frequency of chicken. The presence of duck (*Anas*), goose (*Anser*), crane (*Grus*), as well as the swan, all birds associated with fresh water, is hardly surprising in view of the proximity of Santarém to the Tagus. The Red kite (*Milvus milvus*) a bird known to be partial to carrion, found in the Moslem period, may have been caught feeding on refuse scattered near the Alcáçoba. Since one of the two red kite bones, a humerus, has cut marks on it the possibility that it was eaten or simply exploited for its feathers should also be considered. The great bustard (*Otis tarda*), now rare in Iberia, generally lives in plains and steppe areas. The three bones (one has a cut mark) found in the Moslem period may have been hunted in the wide expanses on the other side of the Tagus from Santarém. Little bustard (*Tetrax tetrax*) was also found in Roman and Moslem periods. This bird, closely related to the great bustard, also prefers open terrain. Perhaps it too was hunted on the other side of the river. The pigeon and dove finds presumably represent an occasional source of wild fowl meat.

### *Fish (See Lozano Rey, 1990; Whitehead et al., 1989)*

Due to insufficient expertise on my part and the incompleteness of our reference collection, most of the fish bones were not identified to species level. No attempt was made to identify the numerous fish vertebrae. However, a number of jawbones (maxillaries, pre-maxillaries and dentaries) with teeth or visible teeth sockets, opercula and osteoderms could be identified to genus. Table 5 provides a count of these elements as well as the vertebrae found at Alcáçova de Santarém. It appears that four groups predominate — the sturgeon represented by its osteoderms; mullets, represented by their large curved opercula; the barbel (*Barbus*); and the sea breams (*Sparus* and *Pagrus*) all represented by their characteristic teeth and jawbones.

Today only one species of sturgeon is found in Iberia — *Acipenser sturio*. Sturgeons are found in the sea around the coasts and enter rivers to reproduce in the spring. This species is especially found in the estuaries of the large rivers. The barbel (*Barbus*) is a fresh water fish, with *B. comiza* found in the southwestern part of Iberia today and an endemic Portuguese species, *B. bocagei*, being another possible candidate. The mullets (Mugilidae) are found in coastal waters and enter estuaries and rivers for feeding. *Pagrus* and *Sparus* are common around the coasts as well as brackish waters including the Tagus estuary. Again Strabo is worth quoting. He remarked upon the abundance of both fish and molluscs in the Tagus (Lasserre, 1966).

## **Frequencies of species through time** (Appendix 1, Tables 3 – 6 and Figs. 12a and 12b)

While bones were found in all levels, there are only significant numbers (*i.e.* > 50) in 12 levels — some of which are combined strata such as Iron Age 1 to Iron Age 7 (see Table 1). The most common mammals are sheep, goat, cattle, pigs, red deer and rabbits. It is clear that the frequencies of the various mammal taxa remained fairly constant through time. As mentioned above, this consistency even applies to the ratio of sheep to goat (Table 6).

### *Mammals*

Figures 12a and 12b reveal a small decrease of red deer numbers during the Iron Ages and early Roman periods. Cervids, with their relatively low-crowned teeth, are generally browsers rather than grazers — *i.e.* they prefer leaves to grass and are therefore associated with woodlands. The red deer decline probably resulted from deforestation in the Santarém region during this time. Cardoso (2002) also suggests a link between red deer numbers and local vegetation. He found that while a significant proportion of the mammal fauna at the Moslem site

"Mesas do Castelinho" (Almodôvar, Baixo Alentejo) comprised red deer, a subsequent decrease of this animal was caused by deforestation resulting from an increased exploitation of wood for ship building in the 13th century. It is possible too to link deforestation in the Santarém region with the rise of non-arboreal pollen during the early phases of its occupation thought to be linked with the growth of viniculture (see Arruda, 2003 for a discussion of the reduction of woodlands in Iron Age Portugal and southern Spain and the increasing intensity of agriculture). At a countrywide level, Mateus notes (pers. comm.) that the Roman period in Portugal is characterised by great destruction of the forests to an extent even greater than today. Thus for the period 45 to 70 AD he (Mateus, 1992, p. 108) suggests that there was a huge decline of oak, pinewood, and *Alnus* forests. This forest clearance was in part undertaken to supply firewood for the ceramics industry and also to increase pastureland for wool production.

It is interesting to note the slightly lower frequency of pig remains in the Moslem level. However, with a similarly low frequency of this animal in the preceding Roman period (there was little if any Visigothic material found at Alcáçova de Santarém), it is difficult to interpret this variance in terms of the Moslem avoidance of pork. (The possibility of residuality also needs to be considered.) This frequency of pig at Moslem Santarém contrasts with most, but not all, Moslem sites in Iberia where remains of this animal are considerably scarcer. For example at a site in Moslem Mértola, Morales Muñiz (1993) remarked upon the total absence of *Sus*, which he suggested reflects the then current religious practises. In the Moslem period assemblage at Alcácer do Sal, there were only 2% pig, at the Convento de São Francisco, Santarém, there were no pig bones (Moreno-García and Davis, 2001) and in three Moslem contexts in the Rua dos Correeiros, Lisbon, pig comprised 2% of the faunal assemblage (Moreno-García and Gabriel, 2001). Similarly at Mesas do Castelinho, Almodôvar, Cardoso (1993) observed an "ausência total" of pig and wild boar in the 9th and 10th century pits. In contrast, Gabriel (2003) found that of the animal bones from silo 1 at Paços do Concelho de Torres Vedras (12th century AD Moslem), 19% were pig. She suggests they were accumulated by local Christians. At another site in Mértola also from the Moslem period, Antunes (1996) did find a few *Sus* bones, which he suggested belonged to wild boar. Similarly at the VIIIth-Xth century site at Castelo de Silves, Antunes (1991) reports an absence of *Sus*. In an al-Mohad rubbish pit in Silves, Algarve, only 2 out of 450 bones belonged to *Sus* (work in progress).

The boar was hunted in the Arab world, but eating its meat was generally considered illicit (Rosenberger, 1999). To give some more examples from Moslem Spain; in the fauna from the period preceding the Cathedral construction in Granada, Riquelme (1992) found no pig remains; at Castillo de la Mola (Alicante) Benito Iborra (1985) found *Sus* constituted 6% of the bones; in 16th century Plaza de España, Motril (Granada), Riquelme (1993) found *Sus* constituted 4%; and less than 1% of the bones from Calatrava la Vieja belonged to *Sus* (Morales Muñiz et al., 1988). An alternative explanation for the presence of *Sus* in Moslem period sites and one that may apply to Santarém is that these suid bones derive from Christian households. However, yet another possibility should be considered. Simoons (1994, p. 341) notes that today many Moslem groups, especially in the Maghreb, consume wild boar flesh. Perhaps, therefore, the abundance of wild boar (see pages 26-28 and Fig. 6) as opposed to pig is not so surprising. It is also possible that the religious regime of Moslem Santarém and Torres Vedras was less severe than for example in al-Mohad Silves.

Like the oysters and chickens, rabbits too became more common in the course of the Santarém succession. What does this mean? Perhaps the Romans and Moslems had a greater fondness of rabbit meat. Another possible explanation is worth bearing in mind. Rabbits may be considered as poor-man's flesh. Does the increase of rabbit signify a growth of urban poor?

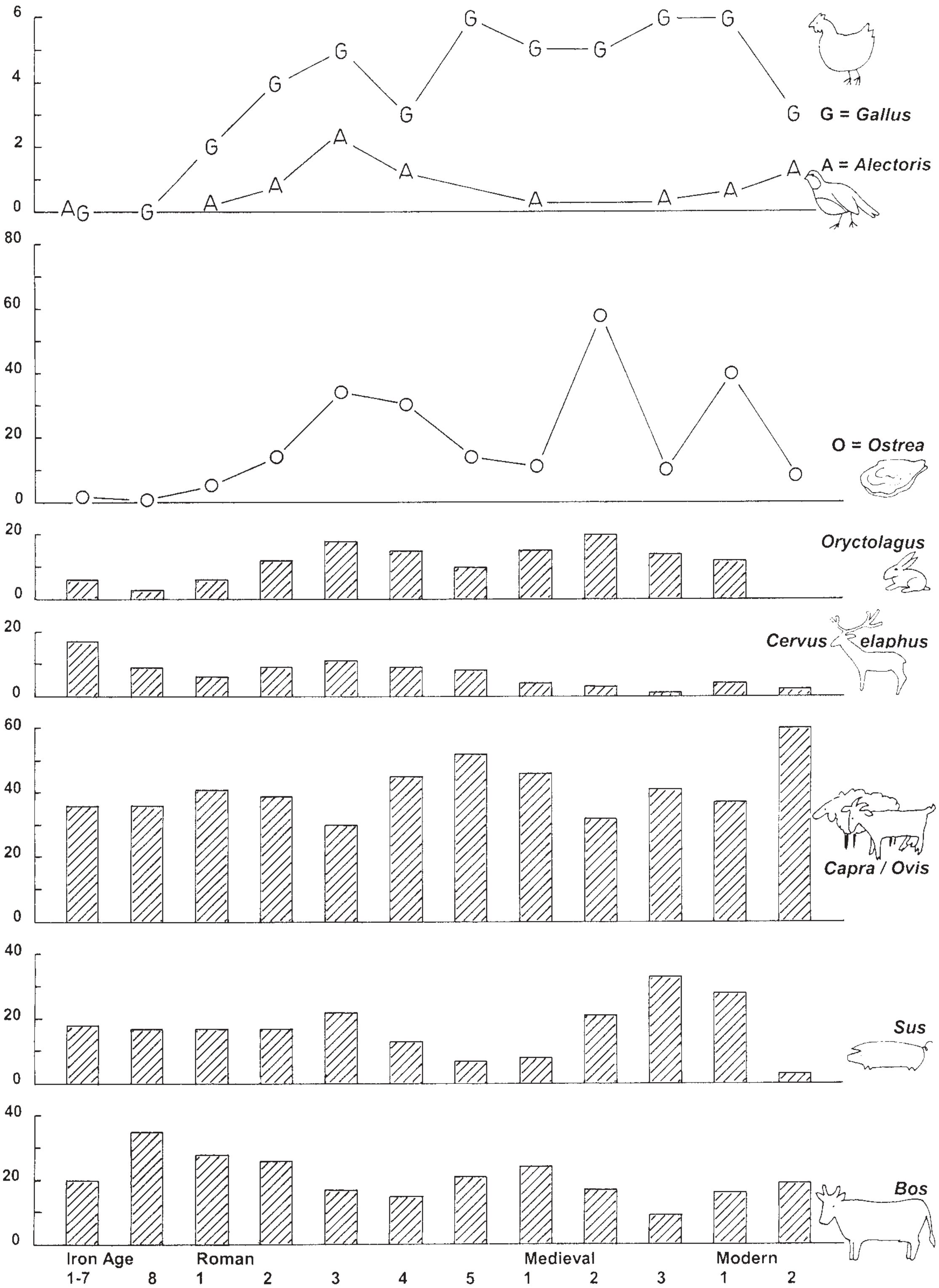


FIG. 12A – Frequencies of different animals found at Alcáçova de Santarém from Iron Age to Modern times. The lower part of this graph shows, in the form of hatched bars, the percentages of the more common mammals in each period. Above are the smaller frequencies of avian and aquatic resources calculated as fractions, ($^n/_N$) x 100, where n = the number of *Gallus* (chicken), *Alectoris* (partridge), or *Ostrea* (oyster) valves, and N = the number of mammal bones. The data are given in table 3a and appendix 1. Note the slight decline of red deer, perhaps reflecting local deforestation, and the increased exploitation of birds and oysters after the Iron Age. Pig numbers are also somewhat low in the Moslem period.

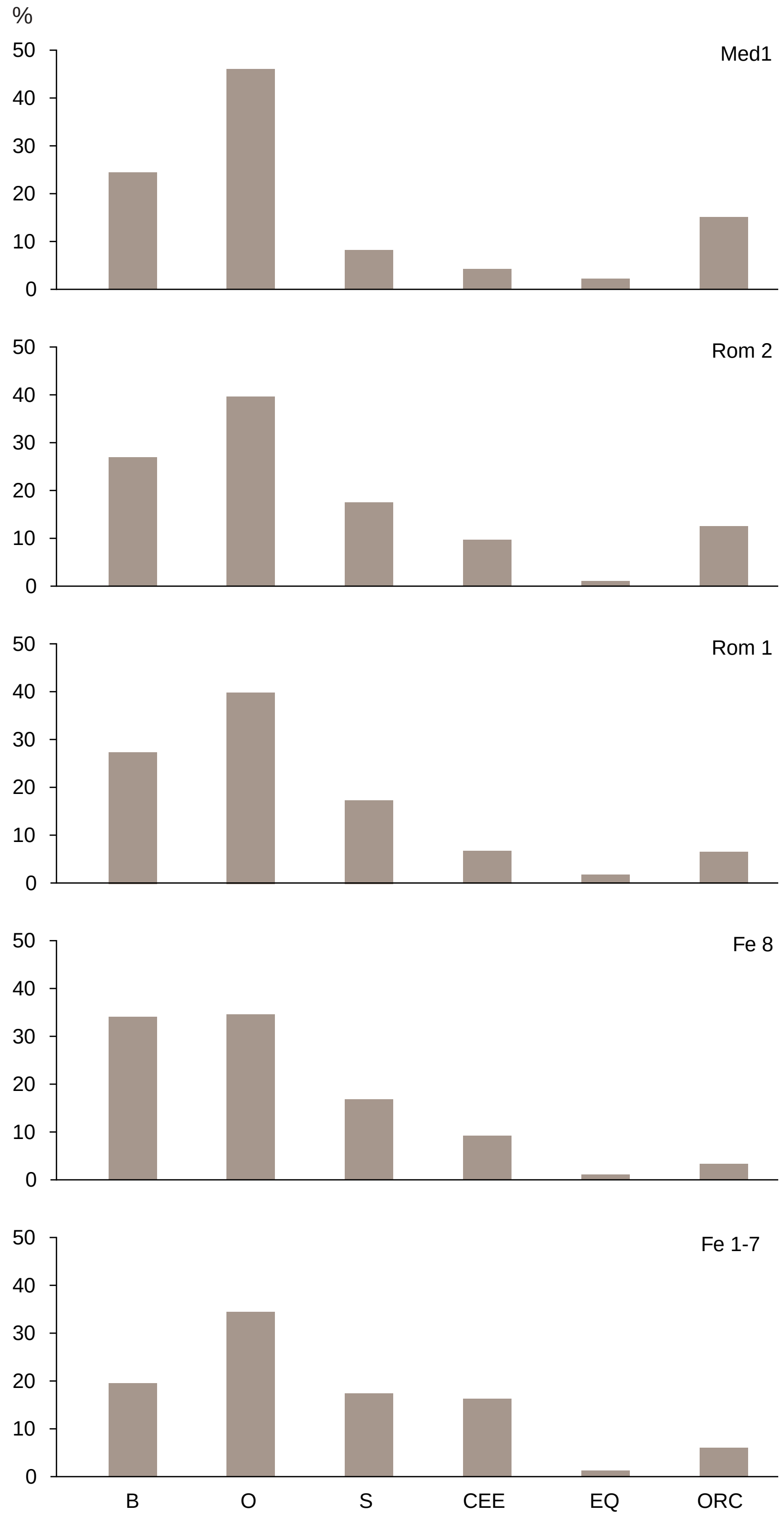


FIG. 12B – Frequencies of the more common animals in the major levels at Alcáçova de Santarém. Animals are coded as follows: B cattle, O sheep and goat, S pig and wild boar, CEE red deer, EQ horse and donkey and ORC rabbits.

*Birds (Table 4 and Fig. 12a)*

A comparison of the numbers of bird bones with numbers of mammal bones shows an interesting increased importance of birds in the course of time. Thus in the Iron Age there are a mere 4 or 6 bird bones per thousand mammal bones, this increases roughly tenfold to circa 35 – 100 in the Roman period and 80 in the Moslem period. The spectrum of bird species is also impoverished in the Iron Age compared to subsequent periods. The Moslem period with some 11 species of birds appears to have a wider spectrum of species; however, this is probably due to the larger sample of faunal remains in this period. For small and medium samples, sample size is correlated with species diversity. The relative scarcity of chicken in the Iron Age (only four bones were recorded) is of considerable interest. This bird, now an important source of meat and eggs, has its origins in SE Asia/India where it was first domesticated. The chicken is unknown in Europe before the Iron Age, and during the 1st millennium BC it was brought into Europe — probably by way of Persia where in the religion of Zoroaster the cock was sacred. The Greeks are presumed to have brought chickens from the east, perhaps after the Persian wars. (Homer, who lived in the 6th century BC, makes no mention of chicken.) In ancient Greece the cock was called the 'Persian bird' (Hehn, 1888, p. 241, 244). The chicken's spread in the Mediterranean in general and Portugal in particular is associated with the Phoenicians. Hernández Carrasquilla (1992) has summarised the evidence for chicken in Iberia and notes that during the first part of the Iron Age chicken remains appear only in Phoenician sites or sites with Phoenician influence. The oldest reliable date of chicken in Iberia comes from Castillo de Doña Blanca in the Bay of Cadiz early in the 8th century BC. Hernández Carrasquilla also observed that the earliest finds of this bird are in the southern part of Iberia where the Phoenicians sought metals, especially silver. This earliest presence in the south invalidates the suggestion of a continental dispersion of the chicken into Iberia overland from the east. The four chicken bones from the Iron Age of Santarém are: two femora from UE 203 and UE 419 (Iron Age 8; 3rd century BC) and a scapula and a tarsometatarsal from square 7 layer 3 (Iron Age 7; 6th-4th centuries BC). These four bones may well be among the earliest Lusitanian chickens.

*Oysters and fishes (Tables 3 and 5, Fig. 12a)*

Not only did chicken numbers increase after the Iron Age at Santarém, but so too did oysters. Perhaps people had to broaden their dietary spectrum. Oysters presumably came from further down the Tagus or from the sea. Carlos de Sousa Reis tells me that until recently (the 1970s) oysters thrived in the Tagus estuary as far upstream as Vila Franca de Xira — almost halfway between Lisbon and Santarém. Hence the Santarém oysters need not have come from as far away as the sea. Their increase might mark improved trade with neighbouring towns. The increase of "exotic" foodstuffs might then serve as an index of commercial complexity in antiquity. Perhaps the oyster, today a luxury food, simply reflects the growth of a wealthy class of consumers in Santarém. Did the Roman inhabitants of Santarém become more affluent? There is, however, another possible explanation for the increased oyster numbers in Roman Santarém. The Romans were well known for their love of fish sauce — *Garum* — one of whose vital ingredients was oyster, valued also for its aphrodisiacal properties (Sousa Reis, pers. comm.). Fishing clearly occurred throughout the occupation of Santarém. Relating the numbers of fish elements to mammal bones (Table 3) indicates that, like the oysters, there was an increase of fish vertebrae, mullet opercula and sturgeon osteoderms in the Iron Age — Roman — Moslem succession. (This pattern is not apparent for the sea breams.) With such small numbers and the likely losses incurred during excavation it is difficult to draw firm conclusions about the fishing industry at Santarém.

**TABLE 9**

Percentages of the recorded bones of the common animals from Alcáçova de Santarém in the four "main periods" that have been cut, chopped, gnawed, burnt or partially digested.

| *"Main period"* | *B* | *O* | *S* | *CEE* | *EQ* | *CAF* | *ORC* | *GNP* |
|---|---|---|---|---|---|---|---|---|
| **2 (post-Moslem)** | | | | | | | | |
| % Cut | 5 | 3 | 1 | — | — | — | — | 11 |
| % Chopped | 19 | 6 | 7 | (15) | (50) | — | — | — |
| % Gnawed | — | 4 | 3 | — | — | (100) | — | 4 |
| % Semi-digested | — | 1 | 1 | — | — | — | — | — |
| % Burnt | — | 1 | 1 | — | — | — | — | — |
| **Total bone** | 57 | 141 | 97 | 13 | 10 | 1 | (—) | 28 |
| **3 (Moslem)** | | | | | | | | |
| % Cut | 4 | 3 | 4 | 4 | 7 | — | 15 | 15 |
| % Chopped | 11 | 5 | 5 | 7 | 10 | — | 1 | 1 |
| % Gnawed | 2 | 2 | 1 | 3 | 1 | — | — | 2 |
| % Semi-digested | — | — | 2 | — | — | — | — | — |
| % Burnt | 6 | 4 | 2 | 4 | 3 | — | | 1 |
| **Total bone** | 743 | 890 | 200 | 114 | 69 | 25 | (122) | 173 |
| **4 (Roman)** | | | | | | | | |
| % Cut | 1 | 2 | 3 | — | — | — | 6 | 4 |
| % Chopped | 4 | 1 | 4 | 2 | — | — | 4 | — |
| % Gnawed | 2 | 1 | 3 | 3 | — | — | — | 2 |
| % Semi-digested | — | 1 | — | — | — | — | — | — |
| % Burnt | 2 | 1 | 1 | + | — | — | | 1 |
| **Total bone** | 568 | 732 | 336 | 205 | 22 | 6 | (48) | 92 |
| **5 (Iron Age)** | | | | | | | | |
| % Cut | 3 | 2 | 1 | 2 | — | — | 16 | — |
| % Chopped | 4 | — | 4 | 1 | — | — | — | — |
| % Gnawed | 3 | 3 | 5 | 3 | — | — | — | — |
| % Semi-digested | — | 3 | 3 | 1 | — | — | — | — |
| % Burnt | + | 1 | 1 | 1 | — | — | | — |
| **Total bone** | 363 | 342 | 197 | 178 | 11 | 5 | (19) | 4 |

Key: B cattle, O sheep and goat, S pig/wild boar, CEE red deer, EQ equids (donkey and horse), CAF dog, ORC rabbit, GNP chicken and probable chicken. "Total bone" is the total number of bones of each taxon within each "main period". "Main periods" are as follows: 2 = MOD2, MOD1 and MED3, 3 = MED2 and MED1, 4 = ROM5 – ROM1, 5 = Fe8 – Fe1. (For rabbit bones sub-samples from Moslem, Roman and Iron Age periods were examined for cut/chop marks.). Note that chopping and cutting of cattle and caprine bones appears to have increased in the course of time, but gnawing and digestion of bones did not change. Not surprisingly, beef bones show more evidence for chopping (especially in the more recent periods) than do the other smaller animals, and the smallest animal, the chicken, was primarily cut only. The slightly greater numbers of burnt bones in the Moslem period is interesting and may signify an increase of grilling and roasting of meat.

## Butchery and other marks

The presence of butchery marks on the animal bones at Santarém is not surprising. The presence of such marks is the most usual indicator that the bones derive from animal carcasses prepared for one or several uses, such as food, skins etc, in antiquity. Table 9 shows the percentages of bones of the more common animals with cut, chop, gnaw and burn marks as well as those showing signs of acid etching ("partially digested", presumed to be due to stomach acids, probably the result of dogs swallowing these bones) in the four main periods at Alcáçova de Santarém. Gnawed and "partially digested" bones were slightly more common in the Iron Age than in the Roman and Moslem periods. This could reflect the presence of more dogs in the town in Iron Age times than subsequently. However, this is speculative — note too that in the post-Moslem levels the frequency of gnawed bones is again similar to the Iron Age. Chop and cut marks on the larger mammal and chicken bones increased with time. This may signify a greater degree of butchery correlated with

FIG. 13 – Butchery. Chopped equid astragalus. (1999 UE 35, Moslem). Were they eating horses?

care taken over carcasses. Does this reflect a rise in the cost of meat in Portugal? Cattle bones were subjected to a greater degree of chopping, especially in the more recent periods, than the other (smaller) animals. Cuts, rather than chops, were observed on the chicken and rabbit bones. This is hardly surprising as it is unnecessary to use any tool heavier than a knife to butcher small animals such as these.

In the Moslem period, 17 of the 69 equid bones had cut and/or chop marks (three had burn marks too), whereas equid bones from the earlier periods show no evidence for such marks (though the samples are very small). In many parts of the Old World today (and in the recent past), horsemeat is not eaten. The presence of butchered (and burnt) equid bones in the Moslem levels (Fig. 13) may signify consumption of horseflesh. According to Rosenberger (1999), in the early Arab world horsemeat was not taboo, but no one ate it. Mule and donkey meat was despised, and only in times of absolute need would anyone eat it. Did the butchered equid bones come from animals eaten during the Christian siege of Santarém? A note of caution is required. Horseflesh may have been fed to dogs, an activity that almost certainly required butchery of the equid carcass. Gervase Markham, an English 17th-18th century writer on agriculture, recommended feeding "horse-flesh newly slaine, and warm at the feeding," to hunting hounds on their rest days. This being "... the strongest and lustiest meat you can give them, ..." (Markham, 1633, p. 17). Although the numbers are really too small to provide evidence of much significance, it is interesting that also in the Moslem period more of the caprine, red deer and cattle bones are burnt. A tendency for more roasting and grilling than boiling in Moslem times may be an interesting avenue for further study.

### *Parts of the skeleton represented (Fig. 14 and Appendix 1)*

Fig. 14 shows the frequencies of different parts of the skeletons of the four most common large mammal taxa. The bars represent the maximum number of animals represented by a particular bone or for the teeth as explained in the legend. If all parts of the animal or multiples thereof were to be present, then the bars would be of equal height. While all parts of the skeletons are represented, there are some large discrepancies that require explanation. The scarcity of certain bones such as the femur, or the phalanges, may be the result of these parts being discarded from the carcass prior to its carriage into Santarém for consumption. However, as Brain (1969) has shown, the frequencies of different parts of the skeleton tend to reflect their density — denser bones preserve better and are more common in an archaeological assemblage. It is difficult for example to explain the large numbers of pelves and tibiae but low numbers of femora in nearly all periods since the femur articulates with both these bones and is situated in between them in the skeleton. It is probable that preservation has played a large role in determining the numbers of different parts of the skeleton here. Recovery biases too may explain the low numbers of phalanges. There is indeed little evidence for any very marked preference for any particular part of the carcass in any of the large mammals at Santarém. Bones with little or no meat on them, like the metapodials, are well represented — which suggests that slaughter of animals was undertaken near the settlement and most of the Santarém animal bones come from general slaughterhouse, kitchen and butchery waste. I suggest that preservation and recovery played the main role and that whole carcasses were brought to Santarém or eventually ended up in the deposits excavated.

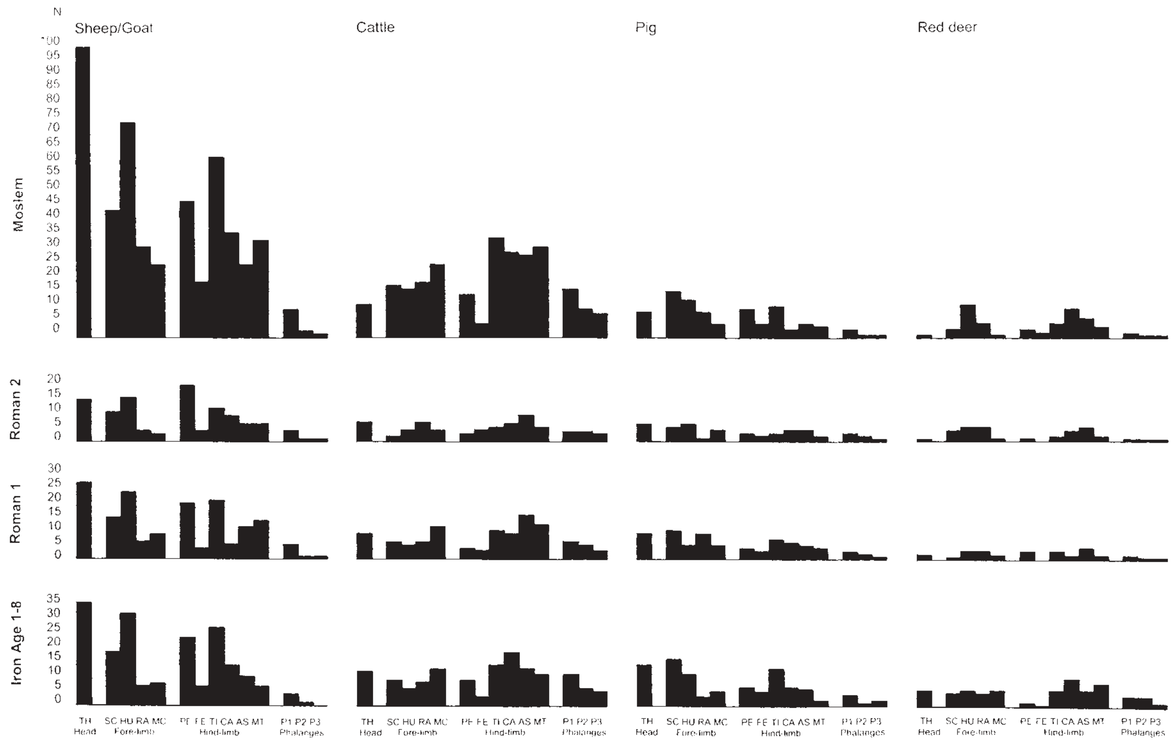


FIG. 14 – Body-part frequencies. Representation of different parts of the skeleton of the caprines, cattle, pigs and red deer at Alcáçova de Santarém in the Iron Age (all levels combined), Roman 1, Roman 2 and Moslem periods. The numbers of individual animals that can be accounted for by each bone are shown as vertical bars, labelled as follows:
Head: TH – teeth. Forelimb and girdle: SC - scapula, HU – humerus, RA – radius, MC – metacarpal. Hindlimb and girdle: PE – pelvis, FE – femur, TI – tibia, CA – calcaneum, AS – astragalus, MT – metatarsal. Phalanges: P1 – first (proximal) phalanx, P2 – second phalanx, P3 – third (terminal) phalanx.
These numbers of individual animals are calculated from the counts in appendix 1 by dividing them by their frequencies in the skeleton. Here are three examples.
Cattle *tibia* in the Moslem period: there are 68 of these (57 fused + 11 unfused metaphyses). Since each animal has two tibiae, the number of animals represented is 68/2 or 34.
Sheep/goat *teeth* in the Roman 1 period: the most common tooth is $dP_4$ and $P_4$. There are 51 of these teeth. Since there are two $P_4$s or $dP_4$s per animal, the number of individuals that can be accounted for is 51/2 or 26.
Sheep/goat proximal *first phalanges* in the Moslem period: there are 80 of these (71 fused + 9 unfused metaphyses). Since each animal has 8 proximal phalanges, the number of animals represented is 80/8 or 10.
If all bones of a particular animal were to be present or to have suffered equal rates of destruction then the bars would be of equal height. Different heights may therefore reflect preferences for different parts of the animal carcass in antiquity, and/or differences in the preservation and recovery of the different bones. The patterns overall do not seem to be easily interpretable in terms of the first of these possibilities. Note some rather large differences in frequencies of bones that articulate with one another. This suggests that preservation and recovery played the major role in determining these patterns of body-part representation.

## TABLE 10
Age at slaughter of the Red deer at Alcáçova de Santarém.

| | "Main period" | Juv | Adult | % juv |
|---|---|---|---|---|
| **$dP_4/P_4$** | 2 | — | — | |
| | 3 | 2 | 2 | |
| | 4 | 1 | 2 | |
| | 5 | 3 | 9 | |
| **CA** | 2 | — | — | |
| | 3 | 3 | 8 | |
| | 4 | 5 | 5 | |
| | 5 | 4 | 10 | |
| **TI** | 2 | — | 1 | |
| | 3 | 2 | 7 | |
| | 4 | 1 | 14 | |
| | 5 | 2 | 9 | |

**TABLE 10 [cont.]**
Age at slaughter of the Red deer at Alcáçova de Santarém.

| | "Main period" | Juv | Adult | % juv |
|---|---|---|---|---|
| **MP** | 2 | 1 | 1 | |
| | 3 | — | 8,5 | |
| | 4 | 4,5 | 14 | |
| | 5 | 3,5 | 26 | 12 |
| **P1** | 2 | — | 4 | |
| | 3 | 1 | 11 | |
| | 4 | 1 | 27 | 4 |
| | 5 | 1 | 30 | 3 |
| **RA** | 2 | — | — | |
| | 3 | 2 | 8 | |
| | 4 | 3 | 16 | |
| | 5 | 2 | 7 | |
| **Average** | 2 | 1 | 6 | |
| | 3 | 10 | 44,5 | **18** |
| | 4 | 15,5 | 78 | **17** |
| | 5 | 15,5 | 91 | **15** |

Estimates of the percentages of juvenile animals calculated from the proportion of *deciduous fourth premolars* ($dP_4$), and unfused limb bone epiphyses – *calcaneum—tuber calcis* (CA), *distal tibia* (TI), *distal metapodials* (MP; metacarpals and metatarsals combined), *proximal phalanges* (P1) and *distal radius* (RA). For the estimates of juvenile tibia, metapodials, phalanges and radii, the larger of the two numbers — unfused epiphyses or metaphyses are given. Percentages have not been calculated where n < 20. There is little evidence for any change in the proportions of juvenile red deer culled in the course of time at Santarém.

**TABLE 11**
Age at slaughter of the pigs at Alcáçova de Santarém.

| | "Main period" | Juv | Adult | % juv |
|---|---|---|---|---|
| **$dP_4/P_4$** | 2 | 3 | 5 | |
| | 3 | 9 | 16 | 36 |
| | 4 | 18 | 17 | 51 |
| | 5 | 9 | 18 | 33 |
| **CA** | 2 | 4 | 3 | |
| | 3 | 4 | 3 | |
| | 4 | 15 | 3 | 83 |
| | 5 | 6 | 1 | |
| **TI** | 2 | 4 | 9 | |
| | 3 | 4 | 22 | 18 |
| | 4 | 6 | 16 | 27 |
| | 5 | 3 | 23 | 12 |
| **MP** | 2 | 3 | 3,5 | |
| | 3 | 8,5 | 11,5 | 43 |
| | 4 | 17,5 | 10 | 64 |
| | 5 | 3 | 9,5 | |
| **P1** | 2 | 9 | 6 | 60 |
| | 3 | 7 | 14 | 33 |
| | 4 | 15 | 39 | 28 |
| | 5 | 7 | 19 | 27 |
| **RA** | 2 | 6 | 2 | |
| | 3 | 12 | 7 | 63 |
| | 4 | 7 | 15 | 32 |
| | 5 | 5 | 0 | |
| **Average** | 2 | 29 | 28,5 | **(50)** |
| | 3 | 44,5 | 73,5 | **38** |
| | 4 | 78,5 | 100 | **44** |
| | 5 | 33 | 70,5 | **32** |

Estimates of the percentages of juvenile animals calculated from the proportion of *deciduous fourth premolars* ($dP_4$), and unfused limb bone epiphyses – *calcaneum-tuber calcis* (CA), *distal tibia* (TI) *distal metapodials* (MP; metacarpals and metatarsals combined) *proximal phalanges* (P1) and *distal radius* (RA). For the estimates of juvenile tibia, metapodials, phalanges and radii, the larger of the two numbers — unfused epiphyses or metaphyses are given. Percentages have not been calculated where n < 15. There may have been more juvenile pigs slaughtered in Roman times.

## TABLE 12

Alcáçova de Santarém. Wear stages of the Sus mandibular teeth (following Grant, 1982).

| | "Main period" | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | na | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$dP_4$** | post-Moslem | — | — | — | 1 | 1 | — | — | — | — | — | 1 | — | — | — | — | — | — | 3 |
| | Moslem | 1 | — | 1 | 3 | 1 | 3 | — | — | — | — | — | — | — | — | — | — | — | 9 |
| | Roman | 4 | — | 2 | 5 | 2 | 2 | 1 | — | — | 1 | 1 | — | — | — | — | — | — | 18 |
| | Iron Age | 3 | — | 3 | — | 1 | — | 1 | — | — | — | 1 | — | 1 | — | — | — | — | 10 |
| **$P_4$** | post-Moslem | — | 2 | — | 2 | 1 | — | 1 | — | — | — | — | — | — | — | — | — | — | 6 |
| | Moslem | 1 | 4 | 3 | 2 | 3 | — | 2 | — | — | — | — | — | — | — | — | — | 1 | 16 |
| | Roman | 1 | 5 | 3 | 6 | — | — | 2 | — | — | — | — | — | — | — | — | — | — | 17 |
| | Iron Age | 2 | 4 | 2 | 6 | 1 | 1 | 1 | — | — | — | — | — | — | — | — | — | 2 | 19 |
| **$M_1$** | post-Moslem | — | — | — | 1 | — | 2 | 2 | 1 | — | 1 | 1 | 1 | — | — | — | — | — | 9 |
| | Moslem | 3 | 1 | 1 | 2 | 3 | 2 | — | 1 | — | — | 1 | — | 1 | — | — | — | 1 | 16 |
| | Roman | 7 | 3 | 2 | — | 1 | 1 | — | — | — | 2 | 1 | — | — | — | — | — | 1 | 18 |
| | Iron Age | 3 | 2 | 3 | 2 | 1 | 2 | 2 | — | — | 1 | 1 | — | 1 | 3 | — | — | — | 21 |
| **$M_{1/2}$** | post-Moslem | 2 | — | — | 2 | — | 2 | — | — | — | — | — | — | — | — | — | — | — | 6 |
| | Moslem | 1 | — | 3 | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | 5 |
| | Roman | 3 | — | 2 | 3 | 1 | — | — | 1 | — | 1 | — | 1 | 1 | — | — | — | — | 13 |
| | Iron Age | 2 | — | — | 4 | 2 | 2 | — | — | — | 2 | — | — | 1 | — | — | — | — | 13 |
| **$M_2$** | post-Moslem | 1 | — | 2 | — | 2 | 2 | — | — | — | — | — | — | — | — | — | — | — | 7 |
| | Moslem | — | — | 1 | 8 | — | 3 | — | 1 | — | — | — | — | — | — | — | — | — | 13 |
| | Roman | 5 | 1 | 3 | 5 | 2 | — | 1 | — | — | — | — | — | — | — | — | — | 1 | 18 |
| | Iron Age | 5 | 1 | 2 | 4 | 2 | 1 | 1 | 2 | — | — | — | — | — | — | — | — | — | 18 |
| **$M_3$** | post-Moslem | 3 | 1 | 4 | 1 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | 10 |
| | Moslem | 6 | 2 | 3 | 2 | — | 1 | — | — | — | 1 | 1 | 1 | — | — | — | — | — | 17 |
| | Roman | 15 | 6 | 1 | 4 | 1 | 1 | — | — | — | — | 2 | — | — | — | — | — | 1 | 31 |
| | Iron Age | 9 | 4 | 2 | 2 | — | — | 2 | — | — | — | 1 | — | — | — | — | — | — | 20 |

These wear stages extend from teeth just erupted with unworn enamel (*i.e.* no dentine exposed) in stage "a" to teeth from very old animals with hardly any crown left. "na" are teeth that could not be assigned to a wear stage, "N" is the total number of teeth considered.

## TABLE 13

Alcáçova de Santarém. Wear stages (following Grant, 1982) of the Sus mandibular first and second molar teeth after metrical allocation of most of the $M_{1/2}$s.

| | "Main period" | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$M_1$** | post-Moslem | — | — | — | 2 | — | 3 | 2 | 1 | — | 1 | 1 | 1 | — | — | — | — | 11 |
| | Moslem | 4 | 1 | 1 | 2 | 3 | 2 | — | 1 | — | — | 2 | — | 1 | — | — | — | 17 |
| | Roman | 9 | 3 | 3 | 1 | 1 | 1 | — | 1 | — | 2 | 1 | 1 | — | — | — | — | 23 |
| | Iron Age | 4 | 2 | 3 | 3 | 1 | 3 | 2 | — | — | 1 | 1 | — | 2 | 3 | — | — | 25 |
| **$M_{1/2}$** | post-Moslem | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0 |
| | Moslem | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0 |
| | Roman | — | — | — | — | — | — | — | — | — | 1 | — | — | 1 | — | — | — | 2 |
| | Iron Age | 1 | — | — | 1 | 1 | 2 | — | — | — | 2 | — | — | — | — | — | — | 7 |
| **$M_2$** | post-Moslem | 3 | — | 2 | 1 | 2 | 3 | — | — | — | — | — | — | — | — | — | — | 11 |
| | Moslem | — | — | 4 | 8 | — | 3 | — | 1 | — | — | — | — | — | — | — | — | 16 |
| | Roman | 6 | 1 | 4 | 7 | 1 | — | 1 | — | — | — | — | — | — | — | — | — | 20 |
| | Iron Age | 5 | 1 | 2 | 6 | 3 | 2 | 1 | 2 | — | — | — | — | — | — | — | — | 22 |

Note some $M_{1/2}$s remain unassigned. These wear stages extend from teeth just erupted with unworn enamel (*i.e.* no dentine exposed) in stage "a" to teeth from very old animals with hardly any crown left. "N" is the total number of teeth considered.

**TABLE 14**

Age at slaughter of the cattle at Alcáçova de Santarém.

| | "Main period" | Juv | Adult | % juv |
|---|---|---|---|---|
| **$dP_4/P_4$** | 2 | 3 | 1 | |
| | 3 | 3 | 15 | 17 |
| | 4 | 7 | 18 | 28 |
| | 5 | 11 | 13 | 46 |
| **CA** | 2 | 1 | 2 | |
| | 3 | 11 | 19 | 37 |
| | 4 | 12 | 16 | 43 |
| | 5 | 11 | 13 | 46 |
| **TI** | 2 | 1 | 6 | |
| | 3 | 11 | 58 | 16 |
| | 4 | 5 | 31 | 14 |
| | 5 | 3 | 23 | 12 |
| **MP** | 2 | — | 11 | |
| | 3 | 8 | 97 | 7 |
| | 4 | 12 | 50 | 19 |
| | 5 | 8 | 42 | 16 |
| **P1** | 2 | — | 14 | |
| | 3 | 5 | 128 | 4 |
| | 4 | 8 | 93 | 8 |
| | 5 | 5 | 80 | 6 |
| **RA** | 2 | 1 | 3 | |
| | 3 | 9 | 29 | 24 |
| | 4 | 9 | 19 | 32 |
| | 5 | 7 | 8 | 47 |
| **Average** | 2 | 6 | 37 | **14** |
| | 3 | 47 | 346 | **12** |
| | 4 | 53 | 227 | **23** |
| | 5 | 45 | 179 | **20** |

Estimates of the percentages of juvenile animals calculated from the proportion of *deciduous fourth premolars* ($dP_4$), and unfused limb-bone epiphyses — *calcaneum-tuber calcis* (CA), *distal tibia* (TI) *distal metapodials* (MP; metacarpals and metatarsals combined) *proximal phalanges* (P1) and *distal radius* (RA). For the estimates of juvenile tibia, metapodials, phalanges and radii, the larger of the two numbers — unfused epiphyses or metaphyses are given. For example in the Moslem period, there were 7 unfused distal radius epiphyses and 9 unfused distal radius metaphyses and 29 adult (fused) distal ends of the radius. Hence the maximum % estimate for juvenile cattle for this bone is given as $^{9}/_{38}$ or 24%. Percentages have not been calculated where n < 15. All bones and teeth except TI indicate that fewer juvenile cattle were slaughtered in the Islamic period.

**TABLE 15**

Alcáçova de Santarém. Wear stages of the Cattle mandibular teeth (following Grant, 1982).

| | "Main period" | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | na | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$dP_4$** | post-Moslem | — | — | — | — | — | 1 | 1 | — | — | 1 | — | — | — | — | — | — | — | 3 |
| | Moslem | — | — | — | 1 | — | — | — | — | — | — | 1 | — | — | — | — | — | 1 | 3 |
| | Roman | — | — | — | — | — | — | — | 1 | — | 4 | — | 1 | 1 | — | — | — | — | 7 |
| | Iron Age | — | — | — | 1 | 1 | — | — | 1 | — | 1 | 1 | 3 | — | — | — | — | 2 | 10 |
| **$P_4$** | post-Moslem | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | 1 |
| | Moslem | — | — | 1 | — | — | 3 | 7 | 1 | — | 2 | — | — | — | — | — | — | 1 | 15 |
| | Roman | — | 1 | 1 | — | 1 | 8 | 3 | 3 | — | 1 | — | — | — | — | — | — | — | 18 |
| | Iron Age | — | 1 | — | — | 1 | 4 | 6 | 2 | — | 1 | — | — | — | — | — | — | — | 15 |
| **$M_1$** | post-Moslem | 1 | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | 2 |
| | Moslem | — | — | — | — | — | 1 | 1 | — | — | — | 2 | 4 | 1 | — | 1 | 1 | — | 11 |
| | Roman | — | — | — | — | — | — | 1 | — | — | — | 4 | — | — | — | 1 | — | — | 6 |
| | Iron Age | 1 | 1 | — | — | — | 1 | 1 | — | — | 1 | — | 3 | 1 | 1 | — | — | — | 10 |

**TABLE 15 [cont.]**

Alcáçova de Santarém. Wear stages of the Cattle mandibular teeth (following Grant, 1982).

| | "Main period" | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | na | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$M_{1/2}$** | post-Moslem | 1 | — | — | — | — | — | — | — | — | 2 | — | 1 | — | — | — | — | — | 4 |
| | Moslem | — | 1 | 1 | — | — | 2 | 1 | 1 | — | 1 | 3 | 4 | 1 | — | — | 1 | 1 | 17 |
| | Roman | — | 2 | — | — | — | 1 | 5 | 2 | — | 3 | 15 | 9 | 4 | — | 1 | — | 1 | 43 |
| | Iron Age | — | 2 | 1 | — | — | 3 | 7 | 2 | — | 2 | 11 | 6 | 3 | 1 | 1 | — | 1 | 40 |
| **$M_2$** | post-Moslem | 1 | — | — | — | — | — | 1 | — | — | — | 1 | — | — | — | — | — | — | 3 |
| | Moslem | — | 1 | — | 1 | — | — | 2 | 1 | — | — | 6 | 1 | 1 | 1 | — | — | — | 14 |
| | Roman | — | — | — | — | — | — | 1 | 1 | — | — | 2 | 2 | — | — | — | — | — | 6 |
| | Iron Age | — | 1 | — | — | — | — | — | 1 | — | — | 8 | — | 1 | — | — | 1 | — | 12 |
| **$M_3$** | post-Moslem | — | — | — | — | — | 1 | 1 | 1 | — | 1 | 1 | 1 | — | — | — | — | — | 6 |
| | Moslem | 2 | 2 | 1 | — | — | 1 | 7 | 2 | — | 1 | 2 | — | 2 | — | — | — | 2 | 22 |
| | Roman | 1 | 1 | 1 | 1 | — | — | 2 | 2 | — | 4 | 4 | 3 | 3 | — | — | — | — | 22 |
| | Age | 1 | — | 1 | — | — | 1 | 6 | — | — | 4 | 1 | 3 | 2 | — | — | — | 4 | 23 |

These wear stages extend from teeth just erupted with unworn enamel (*i.e.* no dentine exposed) in stage "a" to teeth from very old animals with hardly any crown left. "na" are teeth that could not be assigned to a wear stage, "N" is the total number of teeth considered.

**TABLE 16**

Age at slaughter of the sheep/goat at Alcáçova de Santarém.

| | "Main period" | Juv | Adult | % juv |
|---|---|---|---|---|
| **$dP_4/P_4$** | 2 | 9 | 11 | 45 |
| | 3 | 76 | 89 | 46 |
| | 4 | 42 | 59 | 42 |
| | 5 | 22 | 40 | 35 |
| **CA** | 2 | 4 | 3 | |
| | 3 | 35 | 32 | 52 |
| | 4 | 26 | 26 | 50 |
| | 5 | 15 | 11 | 58 |
| **TI** | 2 | 2 | 15 | |
| | 3 | 35 | 93 | 27 |
| | 4 | 17 | 70 | 20 |
| | 5 | 6 | 48 | 11 |
| **MP** | 2 | 3,5 | 11 | |
| | 3 | 56 | 59 | 49 |
| | 4 | 37 | 37,5 | 50 |
| | 5 | 10 | 16,5 | 38 |
| **P1** | 2 | 2 | 12 | |
| | 3 | 9 | 75 | 11 |
| | 4 | 26 | 74 | 26 |
| | 5 | 7 | 20 | 26 |
| **RA** | 2 | 5 | 3 | |
| | 3 | 36 | 28 | 56 |
| | 4 | 17 | 13 | 57 |
| | 5 | 7 | 7 | |
| **Average** | 2 | 25,5 | 55 | **32** |
| | 3 | 247 | 376 | **40** |
| | 4 | 165 | 279,5 | **37** |
| | 5 | 67 | 142,5 | **32** |

Estimates of the percentages of juvenile animals calculated from the proportion of *deciduous fourth premolars* ($dP_4$), and unfused limb bone epiphyses – *calcaneum—tuber calcis* (CA), *distal tibia* (TI) *distal metapodials* (MP; metacarpals and metatarsals combined) *proximal phalanges* (P1) and *distal radius* (RA). For the estimates of juvenile tibia, metapodials, phalanges and radii, the larger of the two numbers — unfused epiphyses or metaphyses are given. Percentages have not been calculated where n < 20. There is little evidence for any change in the proportions of juvenile caprines culled in the course of time at Santarém.

## TABLE 17

Age of slaughter of the caprines at Alcáçova de Santarém.

| "Main Period" | Stage: | A | B | C | D | E | F | G | H | I | n |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | months: | 0-2 | 2-6 | 6-12 | | | | | | | |
| | *years:* | | | | *1-2* | *2-3* | *3-4* | *4-6* | *6-8* | *8-10* | |
| **post-Moslem** | | — | — | — | **33** | 25 | 8 | 17 | 17 | — | 12 |
| **Moslem** | | 1 | 2 | 7 | **26** | 15 | 16 | 18 | 12 | 2 | 124 |
| **Roman** | | — | 5 | 5 | 14 | **27** | **27** | 5 | 14 | 3 | 37 |
| **Iron Age** | | — | — | — | 15 | **26** | **26** | 21 | 6 | 6 | 34 |

Percentages of mandibles assigned to Payne's (1973) dental eruption and wear stages. Maxima are shown emboldened. Note a slight shift to slaughtering younger adult sheep/goat in Moslem times. This small downward shift is also reflected in the high counts of third molar teeth in wear stage "0" (*i.e.* unworn and/or unerupted) and high counts of second molars in wear stages 0 – 5 in table 18a.

## TABLE 18A

Alcáçova de Santarém. Wear stages of the caprine mandibular teeth (following Payne, 1987).

| | "Main period" | *0* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* | *13* | *14* | *15* | *16* | *17* | *18* | *19* | *20* | *21* | *22* | *23* | *na* | *N* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$dP_4$** | post-Moslem | 4 | — | — | — | — | 1 | — | — | — | — | 1 | — | — | 3 | 1 | — | — | — | — | — | — | — | — | — | — | 10 |
| | Moslem | 8 | 2 | — | 2 | 3 | 3 | — | — | 1 | 1 | 1 | 1 | — | 5 | 16 | — | 7 | 6 | 6 | — | 4 | 1 | 2 | 6 | 1 | 76 |
| | Roman | 2 | 1 | — | 1 | 1 | 1 | 2 | — | 2 | 1 | — | 2 | 3 | 13 | 5 | — | 2 | 3 | 3 | — | — | — | — | — | 1 | 43 |
| | Iron Age | — | — | — | — | — | — | — | 1 | — | — | — | 2 | — | 4 | 5 | — | 4 | 2 | 1 | — | — | — | 1 | 1 | — | 21 |
| **$P_4$** | post-Moslem | 1 | — | 1 | — | 1 | — | — | — | 3 | — | — | 2 | 5 | — | — | — | — | — | — | — | — | — | — | — | — | 13 |
| | Moslem | 3 | — | 2 | 2 | 1 | 2 | 6 | 3 | 14 | 13 | — | 2 | 15 | — | 10 | 14 | — | — | — | — | — | — | — | — | 2 | 89 |
| | Roman | — | 1 | — | — | 1 | 2 | 1 | 4 | 6 | 11 | — | 5 | 6 | — | 5 | 5 | — | — | — | — | — | — | — | — | — | 47 |
| | Iron Age | 2 | 1 | — | 1 | 2 | 2 | 1 | 3 | 4 | 8 | — | — | 8 | — | 3 | 3 | — | — | — | — | — | — | — | — | 3 | 41 |
| **$M_1$** | post-Moslem | 1 | — | — | — | — | 1 | — | — | — | 7 | — | 1 | 1 | — | 1 | 1 | — | — | — | — | — | — | — | — | — | 13 |
| | Moslem | 7 | 1 | 3 | — | — | 1 | 4 | 2 | 10 | 75 | 7 | 5 | 6 | — | 2 | 30 | — | — | — | — | — | — | — | — | 4 | 157 |
| | Roman | 4 | — | — | — | — | — | — | 1 | 2 | 25 | 2 | 2 | 3 | — | 2 | 7 | — | — | 1 | — | — | — | — | — | 4 | 53 |
| | Iron Age | 1 | — | 1 | — | — | 1 | — | — | 1 | 19 | 1 | 1 | 4 | — | 2 | 4 | — | — | — | — | — | — | — | — | 1 | 36 |
| **$M_{1/2}$** | post-Moslem | — | — | — | — | — | 2 | — | 1 | 4 | 8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 16 |
| | Moslem | — | 1 | 1 | — | 1 | 6 | 6 | 12 | 7 | 35 | 1 | — | 1 | 1 | — | — | — | — | — | — | — | — | — | — | 4 | 76 |
| | Roman | — | — | 1 | 1 | — | 3 | 1 | 7 | 12 | 44 | 2 | — | 3 | 1 | — | 1 | — | — | — | — | — | — | — | — | 14 | 90 |
| | Iron Age | — | — | 3 | — | — | 3 | 2 | 6 | 6 | 35 | 1 | 1 | — | — | 1 | 1 | — | — | — | — | — | — | — | — | 4 | 63 |
| **$M_2$** | post-Moslem | — | — | 1 | 1 | — | 2 | 1 | 1 | 1 | 3 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | 11 |
| | Moslem | 10 | 2 | 5 | 2 | 2 | 14 | 4 | 19 | 9 | 55 | 3 | 1 | 8 | — | 2 | 3 | — | — | — | — | — | — | — | — | 2 | 141 |
| | Roman | 3 | — | — | — | — | 2 | 1 | 5 | 4 | 19 | 2 | 2 | 2 | — | — | 2 | — | — | — | — | — | — | — | — | — | 42 |
| | Iron Age | 1 | — | 2 | — | — | 1 | 1 | 2 | 5 | 18 | — | 2 | — | — | — | 1 | — | — | — | — | — | — | — | — | 1 | 34 |
| **$M_3$** | post-Moslem | 5 | — | 1 | 1 | 1 | 2 | — | 1 | 1 | 1 | — | 6 | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 20 |
| | Moslem | 38 | 1 | 12 | 4 | 2 | 4 | 4 | 5 | 5 | 9 | 5 | 48 | 2 | — | — | — | — | 1 | — | — | — | — | — | — | 8 | 148 |
| | Roman | 5 | 2 | 4 | 3 | 2 | 9 | 2 | 3 | 3 | 11 | 5 | 27 | 2 | — | — | — | — | 1 | — | — | — | — | — | — | 15 | 94 |
| | Iron Age | 5 | 1 | 4 | 2 | 1 | 5 | 2 | 3 | 3 | 8 | 3 | 16 | 1 | — | 1 | — | 1 | 1 | — | — | — | — | — | — | 3 | 60 |

These wear stages extend from teeth just erupted with unworn enamel (*i.e.* no dentine exposed) in stage "0" to teeth from very old animals with hardly any crown left. "na" are teeth that could not be assigned to a wear stage, "N" is the total number of teeth considered.

