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Baetic shipwrecks in the coast of Esposende (North Portugal)

Naufragios béticos en la costa de Esposende (norte de Portugal)

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Abstract: This paper present the results of the study of two roman *Baetican* shipwrecks and a fishery trap discovered in the coastal zone of Esposende (North Portugal). Those findings were possible due to particular meteorological and hydrological conditions responsible for a strong sand loss on the beach and the subsequent exhumation of former sedimentary deposits.

Key words: Shipwrecks, Esposende, *Baetica*, Roman, Fish-Traps.

Resumen: en este artículo presentaremos los restos de dos pecios béticos y una red de pesca en la costa de Esposende (al norte de Portugal). Estos hallazgos han sido posibles debido a las particulares condiciones meteorológicas e hidrológicas que han llevado a una pérdida de sedimento arenoso en la playa y a la consiguiente exhumación de los depósitos sedimentarios inferiores.

Palabras clave: pecio, Esposende, *Baetica*, romano, trampas para peces.

Introduction

During the last years the coastal zone of Esposende (North of Portugal) was exposed to particular meteorological and hydrological conditions, leading to strong sand losses and conducting to the exhumation of sedimentary coastal deposits. These events made visible two Roman shipwrecks. The first one was detected in 2005 in the low tide area of the beach of Rio de Moinhos, Marinhas (Esposende), being collected a huge amount of fragments of *Baetican* ceramics. Their low dispersion, homogeneity, contemporaneity and the absence of rolled ceramics has pointed to a shipwreck (Fig. 1) (Morais, 2013: 309-334). The study of the collected materials has allowed attributing them to the Augustus period.

The coastal landscape

In the Augustus period the coastal landscape was very different from nowadays. The coastline would be jagged, with headlands and small lagoons in between, protected by barriers located westwards. Dominating the landscape, the lagoons were probably connected with the sea, at least intermittently. Even nowadays is visible a channel with NW-SE orientation in the subtidal rocky platform, being probably related with *Ribeira do Peralto*. Those findings were presented in *O irado mar atlântico. O naufrágio bético augustano de Esposende (norte de Portugal)*, a multidisciplinary book with an assemblage of papers pointing, under different perspectives, the importance of such a discovery in the Atlantic coast (Morais, 2013).

The coastline was located westwards of the present one, as testified by the sedimentary deposits outcropping in low tide. The lagoon was set in a depressed area of the rocky platform (Granja, 1999; Soares de Carvalho *et alii*, 2006) and worked as a natural anchorage place providing the conditions needed for receiving boats adapted to both maritime and fluvial navigation (Fig. 2). The highest areas of the platform were emerged and occupied as the numerous Roman remains found suggest (Almeida, 1988).

