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## Fish remains from the *Casa do Governador* - a Roman fish processing factory in *Lusitania*

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The “Casa do Governador da Torre de Belém” is a former Roman fish processing factory located in Belém, near the ancient town of *Olissipo*- present-day Lisbon. Belém is ideally located in relation to the Tejo’s river and the adjacent Atlantic coast. Firm evidence is still lacking on the dates of operation of “Casa do Governador”, but while the factory appears to have been in use for a long time (probably for at least four centuries), all the fish remains come from the later phase (fourth-fifth century AD).

The social and economic contexts of the “Casa do Governador” factory are relevant because *Olissipo* was a city that registered substantial activities associated with the exploitation of marine resources. Since part of the factory was destroyed, after later urban building development, there is no definitive idea as to what might have been the general context of the “Casa do Governador” factory in its early and late phases. However, it seems more plausible that the factory was part of a large complex (such as an industrial *vicus*) than it was a small factory related to a *villa* (Filipe, Fabião 2009).

During 2005 and 2006 the site was excavated by one of us (IF), in the course of a field evaluation intended to assess the presence of archaeological structures in the area (since the historical building was going to be converted to a hotel). The importance of the discovery and the obvious interest in a more detailed knowledge of a major aspect of *Lusitania*’s economy- the exploitation of marine resources-, provided the motivation for a multidisciplinary project under the direction of one of us (CF), to understand the manufacture of fish products, exported in amphorae to other parts of the Roman Empire (work in progress) (Fabião et al., 2008).

The analysis of fish remains found at the “Casa do Governador” factory tanks will yield information that can be compared with other archaeological data and information presented in several written sources. With our zooarchaeological approach we hope to discover the fish species used and their sizes, the kinds of fish products manufactured (chiefly known from literary sources but poorly evidenced zooarchaeologically), and to describe the fishing activities involved in the capture of the raw goods.

In this study we present data from a preliminary analysis of the ichthyologic material found in 17 of the 34 tanks preserved at the site (Fig. 1) - those still functioning in the later phase. Our aim is to provide an initial characterization of the contents found in the different tanks of the factory.

Sediments containing massive numbers of fish bones were present in seventeen tanks (T): T<sub>4,5,6(a,b),7,8,9,10,11,12,13,14,17,20,26,30,32</sub> and T<sub>33(a,b)</sub> (Fig. 1); these were recovered and packed for future study.

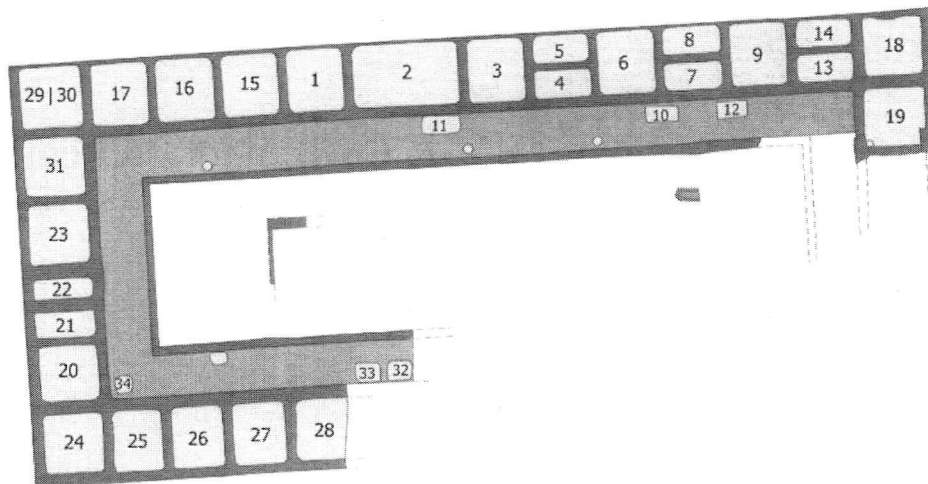


Fig. 1. Schematic plan of the "Casa do Governador" factory (Filipe, Fabião 2009).