## TABLE 18B

### Alcáçova de Santarém. Wear stages of the juvenile caprine lamb and kid mandibular teeth that could be identified to species (using the criteria described in Payne, 1985) as sheep (OVA) and goat (CAH).

| | "Main period" | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | na | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **$dP_4$** | Moslem | CAH | 1 | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 5 | — | 1 | — | 2 | — | 1 | — | — | 1 | — | 12 |
| | | OVA | 6 | 2 | — | 1 | 3 | 3 | — | — | 1 | 1 | 1 | 1 | — | 4 | 11 | — | 5 | 5 | 4 | — | 2 | 1 | 1 | 2 | 1 | 55 |
| | Roman | CAH | — | — | — | — | 1 | 1 | — | — | — | — | — | — | 1 | 3 | 1 | — | — | 1 | 1 | — | — | — | — | — | — | 9 |
| | | OVA | 2 | — | — | 1 | — | — | 2 | — | 2 | — | — | 2 | 2 | 9 | 4 | — | 2 | 2 | 2 | — | — | — | — | — | — | 30 |
| | Iron Age | CAH | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | 1 | — | 2 |
| | | OVA | — | — | — | — | — | — | — | 1 | — | — | — | 2 | — | 4 | 5 | — | 3 | 2 | 1 | — | — | — | 1 | — | — | 19 |
| **$M_1$** | Moslem | CAH | 1 | — | — | — | — | — | 3 | — | 1 | 6 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 11 |
| | | OVA | 5 | 1 | 2 | — | — | — | 1 | 2 | 4 | 12 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 27 |
| | Roman | CAH | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 |
| | | OVA | 3 | — | — | — | — | — | — | 1 | 2 | 2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 9 |
| | Iron Age | CAH | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 |
| | | OVA | 1 | — | 1 | — | — | 1 | — | — | — | 3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 6 |
| **$M_2$** | Moslem | CAH | 4 | — | 2 | 2 | — | 2 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 11 |
| | | OVA | 5 | 1 | 2 | — | — | 1 | 2 | 5 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 17 |
| | Roman | CAH | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 |
| | | OVA | 1 | — | — | — | — | 1 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 3 |
| | Iron Age | CAH | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 |
| | | OVA | 1 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 2 |

Wear stages are as in Payne (1987). These wear stages extend from teeth just erupted with unworn enamel (*i.e.* no dentine exposed) in stage "0" to teeth from very old animals with hardly any crown left. "na" are teeth that could not be assigned to a wear stage, "N" is the total number of teeth considered. Note the interesting difference between lambs and kids in the Moslem period when many lambs were slaughtered probably in their first year of life while kids were probably not slaughtered until later (? 10 – 24 months).

## TABLE 19

### Age at slaughter of the chickens at Alcáçova de Santarém.

| "Main Period" | $N_{juvenile}$ | $N_{adult}$ | $N_{total}$ | % juvenile |
|---|---|---|---|---|
| **post-Moslem** | 1 | 30 | 31 | 3 |
| **Moslem** | 25 | 148 | 173 | 14 |
| **Roman** | 5 | 88 | 93 | 5 |
| **Iron Age** | 0 | 4 | 4 | — |

Estimates of the percentages of juvenile animals calculated from the proportion of *incompletely ossified limb bones*. Note the higher proportion of young chicken bones in the Moslem period.

## TABLE 20

### Age at slaughter of the most common animals at Alcáçova de Santarém.

| "Main period" | Cattle | Pig | Sheep/Goat | Red deer | Chicken |
|---|---|---|---|---|---|
| **post-Moslem** | 14 | 50 | 32 | — | 3 |
| **Moslem** | 12 | 38 | 40 | 18 | 14 |
| **Roman** | 23 | 44 | 37 | 17 | 5 |
| **Iron Age** | 20 | 32 | 32 | 15 | — |

Averages of the percentages of juvenile animals calculated from the proportions of milk $dP_4$ and unfused limb bones, or for chicken the percentages of incompletely ossified limb bones. For further details see tables 10 to 19. Note the following apparent changes in age—at—slaughter patterns: Cattle – more juveniles in the Iron Age and Roman period. Pigs – slightly more juveniles in the Roman period and post-Moslem times. Sheep/Goat — slightly more juveniles in the Roman and

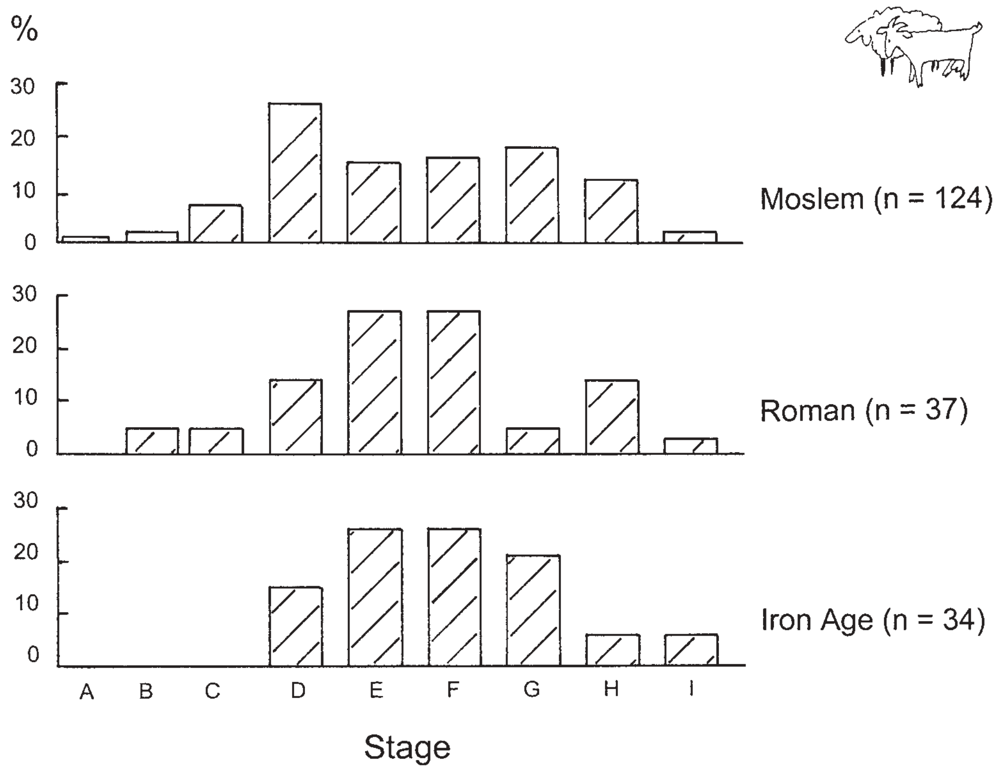


FIG. 15 – Age of slaughter of the caprines at Alcáçova de Santarém. Percentages of mandibles assigned to Payne's (1973) dental eruption and wear stages. Note the slight shift to slaughtering younger adult sheep/goat in Moslem times. This small shift is also reflected in the high counts of third molar teeth in wear stage "0" (*ie* unworn and/or unerupted) and high counts of second molars in wear stages 0 – 5) in Table 18.

Moslem periods. Red deer – no change in the succession. Chicken – more young in the Moslem period.

## *Age at slaughter (Tables 10 to 20 and Fig. 15)*

There are sufficient teeth and bones of red deer, cattle, pigs and caprines and bones of chicken to enable some speculations concerning the slaughter strategy applied to these animals.

Between 15% and 18% of the red deer in the three main periods, Iron Age to Moslem, were from juvenile animals — *i.e.* had unfused limb bone epiphyses (Table 10). This percentage is considerably less than those of the cattle, caprines and pigs (see below) and presumably reflects the fact that the red deer were hunted. Man was not the only predator of red deer; wild carnivores such as wolves were undoubtedly responsible too for part of the mortality of red deer, especially the young. Domestic animals however were protected. Hence the percentage of juveniles represented in the zoo-archaeological assemblage reflects the kind of husbandry practised by people at or near the site. Since the economy was in part geared towards meat consumption, it is not surprising that the percentages of juvenile cattle, caprines and pigs are higher.

In the case of the pig it is possible to suggest, if tentatively as the amount of change is slight, that there are more juveniles in the Roman period — does this signify increased intensity of pig exploitation by the Romans? The Roman writer on cookery, Apicius, gives around a dozen recipes plus variations for suckling and milk-fed pig, and somewhat fewer for *porcus* or sow (Vehling, 1936). At any rate Roman cuisine did show some bias towards young pork. In general first and second pig molars can be distinguished via their size – with second molars being larger than first molars. This difference was used to assign most of the isolated pig $M_1/M_2$s to their position in the jaw (Fig. 16). For the teeth Tables 11-13) it is difficult to observe much change in the culling strategy of this animal. One interesting point is that while the bulk of pig teeth are in wear stages a – g, (*i.e.* fairly young) a few outliers are in the older wear stages, j – m. The pig is an animal exploited primarily for its slaughter products such as meat and fat, and not, like caprines and cattle, for secondary products such as milk and hair. It is therefore hardly surprising that the majority of the pigs were slaughtered at the most economically opportune time when still fairly young. The presence of a small number of older pigs whose molar teeth are in wear stages "j" to "m" requires some explanation. There are two possible interpretations, a) These older specimens belonged to older wild boars or b) they derive from retired breeding animals. If interpretation 'a' were correct, then we would expect the teeth from the older wear stages to be larger since wild boar teeth tend to be larger than those of domestic pig. This is not the case, so that interpretation 'b' is more likely. However, given the small size difference between Iberian wild boars and pigs, this interpretation has to be viewed with caution.

The counts of cattle deciduous fourth premolars (from calves), and the proportions of unfused limb bone epiphyses (from calves) versus fused limb-bones (from adults), all indicate that there was a decrease in the numbers of calves culled in the course of time (Tables 14 and 15). However, this shift is not reflected in the dental wear data (Table 15). Notwithstanding the dental wear data, does this mean that in Moslem times and after, cattle were exploited to a greater extent for their milk and perhaps too for traction?

Unlike the cattle and pigs, there is a large amount of caprine teeth. They allow us to draw some inferences regarding the age-at-death of the sheep/goat in the different levels at Santarém. The long-bone epiphysial fusion counts (Table 16) do not show any age-related

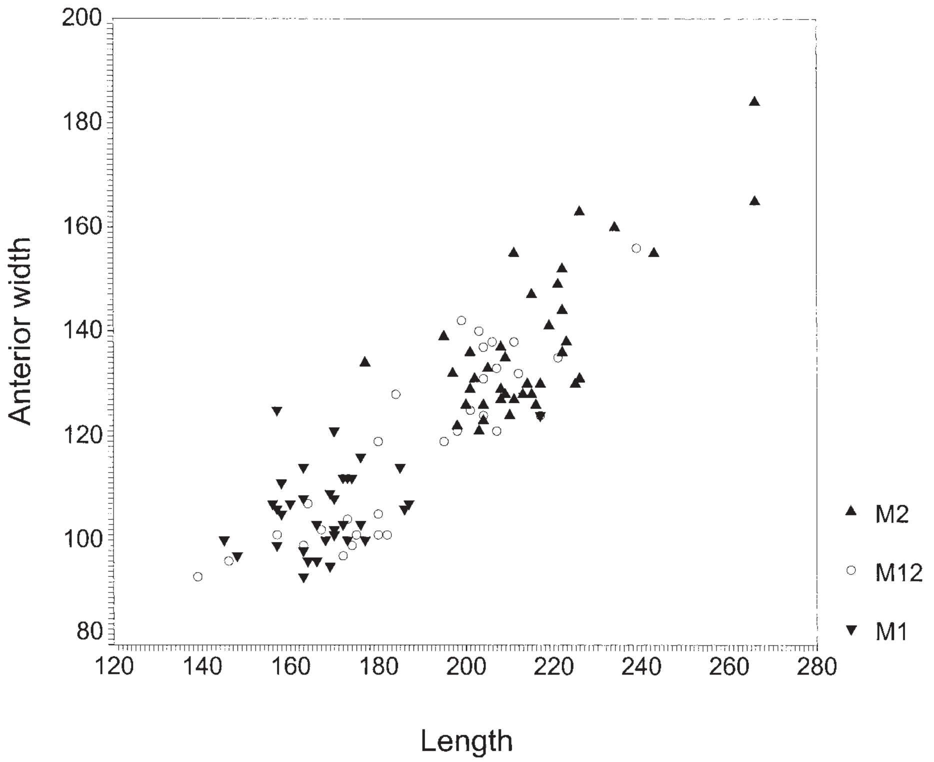


FIG. 16 – Metric assignation of Sus $M_{1/2}$s for age-at-death data in table 13. Anterior width versus length of first and second lower *Sus* molars from Alcáçova de Santarém in tenths of millimetre. These are depicted as solid triangles and indicate a metric separation between these two teeth used to assign isolated molars (depicted as open circles), whose identity as $M_1$ or $M_2$ was unknown. Most of these are assigned to their positions and their wear stages could be added to those of the other $M_1$s and $M_2$s in Table 12.

variations at Santarém. The dental eruption and wear stages are shown in two ways, a) considering complete or posterior parts of mandibles (following Payne, 1973; Table 17; Fig. 15) and b) considering the wear stage of each individual tooth (following Payne, 1987; Table 18[1]).

Both sets of dental data indicate that in the Moslem period many of the sheep and goat were slaughtered at a younger age than in the preceding Roman and Iron Ages. In Iron Age and Roman times the peak in age-at-death occurred in mandible wear stages E and F (*i.e.* roughly 2 to 4 years old), whereas in the Moslem period the peak occurred in stage D (*i.e.* approximately 1-2 years). For the individual teeth, note the larger numbers of $M_2$s in stages 0-5 and the very high count of unerupted and/or unworn $M_3$s in the Moslem period. A possible interpretation of this shift is that in Moslem times sheep were exploited more for their meat than for their wool and milk.

These changes of the cattle and especially the caprine age distributions are most interesting. Why were the Moslems culling fewer calves than their Roman and Iron Age predecessors? In terms of meat gain there is little point in keeping animals many years. One possibility is that the Moslems preferred to keep most of their cows to a greater age for dairy purposes and perhaps many more of the bullocks were castrated for traction. The reduction in numbers of juvenile cattle in Moslem Santarém meshes well with the caprine data which indicate the opposite trend. The increased slaughter of juvenile caprines in Moslem Iberia is also reported from other sites. One example in Portugal is Mértola (Morales, 1993). At Castillo de Albarracín (Teruel, Aragón, Spain), Moreno García (2001) noted a higher proportion of juvenile caprines slaughtered in the two earliest Moslem periods (Taifa and Almohad) while in the succeeding Christian periods the caprines were not slaughtered until they were considerably older.

How can we interpret these age-related changes? In terms of food provided and meat gain and where the emphasis is upon meat, there is little point in keeping animals like sheep and goats much beyond their second or third year of life. This means that most caprine bones from a meat-consuming community will be fairly young. However sheep and goat continue to produce good milk yields and fleeces for several years. In a so-called "secondary products economy" we would expect to find a delay of slaughter until animals are well into their 5th or 6th year (Payne, 1973).

It is possible then that the shift at Santarém is a species-related meat-driven one — *i.e.* the Iron Age and Roman people had a preference for beef and pork while the Moslems had a preference for mutton. In his review of early Arab cuisine, Rosenberger (1999) writes that in the Arab world beef was not much liked and that cows and oxen gave milk or laboured in the fields. Most meat came from the vast flocks of sheep, while goats, which mingled with the flocks of sheep, were less widely eaten. The Arabs liked the taste of mutton and the abundant fat that it provided. He also writes that Arab physicians regarded the meat of the yearling lamb as being close to perfection (see also note 1 below). Did the Iron Age and Roman peoples exploit caprines for milk and wool, while the Moslems relied more upon the cow for their dairy products?

In the Roman and Moslem periods a number of the bird bones derived from juveniles, *i.e.* with spongy or incompletely ossified ends and could be tentatively identified as chicken (table 19). It is interesting that they are more frequent in the Moslem period than in the Roman. According to Hernández Carrasquilla and Aguilar Baltar (1994), a high proportion of young chickens — clearly slaughtered when more tasty — is an indication of affluence. In a comparison of contemporary Christian and Moslem sites in Spain they noted a higher frequency of young chicken bones in the Moslem sites. Perhaps the chicken husbandry at Santarém was more intensive in Moslem than in Roman times with most of the hens kept for egg production and slaughtered when in old age, while many (perhaps most) of the cocks were slaughtered while still osteologically immature. Juvenile bird bone is very fragile, so the percentages of juveniles in Table 19 are almost certainly much underrepresented, most having disappeared *post-mortem*. Another explanation, similar to the one offered above to explain the increase of rabbits, is also worth considering. Chickens like rabbits are relatively easy to keep and both may be kept in towns and cities. The abundance of rabbits and young chickens may then simply reflect increased urbanisation and the need to feed more town dwellers.

### *Aberrant and pathological conditions*

It is usual that some domestic animal bones show signs of pathology and/or arthroses. In this respect the animal bones assemblage from Santarém is no exception. Fig. 17 shows cases of cattle foot bones which show rather severe disease and arthrosis. Note in particular the asymmetry of the distal end of the metapodials with one condyle being considerably wider than the other. The condition may have been due to overload on the foot joint between the distal metapodials and the proximal phalanx (see also Table 21). The measurements of these so-called 'asymmetric' metapodials are also given in Table 22. Note that in most cases the medial condyle is wider than the lateral one. Bartosiewicz et al. (1997) illustrate several cases of modern draught cattle with these symptoms. However the possibility that soft ground may induce the same result should also be borne in mind. The animals whose metapodials are shown in Fig. 17 may have belonged to overworked plough oxen for example.

**TABLE 21**

Cattle pathology: arthropathy of the distal metapodial joint.

| "Main period" | Metacarpals | Metatarsals |
|---|---|---|
| post-Moslem | 0 / 5 | 0 / 5 |
| Moslem | 2 / 38 | 1 / 48 |
| Roman | 2 / 19 | 0 / 23 |
| Iron Age | 0 / 22 | 1 / 16 |

Counts of adult cattle distal metapodials which show "asymmetry" – *i.e.* one condyle, usually the medial, is considerably wider than the other. These are shown as x / y where x = the number of asymmetric metapodials, and y = the total number of metapodials. This arthropathy is thought to be caused by excess strain imposed on the joint during the life of the animal and is often associated with draught animals or animals living on soft ground. Approximately 3% of the cattle at Santarém were affected in this way, but with so few cases it is unclear whether there was any change in the course of time.

**TABLE 22**

Cattle metapodials from Alcáçova de Santarém that exhibit arthropathy of the distal articulation.

| Bone | Ano | Cont | UE | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metacarpal | 1999 | 84 | 11 | MED1 | — | 673 | 328 | **350** | 320 | 247 | 230 | — |
| Metacarpal | 2001 | 542 | 42 | MED1 | 1902 | 679 | 329 | **367** | 298 | 262 | 223 | 338 |
| Metacarpal | 1999 | 429 | 134 | ROM2 | — | 697 | 336 | 328 | **366** | 265 | 244 | — |
| Metacarpal | 1999 | 266 | 221 | ROM1 | 1826 | — | 354 | **350** | 320 | 281 | 249 | 362 |
| Metatarsal | 1999 | 280 | 63 | MED1 | 2135 | 555 | 295 | **273** | 255 | 214 | 203 | 258 |
| Metatarsal | 1999 | 301 | 360 | Fe8 | — | 561 | 303 | **275** | 260 | 229 | 215 | — |

Measurements, in tenths of a millimetre, of the widths of the medial and lateral condyles (WCM and WCL) of metacarpals and metatarsals that display 'asymmetry' of the distal end. For a description of the way these measurements are taken see figure 1 in Davis (1996). Note that in all but one case the medial condyle is wider than the lateral one. This condition may be

FIG. 17 – Pathology. Three cases of cattle foot bones showing signs of arthropathy/disease. From left to right: metatarsal and articulating proximal phalanges showing extensive extra deposition of bone around the joint (1997 camada 6, Iron Age); distal metatarsal with an injury on the medial side of the shaft which could be an ossified haematoma caused by impact and subsequent sub-periosteal bleeding (1999, UE 17, Moslem; see also Baker and Brothwell, 1980, p. 83); and metacarpal with extra-wide medial condyle (1999 UE 221, Roman 1). The first and third examples may reflect excess strain on the joint in life — perhaps they belonged to animals overused for traction.

caused by excessive strain on the metapodial-phalangeal joint. "Ano" = year of excavation, "Cont" = crate number and "UE" = stratigraphic unit number.

## TABLE 23

Cattle lower third molar teeth (M3) whose hypoconulid, the "third" or posterior pillar, is absent. (One of the six Iron Age cases has a reduced hypoconulid.)

| "Main period" | Hypoconulid absent | Total number observed $M_3$s |
|---|---|---|
| post-Moslem | 0 | 3 |
| Moslem | 3 | 12 |
| Roman | 0 | 15 |
| Iron Age | 6 | 19 |


FIG. 18 – Pathology. Three galliform (probably chicken) tibio-tarsals with "bent" shafts. On the left is a modern normal chicken (CIPA N.° 972, female). The three pathological ones (from left to right: 1995 Camada 1 Silo Grande; and the two on the right: 1995 UE 248) all come from the Moslem period and the two small ones probably belonged to the same animal. In modern farms practising intensive rearing, overfeeding results in overweight birds, which can cause "bending" of the tibio-tarsals. Were the hens in Moslem Santarém overfed? Or is this a case of mineral deficiency?

In artiodactyls the lower third molar tooth possesses three pillars. The third pillar, or hypoconulid, is somewhat smaller, and occasionally for some unknown reason fails to develop. At Alcáçova de Santarém there are several cases of cattle $M_3$s with missing hypoconulids (Table 23). Although the number of cases is small, it is interesting that this condition is found in the Moslem and Iron Age but is not recorded in the Roman period. One speculation is that it is an inherited condition and is somehow connected to inbreeding. Does the absence of this condition in Roman Santarém signify less cattle inbreeding? Were the Romans bringing stud bulls or breeding cows from greater distances than was the case in previous and subsequent times?

A red deer proximal phalanx (from MOD2) has exostoses (bony outgrowths) around its distal articular surface, as does a pig metacarpal from Iron Age 5. Neither pig nor red deer are known as animals harnessed for their power. These cases may simply be due to old age. A Roman (Roman 1) sheep metatarsal has an unusually narrow shaft, perhaps caused by extreme malnourishment. Three galliform (presumably chicken) tibiotarsals from the Moslem level (Fig. 18) have bent shafts. I have observed this condition in modern fowl reared intensively. It is probably caused by mechanical strain induced on this bone as a result of over-feeding. Do these three bones indicate over-feeding of hens in the Moslem period at Santarém? This interpretation adds an interesting gloss on the suggestion (see below) that in the Moslem period the principal reason for keeping chickens was for their eggs!

## Morphometry — size, sex and shape (See Appendix 2 for measurements)

Measurements of bones and teeth play an important role in zoo-archaeology. They are useful in distinguishing between closely related species (like sheep and goats, see above) and between wild and domestic forms (like wild boar and pig; and aurochs and cattle, see also above). Measurements can tell us about size and shape, and for large samples it is sometimes possible to ascertain the sex ratio of the animal populations from which the bones are derived. Given a chronological sequence of strata, size changes can tell us about environmental change and economic changes such as livestock improvement. Here at Santarém there are several questions that should be answerable using measurements. They include:

- Do species vary in size and/or shape between Iron Age and Moslem period?
- By including metric data from other Portuguese sites, how does the Santarém sequence fit into a broader one spanning the late Pleistocene to modern times?
- Is there any evidence for animal improvement?

### *Cattle*

The measurements of the width and length of the lower third molars ($M_3$) and the astragalus lengths of the cattle (Figs. 3 and 19) indicate that there was little change in the overall size of domestic cattle in central Portugal between Chalcolithic and Moslem times. Although there is no experimental evidence, artiodactyl cheek teeth generally show less sexual dimorphism than some of the post-cranial bones. Variation in tooth size may therefore reflect genotypic or environmental variation. If this is indeed the case then clearly the cattle of Santarém remained genotypically similar, or the conditions in which the cattle were husbanded

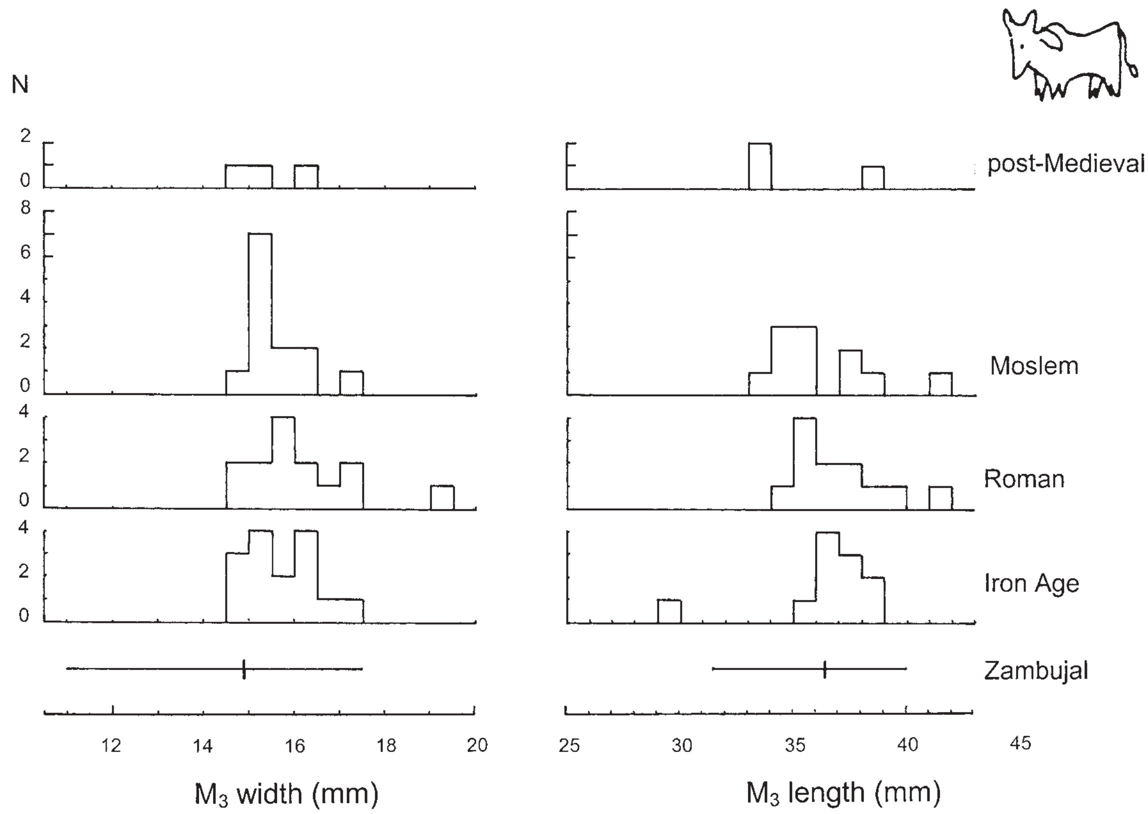


FIG. 19 – Cattle size. Lower third molar ($M_3$) tooth width and length in millimetres from the four main periods at Alcáçova de Santarém. Each box represents an individual specimen. Below are the ranges and mean values for the cattle from Zambujal periods 1 and 2 (Chalcolithic; n = 43, from Driesch and Boessneck, 1976). There does not appear to have been any change in the size of cattle between Chalcolithic and Medieval times.

remained similar in the course of time. This contrasts with the situation reported for Germany and England where the Romans are credited with increasing the size of their cattle (Teichert, 1984; Albarella, in press). Van Neer (1995) also states that Roman cattle in west-central Europe were larger than their Iron Age forebears, which he attributes to the import of animals from the south. Following the decline of the Roman Empire there he notes that in many regions cattle reverted to their Iron Age size. Perhaps the Romans failed to invest in the Lusitanian cattle economy!

Certain cattle post-cranial bones like the metapodials exhibit sexual dimorphism with male bones being larger than those of the females (see Bosold, 1968 for example). In order to discern the sexual composition of the Santarém cattle, the shape (robustness of the shaft and distal end) of the metapodials is plotted in Fig. 20 (metacarpals) and Fig. 21 (metatarsals). Without a reference sample of sexed cattle skeletons from Iberia it is difficult to draw inferences from these figures. However, Fock's (1966) data help. They indicate the degree of difference in robustness between the sexes of present-day German cattle. It is most likely that the distribution of the plots in these figures reflects the sexual composition of the animals. The fact that the points appear to lie along the same regression line suggests that rather than different types (*e.g.* breeds) of animals we are seeing a sex difference. Thus plots in the lower left and upper right of the graphs are respectively females (cows) and males (bulls or steers). If this interpretation is correct, then in the Iron Age, and perhaps the Roman period, there were more adult cows brought to Santarém while in the Moslem

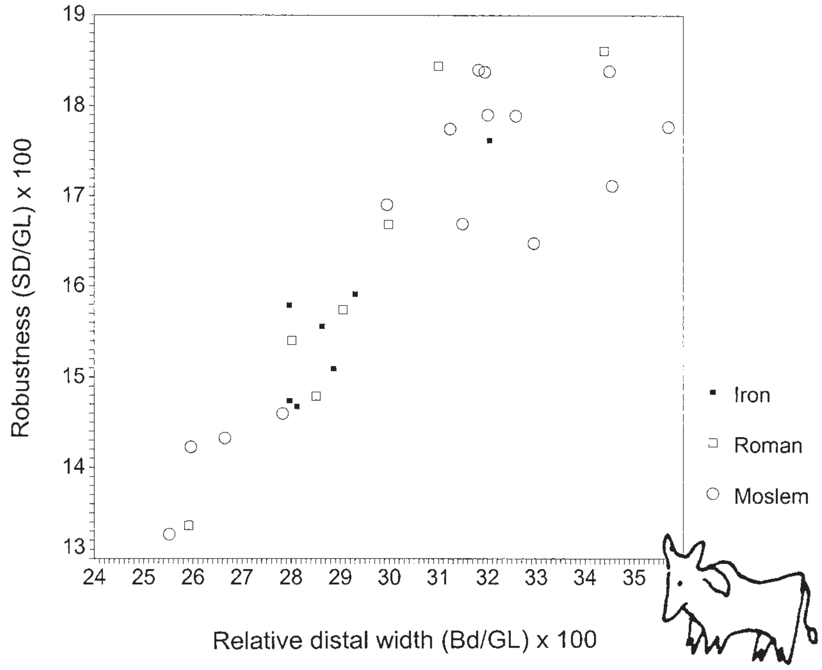


FIG. 20 – Cattle metacarpal shape and sex. Variation of cattle metacarpal (adult, fused specimens only) shape at Alcáçova de Santarém in Iron Age, Roman and Moslem times (there were insufficient data from post-Medieval times). A plot of the shaft robustness (shaft width expressed as a proportion of length) against the distal width expressed also as a proportion of the length. The distribution of these 'metacarpal shape' plots shows a possible difference between Iron Age and Moslem periods. Note that in the former period there are more plots falling in the lower left part of the graph (these are the slender, probably female, bones) while in the latter period there are more plots in the upper right part of the graph (these are the more robust, probably male, bones).

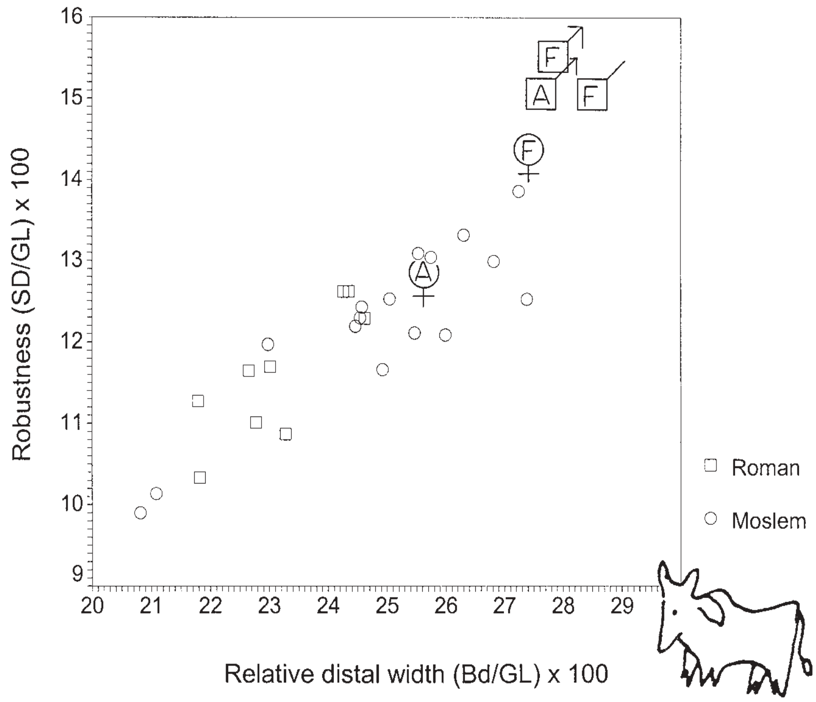


FIG. 21 – Cattle metatarsal shape and sex. Variation of cattle metatarsal (adult, fused specimens only) shape at Alcáçova de Santarém in Roman and Moslem times (there were insufficient data from Iron Age and post-Medieval times). A plot of the shaft robustness (shaft width expressed as a proportion of length) against the distal width expressed also as a proportion of the length. The modern data for two breeds of German cattle are means of samples from Fock (1966) to show the degree of separation between males, steers and females. They are as follows: "A" Angler Rind females and males; "F" Deutsches Fleckvieh females, males and castrates. Although speculative in view of the small samples, there may have been more adult bulls in Moslem times than in the Roman period.

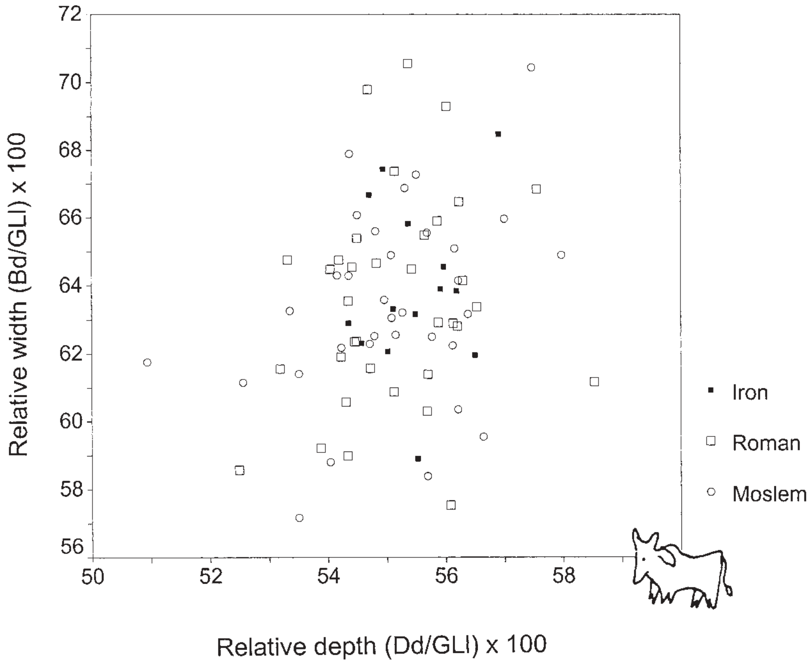


FIG. 22 – Cattle astragalus shape. Scatter plot of measurements Bd/GLl (an index of width) against Dl/GLl (an index of depth) for Iron Age, Roman and Moslem cattle astragali from Alcáçova de Santarém. Their shape appears to have remained the same during this time span.

period there were more adult bulls and/or steers. In other words, in early times the bulk of the cattle slaughtered for meat (while still young) were the males, while in Moslem times males were not slaughtered until well into adulthood (perhaps castrated). Were these retired beasts of burden? Does this reflect a more sophisticated kind of agriculture in Moslem Portugal?

It is worthwhile considering the possible change of shape of bones in the course of time. Breeds, for example, can sometimes be differentiated on the basis of the overall shape of some of their bones. Hence, a shape change may be linked to the introduction of new breeding stock and/or the improvement of local stock, as has been demonstrated zoo-archaeologically for the medieval — post-medieval cattle at a castle site in England (Albarella and Davis, 1996). Did this happen to the cattle at Santarém? Both the metapodial plots (Figs. 20 and 21), as well as those of the astragali (Fig. 22), fail to show any shape differences between the Iron Age and Moslem periods. This does not of course mean that new breeds were *not* introduced at some stage — if they were they may have been of similar shape and hence impossible to differentiate biometrically.

## *Pigs*

As already mentioned above, it is quite likely that some of the larger *Sus* bones (Fig. 5) belonged to wild boar. If we assume that the larger specimens derive from wild boar and the bulk of the smaller ones derive from pigs, then there is no evidence for any significant biometric change in the pigs at Santarém between the Iron Age and Moslem periods. The Islamic avoidance of pork consumption would in any case make it rather surprising to find evidence for pig improvement under Moslem rule (unlike the situation for the sheep see below)!

## *Sheep*

Some caprine bones could be identified specifically as sheep or goats. Examples include many distal humeri and metapodials, calcanea and astragali. Their measurements in the case of the sheep have provided some interesting evidence for change (Figs. 23 to 27). Note for example the greater lengths of sheep calcanea in the Moslem period (a difference which is statistically significant if the Moslem sample is compared to the combined Roman and Iron Age one). Figs. 23 to 27 all show that the Moslem period sheep were somewhat different — they were relatively larger than sheep of the Iron Age and Roman periods.

One factor that has to be considered in studies of size variation is the age of the animal at death; the dimensions of certain sheep bones such as humerus BT and astragalus Bd increase with the age of the animal (Davis, 2000). However, in order to cite age-at-death as the factor responsible for a size change in the course of time at Santarém, we would need to demonstrate a correlated change in the frequencies of different age groups slaughtered. As already discussed above, no marked change occurred, indeed if there was a change in the slaughter pattern, it was one which favoured more *younger* caprines in Moslem Santarém than in earlier times. Hence we can eliminate age as responsible for the size change of the sheep at Santarém.

What of sex? Bones of males (rams) are generally rather more robust than those of females (ewes), and castrates (wethers) have longer bones. However the astragali and humerus dimensions considered here do not show any particularly marked sexual dimorphism as the plots of modern known-sex sheep in Figs. 23 to 25 (see the right side) illustrate. Indeed the small sexual shape differences illustrated by these sheep of known-sex are quite different from the variations we can observe in the Santarém succession. Fig. 23 shows that for the humeri, the clustering of plots changes with time, with Iron Age and Roman spreads being relatively tightly clustered and Moslem period plots having a wide spread. One possible reason for this difference is that the Iron Age and Roman sheep humeri belonged to one sex only — here females — while both sexes — smaller females and larger males — are represented in the Moslem period sample. However, the distribution of plots of modern sexed sheep does not support such an explanation. If we assume that the amount of inter-sex difference for humerus BT and HTC in the modern flock of Shetland sheep shown on the right hand side was similarly negligible in antiquity, then we can rule out any kind of change in the representation of sexes as an explanation for these differences.

Until we have biometric data for traditional Iberian breeds of sheep, it is difficult to interpret the variations we observe here for the sheep metric data. As a working hypothesis, I suggest that the size changes in the sheep bones at Santarém reflect the introduction of new breeding stock and/or the local improvement of sheep in this part of Portugal. The extended spread of Moslem plots may even include a more heterogeneous source of the sheep brought to Santarém for slaughter — perhaps two breeds? These may include animals imported from long distances such as sheep from the Maghreb. The import of new breeds (from the east and/or from the Maghreb), and/or local improvement of breeding stock may well reflect agricultural improvements in Lusitania/al Gharb al-Andaluz by Romans and Arabs. Columella (Forster and Heffner, 1968) makes an interesting comment in this regard. He wrote (Book VII, II) that his uncle, in an attempt to improve wool quality, introduced from "a neighbouring district of Africa" to his estate near Gades (modern Cadiz) "fierce wild rams", tamed them and mated them with his ewes. Clearly, the Romans were experimenting with their livestock and shipping them from North Africa into Iberia. An improvement of local sheep in Moslem times also would not be at all surprising in view of what we already know of Arab agricultural

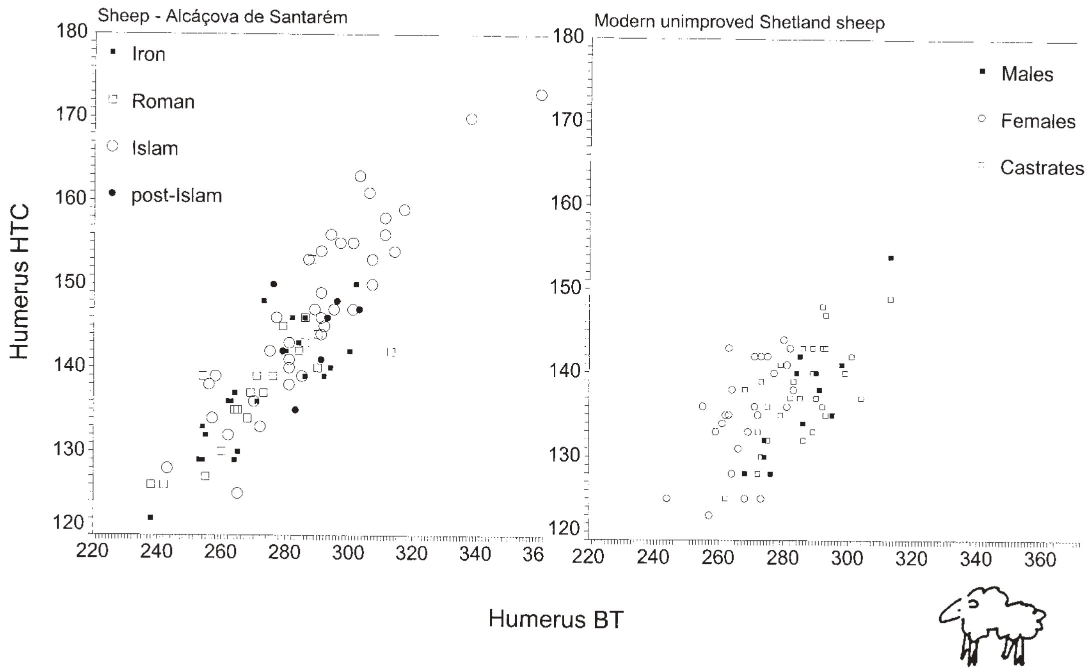


FIG. 23 – Sheep size and shape variation at Alcáçova de Santarém. Plot of the minimum trochlea diameter (HTC) versus the distal trochlea width (BT) of the humerus. On the left are the plots for sheep at Santarém. On the right are plots for a sample of modern unimproved Shetland sheep of known-sex (Davis, 1996, 2000). Measurements are in tenths of a millimetre. These two measurements exhibit low sexual dimorphism so that a variation in the proportions of the different sexes cannot explain the presence of larger sheep in the Islamic period.

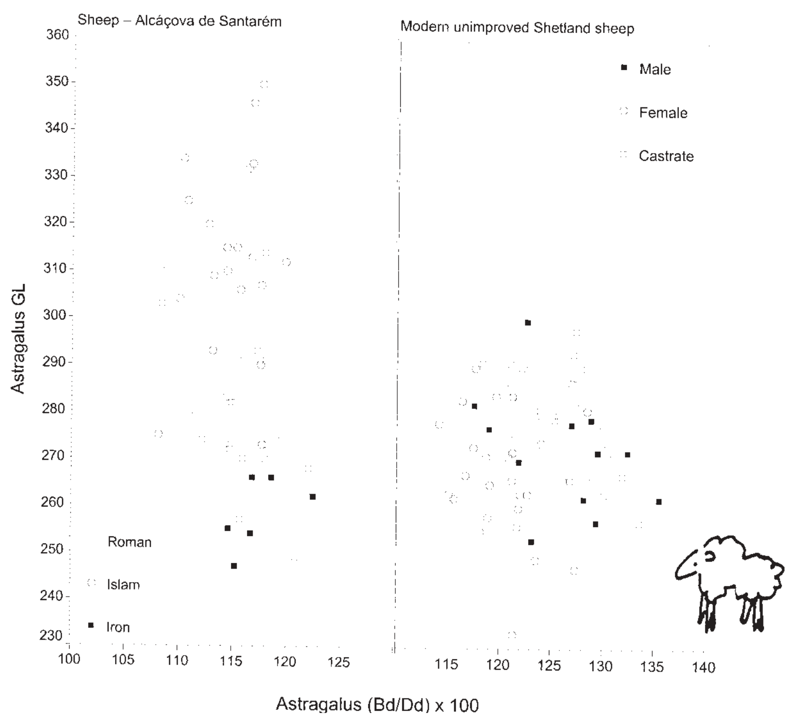


FIG. 24 – Sheep size and shape variation at Alcáçova de Santarém. Plot of the width expressed as a fraction of the depth (Bd/Dd) versus the length (GLl) in tenths of a millimetre of the astragalus. On the left are the plots for sheep at Santarém. On the right are plots for a sample of modern unimproved Shetland sheep of known-sex (Davis, 1996, 2000). The modern Shetland data indicate a very weak distinction between the sexes with females tending to plot towards the lower left and males and wethers (castrates) plotting to the top right. The change of the Santarém sheep astragali (here a relative increase of the length) between Iron Age and Moslem times however is from bottom to top and hence was not due to a change in the course of time of the sexual composition of flocks of sheep brought to Santarém.

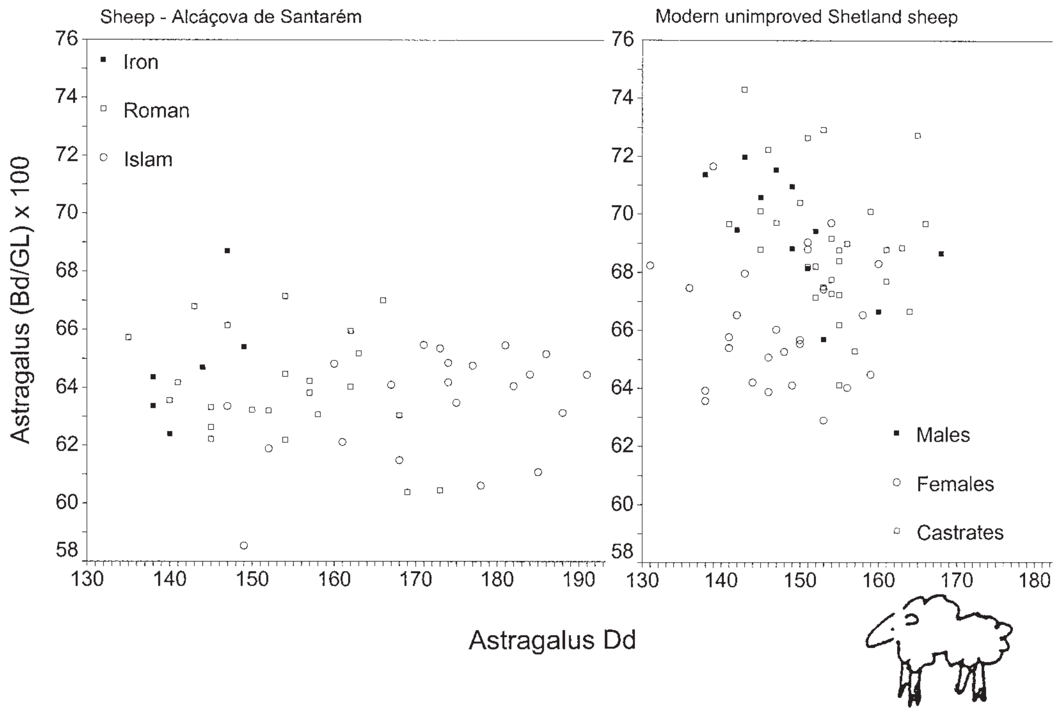


FIG. 25 – Sheep size and shape variation at Alcáçova de Santarém. Plot of the width expressed as a fraction of the length (Bd/GL) versus the depth (Dd) of astragali, in tenths of millimetre, at Santarém alongside, on the right, plots for a sample of modern known-sex unimproved Shetland sheep (Davis, 1996, 2000). The modern Shetland data indicate weak distinction of the sexes with females tending to plot towards the lower left and males and wethers (castrates) plotting to the top right. The change of the Santarém sheep astragali between Iron Age and Moslem times however is from left to right and hence was not due to a change of the sexual composition of flocks of sheep brought to slaughter in Santarém in the course of time.

improvements. The Arabs are credited with the introduction of new agricultural practises into Iberia as well as the spread of many new species of economic importance. These included 16 food crops such as rice, sugar cane, spinach, artichokes, sour oranges, lemons, limes, bananas, and a fibre crop, cotton (Watson, 1974). In Moslem times according to the Kitab al-Rawd al--Mitar, large sized cattle and sheep were to be found north of Toledo. These would be purchased by merchants and then re-sold in all parts of the Iberian Peninsula (Gerbet, 2000, p. 43). In his well known study of the *Mesta* written in 1920, Julius Klein suggested that it was the tribe of Beni Merin Berbers from North Africa who introduced the merino sheep into Spain during the al-Mohad period from the mid 12th century onwards. This would of course explain the origin of the name of this famous breed. He also noted that much present day Spanish pastoral terminology is derived from the Arabic and wrote that "... like so many other elements contributing to the development of Spain, economic as well as cultural and political, the merino and many features of the migratory sheep industry were introduced by the Moors" (Klein, 1964, p. 7). An improvement of Iberian sheep in Moslem times would indeed seem logical. According to El Faiz (2000), "La période qui va du XI$^{e}$ au XII$^{e}$ siècle peut être qualifiée de « moment andalou» dans la marche générale du progrès agricole. Séville, après Cordoue et Tolède, est devenue une capitale agricole et La Mecque des agronomes. ... son hinterland, l'Aljarafe, qui a constitué le laboratoire de la nouvelle agriculture."

Further osteometric studies of sheep bones from various Chalcolithic, Iron Age, Roman and Moslem sites in the southern half of Portugal (work in progress) corroborate the trend observed here at Santarém (Fig. 27). Though, while an Iron Age to Roman increase of the size of sheep seems unlikely, there is a considerable increase in size of sheep here by the end of the Moslem period. The fact that the Romans may have had little if any impact on

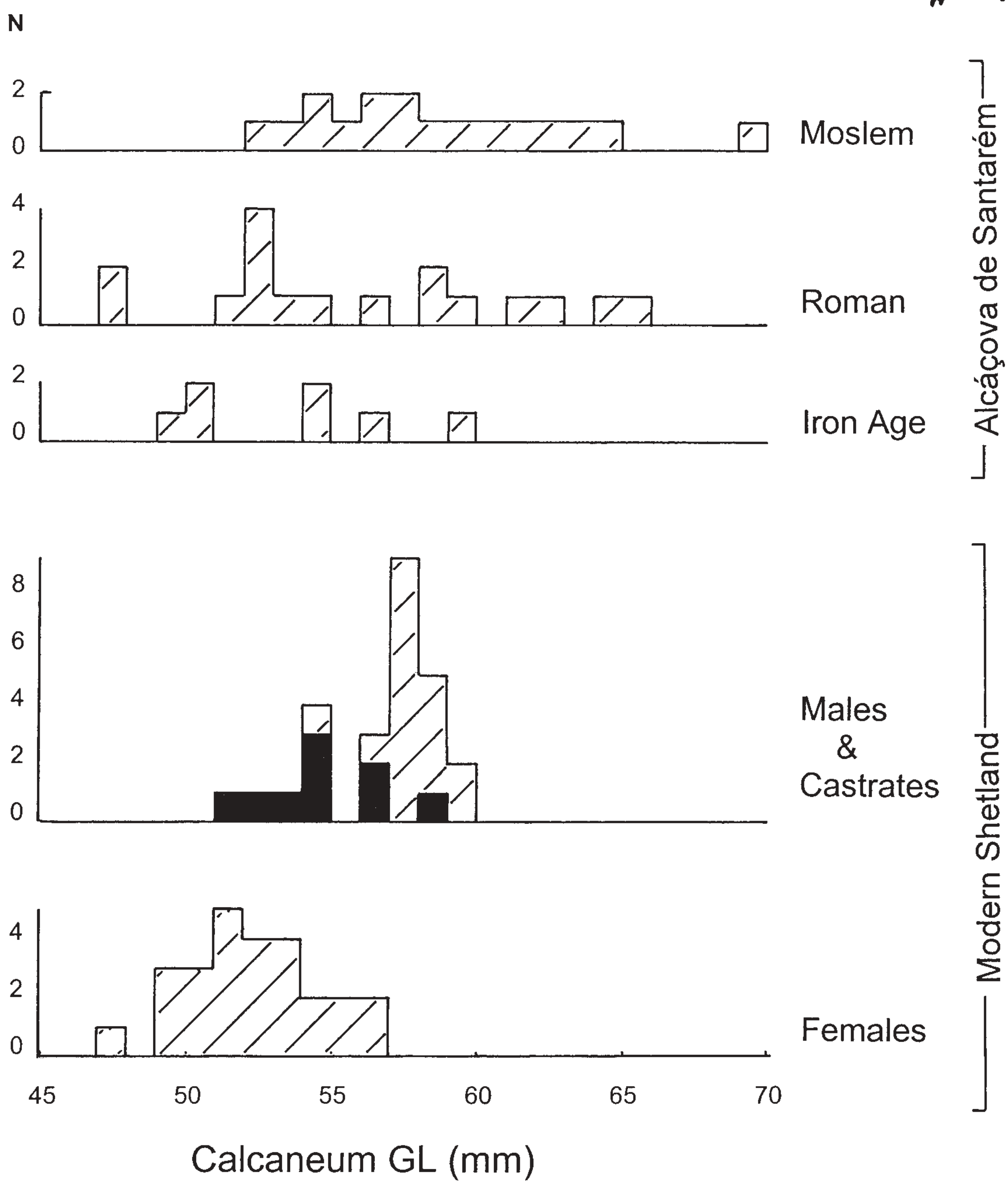


FIG. 26 – Sheep size variation at Alcáçova de Santarém. Plots of the lengths of adult (with fused *tuber calcis*) calcanea at Santarém (above) compared with modern specimens of known-sex unimproved Shetland sheep (below; Davis, 1996, 2000). For these modern sexed sheep, males are shown black, castrates and females hatched. Each square represents a single specimen. A comparison between combined Iron Age and Roman samples (n = 24, mean = 55,2, sd = 5,12) with the Moslem sample (n = 17, mean = 58,6, sd = 4,42) indicates that at the 5% level the Moslem period calcanea are significantly larger ("t" = 2,2). The modern Shetland data indicate slight distinction between the sexes, but this difference is too weak to account for the increase in size of Santarém sheep between Iron Age/Roman and Moslem times.