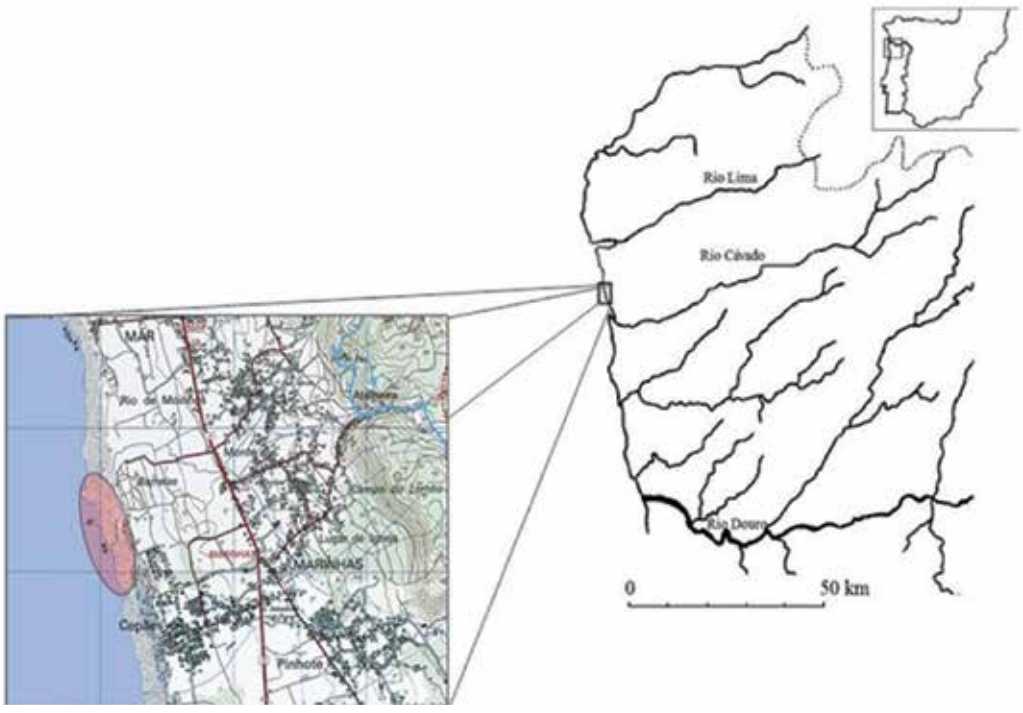

Figure 1. Location of Rio de Moinhos (Marinhas, Esposende).

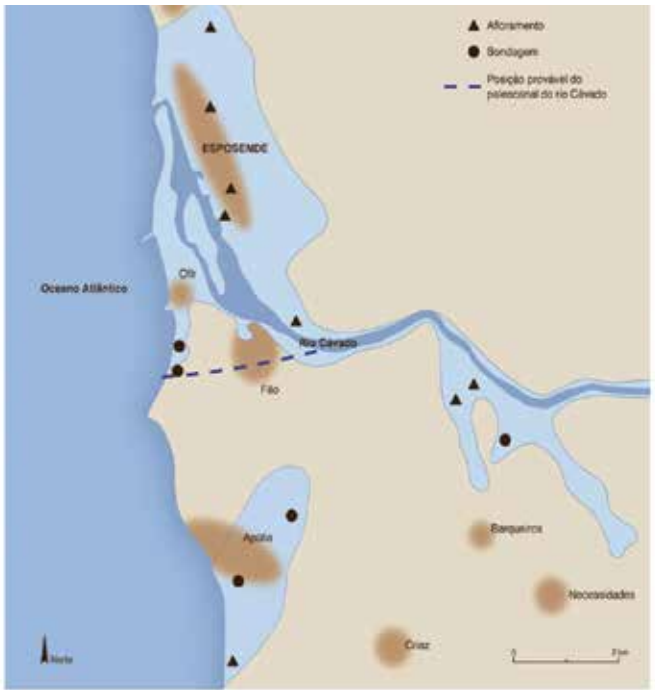

Figure 2. Paleo Estuary of the Cávado River in the Roman period.

The amphorae

According to the sampled materials and to the fact that the main load was of Haltern 70 amphorae, it is possible to infer that reduced dimensions ships were used in the commerce between the *Baetica* and the peninsular NW (Carreras/Martin, 2013: 283-308; Morais, 2013: 309-334).

It is very well known the existence of commercial routes between both regions. As Maria Luisa Blot (2003) refers, the commercial circuit through the Atlantic route was easy to perform due to the coastal morphology of the Iberian Peninsula, the favourable maritime currents and winds, the hydrographic net and the economic resources. These settings certainly promoted the establishment of routes and anchorage points or exchange places.

In the present study, we can be facing a small anchorage located in the vicinity of the settling of S. Lourenço, Vila Chã, located in the top of a cliff at the NE of Esposende, near the Cávado river mouth (Almeida, 1998; 2003; 2011: 27-55). Due to the collection of archaeological remains, particularly the elevated amount of Haltern 70 amphorae found till the moment, this settlement can be framed in the Atlantic fluvio-maritime commerce (Morais/Carreras, 2004: 93-112).

The abundance of Haltern 70 amphorae along the entire Atlantic coast helps to better understand the existence of sunken boats containing that type of containers. As an example, the shipwreck of Peniche (Sítio dos Cortiçais), also from Augustus time (Blot, 2003: 229-231; 2004: 465-480), can be pointed as well as the shipwrecks documented in Galicia (Spain). Here, the Cortegada (Ria de Arosa, Pontevedra) shipwreck, that furnished the boat remains and 34 amphorae (Luaces/Toscano, 1989: 259-62) and another in Cabo de Mar (Ria de Vigo) should be highlighted. Numerous isolated findings collected in sub-aquatic environments, from Algarve till Coruña coast, are also indicators of other probable shipwrecks (Carreras/Martin, 2011: 283-308).

The load and the content

In this context, the shipwreck of Ribeira de Peralto is another example of a Baetican boat whose principal load was Haltern 70 amphorae (n.º 1-19) (Fig. 3). This type of amphorae is a multiuse container, used in the transport of different products, such as olives in *defrutum* (Aguilera, 2004a: 119-120; 2004b: 120-132).