Considering the constraints imposed by the massive amount of material that was collected, and the limited time and personnel that were available for sorting and identification, the sediments recovered in the field were sampled. To recover all existing skeletal elements, and other possible remains (such as botanical and/or insect remains, etc.), all samples were gently washed through a set of sieves with 1mm, 500 $\mu$ m, and 75  $\mu$ m meshes, before being dried and stored. The results presented here represent the bones left in sieves bearing a 1mm mesh.

A total of eighteen samples were analyzed. The bones appeared to be reasonably homogeneous: huge numbers of vertebrae and other bones suggesting the presence of entire fish (except in T<sub>30</sub> where only one vertebra was recovered, and T<sub>33</sub> where low numbers of vertebrae were found). Samples T<sub>4</sub>, 5, 6(a,b), 7, 8, 9, 10, 11, 12, 13, 14, 17, 20, 26 and T<sub>32</sub> have large numbers of fish remains. Compared to those, samples T<sub>33a</sub> and T<sub>33b</sub> had an insignificant number of remains.

The vertebrae were the most commonly represented bone in all samples. *Sardina pilchardus* (sardine) was the principal component of the content found in the tanks. Virtually all bones of the species were represented in samples T<sub>4</sub>, 5, 6(a,b), 7, 8, 9, 10, 11, 12, 13, 14, 17, 20, 26, and T<sub>32</sub>. The atlas was used for size estimation and variations were apparent in the size of the specimens collected from the different tanks. Although less numerous there were other taxa present in the samples (e.g. Scombridae, among others). An isolated vertebra recovered in T<sub>30</sub> corresponded to a shark (possibly Triakidae family).

Several historical texts mention the ichthyologic diversity of the Tagus estuary. Sardine is a pelagic fish native in the Tagus estuary and the adjacent Atlantic coast and its abundance and importance have also been pointed out in several ethno-historic essays (Silva 1891). And even today it is one of the principal fish to be consumed locally. The fact that virtually the whole range of bones of *S. pilchardus* were represented in samples T<sub>4</sub>, 5, 6(a,b), 7, 8, 9, 10, 11, 12, 13, 14, 17, 20, 26, and T<sub>32</sub> suggests the use of entire sardines to produce some sort of sauce or salation. Among fish sauces *allec* has the best chances of being documented by bone finds, because it still contains numerous bones, whereas *garum*, *liquamenn* and *muria* were salty liquids that were fairly clear if strained (Van Neer, Parker 2008).

Archaeozoologically *salsamenta* can be attested when made from entire fish or from cut up pieces still containing bones. We wonder whether more than one fish product was being manufactured at "Casa do Governador". The small number of remains found in samples T<sub>33a</sub> and

T<sub>33b</sub>, the vertebra found in T<sub>30</sub> and the “empty tanks” (e.g. where no fish remains were recovered) may be considered in relation to this issue. Although there must be fish for fish products to exist, it does not follow that there must be fish remnants everywhere fish products were manufactured. In fact, classical writers mention various types of salted fish products which must have contained none or almost no fish bones (e.g., *salsamenta*, *tetragona*, *trigona*, *cubia* and *melandrya*) and therefore will be difficult to identify even if produced in “Casa do Governador’s” fish tanks.

While we await more study of the collection of fish bones recovered from the site, it is already evident that there is a similarity with other contemporary factories from *Lusitania*. This is particularly evident with those from *Olissipo* (e.g., “Núcleo Arqueológico da Rua dos Correeiros” and “Mandarim Chinês”), where sardine was also the key component of the contents found in the tanks (Assis, Amaro 2006). Despite the fact that both the intensity of production and the magnitude of fishing are unattainable, it seems clear that a very significant part of the production should have been based on the exploitation of this particular species. The accurate estimation of size will allow us to discuss the capture of sardine both in ecological and cultural terms (probable period of fishing and fishing techniques likely to be used).

From our results, it is evident that the economic importance of “Casa do Governador” and its association with other sites in *Lusitania* will be an issue of substantial archaeological discussion in the near future. However, for now it seems already fair to state that in late Antiquity, sardine was a most important ingredient in the manufacturing of fish products.

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