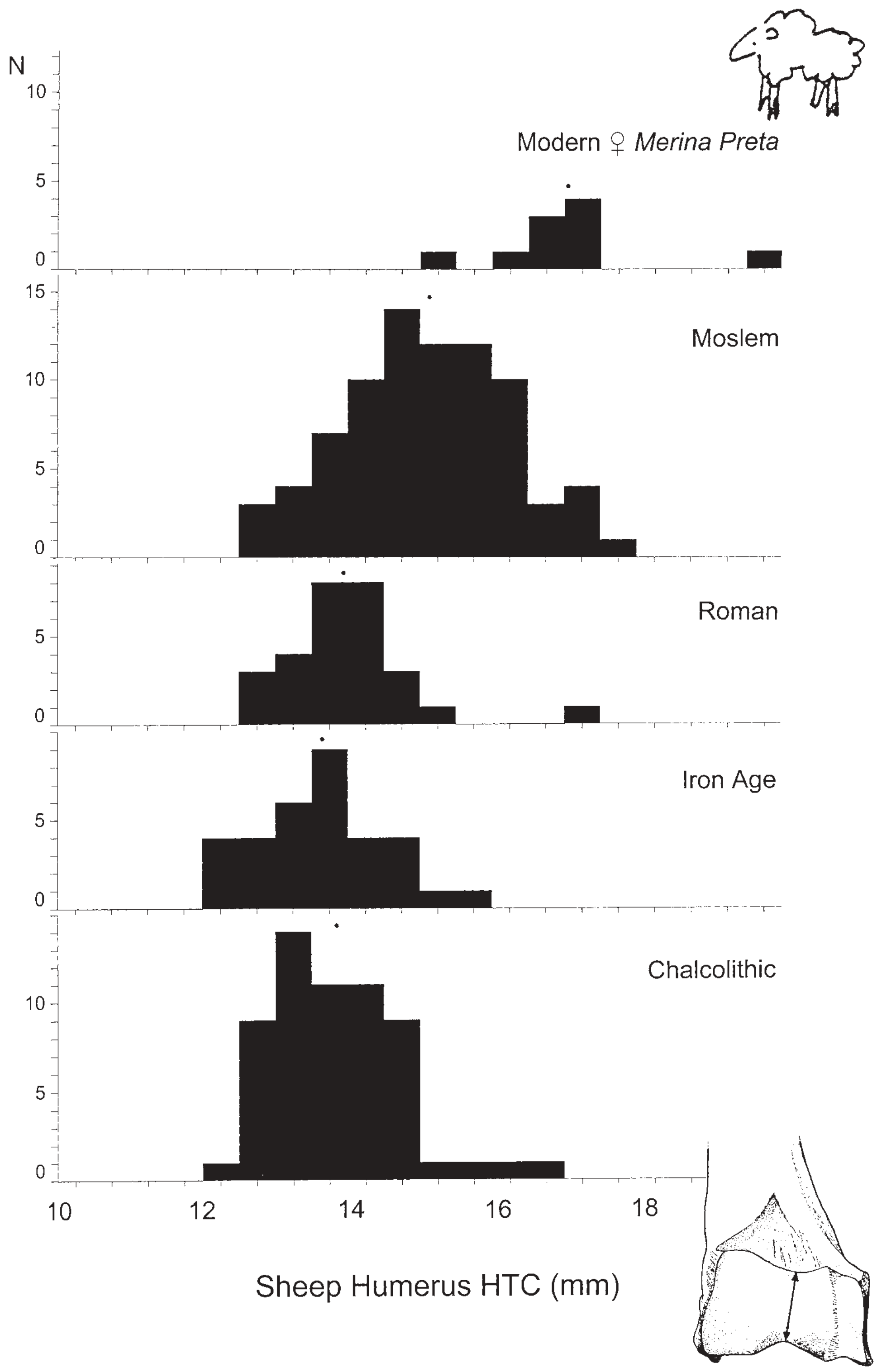


FIG. 27 – Sheep size variation in Portugal from the Chalcolithic to modern times – preliminary results (Davis in preparation). Histograms of the minimum trochlea diameter of sheep humeri (fused specimens only) from Chalcolithic (Leceia, Zambujal and Mercador), Iron Age (Alcáçova de Santarém, Castro Marim), Roman (Alcáçova de Santarém, Torre de Palma) Moslem (Alcáçova de Santarém, Silves-Biblioteca) and ten modern female Merina Preta. These graphs indicate that sheep size remained stable between Chalcolithic and Roman times, but that animals from the Moslem period were larger. While one could argue that the Moslem sample comprises predominantly males and the earlier ones females, this is unlikely since the measurement "humerus HTC" shows almost no sexual dimorphism with males a mere 1% larger than females on average (Davis, 2000).

the sheep, while the Moslems had a greater impact, could reflect the status of, on the one hand Lusitania and, on the other, al-gharb al-Andaluz within Roman and Arab worlds. From an agricultural point of view was Lusitania a mere peripheral province where al-Andalusia was, as El Faiz (2000, p. 21) suggests, "le laboratoire de la nouvelle agriculture?"

*Goat*

Notwithstanding the smallness of the samples, the distal humerus data (Fig. 28) indicate, if tentatively, that the goat did not undergo any kind of size or shape change at Santarém. The five Iron Age goat humeri show the same degree of metric spread, as do the 15 from the Moslem period. The goat is often considered to be the "poor man's sheep" (Digard, 1981, p. 28), so perhaps it is hardly surprising that the Moslems of Andalusia paid greater attention to the sheep.

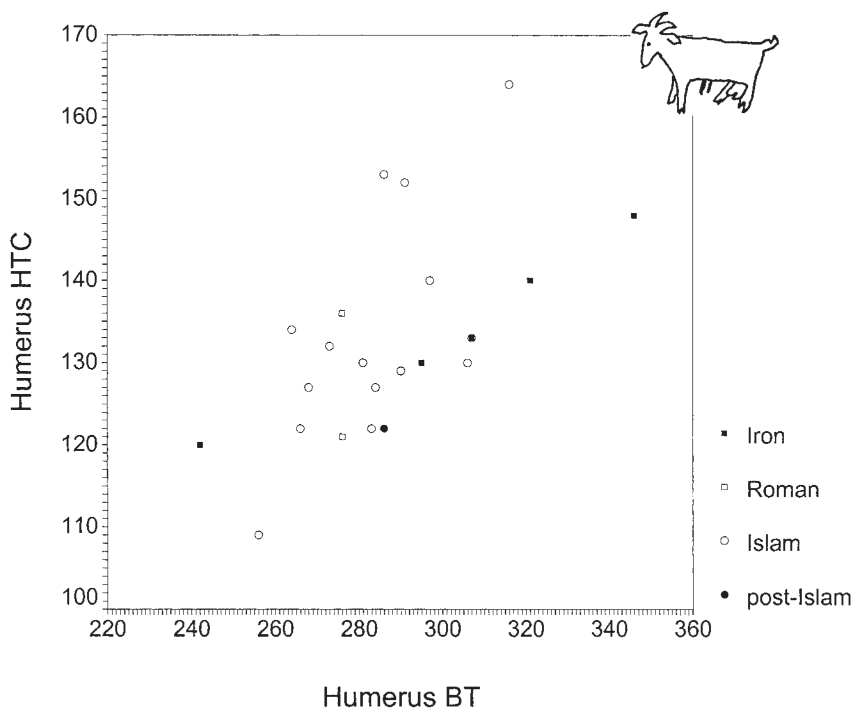


FIG. 28 – Goat size variation at Alcáçova de Santarém. Plots of the minimum trochlea diameter (HTC) versus the distal trochlea width (BT) of the humerus. Measurements are in tenths of a millimetre. There appears to be little evidence for any biometric change in the goats in the Santarém succession.

*Red deer*

There are sufficient measurements of the red deer bones to enable an analysis of the variation in size of this species during the succession at Santarém. These biometric data can also be compared to those of red deer from Portuguese Mesolithic and Chalcolithic sites as well as a small sample from the Upper Pleistocene at Caldeirão cave. With regard to intra-site variation, there was no observable change in the size of red deer between the Iron Age and Moslem period at Alcáçova de Santarém (Fig. 29). The Upper Pleistocene red deer, however, were clearly larger than those from subsequent times (see also Davis, 2002). This Pleistocene – Holocene size reduction was noted in Spain and elsewhere in Europe (Walvius, 1961; Lister, 1987; Klein and

Cruz-Uribe, 1994; Mariezkurrena and Altuna, 1983) and may reflect higher quality forage in those earlier times and/or colder temperatures.

## TABLE 24

Red deer in Portugal – size increase since Mesolithic times.

| | | Mesolithic | | | | | Alcáçova de Santarém | | |
|---|---|---|---|---|---|---|---|---|---|
| | | n | mean | sd | "t" | sig | n | mean | sd |
| Humerus | BT | 17 | 46,3 | 2,35 | 2,3 | 5% | 33 | 48,5 | 3,53 |
| Humerus | HTC | 22 | 24,5 | 1,52 | 5,9 | 1% | 53 | 26,2 | 1,56 |
| Metacarpal | Bd | 8 | 36,6 | 0,88 | 1,6 | 10% | 19 | 38,1 | 2,54 |
| Metacarpal | Dd | 8 | 24,1 | 0,56 | 3,2 | 1% | 19 | 25,6 | 1,25 |
| Tibia | Bd | 16 | 40,9 | 2,56 | 2,7 | 1% | 25 | 43,9 | 3,90 |
| Astragalus | GL | 17 | 47,6 | 2,14 | 4,0 | 1% | 45 | 50,3 | 2,46 |
| Astragalus | Bd | 15 | 30,1 | 1,67 | 2,2 | 2,5% | 45 | 31,2 | 1,72 |
| Calcaneum | GL | 10 | 101,0 | 4,45 | 3,8 | 1% | 15 | 110,5 | 6,91 |

The average sizes in millimetres of certain bones of *Cervus elaphus* from the Mesolithic sites Cabeço do Pez and Poças de São Bento compared to those from Alcáçova de Santarém (all periods at this site are combined since there was no significant size change between the Iron Age and post-Medieval periods). Student's "t" values and their levels of significance are given in the central columns headed "t" and sig. "n" = sample size and "sd" = standard deviation.

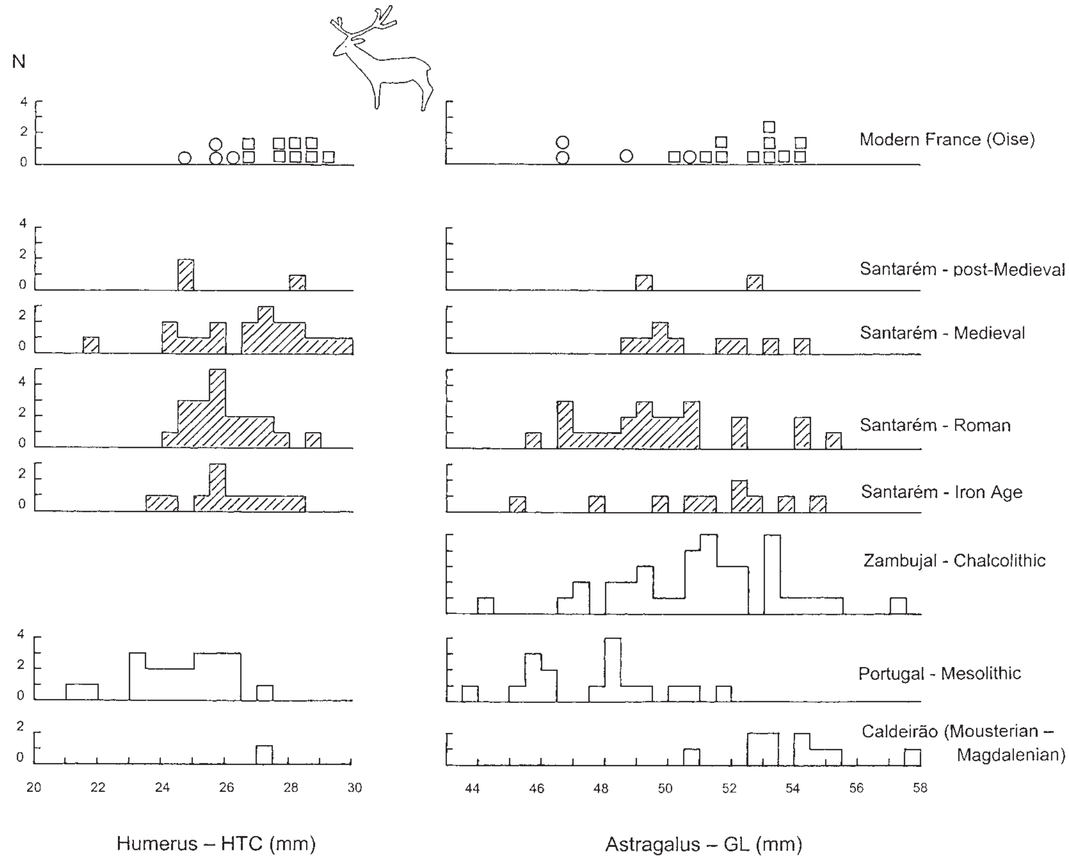


FIG. 29 – Red deer (*Cervus elaphus*) size. Plots of the humerus minimum trochlea diameter (HTC) and astragalus greatest lateral length (GL) in the four main periods at Alcáçova de Santarém compared with data from Caldeirão cave, the Mesolithic sites of Cabeço do Pez and Poças de São Bento (both in the Sado estuary), astragali from the Chalcolithic periods 1-4 at Zambujal (from Driesch and Boessneck, 1976) and a small sample of modern red deer from the Oise region of northern France (Musée d'Histoire naturelle, Paris; males denoted by a square and females by a circle). For the archaeological bones, a box represents each individual specimen. Note the absence of any change of size within the Santarém sequence, the very large size of the Caldeirão deer and the small size of the Mesolithic deer. Could the size increase between Mesolithic and Chalcolithic reflect a post-Mesolithic relaxation of predator pressure on this animal in central Portugal?

What is, however, rather more difficult to explain is the size *increase* that occurred between Mesolithic and Chalcolithic times in Portugal — compare the Mesolithic data (most come from Cabeço do Pez and some from Poças do São Bento, both in the Sado estuary) with those from Zambujal and Santarém. This size difference is statistically significant (Table 24). It is unlikely that biases in the sex composition of some populations was responsible as the spreads of the Mesolithic and Santarém measurements are similar to that of a plot of combined male and female red deer from the Oise, France (Fig. 29). One possible explanation for this size increase is that it reflects a relaxation of hunting pressure after the Mesolithic when domestic ungulates became the prime source of meat.

## *Equids*

The measurements of horse and donkey remains are given in the appendix. As more metric data for these animals become available it will be interesting to determine whether they, especially horses, were improved. The Arabs are well reputed in this field. There is no evidence for any size change of the equids at Santarém.

## *Rabbits*

No change in size of the rabbit could be observed in the Santarém succession (see for example Fig. 30). Their bones are considerably smaller than rabbit bones found in the late Pleistocene levels at Caldeirão cave (work in preparation). This may be another case of Pleistocene – Holocene size decrease correlated with temperature increase (Davis, 1981).

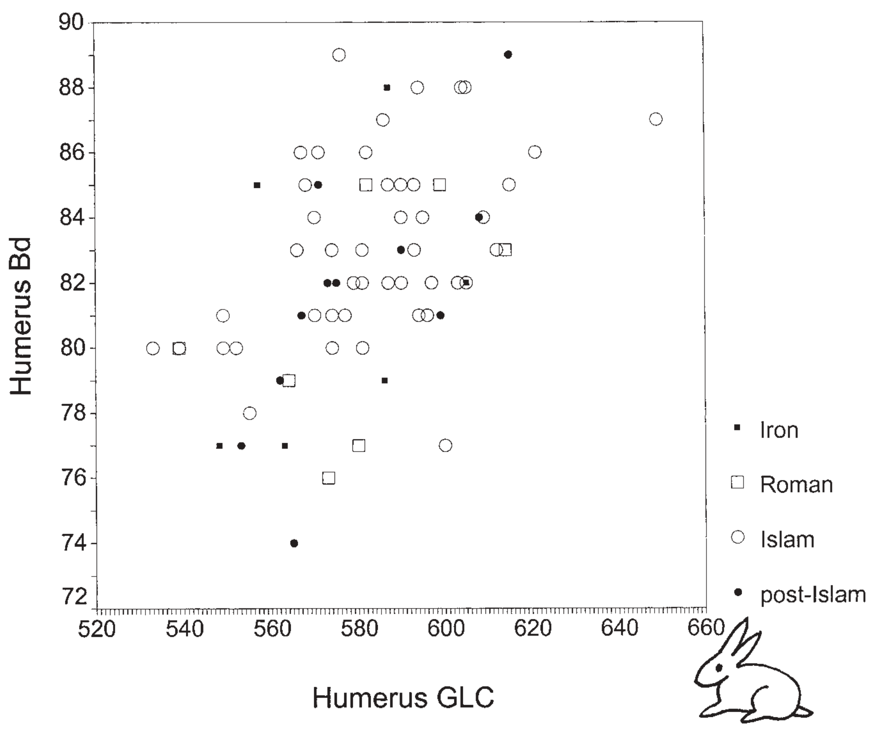


FIG. 30 – Rabbit size and shape variation at Alcáçova de Santarém. Plots of the length (GLC) versus the distal width (Bd) of the humerus. Measurements are in tenths of a millimetre. There appears to be little evidence for any biometric change in the rabbits in the Santarém succession.

### *Chicken*

The domestic fowl, or chicken, is well known for its marked sexual dimorphism which is reflected in some of its bones, especially the tarso-metatarsal. This bone is usually more robust in the cock (male) than in the hen (female). Moreover, the cock tarso-metatarsal usually has an attached spur — a weapon for combat between males. It is therefore possible to determine what the sex ratios might have been in archaeological samples and at Santarém there are sufficient chicken tarso-metatarsals in the Roman and Moslem periods (see Fig. 31). The results are interesting but must be regarded with caution due a) to the smallness of the samples, especially in the Roman period, and b) to the presence of at least two specimens of uncertain sex. One is a Roman specimen (with Bd 12,5 mm) that plots among the presumed female specimens but has a 'spur scar'. The presence of a spur scar is traditionally interpreted as being from a "caponized" cock — a cock whose spur has been artificially removed to prevent it from injuring other males (see West, 1982). Varro (see Hooper, 1935) describes the process of "caponising" cocks as follows: "Cocks are castrated, to make them capons, by burning with a red-hot iron at the lowest part of the leg until it bursts; and the sore which results is smeared with potter's clay". Of course this would not affect the sex or hormonal balance of the bird which would surely develop male characteristics — *i.e.* have a robust tarsometatarsal. Hence the dubious Roman specimen may well have belonged to a "caponised" cock. If we ignore this single specimen, there are 4 cocks and only one hen in the Roman period. However, the majority of the Moslem period chickens were hens.

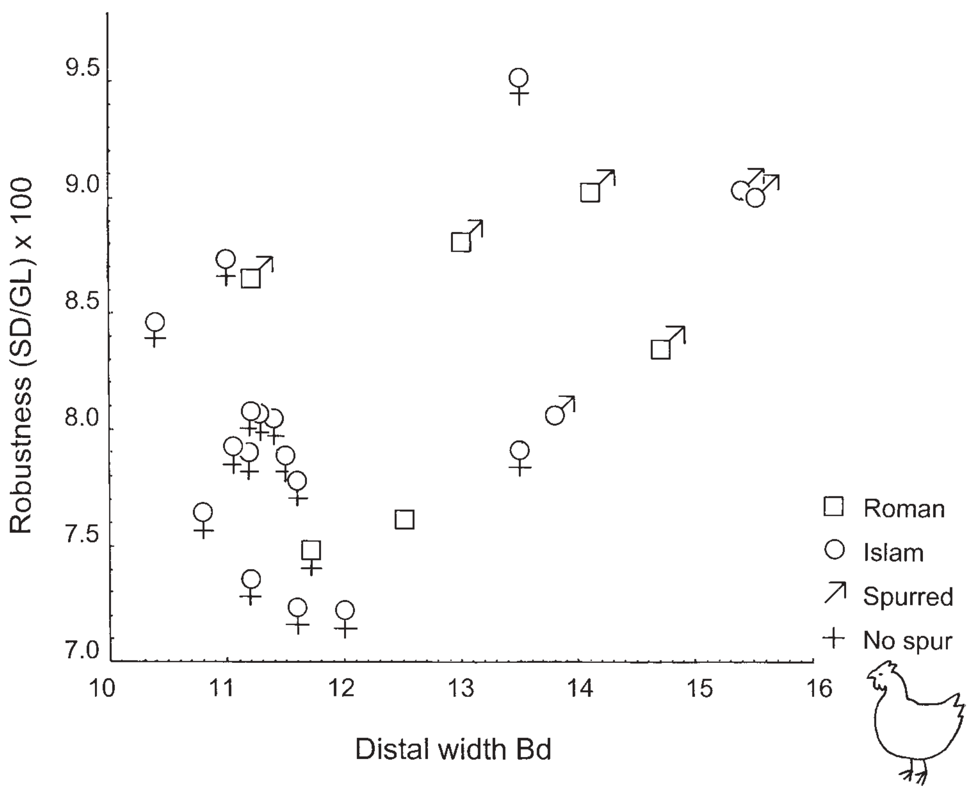


FIG. 31 – Moslem and Roman period chickens compared. Plots of adult (fully ossified) tarsometatarsal shaft robustness (minimum shaft width divided by the length) against the distal width in millimetres. Males (cocks) generally have robust tarsometatarsals with spurs, while females (hens) have unspurred slender ones. Note that the majority of the chickens in the Moslem period were hens while in the Roman period there are more cocks.

Can we assume that this disparity in numbers of the sexes in the Moslem period signifies an interest in keeping adult hens for their eggs? The Moslems at Santarém killed most of their cocks while still young and osteologically immature (and therefore immeasurable, see also above and Table 19). But hens were kept well into adulthood, exploited for their eggs, and only subsequently killed for consumption.

A comparison of the sex ratios in Roman and Moslem periods (1 hen and 4 cocks *versus* 14 hens and only 3 cocks) indicates a shift towards greater representation of hens in the Moslem period, significant at the 5% level (Chi square = 4,35 applying Yate's correction for small samples; Simpson, Roe and Lewontin, 1960, p. 190). However, this shift is insignificant (at the 5% level) if the Roman specimen of uncertain sex is regarded as a female (Chi square = 2,98). At this stage we can at least suggest that the Moslems had an interest in eggs that may have been more accentuated than in Roman times.

Today in the Maghreb and indeed in the Arab world in general eggs are certainly very much appreciated. In Moslem Andalusia eggs were consumed in great quantities by all strata of society, and Moslem physicians there also recommended eggs poached, soft-boiled or fried in olive oil (García Sánchez, 1996). Ibn Bajtisu, an 11th century Syrian doctor, has much to say about eggs, and recommends them for conjunctivitis, stomach ulcers, various inflammatory problems, diarrhoea, etc but above all they have great aphrodisiac properties!


FIG. 32 – Evidence for the manufacture of bone objects. A distal fragment of a sawn red deer metatarsal (1999/2000 UE 109, Roman 4).

## Craft

Several bone fragments such as a red deer distal metatarsal (Fig. 32) and a proximal part of a red deer metatarsal had been sawn off their respective shafts. These presumably represent the off-cuts or waste from a bone-worker's workshop. Cervid metapodial shafts are long hollow cylindrical bones that probably served well as handles for tools etc. A total of five caprine astragali (one from Iron Age 7, three from Roman periods, 1, 2 and 5, and one from the Moslem period — the last definite goat), have smoothed sides. These were probably gaming pieces.

## Conclusions and summary

The majority of the terrestrial animal remains uncovered at Alcáçova de Santarém derive from domesticated species such as sheep, goat, cattle, pig, equids, cat and dog while only a small proportion is from wild animals. The latter group includes mainly red deer and probably some wild boar but also a very small number of roe deer, hare, bear, fox, partridges and other species of birds. Clearly hunting played an important if subordinate role in the life of the inhabitants of Santarém. Rabbits too were probably an important source of meat, although their relative scarcity may well reflect their having been scavenged by the local dogs, cats, etc. The presence of fish bones, oysters and other molluscs, the last two more common after the Iron Age, indicates that aquatic resources were also exploited.

Several rare and somewhat unusual species found include bear (in the 13th century AD), pelican (in the Moslem period) and swan (dated 25 BC – 50 AD). None are found in the wild today in Portugal. Their presence in earlier times and their subsequent demise is probably a sad reminder of man's destructive influence upon the environment. Perhaps the gradual decrease in the frequency of red deer during the succession at Santarém reflects the slow destruction of woodlands in this part of Portugal.

The frequencies of the main domestic animals appear to have remained rather similar throughout the occupation of Alcáçova de Santarém, though there are *slightly* fewer pigs in the Moslem period. This presumably reflects the religious prohibition of pork consumption. Compared to other Moslem Iberian sites, the relative abundance of pig in the Moslem period is surprising and it is possible that many of the inhabitants of the town were Mozarabes (Christians with an allegiance to Moslem rule). Another explanation, for which there is biometric support, is that many of the "pigs" in the Moslem period were in fact wild boar. Rabbit numbers show a slight increase in the course of the Santarém succession. This animal, easily kept in towns, could reflect the increasing urbanisation of Santarém. Chicken, a species imported into Europe during the Iron Age, was rare at that time in Santarém, but increased subsequently as did the oyster. Increase of the latter may reflect the more sophisticated lifestyle of the Romans and Moslems as well as possible improvements in the means of transporting "fruits of the sea".

The large mammals appear to have undergone an increased amount of butchery in the course of time. It is unclear why this should be; one possibility is that it reflects more sophisticated butchery and/or increased intensity of exploitation of animal carcasses. Many rabbit bones have puncture marks of the kind made by cats. It is likely that cats introduced many of the rabbit bones.

The mortality patterns of several of the domestic animals provide clues about their economic function. While there was little change in the slaughter pattern of pig, the cattle bones from the Moslem period indicate a slight decrease in the proportion of calves, compared to earlier times. However, the pattern for the sheep and goats shows the opposite trend with a small increase in younger animals in the Moslem period. One possible explanation for these variations in the mortality patterns is that the Roman and Iron Age economy was based more upon beef production and the Moslem economy was geared more towards lamb consumption, but the differences are so slight that we need to study more zoo-archaeological collections before drawing definite conclusions. The higher frequency of juvenile chicken in the Moslem period may signify greater affluence. Another explanation is simply (as with the rise in rabbit numbers) an increased rate of turnover due to a rise in the intensity of exploitation in turn the result of an increase in the urban human population of Santarém.

Biometric data tell us something about size and shape and even the sexual composition of the animals consumed. The size of cattle and pig did not change between Iron Age and Moslem periods. The absence of any increase in size of cattle between Iron Age and Roman times contrasts with what apparently happened in parts of Europe where the Romans are credited with having improved cattle. However, when we look at the sex ratio of the adult cattle brought to Santarém there were probably more cows in the Iron Age, but more bulls and/or steers in the Moslem period. The biometry of the sheep bones from Santarém is most interesting and indicates that the sheep underwent a change of size in the course of time. Sheep bones from the Moslem period are larger than those from preceding periods. This was not due to a shift in the proportions of ewes and rams and may reflect either local improvement or the import of stock from other regions and/or from overseas — some support for the latter may be found in historical sources. One could even speculate that these larger sheep are the first Merinos that the Beni Merin Berbers supposedly brought across from North Africa during al-Mohad times (see Klein, 1964). The chicken too has provided some interesting biometric data. While there are too few Roman chicken bones to understand whether cocks or hens were more common, in the Moslem period there are clearly many more adult hens than adult cocks. This probably reflects the great popularity of eggs in the Moslem world.

While many of the inferences we can draw from the animal remains from Alcáçova de Santarém are of a very tentative nature, it is hoped that the large body of zoo-archaeological data this site has provided will serve as a useful source for comparison with other such remains from Iron Age to modern times in Portugal.

## Acknowledgements

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## NOTE

1 A small refinement is provided in table 18b which considers juvenile caprine mandibular teeth (that is teeth in jaws containing at least a $dP_4$, a tooth that is relatively easy to assign to species using — sheep or goat — using the criteria indicated by Payne, 1985). The $dP_4$ wear stage data are suggestive of a difference in the culling strategy of these two animals in the Moslem period. Note that in the case of goat, for this tooth in the Moslem period there is only one specimen out of 12 younger than wear stage 13 (this wear stage is probably reached towards the end of the animal's first year of life). However, there are 19 out of 55 sheep within this span of wear stages. Does this mean that more very young sheep were slaughtered than very young goats? If so why? There are too few milk teeth in the earlier periods to enable this distinction to be made.

# Appendix

# Appendix I

Numbers of Alcáçova de Santarém animal bones and teeth from Iron Age to post-Moslem levels. Most caprine bones could not be identified to species and their numbers are given in the column "O". For counts of some of those caprine bones that could be identified to species see table 6. Fusion of mammal bones is coded as follows: UE unfused epiphysis (juvenile), UM unfused metaphysis (juvenile) and F fully fused (adult).

## Mammalian taxa are coded as follows:

| | |
|---|---|
| B | *Bos* (cattle) |
| CAC | *Capreolus capreolus* (roe deer) |
| CAF | *Canis familiaris* (dog) |
| CAH | *Capra* (goat) |
| CEE | *Cervus elaphus* (red deer) |
| EQ | Equid |
| EQA | *Equus asinus* (donkey) |
| EQC | *Equus caballus* (horse) |
| FEC | *Felis catus* (cat) |
| LE | *Lepus* (hare) |
| LYP | *Lynx* (lynx) |
| MEM | *Meles meles* (badger) |
| O | *Ovis* or *Capra* (sheep or goat) |
| ORC | *Oryctolagus cuniculus* (rabbit) |
| OVA | *Ovis* (sheep) |
| S | *Sus* (wild boar/pig) |
| URA | *Ursus arctos* (bear) |
| VUV | *Vulpes vulpes* (fox) |

## Bird taxa are coded as follows:

| | |
|---|---|
| ACG | *Accipiter gentilis* (goshawk) |
| ALR | *Alectoris* cf *rufa* (partridge) |
| ANA | *Anser* cf *anser* (goose) |
| ANP | *Anas* cf *platyrrhynchos* (duck) |
| ANS | *Anser* (goose) |
| COP | *Columba* cf *palumbus* (pigeon) |
| CY | *Cygnus* (swan) |
| G | *Gallus* (chicken) |
| GN | *Gallus* or *Numida* (chicken or guinea fowl) |
| GNP | *Gallus, Numida or Phasianus* (chicken, guinea fowl or pheasant) |
| GRG | *Grus grus* (crane) |
| MIM | *Milvus* cf *milvus* (?red kite) |
| OTT | *Otis tarda* (great bustard) |
| PEC | *Pelecanus crispus* (Dalmatian pelican) |
| STT | *Streptopelia turtur* (turtle dove) |
| TET | *Tetrax tetrax* (little bustard) |
| TUM | *Turdus* cf *merula* (blackbird) |

## Teeth and bones are coded as follows:

| | |
|---|---|
| Deciduous (milk) incisor | i |
| Permanent incisor | I |
| Deciduous (milk) fourth premolar | $dP_4$ |
| Permanent fourth premolar | $P_4$ |
| Premolar or molar (undistinguished) | PM/M |
| First molar | $M_1$ |
| First or second molar (undistinguished) | $M_{1/2}$ |
| Second molar | $M_2$ |
| Third molar | $M_3$ |
| Mndbles | Mandible rami (with/without teeth for rabbits and hares) |
| Scapula – glenoid | SC |
| Humerus – distal | HU |
| Radius – distal | RA |
| Metacarpal – distal | MC1 or MC2 |
| Pelvis – Ischial part of Acetabulum | PE |
| Femur – distal | FE |
| Tibia – distal | TI |
| Calcaneum – sustentacular part | CA |
| Astragalus | AS |
| Tarso-metatarsal – distal | TmT |
| Metatarsal – distal | MT1 or MT2 |
| Phalanx 1 – proximal end | P1 |
| Phalanx 2 – proximal end | P2 |
| Phalanx 3 | P3 |

## MOD2 – "Late Modern"

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | — | — | — | — | — | — | — | — |
| | I | 1 | 3 | — | — | — | — | — | — | — | — |
| | $dP_4$ | — | 1 | — | — | — | — | — | — | — | — |
| | $P_4$ | — | 3 | — | — | — | — | — | — | — | — |
| | $M_1$ | — | 4 | — | — | — | — | — | — | — | — |
| | $M_1/M_2$ | 1 | 4 | — | — | — | — | — | — | — | — |
| | $M_2$ | — | 3 | — | — | — | — | — | — | — | — |
| | $M_3$ | — | 5 | 1 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Scapula** (glenoid) | U | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 2 | — | — | — | — | — | 1 | — | — |
| | ? | — | — | — | — | — | — | — | — | — | — |
| Distal **humerus** | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 4 | — | — | — | — | — | 2 | — | — |
| Distal **radius** | UM | 1 | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 1 | — | — | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | 1 | — | 1 | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 1,5 | — | — | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 1 | 7 | — | — | — | — | — | 6 | — | — |
| Distal **femur** | UM | — | 1 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | — | — | — | — | — | — | 3 | — | — |
| Distal **tibia** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 6 | — | — | 1 | — | — | — | — | — |
| **Calcaneum** | U | — | 1 | — | — | — | — | — | — | — | — |
| | F | 2 | 1 | — | — | — | — | — | — | — | — |
| | ? | 1 | 1 | — | — | — | — | — | — | — | — |
| **Astragalus** | | — | 1 | — | — | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | 1 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | — | — | — | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 5 | 2 | 1 | 1 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | — | — | — | — | — | — | — | — | — |
| **Phalanx 3** | | — | 1 | — | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 0,5 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | — | — | — | — | — | — | — | — | — |

## MOD1 – "Modern" (16th – 18th centuries AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | — | — | — | — | — | — | — | — |
| | I | 1 | 1 | 12 | — | — | — | — | — | — | — |
| | $dP_4$ | 1 | 1 | 2 | — | — | — | — | — | — | — |
| | $P_4$ | 1 | 2 | 3 | — | — | — | — | — | — | — |
| | $M_1$ | — | 2 | 2 | — | — | — | — | — | — | — |
| | $M_1/M_2$ | — | 2 | 4 | — | — | — | — | — | — | — |
| | $M_2$ | — | 2 | 1 | — | — | — | — | — | — | — |
| | $M_3$ | 2 | 4 | 2 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 2 | | |
| **Scapula** (glenoid) | U | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 2 | 2 | — | 2 | — | — | — | — | — |
| | ? | 1 | 1 | 3 | — | — | — | — | — | — | — |
| Distal **humerus** | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | 4 | 5 | 5 | 1 | 1 | — | — | 7 | — | — |
| Distal **radius** | UM | — | 4 | 3 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 1 | 1 | — | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | 2 | 1 | 1,5 | — | — | — | — | — | — | — |
| | F | — | — | — | — | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | — | 12 | 1 | — | — | — | — | 6 | — | — |
| Distal **femur** | UM | — | 1 | — | — | 1 | — | — | — | — | — |
| | UE | 1 | 2 | — | — | — | — | — | — | — | — |
| | F | — | 3 | — | — | — | — | — | 6 | — | — |
| Distal **tibia** | UM | — | 2 | 4 | — | — | — | — | — | — | — |
| | UE | — | 1 | — | — | — | — | — | — | — | — |
| | F | 1 | 7 | 3 | 1 | 1 | — | — | — | — | — |
| **Calcaneum** | U | — | — | 2 | — | — | — | — | — | — | — |
| | F | — | 2 | 1 | — | 1 | — | — | — | — | — |
| | ? | 1 | 1 | — | 1 | 1 | — | — | — | — | — |
| **Astragalus** | | 3 | 1 | — | 3 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 2 | 0,5 | — | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 2 | 2 | 2 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | — | 1 | — | — | — | — | — | — | — |
| **Phalanx 3** | | 3 | 1 | — | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 0,5 | — | — | — | — | — | — | — | — |
| | F | 0,5 | — | — | — | — | — | — | — | — | — |

## MED3 – "Late Medieval" (14th – 15th centuries AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | 1 | 2 | — | — | — | — | — | — | — |
| | I | 5 | — | 8 | — | — | — | — | — | — | — |
| | $dP_4$ | — | 7 | 1 | — | — | — | — | — | — | — |
| | $P_4$ | — | 6 | 2 | — | — | — | — | — | — | — |
| | $M_1$ | — | 7 | 5 | — | — | — | — | — | — | — |
| | $M_1/M_2$ | 2 | 7 | 1 | — | — | — | — | — | — | — |
| | $M_2$ | — | 6 | 5 | — | — | 1 | — | — | — | — |
| | $M_3$ | 2 | 11 | 7 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 9 | | |
| **Scapula** (glenoid) | U | — | 1 | — | — | — | — | — | — | — | — |
| | F | — | 5 | 1 | — | — | — | — | 1 | — | — |
| | ? | — | — | 1 | — | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 1 | 2 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | — | 3 | 3 | — | — | 1 | 1 | 6 | — | — |
| Distal **radius** | UM | — | 1 | 3 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | 1 | 1 | 1 | — | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1,5 | 4,5 | 1 | 1 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 1 | 5 | 1 | — | — | — | — | 10 | — | — |
| Distal **femur** | UM | — | — | 1 | — | — | — | — | 1 | — | — |
| | UE | 1 | — | — | — | — | — | — | — | — | — |
| | F | 1 | 3 | — | — | — | — | — | 8 | — | — |
| Distal **tibia** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 2 | 6 | — | — | — | — | — | — | — |
| **Calcaneum** | U | — | 3 | 2 | — | — | — | — | — | — | — |
| | F | — | — | 2 | — | — | — | — | — | — | — |
| | ? | 1 | 1 | 2 | — | — | — | — | — | — | — |
| **Astragalus** | | — | 5 | 5 | 1 | 1 | — | — | — | — | — |
| Distal **metatarsal** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 2 | — | — | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | — | 2 | 8 | — | — | — | — | — | — | — |
| | UE | — | — | 3 | — | — | — | — | — | — | — |
| | F | 3 | 8 | 3 | 1 | 1 | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | 2 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 5 | 3 | — | — | — | — | — | — | — |
| **Phalanx 3** | | 3 | 3 | 5 | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 0,5 | — | — | — | — | — | — | — | — |
| | F | — | — | 0,5 | — | — | — | — | — | — | — |

## MED2 – "Medieval 2" (13th century AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | — | — | — | — | — | — | — | — |
| | I | 3 | — | 1 | — | — | — | — | — | — | — |
| | $dP_4$ | — | — | 1 | — | — | — | — | — | — | — |
| | $P_4$ | — | — | 1 | — | — | — | — | — | — | — |
| | $M_1$ | — | — | — | — | — | — | — | — | — | VUV=1 |
| | $M_1/M_2$ | — | 1 | 1 | — | — | — | — | — | — | — |
| | $M_2$ | — | — | 1 | — | — | — | — | — | — | — |
| | $M_3$ | — | 1 | 1 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 4 | | |
| **Scapula** (glenoid) | U | — | 1 | — | — | — | — | — | — | — | — |
| | F | 1 | 4 | 2 | 1 | — | 1 | — | 1 | — | — |
| | ? | — | — | — | — | 1 | — | — | — | — | — |
| Distal **humerus** | UM | — | 1 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 5 | — | 1 | — | 1 | — | 5 | — | — |
| Distal **radius** | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 2 | 1 | — | 1 | — | — | — | — | — |
| Distal **metacarpal** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | — | 1 | — | — | (1) | — | — | — | — |
| **Ischium** (acetabulum) | | 1 | 2 | — | — | — | — | — | 6 | — | — |
| Distal **femur** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | 1 | — | — | — | — | — | — | — | — |
| | F | 1 | 2 | — | — | 1 | — | — | 3 | — | — |
| Distal **tibia** | UM | — | 2 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 3 | 4 | — | — | — | — | 1 | — | — |
| **Calcaneum** | U | — | — | — | — | — | — | — | — | — | — |
| | ? | 1 | — | — | — | — | — | — | — | — | — |
| **Astragalus** | | 1 | 1 | — | — | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 0,5 | — | 1 | — | — | — | — | — | — | URA=(1) |
| **Phalanx 1** proximal | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 3 | 4 | — | 1 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | — | — | — | — | — | — | — | — | — |
| **Phalanx 3** | | 3 | — | 1 | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | 1,5 | — | 0,5 | — | — | — | — | — | — | — |
| | F | — | — | 1 | — | — | — | — | — | — | — |

## MED1 – "Moslem" (9th – 12th centuries AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 2 | — | — | — | — | — | — | — |
| | I | 11 | — | 18 | — | 14 | — | — | — | — | — |
| | $dP_4$ | 3 | 76 | 8 | 2 | — | — | — | — | — | CAC=1 |
| | $P_4$ | 15 | 89 | 15 | 2 | 3 | 1 | — | — | — | — |
| | $M_1$ | 11 | 157 | 15 | 2 | 2 | 1 | 1 | — | — | CAC=1 |
| | $M_1/M_2$ | 17 | 77 | 4 | 1 | 2 | — | — | — | — | — |
| | $M_2$ | 14 | 141 | 13 | 1 | 2 | 1 | — | — | — | — |
| | $M_3$ | 22 | 146 | 16 | — | 2 | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 88 | | |
| **Scapula** (glenoid) | U | — | 1 | 6 | — | — | — | — | — | — | — |
| | F | 27 | 71 | 14 | 5 | 6 | — | — | 33 | 1 | — |
| | ? | 8 | 15 | 12 | — | — | — | — | — | — | — |
| Distal **humerus** | UM | 1 | 14 | 3 | — | — | — | — | — | — | — |
| | UE | — | 1 | 1 | — | — | — | — | — | — | — |
| | F | 32 | 132 | 23 | 21 | 8 | 1 | 4 | 87 | — | CAC=1 |
| Distal **radius** | UM | 9 | 35 | 11 | 2 | 1 | — | — | — | — | — |
| | UE | 7 | 2 | — | 2 | 1 | — | — | — | — | — |
| | F | 29 | 26 | 6 | 8 | 5 | — | — | 1 | — | — |
| Distal **metacarpal** | UM | 5 | 22 | 4,5 | — | — | — | — | — | — | — |
| | UE | — | 6 | — | — | — | — | — | — | — | — |
| | F | 40 | 22,5 | 4 | 1,5 | 4 | (1) | — | — | — | — |
| **Ischium** (acetabulum | | 29 | 94 | 19 | 6 | 7 | — | 1 | 166 | 1 | — |
| Distal **femur** | UM | 3 | 19 | 5 | — | — | 1 | 2 | 17 | — | — |
| | UE | 4 | 17 | 1 | — | — | — | 1 | — | — | — |
| | F | 5 | 18 | 5 | 4 | 2 | — | — | 89 | — | — |
| Distal **tibia** | UM | 11 | 33 | 4 | 2 | — | 2 | 2 | — | — | — |
| | UE | 5 | 2 | — | 1 | — | — | — | — | — | — |
| | F | 57 | 90 | 18 | 7 | 2 | 2 | — | 10 | 2 | — |
| **Calcaneum** | U | 11 | 35 | 4 | 3 | — | — | — | — | — | — |
| | F | 19 | 31 | 1 | 8 | 3 | — | — | — | — | — |
| | ? | 39 | 6 | 1 | 8 | 1 | — | — | — | — | — |
| **Astragalus** | | 55 | 50 | 9 | 14 | 8 | — | — | — | — | — |
| Distal **metatarsal** | UM | 6 | 24 | 2 | — | — | — | — | — | — | — |
| | UE | 0,5 | 2 | — | — | — | — | — | — | — | — |
| | F | 50 | 36 | 3,5 | 7 | 2 | (1) | — | — | — | — |
| **Phalanx 1** proximal | UM | 5 | 9 | 6 | 1 | — | — | — | — | — | — |
| | UE | — | 2 | — | — | — | — | — | — | — | — |
| | F | 127 | 71 | 14 | 11 | 6 | 4 | — | — | — | CAC=1 |
| **Phalanx 2** proximal | UM | — | 2 | — | 1 | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 74 | 18 | 2 | 7 | 4 | 7 | — | — | — | — |
| **Phalanx 3** | | 57 | 11 | 2 | 1 | 1 | 3 | — | — | — | — |
| Distal **metapodial** | UM | — | 10 | 1,5 | — | 1 | — | — | — | — | — |
| | UE | 5 | 0,5 | 0,5 | — | — | — | — | — | — | — |
| | F | 5 | 0,5 | 1 | — | 4 | — | — | — | — | — |

## ROM5 – "Roman, Late Imperial" (4th/5th centuries AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | — | — | — | — | — | — | — | — |
| | I | — | — | 1 | — | — | — | — | — | — | — |
| | $dP_4$ | — | 5 | — | — | — | — | — | — | — | — |
| | $P_4$ | — | 2 | — | — | — | — | — | — | — | — |
| | $M_1$ | — | 3 | — | — | — | — | — | — | — | — |
| | $M_1/M_2$ | 1 | 1 | — | — | — | — | — | — | — | — |
| | $M_2$ | — | 3 | — | — | — | — | — | — | — | — |
| | $M_3$ | — | 3 | — | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 1 | | |
| **Scapula** (glenoid) | U | — | 4 | — | — | — | — | — | — | — | — |
| | F | 2 | 6 | 3 | 1 | — | — | — | 4 | — | — |
| | ? | 1 | 3 | 1 | 1 | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 9 | — | 3 | 1 | — | 1 | 2 | — | — |
| Distal **radius** | UM | 1 | 1 | 1 | — | — | — | — | — | — | — |
| | UE | 2 | — | — | — | 1 | — | — | — | — | — |
| | F | — | 2 | — | — | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | 2 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | 1 | — | — | — | — | — | — |
| | F | 2 | 2,5 | 0,5 | — | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 4 | 6 | 1 | 1 | — | — | — | 10 | — | — |
| Distal **femur** | UM | — | 1 | — | — | — | — | — | — | — | — |
| | UE | — | 2 | — | — | — | — | — | — | — | — |
| | F | 1 | 1 | — | — | — | — | — | 4 | — | — |
| Distal **tibia** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 1 | 6 | 1 | 1 | — | — | — | — | — | — |
| **Calcaneum** | U | — | 4 | 1 | — | — | — | — | — | — | — |
| | F | 1 | 4 | — | 1 | — | — | — | — | — | — |
| | ? | 1 | 1 | — | 2 | — | — | — | — | — | — |
| **Astragalus** | | — | 5 | — | 1 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | 1 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 3 | 0,5 | — | 1 | — | — | — | — | — |
| **Phalanx 1** proximal | UM | — | 7 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 7 | 9 | 2 | 2 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | 2 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 10 | 1 | — | 2 | — | — | — | — | — | — |
| **Phalanx 3** | | 6 | 2 | 1 | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | — | — | — | — | — | — | — | — | — |

## ROM4 – "Roman, Imperial 3" (second half of 2nd century AD – 4th/5th century AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 1 | — | — | — | — | — | — | — |
| | I | 3 | 7 | 1 | — | — | — | — | — | — | — |
| | $dP_4$ | — | 9 | 2 | — | — | — | — | — | — | — |
| | $P_4$ | 2 | 6 | 1 | — | — | — | — | — | — | — |
| | $M_1$ | — | 7 | 3 | — | — | — | — | — | — | — |
| | $M_1/M_2$ | 2 | 6 | 1 | — | 1 | — | — | — | — | — |
| | $M_2$ | — | 8 | 5 | 1 | — | — | — | — | — | — |
| | $M_3$ | — | 10 | 3 | 1 | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 5 | | |
| **Scapula** (glenoid) | U | — | 2 | — | — | — | — | — | — | — | — |
| | F | 1 | 4 | — | 1 | — | 1 | — | 7 | — | — |
| | ? | 1 | 2 | 1 | 1 | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 2 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 8 | 5 | 1 | — | — | — | 3 | — | — |
| Distal **radius** | UM | — | 3 | — | — | — | — | — | — | — | — |
| | UE | 1 | — | — | — | — | — | — | — | — | — |
| | F | 1 | 2 | — | 1 | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | 1 | 1,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 1 | — | — | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 1 | 6 | — | 1 | — | — | — | 12 | 1 | rat=1 |
| Distal **femur** | UM | — | 1 | — | — | — | 1 | — | — | — | — |
| | UE | — | 2 | — | — | — | — | — | — | — | — |
| | F | — | 3 | — | — | — | — | — | 6 | 1 | — |
| Distal **tibia** | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | — | 12 | — | 3 | — | — | — | 2 | — | — |
| **Calcaneum** | U | — | 2 | 1 | 2 | — | — | — | — | — | — |
| | F | 1 | 1 | — | — | — | 1 | — | 1 | — | — |
| | ? | — | 2 | 1 | — | — | — | — | — | — | — |
| **Astragalus** | | 1 | 1 | — | 4 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2,5 | — | — | 1 | — | — | — | (2) | — | — |
| **Phalanx 1** proxima | UM | — | 3 | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 12 | 8 | 4 | 5 | — | — | — | — | — | CAC=1 |
| **Phalanx 2** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 11 | 1 | 1 | 1 | — | — | — | — | — | — |
| **Phalanx 3** | | 2 | — | 2 | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 1 | — | — | — | — | — | — | — | — |
| | F | — | — | 1,5 | — | — | (1) | — | — | — | — |

## ROM3 – "Roman, Imperial 2" (end 1st century AD – mid 2nd century AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 3 | — | — | — | — | — | — | — |
| | I | 2 | 2 | 3 | — | — | — | — | — | — | — |
| | $dP_4$ | 1 | 6 | 1 | — | — | — | — | — | — | — |
| | $P_4$ | 3 | 2 | 5 | — | — | — | — | — | — | — |
| | $M_1$ | 1 | 3 | 2 | — | — | — | — | — | — | — |
| | $M_1/M_2$ | 3 | 7 | 2 | 1 | — | — | — | — | — | — |
| | $M_2$ | — | 3 | 3 | — | — | — | — | — | — | — |
| | $M_3$ | — | 7 | 2 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 10 | 1 | |
| **Scapula** (glenoid) | U | — | 2 | 1 | — | — | — | — | — | — | — |
| | F | 2 | — | — | 3 | — | — | — | 15 | 1 | — |
| | ? | — | 3 | 6 | 2 | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 3 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | 2 | — | — | — | — | — | — |
| | F | 2 | 9 | 3 | 3 | — | — | — | 5 | — | — |
| Distal **radius** | UM | — | 2 | 2 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 1 | — | 4 | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | 2 | 1,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2 | 2,5 | 0,5 | 1 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 1 | 5 | 1 | 2 | — | — | — | 14 | 1 | — |
| Distal **femur** | UM | — | 2 | — | — | — | — | — | 1 | — | — |
| | UE | — | 2 | — | 1 | — | — | — | — | — | — |
| | F | — | 1 | — | 1 | — | — | — | 4 | 1 | — |
| Distal **tibia** | UM | — | 2 | — | — | — | — | — | — | — | — |
| | UE | — | 1 | — | — | — | — | — | — | — | — |
| | F | 5 | 4 | 2 | 2 | — | — | — | 3 | 1 | — |
| **Calcaneum** | U | 2 | 1 | 4 | — | — | — | — | — | — | — |
| | F | — | 3 | 2 | 1 | — | — | — | — | — | — |
| | ? | 1 | — | 2 | 1 | 1 | — | — | — | — | — |
| **Astragalus** | | 4 | 3 | 5 | 4 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | 1 | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 2,5 | 1 | 1 | 2 | — | — | — | (2) | — | — |
| **Phalanx 1** proximal | UM | — | 3 | 2 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 10 | 6 | 8 | 2 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 4 | 1 | 2 | 2 | 1 | — | — | — | — | — |
| **Phalanx 3** | | 3 | — | 3 | — | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | 0,5 | — | — | — | 1 | — | — | (1) | — | — |

## ROM2 – "Roman, High Imperial/Imperial 1" (last quarter 1st century BC – mid 1st century AD)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 4 | — | — | — | — | — | — | — |
| | I | 17 | 11 | 14 | — | 2 | — | — | — | — | — |
| | $dP_4$ | 2 | 10 | 8 | — | — | — | — | — | — | — |
| | $P_4$ | 6 | 10 | 3 | — | — | — | 1 | — | — | — |
| | $M_1$ | 3 | 11 | 7 | — | — | — | 1 | — | — | — |
| | $M_1/M_2$ | 21 | 30 | 6 | 1 | — | — | — | — | — | — |
| | $M_2$ | 2 | 8 | 5 | — | — | — | — | — | — | — |
| | $M_3$ | 5 | 27 | 8 | — | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 14 | | Rat=1 |
| **Scapula** (glenoid | U | — | 2 | 4 | — | — | — | — | — | — | — |
| | F | 2 | 12 | 4 | 3 | — | — | 1 | 8 | 1 | — |
| | ? | 1 | 5 | 2 | 4 | — | — | — | 1 | — | — |
| Distal **humerus** | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | 7 | 28 | 11 | 10 | 1 | — | — | 12 | 1 | — |
| Distal **radius** | UM | 2 | 4 | 1 | 2 | — | — | — | — | — | — |
| | UE | 2 | 1 | — | — | — | — | — | — | — | — |
| | F | 11 | 4 | — | 7 | — | — | — | — | — | — |
| Distal **metacarpal** | UM | 1 | 2 | 2,5 | — | — | — | — | — | — | — |
| | UE | 2 | 1,5 | — | — | — | — | — | — | — | — |
| | F | 5 | 3 | 2 | 2 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 5 | 28 | 6 | 2 | — | — | — | 31 | — | — |
| Distal **femur** | UM | — | 1 | 3 | — | — | — | — | 1 | — | — |
| | UE | 1 | 4 | 1 | — | — | — | — | — | — | — |
| | F | 6 | 4 | — | — | — | — | — | 13 | 1 | — |
| Distal **tibia** | UM | — | 6 | 2 | — | — | — | — | — | — | — |
| | UE | 1 | 2 | 1 | — | — | — | — | — | — | — |
| | F | 9 | 18 | 3 | 4 | — | 1 | 1 | 12 | — | — |
| **Calcaneum** | U | 3 | 11 | 3 | 3 | — | — | — | — | — | — |
| | F | 3 | 10 | — | 2 | — | — | — | 2 | — | — |
| | ? | 6 | 6 | 4 | 3 | — | — | — | — | — | — |
| **Astragalus** | | 17 | 12 | 8 | 10 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | 1 | 3 | 0,5 | 1 | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 7,5 | 7,5 | 0,5 | 2,5 | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | 1 | 7 | 5 | — | — | — | — | — | — | — |
| | UE | 1 | — | — | — | — | — | — | — | — | — |
| | F | 32 | 21 | 12 | 7 | 2 | — | — | — | — | — |
| **Phalanx 2** proximal | UM | 2 | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 25 | 5 | 8 | 6 | — | — | — | — | — | — |
| **Phalanx 3** | | 17 | 1 | 4 | 2 | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 1 | 2 | — | — | — | — | — | — | — |
| | UE | — | 1 | 1 | — | — | — | — | — | — | — |
| | F | — | — | 1 | — | — | — | — | (4) | — | — |