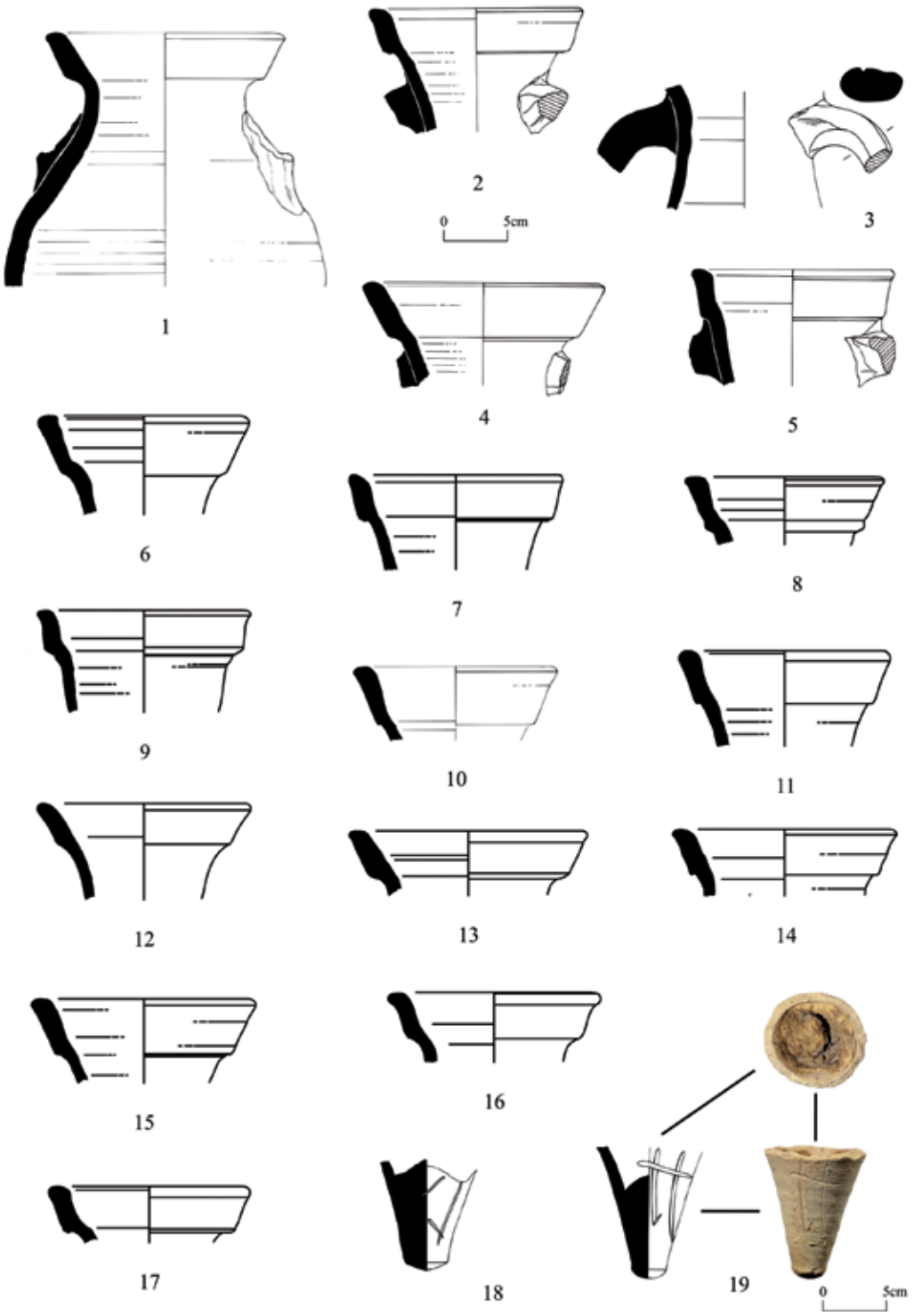

Figure 3. Haltern 70 amphorae from Rio de Moinhos (Marinhas, Esposende).