## ROM1 – "Roman, Late Republican" (end 2nd century BC)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 1 | — | — | — | — | — | — | — |
| | I | 19 | 12 | 25 | 1 | 4 | — | — | — | — | — |
| | $dP_4$ | 4 | 12 | 7 | 1 | — | — | — | — | — | — |
| | $P_4$ | 7 | 39 | 8 | 2 | 2 | — | — | — | — | — |
| | $M_1$ | 2 | 27 | 6 | 2 | 1 | 1 | — | — | — | — |
| | $M_1/M_2$ | 16 | 43 | 4 | 2 | — | — | — | — | — | — |
| | $M_2$ | 4 | 19 | 5 | 2 | — | — | — | — | — | — |
| | $M_3$ | 17 | 46 | 17 | 3 | 1 | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 13 | | |
| **Scapula** (glenoid) | U | 1 | 6 | 4 | — | — | — | — | — | — | — |
| | F | 9 | 12 | 9 | — | 1 | 1 | — | 10 | 1 | — |
| | ? | 2 | 10 | 7 | 2 | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 1 | 9 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 9 | 44 | — | 5 | — | — | — | 14 | 1 | — |
| Distal **radius** | UM | 6 | 7 | 3 | — | — | — | — | — | — | — |
| | UE | 4 | — | 3 | 1 | — | — | — | — | — | — |
| | F | 6 | 4 | 15 | 4 | 1 | — | — | — | — | — |
| Distal **metacarpal** | UM | 3 | 7 | 3 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 13,5 | 4,5 | 1,5 | 3,5 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 8 | 37 | 8 | 6 | — | — | — | 21 | 1 | — |
| Distal **femur** | UM | 2 | 5 | 5 | — | — | — | — | 1 | — | — |
| | UE | 4 | 3 | 1 | — | — | — | — | — | — | — |
| | F | 2 | 3 | 1 | — | 1 | — | — | 7 | 1 | — |
| Distal **tibia** | UM | 2 | 9 | 4 | 1 | 1 | — | — | — | — | — |
| | UE | 4 | 5 | 1 | — | — | — | — | — | — | — |
| | F | 16 | 30 | 10 | 4 | 1 | — | — | 1 | — | — |
| **Calcaneum** | U | 7 | 8 | 6 | — | — | — | — | — | — | — |
| | F | 11 | 8 | 1 | 1 | 2 | — | — | 2 | — | — |
| | ? | 7 | 1 | 5 | 3 | — | — | — | 1 | — | — |
| **Astragalus** | | 30 | 22 | 9 | 7 | 1 | — | — | — | — | LYP=1 |
| Distal **metatarsal** | UM | 6 | 10 | 3 | 1 | — | — | — | — | — | — |
| | UE | — | — | — | 1,5 | — | — | — | — | — | — |
| | F | 13 | 12,5 | 1 | 2 | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | 7 | 6 | 9 | 1 | — | — | — | — | — | — |
| | UE | 1 | — | — | — | — | — | — | — | — | — |
| | F | 35 | 30 | 13 | 11 | 1 | 1 | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | — | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 37 | 8 | 12 | 5 | 1 | — | — | — | — | — |
| **Phalanx 3** | | 24 | 2 | 7 | 4 | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 5 | 3 | 1 | — | — | — | — | — | — |
| | UE | 7 | 2,5 | 3 | — | — | — | — | — | — | — |
| | F | 2 | — | 1 | — | 3 | — | — | (3) | — | — |

## Fe8 – "Iron Age" (3rd century BC)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 3 | — | — | — | — | — | — | — |
| | I | 16 | 6 | 27 | — | 1 | — | — | — | — | — |
| | $dP_4$ | 6 | 5 | 2 | 2 | — | — | — | — | — | — |
| | $P_4$ | 10 | 2 | 10 | 4 | 1 | — | — | — | — | — |
| | $M_1$ | 5 | 19 | 8 | 1 | 2 | — | — | — | — | — |
| | $M_1/M_2$ | 32 | 47 | 11 | 3 | — | — | — | — | — | — |
| | $M_2$ | 6 | 22 | 9 | — | 2 | — | — | — | — | — |
| | $M_3$ | 15 | 42 | 10 | 1 | 1 | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 3 | | |
| **Scapula** (glenoid) | U | — | — | 2 | — | — | — | — | — | — | — |
| | F | 9 | 11 | 10 | 1 | — | 1 | — | 3 | — | — |
| | ? | 1 | 11 | 8 | — | — | — | — | — | — | — |
| Distal **humerus** | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | 2 | — | — | — | — | — | — | — |
| | F | 11 | 41 | 11 | 2 | — | — | — | 8 | — | — |
| Distal **radius** | UM | 4 | 3 | 3 | — | — | — | — | — | — | — |
| | UE | 3 | 3 | 1 | — | — | — | — | — | — | — |
| | F | 7 | 4 | — | 3 | — | — | — | — | — | — |
| Distal **metacarpal** | UM | 2 | | 1 | 1 | — | — | — | — | — | — |
| | UE | — | — | — | 1 | — | — | — | — | — | — |
| | F | 19 | 4 | 3 | 4,5 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 12 | 28 | 7 | 1 | 1 | — | — | 9 | — | — |
| Distal **femur** | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | 1 | 5 | 3 | — | — | — | — | — | — | — |
| | F | 3 | 2 | 1 | 1 | — | — | — | 1 | — | — |
| Distal **tibia** | UM | — | 3 | 2 | — | — | — | — | — | — | — |
| | UE | 2 | — | 2 | — | 1 | — | — | — | — | — |
| | F | 19 | 25 | 14 | 5 | 1 | — | — | 2 | 1 | — |
| **Calcaneum** | U | 8 | 7 | 3 | 2 | — | — | — | — | — | — |
| | F | 13 | 8 | — | 7 | — | 1 | — | — | — | — |
| | ? | 9 | 1 | 3 | 5 | — | — | — | — | — | — |
| **Astragalus** | | 17 | 4 | 6 | 7 | — | — | — | — | — | — |
| Distal **metatarsal** | UM | — | 3 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 1 | — | 0,5 | — | — | — | — | — | — |
| | F | 12 | 2 | 0,5 | 8 | 1 | — | — | 0,5 | — | — |
| **Phalanx 1** proximal | UM | 4 | 3 | 4 | — | — | — | — | — | — | — |
| | UE | 1 | — | — | — | — | — | — | — | — | — |
| | F | 61 | 9 | 11 | 13 | — | — | — | — | — | — |
| **Phalanx 2** proximal | UM | — | 1 | 1 | — | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 32 | 2 | 5 | 7 | — | — | — | — | — | — |
| **Phalanx 3** | | 22 | — | 6 | 2 | — | — | — | — | — | — |
| Distal **metapodial** | UM | — | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | 1 | 1 | — | — | 1 | — | — | — | — | — |
| | F | 0,5 | — | 2,5 | — | — | — | — | — | — | — |

## Fe1-7 – "Iron Ages 1-7" (8th century BC – 4th century BC)

| | | B | O | S | CEE | EQ | CAF | FEC | ORC | LE | Others |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Teeth** (mandibular) | i | — | — | 7 | — | — | — | — | — | — | — |
| | I | 12 | 1 | 17 | — | 1 | — | — | — | — | — |
| | $dP_4$ | 5 | 17 | 7 | 1 | — | — | — | — | — | — |
| | $P_4$ | 5 | 12 | 8 | 5 | 1 | — | — | — | — | MEM=1 |
| | $M_1$ | 5 | 18 | 12 | 4 | — | 1 | — | — | — | MEM=1 |
| | $M_1/M_2$ | 8 | 13 | 2 | 1 | 1 | — | — | — | — | — |
| | $M_2$ | 6 | 13 | 9 | 1 | — | — | — | — | — | — |
| | $M_3$ | 9 | 18 | 9 | 2 | — | — | — | — | — | — |
| | PM/M | — | — | — | — | — | — | — | — | — | — |
| **Mandibles** | | | | | | | | | 7 | | |
| **Scapula** (glenoid) | U | — | — | 3 | — | — | — | — | — | — | — |
| | F | 5 | 9 | 5 | 7 | — | — | — | 7 | — | — |
| | ? | 2 | 4 | 3 | 1 | — | — | — | — | — | — |
| Distal **humerus** | UM | — | — | 1 | — | — | — | — | — | — | — |
| | UE | — | — | 1 | — | — | — | — | — | — | — |
| | F | 1 | 22 | 7 | 9 | — | — | — | 8 | — | VUV=1 |
| Distal **radius** | UM | 3 | 4 | 2 | 2 | — | — | — | — | — | — |
| | UE | 1 | 1 | 1 | 1 | — | — | — | — | — | — |
| | F | 2 | 3 | — | 4 | — | — | — | — | — | — |
| Distal **metacarpal** | UM | — | — | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 3 | — | — | — | — | — | — | — | — |
| | F | 3,5 | 7 | 1,5 | 6,5 | — | — | — | — | — | — |
| **Ischium** (acetabulum) | | 6 | 18 | 6 | 2 | 1 | — | — | 18 | — | — |
| Distal **femur** | UM | 1 | — | 2 | — | — | — | — | — | — | — |
| | UE | — | 5 | 3 | — | — | — | — | — | — | — |
| | F | — | 1 | 2 | 1 | — | — | — | 2 | — | — |
| Distal **tibia** | UM | 2 | 3 | 1 | 2 | — | 1 | — | — | — | — |
| | UE | 1 | 1 | — | 2 | — | — | — | — | — | — |
| | F | 5 | 23 | 9 | 4 | 1 | — | — | 2 | — | — |
| **Calcaneum** | U | 3 | 8 | 3 | 2 | — | — | — | — | — | — |
| | F | 1 | 3 | 1 | 3 | — | 1 | — | 1 | — | — |
| | ? | 2 | 1 | 4 | — | — | — | — | — | — | — |
| **Astragalus** | | 8 | 15 | 6 | 5 | 2 | — | — | — | — | — |
| Distal **metatarsal** | UM | 4 | 4 | — | 2 | — | — | — | — | — | — |
| | UE | — | — | — | 0,5 | — | — | — | — | — | — |
| | F | 5 | 3,5 | 1 | 7 | — | — | — | — | — | — |
| **Phalanx 1** proximal | UM | 1 | 4 | 3 | 1 | — | — | — | — | — | — |
| | UE | — | — | — | 1 | — | — | — | — | — | — |
| | F | 17 | 11 | 8 | 17 | 2 | 1 | — | — | — | — |
| **Phalanx 2** proximal | UM | — | — | — | 1 | — | — | — | — | — | — |
| | UE | — | — | — | — | — | — | — | — | — | — |
| | F | 10 | 1 | 1 | 17 | — | — | — | — | — | — |
| **Phalanx 3** | | 15 | — | 5 | 7 | 1 | — | — | — | — | — |
| Distal **metapodial** | UM | — | 1 | 0,5 | — | — | — | — | — | — | — |
| | UE | — | 0,5 | — | — | — | — | — | — | — | — |
| | F | — | — | 1 | — | — | — | — | — | — | — |

# Appendix 2

Measurements in tenths of a millimetre of mammal bones and teeth and bird bones from Alcaçova de Santarém, organised by part of skeleton, taxon and period. Measurements taken are as in von den Driesch (1976), Payne and Bull (1988) for pig teeth, and Davis (1992 and 1996) for artiodactyl metapodials. For equid teeth, see figure 2 in Davis, 2002, Approximate measurements are referred to in the "Notes" column. Taxa are coded as in the legend to Appendix 1.

## Columns provide the following information:

"Tax" identification to species or species group,
"Os" bone,
"fus" state of fusion of epiphysis where relevant. F = fused, UE = epiphysis unfused,
"MP" is grouped age, 2 = post-Moslem, 3 = Moslem, 4 = Roman
and 5 = Iron Age (see also Table 1),
"Period" Fe = Iron Age, ROM = Roman, MED = medieval, MOD or CONT =
modern or contemporary as described in Table 1,
"Ano" year of excavation,
"Cont" crate number,
"Quad", "Qua" or "Q" square,
"Camada", "Cam" or "C" level,
"Fase", "Fa" or "F" phase,
"UE" stratigraphic unit number,

## Bones are coded as follows:

| | |
|---|---|
| AS | astragalus |
| CA | calcaneum |
| HU | humerus |
| FE | femur |
| MC (MC1 or MC2) | metacarpal (MC1 complete distal end, MC2 single condyle) |
| MT (MT1 or MT2) | metatarsal (MT1 complete distal end, MT2 single condyle) |
| MP (MP1 or MP2) | metapodial (MP1 complete distal end, MT2 single condyle) |
| P1 | proximal (first) phalanx |
| P3 | terminal (third) phalanx |
| TI | tibia |
| TmT | tarsometatarsal |

| Tax | MP | Period | $M_3$length | $M_3$wa | Hypoconulid | Ano | Cont | Quad | Camada | UE |
|---|---|---|---|---|---|---|---|---|---|---|
| B | | R/MED | 330 | 152 | | 1999 | 298 | | | 304 |
| B | 2 | MOD | 335 | 146 | | 1995 | 404 | 12 | 9 | |
| B | 2 | MOD1 | 337 | 150 | | 1999 | 303 | | | 227 |
| B | 2 | MOD1 | 388 | 163 | | 1999 | 432 | | | 449 |
| B | 3 | MED1 | | 151 | absent | 1999 | 292 | | | 141 |
| B | 3 | MED1 | | 154 | absent | 1999 | 435 | | | 451 |
| B | 3 | MED1 | 334 | 153 | | 1999 | 269 | | | 210 |
| B | 3 | MED1 | 347 | 150 | | 2001 | 71 | | | 18 |
| B | 3 | MED1 | 348 | 148 | | 1999 | 270 | | | 247 |
| B | 3 | MED1 | 349 | 150 | | 1999 | 270 | | | 247 |
| B | 3 | MED1 | 353 | 160 | | 1999 | 273 | | | 193 |
| B | 3 | MED1 | 355 | 154 | | 1999 | 277 | | | 193 |
| B | 3 | MED1 | 356 | 155 | | 1999 | 270 | | | 247 |
| B | 3 | MED1 | 370 | 163 | | 1999 | 291 | | | 89 |
| B | 3 | MED1 | 378 | 153 | | 2001 | 548 | | | 51 |
| B | 3 | MED1 | 380 | 157 | | 2001 | 533 | | | 14 |
| B | 3 | MED1 | 410 | 170 | | 1999 | 293 | | | 48 |
| B | 4 | ROM1 | | 153 | | 2001 | 551 | | | 151 |
| B | 4 | ROM1 | | 157 | | 1999 | 428 | | | 663 |
| B | 4 | ROM1 | 341 | 146 | | 1997 | 406 | 19 | 19 | |
| B | 4 | ROM1 | 350 | 159 | | 1999 | 266 | | | 221 |
| B | 4 | ROM1 | 352 | 156 | | 1999 | 266 | | | 221 |
| B | 4 | ROM1 | 356 | 172 | | 1999 | 298 | | | 331 |
| B | 4 | ROM1 | 358 | 156 | | 1999 | 296 | | | 281 |
| B | 4 | ROM1 | 364 | 168 | | 1999 | 302 | | | 375 |
| B | 4 | ROM1 | 365 | 160 | | 1998 | 69 | 7 | 5 | |
| B | 4 | ROM1 | 376 | 163 | | 1999 | 429 | | | 695 |
| B | 4 | ROM1 | 385 | 149 | | 1999 | 275 | | | 337 |
| B | 4 | ROM1 | 393 | 194 | | 1999 | 435 | | | 413 |
| B | 4 | ROM1 | 411 | 174 | | 1999 | 267 | | | 221 |
| B | 4 | ROM2 | | 151 | | 1999 | 299 | | | 236 |
| B | 4 | ROM2 | 371 | | | 1997 | 406 | 3 | 8 | |
| B | 5 | Fe1 | 362 | | | 1997 | 403 | 18 | 18 | |
| B | 5 | Fe1 | 376 | 167 | | 1997 | 403 | 2 | 6 | |
| B | 5 | Fe3 | | 162 | | 1995 | 397 | 3 | 11 | |
| B | 5 | Fe3 | 298 | 160 | reduced | 2001 | 559 | | | 286 |
| B | 5 | Fe7 | 364 | 146 | | 2001 | 558 | | | 227 |
| B | 5 | Fe8 | | 147 | absent | 1999 | 302 | | | 388 |
| B | 5 | Fe8 | | 151 | | 1999 | 300 | | | 432 |
| B | 5 | Fe8 | | 153 | | 1999 | 300 | | | 432 |
| B | 5 | Fe8 | | 156 | absent | 1999 | 271 | | | 361 |
| B | 5 | Fe8 | | 161 | absent | 1999 | 300 | | | 432 |
| B | 5 | Fe8 | 352 | 149 | | 1999 | 435 | | | 428 |
| B | 5 | Fe8 | 364 | 151 | | 1999 | 428 | | | 704 |
| B | 5 | Fe8 | 368 | 163 | | 1999 | 301 | | | 360 |
| B | 5 | Fe8 | 373 | 155 | | 1999 | 300 | | | 432 |
| B | 5 | Fe8 | 377 | 154 | | 1999 | 271 | | | 361 |
| B | 5 | Fe8 | 383 | | | 1999 | 271 | | | 361 |
| B | 5 | Fe8 | 386 | 174 | | 1999 | 435 | | | 340 |
| CEE | 4 | ROM1 | 296 | 140 | | 1998 | 409 | 8 | 5 | |
| CEE | 4 | ROM4 | 312 | 130 | | 1999 | 279 | | | 159 |
| CEE | 5 | Fe3 | | 135 | | 2001 | 562 | | | 285 |
| CEE | 5 | Fe4 | 310 | 136 | | 2001 | 559 | | | 258 |

| Tax | MP | Period | dP$_4$l | dP$_4$w | M$_1$l | M$_1$wa | M$_1$wb | M$_2$l | M$_2$wa | M$_2$wb | M$_3$l | M$_3$wa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | | R/Med | 185 | 82 | 168 | 95 | 98 | | | | | |
| S | | R/Med | 190 | 83 | | | | | | | | |
| S | 2 | CONT | | | | | | | | | | |
| S | 2 | CONT | | | | | | 204 | 123 | 131 | | |
| S | 2 | MED3 | | | | | | | | | | |
| S | 2 | MED3 | | | | | | | | | | |
| S | 2 | MED3 | | | | | | | | | | |
| S | 2 | MED3 | | | | | | | | | 292 | 152 |
| S | 2 | MED3 | | | | | | | | | 300 | 147 |
| S | 2 | MED3 | | | | | | | | | 355 | 167 |
| S | 2 | MED3 | | | | | | 234 | 160 | 161 | 365 | 171 |
| S | 2 | MED3 | | | | 98 | | | | | | |
| S | 2 | MED3 | | | 148 | 97 | 102 | | | | | |
| S | 2 | MED3 | | | 157 | 125 | 124 | 228 | | 166 | 430 | 189 |
| S | 2 | MED3 | | | 158 | 111 | 114 | | 131 | | | |
| S | 2 | MED3 | | | 176 | 116 | 125 | 266 | 165 | 172 | | |
| S | 2 | MED3 | 190 | 86 | | | | | | | | |
| S | 2 | MOD1 | | | | | | | | | | |
| S | 2 | MOD1 | | | | | | | | | | |
| S | 2 | MOD1 | | | | | | | | | | |
| S | 2 | MOD1 | | | | | | | | | | |
| S | 2 | MOD1 | | | | | | | | | | |
| S | 2 | MOD1 | | | | | | 215 | 128 | 130 | | 155 |
| S | 2 | MOD1 | 180 | 85 | 168 | 100 | 102 | | | | | |
| S | 2 | MOD2 | | | | | | | | | 310 | |
| S | 3 | MED1 | | | | | | | | | | |
| S | 3 | MED1 | | | | | | | | | | |
| S | 3 | MED1 | | | | | | | | | | |
| S | 3 | MED1 | | | | | | | | | | |
| S | 3 | MED1 | | | | | | | | | | |
| S | 3 | MED1 | | | | | | | | | | 150 |
| S | 3 | MED1 | | | | | | | | | 319 | 144 |
| S | 3 | MED1 | | | | | | | | | 322 | 154 |
| S | 3 | MED1 | | | | | | | | | 375 | 184 |
| S | 3 | MED1 | | | | | | | | | 407 | 170 |
| S | 3 | MED1 | | | | | | | | | 445 | |
| S | 3 | MED1 | | | | | | 180 | | | 345 | 158 |
| S | 3 | MED1 | | | | | | 197 | 132 | 129 | 305 | 145 |
| S | 3 | MED1 | | | | | | 211 | 155 | 170 | 413 | 174 |
| S | 3 | MED1 | | | | | | 222 | 144 | 142 | 337 | 149 |
| S | 3 | MED1 | | | | | | 226 | 163 | 165 | 379 | 184 |
| S | 3 | MED1 | | | | | | 266 | 184 | 182 | 514 | 198 |
| S | 3 | MED1 | | | 153 | | 105 | 200 | 126 | 129 | | |
| S | 3 | MED1 | | | 155 | | 117 | 205 | 133 | 137 | 319 | 154 |
| S | 3 | MED1 | | | 157 | 106 | 112 | 217 | 130 | 130 | | |

| $M_3$wb | $M_{1/2}$l | $M_{1/2}$wa | $M_{1/2}$wb | Ano | Cont | Q | C | F | UE | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1999 | 430 | | | 4 | 545 | |
| | | | | 1999 | 430 | | | 4 | 545 | |
| | 204 | 137 | 137 | 1995 | 405 | 17 | 1 | | | prob $M_2$ |
| | | | | 1995 | 399 | 27 | 1 | | | |
| | 180 | 119 | 123 | 2001 | 549 | | | 18 | 61 | |
| 145 | | | | 2001 | 549 | | | 18 | 61 | |
| 190 | | | | 2001 | 537 | | | 18 | 21 | |
| 132 | | | | 2001 | 546 | | | 18 | 61 | |
| 131 | | | | 2001 | 548 | | | 18 | 61 | |
| 161 | | | | 2001 | 543 | | | 18 | 21 | |
| 177 | | | | 2001 | 537 | | | 18 | 21 | |
| | | | | 2001 | 550 | | | 18 | 61 | |
| | | | | 2001 | 533 | | | 18 | 4 | |
| | | | | 2001 | 537 | | | 18 | 21 | l,$M_3$ approx |
| | | | | 2001 | 549 | | | 18 | 61 | |
| | | | | 2001 | 537 | | | 18 | 21 | male l,$M_2$ approx |
| | | | | 2001 | 550 | | | 18 | 61 | |
| | 163 | 99 | 108 | 1999 | 303 | | | 2 | 227 | prob $M_1$ |
| | 195 | 119 | 128 | 1999 | 303 | | | 2 | 227 | prob $M_2$ |
| | 212 | 132 | 133 | 1999 | 303 | | | 2 | 227 | prob $M_2$ |
| | 217 | 124 | 126 | 2001 | 533 | | | 19 | 1 | |
| 146 | | | | 1999 | 303 | | | 2 | 227 | |
| 151 | | | | 1999 | 299 | | | 2 | 240 | |
| | | | | 1999 | 303 | | | 2 | 227 | female |
| 140 | | | | 1999 | 1 | | | 1 | 1 | |
| | 146 | 96 | 104 | 2001 | 550 | | | 16 | 48 | prob $M_1$ l, approx |
| | 206 | 138 | 143 | 1999 | 433 | | | 3 | 481 | |
| | 207 | 121 | 128 | 1999 | 432 | | | 3 | 451 | |
| | 239 | 156 | 155 | 1999 | 280 | | | 3 | 67 | prob $M_2$ |
| 187 | | | | 2001 | 543 | | | 16 | 35 | |
| 153 | | | | 1999 | 84 | | | 3 | 21 | |
| 145 | | | | 1999 | 272 | | | 3 | 197 | |
| 151 | | | | 1999 | 432 | | | 3 | 451 | |
| 174 | | | | 1999 | 283 | | | 3 | 67 | |
| 175 | | | | 2001 | 543 | | | 16 | 48 | Wa approx |
| | | | | 1999 | 398 | | | 3 | 6 | |
| 153 | | | | 1999 | 439 | | | 3 | 248 | |
| | | | | 1999 | 278 | | | 3 | 26 | |
| 178 | | | | 1999 | 398 | | | 3 | 6 | |
| 146 | | | | 1999 | 432 | | | 3 | 451 | |
| 184 | | | | 1999 | 280 | | | 3 | 67 | |
| 204 | | | | 1999 | 280 | | | 3 | 67 | huge! |
| | | | | 1999 | 281 | | | 3 | 116 | |
| 154 | | | | 1999 | 432 | | | 3 | 451 | |
| | | | | 1999 | 7 | | | 3 | 17 | |

| Tax | MP | Period | $dP_4l$ | $dP_4w$ | $M_1l$ | $M_1wa$ | $M_1wb$ | $M_2l$ | $M_2wa$ | $M_2wb$ | $M_3l$ | $M_3wa$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 3 | MED1 | | | 158 | 105 | 109 | 195 | 139 | 127 | 301 | 163 |
| S | 3 | MED1 | | | 166 | 103 | 106 | | | | | |
| S | 3 | MED1 | | | 170 | 121 | 129 | | | | | |
| S | 3 | MED1 | | | 172 | 112 | 116 | 243 | 155 | 139 | 418 | 170 |
| S | 3 | MED1 | | | 173 | 100 | | | | | | |
| S | 3 | MED1 | | | 173 | 112 | 124 | | | | | |
| S | 3 | MED1 | | | 174 | 112 | 115 | 221 | 149 | 156 | | |
| S | 3 | MED1 | | | 185 | 114 | 123 | | | | | |
| S | 3 | MED1 | 182 | 83 | | | | | | | | |
| S | 3 | MED1 | 185 | 82 | | | | | | | | |
| S | 3 | MED1 | 187 | 81 | | | | | | | | |
| S | 3 | MED1 | 187 | 90 | 176 | 103 | 110 | | | | | |
| S | 3 | MED1 | 188 | 84 | | | | | | | | |
| S | 3 | MED1 | 196 | 91 | | | | | | | | |
| S | 3 | MED1 | 202 | 97 | | | | | | | | |
| S | 3 | MED1 | 208 | 98 | | | | | | | | |
| S | 3 | MED2 | | | | | | | | | | |
| S | 3 | MED2 | | | | | | 222 | 152 | 156 | 386 | 169 |
| S | 3 | MED2 | 183 | 85 | | | | | | | | |
| S | 4 | ROM | | | | | | | | | 302 | 137 |
| S | 4 | ROM1 | | | | | | | | | | |
| S | 4 | ROM1 | | | | | | | | | | |
| S | 4 | ROM1 | | | | | | | | | | |
| S | 4 | ROM1 | | | | | | | | | | |
| S | 4 | ROM1 | | | | | | | | | | 140 |
| S | 4 | ROM1 | | | | | | | | | 296 | 148 |
| S | 4 | ROM1 | | | | | | | | | 300 | 142 |
| S | 4 | ROM1 | | | | | | | | | 306 | 142 |
| S | 4 | ROM1 | | | | | | | | | 316 | 143 |
| S | 4 | ROM1 | | | | | | | | | 330 | 155 |
| S | 4 | ROM1 | | | | | | | | | 331 | 164 |
| S | 4 | ROM1 | | | | | | | | 128 | 326 | 153 |
| S | 4 | ROM1 | | | | | | 208 | 127 | 133 | | 152 |
| S | 4 | ROM1 | | | | | | 222 | 136 | 136 | 359 | 145 |
| S | 4 | ROM1 | | | | | | 223 | | 145 | | |
| S | 4 | ROM1 | | | 145 | 100 | | | | | | |
| S | 4 | ROM1 | | | 157 | 99 | 98 | | | | | |
| S | 4 | ROM1 | 181 | 82 | | | | | | | | |
| S | 4 | ROM1 | 185 | 86 | | | | | | | | |
| S | 4 | ROM1 | 190 | 80 | | | | | | | | |
| S | 4 | ROM1 | 192 | 85 | | | | | | | | |
| S | 4 | ROM1 | 192 | 90 | | | | | | | | |
| S | 4 | ROM1 | 199 | 85 | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |

| $M_3wb$ | $M_{1/2}l$ | $M_{1/2}wa$ | $M_{1/2}wb$ | Ano | Cont | Q | C | F | UE | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 149 | | | | 1999 | 435 | | | 3 | 451 | |
| | | | | 1999 | 432 | | | 3 | 451 | |
| | | | | 1999 | 280 | | | 3 | 67 | |
| 181 | | | | 1999 | 438 | | | 3 | 452 | female |
| | | | | 1999 | 293 | | | 3 | 42 | |
| | | | | 1999 | 280 | | | 3 | 67 | |
| | | | | 1999 | 430 | | | 3 | 480 | |
| | | | | 1999 | 398 | | | 3 | 6 | |
| | | | | 1999 | 430 | | | 3 | 549 | |
| | | | | 1999 | 398 | | | 3 | 6 | |
| | | | | 1999 | 280 | | | 3 | 67 | |
| | | | | 1999 | 291 | | | 3 | 88 | |
| | | | | 1999 | 430 | | | 3 | 549 | |
| | | | | 1999 | 283 | | | 3 | 77 | |
| | | | | 1999 | 1 | | | 3 | 5 | |
| | | | | 1999 | 280 | | | 3 | 67 | |
| | 175 | 101 | 105 | 2001 | 550 | | | 17 | 76 | prob $M_1$ |
| 168 | | | | 2001 | 546 | | | 17 | 76 | |
| | | | | 2001 | 546 | | | 17 | 76 | |
| 140 | | | | 1996 | 401 | 29 | 4 | | | |
| | 157 | 101 | 102 | 1999 | 296 | | | 9 | 281 | |
| | 174 | 99 | 105 | 1999 | 428 | | | 9 | 679 | prob $M_1$ |
| | 211 | 138 | 144 | 1999 | 428 | | | 9 | 671 | |
| 154 | | | | 1999 | 302 | | | 9 | 387 | |
| | | | | 2001 | 554 | | | 11 | 188 | |
| 132 | | | | 1999 | 298 | | | 9 | 331 | |
| 142 | | | | 1999 | 429 | | | 9 | 698 | |
| 136 | | | | 1999 | 434 | | | 9 | 413 | |
| 136 | | | | 1999 | 439 | | | 9 | 356 | |
| 144 | | | | 1999 | 428 | | | 9 | 671 | |
| | | | | 1999 | 426 | | | 9 | 716 | |
| 142 | | | | 1999 | 298 | | | 9 | 331 | |
| 140 | | | | 1999 | 428 | | | 9 | 671 | |
| 152 | | | | 1999 | 428 | | | 9 | 679 | |
| | | | | 1999 | 266 | | | 9 | 221 | |
| | | | | 1998 | 409 | 8 | 4 | | | |
| | | | | 1999 | 265 | | | 9 | 221 | |
| | | | | 2001 | 551 | | | 11 | 157 | |
| | | | | 1999 | 429 | | | 9 | 698 | |
| | | | | 2001 | 551 | | | 11 | 157 | |
| | | | | 1999 | 428 | | | 9 | 252 | |
| | | | | 1999 | 265 | | | 9 | 221 | |
| | | | | 2001 | 554 | | | 11 | 169 | |
| | 139 | 93 | | 1999 | 426 | | | 8 | 656 | prob $M_1$ |
| | 172 | 97 | 106 | 1997 | 402 | 3 | 4 | | | |
| | 173 | 104 | | 1999 | 432 | | | 8 | 131 | prob $M_1$ |

| Tax | MP | Period | $dP_4l$ | $dP_4w$ | $M_1l$ | $M_1wa$ | $M_1wb$ | $M_2l$ | $M_2wa$ | $M_2wb$ | $M_3l$ | $M_3wa$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | | |
| S | 4 | ROM2 | | | | | | | | | 253 | 144 |
| S | 4 | ROM2 | | | | | | | | | 331 | 156 |
| S | 4 | ROM2 | | | | | | | | | 338 | 150 |
| S | 4 | ROM2 | | | | | | 198 | 122 | 118 | 260 | 143 |
| S | 4 | ROM2 | | | | | | 204 | 126 | 130 | 296 | 148 |
| S | 4 | ROM2 | | | | | | 208 | 129 | 138 | 334 | 155 |
| S | 4 | ROM2 | | | 160 | | 99 | 209 | 128 | 126 | | |
| S | 4 | ROM2 | | | 169 | 95 | 98 | | | | | |
| S | 4 | ROM2 | 183 | 88 | 177 | 100 | 116 | | | | | |
| S | 4 | ROM2 | 185 | 91 | | | | | | | | |
| S | 4 | ROM2 | 186 | | | | | | | | | |
| S | 4 | ROM2 | 187 | 86 | 170 | 102 | 111 | | | | | |
| S | 4 | ROM2 | 191 | 83 | 177 | 100 | 104 | | | | | |
| S | 4 | ROM2 | 192 | 88 | | | | | | | | |
| S | 4 | ROM2 | 193 | 87 | | | | | | | | |
| S | 4 | ROM2 | 204 | 87 | | | | | | | | |
| S | 4 | ROM3 | | | | | | | | | | |
| S | 4 | ROM3 | | | | | | | | | 305 | 138 |
| S | 4 | ROM3 | | | | | | 201 | 136 | 132 | 320 | 160 |
| S | 4 | ROM3 | | | | | | 226 | 131 | 134 | | |
| S | 4 | ROM3 | | | | 95 | | | | | | |
| S | 4 | ROM3 | | | 163 | 98 | 101 | | 125 | | | |
| S | 4 | ROM3 | 192 | 87 | | | | | | | | |
| S | 4 | ROM4 | | | | | | | | | | |
| S | 4 | ROM4 | | | | | | | | | 298 | 144 |
| S | 4 | ROM4 | | | | | | 203 | 121 | 133 | | 144 |
| S | 4 | ROM4 | | | | | | 225 | 130 | 144 | 328 | 158 |
| S | 4 | ROM4 | | | | | 104 | 201 | 129 | | | |
| S | 4 | ROM4 | 178 | 85 | 170 | 101 | 105 | | | | | |
| S | 4 | ROM4 | 182 | 87 | 163 | 93 | 99 | | | | | |
| S | 5 | Fe | | | | | | | | | 341 | 146 |
| S | 5 | Fe | 190 | 85 | | | | | | | | |
| S | 5 | Fe1 | | | | | | | | | | 156 |
| S | 5 | Fe1 | 186 | 81 | 164 | 96 | 96 | | | | | |
| S | 5 | Fe1 | 187 | 82 | | | | | | | | |
| S | 5 | Fe1 | 193 | 82 | | | | | | | | |
| S | 5 | Fe2 | | | | | | | | | | 144 |
| S | 5 | Fe2 | | | | | | 214 | 130 | 134 | | 157 |
| S | 5 | Fe2 | | | 163 | 108 | 113 | 219 | 141 | 139 | | |
| S | 5 | Fe2 | | | 170 | 108 | 104 | | | | | |

| $M_3$wb | $M_{1/2}$l | $M_{1/2}$wa | $M_{1/2}$wb | Ano | Cont | Q | C | F | UE | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | 198 | 121 | 125 | 1999 | 429 | | | 8 | 644 | |
| | 204 | 131 | | 1999 | 429 | | | 8 | 641 | |
| | 221 | 135 | 142 | 1999 | 322 | | | 8 | 163 | prob $M_2$ |
| 162 | | | | 1999 | 432 | | | 8 | 131 | |
| 177 | | | | 1999 | 294 | | | 8 | 270 | |
| 129 | | | | 2001 | 262 | | | 8 | 263 | |
| | | | | 1999 | 295 | | | 8 | 268 | |
| 151 | | | | 1999 | 322 | | | 8 | 163 | |
| 133 | | | | 2001 | 262 | | | 8 | 263 | |
| 151 | | | | 1999 | 295 | | | 8 | 262 | |
| 151 | | | | 1999 | 428 | | | 8 | 647 | |
| | | | | 1999 | 292 | | | 8 | 163 | |
| | | | | 1999 | 299 | | | 8 | 238 | |
| | | | | 2001 | 262 | | | 8 | 263 | |
| | | | | 2001 | 262 | | | 8 | 263 | |
| | | | | 1999 | 298 | | | 8 | 278 | l, approx |
| | | | | 1999 | 295 | | | 8 | 268 | |
| | | | | 1999 | 440 | | | 8 | 322 | |
| | | | | 1999 | 299 | | | 8 | 238 | |
| | | | | 1999 | 299 | | | 8 | 238 | |
| | | | | 1999 | 322 | | | 8 | 200 | |
| | 201 | 125 | 135 | 1999 | 322 | | | 7 | 160 | prob $M_2$ |
| 139 | | | | 1999 | 285 | | | 7 | 160 | |
| 151 | | | | 1999 | 285 | | | 7 | 160 | |
| | | | | 1999 | 288 | | | 7 | 181 | |
| | | | | 1999 | 432 | | | 7 | 568 | |
| | | | | 1999 | 322 | | | 7 | 160 | |
| | | | | 1999 | 279 | | | 7 | 160 | |
| | 167 | 102 | 111 | 1999 | 279 | | | 6 | 119 | |
| 146 | | | | 1999 | 281 | | | 6 | 120 | |
| 143 | | | | 1999 | 281 | | | 6 | 120 | |
| 152 | | | | 1999 | 438 | | | 6 | 159 | |
| | | | | 2001 | 533 | | | 14 | 9 | |
| | | | | 1999 | 279 | | | 6 | 119 | |
| | | | | 1999 | 433 | | | 6 | 560 | |
| 142 | | | | 1997 | 400 | 5 | 15 | | | |
| | | | | 1997 | 405 | 19 | 30 | | | |
| 158 | | | | 2001 | 562 | | | 3 | 313 | |
| | | | | 2001 | 562 | | | 3 | 310 | |
| | | | | 1997 | 406 | 3 | 10 | | | |
| | | | | 1997 | 405 | 2 | 8 | | | |
| | | | | 2001 | 558 | | | 4 | 294 | |
| 153 | | | | 2001 | 559 | | | 4 | 300 | |
| | | | | 2001 | 560 | | | 4 | 288 | |
| | | | | 2001 | 560 | | | 4 | 288 | |

| Tax | MP | Period | dP$_4$l | dP$_4$w | M$_1$l | M$_1$wa | M$_1$wb | M$_2$l | M$_2$wa | M$_2$wb | M$_3$l | M$_3$wa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 5 | Fe3 | | | | | | | | | | 155 |
| S | 5 | Fe3 | | | | | | | | | 331 | 144 |
| S | 5 | Fe3 | | | | | | 235 | | 156 | 413 | 180 |
| S | 5 | Fe3 | | | 136 | | | | 131 | | | |
| S | 5 | Fe3 | | | 166 | 96 | 103 | 211 | 127 | 136 | | |
| S | 5 | Fe3 | | | 187 | 107 | 106 | | 137 | | | |
| S | 5 | Fe3 | 176 | 85 | 170 | | 114 | | | | | |
| S | 5 | Fe3 | 195 | 83 | | | | | | | | |
| S | 5 | Fe4 | | | | | | | | | | |
| S | 5 | Fe4 | | | | | | | | | | |
| S | 5 | Fe4 | | | | | | 202 | 131 | 131 | | |
| S | 5 | Fe4 | 197 | 81 | | | | | | | | |
| S | 5 | Fe5 | | | | | | | | | 327 | 152 |
| S | 5 | Fe5 | | | 163 | 114 | 114 | | | | | |
| S | 5 | Fe7 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | | |
| S | 5 | Fe8 | | | | | | | | | 272 | 137 |
| S | 5 | Fe8 | | | | | | | | | 291 | 149 |
| S | 5 | Fe8 | | | | | | | | | 314 | 147 |
| S | 5 | Fe8 | | | | | | | | | 319 | 154 |
| S | 5 | Fe8 | | | | | | | | | 321 | 148 |
| S | 5 | Fe8 | | | | | | | | | 328 | 154 |
| S | 5 | Fe8 | | | | | | | | | 339 | 170 |
| S | 5 | Fe8 | | | | | | 213 | 128 | 133 | | 140 |
| S | 5 | Fe8 | | | | | | 223 | 138 | 140 | 321 | 162 |
| S | 5 | Fe8 | | | | 110 | | | | | | |
| S | 5 | Fe8 | | | 123 | | | 177 | 134 | 126 | 292 | 158 |
| S | 5 | Fe8 | | | 156 | 107 | 109 | 209 | 135 | 133 | | |
| S | 5 | Fe8 | | | 160 | 107 | | 208 | 137 | 136 | | |
| S | 5 | Fe8 | | | 169 | 109 | 114 | 215 | 147 | 147 | | |
| S | 5 | Fe8 | | | 172 | 103 | 109 | 216 | 126 | 127 | | |
| S | 5 | Fe8 | | | 186 | 106 | 113 | 210 | 124 | 137 | | |
| S | 5 | Fe8 | | | 217 | 124 | 126 | | 155 | | | |
| S | 5 | Fe8 | | 89 | | | | | | | | |

| $M_3$wb | $M_{1/2}$l | $M_{1/2}$wa | $M_{1/2}$wb | Ano | Cont | Q | C | F | UE | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 146 | | | | 1997 | 400 | 17 | 2 | | | |
| 141 | | | | 1997 | 410 | 17 | 5 | | | |
| 173 | | | | 2001 | 559 | | | 5 | 286 | |
| | | | | 2001 | 559 | | | 5 | 272 | |
| | | | | 2001 | 562 | | | 5 | 298 | |
| | | | | 1997 | 400 | 17 | 2 | | | |
| | | | | 2001 | 560 | | | 5 | 285 | |
| | | | | 2001 | 559 | | | 5 | 272 | |
| | 204 | 124 | 124 | 1997 | 403 | 19 | 23 | | | |
| 152 | | | | 2001 | 562 | | | 6 | 271 | |
| | | | | 1997 | 403 | 19 | 23 | | | |
| | | | | 2001 | 562 | | | 6 | 270 | |
| | | | | 2001 | 558 | | | 7 | 247 | |
| | | | | 2001 | 559 | | | 7 | 252 | |
| | 164 | 107 | 117 | 1997 | 402 | 7 | 3 | | | |
| | | | 127 | 2001 | 558 | | | 10 | 215 | |
| | 180 | 101 | 113 | 2001 | 262 | | | 10 | 361 | |
| | 180 | 105 | 107 | 1999 | 426 | | | 10 | 338 | prob $M_1$ |
| | 182 | 101 | 109 | 2001 | 558 | | | 10 | 215 | prob $M_1$ |
| | 184 | 128 | 128 | 1999 | 297 | | | 10 | 430 | |
| | 199 | 142 | 130 | 2001 | 262 | | | 10 | 361 | |
| | 203 | 140 | 140 | 1999 | 264 | | | 10 | 335 | |
| | 207 | 133 | 133 | 1999 | 435 | | | 10 | 340 | |
| 144 | | | | 2001 | 262 | | | 10 | 361 | |
| 139 | | | | 1999 | 300 | | | 10 | 432 | |
| 145 | | | | 1999 | 297 | | | 10 | 433 | |
| 144 | | | | 2001 | 262 | | | 10 | 361 | |
| 145 | | | | 1999 | 271 | | | 10 | 361 | |
| 143 | | | | 1999 | 297 | | | 10 | 433 | |
| 166 | | | | 2001 | 262 | | | 10 | 361 | |
| 143 | | | | 1999 | 271 | | | 10 | 361 | |
| 154 | | | | 1999 | 435 | | | 10 | 340 | |
| | | | | 2001 | 558 | | | 10 | 215 | |
| 141 | | | | 1999 | 301 | | | 10 | 360 | |
| | | | | 1999 | 300 | | | 10 | 432 | |
| | | | | 2001 | 558 | | | 10 | 215 | |
| | | | | 2001 | 558 | | | 10 | 215 | |
| | | | | 1999 | 271 | | | 10 | 361 | |
| | | | | 1999 | 271 | | | 10 | 361 | |
| | | | | 1999 | 435 | | | 10 | 419 | |
| | | | | 1999 | 271 | | | 10 | 361 | |

## Alcáçova de Santarém – Equid teeth measurements.

| Tooth | Period | L1 | L2 | L3 | Wa | Wb | Wc | Wd | Ano | Cont | UE | Ident |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $M_1$ | MED1 | 246 | 164 | 82 | 159 | 146 | 122 | 40 | 1999 | 270 | 247 | EQC |
| $M_2$ | MED1 | 238 | 136 | 67 | 132 | 126 | 111 | 30 | 1999 | 270 | 247 | EQC |
| $M_3$ | MED1 | 303 | 127 | 74 | 118 | 110 | 97 | 22 | 1999 | 270 | 247 | EQC |
| $M_3$ | MED1 | 307 | 132 | 94 | 126 | 108 | 98 | 12 | 1999 | 1 | 8 | EQC |
| $P_3$ | ROM1 | 274 | 154 | 125 | 150 | 157 | 132 | 78 | 1999 | 437 | 413 | EQC |
| $P_4$ | ROM1 | 270 | 151 | 116 | 152 | 153 | 125 | 69 | 1999 | 437 | 413 | EQC |
| $M_1$* | ROM1 | 246 | 130 | 86 | 143 | 132 | — | 32 | 1999 | 437 | 413 | EQC |
| $M_3$ | ROM1 | 316 | 122 | 91 | 125 | 110 | 98 | 24 | 1999 | 437 | 413 | EQC |
| $P_2$ | ROM1 | 303 | 148 | 100 | 102 | 128 | 125 | 64 | 1999 | 268 | 221 | EQ |
| $P_4$ | Fe8 | 253 | 141 | 116 | 122 | 138 | 107 | 53 | 1999 | 264 | 335 | EQA |
| $M_1$ | Fe8 | 235 | 129 | 97 | 126 | 116 | 99 | 27 | 1999 | 264 | 335 | EQA |
| $M_2$ | Fe8 | 250 | 141 | 108 | 122 | 116 | 94 | 39 | 1999 | 264 | 335 | EQA |
| $P_2$ | Fe8 | 287 | 141 | 135 | 105 | 121 | 113 | 70 | 1999 | 264 | 335 | EQ |

(*$L_1$ of this tooth is approximate)
Note: Teeth belonging to the same mandible are grouped together

## Alcáçova de Santarém – carnivore teeth measurements.

| Ano | Cont | Fase | UE | Period | Measurements |
|---|---|---|---|---|---|
| *Canis familiaris* | | | | | |
| 1999 | 302 | 9 | 387 | ROM1 | l.$M_1$-$M_3$ = 323 |
| 1999 | 438 | 3 | 452 | MED1 | l.$M_1$-$M_3$ = 388 |
| | | | | | l.$P_1$-$P_4$ = 472  l.$P_2$-$P_4$ = 413 |
| *Felis catus* | | | | | |
| 1999 | 273 | 8 | 163 | ROM2 | l.$M_1$ = 78  w.$M_1$ = 34 |
| | | | | | l.$P_4$ = 71  w.$P_4$ = 30 |
| | | | | | l.$P_3$ = 49  w.$P_4$ = 30 |
| | | | | | l.$P_3$-$M_1$ = 190 |
| | | | | | ramus ht behind $M_1$ = 111 |
| 2001 | 537 | 16 | 34 | MED1 | l.$M_1$ = 75  w.$M_1$ = 37 |
| | | | | | l.$P_3$-$M_1$ = 186 |
| | | | | | ramus ht behind $M_1$ = 95 |
| *Meles meles* | | | | | |
| 1997 | 402 | Quad=7 | Camada=3 | Fe7 | l.$M_1$ = 182  w.$M_1$ = 85 |
| | | | | | w.$P_4$ = 42 |
| | | | | | ramus ht behind $M_1$ = 160 |
| *Vulpes vulpes* | | | | | |
| 2001 | 546 | 17 | 76 | MED2 | l.$M_1$ = *circa* 148  w.$M_1$ = 60 |

| Os | Tax | fus | MP | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | B | F | 2 | CONT | | 310 | 1995 | 397 | 4 | 1 | | | |
| HU | B | F | 2 | MOD1 | 666 | 308 | 1999 | 299 | | | 2 | 240 | |
| HU | B | F | 2 | MOD1 | 667 | 282 | 1999 | 437 | | | 2 | 484 | BT approx |
| HU | B | F | 3 | MED1 | | 339 | 1999 | 287 | | | 3 | 91 | |
| HU | B | F | 3 | MED1 | 569 | 261 | 1999 | 280 | | | 3 | 63 | |
| HU | B | F | 3 | MED1 | 622 | 283 | 1999 | 275 | | | 3 | 73 | |
| HU | B | F | 3 | MED1 | 635 | 277 | 1999 | 277 | | | 3 | 193 | |
| HU | B | F | 3 | MED1 | 636 | 275 | 1995 | 396 | | | | | Silo grand |
| HU | B | F | 3 | MED1 | 668 | 295 | 1999 | 398 | | | 3 | 6 | |
| HU | B | F | 3 | MED1 | 671 | 292 | 1999 | 278 | | | 3 | 26 | |
| HU | B | F | 3 | MED1 | 690 | 302 | 1999 | 84 | | | 3 | 14 | |
| HU | B | F | 3 | MED1 | 691 | 295 | 1999 | 280 | | | 3 | 62 | |
| HU | B | F | 3 | MED1 | 694 | 295 | 1999 | 84 | | | 3 | 14 | |
| HU | B | F | 3 | MED1 | 705 | 338 | 1999 | 432 | | | 3 | 451 | |
| HU | B | F | 3 | MED1 | 716 | 327 | 1999 | 7 | | | 3 | 17 | |
| HU | B | F | 3 | MED1 | 724 | 312 | 1999 | 1 | | | 3 | 5 | |
| HU | B | F | 3 | MED1 | 738 | 311 | 1999 | 430 | | | 3 | 482 | |
| HU | B | F | 3 | MED1 | 788 | 341 | 1999 | 71 | | | 3 | 18 | |
| HU | B | F | 3 | MED1 | 799 | 370 | 1999 | 430 | | | 3 | 451 | |
| HU | B | F | 3 | MED2 | | 335 | 2001 | 550 | | | 17 | 82 | |
| HU | B | F | 4 | ROM1 | | 300 | 1995 | 405 | 12 | 3 | | | |
| HU | B | F | 4 | ROM1 | | 313 | 1998 | 69 | 7 | 5 | | | |
| HU | B | F | 4 | ROM1 | 642 | 285 | 1999 | 302 | | | 9 | 373 | |
| HU | B | F | 4 | ROM2 | | 290 | 1999 | 263 | | | 8 | 347 | |
| HU | B | F | 4 | ROM2 | | 300 | 1999 | 296 | | | 8 | 261 | |
| HU | B | F | 4 | ROM2 | | 322 | 1999 | 285 | | | 8 | 162 | |
| HU | B | F | 4 | ROM5 | 684 | 291 | 2001 | 549 | | | 15 | 93 | |
| HU | B | F | 5 | Fe2 | 597 | 266 | 1995 | 397 | 2 | 17 | | | |
| HU | B | F | 5 | Fe8 | | 276 | 1999 | 300 | | | 10 | 432 | |
| HU | B | F | 5 | Fe8 | | 285 | 1999 | 301 | | | 10 | 360 | |
| HU | B | F | 5 | Fe8 | | 306 | 1999 | 301 | | | 10 | 360 | |
| HU | B | F | 5 | Fe8 | | 308 | 1999 | 264 | | | 10 | 335 | |
| HU | B | F | 5 | Fe8 | | 322 | 1999 | 300 | | | 10 | 432 | |
| HU | B | F | 5 | Fe8 | | 356 | 1999 | 435 | | | 10 | 428 | |
| HU | B | F | 5 | Fe8 | 668 | 284 | 1999 | 300 | | | 10 | 432 | |
| HU | B | F | 5 | Fe8 | 693 | 303 | 1999 | 300 | | | 10 | 432 | BT approx |
| HU | B | F | 5 | Fe8 | 720 | 305 | 1999 | 435 | | | 10 | 340 | |
| HU | B | F | 5 | Fe8 | 800 | 339 | 1999 | 271 | | | 10 | 361 | |
| HU | B | F | 5 | Fe8 | 832 | 346 | 1999 | 300 | | | 10 | 432 | |
| HU | CAC | F | 3 | MED1 | 273 | 154 | 2001 | 548 | | | 16 | 48 | Roe deer |
| HU | CAH | F | 2 | MOD1 | | 130 | 1999 | 303 | | | 2 | 227 | |
| HU | CAH | F | 2 | MOD2 | 286 | 122 | 1999 | 1 | | | 1 | 1 | |
| HU | CAH | F | 3 | MED1 | | 122 | 2001 | 537 | | | 16 | 27 | |
| HU | CAH | F | 3 | MED1 | | 129 | 1999 | 287 | | | 3 | 91 | |
| HU | CAH | F | 3 | MED1 | 256 | 109 | 1999 | 7 | | | 3 | 17 | |
| HU | CAH | F | 3 | MED1 | 264 | 134 | 1999 | 7 | | | 3 | 17 | |
| HU | CAH | F | 3 | MED1 | 266 | 122 | 1999 | 269 | | | 3 | 210 | |
| HU | CAH | F | 3 | MED1 | 268 | 127 | 1999 | 291 | | | 3 | 88 | |
| HU | CAH | F | 3 | MED1 | 281 | 130 | 1999 | 284 | | | 3 | 88 | |
| HU | CAH | F | 3 | MED1 | 283 | 122 | 2001 | 543 | | | 16 | 48 | BT approx |
| HU | CAH | F | 3 | MED1 | 284 | 127 | 1999 | 276 | | | 3 | 196 | |
| HU | CAH | F | 3 | MED1 | 286 | 153 | 1999 | 71 | | | 3 | 20 | |
| HU | CAH | F | 3 | MED1 | 290 | 129 | 1999 | 273 | | | 3 | 193 | |

| Os | Tax | fus | Mp | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | CAH | F | 3 | MED1 | 291 | 152 | 1999 | 269 | | | 3 | 210 | |
| HU | CAH | F | 3 | MED1 | 297 | 140 | 1999 | 291 | | | 3 | 80 | |
| HU | CAH | F | 3 | MED1 | 297 | 140 | 2001 | 549 | | | 16 | 48 | |
| HU | CAH | F | 3 | MED1 | 306 | 130 | 1999 | 290 | | | 3 | 36 | |
| HU | CAH | F | 3 | MED1 | 307 | 133 | 2001 | 537 | | | 16 | 29 | |
| HU | CAH | F | 3 | MED1 | 316 | 164 | 1999 | 283 | | | 3 | 67 | |
| HU | CAH | F | 4 | ROM2 | 276 | 121 | 1999 | 294 | | | 8 | 270 | |
| HU | CAH | F | 4 | ROM4 | | 155 | 1999 | 281 | | | 6 | 120 | |
| HU | CAH | F | 4 | ROM5 | 276 | 136 | 2001 | 549 | | | 15 | 93 | |
| HU | CAH | F | 5 | Fe2 | 242 | 120 | 2001 | 559 | | | 4 | 300 | |
| HU | CAH | F | 5 | Fe8 | 295 | 130 | 1999 | 264 | | | 10 | 334 | BT approx |
| HU | CAH | F | 5 | Fe8 | 307 | 133 | 1999 | 429 | | | 10 | 676 | |
| HU | CAH | F | 5 | Fe8 | 321 | 140 | 2001 | 558 | | | 10 | 218 | |
| HU | CAH | F | 5 | Fe8 | 346 | 148 | 2001 | 554 | | | 10 | 205 | |
| HU | CAH? | F | 3 | MED1 | 273 | 132 | 2001 | 541 | | | 16 | 23 | |
| HU | CEE | ? | 2 | CONT | 512 | 277 | 1997 | 405 | 2 | 1 | | | prob F |
| HU | CEE | F | 2 | MOD | | 248 | 1995 | 397 | 2 | 6 | | | |
| HU | CEE | F | 2 | MOD | 514 | 280 | 1995 | 397 | 5 | 4 | | | |
| HU | CEE | F | 2 | MOD1 | | 245 | 1999 | 303 | | | 2 | 227 | |
| HU | CEE | F | 3 | MED1 | | 244 | 1999 | 293 | | | 3 | 42 | |
| HU | CEE | F | 3 | MED1 | | 256 | 1999 | 433 | | | 3 | 550 | |
| HU | CEE | F | 3 | MED1 | | 258 | 1999 | 269 | | | 3 | 210 | |
| HU | CEE | F | 3 | MED1 | | 273 | 1999 | 280 | | | 3 | 67 | |
| HU | CEE | F | 3 | MED1 | | 273 | 2001 | 543 | | | 16 | 35 | |
| HU | CEE | F | 3 | MED1 | | 279 | 1999 | 288 | | | 3 | 175 | |
| HU | CEE | F | 3 | MED1 | | 282 | 1999 | 290 | | | 3 | 36 | |
| HU | CEE | F | 3 | MED1 | | 286 | 1999 | 290 | | | 3 | 28 | |
| HU | CEE | F | 3 | MED1 | | 290 | 2001 | 548 | | | 16 | 48 | |
| HU | CEE | F | 3 | MED1 | 412 | 218 | 1999 | 434 | | | 3 | 481 | |
| HU | CEE | F | 3 | MED1 | 456 | 250 | 1999 | 268 | | | 3 | 137 | |
| HU | CEE | F | 3 | MED1 | 459 | 266 | 1999 | 272 | | | 3 | 197 | |
| HU | CEE | F | 3 | MED1 | 466 | 243 | 1999 | 272 | | | 3 | 197 | |
| HU | CEE | F | 3 | MED1 | 466 | 248 | 2001 | 545 | | | 16 | 37 | |
| HU | CEE | F | 3 | MED1 | 481 | 268 | 1999 | 84 | | | 3 | 22 | |
| HU | CEE | F | 3 | MED1 | 501 | 274 | 1999 | 283 | | | 3 | 77 | |
| HU | CEE | F | 3 | MED1 | 515 | 282 | 1999 | 278 | | | 3 | 27 | |
| HU | CEE | F | 3 | MED1 | 550 | 295 | 1999 | 278 | | | 3 | 26 | |
| HU | CEE | F | 3 | MED2 | 507 | 275 | 2001 | 546 | | | 17 | 76 | |
| HU | CEE | F | 4 | Fe1 | 464 | 253 | 1997 | 401 | 17 | 13 | | | |
| HU | CEE | F | 4 | ROM1 | | 245 | 1996 | 401 | 29 | 4 | | | |
| HU | CEE | F | 4 | ROM1 | 468 | 258 | 2001 | 554 | | | 11 | 191 | |
| HU | CEE | F | 4 | ROM1 | 505 | 267 | 1999 | 426 | | | 9 | 716 | |
| HU | CEE | F | 4 | ROM2 | | 252 | 1999 | 299 | | | 8 | 236 | |
| HU | CEE | F | 4 | ROM2 | | 253 | 1999 | 295 | | | 8 | 268 | |
| HU | CEE | F | 4 | ROM2 | | 256 | 1999 | 437 | | | 8 | 462 | |
| HU | CEE | F | 4 | ROM2 | | 263 | 1997 | 402 | 3 | 4 | | | |
| HU | CEE | F | 4 | ROM2 | 450 | 247 | 1999 | 440 | | | 8 | 322 | BT approx |
| HU | CEE | F | 4 | ROM2 | 461 | 241 | 1999 | 426 | | | 8 | 643 | |
| HU | CEE | F | 4 | ROM2 | 506 | 272 | 1999 | 262 | | | 8 | 263 | |
| HU | CEE | F | 4 | ROM2 | 513 | 258 | 1999 | 285 | | | 8 | 162 | |
| HU | CEE | F | 4 | ROM2 | 526 | 285 | 1999 | 289 | | | 8 | 200 | |
| HU | CEE | F | 4 | ROM3 | 480 | 265 | 1997 | 410 | 3 | 5 | | | |
| HU | CEE | F | 4 | ROM3 | 534 | 277 | 1999 | 432 | | | 7 | 317 | |

| Os | Tax | fus | Mp | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | CEE | F | 4 | ROM3 | 542 | 273 | 1999 | 268 | | | 7 | 132 | |
| HU | CEE | F | 4 | ROM4 | | 248 | 1999 | 283 | | | 6 | 71 | |
| HU | CEE | F | 4 | ROM5 | 455 | 264 | 2001 | 550 | | | 15 | 76 | |
| HU | CEE | F | 4 | ROM5 | 456 | 256 | 2001 | 533 | | | 15 | 17 | |
| HU | CEE | F | 4 | ROM5 | 502 | 257 | 1999 | 287 | | | 5 | 95 | |
| HU | CEE | F | 5 | Fe2 | | 261 | 2001 | 560 | | | 4 | 288 | |
| HU | CEE | F | 5 | Fe2 | 457 | 258 | 2001 | 560 | | | 4 | 288 | |
| HU | CEE | F | 5 | Fe3 | 435 | 244 | 2001 | 559 | | | 5 | 285 | |
| HU | CEE | F | 5 | Fe3 | 453 | 255 | 2001 | 562 | | | 5 | 298 | |
| HU | CEE | F | 5 | Fe3 | 511 | 273 | 2001 | 562 | | | 5 | 285 | |
| HU | CEE | F | 5 | Fe3 | 526 | 283 | 2001 | 562 | | | 5 | 298 | |
| HU | CEE | F | 5 | Fe4 | | 251 | 1997 | 410 | 4 | 6 | | | |
| HU | CEE | F | 5 | Fe4 | 494 | 266 | 1997 | 403 | 19 | 23 | | | |
| HU | CEE | F | 5 | Fe5 | | 259 | 2001 | 559 | | | 7 | 251 | |
| HU | CEE | F | 5 | Fe8 | 426 | 235 | 1999 | 435 | | | 10 | 428 | |
| HU | CEE | F | 5 | Fe8 | 528 | 279 | 1999 | 271 | | | 10 | 361 | |
| HU | OVA | F | 2 | MED3 | 276 | 150 | 2001 | 549 | | | 18 | 61 | |
| HU | OVA | F | 2 | MOD | | 156 | 1997 | 407 | 4 | 2 | | | |
| HU | OVA | F | 2 | MOD | 303 | 147 | 1997 | 406 | 4 | 1 | | | |
| HU | OVA | F | 2 | MOD1 | 279 | 142 | 1999 | 303 | | | 2 | 227 | |
| HU | OVA | F | 2 | MOD1 | 291 | 141 | 1999 | 299 | | | 2 | 240 | |
| HU | OVA | F | 2 | MOD1 | 293 | 146 | 2001 | 537 | | | 19 | 1 | |
| HU | OVA | F | 2 | MOD1 | 296 | 148 | 1999 | 299 | | | 2 | 240 | |
| HU | OVA | F | 2 | MOD2 | 283 | 135 | 1999 | 438 | | | 1 | 1 | |
| HU | OVA | F | 3 | MED1 | | 139 | 1999 | 272 | | | 3 | 197 | |
| HU | OVA | F | 3 | MED1 | | 142 | 1999 | 290 | | | 3 | 28 | |
| HU | OVA | F | 3 | MED1 | | 143 | 1999 | 71 | | | 3 | 20 | |
| HU | OVA | F | 3 | MED1 | | 148 | 1995 | 396 | | | | | |
| HU | OVA | F | 3 | MED1 | | 159 | 1999 | 283 | | | 3 | 67 | |
| HU | OVA | F | 3 | MED1 | | 160 | 1999 | 278 | | | 3 | 27 | |
| HU | OVA | F | 3 | MED1 | 243 | 128 | 2001 | 551 | | | 16 | 111 | |
| HU | OVA | F | 3 | MED1 | 256 | 138 | 1999 | 275 | | | 3 | 73 | |
| HU | OVA | F | 3 | MED1 | 257 | 134 | 1999 | 295 | | | 3 | 255 | |
| HU | OVA | F | 3 | MED1 | 258 | 139 | 1999 | 268 | | | 3 | 137 | |
| HU | OVA | F | 3 | MED1 | 262 | 132 | 1999 | 439 | | | 3 | 248 | |
| HU | OVA | F | 3 | MED1 | 265 | 125 | 1999 | 439 | | | 3 | 248 | |
| HU | OVA | F | 3 | MED1 | 270 | 136 | 1999 | 7 | | | 3 | 17 | |
| HU | OVA | F | 3 | MED1 | 272 | 133 | 1999 | 272 | | | 3 | 197 | |
| HU | OVA | F | 3 | MED1 | 273 | | 1999 | 274 | | | 3 | 73 | |
| HU | OVA | F | 3 | MED1 | 275 | 142 | 1999 | 434 | | | 3 | 306 | |
| HU | OVA | F | 3 | MED1 | 277 | 146 | 1999 | 284 | | | 3 | 90 | |
| HU | OVA | F | 3 | MED1 | 281 | 138 | 1999 | 298 | | | 3 | 305 | |
| HU | OVA | F | 3 | MED1 | 281 | 140 | 1999 | 433 | | | 3 | 549 | |
| HU | OVA | F | 3 | MED1 | 281 | 141 | 1999 | 284 | | | 3 | 90 | |
| HU | OVA | F | 3 | MED1 | 281 | 143 | 1999 | 274 | | | 3 | 73 | |
| HU | OVA | F | 3 | MED1 | 285 | 139 | 1999 | 430 | | | 3 | 549 | |
| HU | OVA | F | 3 | MED1 | 287 | 153 | 1999 | 84 | | | 3 | 16 | |
| HU | OVA | F | 3 | MED1 | 289 | 147 | 1999 | 314 | | | 3 | 27 | |
| HU | OVA | F | 3 | MED1 | 291 | 144 | 2001 | 550 | | | 16 | 48 | |
| HU | OVA | F | 3 | MED1 | 291 | 146 | 1999 | 277 | | | 3 | 73 | |
| HU | OVA | F | 3 | MED1 | 291 | 149 | 1995 | 396 | | | | | Silo grand |
| HU | OVA | F | 3 | MED1 | 291 | 154 | 1999 | 284 | | | 3 | 90 | |
| HU | OVA | F | 3 | MED1 | 292 | 145 | 1999 | 314 | | | 3 | 27 | |

| Os | Tax | fus | Mp | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | OVA | F | 3 | MED1 | 292 | 145 | 1999 | 272 | | | 3 | 197 | |
| HU | OVA | F | 3 | MED1 | 295 | 147 | 1999 | 280 | | | 3 | 63 | |
| HU | OVA | F | 3 | MED1 | 301 | 147 | 1999 | 288 | | | 3 | 175 | |
| HU | OVA | F | 3 | MED1 | 301 | 155 | 1999 | 433 | | | 3 | 549 | |
| HU | OVA | F | 3 | MED1 | 303 | 163 | 1999 | 398 | | | 3 | 6 | |
| HU | OVA | F | 3 | MED1 | 306 | 161 | 1999 | 280 | | | 3 | 62 | |
| HU | OVA | F | 3 | MED1 | 307 | 150 | 1999 | 269 | | | 3 | 210 | |
| HU | OVA | F | 3 | MED1 | 307 | 153 | 1999 | 84 | | | 3 | 13 | |
| HU | OVA | F | 3 | MED1 | 311 | 156 | 1999 | 283 | | | 3 | 67 | |
| HU | OVA | F | 3 | MED1 | 311 | 158 | 1999 | 280 | | | 3 | 63 | |
| HU | OVA | F | 3 | MED1 | 314 | 154 | 1999 | 280 | | | 3 | 63 | |
| HU | OVA | F | 3 | MED1 | 317 | 159 | 1999 | 1 | | | 3 | 7 | |
| HU | OVA | F | 3 | MED1 | 338 | 170 | 2001 | 533 | | | 16 | 28 | |
| HU | OVA | F | 3 | MED1 | 360 | 173 | 1995 | 396 | | 1 | | | |
| HU | OVA | F | 3 | MED2 | | 150 | 2001 | 546 | | | 17 | 76 | |
| HU | OVA | F | 3 | MED2 | 294 | 156 | 2001 | 546 | | | 17 | 76 | |
| HU | OVA | F | 3 | MED2 | 297 | 155 | 2001 | 550 | | | 17 | 82 | |
| HU | OVA | F | 4 | ROM1 | | 131 | 1999 | 428 | | | 9 | 671 | |
| HU | OVA | F | 4 | ROM1 | | 137 | 1999 | 428 | | | 9 | 671 | |
| HU | OVA | F | 4 | ROM1 | | 144 | 2001 | 551 | | | 11 | 140 | |
| HU | OVA | F | 4 | ROM1 | 238 | 126 | 1995 | 404 | 13 | 15 | | | |
| HU | OVA | F | 4 | ROM1 | 242 | 126 | 2001 | 560 | | | 11 | 217 | |
| HU | OVA | F | 4 | ROM1 | 254 | 139 | 1999 | 302 | | | 9 | 378 | |
| HU | OVA | F | 4 | ROM1 | 255 | 127 | 1999 | 267 | | | 9 | 221 | |
| HU | OVA | F | 4 | ROM1 | 260 | 130 | 1999 | 265 | | | 9 | 221 | |
| HU | OVA | F | 4 | ROM1 | 264 | 135 | 1999 | 266 | | | 9 | 221 | |
| HU | OVA | F | 4 | ROM1 | 269 | 137 | 1999 | 435 | | | 9 | 413 | |
| HU | OVA | F | 4 | ROM1 | 273 | 137 | 1999 | 296 | | | 9 | 281 | |
| HU | OVA | F | 4 | ROM1 | 286 | 143 | 1999 | 275 | | | 9 | 339 | |
| HU | OVA | F | 4 | ROM2 | | 133 | 1999 | 299 | | | 8 | 239 | |
| HU | OVA | F | 4 | ROM2 | 268 | 134 | 1999 | 296 | | | 8 | 246 | |
| HU | OVA | F | 4 | ROM2 | 284 | 142 | 1999 | 263 | | | 8 | 347 | |
| HU | OVA | F | 4 | ROM3 | | 141 | 1999 | 289 | | | 7 | 201 | |
| HU | OVA | F | 4 | ROM3 | 276 | 139 | 1999 | 279 | | | 7 | 160 | |
| HU | OVA | F | 4 | ROM4 | 286 | 146 | 2001 | 533 | | | 14 | 13 | |
| HU | OVA | F | 4 | ROM4 | 290 | 140 | 1999 | 287 | | | 6 | 110 | |
| HU | OVA | F | 4 | ROM4 | 313 | 142 | 1999 | 303 | | | 6 | 217 | |
| HU | OVA | F | 4 | ROM5 | 265 | 135 | 2001 | 554 | | | 15 | 113 | |
| HU | OVA | F | 4 | ROM5 | 271 | 139 | 2001 | 549 | | | 15 | 93 | |
| HU | OVA | F | 4 | ROM5 | 279 | 145 | 2001 | 549 | | | 15 | 93 | |
| HU | OVA | F | 4 | ROM5 | 288 | 153 | 2001 | 543 | | | 15 | 55 | |
| HU | OVA | F | 4 | ROM5 | 290 | 144 | 2001 | 549 | | | 15 | 93 | |
| HU | OVA | F | 4 | ROM5 | 329 | 171 | 2001 | 549 | | | 15 | 93 | |
| HU | OVA | F | 5 | Fe | 254 | 133 | 1997 | 400 | 10 | 5 | | | |
| HU | OVA | F | 5 | Fe1 | | 120 | 2001 | 562 | | | 3 | 310 | |
| HU | OVA | F | 5 | Fe1 | 238 | 122 | 1997 | 407 | 19 | 25 | | | |
| HU | OVA | F | 5 | Fe1 | 253 | 129 | 2001 | 562 | | | 3 | 310 | |
| HU | OVA | F | 5 | Fe1 | 292 | 139 | 1997 | 406 | 3 | 10 | | | |
| HU | OVA | F | 5 | Fe1 | 294 | 140 | 1997 | 406 | 3 | 10 | | | |
| HU | OVA | F | 5 | Fe2 | 271 | 136 | 2001 | 560 | | | 4 | 288 | |
| HU | OVA | F | 5 | Fe3 | 262 | 136 | 2001 | 562 | | | 5 | 285 | |
| HU | OVA | F | 5 | Fe4 | 264 | 129 | 2001 | 559 | | | 6 | 274 | |
| HU | OVA | F | 5 | Fe4 | 265 | 130 | 1997 | 407 | 19 | 23 | | | |

| Os | Tax | fus | MP | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | OVA | F | 5 | Fe4 | 273 | 148 | 2001 | 560 | | | 6 | 270 | |
| HU | OVA | F | 5 | Fe8 | | 134 | 1999 | 301 | | | 10 | 360 | |
| HU | OVA | F | 5 | Fe8 | | 136 | 1999 | 301 | | | 10 | 360 | |
| HU | OVA | F | 5 | Fe8 | | 137 | 1999 | 301 | | | 10 | 360 | |
| HU | OVA | F | 5 | Fe8 | | 148 | 1999 | 301 | | | 10 | 360 | |
| HU | OVA | F | 5 | Fe8 | | 157 | 1999 | 262 | | | 10 | 361 | |
| HU | OVA | F | 5 | Fe8 | 254 | 129 | 1999 | 437 | | | 10 | 334 | |
| HU | OVA | F | 5 | Fe8 | 255 | 132 | 1999 | 297 | | | 10 | 429 | |
| HU | OVA | F | 5 | Fe8 | 263 | 136 | 1999 | 262 | | | 10 | 361 | |
| HU | OVA | F | 5 | Fe8 | 264 | 137 | 1999 | 271 | | | 10 | 361 | |
| HU | OVA | F | 5 | Fe8 | 280 | 142 | 1999 | 274 | | | 10 | 338 | |
| HU | OVA | F | 5 | Fe8 | 282 | 146 | 1999 | 439 | | | 10 | 361 | |
| HU | OVA | F | 5 | Fe8 | 284 | 143 | 2001 | 558 | | | 10 | 215 | |
| HU | OVA | F | 5 | Fe8 | 286 | 139 | 1999 | 435 | | | 10 | 340 | |
| HU | OVA | F | 5 | Fe8 | 286 | 146 | 1999 | 440 | | | 10 | 363 | |
| HU | OVA | F | 5 | Fe8 | 300 | 142 | 1999 | 434 | | | 10 | 419 | |
| HU | OVA | F | 5 | Fe8 | 302 | 150 | 1999 | 273 | | | 10 | 376 | |
| HU | OVA? | F | 3 | MED1 | 300 | 154 | 2001 | 541 | | | 16 | 23 | |
| HU | OVA? | F | 3 | MED2 | 304 | 154 | 2001 | 546 | | | 17 | 76 | HTC approx |
| HU | S | F | 2 | MED3 | 316 | 198 | 2001 | 549 | | | 18 | 61 | |
| HU | S | F | 2 | MED3 | 321 | 197 | 2001 | 541 | | | 18 | 3 | |
| HU | S | F | 2 | MED3 | 336 | 231 | 2001 | 541 | | | 18 | 21 | |
| HU | S | F | 2 | MOD1 | | 184 | 1999 | 299 | | | 2 | 240 | |
| HU | S | F | 2 | MOD1 | 293 | 200 | 1999 | 303 | | | 2 | 227 | |
| HU | S | F | 2 | MOD1 | 301 | 198 | 1999 | 303 | | | 2 | 227 | |
| HU | S | F | 2 | MOD1 | 304 | 199 | 1999 | 303 | | | 2 | 227 | |
| HU | S | F | 2 | MOD1 | 364 | 220 | 2001 | 546 | | | 19 | 1 | |
| HU | S | F | 3 | MED1 | | 186 | 1999 | 278 | | | 3 | 193 | |
| HU | S | F | 3 | MED1 | | 193 | 1999 | 283 | | | 3 | 67 | |
| HU | S | F | 3 | MED1 | | 202 | 1999 | 280 | | | 3 | 66 | |
| HU | S | F | 3 | MED1 | 243 | 166 | 1999 | 280 | | | 3 | 67 | |
| HU | S | F | 3 | MED1 | 250 | 159 | 1999 | 272 | | | 3 | 197 | |
| HU | S | F | 3 | MED1 | 263 | 173 | 1999 | 398 | | | 3 | 6 | |
| HU | S | F | 3 | MED1 | 264 | 174 | 1999 | 314 | | | 3 | 116 | |
| HU | S | F | 3 | MED1 | 272 | 172 | 1999 | 292 | | | 3 | 141 | |
| HU | S | F | 3 | MED1 | 275 | 170 | 1999 | 430 | | | 3 | 451 | |
| HU | S | F | 3 | MED1 | 279 | 181 | 1999 | 293 | | | 3 | 42 | |
| HU | S | F | 3 | MED1 | 289 | 186 | 1999 | 433 | | | 3 | 549 | |
| HU | S | F | 3 | MED1 | 300 | 167 | 1999 | 283 | | | 3 | 77 | |
| HU | S | F | 3 | MED1 | 305 | 188 | 1999 | 292 | | | 3 | 169 | |
| HU | S | F | 3 | MED1 | 314 | 206 | 2001 | 546 | | | 16 | 27 | |
| HU | S | F | 3 | MED1 | 316 | 190 | 1999 | 293 | | | 3 | 42 | |
| HU | S | F | 3 | MED1 | 333 | 215 | 2001 | 537 | | | 16 | 27 | |
| HU | S | F | 3 | MED1 | 345 | 225 | 1999 | 84 | | | 3 | 14 | |
| HU | S | F | 3 | MED1 | 360 | 245 | 2001 | 537 | | | 16 | 23 | |
| HU | S | F | 3 | MED1 | 366 | 231 | 2001 | 549 | | | 16 | 48 | BT approx |
| HU | S | F | 3 | MED1 | 366 | 235 | 2001 | 545 | | | 16 | 50 | |
| HU | S | F | 3 | MED1 | 391 | 227 | 2001 | 543 | | | 16 | 35 | |
| HU | S | F | 3 | MED1 | 394 | 237 | 2001 | 541 | | | 16 | 23 | |
| HU | S | F | 4 | ROM1 | | 164 | 2001 | 560 | | | 11 | 217 | |
| HU | S | F | 4 | ROM1 | | 176 | 1999 | 428 | | | 9 | 679 | |
| HU | S | F | 4 | ROM1 | | 183 | 1999 | 302 | | | 9 | 378 | |
| HU | S | F | 4 | ROM1 | | 195 | 1999 | 428 | | | 9 | 680 | |

| Os | Tax | fus | MP | Period | BT | HTC | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HU | S | F | 4 | ROM1 | 257 | 182 | 1999 | 428 | | | 9 | 252 | |
| HU | S | F | 4 | ROM1 | 282 | 193 | 1999 | 439 | | | 9 | 357 | |
| HU | S | F | 4 | ROM1 | 284 | 184 | 1999 | 265 | | | 9 | 221 | |
| HU | S | F | 4 | ROM1 | 295 | 192 | 1999 | 296 | | | 9 | 281 | |
| HU | S | F | 4 | ROM1 | 336 | 214 | 1999 | 428 | | | 9 | 640 | |
| HU | S | F | 4 | ROM1 | 386 | 238 | 1999 | 429 | | | 9 | 708 | |
| HU | S | F | 4 | ROM2 | | 182 | 1999 | 432 | | | 8 | 623 | |
| HU | S | F | 4 | ROM2 | | 185 | 1999 | 296 | | | 8 | 246 | |
| HU | S | F | 4 | ROM2 | 253 | 166 | 1999 | 299 | | | 8 | 238 | |
| HU | S | F | 4 | ROM2 | 260 | 165 | 1999 | 322 | | | 8 | 163 | |
| HU | S | F | 4 | ROM2 | 279 | 168 | 2001 | 554 | | | 12 | 160 | |
| HU | S | F | 4 | ROM2 | 283 | 195 | 1997 | 402 | 3 | 4 | | | |
| HU | S | F | 4 | ROM2 | 289 | 180 | 1999 | 295 | | | 8 | 253 | |
| HU | S | F | 4 | ROM2 | 311 | 195 | 1999 | 265 | | | 8 | 261 | |
| HU | S | F | 4 | ROM2 | 311 | 205 | 1999 | 301 | | | 8 | 329 | |
| HU | S | F | 4 | ROM2 | 354 | 217 | 1999 | 296 | | | 8 | 246 | |
| HU | S | F | 4 | ROM3 | | 177 | 1999 | 285 | | | 7 | 160 | |
| HU | S | F | 4 | ROM3 | 313 | 177 | 1999 | 432 | | | 7 | 567 | |
| HU | S | F | 4 | ROM4 | | 192 | 1999 | 283 | | | 6 | 71 | |
| HU | S | F | 4 | ROM4 | | 194 | 1999 | 303 | | | 6 | 217 | |
| HU | S | F | 4 | ROM4 | 275 | 174 | 2001 | 546 | | | 14 | 67 | |
| HU | S | F | 4 | ROM4 | 299 | 173 | 1999 | 279 | | | 6 | 119 | |
| HU | S | F | 5 | Fe1 | | 184 | 2001 | 562 | | | 3 | 309 | |
| HU | S | F | 5 | Fe2 | 296 | 193 | 2001 | 559 | | | 4 | 288 | |
| HU | S | F | 5 | Fe3 | 278 | 178 | 2001 | 560 | | | 5 | 272 | |
| HU | S | F | 5 | Fe4 | 304 | 207 | 2001 | 560 | | | 6 | 258 | |
| HU | S | F | 5 | Fe4 | 381 | 232 | 2001 | 559 | | | 6 | 258 | |
| HU | S | F | 5 | Fe5 | 318 | 203 | 2001 | 558 | | | 7 | 247 | |
| HU | S | F | 5 | Fe8 | | 182 | 1999 | 435 | | | 10 | 340 | |
| HU | S | F | 5 | Fe8 | 270 | 179 | 1999 | 435 | | | 10 | 428 | |
| HU | S | F | 5 | Fe8 | 275 | 177 | 1999 | 297 | | | 10 | 433 | |
| HU | S | F | 5 | Fe8 | 278 | 179 | 1999 | 271 | | | 10 | 361 | |
| HU | S | F | 5 | Fe8 | 293 | 205 | 1999 | 301 | | | 10 | 360 | |
| HU | S | F | 5 | Fe8 | 301 | 188 | 1999 | 435 | | | 10 | 428 | |
| HU | S | F | 5 | Fe8 | 312 | 194 | 2001 | 558 | | | 10 | 215 | |
| HU | S | F | 5 | Fe8 | 320 | 192 | 1999 | 426 | | | 10 | 707 | |
| HU | S | F | 5 | Fe8 | 340 | 209 | 1999 | 300 | | | 10 | 432 | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MC1 | B | F | 2 | CONT | 1869 | 520 | 282 | 246 | 242 | 219 | 210 | 279 | 1995 | 397 | 2 | 3 | | | |
| MC1 | B | F | 2 | MED3 | 1750 | 467 | 252 | 224 | 224 | 193 | 186 | 253 | 2001 | 541 | | | 18 | 21 | |
| MC1 | B | F | 2 | MOD1 | | 550 | | | | | | | 1999 | 303 | | | 2 | 227 | |
| MC1 | B | F | 2 | MOD2 | 1750 | 542 | 277 | 269 | 261 | 217 | 199 | 297 | 1999 | 1 | | | 1 | 1 | |
| MC1 | B | F | 3 | MED1 | | 452 | | | | | | | 1999 | 290 | | | 3 | 30 | small |
| MC1 | B | F | 3 | MED1 | | 473 | 258 | 232 | 217 | 195 | 188 | | 1999 | 322 | | | 3 | 196 | |
| MC1 | B | F | 3 | MED1 | | 478 | 262 | 228 | 231 | 181 | 193 | | 1999 | 293 | | | 3 | 37 | |
| MC1 | B | F | 3 | MED1 | | 486 | 267 | 235 | 231 | 203 | 192 | | 2001 | 545 | | | 16 | 34 | |
| MC1 | B | F | 3 | MED1 | | 495 | 274 | 238 | 235 | 209 | 191 | | 1999 | 71 | | | 3 | 18 | Dd approx |
| MC1 | B | F | 3 | MED1 | | 496 | 265 | 235 | 236 | 207 | 194 | | 1999 | 283 | | | 3 | 67 | |
| MC1 | B | F | 3 | MED1 | | 519 | 280 | 242 | 250 | 202 | 215 | | 1999 | 7 | | | 3 | 17 | DEL approx |
| MC1 | B | F | 3 | MED1 | | 549 | 305 | 263 | 253 | 234 | 214 | | 1999 | 289 | | | 3 | 210 | |
| MC1 | B | F | 3 | MED1 | | 564 | 304 | 270 | 264 | 225 | 218 | | 1999 | 270 | | | 3 | 247 | |
| MC1 | B | F | 3 | MED1 | | 575 | 316 | 279 | 270 | 241 | 221 | | 1999 | 433 | | | 3 | 550 | |
| MC1 | B | F | 3 | MED1 | | 576 | 300 | 274 | 278 | 233 | 221 | | 1999 | 269 | | | 3 | 210 | |
| MC1 | B | F | 3 | MED1 | | 583 | 315 | | | | | | 1999 | 268 | | | 3 | 142 | |
| MC1 | B | F | 3 | MED1 | | 583 | 320 | 272 | 285 | 222 | 239 | | 2001 | 543 | | | 16 | 35 | |
| MC1 | B | F | 3 | MED1 | | 586 | 320 | 267 | 277 | 223 | 243 | | 1999 | 398 | | | 3 | 6 | |
| MC1 | B | F | 3 | MED1 | | 587 | 316 | 281 | 282 | 235 | 217 | | 1999 | 275 | | | 3 | 73 | |
| MC1 | B | F | 3 | MED1 | | 597 | 310 | 283 | 285 | 232 | 248 | | 1999 | 434 | | | 3 | 481 | |
| MC1 | B | F | 3 | MED1 | | 612 | 310 | 290 | 301 | 246 | 225 | | 1999 | 269 | | | 3 | 210 | |
| MC1 | B | F | 3 | MED1 | | 673 | 328 | 350 | 320 | 247 | 230 | | 1999 | 84 | | | 3 | 11 | assym |
| MC1 | B | F | 3 | MED1 | | 684 | 304 | 287 | 275 | 232 | 213 | | 1999 | 276 | | | 3 | 193 | |
| MC1 | B | F | 3 | MED1 | 1760 | 580 | 302 | 290 | 274 | 233 | 215 | 290 | 1999 | 273 | | | 3 | 193 | |
| MC1 | B | F | 3 | MED1 | 1793 | 574 | 305 | 261 | 288 | 204 | 226 | 321 | 1999 | 268 | | | 3 | 142 | |
| MC1 | B | F | 3 | MED1 | 1829 | 509 | 282 | 244 | 234 | 213 | 198 | 267 | 1999 | 274 | | | 3 | 73 | |
| MC1 | B | F | 3 | MED1 | 1834 | 586 | 318 | 278 | 273 | 243 | 234 | 337 | 1999 | 274 | | | 3 | 73 | |
| MC1 | B | F | 3 | MED1 | 1851 | 583 | 300 | 288 | 268 | 236 | 224 | 309 | 1999 | 398 | | | 3 | 6 | |
| MC1 | B | F | 3 | MED1 | 1852 | 640 | | 333 | 303 | 251 | 227 | 317 | 1999 | 268 | | | 3 | 142 | |
| MC1 | B | F | 3 | MED1 | 1855 | 640 | 308 | 310 | 304 | 237 | 216 | 341 | 1999 | 277 | | | 3 | 193 | |
| MC1 | B | F | 3 | MED1 | 1856 | 516 | 289 | 251 | 244 | 214 | 195 | | 2001 | 548 | | | 16 | 34 | |
| MC1 | B | F | 3 | MED1 | 1878 | 612 | | 304 | 289 | 254 | | 336 | 1999 | 284 | | | 3 | 88 | |
| MC1 | B | F | 3 | MED1 | 1902 | 679 | 329 | 367 | 298 | 262 | 223 | 338 | 2001 | 541 | | | 16 | 42 | med cond xtended |
| MC1 | B | F | 3 | MED1 | 1906 | 508 | 285 | 246 | 242 | 208 | 198 | 273 | 1999 | 282 | | | 3 | 196 | |
| MC1 | B | F | 3 | MED1 | 1926 | 500 | 277 | 239 | 234 | 215 | 202 | 274 | 1999 | 268 | | | 3 | 142 | WCL approx |
| MC1 | B | F | 3 | MED1 | 1946 | 583 | 319 | 282 | 273 | 241 | 231 | 329 | 1999 | 84 | | | 3 | 14 | |
| MC1 | B | F | 3 | MED1 | 1975 | 504 | 285 | 243 | 240 | 210 | 202 | 262 | 1999 | 272 | | | 3 | 197 | |
| MC1 | B | F | 3 | MED1 | 2011 | 640 | 336 | 321 | | 263 | | 370 | 1999 | 276 | | | 3 | 197 | Bd & Dd approx |
| MC1 | B | F | 3 | MED2 | 1882 | 588 | 315 | 286 | 286 | 241 | 228 | 334 | 2001 | 545 | | | 17 | 15 | |
| MC1 | B | F | 4 | ROM1 | | 568 | 286 | | | | | | 1999 | 266 | | | 9 | 221 | Bd approx |
| MC1 | B | F | 4 | ROM1 | | 576 | 316 | | | | | | 1999 | 302 | | | 9 | 378 | |
| MC1 | B | F | 4 | ROM1 | | 579 | 293 | 276 | 270 | 225 | 212 | 328 | 1999 | 426 | | | 9 | 671 | |
| MC1 | B | F | 4 | ROM1 | | 627 | 331 | 300 | 298 | 238 | 255 | 332 | 1998 | 69 | 7 | 5 | | | |
| MC1 | B | F | 4 | ROM1 | | 644 | | | | | | | 1999 | 265 | | | 9 | 221 | Bd approx |
| MC1 | B | F | 4 | ROM1 | | 648 | 340 | 298 | 323 | 243 | 267 | | 1999 | 266 | | | 9 | 221 | |
| MC1 | B | F | 4 | ROM1 | 1800 | 619 | 314 | 296 | 300 | 239 | 226 | 335 | 1999 | 266 | | | 9 | 221 | DEL & SD approx |
| MC1 | B | F | 4 | ROM1 | 1826 | | 354 | 350 | 320 | 281 | 249 | 362 | 1999 | 266 | | | 9 | 221 | Asym |
| MC1 | B | F | 4 | ROM1 | 1859 | 530 | 296 | 254 | 247 | 215 | 203 | 275 | 1999 | 428 | | | 9 | 711 | |
| MC1 | B | F | 4 | ROM1 | 1863 | 522 | 280 | 252 | 238 | 209 | 199 | 287 | 1999 | 266 | | | 9 | 221 | |
| MC1 | B | F | 4 | ROM1 | 1968 | 510 | 286 | 247 | 245 | 211 | 204 | 263 | 1999 | 294 | | | 9 | 297 | |
| MC1 | B | F | 4 | ROM2 | | 535 | | 257 | 256 | 216 | 202 | | 1999 | 288 | | | 8 | 200 | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MC1 | B | F | 4 | ROM2 | | 697 | 336 | 328 | 366 | 265 | 244 | | 1999 | 429 | | | 8 | 134 | Diseased |
| MC1 | B | F | 4 | ROM2 | 1772 | 515 | 274 | 248 | 246 | 208 | 198 | 279 | 1999 | 296 | | | 8 | 246 | |
| MC1 | B | F | 4 | ROM2 | 1974 | 612 | 330 | 288 | 295 | 252 | 233 | 364 | 1999 | 295 | | | 8 | 262 | |
| MC1 | B | F | 4 | ROM3 | | 622 | | | | | | | 1999 | 279 | | | 7 | 160 | Bd approx |
| MC1 | B | F | 4 | ROM5 | | 678 | 350 | 326 | 322 | 269 | 245 | | 2001 | 549 | | | 15 | 90 | |
| MC1 | B | F | 4 | ROM5 | 1774 | 532 | 273 | 259 | 249 | 222 | 204 | 296 | 2001 | 550 | | | 15 | 113 | |
| MC1 | B | F | 5 | Fe | | 526 | 285 | 257 | 253 | 215 | 203 | | 1997 | 400 | 3 | 7 | | | |
| MC1 | B | F | 5 | Fe | | 641 | 318 | 306 | 313 | 233 | 222 | | 1997 | 400 | 3 | 7 | | | |
| MC1 | B | F | 5 | Fe1 | 1822 | 526 | 281 | 259 | 245 | 217 | 203 | 275 | 1997 | 407 | 2 | 8 | | | |
| MC1 | B | F | 5 | Fe4 | | 554 | 302 | 273 | 261 | 232 | 214 | | 2001 | 562 | | | 6 | 270 | |
| MC1 | B | F | 5 | Fe7 | 1896 | 543 | 294 | 264 | 257 | 223 | 205 | 295 | 1997 | 402 | 7 | 3 | | | SD & Bd approx |
| MC1 | B | F | 5 | Fe8 | | 521 | 290 | 251 | 243 | 224 | 212 | | 1999 | 262 | | | 10 | 361 | |
| MC1 | B | F | 5 | Fe8 | | 540 | 300 | 253 | 255 | 216 | 231 | | 1999 | 271 | | | 10 | 361 | |
| MC1 | B | F | 5 | Fe8 | | 548 | | 269 | 259 | 222 | 210 | | 1999 | 435 | | | 10 | 428 | |
| MC1 | B | F | 5 | Fe8 | | 550 | | 245 | 280 | | | | 1999 | 300 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | | 557 | | 271 | 270 | 232 | | | 1999 | 300 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | | 562 | 303 | 273 | 272 | 231 | 213 | | 1999 | 300 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | | 569 | 319 | 276 | 268 | 245 | 227 | | 1999 | 301 | | | 10 | 360 | |
| MC1 | B | F | 5 | Fe8 | | 606 | 333 | 294 | 287 | 261 | 243 | | 1999 | 429 | | | 10 | 676 | |
| MC1 | B | F | 5 | Fe8 | | 650 | 341 | 313 | 307 | 257 | 236 | | 1999 | 273 | | | 10 | 376 | |
| MC1 | B | F | 5 | Fe8 | | 671 | 321 | 316 | 326 | 253 | 239 | | 1999 | 439 | | | 10 | 363 | |
| MC1 | B | F | 5 | Fe8 | 1859 | 520 | 290 | 256 | 246 | 221 | 196 | 274 | 1999 | 297 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | 1862 | | | | 270 | | 221 | 279 | 1999 | 302 | | | 10 | 403 | |
| MC1 | B | F | 5 | Fe8 | 1874 | 527 | 286 | 255 | 249 | 215 | 204 | 275 | 1999 | 302 | | | 10 | 388 | |
| MC1 | B | F | 5 | Fe8 | 1948 | 571 | 294 | 273 | 265 | 227 | 214 | 310 | 1999 | 300 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | 1969 | 631 | 310 | 313 | 297 | 245 | 231 | 347 | 1999 | 300 | | | 10 | 432 | |
| MC1 | B | F | 5 | Fe8 | 1988 | 556 | 305 | 269 | 260 | 226 | 212 | 314 | 1999 | 435 | | | 10 | 340 | |
| MC1 | CAH | F | 3 | MED1 | | 263 | 156 | 124 | 123 | 92 | 92 | | 1999 | 7 | | | 3 | 17 | |
| MC1 | CAH | F | 3 | MED1 | | 307 | 185 | 143 | 146 | 100 | 104 | | 1999 | 278 | | | 3 | 26 | |
| MC1 | CAH | F | 3 | MED1 | 1112 | 270 | 165 | 133 | 123 | 94 | 95 | 167 | 2001 | 541 | | | 16 | 42 | |
| MC1 | CAH | F | 3 | MED1 | 1126 | 263 | 166 | 128 | 125 | 91 | 90 | 141 | 1999 | 7 | | | 3 | 17 | |
| MC1 | CAH | F | 3 | MED1 | 1156 | 268 | 164 | 125 | 131 | 89 | 87 | 154 | 1999 | 290 | | | 3 | 30 | |
| MC1 | CAH | F | 4 | ROM1 | 1079 | 245 | 156 | 115 | 115 | 88 | 85 | 140 | 1995 | 405 | 12 | 3 | | | |
| MC1 | CAH | F | 4 | ROM3 | 1255 | 307 | 175 | 146 | 140 | 99 | 97 | 176 | 1999 | 434 | | | 7 | 317 | |
| MC1 | CAH | UE | 3 | MED1 | | 264 | 163 | 129 | 127 | 108 | 100 | | 1997 | 403 | 5 | 9 | | | CAH? |
| MC1 | CAH | UE | 3 | MED1 | | 272 | 172 | 132 | 128 | 92 | 87 | | 1999 | 398 | | | 3 | 10 | |
| MC1 | CAH | UE | 3 | MED1 | | 274 | 182 | 125 | 134 | 98 | 110 | | 1995 | 396 | | | | | |
| MC1 | CAH | UE | 5 | Fe5 | | 288 | 173 | 134 | 136 | 98 | 98 | | 2001 | 558 | | | 7 | 246 | |
| MC1 | CAH | UE | 5 | Fe7 | | 276 | 170 | 135 | 126 | 100 | 98 | | 2001 | 559 | | | 9 | 227 | |
| MC1 | CEE | | 5 | Fe | | 383 | 254 | | | | | | 1986 | 410 | | | | | Dd approx |
| MC1 | CEE | F | 2 | MED3 | | 413 | 265 | 181 | 187 | 196 | 185 | | 2001 | 549 | | | 18 | 61 | |
| MC1 | CEE | F | 3 | MED1 | | 367 | 244 | 174 | 163 | 181 | 172 | | 1999 | 293 | | | 3 | 42 | |
| MC1 | CEE | F | 3 | MED1 | | 389 | 252 | 179 | 185 | 167 | 178 | | 1999 | 272 | | | 3 | 197 | |
| MC1 | CEE | F | 4 | ROM1 | | 430 | 280 | 202 | 198 | 209 | 202 | | 1999 | 302 | | | 9 | 378 | |
| MC1 | CEE | F | 4 | ROM1 | 2455 | 343 | 246 | 166 | 160 | 179 | 171 | 194 | 2001 | 551 | | | 11 | 146 | |
| MC1 | CEE | F | 4 | ROM2 | | 389 | 261 | 192 | 185 | 187 | 180 | | 1999 | 426 | | | 8 | 643 | |
| MC1 | CEE | F | 4 | ROM3 | 2415 | 365 | 249 | 166 | 163 | 186 | 183 | 199 | 1999 | 279 | | | 7 | 160 | |
| MC1 | CEE | F | 5 | Fe | | 371 | 241 | 173 | 166 | 183 | 176 | | 1995 | 400 | 5 | 5 | | | |
| MC1 | CEE | F | 5 | Fe1 | | 349 | 242 | | | | | | 1997 | 410 | 3 | 12 | | | |
| MC1 | CEE | F | 5 | Fe1 | | 406 | 271 | 176 | 185 | 189 | 200 | | 1997 | 402 | 19 | 25 | | | |
| MC1 | CEE | F | 5 | Fe3 | | 385 | 257 | 173 | 181 | 181 | 191 | | 2001 | 560 | | | 5 | 272 | |
| MC1 | CEE | F | 5 | Fe3 | | 404 | 268 | 184 | | 201 | 198 | | 2001 | 559 | | | 5 | 272 | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MC1 | CEE | F | 5 | Fe5 | | 368 | 259 | 172 | 168 | 186 | 187 | | 2001 | 560 | | | 7 | 254 | |
| MC1 | CEE | F | 5 | Fe7 | | 353 | 242 | 171 | 165 | 179 | 170 | | 2001 | 558 | | | 9 | 228 | |
| MC1 | CEE | F | 5 | Fe8 | | 339 | 236 | 156 | 150 | 175 | 168 | | 2001 | 558 | | | 10 | 219 | |
| MC1 | CEE | F | 5 | Fe8 | | 382 | 264 | 185 | 175 | 196 | 194 | | 1999 | 301 | | | 10 | 360 | |
| MC1 | CEE | F | 5 | Fe8 | | 386 | 260 | 180 | 173 | 186 | 179 | | 1999 | 435 | | | 10 | 340 | |
| MC1 | CEE | F | 5 | Fe8 | | 414 | 275 | 188 | 186 | 199 | 194 | | 1999 | 264 | | | 10 | 335 | |
| MC1 | CEE | UE | 5 | Fe8 | | 408 | 282 | 186 | 180 | 206 | 200 | | 1999 | 437 | | | 10 | 340 | |
| MC1 | OVA | F | 2 | CONT | | 236 | 149 | 113 | 113 | 103 | 97 | | 1995 | 397 | 2 | 3 | | | Dd approx |
| MC1 | OVA | F | 2 | MED3 | | 255 | 172 | 120 | 116 | 120 | 114 | | 2001 | 533 | | | 18 | 8 | |
| MC1 | OVA | F | 2 | MED3 | 1219 | 254 | 154 | 120 | 114 | 109 | 100 | 134 | 2001 | 541 | | | 18 | 3 | |
| MC1 | OVA | F | 2 | MED3 | 1293 | 253 | | 125 | 118 | 111 | 102 | 136 | 2001 | 537 | | | 18 | 21 | |
| MC1 | OVA | F | 2 | MOD1 | | 259 | 159 | 126 | 122 | 108 | 102 | | 1999 | 303 | | | 2 | 227 | |
| MC1 | OVA | F | 2 | MOD2 | | 241 | 145 | 116 | 114 | 99 | 97 | | 1999 | 439 | | | 1 | 1 | |
| MC1 | OVA | F | 3 | MED1 | | 244 | 154 | 117 | 113 | 107 | 103 | | 1999 | 275 | | | 3 | 73 | |
| MC1 | OVA | F | 3 | MED1 | | 245 | 163 | 118 | 116 | 112 | 107 | | 1999 | 84 | | | 3 | 13 | |
| MC1 | OVA | F | 3 | MED1 | | 246 | 157 | 119 | 115 | 102 | 95 | | 1999 | 281 | | | 3 | 123 | |
| MC1 | OVA | F | 3 | MED1 | | 247 | 148 | 119 | 119 | 97 | 104 | | 1999 | 283 | | | 3 | 72 | |
| MC1 | OVA | F | 3 | MED1 | | 248 | 163 | 116 | 115 | 113 | 109 | | 1999 | 277 | | | 3 | 73 | |
| MC1 | OVA | F | 3 | MED1 | | 253 | 163 | 119 | 121 | 104 | 110 | | 1999 | 280 | | | 3 | 63 | |
| MC1 | OVA | F | 3 | MED1 | | 263 | 184 | 129 | 118 | 117 | 111 | | 2001 | 549 | | | 16 | 48 | |
| MC1 | OVA | F | 3 | MED1 | | 266 | 177 | 127 | 123 | 118 | 114 | | 1999 | 398 | | | 3 | 6 | |
| MC1 | OVA | F | 3 | MED1 | | 267 | 170 | 120 | 125 | 107 | 118 | | 1999 | 303 | | | 3 | 210 | |
| MC1 | OVA | F | 3 | MED1 | | 272 | 181 | 133 | 129 | 120 | 116 | | 1999 | 434 | | | 3 | 481 | |
| MC1 | OVA | F | 3 | MED1 | | 312 | | 151 | 148 | 134 | 129 | | 1999 | 284 | | | 3 | 88 | |
| MC1 | OVA | F | 3 | MED1 | 1253 | 245 | 157 | 117 | 113 | 110 | 101 | 134 | 1999 | 288 | | | 3 | 175 | |
| MC1 | OVA | F | 3 | MED1 | 1257 | 263 | 173 | 122 | 126 | 116 | 115 | 144 | 1999 | 273 | | | 3 | 197 | |
| MC1 | OVA | F | 3 | MED1 | 1268 | 245 | 168 | 117 | 114 | 113 | 106 | 126 | 1999 | 298 | | | 3 | 306 | |
| MC1 | OVA | F | 3 | MED1 | 1350 | 311 | 179 | | 144 | 123 | 121 | 162 | 1999 | 434 | | | 3 | 481 | |
| MC1 | OVA | F | 4 | ROM1 | | 225 | 152 | 106 | 109 | 98 | 105 | | 1999 | 429 | | | 9 | 298 | |
| MC1 | OVA | F | 4 | ROM1 | | 235 | 142 | 113 | 112 | 96 | 88 | | 1999 | 298 | | | 9 | 331 | |
| MC1 | OVA | F | 4 | ROM1 | | 253 | 180 | 121 | 113 | 114 | 108 | | 1999 | 429 | | | 9 | 698 | |
| MC1 | OVA | F | 4 | ROM2 | 1219 | 245 | 156 | 116 | 115 | 104 | 98 | 139 | 1999 | 322 | | | 8 | 163 | |
| MC1 | OVA | F | 4 | ROM3 | 1300 | 264 | 166 | 127 | 125 | 112 | 106 | 137 | 1999 | 314 | | | 7 | 160 | Dd approx |
| MC1 | OVA | F | 4 | ROM5 | | 228 | | | | | | | 2001 | 541 | | | 15 | 31 | |
| MC1 | OVA | F | 4 | ROM5 | | 260 | 158 | 121 | 124 | 97 | 103 | | 2001 | 533 | | | 15 | 17 | |
| MC1 | OVA | F | 5 | Fe | | 295 | 190 | 140 | 138 | 127 | 123 | | 1997 | 410 | 5 | 11 | | | |
| MC1 | OVA | F | 5 | Fe1 | | 235 | 155 | 113 | 112 | 108 | 102 | | 1997 | 403 | 3 | 10 | | | |
| MC1 | OVA | F | 5 | Fe1 | 1322 | 222 | 151 | 107 | 103 | 103 | 102 | 124 | 1997 | 407 | 2 | 6 | | | |
| MC1 | OVA | F | 5 | Fe3 | 1201 | 243 | 167 | 116 | 113 | 106 | 103 | 124 | 2001 | 560 | | | 5 | 285 | |
| MC1 | OVA | F | 5 | Fe4 | | 248 | | 122 | 119 | 110 | 103 | | 1997 | 410 | 5 | 12 | | | |
| MC1 | OVA | F | 5 | Fe4 | 1248 | 236 | 158 | 112 | 106 | 108 | 100 | 119 | 1997 | 403 | 19 | 23 | | | |
| MC1 | OVA | F | 5 | Fe7 | | 227 | | 110 | 106 | | 92 | | 1997 | 402 | 7 | 3 | | | |
| MC1 | OVA | F | 5 | Fe7 | | 293 | 189 | 140 | 142 | 122 | 127 | | 1997 | 406 | 7 | 3 | | | |
| MC1 | OVA | F | 5 | Fe8 | | 216 | 141 | 102 | 104 | 96 | 101 | | 1999 | 271 | | | 10 | 361 | |
| MC1 | OVA | F | 5 | Fe8 | | 223 | 145 | 110 | 106 | 100 | 96 | | 1999 | 301 | | | 10 | 360 | |
| MC1 | OVA | F | 5 | Fe8 | 1257 | 226 | 150 | 108 | 111 | 103 | 102 | 118 | 1999 | 439 | | | 10 | 361 | Bd/Dd/WCL approx |
| MC1 | OVA | UE | 3 | MED1 | | 273 | 180 | 131 | 128 | 124 | 116 | | 1999 | 273 | | | 3 | 193 | |
| MC2 | B | F | 3 | MED1 | 1784 | | | 235 | | 210 | | | 1999 | 274 | | | 3 | 73 | |
| MC2 | B | F | 3 | MED1 | 1784 | | | 249 | | 211 | | 278 | 1999 | 84 | | | 3 | 12 | |
| MC2 | B | F | 4 | ROM1 | 1884 | | | | | | | 294 | 1999 | 267 | | | 9 | 221 | |
| MC2 | B | F | 5 | Fe8 | 1949 | | | | | | | 346 | 1999 | 300 | | | 10 | 432 | |
| MC2 | OVA | F | 4 | ROM5 | 1306 | | | 121 | | 113 | | 133 | 2001 | 549 | | | 15 | 93 | |
| MC2 | OVA | F | 5 | Fe8 | | | | 138 | | 132 | | | 1999 | 435 | | | 10 | 340 | |