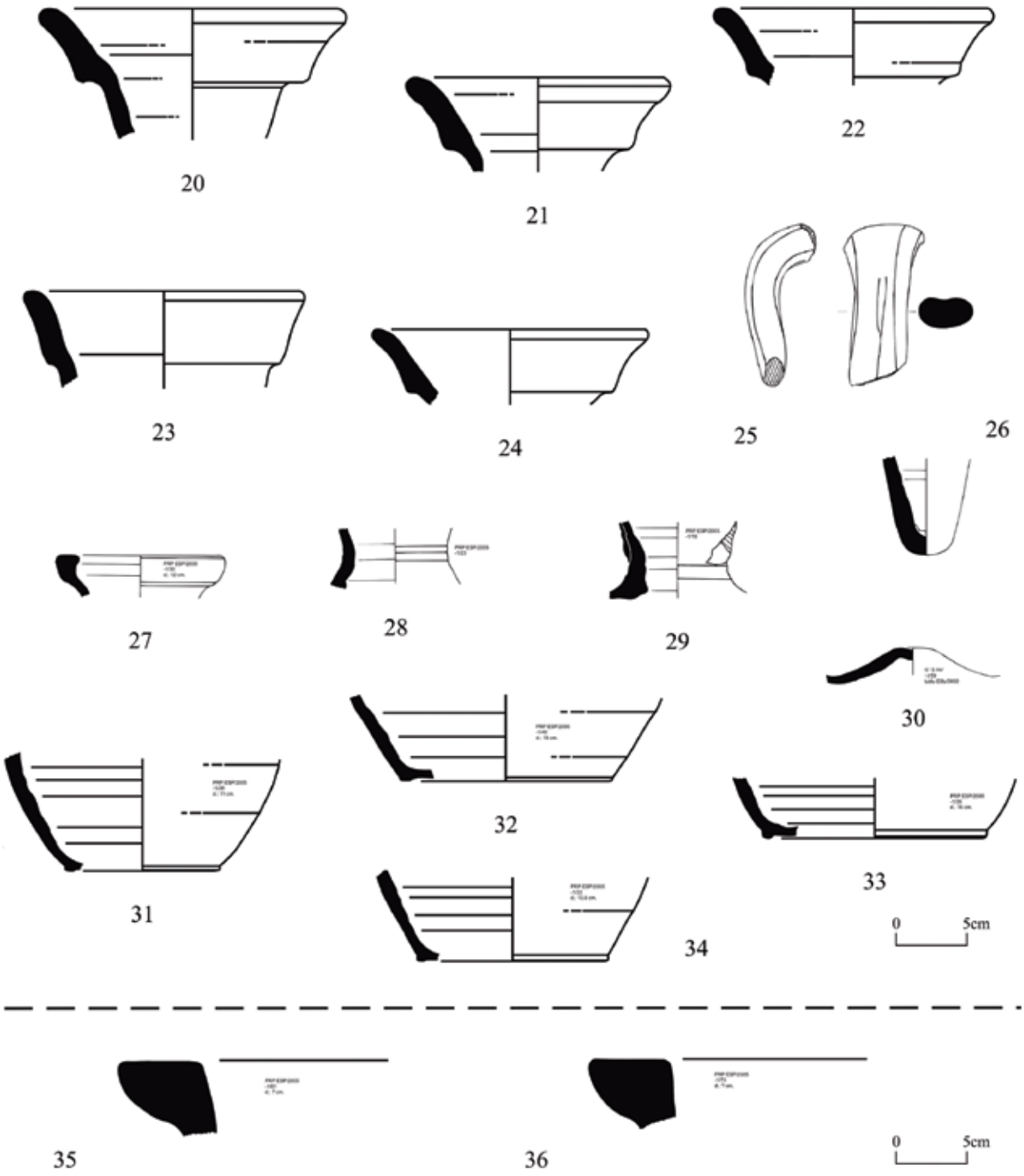

Figure 4. Salt fish amphorae (Dressel 7-11), wine amphorae (type urceus) and *doliola* from Rio de Moinhos (Marinhas, Esposende).

Included in the load was found a gaditanan type Dressel 7-11 (n.º 20-25) amphorae for fish and also ceramic productions from Guadalquivir corresponding to wine amphorae of *urceus* type (n.º 27-34) and small *doliola* (n.º 35-36) (Fig. 4).

Together with these containers were Baetic (n.º 37-51) and Italic (n.º 52-53) common ware (including two fragments of *doliola* from Guadalquivir), and thin-walled ware from Etruria (n.º 54-57), Central-Italy (n.º 58-60) and Campania (n.º 61) (Fig. 5).