| Os | Tax | fus | MP | Period | Bd | Ano | Cont | Q | Camada | Fase | UE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TI | B | F | 2 | CONT | 605 | 1995 | 404 | 10 | 1 | | |
| TI | B | F | 2 | MED3 | 609 | 2001 | 541 | | | 18 | 21 |
| TI | B | F | 2 | MOD | 506 | 1995 | 405 | 5 | 4 | | |
| TI | B | F | 2 | MOD1 | 603 | 2001 | 537 | | | 19 | 1 |
| TI | B | F | 3 | MED1 | 452 | 1999 | 7 | | | 3 | 17 |
| TI | B | F | 3 | MED1 | 487 | 2001 | 543 | | | 16 | 34 |
| TI | B | F | 3 | MED1 | 512 | 1999 | 282 | | | 3 | 196 |
| TI | B | F | 3 | MED1 | 514 | 2001 | 548 | | | 16 | 34 |
| TI | B | F | 3 | MED1 | 515 | 1999 | 278 | | | 3 | 193 |
| TI | B | F | 3 | MED1 | 518 | 1999 | 7 | | | 3 | 17 |
| TI | B | F | 3 | MED1 | 528 | 1999 | 438 | | | 3 | 248 |
| TI | B | F | 3 | MED1 | 534 | 1999 | 274 | | | 3 | 197 |
| TI | B | F | 3 | MED1 | 545 | 1999 | 71 | | | 3 | 18 |
| TI | B | F | 3 | MED1 | 549 | 1999 | 269 | | | 3 | 210 |
| TI | B | F | 3 | MED1 | 553 | 1995 | 396 | | 1 | | |
| TI | B | F | 3 | MED1 | 554 | 1999 | 7 | | | 3 | 17 |
| TI | B | F | 3 | MED1 | 555 | 1999 | 269 | | | 3 | 210 |
| TI | B | F | 3 | MED1 | 556 | 1999 | 292 | | | 3 | 141 |
| TI | B | F | 3 | MED1 | 557 | 1999 | 282 | | | 3 | 196 |
| TI | B | F | 3 | MED1 | 561 | 1999 | 278 | | | 3 | 193 |
| TI | B | F | 3 | MED1 | 561 | 1999 | 273 | | | 3 | 193 |
| TI | B | F | 3 | MED1 | 570 | 1999 | 272 | | | 3 | 197 |
| TI | B | F | 3 | MED1 | 574 | 1999 | 288 | | | 3 | 175 |
| TI | B | F | 3 | MED1 | 575 | 2001 | 541 | | | 16 | 42 |
| TI | B | F | 3 | MED1 | 577 | 1999 | 272 | | | 3 | 197 |
| TI | B | F | 3 | MED1 | 579 | 1999 | 276 | | | 3 | 197 |
| TI | B | F | 3 | MED1 | 579 | 1999 | 430 | | | 3 | 451 |
| TI | B | F | 3 | MED1 | 586 | 1999 | 277 | | | 3 | 193 |
| TI | B | F | 3 | MED1 | 589 | 1999 | 84 | | | 3 | 12 |
| TI | B | F | 3 | MED1 | 590 | 1999 | 276 | | | 3 | 196 |
| TI | B | F | 3 | MED1 | 590 | 1999 | 1 | | | 3 | 9 |
| TI | B | F | 3 | MED1 | 591 | 1999 | 269 | | | 3 | 210 |
| TI | B | F | 3 | MED1 | 592 | 1999 | 287 | | | 3 | 91 |
| TI | B | F | 3 | MED1 | 594 | 1999 | 277 | | | 3 | 193 |
| TI | B | F | 3 | MED1 | 597 | 2001 | 541 | | | 16 | 42 |
| TI | B | F | 3 | MED1 | 597 | 1999 | 269 | | | 3 | 210 |
| TI | B | F | 3 | MED1 | 602 | 1999 | 435 | | | 3 | 451 |
| TI | B | F | 3 | MED1 | 611 | 1999 | 84 | | | 3 | 13 |
| TI | B | F | 3 | MED1 | 613 | 1999 | 434 | | | 3 | 306 |
| TI | B | F | 3 | MED1 | 616 | 1999 | 276 | | | 3 | 196 |
| TI | B | F | 3 | MED1 | 708 | 2001 | 548 | | | 16 | 35 |
| TI | B | F | 4 | ROM1 | 453 | 2001 | 551 | | | 11 | 155 |
| TI | B | F | 4 | ROM1 | 562 | 2001 | 554 | | | 11 | 191 |
| TI | B | F | 4 | ROM1 | 563 | 2001 | 554 | | | 11 | 191 |
| TI | B | F | 4 | ROM1 | 570 | 1999 | 298 | | | 9 | 331 |
| TI | B | F | 4 | ROM1 | 572 | 1999 | 426 | | | 9 | 671 |
| TI | B | F | 4 | ROM1 | 579 | 1999 | 266 | | | 9 | 221 |
| TI | B | F | 4 | ROM1 | 583 | 1998 | 69 | 7 | 5 | | |
| TI | B | F | 4 | ROM1 | 604 | 1999 | 302 | | | 9 | 373 |
| TI | B | F | 4 | ROM1 | 609 | 1999 | 426 | | | 9 | 671 |
| TI | B | F | 4 | ROM1 | 620 | 1999 | 296 | | | 9 | 281 |
| TI | B | F | 4 | ROM1 | 626 | 1999 | 265 | | | 9 | 221 |
| TI | B | F | 4 | ROM1 | 644 | 1999 | 265 | | | 9 | 221 |
| TI | B | F | 4 | ROM2 | 530 | 1999 | 285 | | | 8 | 162 |
| TI | B | F | 4 | ROM2 | 534 | 1999 | 294 | | | 8 | 270 |

| Os | Tax | fus | MP | Period | Bd | Ano | Cont | Q | Camada | Fase | UE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TI | B | F | 4 | ROM2 | 554 | 1999 | 289 | | | 8 | 200 |
| TI | B | F | 4 | ROM2 | 562 | 1999 | 263 | | | 8 | 347 |
| TI | B | F | 4 | ROM2 | 564 | 1999 | 263 | | | 8 | 347 |
| TI | B | F | 4 | ROM2 | 567 | 1999 | 285 | | | 8 | 162 |
| TI | B | F | 4 | ROM2 | 614 | 1999 | 292 | | | 8 | 163 |
| TI | B | F | 4 | ROM2 | 675 | 1997 | 402 | 3 | 4 | | |
| TI | B | F | 4 | ROM3 | 545 | 1999 | 279 | | | 7 | 160 |
| TI | B | F | 4 | ROM3 | 568 | 1999 | 292 | | | 7 | 154 |
| TI | B | F | 4 | ROM3 | 683 | 1999 | 268 | | | 7 | 132 |
| TI | B | F | 5 | Fe2 | 625 | 2001 | 560 | | | 4 | 288 |
| TI | B | F | 5 | Fe3 | 581 | 2001 | 559 | | | 5 | 286 |
| TI | B | F | 5 | Fe7 | 427 | 1997 | 407 | 19 | 29 | | |
| TI | B | F | 5 | Fe7 | 531 | 1997 | 406 | 7 | 3 | | |
| TI | B | F | 5 | Fe7 | 570 | 1997 | 410 | 10 | 4 | | |
| TI | B | F | 5 | Fe8 | 556 | 1999 | 297 | | | 10 | 422 |
| TI | B | F | 5 | Fe8 | 562 | 1999 | 297 | | | 10 | 425 |
| TI | B | F | 5 | Fe8 | 568 | 1999 | 300 | | | 10 | 432 |
| TI | B | F | 5 | Fe8 | 578 | 1999 | 264 | | | 10 | 335 |
| TI | B | F | 5 | Fe8 | 588 | 1999 | 300 | | | 10 | 432 |
| TI | B | F | 5 | Fe8 | 596 | 1999 | 300 | | | 10 | 432 |
| TI | B | F | 5 | Fe8 | 609 | 1999 | 264 | | | 10 | 335 |
| TI | B | F | 5 | Fe8 | 614 | 1999 | 435 | | | 10 | 428 |
| TI | B | F | 5 | Fe8 | 616 | 1999 | 271 | | | 10 | 361 |
| TI | B | F | 5 | Fe8 | 624 | 1999 | 264 | | | 10 | 335 |
| TI | B | F | 5 | Fe8 | 639 | 1999 | 300 | | | 10 | 432 |
| TI | B | F | 5 | Fe8 | 640 | 1999 | 300 | | | 10 | 432 |
| TI | B | F | 5 | Fe8 | 661 | 1999 | 262 | | | 10 | 361 |
| TI | B | F | 5 | Fe8 | 676 | 1999 | 271 | | | 10 | 361 |
| TI | CEE | F | 2 | MOD1 | 483 | 2001 | 537 | | | 19 | 1 |
| TI | CEE | F | 3 | MED1 | 374 | 1999 | 434 | | | 3 | 481 |
| TI | CEE | F | 3 | MED1 | 377 | 2001 | 533 | | | 16 | 40 |
| TI | CEE | F | 3 | MED1 | 425 | 2001 | 533 | | | 16 | 40 |
| TI | CEE | F | 3 | MED1 | 444 | 2001 | 543 | | | 16 | 48 |
| TI | CEE | F | 3 | MED1 | 457 | 1995 | 396 | | | | |
| TI | CEE | F | 3 | MED1 | 469 | 2001 | 550 | | | 16 | 48 |
| TI | CEE | F | 4 | ROM1 | 431 | 2001 | 554 | | | 11 | 188 |
| TI | CEE | F | 4 | ROM1 | 488 | 1999 | 426 | | | 9 | 671 |
| TI | CEE | F | 4 | ROM1 | 540 | 1999 | 268 | | | 9 | 221 |
| TI | CEE | F | 4 | ROM2 | 472 | 1999 | 288 | | | 8 | 200 |
| TI | CEE | F | 4 | ROM3 | 388 | 1999 | 322 | | | 7 | 160 |
| TI | CEE | F | 4 | ROM3 | 423 | 1999 | 322 | | | 7 | 160 |
| TI | CEE | F | 4 | ROM4 | 414 | 1999 | 438 | | | 6 | 159 |
| TI | CEE | F | 4 | ROM4 | 450 | 1999 | 287 | | | 6 | 110 |
| TI | CEE | F | 4 | ROM4 | 450 | 1999 | 279 | | | 6 | 119 |
| TI | CEE | F | 4 | ROM5 | 497 | 2001 | 549 | | | 15 | 90 |
| TI | CEE | F | 5 | Fe1 | 427 | 1997 | 400 | 18 | 21 | | |
| TI | CEE | F | 5 | Fe4 | 441 | 1997 | 403 | 19 | 23 | | |
| TI | CEE | F | 5 | Fe8 | 404 | 2001 | 554 | | | 10 | 205 |
| TI | CEE | F | 5 | Fe8 | 408 | 2001 | 554 | | | 10 | 213 |
| TI | CEE | F | 5 | Fe8 | 410 | 2001 | 554 | | | 10 | 213 |
| TI | CEE | F | 5 | Fe8 | 426 | 1999 | 435 | | | 10 | 340 |
| TI | CEE | F | 5 | Fe8 | 462 | 2001 | 558 | | | 10 | 219 |
| TI | S | F | 2 | MED3 | 263 | 2001 | 537 | | | 18 | 21 |
| TI | S | F | 2 | MED3 | 277 | 2001 | 549 | | | 18 | 61 |
| TI | S | F | 2 | MED3 | 307 | 2001 | 546 | | | 18 | 61 |

| Os | Tax | fus | MP | Period | Bd | Ano | Cont | Q | Camada | Fase | UE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TI | S | F | 2 | MED3 | 323 | 2001 | 548 | | | 18 | 61 |
| TI | S | F | 2 | MED3 | 376 | 2001 | 537 | | | 18 | 21 |
| TI | S | F | 2 | MOD1 | 256 | 1999 | 432 | | | 2 | 449 |
| TI | S | F | 2 | MOD1 | 302 | 1999 | 299 | | | 2 | 240 |
| TI | S | F | 2 | MOD1 | 385 | 2001 | 533 | | | 19 | 1 |
| TI | S | F | 3 | MED1 | 259 | 2001 | 550 | | | 16 | 48 |
| TI | S | F | 3 | MED1 | 269 | 1999 | 272 | | | 3 | 197 |
| TI | S | F | 3 | MED1 | 274 | 1999 | 7 | | | 3 | 17 |
| TI | S | F | 3 | MED1 | 282 | 1999 | 272 | | | 3 | 197 |
| TI | S | F | 3 | MED1 | 302 | 1999 | 293 | | | 3 | 43 |
| TI | S | F | 3 | MED1 | 341 | 2001 | 543 | | | 16 | 48 |
| TI | S | F | 3 | MED1 | 343 | 2001 | 541 | | | 16 | 23 |
| TI | S | F | 3 | MED1 | 344 | 1999 | 280 | | | 3 | 67 |
| TI | S | F | 3 | MED1 | 347 | 1999 | 398 | | | 3 | 6 |
| TI | S | F | 3 | MED1 | 348 | 2001 | 541 | | | 16 | 23 |
| TI | S | F | 3 | MED1 | 359 | 2001 | 546 | | | 16 | 48 |
| TI | S | F | 3 | MED1 | 362 | 2001 | 548 | | | 16 | 48 |
| TI | S | F | 3 | MED2 | 326 | 2001 | 546 | | | 17 | 76 |
| TI | S | F | 3 | MED2 | 337 | 2001 | 546 | | | 17 | 76 |
| TI | S | F | 3 | MED2 | 348 | 2001 | 546 | | | 17 | 76 |
| TI | S | F | 3 | MED2 | 365 | 2001 | 546 | | | 17 | 76 |
| TI | S | F | 4 | ROM1 | 259 | 1999 | 266 | | | 9 | 221 |
| TI | S | F | 4 | ROM1 | 280 | 2001 | 554 | | | 11 | 188 |
| TI | S | F | 4 | ROM1 | 286 | 1999 | 268 | | | 9 | 221 |
| TI | S | F | 4 | ROM1 | 294 | 2001 | 551 | | | 11 | 171 |
| TI | S | F | 4 | ROM1 | 295 | 1999 | 265 | | | 9 | 221 |
| TI | S | F | 4 | ROM1 | 318 | 1999 | 440 | | | 9 | 355 |
| TI | S | F | 4 | ROM1 | 323 | 1999 | 268 | | | 9 | 221 |
| TI | S | F | 4 | ROM1 | 349 | 1999 | 266 | | | 9 | 221 |
| TI | S | F | 4 | ROM2 | 270 | 1999 | 295 | | | 8 | 268 |
| TI | S | F | 4 | ROM2 | 291 | 1997 | 400 | 7 | 4 | | |
| TI | S | F | 4 | ROM2 | 293 | 1999 | 274 | | | 8 | 344 |
| TI | S | F | 4 | ROM3 | 278 | 1999 | 292 | | | 7 | 154 |
| TI | S | F | 4 | ROM3 | 306 | 1999 | 268 | | | 7 | 132 |
| TI | S | F | 4 | ROM5 | 290 | 1999 | 287 | | | 5 | 95 |
| TI | S | F | 5 | Fe | 266 | 1997 | 400 | 3 | 7 | | |
| TI | S | F | 5 | Fe1 | 278 | 1997 | 407 | 2 | 6 | | |
| TI | S | F | 5 | Fe1 | 295 | 2001 | 562 | | | 3 | 310 |
| TI | S | F | 5 | Fe2 | 283 | 2001 | 559 | | | 4 | 300 |
| TI | S | F | 5 | Fe3 | 297 | 1995 | 401 | 3 | 11 | | |
| TI | S | F | 5 | Fe4 | 268 | 1997 | 410 | 10 | 9 | | |
| TI | S | F | 5 | Fe4 | 279 | 1997 | 403 | 19 | 23 | | |
| TI | S | F | 5 | Fe7 | 296 | 2001 | 558 | | | 9 | 229 |
| TI | S | F | 5 | Fe7 | 315 | 2001 | 558 | | | 9 | 229 |
| TI | S | F | 5 | Fe8 | 271 | 1999 | 440 | | | 10 | 340 |
| TI | S | F | 5 | Fe8 | 278 | 1999 | 301 | | | 10 | 360 |
| TI | S | F | 5 | Fe8 | 282 | 1999 | 264 | | | 10 | 335 |
| TI | S | F | 5 | Fe8 | 287 | 1999 | 301 | | | 10 | 360 |
| TI | S | F | 5 | Fe8 | 288 | 1999 | 301 | | | 10 | 360 |
| TI | S | F | 5 | Fe8 | 288 | 1999 | 435 | | | 10 | 419 |
| TI | S | F | 5 | Fe8 | 302 | 1999 | 297 | | | 10 | 433 |
| TI | S | F | 5 | Fe8 | 303 | 1999 | 264 | | | 10 | 335 |
| TI | S | F | 5 | Fe8 | 304 | 1999 | 429 | | | 10 | 702 |
| TI | S | F | 5 | Fe8 | 308 | 1999 | 271 | | | 10 | 361 |
| TI | S | F | 5 | Fe8 | 316 | 1999 | 426 | | | 10 | 707 |

| Os | Tax | fus | MP | Period | GL | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CA | B | F | 2 | MOD2 | 1213 | 1999 | 438 | | | 1 | 1 | |
| CA | B | F | 2 | MOD2 | 1294 | 1999 | 438 | | | 1 | 1 | |
| CA | B | F | 3 | MED1 | 1099 | 1999 | 7 | | | 3 | 17 | |
| CA | B | F | 3 | MED1 | 1153 | 1999 | 277 | | | 3 | 73 | |
| CA | B | F | 3 | MED1 | 1175 | 1999 | 398 | | | 3 | 10 | |
| CA | B | F | 3 | MED1 | 1188 | 1999 | 290 | | | 3 | 36 | |
| CA | B | F | 3 | MED1 | 1188 | 1999 | 269 | | | 3 | 210 | |
| CA | B | F | 3 | MED1 | 1214 | 1999 | 277 | | | 3 | 193 | |
| CA | B | F | 3 | MED1 | 1215 | 1999 | 284 | | | 3 | 90 | |
| CA | B | F | 3 | MED1 | 1222 | 1999 | 434 | | | 3 | 306 | |
| CA | B | F | 3 | MED1 | 1277 | 1999 | 291 | | | 3 | 88 | |
| CA | B | F | 3 | MED1 | 1288 | 1999 | 272 | | | 3 | 197 | |
| CA | B | F | 4 | ROM1 | 1178 | 1999 | 266 | | | 9 | 221 | |
| CA | B | F | 4 | ROM1 | 1234 | 1995 | 405 | 12 | 3 | | | |
| CA | B | F | 4 | ROM1 | 1262 | 1999 | 265 | | | 9 | 221 | |
| CA | B | F | 4 | ROM1 | 1308 | 1999 | 296 | | | 9 | 281 | |
| CA | B | F | 4 | ROM1 | 1336 | 1999 | 437 | | | 9 | 628 | GL approx |
| CA | B | F | 4 | ROM1 | 1422 | 1999 | 267 | | | 9 | 221 | |
| CA | B | F | 4 | ROM2 | 1321 | 1999 | 288 | | | 8 | 200 | |
| CA | B | F | 5 | Fe1 | 1323 | 1997 | 410 | 3 | 11 | | | |
| CA | B | F | 5 | Fe8 | 1205 | 1999 | 300 | | | 10 | 432 | |
| CA | B | F | 5 | Fe8 | 1217 | 1999 | 264 | | | 10 | 334 | |
| CA | B | F | 5 | Fe8 | 1225 | 2001 | 554 | | | 10 | 205 | |
| CA | B | F | 5 | Fe8 | 1230 | 1999 | 300 | | | 10 | 432 | |
| CA | B | F | 5 | Fe8 | 1255 | 1999 | 440 | | | 10 | 340 | |
| CA | B | F | 5 | Fe8 | 1261 | 1999 | 262 | | | 10 | 361 | |
| CA | B | F | 5 | Fe8 | 1293 | 1999 | 297 | | | 10 | 432 | |
| CA | B | F | 5 | Fe8 | 1348 | 1999 | 301 | | | 10 | 360 | |
| CA | B | F | 5 | Fe8 | 1352 | 1999 | 297 | | | 10 | 433 | |
| CA | CAH | F | 3 | MED1 | 541 | 2001 | 549 | | | 16 | 48 | |
| CA | CAH | F | 3 | MED1 | 632 | 1999 | 434 | | | 3 | 481 | |
| CA | CAH | F | 4 | ROM1 | 556 | 1999 | 267 | | | 9 | 221 | |
| CA | CAH? | F | 4 | ROM1 | 521 | 2001 | 554 | | | 11 | 176 | |
| CA | CEE | F | 2 | MOD | 1007 | 1997 | 406 | 4 | 1 | | | |
| CA | CEE | F | 3 | MED1 | 966 | 2001 | 537 | | | 16 | 23 | GL approx |
| CA | CEE | F | 3 | MED1 | 1066 | 1999 | 272 | | | 3 | 197 | |
| CA | CEE | F | 3 | MED1 | 1138 | 2001 | 548 | | | 16 | 51 | |
| CA | CEE | F | 3 | MED1 | 1176 | 1999 | 269 | | | 3 | 210 | |
| CA | CEE | F | 4 | ROM1 | 1055 | 1999 | 267 | | | 9 | 221 | |
| CA | CEE | F | 4 | ROM2 | 1170 | 1999 | 288 | | | 8 | 200 | |
| CA | CEE | F | 4 | ROM2 | 1200 | 1999 | 322 | | | 8 | 163 | |
| CA | CEE | F | 4 | ROM3 | 1189 | 1999 | 289 | | | 7 | 201 | |
| CA | CEE | F | 5 | Fe2 | 1092 | 2001 | 560 | | | 4 | 288 | |
| CA | CEE | F | 5 | Fe7 | 1028 | 2001 | 558 | | | 9 | 228 | |
| CA | CEE | F | 5 | Fe8 | 1108 | 1999 | 301 | | | 10 | 360 | |
| CA | CEE | F | 5 | Fe8 | 1122 | 2001 | 554 | | | 10 | 213 | |
| CA | CEE | F | 5 | Fe8 | 1124 | 1999 | 264 | | | 10 | 335 | |
| CA | CEE | F | 5 | Fe8 | 1133 | 2001 | 558 | | | 10 | 219 | |
| CA | OVA | F | 2 | MOD1 | 546 | 1999 | 432 | | | 2 | 449 | OVA? |
| CA | OVA | F | 3 | MED1 | 523 | 1995 | 396 | | | | | Silo grand |
| CA | OVA | F | 3 | MED1 | 533 | 1999 | 84 | | | 3 | 13 | |
| CA | OVA | F | 3 | MED1 | 542 | 2001 | 549 | | | 16 | 48 | |

| Os | Tax | fus | MP | Period | GL | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CA | OVA | F | 3 | MED1 | 544 | 1999 | 7 | | | 3 | 17 | |
| CA | OVA | F | 3 | MED1 | 557 | 1999 | 84 | | | 3 | 13 | |
| CA | OVA | F | 3 | MED1 | 563 | 1999 | 287 | | | 3 | 91 | |
| CA | OVA | F | 3 | MED1 | 564 | 1999 | 432 | | | 3 | 451 | |
| CA | OVA | F | 3 | MED1 | 579 | 2001 | 546 | | | 16 | 27 | |
| CA | OVA | F | 3 | MED1 | 586 | 1999 | 84 | | | 3 | 11 | |
| CA | OVA | F | 3 | MED1 | 598 | 2001 | 543 | | | 16 | 42 | |
| CA | OVA | F | 3 | MED1 | 608 | 2001 | 548 | | | 16 | 35 | |
| CA | OVA | F | 3 | MED1 | 614 | 1999 | 71 | | | 3 | 20 | |
| CA | OVA | F | 3 | MED1 | 622 | 1999 | 433 | | | 3 | 481 | |
| CA | OVA | F | 3 | MED1 | 633 | 1995 | 396 | | | | | Tanq. Silo 1 |
| CA | OVA | F | 3 | MED1 | 640 | 1999 | 434 | | | 3 | 306 | |
| CA | OVA | F | 3 | MED1 | 690 | 2001 | 543 | | | 16 | 48 | |
| CA | OVA | F | 3 | MED2 | 573 | 2001 | 545 | | | 17 | 15 | |
| CA | OVA | F | 4 | ROM1 | 520 | 1999 | 426 | | | 9 | 669 | |
| CA | OVA | F | 4 | ROM1 | 526 | 1999 | 298 | | | 9 | 331 | |
| CA | OVA | F | 4 | ROM1 | 582 | 1999 | 428 | | | 9 | 645 | |
| CA | OVA | F | 4 | ROM2 | 474 | 1999 | 294 | | | 8 | 270 | |
| CA | OVA | F | 4 | ROM2 | 516 | 1999 | 294 | | | 8 | 263 | |
| CA | OVA | F | 4 | ROM2 | 520 | 1999 | 296 | | | 8 | 261 | |
| CA | OVA | F | 4 | ROM2 | 525 | 1999 | 438 | | | 8 | 347 | |
| CA | OVA | F | 4 | ROM2 | 534 | 1999 | 282 | | | 8 | 194 | |
| CA | OVA | F | 4 | ROM2 | 565 | 1999 | 299 | | | 8 | 238 | |
| CA | OVA | F | 4 | ROM2 | 584 | 1999 | 295 | | | 8 | 268 | |
| CA | OVA | F | 4 | ROM2 | 597 | 1999 | 426 | | | 8 | 643 | |
| CA | OVA | F | 4 | ROM2 | 652 | 1999 | 282 | | | 8 | 194 | |
| CA | OVA | F | 4 | ROM3 | 617 | 1999 | 322 | | | 7 | 160 | |
| CA | OVA | F | 4 | ROM3 | 628 | 1999 | 279 | | | 7 | 160 | |
| CA | OVA | F | 4 | ROM4 | 473 | 2001 | 562 | | | 14 | 186 | |
| CA | OVA | F | 4 | ROM5 | 544 | 2001 | 551 | | | 15 | 113 | |
| CA | OVA | F | 4 | ROM5 | 644 | 2001 | 541 | | | 15 | 31 | |
| CA | OVA | F | 5 | Fe | 597 | 1995 | 400 | 5 | 5 | | | |
| CA | OVA | F | 5 | Fe2 | 498 | 2001 | 559 | | | 4 | 300 | |
| CA | OVA | F | 5 | Fe2 | 504 | 2001 | 560 | | | 4 | 289 | |
| CA | OVA | F | 5 | Fe8 | 500 | 1999 | 302 | | | 10 | 403 | |
| CA | OVA | F | 5 | Fe8 | 544 | 1999 | 429 | | | 10 | 713 | |
| CA | OVA | F | 5 | Fe8 | 545 | 1999 | 262 | | | 10 | 361 | |
| CA | OVA | F | 5 | Fe8 | 563 | 1999 | 437 | | | 10 | 340 | |
| CA | S | F | 2 | MED3 | 873 | 2001 | 537 | | | 18 | 21 | |
| CA | S | F | 2 | MED3 | 876 | 2001 | 537 | | | 18 | 21 | |
| CA | S | F | 2 | MOD1 | 880 | 2001 | 537 | | | 19 | 1 | |
| CA | S | F | 3 | MED1 | 895 | 2001 | 537 | | | 16 | 27 | |
| CA | S | F | 3 | MED2 | 838 | 2001 | 546 | | | 17 | 76 | |
| CA | S | F | 4 | ROM1 | 812 | 2001 | 554 | | | 11 | 188 | |
| CA | S | F | 4 | ROM3 | 735 | 1999 | 432 | | | 7 | 129 | |
| CA | S | F | 4 | ROM3 | 779 | 1999 | 268 | | | 7 | 132 | |

| Os | Tax | fus | MP | Period | GL | Ano | Cont | Quad | Camada | Fase | UE | notes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | B | 2 | MOD | 551 | 360 | 300 | 1995 | 405 | 5 | 4 | | | |
| AS | B | 2 | MOD | 670 | 414 | 362 | 1995 | 405 | 5 | 4 | | | |
| AS | B | 2 | MOD1 | | 391 | | 1999 | 299 | | | 2 | 240 | |
| AS | B | 2 | MOD1 | 564 | 357 | 316 | 1999 | 303 | | | 2 | 227 | |
| AS | B | 2 | MOD1 | 629 | | | 1999 | 303 | | | 2 | 225 | |
| AS | B | 3 | MED1 | | | 320 | 1999 | 1 | | | 3 | 8 | |
| AS | B | 3 | MED1 | | 363 | | 1999 | 322 | | | 3 | 195 | |
| AS | B | 3 | MED1 | | 394 | 342 | 2001 | 537 | | | 16 | 23 | |
| AS | B | 3 | MED1 | | 395 | 350 | 2001 | 550 | | | 16 | 48 | |
| AS | B | 3 | MED1 | | 398 | | 1995 | 396 | | | | | Silo grand |
| AS | B | 3 | MED1 | | 402 | | 2001 | 548 | | | 16 | 35 | |
| AS | B | 3 | MED1 | | 406 | | 1999 | 433 | | | 3 | 481 | |
| AS | B | 3 | MED1 | | 427 | | 1999 | 282 | | | 3 | 195 | |
| AS | B | 3 | MED1 | | 430 | | 1999 | 314 | | | 3 | 27 | |
| AS | B | 3 | MED1 | | 434 | | 1999 | 440 | | | 3 | 307 | |
| AS | B | 3 | MED1 | | 445 | | 2001 | 548 | | | 16 | 48 | |
| AS | B | 3 | MED1 | 555 | 356 | 312 | 1999 | 284 | | | 3 | 88 | |
| AS | B | 3 | MED1 | 564 | 366 | 327 | 1999 | 282 | | | 3 | 196 | |
| AS | B | 3 | MED1 | 572 | 356 | 321 | 1999 | 274 | | | 3 | 197 | |
| AS | B | 3 | MED1 | 574 | 369 | 312 | 1999 | 71 | | | 3 | 18 | |
| AS | B | 3 | MED1 | 579 | 360 | 314 | 1997 | 406 | 5 | 3 | | | |
| AS | B | 3 | MED1 | 587 | | | 1999 | 314 | | | 3 | 27 | |
| AS | B | 3 | MED1 | 590 | 372 | 325 | 1999 | 7 | | | 3 | 17 | |
| AS | B | 3 | MED1 | 593 | 386 | 333 | 1999 | 1 | | | 3 | 5 | |
| AS | B | 3 | MED1 | 594 | 370 | 325 | 1999 | 273 | | | 3 | 193 | |
| AS | B | 3 | MED1 | 598 | 392 | 333 | 1999 | 430 | | | 3 | 557 | |
| AS | B | 3 | MED1 | 601 | 390 | 331 | 1999 | 277 | | | 3 | 193 | |
| AS | B | 3 | MED1 | 602 | 424 | 346 | 1999 | 426 | | | 3 | 481 | |
| AS | B | 3 | MED1 | 614 | 405 | 350 | 1999 | 282 | | | 3 | 196 | |
| AS | B | 3 | MED1 | 615 | 391 | 338 | 1999 | 434 | | | 3 | 306 | |
| AS | B | 3 | MED1 | 617 | 390 | 341 | 1999 | 434 | | | 3 | 306 | |
| AS | B | 3 | MED1 | 619 | 391 | 349 | 1999 | 293 | | | 3 | 37 | |
| AS | B | 3 | MED1 | 622 | 411 | 339 | 1999 | 269 | | | 3 | 210 | |
| AS | B | 3 | MED1 | 624 | 390 | 348 | 2001 | 543 | | | 16 | 35 | |
| AS | B | 3 | MED1 | 626 | 396 | 334 | 1999 | 278 | | | 3 | 193 | |
| AS | B | 3 | MED1 | 628 | 359 | 336 | 1999 | 276 | | | 3 | 196 | |
| AS | B | 3 | MED1 | 628 | 379 | 353 | 1999 | 284 | | | 3 | 90 | |
| AS | B | 3 | MED1 | 629 | 427 | 342 | 1999 | 276 | | | 3 | 197 | |
| AS | B | 3 | MED1 | 631 | 371 | 341 | 1999 | 284 | | | 3 | 88 | |
| AS | B | 3 | MED1 | 638 | 394 | 325 | 1999 | 434 | | | 3 | 306 | |
| AS | B | 3 | MED1 | 640 | | 351 | 1999 | 430 | | | 3 | 480 | |
| AS | B | 3 | MED1 | 640 | 428 | 354 | 1999 | 269 | | | 3 | 210 | |
| AS | B | 3 | MED1 | 649 | | 354 | 1999 | 434 | | | 3 | 306 | |
| AS | B | 3 | MED1 | 655 | 390 | 371 | 2001 | 550 | | | 16 | 48 | |
| AS | B | 3 | MED1 | 656 | 403 | | 1999 | 434 | | | 3 | 306 | |
| AS | B | 3 | MED1 | 661 | 423 | | 2001 | 548 | | | 16 | 35 | |
| AS | B | 3 | MED1 | 661 | 425 | 358 | 1999 | 289 | | | 3 | 210 | |
| AS | B | 3 | MED1 | 663 | 446 | 368 | 1999 | 273 | | | 3 | 197 | GL = approx |
| AS | B | 3 | MED1 | 664 | 406 | 349 | 1999 | 278 | | | 3 | 193 | |
| AS | B | 3 | MED1 | 668 | 390 | 372 | 1999 | 7 | | | 3 | 17 | |
| AS | B | 3 | MED1 | 686 | 450 | 376 | 1999 | 290 | | | 3 | 30 | |
| AS | B | 3 | MED1 | 689 | | 394 | 1999 | 314 | | | 3 | 27 | GL = approx |

| Os | Tax | MP | Period | GL | Bd | Dd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | B | 3 | MED1 | 689 | 431 | 380 | 1999 | 314 | | | 3 | 116 | |
| AS | B | 3 | MED1 | 699 | 437 | 383 | 1999 | 292 | | | 3 | 141 | |
| AS | B | 3 | MED2 | 684 | 420 | 366 | 2001 | 546 | | | 17 | 76 | |
| AS | B | 4 | ROM1 | | 329 | | 1999 | 265 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | | 387 | 354 | 2001 | 554 | | | 11 | 174 | |
| AS | B | 4 | ROM1 | | 415 | 359 | 1999 | 296 | | | 9 | 281 | |
| AS | B | 4 | ROM1 | 533 | 326 | 312 | 2001 | 551 | | | 11 | 151 | |
| AS | B | 4 | ROM1 | 549 | 355 | 301 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 594 | 383 | 321 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 596 | 375 | 333 | 1999 | 429 | | | 9 | 698 | |
| AS | B | 4 | ROM1 | 605 | 380 | 340 | 1996 | 401 | 30 | 2 | | | |
| AS | B | 4 | ROM1 | 607 | 366 | 338 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 609 | 387 | 331 | 1999 | 265 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 620 | 406 | 345 | 1999 | 265 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 635 | 396 | 346 | 1999 | 426 | | | 9 | 671 | |
| AS | B | 4 | ROM1 | 636 | 400 | 357 | 1998 | 69 | 5 | 5 | | | |
| AS | B | 4 | ROM1 | 639 | 387 | 347 | 1999 | 302 | | | 9 | 378 | GL = approx |
| AS | B | 4 | ROM1 | 640 | 431 | | 1999 | 428 | | | 9 | 671 | |
| AS | B | 4 | ROM1 | 642 | 376 | 337 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 644 | 392 | 355 | 1998 | 69 | 5 | 4 | | | |
| AS | B | 4 | ROM1 | 644 | 417 | 349 | 1999 | 428 | | | 9 | 663 | |
| AS | B | 4 | ROM1 | 647 | 419 | 345 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 648 | 449 | 363 | 1999 | 267 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 651 | 403 | 353 | 1999 | 428 | | | 9 | 679 | |
| AS | B | 4 | ROM1 | 652 | 460 | 361 | 1998 | 409 | 6 | 4 | | | |
| AS | B | 4 | ROM1 | 655 | 429 | | 1998 | 69 | 7 | 5 | | | |
| AS | B | 4 | ROM1 | 657 | 389 | 354 | 2001 | 554 | | | 11 | 191 | |
| AS | B | 4 | ROM1 | 657 | 433 | 367 | 1999 | 428 | | | 9 | 679 | |
| AS | B | 4 | ROM1 | 658 | 417 | 372 | 1999 | 265 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 662 | 446 | 365 | 1999 | 267 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 673 | 434 | 373 | 1999 | 266 | | | 9 | 221 | |
| AS | B | 4 | ROM1 | 675 | 433 | 380 | 1999 | 267 | | | 9 | 221 | |
| AS | B | 4 | ROM2 | | | 331 | 1999 | 432 | | | 8 | 631 | |
| AS | B | 4 | ROM2 | 562 | 345 | 313 | 1999 | 263 | | | 8 | 347 | |
| AS | B | 4 | ROM2 | 578 | 378 | 315 | 1999 | 289 | | | 8 | 200 | |
| AS | B | 4 | ROM2 | 608 | 417 | | 1999 | 273 | | | 8 | 163 | |
| AS | B | 4 | ROM2 | 609 | | | 1999 | 294 | | | 8 | 270 | |
| AS | B | 4 | ROM2 | 614 | 378 | 336 | 1999 | 299 | | | 8 | 239 | |
| AS | B | 4 | ROM2 | 617 | 355 | 346 | 1999 | 263 | | | 8 | 347 | |
| AS | B | 4 | ROM2 | 625 | 392 | | 1999 | 297 | | | 8 | 426 | Bd = approx |
| AS | B | 4 | ROM2 | 646 | 381 | 351 | 1999 | 294 | | | 8 | 270 | |
| AS | B | 4 | ROM2 | 662 | 462 | 362 | 1999 | 296 | | | 8 | 246 | |
| AS | B | 4 | ROM2 | 674 | 448 | 379 | 1999 | 439 | | | 8 | 365 | |
| AS | B | 4 | ROM3 | 582 | 389 | 335 | 1999 | 268 | | | 7 | 132 | |
| AS | B | 4 | ROM3 | 595 | 371 | 324 | 1999 | 279 | | | 7 | 160 | |
| AS | B | 4 | ROM3 | 612 | 395 | 333 | 1999 | 433 | | | 7 | 577 | GL = approx |
| AS | B | 4 | ROM3 | 658 | 405 | 350 | 1999 | 289 | | | 7 | 201 | |
| AS | B | 4 | ROM4 | 504 | 327 | | 2001 | 533 | | | 14 | 9 | |
| AS | B | 5 | Fe1 | 602 | 361 | | 1997 | 407 | 2 | 8 | | | |
| AS | B | 5 | Fe1 | 627 | 418 | 343 | 1997 | 403 | 4 | 10 | | | Dd = approx |
| AS | B | 5 | Fe1 | 655 | 412 | 356 | 1997 | 406 | 3 | 10 | | | |
| AS | B | 5 | Fe3 | 614 | 392 | 345 | 2001 | 559 | | | 5 | 286 | |

| Os | Tax | MP | Period | GL | Bd | Dd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | B | 5 | Fe4 | 536 | 346 | 300 | 2001 | 559 | | | 6 | 267 | GL = approx |
| AS | B | 5 | Fe4 | 626 | 400 | 350 | 2001 | 560 | | | 6 | 258 | juvenile |
| AS | B | 5 | Fe7 | 602 | 386 | | 1997 | 410 | 10 | 4 | | | |
| AS | B | 5 | Fe8 | | | 328 | 2001 | 558 | | | 10 | 219 | |
| AS | B | 5 | Fe8 | | 418 | 368 | 1999 | 300 | | | 10 | 432 | |
| AS | B | 5 | Fe8 | | 446 | | 1999 | 440 | | | 10 | 340 | |
| AS | B | 5 | Fe8 | 555 | 375 | | 1999 | 437 | | | 10 | 428 | |
| AS | B | 5 | Fe8 | 574 | 369 | | 1999 | 300 | | | 10 | 432 | |
| AS | B | 5 | Fe8 | 623 | 386 | 352 | 1999 | 435 | | | 10 | 428 | |
| AS | B | 5 | Fe8 | 628 | | 345 | 1999 | 273 | | | 10 | 376 | |
| AS | B | 5 | Fe8 | 634 | 395 | 346 | 1999 | 301 | | | 10 | 360 | |
| AS | B | 5 | Fe8 | 638 | 396 | 351 | 1999 | 435 | | | 10 | 340 | |
| AS | B | 5 | Fe8 | 638 | 403 | 354 | 1999 | 440 | | | 10 | 340 | |
| AS | B | 5 | Fe8 | 646 | 409 | 356 | 1999 | 301 | | | 10 | 360 | |
| AS | B | 5 | Fe8 | 648 | 437 | 356 | 1999 | 300 | | | 10 | 432 | Dd = approx v, wide |
| AS | B | 5 | Fe8 | 652 | 384 | 362 | 1999 | 297 | | | 10 | 430 | |
| AS | B | 5 | Fe8 | 666 | 456 | 379 | 1999 | 262 | | | 10 | 361 | |
| AS | B | 5 | Fe8 | 708 | 466 | 392 | 1999 | 297 | | | 10 | 433 | |
| AS | CAH | 2 | MED3 | 313 | 202 | 170 | 2001 | 545 | | | 18 | 8 | ID = ?CAH |
| AS | CAH | 3 | MED1 | 320 | 198 | 161 | 1995 | 396 | | 1 | | | |
| AS | CAH | 4 | ROM1 | 260 | 161 | 130 | 2001 | 551 | | | 11 | 149 | |
| AS | CAH | 4 | ROM1 | 267 | 169 | 138 | 2001 | 551 | | | 11 | 151 | |
| AS | CAH | 4 | ROM2 | 266 | 162 | 138 | 1999 | 263 | | | 8 | 345 | |
| AS | CAH | 4 | ROM3 | 314 | 208 | 162 | 1997 | 410 | 5 | 13 | | | |
| AS | CAH | 5 | Fe1 | 266 | 184 | | 1997 | 406 | 3 | 10 | | | |
| AS | CAH | 5 | Fe5 | 254 | 159 | 142 | 2001 | 560 | | | 7 | 256 | |
| AS | CEE | 2 | MED3 | 527 | 323 | 286 | 2001 | 546 | | | 18 | 61 | |
| AS | CEE | 2 | MOD1 | | 330 | 289 | 1999 | 303 | | | 2 | 227 | |
| AS | CEE | 2 | MOD1 | 492 | 294 | 264 | 1999 | 430 | | | 2 | 486 | |
| AS | CEE | 3 | MED1 | | | 290 | 1999 | 288 | | | 3 | 175 | |
| AS | CEE | 3 | MED1 | | 303 | | 1999 | 274 | | | 3 | 73 | |
| AS | CEE | 3 | MED1 | 488 | 311 | 277 | 1999 | 278 | | | 3 | 26 | |
| AS | CEE | 3 | MED1 | 493 | 316 | 266 | 2001 | 548 | | | 16 | 48 | Bd = approx |
| AS | CEE | 3 | MED1 | 496 | 315 | 263 | 2001 | 549 | | | 16 | 48 | |
| AS | CEE | 3 | MED1 | 498 | 314 | 277 | 2001 | 533 | | | 16 | 14 | |
| AS | CEE | 3 | MED1 | 503 | 317 | 266 | 1999 | 293 | | | 3 | 43 | |
| AS | CEE | 3 | MED1 | 518 | 325 | 279 | 1999 | 398 | | | 3 | 6 | |
| AS | CEE | 3 | MED1 | 524 | 328 | 296 | 1999 | 278 | | | 3 | 26 | |
| AS | CEE | 3 | MED1 | 533 | 320 | 300 | 2001 | 541 | | | 16 | 23 | |
| AS | CEE | 3 | MED1 | 540 | 323 | 286 | 1999 | 296 | | | 3 | 247 | |
| AS | CEE | 4 | ROM | 550 | 342 | 309 | 1995 | 397 | 4 | 7 | | | |
| AS | CEE | 4 | ROM1 | | 311 | | 1999 | 298 | | | 9 | 331 | |
| AS | CEE | 4 | ROM1 | 488 | 301 | 274 | 1999 | 296 | | | 9 | 281 | GL = approx |
| AS | CEE | 4 | ROM1 | 491 | 314 | | 1995 | 397 | 14 | 4 | | | |
| AS | CEE | 4 | ROM1 | 493 | 292 | 259 | 1999 | 435 | | | 9 | 413 | |
| AS | CEE | 4 | ROM1 | 505 | 304 | 280 | 2001 | 554 | | | 11 | 188 | |
| AS | CEE | 4 | ROM1 | 505 | 321 | 278 | 2001 | 554 | | | 11 | 176 | |
| AS | CEE | 4 | ROM1 | 540 | 332 | 285 | 1999 | 428 | | | 9 | 671 | |
| AS | CEE | 4 | ROM2 | | 295 | | 1999 | 289 | | | 8 | 200 | |
| AS | CEE | 4 | ROM2 | 467 | | 256 | 1999 | 432 | | | 8 | 131 | |
| AS | CEE | 4 | ROM2 | 472 | 285 | 257 | 1999 | 437 | | | 8 | 462 | |
| AS | CEE | 4 | ROM2 | 477 | 283 | 260 | 1999 | 433 | | | 8 | 588 | |

| Os | Tax | MP | Period | GL | Bd | Dd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | CEE | 4 | ROM2 | 486 | 300 | 270 | 1999 | 438 | | | 8 | 347 | |
| AS | CEE | 4 | ROM2 | 495 | 343 | 288 | 1999 | 288 | | | 8 | 200 | |
| AS | CEE | 4 | ROM2 | 498 | | 268 | 1999 | 274 | | | 8 | 344 | GL = approx |
| AS | CEE | 4 | ROM2 | 501 | 316 | | 1999 | 299 | | | 8 | 238 | |
| AS | CEE | 4 | ROM2 | 506 | 310 | 276 | 1995 | 404 | 14 | 9 | | | |
| AS | CEE | 4 | ROM3 | 459 | 292 | 251 | 1999 | 279 | | | 7 | 160 | |
| AS | CEE | 4 | ROM3 | 465 | 290 | 259 | 1999 | 289 | | | 7 | 201 | |
| AS | CEE | 4 | ROM3 | 467 | 283 | 250 | 1997 | 410 | 3 | 3 | | | Dd = approx |
| AS | CEE | 4 | ROM3 | 493 | 305 | 266 | 1999 | 285 | | | 7 | 160 | |
| AS | CEE | 4 | ROM4 | 480 | | | 1999 | 438 | | | 6 | 159 | |
| AS | CEE | 4 | ROM4 | 503 | | 275 | 1999 | 438 | | | 6 | 159 | |
| AS | CEE | 4 | ROM4 | 522 | 293 | 280 | 1999 | 438 | | | 6 | 159 | Bd & Dd=approx |
| AS | CEE | 4 | ROM4 | 523 | 324 | 295 | 1999 | 438 | | | 6 | 159 | |
| AS | CEE | 4 | ROM5 | 540 | 351 | 296 | 2001 | 550 | | | 15 | 95 | |
| AS | CEE | 5 | Fe1 | 475 | 303 | 261 | 1997 | 402 | 18 | 20 | | | |
| AS | CEE | 5 | Fe1 | 523 | 305 | 280 | 1997 | 400 | 19 | 21 | | | |
| AS | CEE | 5 | Fe2 | 511 | 322 | 296 | 1997 | 410 | 5 | 14 | | | |
| AS | CEE | 5 | Fe5 | 452 | 277 | | 2001 | 558 | | | 7 | 256 | |
| AS | CEE | 5 | Fe8 | 495 | 301 | 271 | 1999 | 437 | | | 10 | 334 | |
| AS | CEE | 5 | Fe8 | 508 | 328 | 283 | 1999 | 297 | | | 10 | 432 | |
| AS | CEE | 5 | Fe8 | 520 | 309 | 291 | 2001 | 558 | | | 10 | 215 | |
| AS | CEE | 5 | Fe8 | 526 | 323 | | 1999 | 264 | | | 10 | 334 | |
| AS | CEE | 5 | Fe8 | 537 | 331 | 286 | 2001 | 558 | | | 10 | 219 | |
| AS | CEE | 5 | Fe8 | 547 | 332 | 300 | 2001 | 558 | | | 10 | 215 | |
| AS | OVA | 2 | MED3 | 311 | 206 | 178 | 2001 | 548 | | | 18 | 61 | |
| AS | OVA | 2 | MOD | 285 | | 150 | 1997 | 410 | 4 | 3 | | | |
| AS | OVA | 2 | MOD1 | 296 | 195 | 162 | 1999 | 432 | | | 2 | 449 | |
| AS | OVA | 2 | MOD2 | 277 | 188 | 154 | 1999 | 1 | | | 1 | 1 | |
| AS | OVA | 3 | MED1 | 268 | 176 | | 1999 | 1 | | | 3 | 9 | |
| AS | OVA | 3 | MED1 | 273 | 173 | 147 | 1999 | 426 | | | 3 | 481 | |
| AS | OVA | 3 | MED1 | 275 | 161 | 149 | 1999 | 1 | | | 3 | 4 | |
| AS | OVA | 3 | MED1 | 283 | | 157 | 1999 | 268 | | | 3 | 137 | |
| AS | OVA | 3 | MED1 | 286 | 177 | 152 | 1999 | 284 | | | 3 | 88 | |
| AS | OVA | 3 | MED1 | 290 | 188 | 160 | 1999 | 84 | | | 3 | 22 | |
| AS | OVA | 3 | MED1 | 293 | 182 | 161 | 1999 | 273 | | | 3 | 193 | |
| AS | OVA | 3 | MED1 | 295 | | 168 | 1999 | 290 | | | 3 | 35 | |
| AS | OVA | 3 | MED1 | 304 | 199 | 181 | 1999 | 398 | | | 3 | 6 | |
| AS | OVA | 3 | MED1 | 306 | 200 | 173 | 1999 | 280 | | | 3 | 63 | |
| AS | OVA | 3 | MED1 | 307 | 201 | 171 | 2001 | 549 | | | 16 | 48 | |
| AS | OVA | 3 | MED1 | 309 | 190 | 168 | 2001 | 548 | | | 16 | 34 | |
| AS | OVA | 3 | MED1 | 310 | 199 | 174 | 1999 | 278 | | | 3 | 26 | |
| AS | OVA | 3 | MED1 | 312 | 200 | 167 | 1999 | 283 | | | 3 | 67 | |
| AS | OVA | 3 | MED1 | 313 | 203 | 174 | 1995 | 396 | | 1 | | | |
| AS | OVA | 3 | MED1 | 315 | 200 | 175 | 1999 | 71 | | | 3 | 18 | |
| AS | OVA | 3 | MED1 | 315 | 204 | 177 | 1999 | 284 | | | 3 | 90 | |
| AS | OVA | 3 | MED1 | 316 | 207 | | 1999 | 278 | | | 3 | 27 | |
| AS | OVA | 3 | MED1 | 318 | | 179 | 1999 | 281 | | | 3 | 123 | |
| AS | OVA | 3 | MED1 | 320 | 205 | 182 | 1999 | 84 | | | 3 | 12 | |
| AS | OVA | 3 | MED1 | 325 | 197 | 178 | 1999 | 71 | | | 3 | 20 | |
| AS | OVA | 3 | MED1 | 333 | 217 | 186 | 1995 | 396 | | | | | Silo grand |
| AS | OVA | 3 | MED1 | 334 | 204 | 185 | 1999 | 434 | | | 3 | 481 | |
| AS | OVA | 3 | MED1 | 346 | 223 | 191 | 2001 | 549 | | | 16 | 48 | |

| Os | Tax | MP | Period | GL | Bd | Dd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | OVA | 3 | MED1 | 350 | 221 | 188 | 2001 | 545 | | | 16 | 51 | |
| AS | OVA | 3 | MED2 | 332 | 214 | 184 | 2001 | 546 | | | 17 | 76 | |
| AS | OVA | 4 | ROM1 | 248 | 163 | 135 | 1999 | 296 | | | 9 | 281 | |
| AS | OVA | 4 | ROM1 | 258 | 164 | 140 | 1999 | 437 | | | 9 | 628 | |
| AS | OVA | 4 | ROM1 | 262 | 175 | 143 | 1999 | 298 | | | 9 | 331 | |
| AS | OVA | 4 | ROM1 | 270 | 171 | 145 | 1999 | 428 | | | 9 | 679 | |
| AS | OVA | 4 | ROM1 | 272 | 172 | 150 | 1999 | 302 | | | 9 | 378 | |
| AS | OVA | 4 | ROM1 | 273 | 171 | 145 | 1999 | 265 | | | 9 | 221 | |
| AS | OVA | 4 | ROM1 | 274 | 176 | 157 | 1999 | 429 | | | 9 | 680 | |
| AS | OVA | 4 | ROM1 | 274 | 184 | 154 | 1999 | 437 | | | 9 | 628 | |
| AS | OVA | 4 | ROM1 | 277 | | | 1999 | 294 | | | 9 | 297 | |
| AS | OVA | 4 | ROM1 | 279 | 176 | 158 | 1999 | 296 | | | 9 | 281 | Bd = approx |
| AS | OVA | 4 | ROM1 | 280 | 177 | 152 | 1999 | 268 | | | 9 | 221 | |
| AS | OVA | 4 | ROM1 | 283 | 176 | 154 | 2001 | 560 | | | 11 | 217 | Bd = approx |
| AS | OVA | 4 | ROM2 | | 176 | 149 | 1999 | 299 | | | 8 | 239 | |
| AS | OVA | 4 | ROM2 | 257 | 170 | 147 | 1999 | 295 | | | 8 | 254 | |
| AS | OVA | 4 | ROM2 | 265 | 172 | | 1999 | 295 | | | 8 | 268 | |
| AS | OVA | 4 | ROM2 | 268 | 172 | 141 | 1999 | 295 | | | 8 | 262 | |
| AS | OVA | 4 | ROM2 | 270 | 168 | 145 | 1999 | 439 | | | 8 | 365 | |
| AS | OVA | 4 | ROM2 | 273 | 176 | 154 | 1999 | 295 | | | 8 | 253 | |
| AS | OVA | 4 | ROM2 | 282 | 186 | 162 | 1999 | 298 | | | 8 | 278 | |
| AS | OVA | 4 | ROM2 | 292 | 187 | 162 | 1999 | 292 | | | 8 | 163 | |
| AS | OVA | 4 | ROM2 | 303 | 183 | 169 | 1999 | 296 | | | 8 | 261 | |
| AS | OVA | 4 | ROM3 | 293 | 191 | 163 | 1999 | 322 | | | 7 | 160 | |
| AS | OVA | 4 | ROM3 | 314 | 198 | 168 | 1999 | 435 | | | 7 | 317 | |
| AS | OVA | 4 | ROM4 | 282 | 180 | 157 | 1999 | 287 | | | 6 | 110 | |
| AS | OVA | 4 | ROM5 | 291 | 195 | 166 | 2001 | 548 | | | 15 | 75 | |
| AS | OVA | 4 | ROM5 | 311 | 188 | 173 | 2001 | 550 | | | 15 | 95 | |
| AS | OVA | 5 | Fe1 | 266 | 174 | 149 | 1995 | 397 | 9 | 24 | | | |
| AS | OVA | 5 | Fe2 | 244 | | 132 | 2001 | 559 | | | 4 | 288 | |
| AS | OVA | 5 | Fe2 | 255 | 165 | 144 | 2001 | 559 | | | 4 | 290 | |
| AS | OVA | 5 | Fe2 | 262 | 180 | 147 | 2001 | 559 | | | 4 | 300 | |
| AS | OVA | 5 | Fe2 | 266 | 166 | 140 | 2001 | 559 | | | 4 | 300 | |
| AS | OVA | 5 | Fe3 | 266 | | | 2001 | 562 | | | 5 | 285 | |
| AS | OVA | 5 | Fe4 | 246 | 164 | | 1997 | 406 | 19 | 35 | | | |
| AS | OVA | 5 | Fe5 | 247 | 159 | 138 | 2001 | 560 | | | 7 | 248 | extremely small! |
| AS | OVA | 5 | Fe8 | 254 | 161 | 138 | 1999 | 439 | | | 10 | 361 | |
| AS | S | 2 | MED3 | 392 | | | 2001 | 550 | | | 18 | 61 | |
| AS | S | 2 | MED3 | 412 | | | 2001 | 549 | | | 18 | 61 | GL = approx |
| AS | S | 2 | MED3 | 474 | | | 2001 | 537 | | | 18 | 21 | |
| AS | S | 2 | MED3 | 507 | | | 2001 | 549 | | | 18 | 61 | |
| AS | S | 2 | MOD | 346 | | | 1997 | 406 | 4 | 1 | | | |
| AS | S | 2 | MOD | 381 | | | 1997 | 406 | 4 | 1 | | | |
| AS | S | 3 | MED1 | 382 | | | 1999 | 432 | | | 3 | 451 | |
| AS | S | 3 | MED1 | 387 | | | 2001 | 549 | | | 16 | 48 | |
| AS | S | 3 | MED1 | 388 | | | 1999 | 432 | | | 3 | 451 | |
| AS | S | 3 | MED1 | 439 | | | 1999 | 280 | | | 3 | 67 | |
| AS | S | 3 | MED1 | 467 | | | 1999 | 1 | | | 3 | 7 | |
| AS | S | 4 | ROM1 | 359 | | | 1999 | 296 | | | 9 | 281 | |
| AS | S | 4 | ROM1 | 363 | | | 2001 | 554 | | | 11 | 188 | |
| AS | S | 4 | ROM1 | 365 | | | 1999 | 265 | | | 9 | 221 | |
| AS | S | 4 | ROM1 | 404 | | | 1999 | 294 | | | 9 | 297 | |

| Os | Tax | MP | Period | GL | Bd | Dd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | S | 4 | ROM1 | 408 | | | 1999 | 302 | | | 9 | 378 | GL = approx |
| AS | S | 4 | ROM1 | 412 | | | 2001 | 554 | | | 11 | 188 | |
| AS | S | 4 | ROM1 | 447 | | | 2001 | 554 | | | 11 | 191 | |
| AS | S | 4 | ROM2 | 363 | | | 1999 | 426 | | | 8 | 643 | |
| AS | S | 4 | ROM2 | 372 | | | 1999 | 433 | | | 8 | 595 | |
| AS | S | 4 | ROM2 | 382 | | | 1999 | 437 | | | 8 | 631 | |
| AS | S | 4 | ROM2 | 383 | | | 1999 | 292 | | | 8 | 163 | |
| AS | S | 4 | ROM2 | 386 | | | 1999 | 433 | | | 8 | 131 | |
| AS | S | 4 | ROM2 | 387 | | | 1999 | 274 | | | 8 | 344 | slightly pathological |
| AS | S | 4 | ROM2 | 492 | | | 1999 | 298 | | | 8 | 278 | |
| AS | S | 4 | ROM3 | 370 | | | 1999 | 285 | | | 7 | 160 | |
| AS | S | 4 | ROM3 | 376 | | | 1999 | 279 | | | 7 | 160 | GL = approx |
| AS | S | 4 | ROM3 | 380 | | | 1999 | 288 | | | 7 | 181 | |
| AS | S | 4 | ROM3 | 411 | | | 1999 | 279 | | | 7 | 160 | |
| AS | S | 5 | Fe1 | 431 | | | 2001 | 562 | | | 3 | 310 | |
| AS | S | 5 | Fe2 | 346 | | | 2001 | 559 | | | 4 | 294 | |
| AS | S | 5 | Fe2 | 396 | | | 2001 | 560 | | | 4 | 288 | |
| AS | S | 5 | Fe3 | 421 | | | 2001 | 559 | | | 5 | 285 | |
| AS | S | 5 | Fe8 | 402 | | | 1999 | 426 | | | 10 | 707 | |
| AS | S | 5 | Fe8 | 411 | | | 2001 | 554 | | | 10 | 205 | |
| AS | S | 5 | Fe8 | 443 | | | 2001 | 554 | | | 10 | 203 | |
| AS | S | 5 | Fe8 | 489 | | | 1999 | 264 | | | 10 | 334 | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT1 | B | F | 2 | CONT | 2281 | 533 | 296 | 254 | 250 | 218 | 205 | 269 | 1995 | 397 | 4 | 1 | | | |
| MT1 | B | F | 2 | MED3 | | 496 | 282 | 235 | 229 | 213 | 200 | | 2001 | 541 | | | 18 | 21 | |
| MT1 | B | F | 2 | MED3 | | 548 | | 272 | 254 | 226 | 202 | | 2001 | 533 | | | 18 | 8 | |
| MT1 | B | F | 2 | MOD1 | | | 306 | 258 | 251 | 230 | 216 | | 2001 | 537 | | | 19 | 1 | WCM approx |
| MT1 | B | F | 2 | MOD2 | | 489 | 266 | 229 | 227 | 193 | 184 | | 1999 | 314 | | | 1 | 1 | |
| MT1 | B | F | 3 | MED1 | | | | 255 | | 226 | 213 | | 1999 | 435 | | | 3 | 451 | |
| MT1 | B | F | 3 | MED1 | | 444 | 253 | 219 | 205 | 185 | 170 | | 1999 | 434 | | | 3 | 306 | |
| MT1 | B | F | 3 | MED1 | | 465 | | 227 | 216 | 202 | 193 | | 1999 | 276 | | | 3 | 197 | |
| MT1 | B | F | 3 | MED1 | | 469 | 266 | 226 | 226 | 190 | 177 | | 2001 | 537 | | | 16 | 23 | |
| MT1 | B | F | 3 | MED1 | | 474 | 268 | 228 | 213 | 196 | 181 | | 1999 | 282 | | | 3 | 195 | |
| MT1 | B | F | 3 | MED1 | | 480 | | 227 | 219 | 205 | 186 | | 1999 | 7 | | | 3 | 17 | Bd approx |
| MT1 | B | F | 3 | MED1 | | 480 | 271 | | 223 | 199 | 190 | | 1999 | 293 | | | 3 | 37 | |
| MT1 | B | F | 3 | MED1 | | 482 | 276 | 231 | 222 | 207 | 197 | | 1999 | 7 | | | 3 | 17 | infection? |
| MT1 | B | F | 3 | MED1 | | 485 | 292 | 231 | 224 | 217 | 206 | | 1999 | 398 | | | 3 | 10 | |
| MT1 | B | F | 3 | MED1 | | 494 | 285 | 242 | 224 | 207 | 195 | 264 | 1999 | 84 | | | 3 | 11 | Bd approx |
| MT1 | B | F | 3 | MED1 | | 496 | 270 | 240 | 230 | 202 | 188 | | 2001 | 548 | | | 16 | 51 | |
| MT1 | B | F | 3 | MED1 | | 500 | 302 | 238 | 230 | 221 | 214 | | 1999 | 432 | | | 3 | 451 | |
| MT1 | B | F | 3 | MED1 | | 506 | 289 | 244 | 237 | 213 | 194 | | 1999 | 278 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | | 514 | | 250 | 237 | 202 | 185 | | 1999 | 278 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | | 533 | 310 | 252 | 238 | 228 | 212 | | 1999 | 433 | | | 3 | 549 | |
| MT1 | B | F | 3 | MED1 | | 534 | 304 | | | | | | 2001 | 543 | | | 16 | 48 | |
| MT1 | B | F | 3 | MED1 | | 539 | 304 | 258 | 254 | 226 | 215 | | 1999 | 278 | | | 3 | 26 | |
| MT1 | B | F | 3 | MED1 | | 550 | 322 | 258 | 250 | 236 | 220 | | 1999 | 280 | | | 3 | 67 | |
| MT1 | B | F | 3 | MED1 | | 560 | 310 | 264 | 259 | 234 | 217 | | 1999 | 292 | | | 3 | 141 | |
| MT1 | B | F | 3 | MED1 | | 562 | 313 | | | | | | 1999 | 398 | | | 3 | 6 | |
| MT1 | B | F | 3 | MED1 | | 568 | 330 | 279 | 262 | 247 | 230 | | 1999 | 278 | | | 3 | 27 | |
| MT1 | B | F | 3 | MED1 | | 579 | 325 | 279 | 267 | 243 | 223 | | 1999 | 282 | | | 3 | 196 | |
| MT1 | B | F | 3 | MED1 | | 580 | 318 | 286 | 263 | 237 | 216 | | 1999 | 282 | | | 3 | 195 | |
| MT1 | B | F | 3 | MED1 | | 586 | 338 | | 261 | | 236 | | 1999 | 276 | | | 3 | 196 | |
| MT1 | B | F | 3 | MED1 | | 601 | | 285 | 292 | 239 | 227 | | 1999 | 292 | | | 3 | 141 | |
| MT1 | B | F | 3 | MED1 | 2017 | 515 | 294 | 256 | 244 | 218 | 212 | 264 | 1999 | 273 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2032 | 545 | | 264 | 259 | 227 | 217 | 264 | 1999 | 280 | | | 3 | 63 | |
| MT1 | B | F | 3 | MED1 | 2073 | 528 | 292 | 250 | 241 | 214 | 200 | 251 | 1999 | 277 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2080 | 478 | | 230 | 227 | 200 | 197 | 249 | 1999 | 273 | | | 3 | 193 | GL & DEM approx |
| MT1 | B | F | 3 | MED1 | 2100 | 526 | 302 | 248 | 243 | 228 | 215 | 263 | 1999 | 276 | | | 3 | 196 | |
| MT1 | B | F | 3 | MED1 | 2101 | 541 | 282 | 265 | 246 | 205 | 193 | 274 | 1999 | 276 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2118 | 528 | | 251 | 245 | 221 | 208 | 247 | 1999 | 280 | | | 3 | 63 | |
| MT1 | B | F | 3 | MED1 | 2130 | | 276 | | | | | 240 | 1999 | 280 | | | 3 | 63 | |
| MT1 | B | F | 3 | MED1 | 2135 | 555 | 295 | 273 | 255 | 214 | 203 | 258 | 1999 | 280 | | | 3 | 63 | slight assym |
| MT1 | B | F | 3 | MED1 | 2136 | 582 | | 272 | 274 | 233 | 221 | 296 | 1999 | 280 | | | 3 | 63 | |
| MT1 | B | F | 3 | MED1 | 2140 | 563 | 286 | 270 | 260 | 214 | 198 | 285 | 1999 | 280 | | | 3 | 63 | |
| MT1 | B | F | 3 | MED1 | 2140 | 586 | 318 | 291 | 273 | 230 | 210 | 268 | 1999 | 314 | | | 3 | 116 | GL approx |
| MT1 | B | F | 3 | MED1 | 2157 | | | 246 | | 217 | | 277 | 2001 | 537 | | | 16 | 27 | |
| MT1 | B | F | 3 | MED1 | 2165 | 532 | 291 | 255 | 250 | 210 | 200 | 269 | 1999 | 273 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2196 | 539 | 306 | 258 | 244 | 230 | 212 | 270 | 1999 | 277 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2210 | 466 | 280 | 232 | 218 | 207 | 196 | 224 | 1999 | 277 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2253 | 469 | 281 | 230 | 219 | 206 | 197 | 223 | 1999 | 276 | | | 3 | 193 | |
| MT1 | B | F | 3 | MED1 | 2297 | 562 | 317 | 273 | 259 | 229 | 216 | 280 | 1999 | 282 | | | 3 | 197 | |
| MT1 | B | F | 4 | ROM1 | | 493 | 285 | 241 | 234 | 221 | 199 | | 1999 | 265 | | | 9 | 221 | |
| MT1 | B | F | 4 | ROM1 | | 515 | 280 | 247 | 245 | 215 | 204 | | 1999 | 266 | | | 9 | 221 | Dd approx |
| MT1 | B | F | 4 | ROM1 | 1986 | 489 | 265 | 236 | 226 | 193 | 181 | 244 | 1999 | 294 | | | 9 | 297 | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT1 | B | F | 4 | ROM1 | 2006 | 467 | 278 | 227 | 216 | 206 | 190 | 218 | 1999 | 265 | | | 9 | 221 | |
| MT1 | B | F | 4 | ROM1 | 2017 | 457 | 271 | 220 | 212 | 198 | 182 | 235 | 1999 | 294 | | | 9 | 297 | |
| MT1 | B | F | 4 | ROM1 | 2064 | 558 | 297 | 275 | 252 | 221 | 206 | | 1999 | 266 | | | 9 | 221 | |
| MT1 | B | F | 4 | ROM1 | 2094 | 482 | 277 | 241 | 224 | 199 | 186 | 245 | 1999 | 266 | | | 9 | 221 | GL approx |
| MT1 | B | F | 4 | ROM1 | 2111 | 460 | 278 | 223 | 212 | 210 | 191 | 238 | 1999 | 294 | | | 9 | 297 | |
| MT1 | B | F | 4 | ROM1 | 2134 | 486 | | 238 | | 225 | | 235 | 1999 | 266 | | | 9 | 221 | GL & Bd approx |
| MT1 | B | F | 4 | ROM1 | 2164 | 525 | 294 | 248 | 238 | 227 | 211 | 273 | 1998 | 409 | 6 | 4 | | | |
| MT1 | B | F | 4 | ROM1 | 2243 | 517 | 297 | 248 | 238 | 225 | 203 | | 1995 | 404 | 13 | 15 | | | |
| MT1 | B | F | 4 | ROM2 | | 498 | 288 | 236 | 227 | 213 | 200 | | 1999 | 430 | | | 8 | 648 | |
| MT1 | B | F | 4 | ROM2 | | 524 | 298 | 250 | 242 | 227 | 205 | | 2001 | 551 | | | 12 | 117 | |
| MT1 | B | F | 4 | ROM2 | | 542 | | | | | | | 1999 | 294 | | | 8 | 263 | |
| MT1 | B | F | 4 | ROM2 | | 580 | 334 | 280 | 268 | 256 | 241 | | 1999 | 294 | | | 8 | 270 | |
| MT1 | B | F | 4 | ROM2 | | 595 | 320 | 285 | 277 | 242 | 227 | | 1999 | 428 | | | 8 | 660 | |
| MT1 | B | F | 4 | ROM3 | | 507 | 301 | 252 | 232 | 218 | 198 | | 1997 | 410 | 3 | 5 | | | |
| MT1 | B | F | 4 | ROM4 | 2071 | 452 | 270 | 218 | 205 | 199 | 188 | 214 | 1999 | 283 | | | 6 | 71 | |
| MT1 | B | F | 4 | ROM4 | 2250 | 548 | 316 | 264 | 257 | 230 | 215 | 284 | 2001 | 549 | | | 14 | 89 | Dd approx |
| MT1 | B | F | 5 | Fe | | 512 | 290 | 246 | 235 | 221 | 206 | | 1986 | 410 | | | | | |
| MT1 | B | F | 5 | Fe2 | | 505 | 297 | 244 | 235 | 219 | 205 | | 2001 | 560 | | | 4 | 288 | |
| MT1 | B | F | 5 | Fe2 | | 536 | 295 | 255 | | 221 | | | 2001 | 559 | | | 4 | 288 | |
| MT1 | B | F | 5 | Fe2 | | 560 | 333 | 264 | 253 | 248 | 234 | | 2001 | 560 | | | 4 | 296 | |
| MT1 | B | F | 5 | Fe3 | | 596 | 334 | 283 | 279 | 246 | 233 | | 1997 | 410 | 2 | 7 | | | |
| MT1 | B | F | 5 | Fe5 | | 488 | 286 | 232 | 227 | 214 | 196 | | 2001 | 558 | | | 7 | 251 | |
| MT1 | B | F | 5 | Fe8 | | 482 | | 239 | 225 | 200 | 183 | | 2001 | 554 | | | 10 | 205 | |
| MT1 | B | F | 5 | Fe8 | | 483 | 293 | 232 | 223 | 218 | 205 | | 1999 | 301 | | | 10 | 360 | |
| MT1 | B | F | 5 | Fe8 | | 507 | 303 | 253 | 233 | 219 | 199 | | 1999 | 297 | | | 10 | 429 | Dd & DEL approx |
| MT1 | B | F | 5 | Fe8 | | 509 | 296 | 246 | 231 | 216 | 200 | | 2001 | 558 | | | 10 | 219 | |
| MT1 | B | F | 5 | Fe8 | | 533 | 303 | 253 | 245 | 223 | 212 | | 1999 | 264 | | | 10 | 334 | |
| MT1 | B | F | 5 | Fe8 | | 561 | 303 | 275 | 260 | 229 | 215 | | 1999 | 301 | | | 10 | 360 | Dd approx, & asym |
| MT1 | B | F | 5 | Fe8 | 2095 | 493 | 276 | 241 | 228 | 201 | 184 | | 1999 | 264 | | | 10 | 335 | |
| MT1 | B | F | 5 | Fe8 | 2164 | | | 235 | | 213 | | 256 | 1999 | 271 | | | 10 | 361 | Bd=48-49 mm |
| MT1 | B | F | 5 | Fe8 | 2170 | 478 | 279 | 227 | 221 | 205 | 194 | 240 | 1999 | 271 | | | 10 | 361 | |
| MT1 | B | F | 5 | Fe8 | 2331 | 585 | 312 | 277 | 270 | 249 | 236 | 295 | 1999 | 297 | | | 10 | 433 | |
| MT1 | CAH | F | 3 | MED1 | | 222 | 148 | | | | | | 1999 | 84 | | | 3 | 17 | |
| MT1 | CAH | F | 3 | MED1 | | 234 | 152 | | | | | | 1999 | 398 | | | 3 | 10 | |
| MT1 | CAH | F | 3 | MED1 | | 256 | 160 | | | | | | 1999 | 277 | | | 3 | 73 | |
| MT1 | CAH | F | 4 | ROM1 | 1124 | 233 | 151 | | | | | 119 | 1999 | 267 | | | 9 | 221 | |
| MT1 | CAH | F | 4 | ROM2 | | 228 | 151 | | | | | | 1999 | 289 | | | 8 | 200 | |
| MT1 | CAH | F | 4 | ROM5 | 1122 | 231 | 150 | | | | | 122 | 2001 | 543 | | | 15 | 55 | |
| MT1 | CEE | F | 3 | MED1 | | 359 | 257 | | | | | | 1999 | 272 | | | 3 | 197 | |
| MT1 | CEE | F | 3 | MED1 | | 362 | 243 | | | | | | 1999 | 278 | | | 3 | 26 | |
| MT1 | CEE | F | 3 | MED1 | | 367 | 248 | | | | | | 2001 | 541 | | | 16 | 40 | |
| MT1 | CEE | F | 3 | MED1 | | 370 | 254 | | | | | | 1999 | 398 | | | 3 | 6 | |
| MT1 | CEE | F | 3 | MED1 | | 378 | 267 | | | | | | 1999 | 301 | | | 3 | 326 | |
| MT1 | CEE | F | 3 | MED1 | | 419 | 263 | | | | | | 1999 | 7 | | | 3 | 17 | |
| MT1 | CEE | F | 4 | ROM1 | | 422 | 274 | | | | | | 1999 | 428 | | | 9 | 640 | |
| MT1 | CEE | F | 4 | ROM2 | | 356 | 246 | | | | | | 1999 | 295 | | | 8 | 262 | |
| MT1 | CEE | F | 4 | ROM2 | | 405 | 273 | | | | | | 1999 | 426 | | | 8 | 643 | |
| MT1 | CEE | F | 4 | ROM3 | | 365 | 244 | | | | | | 1999 | 285 | | | 7 | 160 | |
| MT1 | CEE | F | 4 | ROM3 | | 367 | 243 | | | | | | 1999 | 433 | | | 7 | 460 | Dd approx |
| MT1 | CEE | F | 5 | Fe1 | | 373 | 250 | | | | | | 1997 | 402 | 18 | 20 | | | Dd approx |
| MT1 | CEE | F | 5 | Fe3 | | 403 | 281 | | | | | | 2001 | 559 | | | 5 | 286 | |
| MT1 | CEE | F | 5 | Fe4 | | 371 | 245 | | | | | | 1997 | 403 | 19 | 23 | | | |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT1 | CEE | F | 5 | Fe4 | | 413 | 265 | | | | | | 2001 | 562 | | | 6 | 271 | |
| MT1 | CEE | F | 5 | Fe4 | | 432 | 283 | | | | | | 1995 | 404 | 12 | 20 | | | |
| MT1 | CEE | F | 5 | Fe6 | | 370 | 255 | | | | | | 2001 | 560 | | | 8 | 240 | |
| MT1 | CEE | F | 5 | Fe8 | | 375 | 253 | | | | | | 1999 | 297 | | | 10 | 433 | |
| MT1 | CEE | F | 5 | Fe8 | | 384 | 262 | | | | | | 1999 | 271 | | | 10 | 361 | |
| MT1 | CEE | F | 5 | Fe8 | | 392 | 256 | | | | | | 1999 | 300 | | | 10 | 432 | |
| MT1 | CEE | F | 5 | Fe8 | | 395 | 262 | | | | | | 1999 | 429 | | | 10 | 676 | |
| MT1 | CEE | F | 5 | Fe8 | | 398 | 278 | | | | | | 1999 | 297 | | | 10 | 422 | |
| MT1 | CEE | F | 5 | Fe8 | | 412 | 283 | | | | | | 1999 | 439 | | | 10 | 362 | |
| MT1 | CEE | F | 5 | Fe8 | | 420 | 269 | | | | | | 1999 | 426 | | | 10 | 338 | |
| MT1 | CEE | F | 5 | Fe8 | 2757 | 377 | 270 | | | | | 196 | 1999 | 439 | | | 10 | 362 | |
| MT1 | OVA | | 4 | ROM2 | | 214 | 144 | | | | | | 1999 | 295 | | | 8 | 254 | |
| MT1 | OVA | F | 2 | MED3 | | 238 | 143 | | | | | | 2001 | 533 | | | 18 | 8 | |
| MT1 | OVA | F | 2 | MED3 | | 253 | 176 | | | | | | 2001 | 533 | | | 18 | 4 | |
| MT1 | OVA | F | 2 | MOD1 | | 248 | 159 | | | | | | 1999 | 432 | | | 2 | 449 | |
| MT1 | OVA | F | 2 | MOD1 | 1503 | 251 | 166 | | | | | 119 | 1999 | 299 | | | 2 | 240 | |
| MT1 | OVA | F | 3 | MED1 | | 213 | 147 | | | | | | 1999 | 1 | | | 3 | 9 | |
| MT1 | OVA | F | 3 | MED1 | | 219 | 146 | | | | | | 1999 | 398 | | | 3 | 10 | |
| MT1 | OVA | F | 3 | MED1 | | 231 | 155 | | | | | | 1999 | 278 | | | 3 | 27 | |
| MT1 | OVA | F | 3 | MED1 | | 232 | 163 | | | | | | 1999 | 290 | | | 3 | 36 | |
| MT1 | OVA | F | 3 | MED1 | | 233 | | | | | | | 1999 | 278 | | | 3 | 27 | |
| MT1 | OVA | F | 3 | MED1 | | 237 | 164 | | | | | | 2001 | 541 | | | 16 | 42 | |
| MT1 | OVA | F | 3 | MED1 | | 241 | 159 | | | | | | 1999 | 269 | | | 3 | 210 | |
| MT1 | OVA | F | 3 | MED1 | | 243 | 157 | | | | | | 1999 | 280 | | | 3 | 63 | |
| MT1 | OVA | F | 3 | MED1 | | 245 | 168 | | | | | | 1999 | 268 | | | 3 | 137 | |
| MT1 | OVA | F | 3 | MED1 | | 245 | 172 | | | | | | 2001 | 550 | | | 16 | 48 | |
| MT1 | OVA | F | 3 | MED1 | | 246 | 156 | | | | | | 1999 | 274 | | | 3 | 73 | |
| MT1 | OVA | F | 3 | MED1 | | 246 | 171 | | | | | | 1999 | 280 | | | 3 | 63 | |
| MT1 | OVA | F | 3 | MED1 | | 247 | 167 | | | | | | 1999 | 7 | | | 3 | 17 | |
| MT1 | OVA | F | 3 | MED1 | | 250 | 162 | | | | | | 1999 | 281 | | | 3 | 123 | |
| MT1 | OVA | F | 3 | MED1 | | 250 | 168 | | | | | | 1999 | 268 | | | 3 | 142 | |
| MT1 | OVA | F | 3 | MED1 | | 252 | 153 | | | | | | 1999 | 273 | | | 3 | 193 | |
| MT1 | OVA | F | 3 | MED1 | | 254 | 164 | | | | | | 1999 | 272 | | | 3 | 197 | |
| MT1 | OVA | F | 3 | MED1 | | 258 | | | | | | | 1999 | 276 | | | 3 | 193 | |
| MT1 | OVA | F | 3 | MED1 | | 262 | 171 | | | | | | 2001 | 545 | | | 16 | 37 | |
| MT1 | OVA | F | 3 | MED1 | | 262 | 174 | | | | | | 1999 | 277 | | | 3 | 193 | |
| MT1 | OVA | F | 3 | MED1 | | 270 | 175 | | | | | | 2001 | 541 | | | 16 | 23 | |
| MT1 | OVA | F | 3 | MED1 | 1117 | 223 | 144 | | | | | 102 | 1999 | 1 | | | 3 | 9 | |
| MT1 | OVA | F | 3 | MED1 | 1229 | 213 | 144 | | | | | 101 | 1999 | 7 | | | 3 | 17 | |
| MT1 | OVA | F | 3 | MED1 | 1286 | 221 | 146 | | | | | 106 | 1999 | 7 | | | 3 | 17 | |
| MT1 | OVA | F | 3 | MED1 | 1315 | 237 | 165 | | | | | 111 | 1997 | 403 | 5 | 9 | | | |
| MT1 | OVA | F | 3 | MED1 | 1344 | 226 | 155 | | | | | 107 | 1999 | 272 | | | 3 | 197 | |
| MT1 | OVA | F | 3 | MED1 | 1445 | 257 | 172 | | | | | 122 | 1999 | 284 | | | 3 | 88 | |
| MT1 | OVA | F | 3 | MED1 | 1546 | 264 | | | | | | 125 | 1999 | 71 | | | 3 | 24 | |
| MT1 | OVA | F | 4 | ROM1 | | 209 | 141 | | | | | | 1999 | 265 | | | 9 | 221 | Bd approx |
| MT1 | OVA | F | 4 | ROM1 | | 218 | 140 | | | | | | 1998 | 69 | 7 | 4 | | | Dd approx shaft narrow ?malnourished |
| MT1 | OVA | F | 4 | ROM1 | | 229 | 148 | | | | | | 1999 | 429 | | | 9 | 696 | |
| MT1 | OVA | F | 4 | ROM1 | | 232 | 157 | | | | | | 1999 | 428 | | | 9 | 671 | |
| MT1 | OVA | F | 4 | ROM1 | | 236 | 154 | | | | | | 1999 | 437 | | | 9 | 628 | |
| MT1 | OVA | F | 4 | ROM1 | | 239 | 159 | | | | | | 1999 | 298 | | | 9 | 331 | |
| MT1 | OVA | F | 4 | ROM1 | 1247 | 237 | 156 | | | | | 112 | 2001 | 551 | | | 11 | 157 | GL approx |

| Os | Tax | fus | MP | Period | GL | Bd | Dd | WCM | WCL | DEM | DEL | SD | Ano | Cont | Q | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT1 | OVA | F | 4 | ROM1 | 1365 | 223 | 154 | | | | | 110 | 1999 | 266 | | | 9 | 221 | |
| MT1 | OVA | F | 4 | ROM2 | | 217 | 145 | | | | | | 1999 | 295 | | | 8 | 262 | |
| MT1 | OVA | F | 4 | ROM2 | | 240 | 164 | | | | | | 1999 | 426 | | | 8 | 643 | |
| MT1 | OVA | F | 4 | ROM2 | | 261 | | | | | | | 1999 | 282 | | | 8 | 194 | |
| MT1 | OVA | F | 4 | ROM2 | | 274 | 178 | | | | | | 1999 | 322 | | | 8 | 163 | |
| MT1 | OVA | F | 4 | ROM2 | 1348 | 212 | 145 | | | | | 110 | 1999 | 268 | | | 8 | 134 | |
| MT1 | OVA | F | 4 | ROM3 | | 261 | | | | | | | 1999 | 322 | | | 7 | 160 | |
| MT1 | OVA | F | 4 | ROM5 | | | 168 | | | | | | 2001 | 541 | | | 15 | 31 | |
| MT1 | OVA | F | 4 | ROM5 | 1549 | 265 | 172 | | | | | 130 | 2001 | 550 | | | 15 | 75 | |
| MT1 | OVA | F | 5 | Fe2 | | 227 | 158 | | | | | | 1997 | 410 | 5 | 14 | | | |
| MT1 | OVA | F | 5 | Fe4 | | 236 | 156 | | | | | | 2001 | 558 | | | 6 | 257 | Dd approx |
| MT1 | OVA | F | 5 | Fe7 | 1246 | 228 | 149 | | | | | 97 | 2001 | 558 | | | 9 | 229 | GL approx |
| MT1 | OVA | F | 5 | Fe8 | | 213 | 155 | | | | | | 1999 | 271 | | | 10 | 361 | |
| MT1 | OVA | F | 5 | Fe8 | 1297 | 217 | 154 | | | | | 112 | 1999 | 262 | | | 10 | 361 | |
| MT2 | B | F | 4 | ROM1 | 2230 | | | | 248 | | 213 | | 1999 | 294 | | | 9 | 297 | |
| MT2 | B | F | 5 | Fe8 | 2180 | | | | | | | | 1999 | 273 | | | 10 | 376 | GL approx |

| Os | MP | Period | fus | Tax | GL | Bd | Dd | BT | HTC | SD | Bp | Dp | GH | LmT | GB | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AS | 3 | MED1 | | EQ | | 495 | | | | | | | 597 | 630 | 606 | 2001 | 545 | | | 16 | 51 | |
| AS | 3 | MED1 | | EQ | | 502 | | | | | | | 586 | 599 | 602 | 1999 | 276 | | | 3 | 196 | |
| AS | 3 | MED1 | | EQ | | 575 | | | | | | | 626 | 644 | | 1999 | 435 | | | 3 | 451 | |
| AS | 4 | ROM1 | | EQ | | 335 | | | | | | | 404 | 401 | 446 | 1999 | 296 | | | 9 | 281 | |
| AS | 5 | Fe | | EQ | | 485 | | | | | | | 534 | 539 | | 1997 | 407 | 3 | 7 | | | |
| AS | 5 | Fe3 | | EQ | | 517 | | | | | | | 581 | 605 | | 1995 | 397 | 3 | 11 | | | |
| CA | 2 | MOD | F | EQ | 1028 | | | | | | | | | | | 1997 | 406 | 4 | 3 | | | |
| CA | 3 | MED1 | F | EQ | 1076 | | | | | | | | | | | 1999 | 268 | | | 3 | 137 | |
| CA | 3 | MED1 | F | EQ | 1165 | | | | | | | | | | | 1999 | 276 | | | 3 | 196 | |
| CA | 4 | ROM1 | F | EQ | 733 | | | | | | | | | | | 1999 | 296 | | | 9 | 281 | ?ass |
| CA | 4 | ROM1 | F | EQ | 1072 | | | | | | | | | | | 1999 | 268 | | | 9 | 221 | |
| HU | 3 | MED1 | F | EQ | | | | | 359 | | | | | | | 1999 | 280 | | | 3 | 63 | |
| HU | 3 | MED1 | F | EQ | | | | 583 | 268 | | | | | | | 1999 | 280 | | | 3 | 62 | |
| HU | 3 | MED1 | F | EQ | | | | 672 | 331 | | | | | | | 1999 | 287 | | | 3 | 93 | |
| HU | 3 | MED1 | F | EQ | | | | 685 | 342 | | | | | | | 1999 | 84 | | | 3 | 16 | |
| HU | 3 | MED1 | F | EQ | | | | 731 | 348 | | | | | | | 1999 | 270 | | | 3 | 247 | |
| HU | 3 | MED1 | F | EQ | | | | 734 | 326 | | | | | | | 2001 | 541 | | | 16 | 42 | |
| HU | 4 | ROM2 | F | EQ | | | | 590 | 271 | | | | | | | 1999 | 273 | | | 8 | 163 | BT approx |
| HU | 4 | ROM5 | F | EQ | | | | 732 | 373 | | | | | | | 2001 | 551 | | | 15 | 113 | |
| MC1 | 3 | MED1 | F | EQ | 1938 | 378 | 288 | | | 263 | | | | | | 1999 | 280 | | | 3 | 62 | ?horse |
| MC1 | 3 | MED1 | F | EQ | 2182 | 460 | | | | 295 | | | | | | 1999 | 270 | | | 3 | 247 | Bd approx |
| MC1 | 3 | MED1 | F | EQC | | | | | | 359 | | | | | | 1995 | 396 | | | | | Bd approx 510-520 |
| MC1 | 3 | MED1 | F | EQC | 2231 | 520 | 360 | | | 329 | | | | | | 1999 | 275 | | | 3 | 73 | |
| MC1 | 4 | ROM1 | F | EQ | | 336 | 260 | | | | | | | | | 1995 | 405 | 14 | 17 | | | ?ass |
| MP1 | 3 | MED1 | F | EQ | | 463 | 348 | | | | | | | | | 1999 | 268 | | | 3 | 137 | |
| MP1 | 4 | ROM3 | F | EQ | | 493 | 347 | | | | | | | | | 1999 | 288 | | | 7 | 181 | ?horse |
| MT1 | 3 | MED1 | F | EQ | 2339 | | 290 | | | 242 | | | | | | 1999 | 280 | | | 3 | 62 | |
| MT1 | 3 | MED1 | F | EQ | 2620 | 462 | 342 | | | 275 | | | | | | 1999 | 270 | | | 3 | 247 | Dd approx |
| MT1 | 4 | ROM5 | F | EQ | 2677 | 497 | 356 | | | 320 | | | | | | 2001 | 548 | | | 15 | 98 | |
| MT1 | 5 | Fe8 | F | EQA | 1860 | 298 | 240 | | | 208 | | | | | | 1999 | 300 | | | 10 | 432 | ?ass Bd approx |
| P1 | 3 | MED1 | F | EQ | 651 | | | | | 231 | 373 | 266 | | | | 1999 | 272 | | | 3 | 197 | ?ass |
| P1 | 3 | MED1 | F | EQ | 828 | 433 | 241 | | | 331 | 536 | 357 | | | | 1997 | 400 | 4 | 4 | | | |
| P1 | 3 | MED1 | F | EQ | 842 | 414 | 238 | | | 317 | 512 | 344 | | | | 1999 | 270 | | | 3 | 247 | |
| P1 | 3 | MED1 | F | EQA | 795 | 350 | 210 | | | 260 | 391 | 310 | | | | 2001 | 548 | | | 16 | 34 | |
| P1 | 3 | MED1 | F | EQC | 825 | 401 | 241 | | | 296 | 513 | 380 | | | | 1999 | 439 | | | 3 | 248 | |
| P1 | 4 | ROM1 | F | EQ | 676 | 295 | 182 | | | 216 | | | | | | 1999 | 265 | | | 9 | 221 | ?ass |
| P1 | 4 | ROM2 | F | EQ | 661 | 302 | 193 | | | 240 | 386 | 289 | | | | 1999 | 273 | | | 8 | 163 | |
| P1 | 4 | ROM2 | F | EQ | 847 | 412 | 245 | | | 304 | 510 | 342 | | | | 1999 | 268 | | | 8 | 222 | |
| P1 | 2 | MOD | F | EQ | 853 | 446 | 258 | | | 342 | 546 | 404 | | | | 1997 | 407 | 5 | 4 | | | |
| TI | 2 | MOD1 | F | EQ | | 716 | | | | | | | | | | 2001 | 537 | | | 19 | 1 | |
| TI | 2 | MOD2 | F | EQ | | 703 | | | | | | | | | | 1999 | 1 | | | 1 | 1 | |
| TI | 3 | MED1 | F | EQ | | 675 | | | | | | | | | | 1999 | 270 | | | 3 | 247 | |
| TI | 3 | MED1 | F | EQ | | 702 | | | | | | | | | | 1999 | 268 | | | 3 | 137 | |
| TI | 4 | ROM1 | F | EQ | | 473 | | | | | | | | | | 1999 | 296 | | | 9 | 281 | ?ass |
| TI | 5 | Fe1 | F | EQ | | 709 | | | | | | | | | | 1997 | 410 | 3 | 11 | | | |
| TI | 5 | Fe8 | F | EQ | | 522 | | | | | | | | | | 1999 | 440 | | | 10 | 340 | |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | CA | F | 4 | ROM2 | 214 | | 1999 | 296 | | | 8 | 246 | |
| ORC | CA | F | 4 | ROM2 | 220 | | 1999 | 263 | | | 8 | 345 | |
| ORC | CA | F | 4 | ROM4 | 201 | | 1999 | 433 | | | 6 | 109 | |
| ORC | CA | F | 5 | Fe4 | 217 | | 2001 | 560 | | | 6 | 258 | |
| ORC | FE | F | | R/MED | 743 | | 1999 | 430 | | | 4 | 546 | |
| ORC | FE | F | 2 | CONT | 754 | | 1995 | 397 | 2 | 3 | | | |
| ORC | FE | F | 2 | MED3 | 742 | | 2001 | 550 | | | 18 | 61 | |
| ORC | FE | F | 2 | MED3 | 748 | | 2001 | 541 | | | 18 | 3 | |
| ORC | FE | F | 2 | MOD | 732 | | 1997 | 402 | 19 | 7 | | | |
| ORC | FE | F | 2 | MOD | 734 | | 1997 | 402 | 19 | 7 | | | |
| ORC | FE | F | 2 | MOD | 782 | | 1995 | 404 | 14 | 11 | | | |
| ORC | FE | F | 2 | MOD | 804 | | 1997 | 402 | 19 | 7 | | | |
| ORC | FE | F | 2 | MOD1 | 689 | | 1999 | 303 | | | 2 | 225 | |
| ORC | FE | F | 2 | MOD1 | 702 | | 1999 | 303 | | | 2 | 225 | |
| ORC | FE | F | 2 | MOD1 | 715 | | 1999 | 303 | | | 2 | 227 | |
| ORC | FE | F | 2 | MOD1 | 736 | | 1999 | 303 | | | 2 | 227 | |
| ORC | FE | F | 2 | MOD2 | 716 | | 1999 | 1 | | | 1 | 1 | |
| ORC | FE | F | 2 | MOD2 | 728 | | 1999 | 1 | | | 1 | 1 | |
| ORC | FE | F | 2 | MOD2 | 776 | | 1999 | 1 | | | 1 | 1 | |
| ORC | FE | F | 3 | MED1 | 701 | | 1999 | 283 | | | 3 | 77 | |
| ORC | FE | F | 3 | MED1 | 713 | | 1999 | 269 | | | 3 | 210 | |
| ORC | FE | F | 3 | MED1 | 714 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 715 | | 2001 | 543 | | | 16 | 48 | |
| ORC | FE | F | 3 | MED1 | 715 | | 1999 | 269 | | | 3 | 210 | |
| ORC | FE | F | 3 | MED1 | 718 | | 1999 | 276 | | | 3 | 196 | |
| ORC | FE | F | 3 | MED1 | 720 | | 2001 | 541 | | | 16 | 23 | |
| ORC | FE | F | 3 | MED1 | 721 | | 2001 | 549 | | | 16 | 48 | |
| ORC | FE | F | 3 | MED1 | 728 | | 1999 | 84 | | | 3 | 19 | |
| ORC | FE | F | 3 | MED1 | 728 | | 1999 | 84 | | | 3 | 19 | |
| ORC | FE | F | 3 | MED1 | 732 | | 1999 | 274 | | | 3 | 173 | |
| ORC | FE | F | 3 | MED1 | 732 | | 1999 | 71 | | | 3 | 20 | |
| ORC | FE | F | 3 | MED1 | 733 | | 1995 | 396 | | | | | Silo 3 |
| ORC | FE | F | 3 | MED1 | 736 | | 2001 | 550 | | | 16 | 37 | |
| ORC | FE | F | 3 | MED1 | 737 | | 1999 | 274 | | | 3 | 173 | |
| ORC | FE | F | 3 | MED1 | 737 | | 2001 | 546 | | | 16 | 42 | |
| ORC | FE | F | 3 | MED1 | 737 | | 1995 | 396 | | | | | Silo 3 |
| ORC | FE | F | 3 | MED1 | 738 | | 1999 | 274 | | | 3 | 173 | |
| ORC | FE | F | 3 | MED1 | 738 | | 1999 | 1 | | | 3 | 9 | |
| ORC | FE | F | 3 | MED1 | 740 | | 1999 | 433 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 742 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 743 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 747 | | 1999 | 1 | | | 3 | 9 | |
| ORC | FE | F | 3 | MED1 | 749 | | 1999 | 430 | | | 3 | 557 | |
| ORC | FE | F | 3 | MED1 | 751 | | 1999 | 84 | | | 3 | 14 | |
| ORC | FE | F | 3 | MED1 | 753 | | 1999 | 84 | | | 3 | 13 | |
| ORC | FE | F | 3 | MED1 | 754 | | 1999 | 283 | | | 3 | 72 | |
| ORC | FE | F | 3 | MED1 | 755 | | 1999 | 1 | | | 3 | 4 | |
| ORC | FE | F | 3 | MED1 | 756 | | 2001 | 545 | | | 16 | 34 | |
| ORC | FE | F | 3 | MED1 | 758 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 759 | | 1999 | 276 | | | 3 | 193 | |
| ORC | FE | F | 3 | MED1 | 761 | | 2001 | 533 | | | 16 | 28 | |
| ORC | FE | F | 3 | MED1 | 762 | | 1999 | 398 | | | 3 | 10 | |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | FE | F | 3 | MED1 | 763 | | 1999 | 270 | | | 3 | 247 | |
| ORC | FE | F | 3 | MED1 | 764 | | 2001 | 533 | | | 16 | 40 | |
| ORC | FE | F | 3 | MED1 | 764 | | 1999 | 84 | | | 3 | 13 | |
| ORC | FE | F | 3 | MED1 | 765 | | 2001 | 537 | | | 16 | 23 | |
| ORC | FE | F | 3 | MED1 | 768 | | 1999 | 280 | | | 3 | 63 | |
| ORC | FE | F | 3 | MED1 | 770 | | 1999 | 84 | | | 3 | 12 | |
| ORC | FE | F | 3 | MED1 | 773 | | 1999 | 298 | | | 3 | 306 | |
| ORC | FE | F | 3 | MED1 | 774 | | 2001 | 545 | | | 16 | 34 | |
| ORC | FE | F | 3 | MED1 | 774 | | 2001 | 548 | | | 16 | 51 | |
| ORC | FE | F | 3 | MED1 | 776 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 787 | | 1999 | 84 | | | 3 | 13 | |
| ORC | FE | F | 3 | MED1 | 791 | | 2001 | 545 | | | 16 | 34 | |
| ORC | FE | F | 3 | MED1 | 797 | | 1999 | 434 | | | 3 | 481 | |
| ORC | FE | F | 3 | MED1 | 813 | | 1999 | 1 | | | 3 | 8 | |
| ORC | FE | F | 3 | MED1 | 820 | | 2001 | 548 | | | 16 | 34 | |
| ORC | FE | F | 4 | ROM1 | 747 | | 1999 | 265 | | | 9 | 221 | |
| ORC | FE | F | 4 | ROM2 | 745 | | 1999 | 289 | | | 8 | 213 | |
| ORC | FE | F | 4 | ROM2 | 798 | | 1999 | 288 | | | 8 | 200 | |
| ORC | FE | F | 4 | ROM3 | 777 | | 1999 | 292 | | | 7 | 154 | |
| ORC | FE | F | 4 | ROM5 | 732 | | 2001 | 541 | | | 15 | 38 | |
| ORC | HU | F | 3 | MED1 | 600 | 77 | 2001 | 541 | | | 16 | 42 | |
| ORC | HU | F | | R/MED | | 80 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | | 82 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | | 83 | 1999 | 432 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | | 84 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | | 85 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | | 86 | 1999 | 430 | | | 4 | 546 | |
| ORC | HU | F | | R/MED | | 86 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | | R/MED | 569 | 86 | 1999 | 430 | | | 4 | 545 | |
| ORC | HU | F | 2 | MED3 | | 80 | 2001 | 533 | | | 18 | 4 | |
| ORC | HU | F | 2 | MED3 | | 80 | 2001 | 549 | | | 18 | 61 | |
| ORC | HU | F | 2 | MED3 | | 81 | 2001 | 546 | | | 18 | 61 | |
| ORC | HU | F | 2 | MED3 | | 83 | 2001 | 545 | | | 18 | 8 | |
| ORC | HU | F | 2 | MED3 | | 86 | 2001 | 549 | | | 18 | 61 | |
| ORC | HU | F | 2 | MED3 | 575 | 82 | 2001 | 546 | | | 18 | 61 | |
| ORC | HU | F | 2 | MOD | | 79 | 1997 | 407 | 4 | 2 | | | prox UM |
| ORC | HU | F | 2 | MOD | | 86 | 1997 | 406 | 4 | 1 | | | |
| ORC | HU | F | 2 | MOD | 571 | 85 | 1997 | 406 | 4 | 1 | | | |
| ORC | HU | F | 2 | MOD | 573 | 82 | 1997 | 406 | 4 | 3 | | | |
| ORC | HU | F | 2 | MOD1 | 553 | 77 | 1999 | 299 | | | 2 | 240 | |
| ORC | HU | F | 2 | MOD1 | 562 | 79 | 2001 | 546 | | | 19 | 1 | |
| ORC | HU | F | 2 | MOD1 | 567 | 81 | 2001 | 537 | | | 19 | 1 | |
| ORC | HU | F | 2 | MOD1 | 590 | 83 | 1999 | 432 | | | 2 | 449 | |
| ORC | HU | F | 2 | MOD1 | 599 | 81 | 2001 | 537 | | | 19 | 1 | |
| ORC | HU | F | 2 | MOD1 | 608 | 84 | 2001 | 537 | | | 19 | 1 | |
| ORC | HU | F | 2 | MOD1 | 615 | 89 | 2001 | 546 | | | 19 | 1 | |
| ORC | HU | F | 2 | MOD2 | | 87 | 1999 | 439 | | | 1 | 1 | |
| ORC | HU | F | 2 | MOD2 | 565 | 74 | 1999 | 1 | | | 1 | 1 | |
| ORC | HU | F | 3 | MED1 | | 73 | 2001 | 549 | | | 16 | 48 | |
| ORC | HU | F | 3 | MED1 | | 76 | 1999 | 434 | | | 3 | 481 | prox UM |
| ORC | HU | F | 3 | MED1 | | 77 | 1999 | 298 | | | 3 | 306 | prox UM |
| ORC | HU | F | 3 | MED1 | | 78 | 1999 | 291 | | | 3 | 89 | prox UM |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | HU | F | 3 | MED1 | | 78 | 1999 | 84 | | | 3 | 13 | |
| ORC | HU | F | 3 | MED1 | | 79 | 1995 | 396 | | 1 | | | |
| ORC | HU | F | 3 | MED1 | | 79 | 1999 | 281 | | | 3 | 123 | |
| ORC | HU | F | 3 | MED1 | | 80 | 1999 | 289 | | | 3 | 210 | |
| ORC | HU | F | 3 | MED1 | | 80 | 1999 | 433 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | | 80 | 1999 | 275 | | | 3 | 73 | |
| ORC | HU | F | 3 | MED1 | | 80 | 1999 | 71 | | | 3 | 25 | |
| ORC | HU | F | 3 | MED1 | | 80 | 2001 | 548 | | | 16 | 34 | |
| ORC | HU | F | 3 | MED1 | | 81 | 1999 | 287 | | | 3 | 91 | |
| ORC | HU | F | 3 | MED1 | | 81 | 1999 | 432 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | | 81 | 1999 | 432 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | | 81 | 1995 | 396 | | 1 | | | prox UM |
| ORC | HU | F | 3 | MED1 | | 81 | 1995 | 396 | | | | | Silo grand |
| ORC | HU | F | 3 | MED1 | | 81 | 1995 | 396 | | | | | Silo grand |
| ORC | HU | F | 3 | MED1 | | 81 | 2001 | 543 | | | 16 | 35 | |
| ORC | HU | F | 3 | MED1 | | 81 | 1999 | 295 | | | 3 | 255 | |
| ORC | HU | F | 3 | MED1 | | 82 | 1999 | 298 | | | 3 | 306 | |
| ORC | HU | F | 3 | MED1 | | 82 | 1999 | 432 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | | 83 | 1999 | 281 | | | 3 | 123 | |
| ORC | HU | F | 3 | MED1 | | 83 | 2001 | 533 | | | 16 | 14 | |
| ORC | HU | F | 3 | MED1 | | 83 | 2001 | 537 | | | 16 | 34 | |
| ORC | HU | F | 3 | MED1 | | 83 | 2001 | 543 | | | 16 | 34 | |
| ORC | HU | F | 3 | MED1 | | 83 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | | 83 | 2001 | 543 | | | 16 | 22 | |
| ORC | HU | F | 3 | MED1 | | 83 | 1999 | 84 | | | 3 | 13 | prox UM |
| ORC | HU | F | 3 | MED1 | | 84 | 1999 | 432 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | | 84 | 1999 | 291 | | | 3 | 80 | |
| ORC | HU | F | 3 | MED1 | | 84 | 1999 | 432 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | | 84 | 1999 | 398 | | | 3 | 10 | |
| ORC | HU | F | 3 | MED1 | | 85 | 1999 | 432 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | | 85 | 2001 | 549 | | | 16 | 48 | |
| ORC | HU | F | 3 | MED1 | | 85 | 1995 | 396 | | | | | Silo grand |
| ORC | HU | F | 3 | MED1 | | 87 | 2001 | 543 | | | 16 | 34 | |
| ORC | HU | F | 3 | MED1 | | 87 | 1999 | 430 | | | 3 | 482 | |
| ORC | HU | F | 3 | MED1 | | 88 | 2001 | 545 | | | 16 | 34 | prox UM |
| ORC | HU | F | 3 | MED1 | | 89 | 1999 | 430 | | | 3 | 549 | |
| ORC | HU | F | 3 | MED1 | | 90 | 1999 | 430 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | 533 | 80 | 1999 | 84 | | | 3 | 14 | |
| ORC | HU | F | 3 | MED1 | 539 | 80 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 549 | 80 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 549 | 81 | 1999 | 269 | | | 3 | 210 | |
| ORC | HU | F | 3 | MED1 | 552 | 80 | 1999 | 432 | | | 3 | 451 | |
| ORC | HU | F | 3 | MED1 | 552 | 80 | 1999 | 291 | | | 3 | 80 | |
| ORC | HU | F | 3 | MED1 | 555 | 78 | 1999 | 1 | | | 3 | 4 | |
| ORC | HU | F | 3 | MED1 | 566 | 83 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 567 | 86 | 1999 | 398 | | | 3 | 10 | prox F |
| ORC | HU | F | 3 | MED1 | 568 | 85 | 1999 | 278 | | | 3 | 27 | |
| ORC | HU | F | 3 | MED1 | 570 | 81 | 1999 | 277 | | | 3 | 193 | |
| ORC | HU | F | 3 | MED1 | 570 | 84 | 1999 | 84 | | | 3 | 13 | |
| ORC | HU | F | 3 | MED1 | 571 | 86 | 1999 | 322 | | | 3 | 196 | |
| ORC | HU | F | 3 | MED1 | 574 | 80 | 1999 | 84 | | | 3 | 13 | |
| ORC | HU | F | 3 | MED1 | 574 | 81 | 1999 | 278 | | | 3 | 27 | |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | HU | F | 3 | MED1 | 574 | 83 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 576 | 89 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 577 | 81 | 1999 | 84 | | | 3 | 19 | |
| ORC | HU | F | 3 | MED1 | 579 | 82 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 581 | 80 | 1999 | 269 | | | 3 | 210 | |
| ORC | HU | F | 3 | MED1 | 581 | 82 | 1999 | 291 | | | 3 | 89 | |
| ORC | HU | F | 3 | MED1 | 581 | 83 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 586 | 87 | 1999 | 290 | | | 3 | 35 | |
| ORC | HU | F | 3 | MED1 | 587 | 82 | 1999 | 298 | | | 3 | 306 | |
| ORC | HU | F | 3 | MED1 | 590 | 82 | 2001 | 541 | | | 16 | 42 | |
| ORC | HU | F | 3 | MED1 | 590 | 84 | 1999 | 278 | | | 3 | 26 | |
| ORC | HU | F | 3 | MED1 | 590 | 85 | 1999 | 289 | | | 3 | 210 | |
| ORC | HU | F | 3 | MED1 | 593 | 83 | 1999 | 433 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 593 | 85 | 2001 | 549 | | | 16 | 48 | |
| ORC | HU | F | 3 | MED1 | 594 | 81 | 2001 | 548 | | | 16 | 35 | |
| ORC | HU | F | 3 | MED1 | 594 | 88 | 1999 | 1 | | | 3 | 9 | |
| ORC | HU | F | 3 | MED1 | 595 | 84 | 1999 | 84 | | | 3 | 13 | |
| ORC | HU | F | 3 | MED1 | 595 | 84 | 1999 | 434 | | | 3 | 481 | |
| ORC | HU | F | 3 | MED1 | 596 | 81 | 1999 | 284 | | | 3 | 90 | |
| ORC | HU | F | 3 | MED1 | 597 | 82 | 2001 | 543 | | | 16 | 48 | |
| ORC | HU | F | 3 | MED1 | 603 | 82 | 1999 | 293 | | | 3 | 37 | |
| ORC | HU | F | 3 | MED1 | 604 | 88 | 1999 | 398 | | | 3 | 10 | prox F |
| ORC | HU | F | 3 | MED1 | 605 | 82 | 1999 | 71 | | | 3 | 20 | |
| ORC | HU | F | 3 | MED1 | 605 | 88 | 1999 | 84 | | | 3 | 19 | |
| ORC | HU | F | 3 | MED1 | 609 | 84 | 2001 | 543 | | | 16 | 34 | |
| ORC | HU | F | 3 | MED1 | 612 | 83 | 1999 | 1 | | | 3 | 9 | |
| ORC | HU | F | 3 | MED1 | 615 | 85 | 2001 | 548 | | | 16 | 48 | |
| ORC | HU | F | 3 | MED1 | 621 | 86 | 1999 | 1 | | | 3 | 9 | |
| ORC | HU | F | 3 | MED1 | 649 | 87 | 1999 | 281 | | | 3 | 123 | |
| ORC | HU | F | 3 | MED2 | | 84 | 2001 | 550 | | | 17 | 82 | |
| ORC | HU | F | 3 | MED2 | | 85 | 2001 | 550 | | | 17 | 82 | |
| ORC | HU | F | 3 | MED2 | 582 | 86 | 2001 | 543 | | | 17 | 10 | |
| ORC | HU | F | 3 | MED2 | 587 | 85 | 2001 | 545 | | | 17 | 15 | |
| ORC | HU | F | 4 | ROM1 | | 80 | 2001 | 551 | | | 11 | 149 | |
| ORC | HU | F | 4 | ROM1 | | 82 | 2001 | 551 | | | 11 | 171 | |
| ORC | HU | F | 4 | ROM1 | | 82 | 1999 | 428 | | | 9 | 671 | |
| ORC | HU | F | 4 | ROM1 | | 83 | 2001 | 551 | | | 11 | 169 | |
| ORC | HU | F | 4 | ROM1 | | 83 | 2001 | 554 | | | 11 | 173 | |
| ORC | HU | F | 4 | ROM1 | | 84 | 1999 | 439 | | | 9 | 357 | |
| ORC | HU | F | 4 | ROM1 | | 84 | 1999 | 298 | | | 9 | 331 | |
| ORC | HU | F | 4 | ROM1 | | 85 | 1999 | 435 | | | 9 | 413 | |
| ORC | HU | F | 4 | ROM1 | | 90 | 1999 | 428 | | | 9 | 252 | |
| ORC | HU | F | 4 | ROM1 | | 90 | 2001 | 551 | | | 11 | 151 | prox UM |
| ORC | HU | F | 4 | ROM1 | 573 | 76 | 1999 | 296 | | | 9 | 281 | |
| ORC | HU | F | 4 | ROM1 | 580 | 77 | 2001 | 554 | | | 11 | 172 | |
| ORC | HU | F | 4 | ROM1 | 582 | 85 | 1999 | 428 | | | 9 | 671 | |
| ORC | HU | F | 4 | ROM2 | | 81 | 1999 | 289 | | | 8 | 204 | |
| ORC | HU | F | 4 | ROM2 | | 82 | 1999 | 434 | | | 8 | 313 | |
| ORC | HU | F | 4 | ROM2 | | 83 | 1999 | 322 | | | 8 | 200 | |
| ORC | HU | F | 4 | ROM2 | | 83 | 1999 | 296 | | | 8 | 261 | |
| ORC | HU | F | 4 | ROM2 | | 83 | 1999 | 289 | | | 8 | 204 | |
| ORC | HU | F | 4 | ROM2 | | 84 | 1999 | 428 | | | 8 | 660 | |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | HU | F | 4 | ROM2 | | 85 | 1999 | 433 | | | 8 | 131 | |
| ORC | HU | F | 4 | ROM2 | | 85 | 1999 | 439 | | | 8 | 241 | |
| ORC | HU | F | 4 | ROM2 | | 86 | 1999 | 322 | | | 8 | 163 | |
| ORC | HU | F | 4 | ROM2 | 539 | 80 | 1999 | 433 | | | 8 | 589 | |
| ORC | HU | F | 4 | ROM2 | 599 | 85 | 1999 | 265 | | | 8 | 261 | |
| ORC | HU | F | 4 | ROM2 | 614 | 83 | 1999 | 296 | | | 8 | 246 | |
| ORC | HU | F | 4 | ROM3 | | 83 | 1999 | 433 | | | 7 | 561 | |
| ORC | HU | F | 4 | ROM3 | | 83 | 1999 | 433 | | | 7 | 460 | |
| ORC | HU | F | 4 | ROM3 | | 83 | 1999 | 322 | | | 7 | 160 | |
| ORC | HU | F | 4 | ROM3 | | 85 | 1999 | 432 | | | 7 | 129 | |
| ORC | HU | F | 4 | ROM3 | 564 | 79 | 1999 | 440 | | | 7 | 182 | |
| ORC | HU | F | 4 | ROM4 | | 77 | 1999 | 438 | | | 6 | 120 | |
| ORC | HU | F | 4 | ROM4 | | 82 | 2001 | 533 | | | 14 | 9 | |
| ORC | HU | F | 4 | ROM4 | | 84 | 1999 | 438 | | | 6 | 159 | |
| ORC | HU | F | 4 | ROM5 | | 92 | 2001 | 551 | | | 15 | 113 | prox UM |
| ORC | HU | F | 5 | Fe | | 87 | 1997 | 400 | 6 | 5 | | | |
| ORC | HU | F | 5 | Fe4 | | 81 | 2001 | 560 | | | 6 | 258 | |
| ORC | HU | F | 5 | Fe4 | | 82 | 2001 | 562 | | | 6 | 270 | |
| ORC | HU | F | 5 | Fe6 | | 83 | 2001 | 559 | | | 8 | 277 | |
| ORC | HU | F | 5 | Fe7 | | 86 | 1997 | 402 | 7 | 3 | | | prox UM |
| ORC | HU | F | 5 | Fe7 | 557 | 85 | 1997 | 402 | 7 | 3 | | | prox F |
| ORC | HU | F | 5 | Fe7 | 563 | 77 | 1997 | 402 | 7 | 3 | | | prox F |
| ORC | HU | F | 5 | Fe7 | 586 | 79 | 1997 | 402 | 7 | 3 | | | prox F |
| ORC | HU | F | 5 | Fe7 | 605 | 82 | 1997 | 402 | 7 | 3 | | | prox F |
| ORC | HU | F | 5 | Fe8 | | 76 | 1999 | 302 | | | 10 | 400 | prox UM |
| ORC | HU | F | 5 | Fe8 | | 80 | 2001 | 554 | | | 10 | 203 | |
| ORC | HU | F | 5 | Fe8 | | 86 | 1999 | 437 | | | 10 | 340 | |
| ORC | HU | F | 5 | Fe8 | | 87 | 1999 | 426 | | | 10 | 707 | |
| ORC | HU | F | 5 | Fe8 | | 90 | 1999 | 429 | | | 10 | 676 | |
| ORC | HU | F | 5 | Fe8 | 548 | 77 | 1999 | 429 | | | 10 | 676 | |
| ORC | HU | F | 5 | Fe8 | 587 | 88 | 1999 | 426 | | | 10 | 338 | |
| ORC | TI | F | 3 | MED1 | | 101 | 1999 | 434 | | | 3 | 481 | |
| ORC | TI | F | 3 | MED1 | | 104 | 2001 | 549 | | | 16 | 48 | |
| ORC | TI | F | 3 | MED1 | | 107 | 1999 | 71 | | | 3 | 20 | |
| ORC | TI | F | 3 | MED1 | | 109 | 1999 | 71 | | | 3 | 20 | |
| ORC | TI | F | 3 | MED1 | | 110 | 1999 | 434 | | | 3 | 481 | |
| ORC | TI | F | 3 | MED1 | | 116 | 1999 | 398 | | | 3 | 10 | |
| ORC | TI | F | 3 | MED1 | | 119 | 1999 | 434 | | | 3 | 481 | |
| ORC | TI | F | 3 | MED1 | | 121 | 1999 | 278 | | | 3 | 26 | |
| ORC | TI | F | 3 | MED1 | 902 | 114 | 1999 | 283 | | | 3 | 67 | |
| ORC | TI | F | 3 | MED2 | | 104 | 2001 | 543 | | | 17 | 10 | |
| ORC | TI | F | 4 | ROM2 | | 103 | 1999 | 299 | | | 8 | 238 | |
| ORC | TI | F | 4 | ROM2 | | 105 | 1999 | 294 | | | 8 | 263 | |
| ORC | TI | F | 4 | ROM2 | | 107 | 1995 | 405 | 14 | 14 | | | |
| ORC | TI | F | 4 | ROM2 | | 108 | 1999 | 433 | | | 8 | 131 | |
| ORC | TI | F | 4 | ROM2 | | 110 | 1999 | 437 | | | 8 | 626 | |
| ORC | TI | F | 4 | ROM2 | | 110 | 1999 | 429 | | | 8 | 641 | fresh-looking ?intrusive |
| ORC | TI | F | 4 | ROM2 | | 112 | 1999 | 439 | | | 8 | 352 | white ? intrusive |
| ORC | TI | F | 4 | ROM2 | | 113 | 1999 | 426 | | | 8 | 643 | |
| ORC | TI | F | 4 | ROM2 | | 114 | 1999 | 295 | | | 8 | 268 | |
| ORC | TI | F | 4 | ROM2 | | 119 | 1999 | 435 | | | 8 | 426 | |