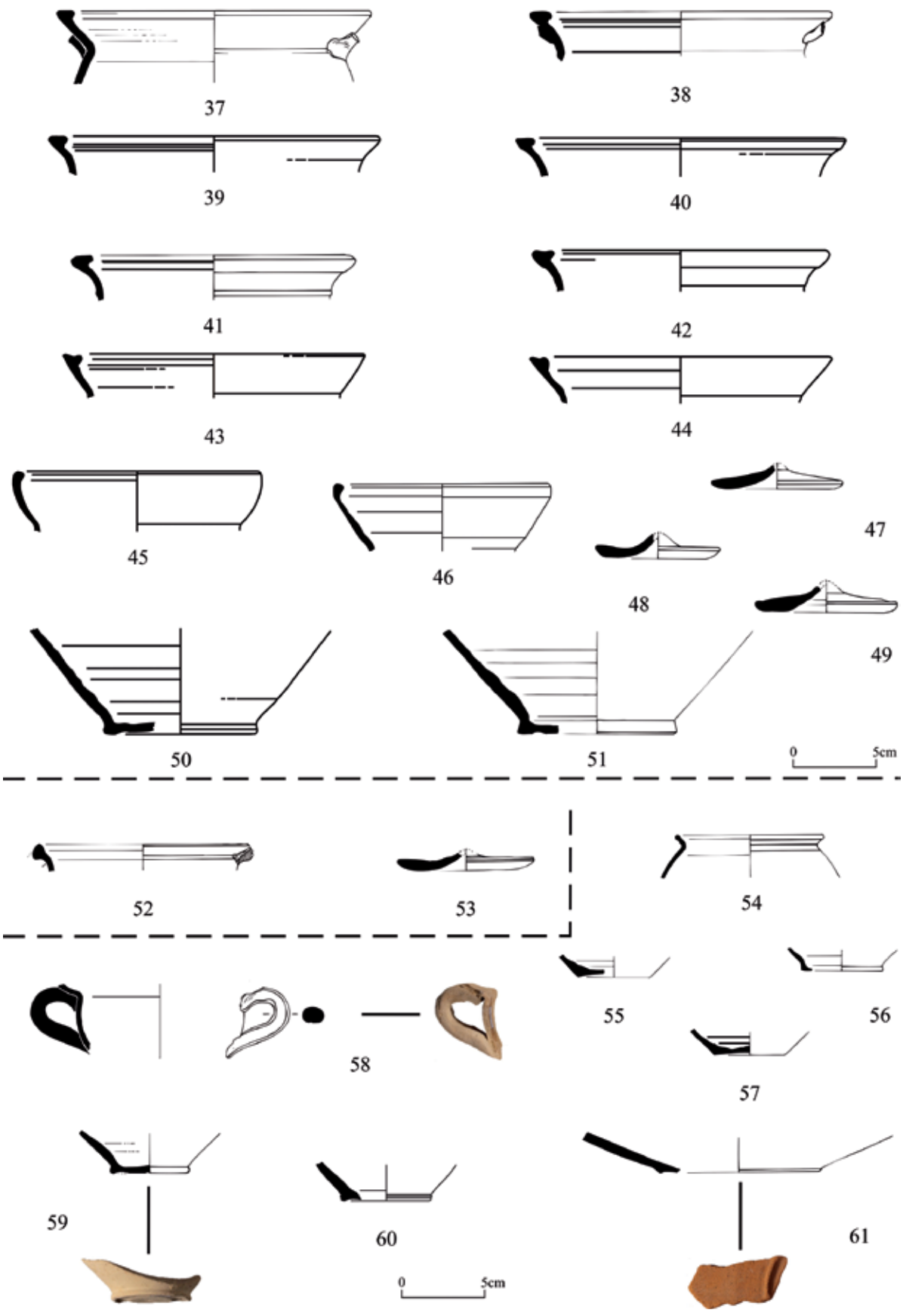

Figure 5. Baetican and Italic common ware and Italic thin-walled ware from Rio de Moinhos (Marinhas, Esposende).

The original content of these amphorae (Haltern 70 and *urceus* type) was analysed by gas chromatography with mass detection (GC/MS). The results obtained pointed to the presence of *defrutum* in the Haltern 70 amphorae (Fig. 6a) and a sweetish wine (*mulsum*) in *urceus* type amphorae (Fig. 6b) (Oliveira *et alii*, 2013: 263-281).

Shipwrecks and fishery practices

The above mentioned vestiges of a shipwreck suggested the existence of an analogous situation in Esposende coast. Storms occurred from October 2013 till February 2014, exhumed another shipwreck in a beach located at north of Rio de Moinhos. The main load of the Roman shipwreck was composed by gaditan fish amphorae Dressel 7-11, with a supplementary load of Haltern 70 and Dressel 20 amphorae from Guadalquivir. Though still in study, a preliminary analysis of the remains till now collected, point a chronology of mid-1st century A.D.

In 2014 several wood stakes lined in between were discovered near the area of the first shipwreck. Those were probably from a fishery trap analogous to other similar found in Silvalde

Ácidos orgânicos indicadores da presença de vinho				
4-etilguaiacol	Guaiacol	Vanilina	Siringaldeido	Calameneno
4-etilcatecol	Ácido octanóico	Hidroquinona	Eugenol	Guaiazuleno
Resinas				
Ácido levopimárico	Isopimariedeno	Ácido dehidroabiético		Eudalina
Cembreno	Pimarinal	Bisaboleno	Cadalina	Aromadendreno
Indicadores da presença de azeite				
Ácido palmítico	Valenceno	Patcholeno	Copaeno	Muoroleno	Alcanos de cadeia linear

Figure 6a. Chromatographic analysis on Haltern 70 amphorae.

Ácidos orgânicos indicadores da presença de vinho					
Tartárico	Octanóico	Sucínico	Málico	Vanílico	Isovanílico
Treónico	3-Hidroxiisovalérico		Azeláico	3-Hidroxicapróico	
Isoleucina	Ácido fumárico	Levúlico	Acético	Ácidos alcanóicos e alcenóicos de cadeia linear	
Açucares					
D-Frutose	D-Glucose	Sucrose	Maltose	D-Turanose	
Galactopiranose	Xilofuranose		Lactose	Celobiose	
Indicador da queima de madeira					
Levoglucosano					

Figure 6b. Chromatographic analysis on *urceus* type amphora

(Espinho, north coast of Portugal), that was dated as high-empire (Alves *et alii*, 1988-1989: 187-226). This type of fishery traps was generally installed in lakes and lagoons. This is not an isolated example as are already known analogous traps in England, called «river fisheries or coastal weirs» and Spain, known as «calaes ou redolins». These are testimonies of a kind of collective fishery that consists in the nets disposed perpendicular to the coast in order to avoid the fish scape. One of the stakes sampled in Rio de Moinhos was radiocarbon dated of 1960±60 yr BP (2 sigma calibrated: 106 cal BC-180 cal AD). This chronology is coincident with that of the shipwreck, what reinforces the thesis concerning the existence of a lagoon, previously inferred from geomorphological and sedimentological data.

Conclusion

According to the available results we can state that the Atlantic commerce was done through one of the natural ways of navigation and, consequently, in an area of culture confluences. This fact is not mentioned in most literary sources that usually do not stretch the commerce through the Atlantic maritime route. This situation contrasts with the Mediterranean navigation and commerce about what a vast literature was written, as is the case of the shipwreck research of A. J. Parker, published in 1992.

Organic acids tracers for wine				
Octanoic	Hydroquinone	Vanillin	1,3- dimethylnaphthalene	Syringaldehyde
Calamenene	Guaiacol	4-ethilguaiacol	4-ethylcatechol	Nonadecane
Eugenol	Guaiazulene	1,2- diphenylethylene		
Resin compounds				
Levopimaric acid	Isopimariedene	Dehydroabietic acid	Cadaline	Eudalin
Cembrene	Pimarinal	γ-Bisabolene	Diphenyl eter	Aromadendrene
Germacrene	α-patcholene	methylpimarate	Methyl sandaracopimarate	Creosol
Valencene	Pimaric acid	10,18-Bisnorabieta-5,7,9(10),11,13-pentaene		
Olive oil tracers				
Palmitic acid	Valencene	α-patcholene	α-copaene	α-muorolene
Homologous series of linear alkanoic acids				

Table 1. Chromatographic analysis on Haltern 70 amphorae.

Organic acids tracers for wine				
Tartaric	Octanoic	Succinic	Malic	Vanillic
Isovanillic	Threonic	3-hydroxyisovaleric	Acetic	Azelaic
3- hydroxycaproic	Levulinic	Isoleucine	Fumaric	Homologous series of linear alkanoic and alkenoic acids
Carbohydrates				
Fructose	Glucose	Sucrose	Maltose	Turanose
Cellobiose	Galactopyranose	Xylofuranose	Lactose	
Biomass burning tracer				
Levoglucosan				

Table 2. Chromatographic analysis on urceus type amphorae.

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