| Tax | Os | fus | MP | Period | GL/GLC | Bd | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ORC | TI | F | 4 | ROM2 | 865 | 105 | 1999 | 299 | | | 8 | 238 | |
| ORC | TI | F | 4 | ROM4 | | 105 | 1999 | 281 | | | 6 | 110 | |
| ORC | TI | F | 4 | ROM4 | | 111 | 1999 | 438 | | | 6 | 159 | |
| ORC | TI | F | 5 | Fe4 | | 104 | 2001 | 562 | | | 6 | 271 | |
| ORC | TI | F | 5 | Fe8 | | 113 | 1999 | 426 | | | 10 | 338 | |
| ORC | TI | F | 5 | Fe8 | | 116 | 1999 | 297 | | | 10 | 422 | |
| ORC | TI | F | 4 | ROM | | 114 | 1997 | 406 | 6 | 4 | | | |

| Tax | Os | fus | MP | Period | GL | Bd | Dd | BT | HTC | SD | ID | Ano | Cont | Quad | Camada | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAF | CA | F | 4 | ROM4 | 445 | | | | | | 1605 | 2001 | 549 | | | 14 | 89 | |
| CAF | CA | F | 5 | Fe7 | 463 | | | | | | 829 | 2001 | 558 | | | 9 | 228 | |
| CAF | CA | F | 5 | Fe8 | 400 | | | | | | 4705 | 1999 | 264 | | | 10 | 335 | |
| CAF | HU | F | 2 | MED3 | | | | | 124 | | 1284 | 2001 | 548 | | | 18 | 61 | |
| CAF | HU | F | 2 | MOD | | 223 | | | 93 | | 6884 | 1997 | 406 | 4 | 3 | | | |
| CAF | HU | F | 3 | MED1 | | 272 | | 197 | 115 | | 6317 | 1995 | 399 | 29 | 2 | | | |
| CAF | HU | F | 3 | MED2 | | 366 | | 235 | 139 | | 363 | 2001 | 550 | | | 17 | 82 | Bd & BT approx |
| LYP | AS | | 4 | ROM1 | 242 | | | | | | 5457 | 1999 | 302 | | | 9 | 375 | |
| URA | MTv | F | 3 | MED2 | 844 | 189 | 149 | | | 114 | 132 | 2001 | 546 | | | 17 | 76 | fifth metatarsal |
| VUV | HU | F | 5 | Fe7 | | 205 | | | 85 | | 6512 | 1997 | 402 | 7 | 3 | | | |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACG | FE | 2 | MOD1 | 805 | 787 | | 175 | | 76 | 1999 | 299 | | | 2 | 240 | *Accipiter gentilis* prob female |
| Acip | HU | 3 | MED1 | 889 | | | 146 | | | 2001 | 545 | | | 16 | 50 | *Accipitridae* |
| ALR | FE | 3 | MED1 | 559 | | | 104 | | | 1999 | 283 | | | 3 | 72 | |
| ALR | FE | 2 | MOD1 | 479 | 460 | | 102 | | | 1999 | 303 | | | 2 | 227 | |
| ALR | HU | 5 | Fe2 | 513 | | | 102 | | 47 | 1997 | 410 | 5 | 14 | | | |
| ALR | HU | 3 | MED1 | | | | 102 | | 45 | 1999 | 275 | | | 3 | 73 | |
| ALR | HU | 3 | MED1 | 503 | | | 98 | | | 1999 | 1 | | | 3 | 9 | |
| ALR | HU | 2 | MED3 | 474 | | | | | | 2001 | 549 | | | 18 | 61 | |
| ALR | HU | 4 | ROM1 | 487 | | | 95 | | 45 | 1995 | 401 | 19 | 5 | | | |
| ALR | HU | 4 | ROM2 | | | | 103 | | | 1999 | 437 | | | 8 | 621 | Bd approx |
| ALR | HU | 4 | ROM2 | 461 | | | 92 | | | 1999 | 295 | | | 8 | 267 | |
| ALR | HU | 4 | ROM2 | 510 | | | 104 | | 45 | 1997 | 402 | 3 | 4 | | | |
| ALR | HU | 4 | ROM3 | | | | 95 | | | 1999 | 432 | | | 7 | 129 | Bd approx |
| ALR | HU | 4 | ROM3 | 463 | | | 96 | | | 1997 | 410 | 3 | 3 | | | |
| ALR | TI | 4 | ROM1 | | | | 74 | 72 | | 1999 | 296 | | | 9 | 281 | |
| ALR | TI | 4 | ROM3 | 724 | | 707 | 69 | 69 | 34 | 1999 | 429 | | | 7 | 725 | |
| ALR | TI | 4 | ROM3 | 765 | | 743 | 76 | 77 | | 1997 | 410 | 3 | 4 | | | |
| ALR | TmT | 3 | MED1 | 425 | | | 81 | | 34 | 1999 | 398 | | | 3 | 10 | |
| ALR | TmT | 3 | MED1 | 448 | | | 87 | | 36 | 1999 | 1 | | | 3 | 9 | no spur |
| ALR | TmT | 2 | MOD2 | | | | 89 | | 36 | 1999 | 439 | | | 1 | 1 | |
| ALR | TmT | | R/MED | 421 | | | 88 | | 37 | 1999 | 322 | | | 4 | 161 | no spur |
| ALR | TmT | 4 | ROM2 | 415 | | | | | 40 | 1999 | 432 | | | 8 | 603 | with small spur |
| ALR | TmT | 4 | ROM2 | 430 | | | 89 | | 41 | 1999 | 299 | | | 8 | 238 | with spur |
| ALR | TmT | 4 | ROM2 | 460 | | | 93 | | 43 | 1999 | 299 | | | 8 | 238 | no spur |
| ALR | TmT | 4 | ROM3 | | | | 92 | | 40 | 1999 | 432 | | | 7 | 129 | |
| ALR | TmT | 4 | ROM3 | 444 | | | 93 | | 40 | 1997 | 410 | 3 | 5 | | | ?male - spur scar |
| ALR | TmT | 4 | ROM4 | | | | 85 | | 39 | 1999 | 439 | | | 6 | 172 | |
| ALR | TmT | 4 | ROM4 | | | | 89 | | | 1999 | 432 | | | 6 | 109 | with blunt spur |
| ALR | TmT | 4 | ROM4 | 411 | | | | | 32 | 1999 | 429 | | | 6 | 125 | |
| ANA | TI | 2 | MOD1 | | | | 170 | 158 | | 1999 | 303 | | | 2 | 227 | *Anser* cf *anser* |
| ANA | TmT | 4 | ROM1 | | | | 156 | | | 2001 | 551 | | | 11 | 151 | *Anser* cf *anser* |
| ANP | HU | 3 | MED1 | | | | 155 | | 72 | 1995 | 396 | | | | | *Anas* cf *platyrrhynchos* Silo grand |
| ANP | HU | 2 | MOD1 | 931 | | | 154 | | 72 | 1999 | 303 | | | 2 | 227 | *Anas* cf *platyrrhynchos* |
| ANP | TmT | 2 | MED3 | 425 | | | 89 | | 45 | 2001 | 549 | | | 18 | 61 | *Anas* cf *platyrrhynchos* |
| ANS | TI | 2 | MED3 | | | | 164 | 166 | | 2001 | 533 | | | 18 | 8 | *Anser* sp, |
| COP | HU | 4 | ROM3 | 563 | | | 134 | | 61 | 2001 | 550 | | | 13 | 119 | *Columba palumbus* |
| COP | TI | 3 | MED1 | 616 | | 604 | 74 | 74 | 37 | 1995 | 396 | | | | | *Columba* cf *palumbus* silo grand |
| COP | TI | 2 | MED3 | | | | 75 | 79 | | 2001 | 549 | | | 18 | 61 | *Columba* cf *palumbus* |
| COP | TI | 4 | ROM2 | 554 | | 539 | 60 | 62 | 31 | 1999 | 289 | | | 8 | 213 | *Columba* cf *palumbus* |
| COP | TmT | 4 | ROM1 | 306 | | | 74 | | 31 | 1999 | 426 | | | 9 | 669 | *Columba* cf *palumbus* |
| COP | TmT | 4 | ROM4 | | | | 84 | | 36 | 1999 | 439 | | | 6 | 172 | *Columba* cf *palumbus* |
| COP? | HU | 3 | MED1 | 463 | | | 108 | | 54 | 1999 | 289 | | | 3 | 210 | *Columba* cf *palumbus* |
| COP? | HU | 4 | ROM2 | 463 | | | 109 | | 54 | 1999 | 289 | | | 8 | 213 | *Columba* cf *palumbus* |
| CY | HU | 4 | ROM2 | | | | 364 | | | 1999 | 285 | | | 8 | 162 | Swan |
| G | TmT | | R/MED | | | | 137 | | 63 | 1999 | 322 | | | 4 | 161 | *Gallus*, Spurred, no post keel |
| G/N | FE | 3 | MED1 | 858 | 807 | | 154 | 136 | | 2001 | 541 | | | 16 | 23 | |
| G | TmT | 3 | MED1 | 844 | | | 138 | | 68 | 1999 | 398 | | | 3 | 10 | *Gallus*, Spurred, no post keel |
| G | TmT | 4 | ROM2 | 806 | | | 130 | | 71 | 1999 | 282 | | | 8 | 194 | *Gallus*, Spurred, no post keel |
| GN | FE | 3 | MED1 | | 712 | | 146 | | 65 | 1999 | 314 | | | 3 | 27 | |
| GN | FE | 3 | MED1 | | 744 | | 146 | | 67 | 1999 | 433 | | | 3 | 481 | |
| GN | FE | 3 | MED1 | | 854 | | 176 | | 76 | 1995 | 396 | | 1 | | | Silo 3 |
| GN | FE | 3 | MED1 | 597 | 562 | | 121 | | 55 | 1999 | 71 | | | 3 | 25 | no prox foramen |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GN | FE | 3 | MED1 | 615 | 564 |  | 151 |  | 62 | 1999 | 439 |  |  | 3 | 248 | no prox foramen |
| GN | FE | 3 | MED1 | 682 |  |  |  |  | 56 | 1999 | 439 |  |  | 3 | 248 | no prox foramen |
| GN | FE | 3 | MED1 | 710 | 666 |  | 123 |  | 52 | 1999 | 293 |  |  | 3 | 37 |  |
| GN | FE | 3 | MED1 | 712 | 661 |  | 140 |  | 62 | 1999 | 275 |  |  | 3 | 73 | no prox foramen |
| GN | FE | 3 | MED1 | 724 | 682 |  | 132 |  |  | 1999 | 1 |  |  | 3 | 9 | no prox foramen |
| GN | FE | 3 | MED1 | 726 | 682 |  | 135 | 117 | 58 | 2001 | 548 |  |  | 16 | 51 | no prox foramen |
| GN | FE | 3 | MED1 | 732 | 683 |  | 134 |  |  | 1999 | 1 |  |  | 3 | 9 | no prox foramen |
| GN | FE | 3 | MED1 | 735 | 682 |  | 134 |  |  | 1999 | 1 |  |  | 3 | 9 | no prox foramen |
| GN | FE | 3 | MED1 | 736 | 687 |  | 140 |  | 62 | 1999 | 434 |  |  | 3 | 481 | no prox foramen |
| GN | FE | 3 | MED1 | 744 | 699 |  | 148 |  | 61 | 1999 | 291 |  |  | 3 | 80 | no prox foramen |
| GN | FE | 3 | MED1 | 746 | 702 |  | 142 |  | 61 | 1999 | 284 |  |  | 3 | 90 |  |
| GN | FE | 3 | MED1 | 782 | 731 |  | 155 |  | 63 | 1999 | 1 |  |  | 3 | 7 | no prox foramen |
| GN | FE | 3 | MED1 | 783 | 726 |  | 152 |  | 68 | 1999 | 293 |  |  | 3 | 42 |  |
| GN | FE | 3 | MED1 | 793 | 742 |  | 148 |  | 65 | 1999 | 433 |  |  | 3 | 481 | no prox foramen |
| GN | FE | 3 | MED1 | 843 | 784 |  | 170 |  | 78 | 1999 | 434 |  |  | 3 | 481 |  |
| GN | FE | 3 | MED1 | 845 | 793 |  | 164 |  | 65 | 1999 | 268 |  |  | 3 | 142 | no prox foramen |
| GN | FE | 3 | MED1 | 851 | 785 |  | 166 |  | 71 | 1999 | 434 |  |  | 3 | 481 | no prox foramen |
| GN | FE | 3 | MED1 | 853 | 810 |  | 173 | 141 |  | 2001 | 543 |  |  | 16 | 35 | no prox foramen |
| GN | FE | 3 | MED1 | 894 | 826 |  | 184 | 149 |  | 2001 | 545 |  |  | 16 | 23 |  |
| GN | FE | 3 | MED1 | 914 | 861 |  | 190 |  | 75 | 1999 | 280 |  |  | 3 | 67 | no prox foramen |
| GN | FE | 2 | MED3 | 893 | 828 |  | 187 | 159 | 78 | 2001 | 533 |  |  | 18 | 8 |  |
| GN | FE | 2 | MOD | 635 | 596 |  | 129 |  |  | 1997 | 402 | 19 | 7 |  |  |  |
| GN | FE | 2 | MOD1 |  | 814 |  | 172 | 147 | 70 | 2001 | 537 |  |  | 19 | 1 | no prox foramen |
| GN | FE | 2 | MOD1 | 774 | 729 |  | 195 |  | 83 | 1999 | 303 |  |  | 2 | 225 | no prox foramen |
| GN | FE | 2 | MOD1 | 874 | 813 |  | 170 | 145 | 72 | 1999 | 430 |  |  | 2 | 486 | no prox foramen |
| GN | FE | 4 | ROM1 |  | 742 |  | 152 |  | 68 | 1999 | 296 |  |  | 9 | 281 | no prox foramen |
| GN | FE | 4 | ROM1 | 846 | 789 |  | 166 |  | 74 | 1999 | 429 |  |  | 9 | 298 |  |
| GN | FE | 4 | ROM2 | 848 | 789 |  | 166 |  | 74 | 1999 | 428 |  |  | 8 | 660 | no prox foramen |
| GN | TmT | 3 | MED1 |  |  |  | 113 |  |  | 1999 | 277 |  |  | 3 | 193 | female |
| GN | TmT | 3 | MED1 |  |  |  | 143 |  |  | 1999 | 283 |  |  | 3 | 72 | ?male |
| GN | TmT | 3 | MED1 | 607 |  |  | 110 |  | 53 | 1999 | 84 |  |  | 3 | 19 |  |
| GN | TmT | 3 | MED1 | 626 |  |  |  |  | 50 | 1999 | 292 |  |  | 3 | 141 | female |
| GN | TmT | 3 | MED1 | 638 |  |  | 104 |  | 54 | 1999 | 288 |  |  | 3 | 175 | no spur, no post keel |
| GN | TmT | 3 | MED1 | 646 |  |  | 112 |  | 51 | 1999 | 439 |  |  | 3 | 248 | no spur, no post keel |
| GN | TmT | 3 | MED1 | 671 |  |  | 113 |  | 54 | 1999 | 1 |  |  | 3 | 9 | no spur |
| GN | TmT | 3 | MED1 | 672 |  |  | 115 |  | 53 | 1999 | 269 |  |  | 3 | 210 | female |
| GN | TmT | 3 | MED1 | 693 |  |  | 112 |  | 51 | 1999 | 322 |  |  | 3 | 196 | no spur |
| GN | TmT | 3 | MED1 | 694 |  |  | 111 |  | 55 | 1999 | 1 |  |  | 3 | 9 | no spur |
| GN | TmT | 3 | MED1 | 695 |  |  | 113 |  | 56 | 1999 | 283 |  |  | 3 | 72 | ?female |
| GN | TmT | 3 | MED1 | 697 |  |  | 113 |  | 56 | 1999 | 1 |  |  | 3 | 9 | no spur |
| GN | TmT | 3 | MED1 | 704 |  |  | 135 |  | 67 | 1999 | 280 |  |  | 3 | 63 | female |
| GN | TmT | 3 | MED1 | 705 |  |  | 116 |  | 51 | 1999 | 1 |  |  | 3 | 9 | no spur |
| GN | TmT | 3 | MED1 | 720 |  |  | 116 |  | 56 | 1999 | 1 |  |  | 3 | 9 | no spur |
| GN | TmT | 3 | MED1 | 720 |  |  | 120 |  | 52 | 1999 | 71 |  |  | 3 | 25 | no spur |
| GN | TmT | 3 | MED1 | 723 |  |  |  |  | 64 | 1999 | 433 |  |  | 3 | 473 | spur scar |
| GN | TmT | 3 | MED1 | 784 |  |  | 135 |  | 62 | 1999 | 432 |  |  | 3 | 306 | no spur, no post keel |
| GN | TmT | 3 | MED1 | 852 |  |  | 154 |  | 77 | 1999 | 433 |  |  | 3 | 481 | spur detached ?male |
| GN | TmT | 3 | MED1 | 856 |  |  | 155 |  | 77 | 1999 | 434 |  |  | 3 | 481 | with spur |
| GN | TmT | 2 | MED3 | 748 |  |  | 144 |  | 67 | 2001 | 549 |  |  | 18 | 61 | GL approx |
| GN | TmT |  | R/MED | 749 |  |  | 134 |  | 68 | 1999 | 285 |  |  | 4 | 161 | with spur |
| GN | TmT |  | R/MED | 817 |  |  | 141 |  | 66 | 1999 | 430 |  |  | 4 | 546 | spur |
| GN | TmT | 4 | ROM1 | 682 |  |  | 117 |  | 51 | 1999 | 294 |  |  | 9 | 297 | GL approx |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GN | TmT | 4 | ROM1 | 717 | | | 112 | | 62 | 1999 | 298 | | | 9 | 293 | with spur, no post keel |
| GN | TmT | 4 | ROM1 | 875 | | | 147 | | 73 | 1999 | 429 | | | 9 | 298 | with spur, no post keel |
| GN | TmT | 4 | ROM2 | | | | 128 | | | 1999 | 437 | | | 8 | 621 | spur attached |
| GN | TmT | 4 | ROM2 | | | | 132 | | 65 | 1999 | 432 | | | 8 | 131 | with spur, no post keel |
| GN | TmT | 4 | ROM4 | 798 | | | 141 | | 72 | 1999 | 287 | | | 6 | 110 | with spur |
| GN | TmT | 4 | ROM5 | 625 | | | | | 54 | 2001 | 548 | | | 15 | 78 | |
| GNP | FE | 5 | Fe8 | | | | 142 | 122 | | 1999 | 435 | | | 10 | 419 | |
| GNP | FE | 3 | MED1 | | | | 126 | | | 1999 | 84 | | | 3 | 21 | |
| GNP | FE | 3 | MED1 | | | | 132 | | | 1999 | 71 | | | 3 | 20 | |
| GNP | FE | 3 | MED1 | | | | 139 | | | 1999 | 433 | | | 3 | 481 | |
| GNP | FE | 3 | MED1 | | | | 140 | | | 1999 | 434 | | | 3 | 481 | Bd approx |
| GNP | FE | 3 | MED1 | | | | 157 | | | 1999 | 398 | | | 3 | 10 | |
| GNP | FE | 3 | MED1 | | | | 158 | | | 1999 | 398 | | | 3 | 10 | |
| GNP | FE | 3 | MED1 | | 681 | | 129 | | 54 | 1999 | 7 | | | 3 | 17 | |
| GNP | FE | 3 | MED1 | 774 | 724 | | 154 | | 68 | 1999 | 292 | | | 3 | 141 | |
| GNP | FE | 2 | MED3 | | | | 109 | 84 | | 2001 | 541 | | | 18 | 3 | |
| GNP | FE | 2 | MED3 | | | | 140 | 118 | | 2001 | 545 | | | 18 | 8 | |
| GNP | FE | 4 | ROM1 | | | | 123 | | | 2001 | 551 | | | 11 | 150 | Bd approx |
| GNP | FE | 4 | ROM1 | | | | 138 | | | 1999 | 429 | | | 9 | 689 | |
| GNP | FE | 4 | ROM1 | | | | 147 | | | 2001 | 554 | | | 11 | 188 | |
| GNP | FE | 4 | ROM2 | | | | 125 | | | 1999 | 438 | | | 8 | 347 | |
| GNP | FE | 4 | ROM2 | | | | 129 | | | 1999 | 437 | | | 8 | 621 | |
| GNP | FE | 4 | ROM2 | | | | 130 | | 58 | 1999 | 282 | | | 8 | 194 | ?GNP Lm 677 |
| GNP | FE | 4 | ROM2 | | | | 149 | | | 1997 | 403 | 5 | 6 | | | species ident, uncertain |
| GNP | FE | 4 | ROM3 | | | | 147 | | | 1999 | 289 | | | 7 | 201 | |
| GNP | FE | 4 | ROM3 | | | | 167 | | | 1999 | 433 | | | 7 | 561 | |
| GNP | FE | 4 | ROM4 | | | | 158 | | | 1999 | 439 | | | 6 | 172 | |
| GNP | FE | 4 | ROM5 | | | | 128 | 110 | | 2001 | 549 | | | 15 | 93 | |
| GNP | HU | 3 | MED1 | | | | 131 | | | 1999 | 1 | | | 3 | 9 | |
| GNP | HU | 3 | MED1 | | | | 131 | | | 1999 | 433 | | | 3 | 550 | |
| GNP | HU | 3 | MED1 | | | | 135 | | | 1999 | 284 | | | 3 | 88 | |
| GNP | HU | 3 | MED1 | | | | 143 | | | 1999 | 433 | | | 3 | 481 | |
| GNP | HU | 3 | MED1 | 566 | | | 144 | | 62 | 1999 | 439 | | | 3 | 248 | ?chicken |
| GNP | HU | 3 | MED1 | 587 | | | 124 | | 52 | 1999 | 274 | | | 3 | 173 | |
| GNP | HU | 3 | MED1 | 596 | | | 120 | | 52 | 1999 | 292 | | | 3 | 141 | |
| GNP | HU | 3 | MED1 | 624 | | | 131 | | 56 | 1999 | 277 | | | 3 | 73 | |
| GNP | HU | 3 | MED1 | 655 | | | 139 | | 64 | 1999 | 280 | | | 3 | 66 | |
| GNP | HU | 3 | MED1 | 656 | | | 132 | | | 1999 | 1 | | | 3 | 9 | |
| GNP | HU | 3 | MED1 | 659 | | | | | 58 | 1999 | 71 | | | 3 | 24 | |
| GNP | HU | 3 | MED1 | 681 | | | 148 | | 63 | 1995 | 396 | | | | | Silo grand |
| GNP | HU | 3 | MED1 | 682 | | | 151 | | 63 | 2001 | 541 | | | 16 | 42 | |
| GNP | HU | 3 | MED1 | 683 | | | 149 | | | 2001 | 548 | | | 16 | 34 | |
| GNP | HU | 3 | MED1 | 690 | | | 146 | | 63 | 1995 | 396 | | | | | Silo grand |
| GNP | HU | 3 | MED1 | 700 | | | 151 | | 64 | 1997 | 403 | 5 | 9 | | | |
| GNP | HU | 3 | MED1 | 708 | | | 148 | | 64 | 2001 | 543 | | | 16 | 22 | |
| GNP | HU | 3 | MED1 | 723 | | | 142 | | 65 | 1999 | 84 | | | 3 | 19 | |
| GNP | HU | 3 | MED1 | 733 | | | 152 | | | 1999 | 398 | | | 3 | 10 | |
| GNP | HU | 3 | MED2 | 676 | | | 143 | | 66 | 2001 | 545 | | | 17 | 15 | |
| GNP | HU | 2 | MED3 | 673 | | | 140 | | 61 | 2001 | 545 | | | 18 | 8 | |
| GNP | HU | 2 | MOD1 | 656 | | | 132 | | 59 | 1999 | 303 | | | 2 | 227 | |
| GNP | HU | 2 | MOD2 | | | | 135 | | | 1999 | 1 | | | 1 | 1 | |
| GNP | HU | 2 | MOD2 | 647 | | | 136 | | 63 | 1999 | 1 | | | 1 | 1 | |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GNP | HU | 4 | ROM1 | | | | 123 | | | 2001 | 554 | | | 11 | 188 | |
| GNP | HU | 4 | ROM1 | | | | 132 | | | 2001 | 554 | | | 11 | 188 | |
| GNP | HU | 4 | ROM1 | | | | 154 | | | 2001 | 551 | | | 11 | 171 | |
| GNP | HU | 4 | ROM1 | | | | 160 | | | 1999 | 435 | | | 9 | 413 | |
| GNP | HU | 4 | ROM1 | | | | 161 | | | 1999 | 435 | | | 9 | 413 | |
| GNP | HU | 4 | ROM2 | | | | 133 | | | 1999 | 296 | | | 8 | 246 | |
| GNP | HU | 4 | ROM2 | | | | 135 | | | 1999 | 437 | | | 8 | 642 | |
| GNP | HU | 4 | ROM2 | | | | 145 | | | 1999 | 432 | | | 8 | 627 | |
| GNP | HU | 4 | ROM2 | | | | 147 | | | 1999 | 437 | | | 8 | 462 | |
| GNP | HU | 4 | ROM2 | | | | 154 | | | 1999 | 299 | | | 8 | 238 | |
| GNP | HU | 4 | ROM2 | | | | 164 | | | 1999 | 295 | | | 8 | 268 | |
| GNP | HU | 4 | ROM2 | 621 | | | 129 | | 58 | 1999 | 282 | | | 8 | 194 | |
| GNP | HU | 4 | ROM2 | 654 | | | 133 | | 66 | 1999 | 294 | | | 8 | 263 | |
| GNP | HU | 4 | ROM2 | 658 | | | 138 | | 66 | 1997 | 402 | 3 | 4 | | | |
| GNP | HU | 4 | ROM3 | | | | 150 | | | 1999 | 429 | | | 7 | 725 | |
| GNP | HU | 4 | ROM3 | 646 | | | 134 | | 62 | 1999 | 288 | | | 7 | 181 | |
| GNP | HU | 4 | ROM3 | 647 | | | 135 | | 56 | 1999 | 285 | | | 7 | 160 | |
| GNP | HU | 4 | ROM3 | 689 | | | 151 | | 66 | 1999 | 429 | | | 7 | 724 | |
| GNP | HU | 4 | ROM4 | | | | 185 | | | 1999 | 281 | | | 6 | 110 | |
| GNP | HU | 4 | ROM5 | 636 | | | 131 | | 56 | 2001 | 533 | | | 15 | 31 | |
| GNP | TI | 3 | MED1 | | | | 98 | 105 | | 2001 | 543 | | | 16 | 34 | |
| GNP | TI | 3 | MED1 | | | | 100 | | | 1999 | 291 | | | 3 | 80 | |
| GNP | TI | 3 | MED1 | | | | 100 | 95 | 48 | 1999 | 439 | | | 3 | 248 | |
| GNP | TI | 3 | MED1 | | | | 105 | 102 | 56 | 1999 | 280 | | | 3 | 66 | |
| GNP | TI | 3 | MED1 | | | | 106 | 108 | | 1999 | 276 | | | 3 | 196 | |
| GNP | TI | 3 | MED1 | | | | 106 | 111 | | 1999 | 283 | | | 3 | 67 | |
| GNP | TI | 3 | MED1 | | | | 107 | | | 1999 | 270 | | | 3 | 247 | |
| GNP | TI | 3 | MED1 | | | | 107 | 103 | | 1999 | 284 | | | 3 | 88 | |
| GNP | TI | 3 | MED1 | | | | 111 | | | 1995 | 396 | | 1 | | | shaft bent Silo grand |
| GNP | TI | 3 | MED1 | | | | 112 | 112 | | 1999 | 434 | | | 3 | 481 | |
| GNP | TI | 3 | MED1 | | | | 112 | 123 | | 1999 | 1 | | | 3 | 7 | |
| GNP | TI | 3 | MED1 | | | | 114 | | | 2001 | 541 | | | 16 | 42 | |
| GNP | TI | 3 | MED1 | | | | 115 | 121 | | 1999 | 280 | | | 3 | 67 | |
| GNP | TI | 3 | MED1 | | | | 116 | 117 | | 1999 | 432 | | | 3 | 452 | |
| GNP | TI | 3 | MED1 | | | | 116 | 123 | | 1999 | 280 | | | 3 | 67 | |
| GNP | TI | 3 | MED1 | | | | 118 | | | 1995 | 396 | | 1 | | | |
| GNP | TI | 3 | MED1 | | | | 123 | 124 | | 1999 | 398 | | | 3 | 6 | |
| GNP | TI | 3 | MED1 | | | | 123 | 125 | | 2001 | 549 | | | 16 | 48 | |
| GNP | TI | 3 | MED1 | | | | 124 | 122 | | 1995 | 396 | | | | | Silo grand |
| GNP | TI | 3 | MED1 | | | | 125 | 130 | | 1999 | 84 | | | 3 | 21 | |
| GNP | TI | 3 | MED1 | | | | 127 | 130 | | 1999 | 434 | | | 3 | 481 | |
| GNP | TI | 3 | MED1 | | | | 128 | 137 | | 1995 | 396 | | 1 | | | Bd approx Silo 3 |
| GNP | TI | 3 | MED1 | | | | 133 | 144 | | 1999 | 295 | | | 3 | 255 | |
| GNP | TI | 3 | MED1 | | | 875 | 103 | 102 | 47 | 1999 | 439 | | | 3 | 248 | |
| GNP | TI | 3 | MED1 | | | 943 | 95 | 104 | 51 | 1999 | 84 | | | 3 | 19 | |
| GNP | TI | 3 | MED1 | | | 998 | 104 | 107 | 55 | 1999 | 283 | | | 3 | 67 | La approx |
| GNP | TI | 3 | MED1 | | | 1017 | 105 | 105 | 56 | 1999 | 1 | | | 3 | 9 | |
| GNP | TI | 3 | MED1 | | | 1054 | 118 | 122 | 58 | 1999 | 291 | | | 3 | 80 | |
| GNP | TI | 3 | MED1 | 761 | | 719 | 112 | 105 | 61 | 1999 | 439 | | | 3 | 248 | shaft bent |
| GNP | TI | 3 | MED1 | 765 | | 716 | 114 | 105 | 65 | 1999 | 439 | | | 3 | 248 | shaft bent |
| GNP | TI | 3 | MED1 | 1005 | | 970 | 100 | 102 | 53 | 1999 | 268 | | | 3 | 142 | |
| GNP | TI | 3 | MED1 | 1007 | | 978 | 102 | 104 | 52 | 2001 | 545 | | | 16 | 23 | |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GNP | TI | 3 | MED1 | 1015 | | 972 | 105 | 107 | 52 | 1999 | 432 | | | 3 | 452 | |
| GNP | TI | 3 | MED1 | 1016 | | 978 | 106 | 109 | 54 | 1999 | 284 | | | 3 | 88 | |
| GNP | TI | 3 | MED1 | 1016 | | 990 | 109 | 108 | 59 | 1999 | 292 | | | 3 | 141 | |
| GNP | TI | 3 | MED1 | 1026 | | 991 | 102 | 104 | 53 | 1999 | 284 | | | 3 | 88 | |
| GNP | TI | 3 | MED1 | 1047 | | 1012 | 102 | 104 | 56 | 1999 | 398 | | | 3 | 10 | |
| GNP | TI | 3 | MED1 | 1052 | | 1016 | 99 | 106 | 54 | 1999 | 280 | | | 3 | 67 | |
| GNP | TI | 3 | MED1 | 1073 | | 1038 | 110 | 110 | 58 | 1999 | 314 | | | 3 | 27 | |
| GNP | TI | 3 | MED1 | 1074 | | 1031 | 112 | 108 | 58 | 1999 | 280 | | | 3 | 63 | |
| GNP | TI | 3 | MED1 | 1121 | | 1083 | 114 | 112 | 59 | 1999 | 434 | | | 3 | 481 | |
| GNP | TI | 3 | MED1 | 1124 | | 1084 | 111 | 112 | 58 | 2001 | 545 | | | 16 | 34 | |
| GNP | TI | 3 | MED1 | 1164 | | 1127 | 116 | 125 | 63 | 1999 | 277 | | | 3 | 73 | |
| GNP | TI | 3 | MED1 | 1187 | | 1154 | 120 | 125 | 70 | 1999 | 283 | | | 3 | 77 | |
| GNP | TI | 3 | MED1 | 1205 | | 1162 | 117 | 122 | 62 | 1999 | 1 | | | 3 | 9 | |
| GNP | TI | 3 | MED1 | 1240 | | 1190 | 128 | 129 | 66 | 1999 | 434 | | | 3 | 481 | |
| GNP | TI | 3 | MED1 | 1244 | | 1090 | 127 | 126 | 67 | 1999 | 434 | | | 3 | 481 | |
| GNP | TI | 3 | MED1 | 1293 | | 1248 | 134 | 141 | 72 | 1999 | 280 | | | 3 | 67 | |
| GNP | TI | 3 | MED2 | | | | 111 | 106 | | 2001 | 546 | | | 17 | 76 | |
| GNP | TI | 2 | MED3 | | | | 101 | | | 2001 | 546 | | | 18 | 61 | |
| GNP | TI | 2 | MED3 | | | | 107 | 107 | | 2001 | 546 | | | 18 | 61 | |
| GNP | TI | 2 | MED3 | | | | 114 | 116 | | 2001 | 549 | | | 18 | 61 | |
| GNP | TI | 2 | MED3 | | | | 115 | 112 | | 2001 | 533 | | | 18 | 8 | |
| GNP | TI | 2 | MED3 | | | | 139 | 147 | | 2001 | 533 | | | 18 | 4 | |
| GNP | TI | 2 | MOD1 | | | | 104 | 108 | | 1999 | 303 | | | 2 | 225 | |
| GNP | TI | 2 | MOD1 | | | | 128 | 128 | | 1999 | 303 | | | 2 | 225 | |
| GNP | TI | 2 | MOD1 | | | | 133 | 140 | | 1999 | 299 | | | 2 | 240 | |
| GNP | TI | 2 | MOD1 | | | | 142 | | | 1999 | 303 | | | 2 | 227 | |
| GNP | TI | 2 | MOD1 | | | 1113 | 118 | | 58 | 1999 | 299 | | | 2 | 240 | |
| GNP | TI | 2 | MOD1 | | | 1198 | 118 | 126 | 67 | 1999 | 299 | | | 2 | 240 | |
| GNP | TI | 2 | MOD2 | | | | 96 | 98 | 54 | 1999 | 438 | | | 1 | 1 | Dd approx |
| GNP | TI | | R/MED | | | | 123 | 122 | | 1999 | 298 | | | 4 | 304 | |
| GNP | TI | 4 | ROM1 | | | | 93 | 96 | | 1999 | 439 | | | 9 | 357 | |
| GNP | TI | 4 | ROM1 | | | | 111 | | | 1999 | 265 | | | 9 | 221 | |
| GNP | TI | 4 | ROM1 | | | | 118 | | | 1999 | 265 | | | 9 | 221 | |
| GNP | TI | 4 | ROM1 | | | | 128 | 131 | | 1999 | 437 | | | 9 | 628 | Dd approx |
| GNP | TI | 4 | ROM1 | 1238 | | 1187 | 121 | 131 | 73 | 1999 | 429 | | | 9 | 298 | |
| GNP | TI | 4 | ROM1 | 1245 | | 1193 | 122 | 132 | 72 | 1999 | 429 | | | 9 | 298 | |
| GNP | TI | 4 | ROM2 | | | | 102 | 100 | | 1999 | 428 | | | 8 | 660 | |
| GNP | TI | 4 | ROM2 | | | | 117 | 124 | | 1999 | 289 | | | 8 | 213 | |
| GNP | TI | 4 | ROM2 | | | | 127 | 134 | | 1999 | 299 | | | 8 | 238 | |
| GNP | TI | 4 | ROM2 | 1081 | | 1036 | 108 | 118 | 61 | 1999 | 438 | | | 8 | 347 | Bd approx |
| GNP | TI | 4 | ROM3 | | | | 95 | 105 | | 1999 | 432 | | | 7 | 129 | |
| GNP | TI | 4 | ROM3 | | | | 104 | 112 | | 1999 | 432 | | | 7 | 568 | |
| GNP | TI | 4 | ROM3 | | | | 112 | 123 | | 1999 | 440 | | | 7 | 182 | |
| GNP | TI | 4 | ROM3 | | | | 116 | 125 | | 1997 | 410 | 5 | 13 | | | |
| GNP | TI | 4 | ROM4 | 962 | | 923 | 104 | 98 | 52 | 2001 | 545 | | | 14 | 45 | |
| GNP | TI | 4 | ROM4 | 1137 | | 1096 | 127 | | 64 | 1999 | 283 | | | 6 | 71 | |
| GNP | TI | 4 | ROM5 | | | | 97 | 95 | | 2001 | 541 | | | 15 | 38 | |
| GNP | TI | 4 | ROM5 | | | | 104 | 100 | | 2001 | 541 | | | 15 | 31 | |
| GNP | TI | 4 | ROM5 | | | | 124 | 137 | | 2001 | 549 | | | 15 | 90 | |
| GNP | TmT | 5 | Fe7 | | | | 140 | | | 1997 | 402 | 7 | 3 | | | |
| GNP | TmT | 3 | MED1 | 680 | | | 108 | | 52 | 2001 | 533 | | | 16 | 28 | |
| GNP | TmT | 2 | MED3 | | | | 115 | | | 2001 | 533 | | | 18 | 8 | |

| Tax | Os | MP | Period | GL | Lm | La | Bd | Dd | SD | Ano | Cont | Qua | Cam | Fase | UE | notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GNP | TmT | 2 | MED3 | 738 | | | | | 59 | 2001 | 545 | | | 18 | 8 | no spur |
| GNP | TmT | 2 | MOD | | | | 115 | | | 1995 | 397 | 2 | 6 | | | |
| GNP | TmT | 4 | ROM1 | | | | 105 | | | 1999 | 435 | | | 9 | 413 | |
| GNP | TmT | 4 | ROM1 | 788 | | | 125 | | 60 | 2001 | 560 | | | 11 | 217 | |
| GNP | TmT | 4 | ROM3 | | | | 126 | | | 1999 | 432 | | | 7 | 129 | |
| GNP | TmT | 4 | ROM3 | | | | 136 | | | 1999 | 285 | | | 7 | 160 | with spur |
| GNP | TmT | 4 | ROM3 | | | | 146 | | | 1999 | 432 | | | 7 | 129 | |
| GNP | TmT | 4 | ROM5 | | | | 116 | | | 2001 | 549 | | | 15 | 93 | |
| GP | TmT | 2 | MED3 | 917 | | | 152 | | 78 | 2001 | 545 | | | 18 | 8 | with spur |
| GRG | TmT | 2 | MOD1 | | | | 253 | | | 2001 | 537 | | | 19 | 1 | *Grus grus* |
| MIM? | HU | 3 | MED1 | | | | 211 | | | 1999 | 282 | | | 3 | 196 | *Milvus* cf *milvus* Bd approx |
| MIM? | HU | 3 | MED1 | | | | 216 | | | 1999 | 322 | | | 3 | 196 | *Milvus* cf *milvus* |
| OTT | FE | 3 | MED1 | | | | 238 | | 106 | 1999 | 7 | | | 3 | 17 | *Otis tarda* prob, male |
| OTT | TI | 3 | MED1 | | | | 236 | 240 | | 1999 | 284 | | | 3 | 90 | *Otis tarda* |
| OTT | TI | 3 | MED1 | | | | 240 | 241 | | 1999 | 284 | | | 3 | 90 | *Otis tarda* |
| PEC | HU | 3 | MED1 | | | | 568 | | | 1999 | 269 | | | 3 | 210 | *Pelicanus crispus* |
| Rall | TmT | 3 | MED1 | | | | 66 | | | 1995 | 396 | | | | | cf *Rallidae* Silo grand |
| Rall | TmT | 3 | MED1 | 457 | | | 63 | | 24 | 1999 | 291 | | | 3 | 80 | cf *Rallidae* |
| STT | HU | 4 | ROM1 | 349 | | | 83 | | 44 | 1999 | 296 | | | 9 | 252 | cf, *Streptopelia turtur* |
| TET | TI | 3 | MED1 | | | | 92 | 104 | | 1999 | 273 | | | 3 | 197 | *Tetrax tetrax* |
| TET | TI | 4 | ROM1 | | | | 89 | 83 | | 2001 | 554 | | | 11 | 172 | *Tetrax tetrax* |
| TET | TI | 4 | ROM3 | | | | 87 | 99 | | 1999 | 433 | | | 7 | 583 | *Tetrax tetrax* |
| TET | TmT | 3 | MED1 | | | | 106 | | | 2001 | 549 | | | 16 | 48 | *Tetrax tetrax* |
| TET | TmT | 3 | MED1 | | | | 108 | | | 1999 | 291 | | | 3 | 89 | *Tetrax tetrax* |
| TET | TmT | | R/MED | 721 | | | 64 | | 43 | 1999 | 430 | | | 4 | 546 | *Tetrax tetrax* |
| TET | TmT | 4 | ROM2 | | | | 103 | | | 1999 | 437 | | | 8 | 462 | *Tetrax tetrax* |
| TET | TmT | 4 | ROM2 | 678 | | | | | 44 | 1999 | 297 | | | 8 | 426 | *Tetrax tetrax* |
| TUM | HU | 3 | MED1 | 287 | | | 68 | | | 1999 | 71 | | | 3 | 20 | *Turdus* cf *merula* |

# Resumo

Este relatório tem por base o estudo dos restos faunísticos descobertos durante as escavações arqueológicas realizadas por Ana Arruda e Catarina Viegas em níveis da Idade do Ferro, do período Romano e do período Muçulmano na Alcáçova de Santarém. A sua maior parte provém de espécies domesticadas, como sejam ovinos, cabras, porcos, gado bovino, equídeos (cavalos e burros), gatos e cães. As fontes mais importantes no consumo de carne foram o gado bovino, porcos e ovicaprídeos (ovinos e cabras). Saliente-se, no entanto, a importância do veado durante a Idade do Ferro. Entre os animais selvagens, esta foi a espécie mais representada. Alguns restos de javali, corso, lebre, urso, raposa, perdiz e outras espécies de aves estão presentes em pequenas quantidades. Durante todos os períodos a caça terá desempenhado um papel importante na vida dos habitantes de Santarém, mas sempre secundário em relação ao consumo da carne de animais domésticos. A presença de ossos de peixe e de ostras (estes últimos mais comuns após a Idade do Ferro) indicam a exploração dos recursos aquáticos. Foram assinaladas algumas espécies menos vulgares ou raras, casos do urso (no século XIII d.C.), do pelicano (no período Muçulmano) e de cisne (entre 25 a.C. e 50 d.C.), espécies actualmente ausentes na fauna selvagem de Portugal. A sua presença no passado e a sua extinção são uma lembrança triste da influência destruidora dos homens no ambiente. A diminuição na frequência de ocorrência de veado durante as sucessivas ocupações pode reflectir uma redução progressiva da floresta na região de Santarém. As frequências dos animais domésticos mais importantes não sofreram grandes alterações ao longo dos dois mil anos de ocupação da Alcáçova de Santarém, mas regista-se uma ligeira redução da ocorrência de porco no período Muçulmano — provavelmente devido à proibição do seu consumo pelo Islão. Porém, a presença relativamente importante desta espécie, em comparação com outros sítios da Península Ibérica, pode reflectir a presença de uma razoável comunidade de Cristãos em Santarém, ou um regime Islâmico mais "liberal" nesta região a norte do al-Gharb. Um aumento da percentagem de coelho, um animal urbano, durante a ocupação de Santarém pode reflectir o reforço da urbanização da cidade. A galinha, espécie introduzida na Europa durante a Idade de Ferro, está escassamente representada em Santarém neste período, aumentando o seu consumo durante o período Romano. O mesmo sucede com as ostras, facto que pode indiciar uma sofisticação dos hábitos alimentares e uma melhoria dos transportes do mar até Santarém. O aumento do número de cortes observados nos ossos dos grandes mamíferos acentua-se ao longo dos tempos por razões não conhecidas, talvez resultantes do aumento da sofisticação das técnicas de corte ou de um aumento na intensidade de exploração das carcaças daqueles animais. Muitos dos restos dos coelhos apresentam marcas de dentes provavelmente produzidas por gatos, animais comensais do homem. O padrão das idades de morte de alguns animais domésticos pode dar-nos indicações sobre o modo como seriam explorados. Por exemplo, em relação ao porco o padrão não sofreu alteração, mas o padrão do gado bovino indica uma diminuição da exploração

de vitelas no período Muçulmano, evidenciando-se no conjunto dos ovicaprídeos (cabra/ovelha) um aumento do consumo de animais jovens durante este período. Estas mudanças ligeiras podem sugerir que a economia durante a Idade do Ferro e no período Romano era baseada sobretudo na exploração da carne de vaca enquanto durante o período Muçulmano era sobretudo baseada na exploração da carne de ovinos e cabras. No entanto, estas diferenças pouco acentuadas devem ser interpretadas com prudência, sendo necessárias mais colecções arqueozoológicas que nos permitam retirar conclusões mais definitivas. A frequência mais alta de jovens galinhas no período Muçulmano pode significar um acréscimo de afluência, ou (como no caso dos coelhos) um aumento da intensidade de exploração da sua carne — devida ao aumento da população humana em Santarém. O estudo biométrico evidencia mudanças de tamanho de alguns animais, bem como as proporções em que os diferentes sexos estavam representados. As dimensões do gado bovino não mudaram entre a Idade do Ferro e o período Romano, contrariamente ao que aconteceu na Europa central durante o mesmo período, onde as dimensões dos bovídeos aumentaram. A proporção dos bovinos de diferentes tamanhos (*i.e.* sexo) indica a presença de mais fêmeas na Idade do Ferro, registando-se a presença de maior número de machos durante o período Muçulmano. A biometria dos ovinos é muito interessante e indica um ligeiro desenvolvimento da morfologia dos ossos deste animal entre a Idade do Ferro e o período Romano, sendo mais acentuada entre o período Romano e o período Muçulmano. Estas mudanças não serão o resultado de uma escolha desequilibrada dos sexos, mas podem reflectir uma melhoria dos ovinos e/ou a importação das raças diferentes. Um estudo mais amplo dos ovinos no sul do país mostra que os ovinos do período Muçulmano já eram maiores, o que indica que talvez os Árabes tenham introduzido melhoramentos em Portugal, já que consideravam o al-gharb al-Andaluz um centro importante. A biometria das galinhas é igualmente interessante e sugere mais galinhas adultas do que frangos adultos no período Muçulmano, situação que pode reflectir a popularidade dos ovos no mundo islâmico. Muitas das deduções apresentadas neste trabalho são hipóteses necessariamente dependentes de uma confirmação no futuro, quando for possível efectuar a sua comparação com outras amostras arqueozoológicas dos mesmos períodos em Portugal.

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